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Unfinished Business?
The WTO's Doha Agenda

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THE WORLD BANK

edited by **Will Martin and Aaditya Mattoo**

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WILL MARTIN AND AADITYA MATTOO

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List of Abbreviations

AB	Appellate Body
ACP	Africa, Caribbean and Pacific
ACRE	Average Crop Revenue Election
ADA	Anti-dumping Agreement
AFR	sub-Saharan Africa
AMA	agricultural market access
AMS	aggregate measurement of support
ANZCERTA	Australia–New Zealand Closer Economic Relations Trade Agreement
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
CAP	Common Agricultural Policy
CAS	country assistance strategy
CCP	counter-cyclical payments
CES	constant elasticity of substitution
CGE	computable general equilibrium
CIF	cost, insurance and freight
CRS	creditor reporting system
CSE	consumer support estimate
CTE	consumer tax equivalent
DDA	Doha Development Agenda
DFID	Department for International Development (U.K.)
DFQF	duty-free, quota-free
DSU	Dispute Settlement Understanding
EAP	East Asia and Pacific
EBA	everything but arms
ECA	Europe and Central Asia
EDF	European Development Fund
EFTA	European Free Trade Association
EIF	Enhanced Integrated Framework
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GCC	Gulf Cooperation Council
GDP	gross domestic product
GSP	generalised system of preferences
GTAP	Global Trade Analysis Project
HS	Harmonized System
HTS	Harmonized Tariff Schedule
IF	Integrated Framework

IMF	International Monetary Fund
ITC	International Trade Centre
JITAP	Joint Integrated Trade Assistance Program
LAC	Latin America and Caribbean
LDC	least-developed country
LES	linear expenditure system
MENA	Middle East and North Africa
MFN	most-favoured nation
MIC	middle-income country
NAMA	non-agricultural market access
NRA	nominal rate of assistance
ODA	official development assistance
OPEC	Organization of Petroleum Exporting Countries
OTDS	overall trade-distorting support
PAE	poor agrarian economy
PSE	producer support estimates
RAM	recently acceded member
RIE	rich industrial economy
RRA	relative rate of assistance
SACU	Southern African Customs Union
SAR	South Asia region
SCTDP	South Centre Trade for Development Program
SDT	special and differential treatment
SITC	Standard International Trade Classification
SSG	special agricultural safeguard
SSM	special safeguard mechanism
STDF	Standards and Trade Development Facility
STRI	services trade restrictiveness index
SVE	small and vulnerable economy
SWF	sovereign wealth fund
TAMS	total aggregate measurement of support
TFA	Trade Facilitation Agreement
TPRM	trade policy review mechanism
TRIPS	trade-related aspects of intellectual property rights
TRQ	tariff-rate quota
TSI	trade specialisation index
UNCTAD	United Nations Conference on Trade and Development
URAA	Uruguay Round Agreement on Agriculture
USDA	U.S. Department of Agriculture
USDOC	U.S. Department of Commerce
VRAM	very recently acceded member
WRI	welfare reduction index
WTO	World Trade Organization

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Foreword

This important study deals with the state and the fate of the Doha Development Agenda—one of the most ambitious attempts at international cooperation over the past decade. These multilateral negotiations, launched in Doha in 2001, were intended to place developing countries at the centre for the first time.

Since their launch, these negotiations have experienced considerable challenges. Meanwhile, outside the negotiations, many developing countries have demonstrated how growth can be stimulated by taking advantage of export market opportunities in areas consistent with their comparative advantage. My own country, China, whose accession to the WTO was approved by the same ministerial meeting that launched the Doha Agenda, has increased its exports almost eightfold since 2001, and now employs around 85 million people in labour-intensive manufactures. Developing countries more generally have contributed to a dramatic expansion in world trade, and their share of that trade has risen sharply, from 23% to 35%.

As the negotiators attempted to reconcile the competing demands in a rapidly changing world, they developed a negotiating framework of considerable complexity. This complexity has created an important challenge, with countries finding it difficult to evaluate the benefits that would flow to them from an agreement, while being acutely aware of the political costs they would incur in committing to further liberalisation.

This volume has three key objectives: to provide qualitative and quantitative information about the implications of what is currently on the table; to examine controversial areas where further progress might be made; and to identify lessons that might be of use for future negotiations. To achieve these objectives, this study brings together a team of 20 experts to analyze the draft agreements and synthesises their findings. They use innovative approaches developed specifically for this work.

To briefly summarise their findings, there is much in the proposals already on the table; substantially more might be achieved in some key areas; and there is a case for new approaches in future negotiations. I hope that the findings of this volume will help to provide the stimulus needed to jolt the negotiations back on track towards an outcome that will benefit all countries, and particularly the developing countries.

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Acknowledgements

1

Introduction

WILL MARTIN, AADITYA MATTOO AND DEBORAH WINKLER

1   INTRODUCTION

The Doha Development Agenda (DDA) is in limbo. After ten years of hard work by skilled negotiators seeking to identify the interests of different participants and to reconcile them into an overall agreement, no conclusion is in sight. A Doha-weary world faces a difficult 'trilemma' over whether to implement all or part of the draft agreements as they stand today, to modify them substantially, or to dump Doha and start afresh. At this critical juncture, this volume aims to provide a better empirical basis for an informed choice. It addresses the questions that are relevant to each of the possible scenarios. What benefits, precisely, does Doha currently offer individual participants and what would be lost if Doha were abandoned? What are the implications of the modifications proposed to the Doha drafts? If we did start afresh, what have we learnt from Doha about how to negotiate and perhaps even what to negotiate?

1.1   What Does Doha Offer?

One of the key impediments to reaching an agreement is widespread scepticism about what the DDA will actually deliver in terms of market access. The formal draft proposals (modalities) for the Doha negotiations have not changed since late 2008, although negotiators have tried many approaches to move beyond the current stalemate. The complex nature of the resulting proposals makes it difficult for members—especially developing-country members—to evaluate the implications for access to markets, particularly because the implications can only be established by predicting the actions of more than 150 other World Trade Organisation (WTO) members. The literature attempting to make a detailed assessment of the answers to these questions is quite limited, apart from a few specific studies cited in IMF (2011) such as Hufbauer *et al* (2010), Bouët and Laborde (2010a) and Decreux and Fontagné (2009).

   This book shows that the current Doha proposals, even after allowing for flexibilities (such as sensitive and special products), would cut applied

tariffs on agricultural market-access (AMA) and non-agricultural market-access (NAMA) in goods by around 20%. The agricultural proposals also include abolition of export subsidies and sharp reductions in maximum levels of domestic support, especially in the EU and the United States. The global gains are conservatively estimated to be around $160 billion per year from AMA and NAMA agreements alone. The true gains would be larger because the proposed cuts in bound tariffs (an average of 27% in agricultural and 46% in non-agricultural goods) would reduce the uncertainty associated with the current large gaps between applied and bound tariffs.

In services, current Doha offers improve on countries' previous commitments by about 10%, leaving them, on average, twice as restrictive as actual policies. Even with highly probable additional offers in the closing stages of negotiations, it seems likely that Doha will offer modest improvements in security of market access rather than substantial new market access.

The negotiations attempt to ensure that the least-developed countries (LDCs) benefit by granting them duty-free quota-free (DFQF) access on almost all of their exports to industrial countries, and to some developing countries. This would help the LDCs, but analysis in this volume finds that excluding even 3% of tariff lines, as currently envisaged, would sharply reduce the value of this market access.

The Trade Facilitation Agreement (TFA) focuses on trade-cost-increasing administrative and regulatory measures whose reform could significantly promote trade growth in developing countries. In parallel, the 'aid-for-trade' initiative would play a valuable catalytic role in mobilising trade-related assistance directed at enhancing export capacity in poor countries. The evidence reviewed makes a case for focusing aid-for-trade assistance in areas such as customs administration, transparency, and government procurement, where the returns appear to be much larger than if resources are spread across a broader range of issues.

1.2   What About the Unresolved Issues?[1]

Standing in the way of disagreements on the current proposals is disagreement over—among other things—whether there should be a movement to free or freer trade in specific sectors, the design of a special safeguard mechanism (SSM) in agriculture, and the practice of zeroing in anti-dumping actions in the United States. This study presents evidence that if all of the sectoral agreements that have been proposed were implemented, the trade expansion from reforms in non-agricultural trade would more than double. In agriculture, the evidence reviewed suggests that the proposed SSM envisaged for developing countries, with quantity and price triggers, could both reduce market access and increase the instability of world and domestic markets.

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[1] This section draws in part upon Hoekman *et al* (2010).

Zeroing in U.S. anti-dumping has been the subject of more than 13% of WTO panel investigations and almost 20% of WTO Appellate Body (AB) reports between 1998 and 2010. While WTO litigation on zeroing has, to date, mainly involved exporters from high-income economies, zeroing is also likely to be important for developing-country exporters, with over 60% of the products currently subject to U.S. anti-dumping exported by developing countries.

1.3   What Lessons for Future Negotiations?

The analysis in this book provides some suggestions for future negotiations, whether they involve comprehensive renegotiation of issues covered under the Doha Agenda, or entirely new negotiations. First, in negotiating cuts in tariffs, top-down formulas with very sharp reductions in the highest tariffs (as used in the Doha negotiations) are economically desirable. However, they may generate political costs even more rapidly than economic efficiency gains, leading to intense pressure for exceptions from the formula. Better outcomes might be achieved through less aggressive top-down formulas—even proportional cuts—especially if combined with a requirement that countries 'pay' for any exceptions.

Second, in agriculture, the limited disciplines on export restrictions hurt the confidence of importers that world markets are a reliable source of food supplies. Negotiating disciplines on import and export restrictions, and dealing explicitly with food security and price insulation issues could lead to a more desirable negotiated outcome. Third, in services, market-access negotiations have floundered, in large part due to the inadequate attention being given to the regulatory context in which any liberalisation must take place. Greater progress might be made by addressing regulatory weaknesses in developing countries and promoting international regulatory cooperation, especially in areas like financial services and labour mobility (mode 4).

Finally, this volume identifies several critical trade-related matters that lie outside the DDA, such as the trade and trade policy implications of climate change mitigation, exchange rate management, food security, and energy security. Reaching closure on Doha is important, not just because of the benefits it offers, but also to create the space for some of these issues that require multilateral cooperation, though not necessarily in the WTO alone.

Section 2 of this chapter revisits the main benefits of Doha, namely, improved market access in agriculture and manufacturing, greater security of market access, and the mobilisation of resources to deal with the trade problems of LDCs. In Section 3 we focus on particularly contentious issues: the desire for further liberalisation of certain sectors, the design of an SSM in agriculture, and the practice of zeroing in the United States. In Section 4 we draw lessons from Doha and focus on three main areas: agriculture, services, and trade facilitation and aid for trade. Section 5 identifies areas for multilateral cooperation on critical policy matters that lie outside the

DDA, the most urgent of which are the trade policy implications of climate change mitigation, although other threats to security are considered. Section 6 concludes.

2   REVISITING WHAT IS ON THE TABLE

The proposals on the table for the Doha negotiations in December 2008 implied three key benefits: new market access in agriculture and manufacturing; greater security of market access in agriculture, manufacturing and services; and expanded opportunities for LDCs.

2.1   Reductions in Tariffs on Goods

In Chapters 2 and 3, David Laborde and Will Martin estimate the impact of the December 2008 modalities on AMA and NAMA. The key implications of the Doha Agenda negotiations for the tariffs levied by four major groups of countries are presented in Table 1.1. These are given for total trade, for AMA, and for NAMA. The first three columns refer to the applied rates that influence actual market outcomes. The last three show the WTO bound rates. In each set of three columns, the first ('Base') refers to the base rates in the absence of a round; the second ('Formula') shows the rate if the market-access formulas being negotiated are implemented without exceptions; the third ('Formula plus flex') shows the rate after allowing for country and product flexibilities such as those for LDCs and for sensitive and special products in agriculture.

In agriculture, tariffs are much higher than the average tariff rates for all non-agricultural goods, partly reflecting the fact that this is only the second multilateral round in which agricultural tariffs have been negotiated. The proposals under discussion would reduce the world average bound tariff from 40% to 30% for agricultural products, and from 10% to 5% for non-agricultural goods (see Table 1.1). The tiered formula for liberalisation in agriculture involves larger cuts in the higher tariffs, and would, if implemented without exceptions, cut average bound tariffs almost in half, from 40.3% (base) to 20.7% (formula). But exceptions for 'sensitive' and 'special' products allow many higher tariffs to be subjected to smaller cuts. For most developing countries, bound rates would, on average, still be much higher than currently applied rates. For example, in agriculture, developing countries would still have an average margin of more than 28 percentage points (compared with the actual tariff of 13%) to deal with any unexpected consequences of liberalisation. In manufacturing, this margin would be 8%, slightly higher than the actual average tariff.

One key feature of the potential agreement is its impact on the tariffs that countries face and, hence, their access to foreign markets. Today's legal tariff ceilings are, in many cases, much higher than applied levels of

protection, so even drastic cuts in bound rates frequently only result in modest cuts in applied protection. Despite this, there are likely to be some real benefits for developing-country exporters, as estimated by Laborde *et al* in Chapters 2 and 3. Accounting for flexibilities, the average farm tariffs faced by developing-country exporters would fall from 14.3% to 11.5%, and the tariffs on their exports of manufactures would fall from 2.9% to 2.1%. Exporters of agricultural products from high-income countries would see the tariffs they face fall from 15.1% to 12.3%. Tariffs facing high-income-country exporters of non-agricultural products would fall from 3% to 2.4%.

While only some of the reductions in bound tariffs translate into reductions in applied rates, the entire reduction has value in constraining potential future increases in tariffs (Francois and Martin 2004). Although applied tariffs are now low by historical standards, and have fallen particularly sharply in developing countries, historical studies by Gardner and Kimbrough (1989) and Rama (1992) show that reductions in applied protection that are not locked in through international agreements are frequently reversed. This suggests that the reductions in bound rates may have substantial long-run value, even in cases where the bound rates are above current applied rates.

These cuts in average applied tariffs substantially understate what is on the table for highly protected products like textiles and clothing, since the formulas used for both agricultural and non-agricultural tariffs would bring peak tariffs down much more. For example, peak tariffs of the type frequently applied by industrial countries against developing-country exports of clothing would be sharply reduced, with 30% tariffs dropping to 6.3%, and 20% tariffs dropping to 5.7%. The progressive nature of these tariff cuts is important from a welfare perspective, as the social cost of protection rises with the square of the tariff. Furthermore, it is important for many developing countries since many tariff peaks in the industrial countries are concentrated in products in which they have a comparative advantage, such as agriculture, clothing and footwear.

Besides tariff cuts, the modalities propose to sharply reduce the use of the current agricultural special safeguard (SSG), which currently permits many developed countries to impose duties above their Uruguay Round bindings. Use of this measure has increased over time, and it has been used to provide sustained protection for some commodities (Hallaert 2005). Its elimination should increase access and reduce the extent to which domestic prices in the industrial countries are insulated from world market prices, thereby reducing the instability of world market prices. As discussed by Jason Grant and Karl Meilke in Chapter 7, however, a new SSM with both price and quantity triggers is envisaged for developing countries to provide protection and insulation to domestic markets. This safeguard could reduce market access and increase the instability of world markets if used by importers accounting for a significant fraction of imports. The SSM is one of the contentious issues discussed in Section 3.

Table 1.1: *Weighted-average applied and bound rates levied by WTO members (in percent).*

	Applied rates			Bound rates		
	Base	Formula	Formula plus flex	Base	Formula	Formula plus flex
Agriculture						
All countries	14.6	9.0	11.9	40.3	20.7	29.9
Low- and middle-income countries (non-LDC)	13.3	11.3	13.2	53.0	33.0	45.4
High-income countries	15.5	7.5	11.1	30.9	12.1	18.4
LDCs	12.5	12.2	12.5	94.1	59.3	93.7
NAMA						
All countries	2.9	2.0	2.3	9.9	4.7	5.3
Low- and middle-income countries (non-LDC)	6.1	4.6	5.3	22.3	10.9	12.3
High-income countries	1.6	1.0	1.0	4.6	2.1	2.1
LDCs	10.9	8.0	10.9	40.9	14.3	40.9

Country groups defined using World Bank and UN classifications.
Source: Laborde and Martin, Chapters 2 and 3.

Moreover, agricultural negotiations envisage substantial reforms in export subsidies and domestic support. First, agricultural export subsidies in the industrial countries—a longstanding concern of developing countries—would be banned. This prohibition is important because it rules out the re-emergence of wasteful and price-depressing export subsidies in the future. The reimposition of export subsidies in mid 2009 for dairy products by the EU and the United States illustrates the continuing relevance of a ban on export subsidies.

Second, the proposed rules on domestic agricultural subsidies involve sharp reductions in the maximum allowed levels of support, by 70% in the EU and 60% in the United States. As David Blandford and Tim Josling conclude in Chapter 4, these constraints on the domestic policies of the EU and the United States might not lead to significant cuts in actual subsidies, which are likely to remain at low levels if commodity prices remain substantially above those prevailing in the late 1990s and early 2000s. But the proposed rules are likely to constrain industrial country subsidies, especially for products such as cotton, peanuts and sugar, which are of particular export importance for many developing countries.

2.2 'Quantifying' the Value of Doha Market Access

Much of the discussion and debate about the 'value' of Doha has centred on the results of global modelling exercises. A serious problem with any effort to assess the value of what is on the table using the large-scale empirical models available today is that such attempts can only assess the implications of proposed agreements for applied levels of protection. Thus, they ignore the benefits of new policy disciplines and the effects of additional policy bindings. As a result, discussions of the value of the DDA that are based on typical numerical models will, by definition, be missing a key benefit of Doha (Hoekman *et al* 2010; Handley and Limão 2011). Given this very important caveat, it is nonetheless useful to briefly discuss what the available empirical studies suggest will be the impact of what is on the table in terms of average levels of applied protection in trade in merchandise.

In Chapter 10, David Laborde, Will Martin and Dominique van der Mensbrugghe suggest that overall global gains would be up to $160 billion for the agricultural and non-agricultural market-access agreements alone, even after allowing for exceptions for sensitive and special products. The authors apply new methodological approaches that allow much more disaggregated trade data to be used in the general equilibrium simulation models used for such studies (some 5,100 tariff lines/product categories). Compared with the approach used in other recent studies, the central estimates of the gains are about 65% higher for developed countries and some 100% higher for developing countries as a group. Such disaggregation is important because the welfare cost of protection goes up with the square of the tariff, an effect not captured when average tariffs are used. The estimates of real income gains

reported in this study remain very conservative by not counting the gains from reduced barriers to trade in services, from increases in the range of varieties consumed (see Broda *et al* 2006), and by omitting gains from trade facilitation and reduced trade costs (see Hoekman and Nicita forthcoming).

To put this result in perspective, Decreux and Fontagné (2009) identify a $57 billion world gross domestic product (GDP) gain from implementing what was on the table in July 2008 in terms of liberalising trade in merchandise, based on the modalities that had emerged and again including the likely exceptions and the differentiated nature of the commitments that would be made by different groups of countries. In another recent paper, Hufbauer *et al* (2010) use a different approach to quantify the market-access impacts of what is on the table, taking into account the estimated tariff revenue effects of applying the July negotiating modalities to the trade of the 22 largest WTO members and applying GDP multipliers. Overall, they estimate that the associated increase in global exports would raise real GDP by some $63 billion annually.

The model results demonstrate that, even if the focus is limited to reductions in applied levels of trade restrictions, even taking into account likely exclusions for sensitive and special products, the associated real income gains are non-trivial. Decreux and Fontagné (2009) and Adler *et al* (2009) also estimate the non-market-access parts of the DDA. Quantifying these is extremely difficult, but their estimates suggest substantial additional real income gains from improved trade facilitation. These results indicate that there is significant scope to generate trade over and above what is on the table in narrow market-access terms, especially for many developing countries.[2]

2.3   Greater Security of Market Access

More Secure Market Access in Goods

Under the Doha proposals, WTO members would sharply reduce their legally bound levels of protection on goods and services. While the benefits of reductions in bindings can be formally evaluated in specific circumstances (see Francois and Martin 2004), this is difficult to do for the global models now used to evaluate the impacts of global trade reforms. In this volume, we use two alternative approaches to provide insight into the extent to which these cuts in tariff bindings would limit the scope for future imposition of restrictive measures. The first is to take into account the possibility of a shift towards protectionism, perhaps of the kind experienced in earlier economic

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[2]Hoekman and Nicita (2010, forthcoming) show that only a marginal reduction in trade costs would expand trade by more than what could be expected even from a relatively ambitious Doha Round outcome in terms of market access, narrowly defined to span only reductions in average applied levels of protection. Everything else being equal, improving the logistics performance of low-income countries to the level observed in middle-income countries would increase their trade flows by more than 50%.

downturns. The second is to take into account the fact that protection that is not subject to tariff bindings under the WTO can evolve in ways that involve greatly increased costs relative to the initial rate of protection.

In Chapter 12 Antoine Bouët and David Laborde take the first approach in order to show that the implementation of the DDA agreements would reinforce current commitments and sharply reduce existing bound duties. Their analysis shows that the reductions in the cost of permitted tariff increases could be very substantial. If (perhaps in the context of a trade war) countries raised their protection on goods up to the limits currently allowed by their WTO bindings, the cost in terms of lost exports and lost real income would be around $1300 billion and $300 billion, respectively. Following Doha, these potential losses would shrink to $110 billion and $40 billion, respectively.

Another important question is what protection rates would apply in the future in the absence of a negotiated agreement. The conventional approach of assuming that current rates will apply in the future in the absence of an agreement can be extremely misleading: this approach to evaluation would have placed a zero value on a binding of 60% for rice when Japan joined the General Agreement on Tariffs and Trade (GATT) in 1955, yet such a binding would have been extremely valuable by ruling out the subsequent, highly costly increases in protection to around 1000%. In Chapter 13, Kym Anderson and Signe Nelgen generate a set of agricultural price distortions for the world in 2030, drawing on the World Bank's agricultural distortions database for 75 countries (Anderson 2009), political-economy theory, a set of political-econometric equations for the most important agricultural products, and knowledge of current WTO-bound tariffs. The authors then insert these alternative price distortions into a global-economy-wide model and compare the welfare effects with a scenario assuming no change in farm policies over the next two decades. The key finding is that the contribution of farm policies to the estimated welfare cost of trade-distorting policies by 2030 is likely to be much higher, even if it is only in developing countries that agricultural protection grows, and even if those countries' farm tariffs remain within their current bound rates. In that scenario the welfare cost of developing countries' agricultural policies would be more than one-quarter higher than if rates of protection did not change over those two decades.

Enhanced Security of Market Access in Services

Services are a puzzling aspect of Doha. In principle, the stakes are huge for the key protagonists. Some 80% of GDP in the United States and the EU originates in services. Together, these two economies account for over 60% of world services exports. The business services exports of major developing countries such as India, China and Brazil have grown by well over 10% every year for the last decade, and India may soon export more services than goods. Exports of services are also important for a wide range of developing

countries. In practice, however, negotiating attention has been focused mostly on agriculture and manufactured goods rather than on services (Hoekman *et al* 2010).

Most services liberalisation has been undertaken unilaterally. In Chapter 5, Ingo Borchert, Batshur Gootiiz and Aaditya Mattoo find that, in all regions of the world, actual policy is substantially more liberal than the policy commitments (bindings) made by WTO members in the General Agreement on Trade in Services (GATS) during the Uruguay Round. The latter are, on average, 2.3 times more restrictive than currently applied policies, *ie* countries could more than double their average levels of restrictiveness without violating their commitments. As they stand today, the Doha offers do not provide any liberalisation of actual policy.[3] Furthermore, two of the currently most protected areas, cross-border transport and the movement of individual professionals, are either not being negotiated at all, or not with any degree of seriousness.

Given that services liberalisation is essentially not on the table, the question is whether the current Doha offers involve any greater security of market access than the Uruguay Round commitments under the GATS. Doha offers improve on GATS commitments, but at this stage the gap between offers and actual policy is still large: the best offers submitted so far improve on current GATS commitments by about 10%, but remain on average 2.3 times more restrictive than actual policies (see Figure 1.1). At present, Doha does not offer greater access to markets, but rather offers a weak assurance that access will not get worse. A report on the status of the services negotiations noted that further discussion was needed on issues relating to participants' level of ambition, their willingness to bind existing and improved levels of market access, and national treatment, especially in modes of supply of export interest to developing countries. In 2008, the chair of the Trade Negotiations Committee also held a 'signalling exercise' among a group of ministers, at the time that 'modalities' in AMA and NAMA were being discussed. At the signalling exercise, participating ministers indicated that they might significantly improve their services offers.

2.4   Expanded Opportunities for Least-Developed Countries

The LDCs are in an unusual situation in the Doha Agenda negotiations in that they are not being required to reduce their own applied tariffs. As a consequence, the economic impacts of these negotiations on the LDCs will depend more on what other countries do than on economic reforms undertaken in the LDCs. Key elements of the Doha Round from a development

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[3]Borchert, Gootiiz and Mattoo (Chapter 5) examine, in some detail, the Doha offers on a range of services sectors and modes of supply and compare these with existing GATS commitments.
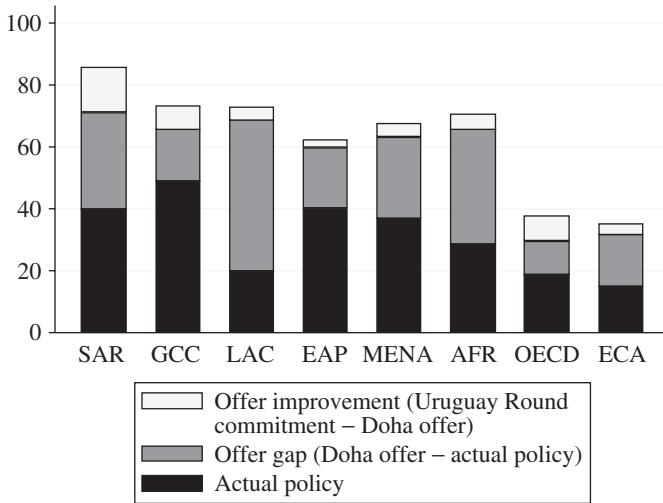
Figure 1.1: *Existing commitments, Doha offers and actual policy (by region).*
If countries have not made a Doha offer, existing commitments are used. Source: Borchert, Gootiiz and Mattoo, Chapter 5.

perspective are: enhanced market access for LDCs, actions to facilitate trade (lower trade transactions costs), and the aid-for-trade initiative.

Enhanced Market Access for Least-Developed Countries

In Chapter 6, Antoine Bouët and David Laborde assess the implications of the proposed DDA agreements for LDCs. For most developing countries, reductions in their trading partners' trade barriers would likely bring about gains through improvements in market access. The LDCs are in a more vulnerable position for three reasons. First, they already have tariff preferences in a number of their trading partners, especially in the EU. Second, many LDCs are net importers of agricultural products, whose prices might be expected to rise slightly as a consequence of global trade liberalisation in agriculture. Third, LDCs are not committed to any reform of their own trade policies and, hence, cannot count on efficiency reductions from moving to lower-cost sources of supply.

Where LDCs face preferential tariffs in a particular market, reductions in most-favoured-nation (MFN) tariffs may lower the barriers facing non-LDC members, causing the LDCs to suffer from preference erosion. Where LDCs do not have complete duty-free access, this preference erosion can frequently be overcome by increasing the depth of their preferences in that market. Recognising this, the WTO has proposed a broadening of these preferences for LDCs to cover all developed-country markets and the locking in of these preferences under the DFQF proposal (WTO 2005, 2008c).

The proposed DFQF initiative will improve existing access to foreign markets for LDCs. But the initiative will add significantly to existing access only if industrial and more advanced developing countries do not exclude vital products such as garments or agricultural products. In most of the potential major markets that do not already offer 100% DFQF access, limiting such access to 97% of tariff lines, as permitted in the 2005 Hong Kong Ministerial declaration, implies that a large share of important exports may continue to be subjected to restrictions.[4]

Laborde (2008) shows that, in most developed countries, 3% of tariff lines cover 90–98% of exports from LDCs. For example, over 70% of Bangladesh's exports to the United States are covered by only 70 tariff lines, which together account for less than 1% of all U.S. tariff lines.[5] Only 39 tariff lines account for 76% of Cambodia's exports to the United States. Nonetheless, Carrere and de Melo (2009) estimate that if the United States were to apply DFQF access for 97% of lines, LDCs could expand exports by 10%, or $1 billion (Hoekman *et al* 2010).[6]

Another direct trade policy option that might reduce the market-access barriers facing LDCs is to reduce the restrictiveness and costs associated with rules of origin, something that is encouraged in proposals for the LDCs (WTO 2008c). The utility of preferential access depends significantly on the rules of origin that are applied by the importing jurisdiction. Experience has shown that liberal rules of origin—those that allow for cumulation and significant use of imported inputs sourced from third countries—are frequently a critical determinant of a large export supply response by firms located in LDCs. Such rules are not on the negotiating table, and would remain at the discretion of importing economies. Recent initiatives by the United States and the

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[4]Australia, the EU (as of the end of 2009), New Zealand, Norway and Switzerland (as of the end of 2009) offer 100% DFQF access. Canada's DFQF programme for LDCs spans 99% of products, excluding some sensitive agricultural products (dairy, poultry and eggs); Japan's offers about 98% product coverage, with exclusions for fish, footwear, rice and sugar. The Republic of Korea offers duty-free access for LDCs for some 75% of tariff lines. The United States does not currently have a programme specifically targeting LDCs. Although many African LDCs have duty-free access to the United States under the African Growth and Opportunity Act, LDCs such as Bangladesh and Cambodia do not. In 2006, the combined $800 million tariff bill on imports from these two countries was seven times larger than the U.S. aid these countries received, and roughly the same as the amount collected on exports from the United Kingdom and France (Elliott and Soderquist 2009; Hoekman *et al* 2009).

[5]The total number of tariff lines at the eight-digit level is 10,500. The calculation was done at the eight-digit level.

[6]In Chapter 6, Bouët and Laborde show that either participation by large developing-country importers or expansion of the import coverage to 100% is needed for the LDCs to be obtain real income gains. If these are combined, the gains to LDC exports and trade could be worthwhile.

EU demonstrate a willingness to address this constraint and to offer an opportunity to make a specific commitment to the LDCs in this area.

Of particular importance for LDC exporters of cotton is that the complete removal of tariffs and quantitative restrictions on their exports be complemented by deeper cuts in trade-distorting support programmes maintained by high-income countries than for agricultural support more generally, and that this is implemented in a more expedient way (Baffes 2005). This is widely regarded as a litmus test for whether the Doha Development Agenda can live up to its name. Global support to the cotton industry, including direct subsidies, border protection, crop insurance subsidies, and minimum support price mechanisms have risen more than twofold, from $2.7 billion in 2007–8 to an estimated $5.9 billion in 2008–9, more than half of which will be provided by the United States (International Cotton Advisory Committee 2009).[7] The recent increase in support again illustrates the value of commitments to bind (cap) permitted levels of support: lower levels of permitted subsidies and other forms of support would have constrained the ability of governments to increase assistance levels (Hoekman *et al* 2010).

Trade Facilitation

The TFA is important for leveraging the market-access dimensions of the DDA. If a focus on the trade-costs agenda stimulated by a Doha agreement catalyses a reform programme in this area, it could have large positive trade effects, as shown by Benjamin Taylor and John Wilson in Chapter 8. Pursuit of trade facilitation is particularly important for lower-income countries, especially LDCs that otherwise may not benefit significantly from the Doha market-access negotiations, because they have DFQF access to major markets and will not be asked to reform their own trade policies (Hoekman *et al* 2010).

The various TFA proposals focus on areas of trade facilitation reform that, according to recent research by Helble *et al* (2009), have the highest returns to investment and are relatively easy to implement in terms of both cost and time, including regulatory, administrative, and institutional reforms. This study finds that 'narrow trade facilitation' focusing on trade policy and regulation only has a rate of return that is more than 139 times as great as

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[7]Subsidies averaging 14 cents per pound were provided by some ten countries in 2008–9, up from an average 8 cents in 2007–8. The share of global cotton production receiving support rose from an average of 55% during the period from 1997–8 to 2007–8 to an estimated 84% in 2008–9. Total direct U.S. support for cotton production, including crop insurance, increased from $888 million in 2007–8 to $3.1 billion in 2008–9, or an equivalent of 50 cents per pound of production. The 2008 farm bill extended counter-cyclical payments and marketing loans while only marginally lowering the target price for upland cotton and creating a new cotton-user payment of 4 cents per pound. Although the latter applies to cotton of any origin, given that the U.S. imports very little, in practice most payments will accrue to domestically sourced cotton (Schnepf 2008).

the rate of return for 'broad trade facilitation' focusing on trade development and economic infrastructure.

Negotiations on a TFA have been progressing well. An agreement offers prospects for real income gains: indeed, analysis suggests that this is an area where the potential gains for developing countries are higher than what might emerge from any other part of the DDA. The reason for this is that domestic trade costs in many countries constitute a major tax on firms (Djankov *et al* 2006). The TFA is of particular importance to landlocked developing countries, as their trade costs depend critically on the efficiency and cost of transit through neighbouring states. Wilson *et al* (2005) find that improvements in trade facilitation, similar to those proposed through the TFA, could increase exports in some developing regions by as much as 40%. Adler *et al* (2009) estimate that developing countries could gain $47.3 billion in exports and $84 billion in imports from proposed measures currently on the table.

Aid for Trade

For many low-income countries, the key constraint to export growth is a lack of competitiveness. This makes it particularly important that DFQF access be associated with liberal rules of origin in order to allow firms to use imported inputs from the lowest cost source of supply anywhere in the world. But, more generally, what is now increasingly recognised is that competitiveness is a function of the domestic business environment in the exporting countries (Hoekman *et al* 2010). This is the major driver behind the aid-for-trade initiative, described by Bernard Hoekman in Chapter 9, which is playing a valuable catalytic role in mobilising trade-related assistance.

Hoekman argues that the concept of aid for trade reflects the recognition of the WTO membership that trade liberalisation (market access and rules) alone is not enough to benefit poor countries, and that promises to provide technical assistance are an inadequate response to concerns regarding adjustment and implementation costs of trade agreements. Moreover, the emergence of aid for trade signals that the development community is giving greater importance to the role that trade can play in fostering higher growth rates in low-income countries.

Such aid has already increased: according to WTO/OECD figures and definitions, aid for trade grew by more than 10% in real terms in both 2006 and 2007, with total new commitments from bilateral and multilateral donors reaching $25.4 billion, with an additional $27.3 billion in non-concessional trade-related financing.[8] Realism suggests that aid budgets will come under

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[8]These numbers are large because they include investments in infrastructure and span both low- and middle-income countries. However, even if a much more narrow definition of aid for trade is used, such assistance approximately doubled between 2002–5 and 2008 (World Bank 2009).

increasing pressure as OECD governments seek to reduce expenditures following the fiscal expansion of the last 18 months. While aid for trade is not formally linked to the DDA, concluding the round could help to translate the aid-for-trade commitments into additional resource transfers.

3   CONTENTIOUS ISSUES ON THE TABLE

Much has already been tentatively agreed in the Doha negotiations, most notably the structure of the modalities to reduce tariff bindings for agricultural and non-agricultural tariff lines for different groups of WTO members. Standing in the way of the substantial benefits from Doha are disagreements over, among other things, at least three broad issues:[9]

1. divergence of views on the extent of actual liberalisation commitments for merchandise trade, notably whether there should be a movement to free or freer trade in specific sectors;
2. disagreements about the design of an SSM in agriculture;
3. the U.S. use of zeroing in its anti-dumping procedures.

In what follows, we argue that members need to make two broad judgments. First, they should judge how best to strike a balance between liberalisation and security of market access, *ie* how far to push for additional market-opening (*eg* via sectoral negotiations) rather than to be content with legally binding existing market access. Second, they should judge how best to achieve security of market access, *ie* how far and under what conditions to allow contingent protection (*eg* via safeguard type of action) in return for tighter and more comprehensive bindings.

3.1   Sectorals

A perception that the formula-based market-access negotiating modalities would not generate 'enough' actual liberalisation of applied tariffs has generated a push for sectoral deals in specific sectors by some WTO members. Much of this concern is based on the belief that exceptions have excessively hollowed out the liberalising effects of the negotiating formulas. Chapters 2 and 3 show that the situation is, in fact, more nuanced. While the flexibilities

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[9]Of course, many other issues, such as the coverage of additional services policy commitments, reductions in support to cotton production, EU banana tariffs, and extensions/amendments to the agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) concerning geographical indications and biological diversity also remain highly sensitive. We focus here on areas that have proven to be particularly controversial and that are of significance for the WTO membership generally (and that matter 'systemically'). While contentious, the outlines of a possible agreement on many of the other issues that must be settled is relatively clear: see, for example, Hoekman and Kostecki (2009).

for sensitive and special products do substantially reduce the market-access gains in agriculture, this is not the case in non-agricultural products.

What would be the implications of agreeing to sectorals? In Chapter 11, David Laborde compares a baseline scenario (agricultural and non-agricultural market-access modalities allowing for exceptions for sensitive and special products) with scenarios in which tariffs are reduced more sharply in selected sectors. The tariff reductions are made to zero duties for those products entering the industrial countries, and to zero with some exceptions in developing countries. While the range of exceptions permitted varies by sector, it is generally quite limited. In the most important of these sectors, electronic products, the exceptions are limited to allowing tariffs of up to 5% on 5% of tariff lines accounting for no more than 5% of imports. The sectoral initiatives are considered for 14 product groups where a range of countries have indicated an interest in undertaking such initiatives. If all of the 14 initiatives listed in the December 2008 modalities were included, the estimated overall real income gains from the round would roughly double, while the associated trade expansion would more than double.

More realistically, if only the seven sectoral initiatives for which the core countries supporting the initiative account for more than 33% of world imports—chemicals, electronics and electric equipment, industrial machinery, enhanced health care, forest products, gems and jewelry, and sports equipment—were included, the real income and trade gains would both increase by roughly two-thirds. Adler *et al* (2009) come to a very similar conclusion: sectoral deals on chemicals, electronic and electrical goods, and environmental goods would double the trade and real income gains for their sample of 22 large countries.

Laborde (Chapter 11) also estimates the impact by income group and shows that the implementation of all sectoral initiatives would double welfare gains for both developing and developed countries. Moreover, the initial losses for LDCs from Doha with flexibilities (as shown in Chapter 6) would be lowered by 40%. These simulations suggest that sectoral agreements could be important in increasing the incentives of the relevant export industries to support multilateral trade negotiations. Zero-for-zero and sectoral agreements were a feature of the Uruguay Round. Examples of such agreements—under which subsets of (mostly) OECD countries agreed to eliminate tariffs, either immediately or following a transition path—included deals on agricultural, construction and medical equipment; beer; furniture; paper; pharmaceuticals; and toys (Mann and Liu 2009).

In principle, agreement among the major traders to negotiate future sectoral agreements could be part of a Doha deal, with the critical mass of countries committing to engage in talks that would start after conclusion of the DDA. As argued by, among others, Gallagher and Stoler (2009), Harbinson (2009) and Abbott (2009), an explicit shift towards 'critical mass' negotiations that aim at agreements that are applied on an MFN basis would move the WTO

back towards a negotiating modality that has been able to deliver substantial benefits in a number of important cases (Hoekman *et al* 2010).

3.2   Special Safeguard Mechanism

As was widely reported at the time, the proximate cause of the July 2008 breakdown of the Doha negotiations was disagreement between members on the specifics of an SSM for agricultural imports. Exporters argued that there was no need for a new SSM because tariff bindings on many of the most important agricultural products in developing countries would not be reduced substantially because of provisions such as those for special products. They also objected to the specifics of the SSM proposal, arguing that it made it too easy to raise levels of protection (Hoekman *et al* 2010). A particularly contentious issue was the extent to which a country could raise its tariffs and duties above its pre-Doha bound levels when the SSM is applied (Grant and Meilke 2009). On the importing side, many developing countries took the view that the SSM was needed to protect their farmers from sharp declines in import prices or increases in imports.

Whatever the specifics of an SSM for agricultural products, the principle of safeguard mechanisms is firmly embedded in the WTO (and trade agreements more generally). Safeguards are a common element of trade agreements, frequently seen as the price of getting agreement on tariff bindings and other policy commitments. The trade policy responses to the recent global economic recession have largely taken the form of instruments that were included in the WTO to allow governments to temporarily assist domestic-import-competing industries. While the purported rationales for these instruments differ, the major ones all serve the same purpose: to provide a safety valve for protectionist pressure that is tied to import surges generated by external shocks or structural changes in the world economy (Hoekman *et al* 2010).

In Chapter 7, Jason Grant and Karl Meilke review the qualitative and quantitative literature dealing with the SSM. They note that the price-based measure reflects a response to external events and, hence, is understandable from the point of view of individual countries attempting to stabilise their domestic markets. However, they raise questions about the quantity-based measure, which is more likely to be triggered by domestic events, such as bad harvests. Using the case of wheat, Hertel *et al* (2010) find that a volume-trigger-based SSM, if used, would likely contract world trade and destabilise, rather than stabilise, domestic prices in developing countries by reducing imports when domestic output declines, and, indirectly, by increasing the volatility of international prices. While a price-based safeguard can clearly be stabilising for an individual country, it does not necessarily make sense to incorporate this type of price insulation into the trading system because of the collective-action problem identified by Martin and Anderson (2011). Attempts by countries to reduce the volatility of their domestic prices in this

way are a beggar-thy-neighbour policy that increases the volatility of prices in other countries, and attempts by all countries to stabilise their domestic prices in this way are completely ineffective.

Grant and Meilke also conclude that, while it is difficult to provide a concise and objective evaluation of the effectiveness of the SSM, research has shown that the SSM will sometimes trigger action when it is not needed, and fail to trigger action when it is seen to be needed (Finger 2009; Montemayor 2008). Other studies show that the suggested combination of price and quantity triggers to invoke the mechanism is unlikely to achieve the objective of food security (Finger 2009; Hufbauer and Adler 2008). Ivanic and Martin (2011) point out that the quantity-based safeguard that has been a major focus of the negotiations would be likely to destabilise domestic markets by raising prices when domestic production declines because of shocks such as bad seasonal conditions. While such a rise in prices might be seen as compensating farmers for the decline in output that they have experienced, most poor farmers in poor countries turn out to be net buyers of food, and hence to have their real income losses from lower production compounded by having to pay higher prices to meet their consumption needs.

A key question is whether the SSM is likely to be used to anything like the extent to which it is permitted. In fact, it seems likely that the proposed SSM would be used much less frequently than its rules permit because, as shown by Finger (2009), the proposed criteria would frequently permit protection when it is unlikely to be sought after by policymakers, such as when imports 'surge' because of a harvest failure, or prices fall from very high to normal levels.

3.3   Zeroing in Anti-dumping

In what follows we focus on contingent protection of a different type: anti-dumping. The practice of zeroing, used only by the United States, has been deemed to be inconsistent with the Anti-dumping Agreement (ADA) by the WTO AB, and has been a high-profile source of heated debate in the Doha Round. Chad Bown and Thomas Prusa conclude in Chapter 14 that U.S. use of zeroing in its anti-dumping procedures has become a political flashpoint that has risen to such a level that it threatens some of the legitimacy of the WTO's critically important dispute settlement system.

Zeroing refers to the practice of replacing dumping margins on particular transactions that have a negative estimated value with a value of zero prior to the final calculation of a weighted-average margin of dumping on all transactions. As zeroing drops transactions that have negative estimated margins, it creates an upward bias in the estimated dumping margins and the resulting size of the applied anti-dumping duties. The basic statistical error involved in zeroing, which results in positive estimated margins when there is no dumping, makes it more difficult for firms exporting to the United States

to avoid dumping—perhaps doubling the number of anti-dumping actions—and, of course, makes it highly attractive to import-competing industries in the United States.

Several indicators identified by Bown and Prusa confirm that zeroing is a major trade issue for developing countries. First, the number of products affected by U.S. anti-dumping measures between 1990 and 2009 has considerably increased from less than 100 to more than 400. Second, the scope of countries being affected increasingly includes developing countries. Between 2006 and 2009, over 60% of all U.S. anti-dumping measures were imposed against developing countries. Moreover, the large number of WTO disputes involving zeroing and of countries complaining about this practice is another indicator of its relevance. Finally, Bown and Prusa provide evidence that the elimination of zeroing would remove a significant number of anti-dumping measures and reduce the duties in other cases (Bown and Prusa, Chapter 14).

As the scope of countries and the number of products affected by U.S. anti-dumping measures is rising, developing countries are likely to file more WTO complaints over the U.S. use of zeroing for the following reasons. First, chances are high that developing countries will prevail in such disputes against the United States. During the past decade, the WTO AB has found, in each dispute involving zeroing, that the practice violates the WTO ADA. Second, stopping zeroing would significantly reduce the anti-dumping margin and, thus, lead to potentially large economic returns. Third, zeroing is as likely to impact the size of U.S. anti-dumping duties applied on developing-country exports as the size imposed on developed country exports. Fourth, it is unclear at the moment that the United States is willing to stop zeroing, at least with respect to administrative reviews.

On the other hand, zeroing has not been an issue in more than half of the caseload of anti-dumping challenges that were appealed to the WTO, and most of these were concerned with countries other than the United States. Moreover, zeroing seems only to affect a relatively small value of trade. Finally, zeroing is most likely to be disputed in a subset of cases where dumping margins are low. In these low-duty cases, zeroing is the only reason why anti-dumping margins exist and, thus, there is a considerable incentive to eliminate zeroing. In the cases that have gone to dispute settlement, the average U.S. anti-dumping duty imposed on EU and Japanese firms was 12%, compared with an average of some 75% for all U.S. anti-dumping actions (including those against the EU and Japan).[10] Nye (2008) estimates that zeroing accounts for 2.5 percentage points of an average 47% anti-dumping duty imposed by the United States in a sample of cases.

This is not to say that zeroing is innocuous. If many countries were to use zeroing, the discipline created by multilateral rules would be eroded, and the rules appear to have played a role in constraining the use of trade remedies

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[10]These data were provided by Chad Bown.

during the recent global recession. More important, however, is the threat to gaining the benefits from what is on the table by the difficulties faced by the WTO in resolving the zeroing issue. At the same time, the growing number of similar unenforced decisions against the United States, a prominent and powerful member, challenges the stature of the institution.

4 LESSONS FROM DOHA FOR FUTURE NEGOTIATIONS

Even if the Doha Round should fail, a key question will remain: what have we learnt from Doha about which approaches work and which do not for market-access negotiations in goods and services?

4.1 *Agriculture and Non-agricultural Market Access*

Negotiations on agriculture have multiple goals, including increasing efficiency, increasing market access, and increasing food security. Agricultural trade barriers account for a large share of the potential benefits from reforming merchandise trade, even though agricultural trade accounts for just 6% of world trade and barely 3% of global GDP (Anderson and Martin 2006). These barriers also add to inequality and poverty between high-income and developing countries, and also within developing countries (Anderson *et al* 2010, 2011).

An important question is whether it makes sense to focus on approaches that involve large cuts in the highest tariffs. Approaches such as the tiered formula, or the Swiss formula used in NAMA, are highly desirable from the point of view of generating efficiency gains, because the cost of any given tariff rises with the square of the tariff rate, making the highest tariffs far more economically costly than lower tariff rates. However, these high tariffs tend to have the strongest political support, and cuts in the highest tariffs seem to cause the political costs of reform to increase even more rapidly than the economic benefits (Jean *et al* 2011). When negotiators have only a limited amount of political support for their efforts—perhaps obtained from the market-access gains that they generate through the negotiations—it appears that less aggressive tariff-cutting formulas than the tiered or Swiss formulas may yield more economic benefit per unit of political support than the more aggressive formulas used in the Doha proposals. While Falconer (2008) considered a move from the tiered formula to an average-cut formula, Jean *et al* (2011) conclude that an approach such as a proportional cut formula, which is less aggressive than the Swiss formula but not flaccid like an average-cut rule, may yield greater efficiency gains per unit of political cost.

Another potentially important point emphasised by Schwab (2011) and Falconer (2008) is that top-down tariff-cutting formulas involving deep cuts in the highest and most politically sensitive tariffs are likely to lead to extreme

pressure for exceptions that undermine both the negotiating process and the outcome. The damage to the process from obscuring each country's view of what might be obtained in terms of market access—a perspective that was central to the argument for using formula approaches rather than request and offer (Baldwin 1986)—appears to have been particularly serious in the Doha negotiations. In particular, it appears to have encouraging a damaging focus on defensive interests and resistance to lowering its own barriers. A move to less aggressive formulas, as suggested above, seems likely to reduce the intensity of this problem.

Another important consideration seems likely to be to more systematically incorporate a 'price' on exceptions. One such possibility, as suggested by Schwab (2011), would be to develop a framework in which countries begin with a proposed set of post-cut tariffs obtained using a formula and then compensate their partners for any exceptions from the formula, an approach analogous to that used for tariff renegotiations under the WTO. As noted by Jean *et al* (2010), the approach of allowing exceptions for a particular number of tariff lines provides no coherent discipline on exceptions, since the importance of tariff lines is so different and only a small number of tariff lines typically 'matter'. Even moving to a system (such as that used in the Doha negotiations on manufactures) in which flexibilities are permitted up to a limited share of trade, rather than of tariff lines, can, as shown in Chapter 3, greatly reduce the damage to market access brought about by flexibilities.

There is also a much more prosaic concern regarding the use of tariffs that reduce the tariffs on the highest products the most. If the most important barriers facing a country are relatively low tariffs on a wide range of products, then a tariff that reduces the highest tariffs by the most may have relatively modest impacts on the market-access opportunities. The results presented in Chapter 2 suggest that this, rather than the flexibilities provided to developing countries, was the primary cause of the relatively small tariff reductions in the tariffs on non-agricultural goods facing the United States.

A third key lesson from the Doha negotiations is the need to explicitly deal with food security and price insulation issues that are of particular importance to developing countries. A key feature of agricultural trade regimes in many countries is a policy of varying protection rates in such a way as to insulate domestic prices from fluctuations in world prices. From the viewpoint of an individual country, this can be an efficient way to reduce the fluctuations in domestic agricultural prices that can cause serious problems for the poor. From the perspective of the trading system, however, this policy is a failure. If all countries seek to insulate their prices to the same degree, the effect is merely to increase the volatility of world prices, leaving the volatility of domestic prices unchanged, while increasing the volatility of the redistributions between countries associated with changes in the terms of trade (Martin and Anderson 2011).

While price-insulating policies cannot reduce domestic volatility for all countries, they can redistribute it, with the countries that insulate most effectively exporting some of their volatility to other countries. Using the example of a demand shock in the wheat sector, Bouët and Laborde (2010b) show that net wheat importers' real income is negatively affected by export taxes. Martin and Anderson (2011) show that some of the poorest countries in the world were least successful in insulating themselves against the large increases in world prices in the 2005–8 period. In the Uruguay Round, the problems associated with price insulation were recognised, and successful attempts were made to reduce its prevalence in the industrial countries through measures such as bans on variable import levies. The issue was rarely addressed explicitly in the Doha Agenda, and the price-based SSM proposal involves insulating domestic markets against up to 85% of changes in world prices, an approach that would, if followed by all countries, magnify the impact of any shock on the international price by a factor of 6.7, and the variance of world prices by a factor of 44.

It seems highly desirable to identify approaches that can deal with the very real concerns of poor countries regarding volatility in world prices (see Ivanic *et al* 2011). Ideally this would involve identifying cooperative approaches— such as those involving diversification and/or increased storage—that could reduce the very real concerns of developing countries regarding food price volatility, and coupling these with policies that reduce the extent to which beggar-thy-neighbour policies such as export restrictions are used in agricultural markets. This approach may well build on the research undertaken by Gouel and Jean (2011) on optimal policies for individual small countries.

During the 2008 world food price crisis and in the period following it, many countries imposed export restrictions in order to keep domestic supplies high and to damp the increases in domestic prices. Many importing countries reduced their tariffs on imported food, helping to lower the cost of food domestically, but stimulating demand for imported food and placing upward pressure on world food prices. Current WTO rules were of little help because they permit taxes and quantitative restrictions on food exports in this situation, and permit reductions in import duties at any time. The lack of disciplines upon export restrictions has very important consequences for the trading system by reducing the confidence of importers that world markets will be a reliable source of food supplies. In this context, they are likely to be tempted to increase self-sufficiency, even though protecting domestic production is likely to increase poverty and to reduce the food security of the most vulnerable members of the population (Ivanic and Martin 2011).

Another threat to food security has emerged from biofuel policies. In the United States, the combination of ethanol mandates, tax credits for ethanol producers, and duties on imported ethanol have diverted land—especially from wheat and soybean production—to corn production for biofuel, with around half of the U.S. corn output now going to ethanol production. Other

industrial countries, and some developing countries, have introduced biofuel policies that have the potential to use substantial amounts of food for fuel.

Even as food prices have soared and import barriers have declined, the Doha talks continued to focus on traditional forms of agricultural protection, such as production subsidies and import safeguards, which have become less relevant. The trade agenda needs to be enlarged to include a discussion of all trade barriers—on imports and exports—and biofuel policies, including tariffs on imports.

4.2 Services

Trade in services still has a mountain to climb. In both high-income and developing countries, the barriers to trade and restrictions on investment in the services sector are far higher than for the goods sector. The discrepancy is even more severe in emerging markets. The costs of such policies are significant. The productivity and competitiveness of firms depends on access to low-cost and high-quality producer services such as telecommunications, transport, finance and distribution. An expanding body of research, as surveyed in Francois and Hoekman (2010), has documented the positive association between open service markets, foreign direct investment in services and the performance of downstream domestic firms, including on exports.

As we have seen, services are on the table in the current WTO Doha Round negotiations, but little progress has been made to enhance the contestability of services markets. Why the limited traction? Governments have been reluctant to commit multilaterally for three reasons. Firstly, it will deprive them of the freedom to regulate (*eg* cross-border flows of financial and data services and activities such as cross-border gambling services); secondly, their regulators (especially in the smaller developing countries and especially in financial services) are unprepared for unrestricted entry and competition; and finally, there are inadequate mechanisms for the international regulatory cooperation (between financial regulators, competition authorities and immigration authorities) that would be needed to reap the full benefits of liberalisation.

WTO-based services trade liberalisation faces three more 'headwinds'. Business interest has been limited because industrial country services markets are mostly open, except for a few hardened pockets of protection (*eg* in transport and labour mobility), and developing countries are unilaterally liberalising their markets. Growing mutual interdependence—with developing countries increasingly acting as suppliers of outsourced services to OECD nations that are the source of investment and know-how in sectors such as transport, telecom and finance—is creating a self-enforcing equilibrium of openness with a reduced likelihood of policy reversal. Past experiences with services negotiations have created a sense of pessimism in the business community about whether they can deliver greater openness or even greater security

of access in a way that is meaningful to their operations, in part because regulatory policies are not the focus of attention.

Hoekman and Mattoo (2010) develop two proposals that could significantly enhance the prospects of negotiating meaningful commitments on services trade and improving regulatory policies affecting services markets. The first is to recognise regulation matters and to expand regulatory cooperation and dialogue.

The focus in the services trade negotiations to date has been on market access rather than on domestic regulation. Governments are free to regulate as long as this does not discriminate against foreign suppliers. Although it makes sense to limit trade agreements on the removal of discriminatory policies, the 'benign neglect' of domestic regulation implies that there are no assurances that liberalisation will increase national welfare. The WTO does nothing to help governments to determine whether they have adequate national regulation in place and whether there is a downside risk associated with liberalisation. In general, improved prudential and pro-competitive regulation will be necessary to deliver the full benefits of liberalisation in sectors such as financial services, basic telecommunications and other network-based services.

Mattoo (2005) and Feketekuty (2010) have suggested that the negotiating process needs to be complemented by other approaches. The first proposal is to create mechanisms to address the regulatory dimensions of enhancing the performance of services industries. There are two elements to this: one domestic (country-specific) and one international. The first is the need, in many developing countries, to strengthen regulatory institutions and to identify, design and implement policies that address market failures and to ensure wider access to services. 'Services knowledge platforms' that bring together sectoral regulators, trade officials and stakeholders to assess current policies and to identify beneficial reforms could help to establish the preconditions for future liberalisation commitments (Hoekman and Mattoo 2010). Participation in such mechanisms would be voluntary and not linked to negotiations in the WTO. Implementation of priority reforms could be assisted by the development community under the aid-for-trade initiative.

The second dimension is international cooperation to address regulatory externalities. There are many such externalities: prudential regulation problems arising from differences in regulatory standards, dangers that liberalisation gain will be appropriated by international oligopolies (*eg* transport and information services), and cooperation between host and source countries with regard to temporary labour mobility. Both dimensions of regulatory cooperation are needed to enable progress to be made on services trade liberalisation, whether in the current Doha Round, in future WTO talks or through unilateral reforms. The premise is that all countries would participate more meaningfully in negotiations if they had greater certainty regarding the

payoffs from making binding policy commitments and assurance that the regulatory preconditions for benefiting from such commitments were in place.

The second proposal is to take a bolder approach to liberalising services trade. Significant movements to liberalise services trade will not be possible for many countries in the near term given the great diversity in regulation and regulatory capacity. The required process of learning, policy and regulatory reform, and strengthening of capacity will take many years. It therefore follows that any Doha package should include an acceptance that liberalisation of services markets is a long-term endeavour, one that is conditional on an appropriate regulatory and competition framework being in place.

In future, however, greater ambition will be required on the market-access dimension of services negotiations. A package negotiated among a subset (critical mass) of the 25 or so major players on services—which together account for over 90% of global output and trade—could span the following three elements. A *standstill* is a pledge not to impose any new restrictions, especially on cross-border trade and investment, by inscribing binding language to this effect in the schedules of specific commitments in the GATS. Secondly, *pre-commitments to liberalise* are inscribed in each country's specific commitments to implement reforms by a certain date (to be negotiated) in the future in order to liberalise trade in services, especially on foreign direct investment and in the air and maritime transport sector (currently often excluded from WTO commitments). Finally, *temporary movement of suppliers* is an agreement to expand the scope for temporary movement of services suppliers, conditional on a set of source-country obligations and transparent criteria relating to host-country economic conditions.

The first element would send a signal that there is a willingness to use the WTO to substantially reduce uncertainty for service suppliers and users by locking in current policies. The second and third elements would demonstrate that the major players are also ready to open service markets gradually, subject to a defined timetable to allow appropriate regulatory reforms to be implemented, including by source countries to meet the conditions required to supply services in importing economies.

Negotiating the liberalisation of services is complicated. Adequate national regulation and international regulatory cooperation will often be necessary. A concerted effort is needed to help countries to strengthen and improve service sector regulation and implementing institutions, as well as to cooperate with each other where there are significant regulatory externalities.

Although comprehensive liberalisation of service markets in all 153 members in the Doha Round is neither possible nor, at this point in time, desirable, the largest services economies (a 'G25') can and should go further. But the larger players may also need to pursue domestic regulatory reforms before opening up some services sectors to foreign competition, and will need to strengthen regulatory cooperation to facilitate trade in some services. A pre-commitment approach will allow such conditions to be put in place and to

ensure that there is an agreed timetable to open markets to greater competition. Explicitly recognising that services liberalisation cannot, and should not be, divorced from services regulation will do much to help harness the potential that trade agreements have to expand services trade and investment.

4.3   Trade Facilitation and Aid for Trade

The international development community has aggressively taken on the challenge of building trade capacity in developing countries through the global aid-for-trade agenda. This is evident not only in the large increases in the amount of trade-related assistance supplied to developing countries, but also in the increased policy attention that trade facilitation receives from the donor community and other multilateral forums. Perhaps the largest hurdle to a successful conclusion of a TFA remains the issue of whether the implementation mechanism for some reforms should include obligated assistance from developed members.

Proposals to build obligated assistance into the TFA ignore the scope of these efforts by trying to subsume portions of the aid-for-trade agenda into the WTO's framework. Given the Organization's central instrument of multilaterally applicable legal obligation, this has taken the form of binding implementation to provision of assistance on a case-by-case, or reform-by-reform, basis. This approach is highly problematic. It not only creates a myriad of logistical issues that would further complicate TFA negotiations, but it also has the potential to stifle the larger development-driven trade facilitation agenda by ignoring its positive-sum nature.

Going forward, members should strive to more creatively address issues that span outside the WTO's traditional realm while maintaining legally binding obligations, the WTO's primary comparative advantage. In the case of the current TFA negotiations this could, for example, include an implementation mechanism that allows for the consideration of aid supplied by outside actors, *ie* bilateral and multilateral donors. Such a mechanism could maintain full conditionality of implementation, thereby addressing the concerns of developing members, but allow aid demand to be met through existing donor channels, thereby recognising their comparative advantage in integrating specific reforms into developing members' broader development strategies.

5   SPACE FOR MULTILATERAL COOPERATION OUTSIDE DOHA

Apart from the benefits of the DDA itself, an important reason for concluding the negotiations is to create space for multilateral cooperation on critical policy matters outside of the current negotiating agenda. In particular, the lack of agreement on the Doha Round could crowd out the prospects for cooperation on initiatives that address large cross-border spillovers. In

Chapter 15, Aaditya Mattoo and Arvind Subramanian identify several areas of critical international policy for which the global policy frameworks are currently inadequate, including climate change, oil and energy security, and financial security. Progress on these issues is likely to require changes in the international trade architecture as well as reforms in other areas, and yet the stalemate over the Doha Agenda makes it difficult for the WTO to address these challenges.

5.1 Environmental Protection

Climate change, widely regarded as the gravest danger to humanity, is the subject of an ongoing process of international negotiations under the auspices of the United Nations. In recent years there has been talk of using trade as an instrument for furthering environmental objectives. In the absence of a coordinated multilateral response to climate change,[11] the pressure for trade restrictions in particular sectors is likely to increase. The WTO is therefore likely to need to define its role in future arbitration of carbon-related trade disputes (Jackson and McGoldrick 2010). This might require the WTO to 'provide a framework within which countries could impose border adjustments, and would greatly reduce the likelihood of the imposition of climate-change-justified border adjustments degenerating into a trade war' (Garnaut 2008, p. 233).

5.2 Oil and Energy Security

There has been a dramatic rise in the price of oil since 2002, with prices peaking in 2008, declining during the subsequent global slowdown and returning to high levels in 2011. Uncertainty about available supplies and increased demand from emerging economies such as China and India has contributed to fears about energy security and price increases. But another important influence may be the cartelisation of oil markets by oil-exporting countries. Although oil is the world's most important traded commodity, a striking feature of the global trading system is the absence of any formal rules on collusion by oil-producing countries.

Rising oil prices have prompted a number of unilateral responses. Many oil-importing states have attempted to provide a cushion for consumers against price increases by subsidising gasoline and heating fuel, especially for poorer households. In the process, they have contributed to higher world

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[11] The Copenhagen Accord was negotiated by a representative group of 29 heads of government, and although the Accord was not formally accepted due to the resistance of a small number of countries, around 100 industrial and developing countries have formally associated themselves with it since then.

prices by dampening incentives to reduce consumption. In Chapter 15 Mattoo and Subramanian argue that new multilateral trade rules are needed. They advocate bringing together the world's oil producers (both Organization of Petroleum Exporting Countries (OPEC) members and non-members such as the Russian Federation) and its oil consumers (represented, for example, by an expanded International Energy Agency) to draft a new set of rules on global trade in energy, and particularly for oil.

5.3   Financial Security

Seismic changes shook the world financial system in 2008, with many of the icons of financial capitalism either disappearing or falling under government control. This crisis has led to a re-examination of national policies and international rules. Lax regulation, a bubble psychology and perverse incentives for managers and rating agencies that profited from overestimating the value of complex financial instruments were all factors. The problems emerging in Greece and other European countries since 2010 have highlighted the seriousness and the scope of the potential international spillovers. National regulatory reform is under way in some countries, but there is a concern that financial institutions may resort to regulatory arbitrage, *ie* relocate to jurisdictions with relatively light regulation.

In Chapter 15, Mattoo and Subramanian argue that a major problem is the fact that, although finance has become global, its regulation has remained national. Some form of multilateral cooperation to coordinate national regulation seems necessary and desirable. It would also ensure that, as countries open themselves to financial flows, they have the regulatory capacity to manage them.

6   CONCLUSION

The analysis presented in this volume suggests that, despite many weaknesses and exceptions, the current Doha proposals could generate worthwhile and much-needed liberalisation of world markets that could generate over $160 billion per year in readily quantifiable economic benefits. This liberalization is particularly important in the current economic context, as it would provide a boost to world demand during a period in which many governments will be seeking to reduce fiscal stimulus measures (Hoekman *et al* 2010). As we have argued in this introduction, these quantifiable economic benefits are probably only the tip of a much larger proverbial iceberg. As argued by Bouët and Laborde in this volume, the more-difficult-to-quantify benefits from increased security resulting from increases in coverage and more effective bindings are likely to be substantially greater.

What is now on the table will achieve less than many developing countries would like to achieve. For example, the inability to agree on providing 100% DFQF access implies that the market-access gains for LDCs would be substantially less than they could otherwise be. Deeper cuts in agricultural production support by rich countries would be better than the 60–70% reduction in permitted support that is now on the table. Agreement to refrain from agricultural export restrictions would have enhanced the benefits for net-food-importing countries. While there are clearly important 'gaps' between what would be desirable from a development perspective and what is feasible, an outcome that is largely centred on what is currently on the table would nevertheless be a step forward for developing countries.

Whether or not the Doha Agenda succeeds, its negotiating process and draft agreement allow identification of some potentially enormously valuable insights for future negotiations. Some of these are as follows. First, the approach of using tariff-cutting formulas with deep cuts on the highest tariff, while economically highly desirable, may have contributed to strong political resistance and the emergence of pressures for damaging flexibilities and exceptions. Second, the form of these exceptions, particularly in agriculture, restricted only by the near-ineffective constraint of the number of tariff lines, further compounds these problems. Finally, the negotiating approach in services also appears to have created too little momentum for meaningful liberalisation.

Apart from the benefits of the DDA itself, an important reason for concluding the negotiations is to create space for multilateral cooperation on critical policy matters outside the current negotiating agenda, as argued by Mattoo and Subramanian in Chapter 15. In particular, the lack of agreement on the Doha Round could crowd out the prospects for cooperating on initiatives that address large cross-border spillovers. Climate change is the most obvious example where there is an urgent need for governments to consider the implications for the trading system of concerted action to reduce carbon emissions and greenhouse gas emissions. Other areas for potential multilateral cooperation include agriculture and food security; oil and energy security; and financial security.

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2

Agricultural Market Access

DAVID LABORDE AND WILL MARTIN

1 INTRODUCTION

The modalities on AMA (WTO 2008) reflect the enormous amount of negotiating effort that has been made since the launch of this negotiating round in 2001 to identify the interests and sensitivities of the more than 150 WTO members. The draft texts build on the negotiating framework of 2004 (WTO 2004) studied in Anderson and Martin (2006), but are much more specific and detailed. While some key parameters remain undecided, the potential range of choices is much narrower than it was in the framework or in earlier draft versions of the modalities.

Despite, or perhaps because of, their detailed nature, it remains very difficult to assess the implications of these modalities for developing countries. While the negotiations involve line-by-line tariff-cutting formulas, there is an enormous range of exceptions and flexibilities. While countries can work out the implications of these flexibilities upon what they need to do themselves, working out the 'gain' side of the deal, in terms of their market access, is much more difficult. This information asymmetry has, we fear, contributed to a situation where members have focused on minimising the 'pain' associated with their own liberalisation, rather than paying equal attention to both the 'pain' and 'gain' sides of the ledger.

Some key questions include the following. What are the implications of the current formulas for tariffs levied by WTO members, and for the tariffs they face? What would the potential effects of such a proposal be if the formulas on which it is based were adopted without exception? How would these benefits be affected by changes in particular parameters, such as those for the flexibilities for developed and developing countries, and in preferences to be given to the LDCs? Some argue that the current proposals are not sufficiently ambitious in liberalising trade. Others feel that they are too aggressive. Quantifying the extent of liberalisation is clearly of critical importance if informed decisions are to be taken regarding next steps with the negotiations.

As we will see, the modalities involve deep cuts in bound agricultural tariffs. However, the large gaps between bound and applied rates greatly reduce the implications for applied rates, and hence for market access. The provisions for flexibility for particular groups of countries, or for products where members are able to apply smaller-than-formula cuts, further reduce the reductions in applied rates.

The negotiations on agriculture have three pillars: market access, domestic support and export competition. Earlier work suggests that increasing AMA has much more potential to generate welfare gains than liberalisation under either or both of the other pillars of the negotiation (Anderson *et al* 2006). Furthermore, our conventional approaches to measuring the real income gains resulting from liberalisation fail to account for the benefits of limits that are above current levels of support, which, as Blandford and Josling show in Chapter 4, is likely to be the case for domestic support. Given that export subsidies have been used to a minuscule extent in recent years, the proposed abolition of these measures also has little measurable benefit, even though it has important systemic benefits in terms of ruling out their re-emergence in the future. In this chapter we focus solely on market access. This is partly because these are complex proposals whose impact requires careful evaluation if it is to be accurately assessed. It is also because WTO members' assessments of these agreements will be an important determinant of whether it is possible to obtain a broader agreement. Acceptance of something like these proposals is a necessary, but far from sufficient, condition for a broader agreement being reached.

We begin by examining the key features of the modalities for liberalising AMA. We first consider the impacts of the negotiating formulas on average tariffs, and then assess the implications of the flexibilities for different members and commodities permitted under the modalities. Throughout most of the chapter we focus on the impacts on the weighted-average tariff rates applied by, and facing, individual countries and groups of countries. While these are imperfect measures, they provide a well-understood indication of the effects of the agreement. We use more sophisticated approaches (see Laborde *et al* 2011) that take into account the fact that the weights on individual tariffs change as tariffs change in our evaluation of the likely implications of the agreement in Chapters 6, 10, 11 and 12.

2   PROPOSED REFORMS IN AGRICULTURAL MARKET ACCESS

A central feature of the proposed agreement is a tiered formula for cutting agricultural tariffs, which provides for larger proportional cuts to higher tariff rates. An approach of this type, with larger cuts in the higher tariffs (which typically generate the largest economic costs) is economically desirable but may result in considerable political resistance and pressure for exceptions (Falconer 2008; Jean *et al* 2011; Schwab 2011).

Table 2.1: *The tiered formula for cuts in agricultural tariff bindings.*

Band	Developed		Developing	
	Range (%)	Cut (%)	Range (%)	Cut (%)
A	$t_0 = 20$	50	$t_0 = 30$	33.3
B	$20 < t_0 = 50$	57	$30 < t_0 = 80$	38
C	$50 < t_0 = 75$	64	$80 < t_0 = 130$	42.7
D	$t_0 > 75$	70	$t_0 > 130$	46.7
Average cut	Minimum	54	Maximum	36

Key features of the tiered formula, such as the depth of cut in each band, that were undetermined in the WTO's 2004 framework (WTO 2004) considered by Jean *et al* (2006) and Anderson and Martin (2006) have now been resolved. The draft modalities propose four bands in each case, with the boundaries for developed and developing countries given in Table 2.1, together with the proportional cuts to be made in *bound* agricultural tariffs in each band.

The cuts proposed are to be implemented in equal annual cuts over 5 years in the industrial countries and over 11 years in developing countries. The cuts are smaller for developing countries because of the long-standing view in the WTO that special and differential treatment (SDT) for developing countries implies smaller tariff cuts for them than for the industrial countries. The bands for developing countries are wider partly for this reason, and partly because the higher average tariffs in developing countries mean that they might otherwise face larger average cuts in their tariffs than the industrial countries.

Unlike the Swiss formula used in the non-agricultural market-access negotiations, this formula does not provide a smooth mapping from initial to final tariffs. The larger cuts applying to tariffs in the higher bands mean that tariffs just above the boundaries between the bands end up somewhat lower than some tariffs in the next lower band. This results in the sawtooth relationship between tariffs before and after implementation of the cuts depicted in Figure 2.1.

Since the size of the cut applied to each tariff depends on its *ad valorem* level, the tiered formula requires tariffs to be available as a percentage of the value of imported goods. This conversion into *ad valorem* form always involves an element of discretion because of the variations in the price of imported goods. For the most sensitive agricultural goods, industrial countries provide tariff-rate quotas (TRQs) for which unit values of imports are inflated by the quota rents: in this case, using an importer-specific unit value leads to an underestimation of the trade *ad valorem* equivalent. A consistent method for the evaluation of *ad valorem* equivalents has been agreed upon for the negotiations (WTO 2006, Annex A) and this methodology is used in assessing the bands in which tariffs are placed, and, hence, the tariff cuts
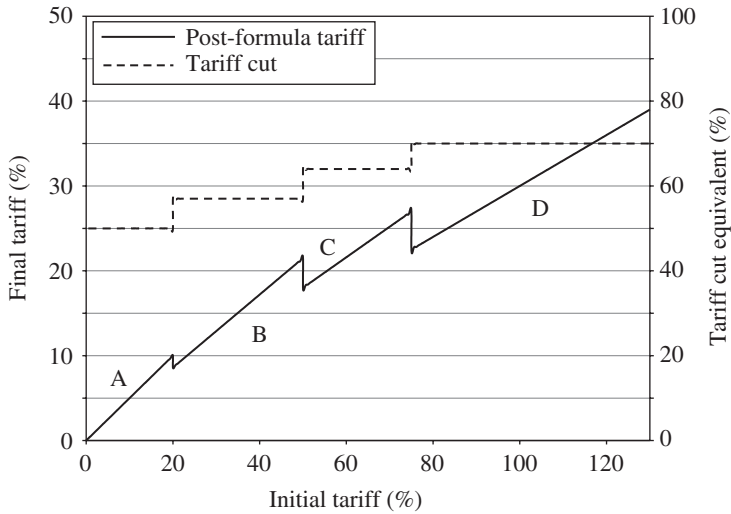
Figure 2.1: *The pattern of tariff cuts under the tiered formula: developed countries (in percent).*

required. We use our best available estimate of the *ad valorem* equivalents of the tariffs to assess their protective effect, rather than the estimate based on the agreed negotiating compromise, which is likely to be somewhat biased downwards from the true value. However, we use the negotiating compromise to decide the tier for each tariff, and hence the cut rate to be used.

As is evident from Table 2.1, the tariff-cutting formula is very aggressive, particularly relative to the approach used in the Uruguay Round negotiations, where industrial countries were expected to cut their agricultural tariffs by an average of 36%, and developing countries by an average of 24%. The difference is even greater than it might appear because the average-cut procedure encouraged members to make larger cuts in their smaller tariffs, and hence to make the resulting average-cut measures larger than the more economically meaningful cuts in the average. The Doha tariff-cutting formulas have the economically desirable feature of making larger cuts in the higher (and hence more economically costly) tariffs. In line with long-standing practice, developing-country cuts in each band are two-thirds the size of those of the industrial countries. The bands are also wider in developing countries, partly to allow for the fact that many developing countries would otherwise have more tariffs included in the higher bands.

Special provisions apply for tariff-escalation products in a set of specified processing chains. The general principle here is that processed products subject to tariffs higher than their raw or intermediate product counterparts are moved into the next highest band. If they are in the highest band, the cut imposed is 6 percentage points higher than the formula cut for the

highest band. If the gap between the processed and unprocessed product is less than 5 percentage points, then the tariff-escalation procedure is not used, reducing the risk that the tariff-cutting process will bring the tariff on the processed product below the tariff on the intermediates used in its production.

A list of 'tropical' and diversification products are to be subjected to deeper-than-formula cuts to provide greater opportunities to the many developing countries that export these products. Two alternative treatments have been proposed for these products. Under the first option, tariffs below 25% would be reduced to zero, with no sensitive product treatment being permitted. Under the second alternative, tariffs below 10% would be reduced to zero, while higher tariffs would be reduced by the 70% cut agreed for the top tier of the formula, except for products already in the top tier, which is to be cut by the agreed cut in the top tier plus 8 percentage points. Under the second alternative, sensitive product treatment would not be ruled out. The cuts for these products are quite deep, so key issues include the scope of the list and whether sensitive product treatment is allowed on these products. One version of the list includes highly sensitive products such as rice, sugar and bananas (see Appendix G of the agricultural modalities). The alternative, Uruguay Round, list is more narrowly defined. In this analysis we used the Uruguay Round list of products and did not allow for sensitive products.

Several groups of developing-country members are allowed smaller tariff reductions. Least developed countries are not required to make any reductions. Small and vulnerable economies[1] can make reductions 10% smaller in each band than other developing members, or may make an average cut of 24%. Recently acceded members are permitted to: make cuts reduced by 8 percentage points; to make zero cuts in tariffs below 10%; to delay their reduction commitments until one year after completion of their accession commitments; and to have one-tenth more special products with cuts 2 percentage points smaller. A group of very recently acceded members (VRAMs) and transition economies is not required to make any cuts.

All countries are permitted to make smaller cuts on 'sensitive' products. The modalities include a limit on the number of sensitive products, and provisions for increases in market access under TRQs for products where smaller-than-formula cuts are made. In industrial countries 4% of tariff lines can be classified as sensitive, except for countries with over 30% of bindings in the top band, or with tariffs scheduled at the six-digit level, in which case this percentage can be increased by 2 percentage points. If the formula cut is reduced by two-thirds, then TRQ access must be increased by 4% of domestic consumption. If the reduction is by half, then the TRQ increase can

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[1]Defined in general as countries with less than 0.1% of world trade, with some larger countries such as Congo, Côte d'Ivoire and Nigeria treated on the same basis in agriculture.

be 1 percentage point less. If the reduction is by one-third, then the TRQ increase is 0.5 percentage points less. Developing countries have the right to one-third more sensitive products than developed countries.

Developing countries would be able to self-designate a set of special products intended to promote food security, livelihood security and rural development. Up to 12% of agricultural tariff lines can be designated in this category, with an average cut in these tariffs of 11% and with up to 5% exempt from cuts.[2] The selection of these products is to be guided by indicators, some of which relate closely to food security issues (such as whether the product is a staple food), while others allow almost all products[3] to be designated as special products.

Several countries have 'expressed reservations' concerning the number of sensitive and special products in the draft modalities and have requested an increased number of tariff lines. Other countries are concerned that the current provisions for sensitive and special products result in an agreement that provides insufficient gains in market access to make the negotiated outcome worthwhile. Clearly, a careful analysis is required to balance these competing claims.

Sensitive products are likely to be selected from an agreed list of products nominated by members intending to use this type of flexibility, a process that means the list of products will not constrain the choice of products unless a country wishes to add a product after the list has been finalised. Special products are self-designated guided by a set of indicators. These indicators cover a range of issues such as importance as a staple food, the proportion of demand met from domestic production, importance in employment, the share of output processed, and productivity levels. It seems likely that these indicators will allow countries considerable freedom to self-designate products.

As noted in the last row of Table 2.1, an average-cut principle is to be used as an auxiliary constraint on the tariff-cutting rule. If application of the formula to bound tariffs in an industrial country results in less than a 54% average cut in tariffs, after taking sensitive products into account, then the cuts in each band are to be increased until this target is reached. In developing countries, the average cut appears as a maximum constraint. If the formula, and the choice of sensitive products, results in an average cut of more than 36%, then the member may make equiproportionate reductions across the tariff bands. Given the progressive nature of the tiered formula,

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[2]Recently acceded members are entitled to declare 13% of tariff lines as special products with an average cut of 10%.

[3]Indicators allowing a product to be classified as 'special' if any WTO member has declared any distorting domestic support for that product, or if productivity in any part of a developing country is below world average levels (WTO 2008, pp. 55–6), would seem to fall into the latter category.

the average-cut measure for larger tariff cuts on higher tariffs has completely different implications from those under the Uruguay Round. Under the Uruguay Round, it overestimated the implications for liberalisation by counting large cuts in small tariffs equally with large cuts in higher tariffs. Under the Doha proposals, with the larger cuts concentrated on products with high tariffs, the average-cut measure would underestimate the true extent of liberalisation.

A key question when forming an *ex ante* assessment of the implications of these flexibilities for tariff reductions and market access is how the sensitive and special products are to be chosen. Some studies have assumed that the products likely to be chosen for smaller or zero cuts would be those with the highest bound tariffs (Sharma 2006), some have assumed that they would be those with the highest applied tariffs (Vanzetti and Peters 2008; Hufbauer *et al* 2010) and others have used a tariff-revenue-loss criterion under which the products selected tend to be large imports subject to large cuts in *applied* tariffs (Jean *et al* 2006). None of these approaches has any firm conceptual basis and Jean *et al* (2010, 2011) show that an approach that takes policymakers' preferences into account should try to reduce the tariff cuts on products that are important shares of total imports, products that have high initial applied tariffs, and products that would face large cuts under the formula. They also show that the consequences of sensitive products selected on this basis are likely to be similar to those of the tariff-revenue-loss rule, *ie* even small numbers of tariff lines are likely to cause large reductions in the cuts in average tariffs achieved.

The modalities reflect an agreement to eliminate or to sharply reduce the use of the SSG that currently allows countries that converted non-tariff barriers into tariffs by 'tariffication' in the Uruguay Round (mostly developed countries) to impose duties above their Uruguay Round bindings. There is an agreement to include a new SSM for developing countries that would allow members to impose tariffs above their Doha Agenda bindings and possibly above their Uruguay Round bindings. Two quite different models are presented as potential approaches to implementing these measures. The extent to which the SSM leads to higher average tariffs and insulation in developing countries—and hence increases in average tariffs and in the volatility of world prices—will depend on the specific parameters chosen. The way that these policies are implemented will also be particularly important. Research by Hertel *et al* (2010) reviewed in Chapter 7 shows that if these policies were implemented mechanically, they could increase both the volatility of producer prices in developing countries, and the volatility of international prices. Ivanic and Martin (2011) show that considerable caution is needed in the application of the quantity safeguard. If it is used when domestic output is reduced by drought or other adverse seasonal conditions, this duty is more likely than usual to increase poverty because more farmers than usual are net buyers of food.

Table 2.2: *Key elements of the agricultural tariff cuts used in the analysis.*

	Developed	Developing	LDCs	SVEs	RAMs
Bands	0/20/50/75	0/30/80/130	No cuts	No cuts	
Proportional cut	50/57/64/70	33.3/38/42.7/46.7			
	Scaled proportionately if the average cut (including sensitive, tropical and tariff-escalation products) is <54% in industrial countries; or >36% in developing countries				8% points less than tiered formula
Sensitive products	5% of lines	6.7% of lines			
	If >30% of lines in top tier, 2 percentage points more				
Special products		14% lines; 40% no cut and 60% with a 15% cut			
Tariff escalation products	Cut from next higher tier applied; in top tier add 6 percentage points to the cut				
Tropical products	$t \leqslant 10$, cut to zero; $1 < t \leqslant 75$, 70% cut; $t > 75$, 78% cut				
Cotton	Duty-free access by developed and those developing countries able to do so to LDCs				

Republic of Korea is treated as a developing country for agriculture. Least-developed countries are identified in the UN list of least developed countries. Economies treated as small and vulnerable (SVE) were: Antigua and Barbuda, Barbados, Belize, Bolivia, Botswana, Brunei Darussalam, Cameroon, Congo, Côte d'Ivoire, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Fiji, Gabon, Georgia, Ghana, Grenada, Guatemala, Guyana, Honduras, Jamaica, Jordan, Kenya, Macau, Mauritius, Mongolia, Namibia, Nicaragua, Nigeria, Panama, Papua New Guinea, Paraguay, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sri Lanka, Trinidad and Tobago, Uruguay and Zimbabwe. Recently acceded members treatment are China, Croatia, Ecuador, Jordan, Mongolia, Oman, Panama, and Chinese Taipei. Very recently acceded members (no cuts) are Albania, Armenia, Georgia, Kyrgyz Republic, Moldova, Former Yugoslav Republic of Macedonia, Saudi Arabia, Tonga, Ukraine and Vietnam. The special product percentages are higher than in the December 2008 modalities because of the 'serious objections' of some developing countries.

3   SPECIFYING CUTS IN TARIFFS

While WTO negotiations are based on bound tariff rates, their implications for market access and for economic welfare mainly depend on their effects on applied rates. To provide a preliminary assessment of the implications upon the modalities for the applied protection, we begin with the MAcMap-HS6 version 2.1 database (Boumellassa *et al* 2009) for 2004 together with a set of bound tariff rates for which *ad valorem* equivalents have been calculated on the same basis. We first cut the bound tariff rates using the approaches considered in the modalities, then assess their implications for applied rates. The specific choices of parameters used are set out in Table 2.2. In this analysis we use the conventional assumption that applied rates are not reduced unless

the new bound rate falls below the initial applied rate[4] (assumed to be the applied rate in the MAcMap-HS6 version 2.1 data set, which is for 2004).

The tariff-reduction formulas and the flexibilities are intertwined in the sense that countries are frequently willing to consider more ambitious formulas when they have the flexibility to make smaller cuts for some products (see Jean *et al* 2010). A major problem for negotiators in this situation is that the 'price' paid for the flexibilities, in terms of efficiency and market access, is difficult to evaluate. In our analysis, we make a distinction between cuts without flexibility and those resulting from the formula with flexibility. This decomposition is useful in order to allow some estimate to be made of the implications of the flexibilities, as long as it is recognised that agreement on the particular formulas was almost certainly contingent on the presence of flexibilities.

A number of categorisations had to be made before the tariff-cutting formulas could be applied. Countries with more than 30% of agricultural tariffs in the highest band had to be identified[5] to allow for the additional sensitive products permitted to these countries. Products subject to special treatment such as tariff-escalation products, and tropical and diversification products also had to be specified.

A few simple cases can be identified, including the LDCs, that are not required to make any cuts. Initial investigation led us to conclude that the only small and vulnerable economy (SVE) required to undertake cuts in applied rates would be Gabon.[6] In most cases it was necessary to take account of the flexibility options before the cuts to applied rates could be determined. In some cases, such as agricultural products in the industrial countries, the choice of sensitive products is independent of the coefficients so that the selection of sensitive products can be undertaken in one pass, although the minimum average-cut requirement may necessitate a second-round calculation of the tariff rate cuts.

In many cases, the selection of products to be accorded flexibility was a multistage process. For example, we assumed that developing countries would use special products (with their smaller tariff cut requirements) for the products with the strongest political support. Only when all of these flexibilities were used up would they begin to use sensitive products.[7]

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[4]This assumption neglects the important value that can arise from bindings above current applied rates, by ruling out incidents of higher tariffs in the future (Francois and Martin 2004).

[5]These countries were Bangladesh, Iceland, India, Lesotho, Myanmar, Nigeria, Norway, Switzerland, Tunisia and Zimbabwe.

[6]Gabon may renegotiate some of its bound tariffs since it is a member of the central Africa Custom Union, CEMAC, of which some other members are LDCs.

[7]Beginning with sensitive products with a 25% deviation and no TRQ creation.

We could not explicitly represent the TRQ increases that are associated with sensitive product designation in the industrial countries. While these can have some liberalising effect, the record of success appears to be relatively limited (de Gorter and Kliauga 2006). We anticipate that most users of TRQs will adopt the option that allows them to reduce the formula cut by two-thirds, and that requires TRQ expansion equal to 4% of initial consumption. Given the finding by de Gorter and Kliauga (2006, p. 155) that TRQ expansion of the type envisaged under the Doha agreement would have about one-third the impact of the envisaged tariff cuts, we treated this combination of tariff cuts and TRQ expansions for sensitive products as equivalent to a tariff cut that is one-third less than the formula.

The scenarios for which we provide results are as follows.

(0) Applied tariffs in 2002 adjusted for any internationally binding commitments for further cuts. Due to its importance (Bureau and Gohin 2006), the EU's sugar reform has been integrated in terms of its impact on EU applied tariffs.

(B) Tariffs following implementation of the DDA formula without flexibilities.

(C) Tariffs following implementation of the formula with country exceptions, such as those for LDCs, SVEs and RAMs.

(D) Tariffs after the tariff-cutting formulas with flexibilities for countries and products

(D_1) with flexibility in developing countries only,

(D_2) with flexibility in developed countries only.

4 IMPLICATIONS FOR TARIFFS LEVIED AND FACED

In this section we consider the implications of the formulas and scenarios discussed above for weighted-average tariffs levied and faced by different countries. As shown by Anderson and Neary (2007) and evaluated for agricultural sensitive products in Jean *et al* (2011), this standard measure of tariff reduction is incomplete as a measure of market access and of economic welfare. However, it provides an initial indication and a widely understood general indication of the direct effects. We first consider the impacts of the formulas on members' bound tariffs, and then we consider the applied rates that they actually levy. In doing so, we assume that the applied rate will be reduced only if the new bound rate is below the initial applied rate. Finally, we turn to the tariffs that each country faces on its exports.[8]

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[8]Details of the tariff-cutting scenarios and results at the Global Trade Analysis Project (GTAP) commodity level are given at http://gatt.ifpri.info/dda0.

4.1 Agricultural Bound Tariffs

Because the formula cuts and exceptions apply to members' tariffs as bound at the WTO, it is useful to first consider the direct impacts of these formulas on the bound rates. This is a necessary precursor for determining their impact on applied rates. In this analysis, we assume that applied rates are reduced only in those cases where the bound tariff is reduced below the initial applied rate. The bound rates allow an assessment of the extent of the gap between bound and applied rates (the binding overhang), which determines the extent to which WTO bindings provide security of market access by ruling out future increases in bound rates (see Bouët and Laborde in Chapter 12). We follow the usual rule of thumb in this type of analysis: the applied rate is not reduced unless the new bound rate lies below the initial applied rate. As shown by Francois and Martin (2004), this may understate the benefits of binding reductions. Reductions in bound rates may have substantial value, even when the binding is below the initial applied rate by ruling out costly increases in applied rates in subsequent years.

One clear finding from the table is that the agricultural tariff-cutting formulas being applied in this study would bring about very substantial reductions in bound tariffs. On average, agricultural bound tariffs would almost halve under scenario B, falling from 40.3% to 20.7%. The cut in average tariffs in the industrial countries would be even larger, at 61%. Even in developing (low- and middle-income) countries, the cut would be a very substantial 38%. The exceptions for countries and products included in scenario D reduce the average extent of tariff reduction substantially, but still leave a worthwhile overall reduction of 26% in world average bound tariffs. In the industrial countries, the reduction in agricultural bound rates is still over 40%, from 30.9% to 18.4%.

In some of the most important markets such as the EU and the United States, there are substantial cuts in bound tariffs, even after allowing for exceptions such as those for sensitive products. The average bound tariff in Europe would fall by more than half, from 23.8% to 11.8%. In the United States, the weighted average would fall from 8.0% to 4.5%. For developing countries as a whole, the weighted-average bound rate would fall from 53% to 45.4%, a decline of almost 15%. As noted in the discussion of the modalities, many developing countries would be required to make essentially no reductions to their bound tariffs.

In developing countries, the cuts in agricultural bound tariffs are typically smaller as a percentage of the original tariff than in the industrial countries. In Brazil and India, for example, the formula would cut the average bound tariff by around a third of its original level. This reflects two key design features of SDT: that the cuts in each band are smaller and that the bands are wider for developing countries, to ensure that the resulting tariff cuts are smaller than for the industrial countries, even though developing-country tariffs are

higher. The provisions for sensitive and special products frequently allow bound tariffs to end up substantially above the outcome of the formula. For Korea and Taiwan (China), for example, the resulting tariffs are 65% higher than they would be in the absence of these flexibilities. The 'round for free' provisions ensure that there are no reductions in bound tariffs in LDCs like Bangladesh.

4.2   *Applied Agricultural Tariffs Levied*

In Table 2.4 we can see that the formulas applied *without exceptions* (scenario B) would result in a decline from 14.6% to 9% in average *applied* agricultural tariffs worldwide. In the WTO developed countries, the result is a cut of over 50% in applied rates, from 15.4% to 7.0%. In WTO developing countries other than the LDCs, the reduction is from 13.7% to 11.2%, a smaller cut than in the industrial countries partly because of key features of the formula—the smaller cuts and higher tier boundaries laid out in Table 2.1— and the greater binding overhang in many developing countries.

   Without exceptions, the cut in the EU27 applied agricultural tariff is from 15.9% to 6.6%: a cut of almost 60% of its initial value. In the United States, the corresponding cut is from 4.8% to 2.1%: a reduction of 56% from its initial value. The cut in Japan's average applied agricultural tariff is almost 16 percentage points, from 29.8% to 14%: a reduction of over 50%. In Canada, the cut would be from 10.7% to 5.1%: a reduction of more than 53%.

   The impact of the basic developing-country formula on applied rates differs considerably according to the initial level of binding overhang. In India, the formula would reduce average tariffs by almost 8% of their initial level, while in China, the reduction would be from 7.8% to 5.3%: a cut of 32%. By contrast, in many former GATT contracting parties, such as Brazil and Nigeria, binding overhang means that the full formula, without exceptions, would result in very small cuts in average applied rates.

   The country flexibilities for members such as SVEs, RAMs and VRAMs included in scenario C are important for some countries and groups such as China and the Central Asian region. The overall effect of these flexibilities on the global average tariff rate is, however, quite small, with this rate increasing from 9.0 to 9.2 following the introduction of these flexibilities. Even for the non-LDC WTO developing countries, the impact on the overall average is relatively small, increasing it from 11.2% to 11.6%.

   The flexibilities for commodities (sensitive and special products) included in scenario D more than halve the worldwide cut in tariffs, from 5.4% with country flexibilities to 2.7% with country and commodity flexibilities. Interestingly, it is in the industrial countries that the cut in applied tariffs is reduced the most, with the tariff after flexibilities declining from 7.4 percentage points to 5 percentage points. In low- and middle-income non-LDC countries, these flexibilities reduce the cut from 1.6 to 0.1 percentage points: a larger

proportional reduction in the cut than for high-income countries, but a smaller one in percentage-point terms. This difference is particularly striking in individual cases, such as India, where use of both sensitive and special products under scenario D allows the applied tariff to rise by only 8% of its post-formula level. By contrast, the less extensive flexibilities available to Canada allow the average agricultural tariff there to rise by 68% of its post-formula level.

4.3   Relationship between Bound and Applied Rates

A comparison of Tables 2.3 and 2.4 provides an indication of the extent of binding overhang before and after implementation of the modalities. A striking feature of the current agricultural trade regime is that the global average bound tariff, at 40.3%, is almost three times as high as the average applied tariff rate. In the industrial countries, the average bound rate, at 31%, is almost exactly twice the applied rate. In developing countries, the average applied rate of 13.3% is lower than in the industrial countries, but the average bound rate of 53% is substantially higher, and four times the applied rate. Binding overhang is substantial, even in the major industrial countries such as the United States and the EU once allowance is made for the prevalence of in-quota trade and preferential trade. Binding overhang is substantial in almost all developing regions, with the gap between bound and applied rates exceeding 100 percentage points in countries such as Bangladesh, Nigeria and India. One important country with relatively low binding overhang is China, where the average bound agricultural tariff is 17.2% and the applied rate is 7.8%.

The proposed cuts in bindings would substantially reduce binding overhang. It would essentially be eliminated in the United States and the EU, and sharply reduced in almost all of the industrial countries, even after the flexibilities for sensitive products are taken into account. The elimination of this binding overhang will likely have substantial benefits of the type identified by Francois and Martin (2004) that are not accounted for in static, large-scale calculations of the type reported in this volume or by Hufbauer *et al* (2010). There would also be potentially very substantial benefits from reductions in the volatility of world commodity prices of the type identified by Tyers and Anderson (1992).

In developing countries, the reductions in tariff-binding overhang are much smaller than in the industrial countries. In most cases this is because there are very small reductions in bound tariff rates. In some cases where there would be significant reductions in bound tariff rates, as in India, the binding overhang remains substantial simply because the pre-cut binding overhang is so substantial. The very small reductions in bound tariffs appear to reflect a reluctance to make binding commitments on agricultural protection in developing countries. While this is likely to substantially reduce the benefits

Table 2.3: *Average bound tariffs on WTO agricultural products by scenario (in percent, trade-weighted averages).*

Regions	Scenarios					
	0	B	C	D	D_1	D_2
Australia and New Zealand	13.4	5.0	5.0	5.6	5.0	5.6
Bangladesh	163.8	104.4	163.8	163.8	163.8	163.8
Brazil	41.8	26.7	26.7	34.9	34.9	26.7
Canada	20.4	6.8	6.8	10.6	6.8	10.6
Chile	26.4	17.3	17.3	24.8	24.8	17.3
China	17.2	11.0	13.0	16.1	16.1	13.0
Egypt, Arab Rep. of	43.5	25.0	25.0	40.3	40.3	25.0
EU27	23.8	7.6	7.6	11.8	7.6	11.8
Hong Kong (China) and Singapore	51.7	28.0	28.0	29.1	29.1	28.0
India	161.3	100.3	100.3	128.3	128.3	100.3
Indonesia	57.7	35.5	35.5	51.9	51.9	35.5
Japan	48.6	15.4	15.4	25.9	15.4	25.9
Korea, Rep. of and Taiwan (China)	70.7	41.6	43.1	71.0	71.0	43.1
Middle East and North Africa	81.0	50.6	50.6	63.7	63.7	50.6
Mexico	52.9	32.7	32.7	41.2	41.2	32.7
Nigeria	150.0	81.2	96.0	100.9	100.9	96.0
Pakistan	107.0	67.0	67.0	101.5	101.5	67.0
Rest of Europe	81.1	24.2	24.2	35.5	24.2	35.5
Rest of Latin America and the Caribbean	58.7	35.6	38.9	50.9	50.9	39.0
Rest of Southeast Asia	48.4	30.9	38.0	49.2	49.2	38.0
South Africa	57.3	34.5	34.5	43.3	43.3	34.5
Sub-Saharan Africa	73.0	44.7	62.5	70.5	70.5	62.5
Thailand	50.3	29.9	29.9	34.5	34.5	29.9
Turkey	52.5	31.5	31.5	34.3	34.3	31.5
United States	8.0	3.1	3.1	4.5	3.1	4.5
World Bank classification						
All countries	40.3	20.7	22.6	29.9	27.4	25.1
Low- and middle-income countries (non-LDCs)	53.0	33.0	35.6	45.4	45.4	35.6
High-income countries	30.9	12.1	12.2	18.4	14.4	16.3
LDCs	94.1	59.3	93.7	93.7	93.7	93.7
WTO classification						
Developed WTO	26.0	8.4	8.4	13.1	8.4	13.1
Developing WTO non-LDCs	54.8	33.5	35.8	46.8	46.8	35.8
Normal developing WTO	66.5	39.8	39.8	54.4	54.4	39.8
RAM WTO	75.5	43.6	50.9	62.5	62.5	51.0
SVE WTO	19.0	14.5	20.1	22.4	22.4	20.1

from trade reform in developing countries under these modalities, it is a pattern that was certainly observed among the industrial countries in earlier rounds of multilateral trade negotiations. It appears that one reason that

Table 2.4: *Average applied tariffs levied on WTO agricultural products by scenario (in percent, trade-weighted averages).*

Regions	Scenarios					
	0	B	C	D	D_1	D_2
Australia and New Zealand	2.5	1.5	1.5	1.9	1.5	1.9
Bangladesh	16.4	16.4	16.4	16.4	16.4	16.4
Brazil	4.8	4.7	4.7	4.8	4.8	4.7
Canada	10.7	5.1	5.1	8.6	5.1	8.6
Chile	1.7	1.7	1.7	1.7	1.7	1.7
China	7.8	5.3	6.3	7.5	7.5	6.3
Egypt, Arab Rep. of	15.7	14.8	14.8	15.7	15.7	14.8
EU27	15.9	6.6	6.6	10.2	6.6	10.2
Hong Kong (China) and Singapore	0.2	0.2	0.2	0.2	0.2	0.2
India	59.2	54.6	54.6	59.2	59.2	54.6
Indonesia	7.6	7.0	7.0	7.6	7.6	7.0
Japan	29.8	14.0	14.0	20.4	14.0	20.4
Korea, Rep. of and Taiwan (China)	27.8	18.5	19.8	27.1	27.1	19.8
Middle East and North Africa	36.9	30.4	30.4	36.5	36.5	30.4
Mexico	3.9	3.3	3.3	3.9	3.9	3.3
Nigeria	24.0	24.0	24.0	24.0	24.0	24.0
Pakistan	20.9	20.7	20.7	20.9	20.9	20.7
Rest of Europe	37.4	19.5	19.5	28.2	19.5	28.2
Rest of Latin America and the Caribbean	9.8	9.4	9.5	9.8	9.8	9.5
Rest of Southeast Asia	16.1	12.3	13.1	16.0	16.0	13.1
South Africa	5.9	5.3	5.3	5.9	5.9	5.3
Sub-Saharan Africa	13.3	12.8	13.1	13.3	13.3	13.1
Thailand	20.6	15.3	15.3	19.6	19.6	15.3
Turkey	13.6	10.9	10.9	13.2	13.2	10.9
United States	4.8	2.1	2.1	3.0	2.1	3.0
World Bank classification						
All countries	14.6	9.0	9.2	11.9	10.0	11.0
Low- and middle-income countries (non-LDC)	13.3	11.3	11.7	13.2	13.2	11.7
High-income countries	15.5	7.5	7.6	11.1	8.1	10.5
LDCs	12.5	12.2	12.5	12.5	12.5	12.5
WTO classification						
Developed WTO	15.4	7.0	7.0	10.4	7.0	10.4
Developing WTO non-LDCs	13.7	11.2	11.6	13.6	13.6	11.6
Normal developing WTO	15.1	12.3	12.3	15.0	15.0	12.3
RAM WTO	13.4	12.8	13.0	13.4	13.4	13.0
SVE WTO	10.7	7.8	9.5	10.5	10.5	9.5

many developing countries have sought to retain higher bindings is to allow them to adjust their applied rates in order to stabilise domestic prices. While understandable from the point of view of an individual country, the fact that most countries use this flexibility, and the fact that price insulation of this type merely redistributes volatility means that it is not effective in

reducing overall volatility in developing countries. In the 2008 price surge, price insulation appears to have redistributed price volatility towards some of the poorest developing countries (Martin and Anderson 2011).

4.4   Applied Tariffs Faced

As previously noted, estimates of the implications of the modalities formulas for the tariffs facing individual members are probably more important for meeting policymakers' needs than estimates of the tariffs levied. This is because evaluating the former is quite straightforward for an individual country, while estimating the implications for barriers faced requires an assessment for over 150 other WTO members.

Table 2.5 reveals some quite substantial reductions in the tariffs facing WTO members. Table 2.5 shows that the average applied tariff facing agricultural exporters would decline by more than one-third—from 14.6% to 9.0%—through the application of the formula without exceptions (scenario B). The reduction in the tariff facing industrial countries would be quite similar to that facing developing countries: 5.8 percentage points in the former and 5.7 in the latter. Even in the LDCs, for whom preference erosion imposes constraints on the gains from market access, the average tariff barrier faced falls from 7.4% to 6.5%. Under this scenario, the RAMs and SVEs would benefit from particularly large reductions in the unusually high tariff barriers that they face. In some specific cases, such as Australia, Brazil, China, Pakistan and Thailand, the benefits from reductions in tariffs faced would be even larger. For Thailand, the reduction in agricultural tariffs faced would be over 10 percentage points.

The country flexibilities included under scenario C would only slightly reduce these gains in AMA. This is due to several factors. Since the LDCs and SVEs that are central to these country flexibilities are relatively small, the overall impact on market access is also relatively small. Most of the VRAMs for which zero cuts are required are also relatively small. Finally, the RAMs group, which includes some much larger economies, is still required to make some tariff reductions.

In scenario D, where flexibilities for commodities are incorporated along with those for countries, the reductions in tariffs faced are much smaller, with the reduction in global agricultural tariffs declining from a potential 5.6 (scenario B) to 2.7 percentage points. Part of this reduction in the tariff cut comes from the sensitive- and special-product flexibilities used by developing countries. Scenario D_1 shows the post-cut tariff rising from 9.2% to 10.0% as these flexibilities are incorporated. However, use of the sensitive-product flexibilities by the industrial countries in scenario D_2 takes the final tariff faced from 9.2% to 11.0%. While these flexibilities are more constrained in their application than developing-country flexibilities such as special products and require increases in market access through TRQ expansion, they are superimposed on a situation in which the industrial country formula is more

Table 2.5: *Average tariffs facing exports of agricultural products (in percent, trade-weighted averages).*

Regions	Scenarios					
	0	B	C	D	D_1	D_2
Australia and New Zealand	17.3	10.2	10.4	13.9	11.6	12.7
Bangladesh	14.7	12.6	12.6	14.4	14.2	12.9
Brazil	18.8	9.8	10.0	13.7	10.6	13.0
Canada	9.0	5.2	5.2	6.8	5.5	6.5
Chile	8.7	5.2	5.3	6.4	5.5	6.2
China	16.8	9.7	9.8	13.8	11.9	11.7
Egypt, Arab Rep. of	8.0	5.6	5.6	6.7	6.0	6.3
EU27	16.6	10.6	10.9	13.6	11.8	12.7
Hong Kong (China) and Singapore	18.4	12.7	14.5	17.2	16.6	15.2
India	10.1	7.2	7.4	8.9	8.1	8.2
Indonesia	21.5	19.4	19.6	20.4	20.2	19.7
Japan	14.0	9.9	10.7	12.7	12.5	10.9
Korea, Rep. of and Taiwan (China)	16.0	10.8	11.2	12.8	11.8	12.3
Middle East and North Africa	16.3	8.6	8.7	10.7	8.7	10.6
Mexico	4.2	2.3	2.3	3.1	2.4	3.1
Nigeria	2.6	2.4	2.4	2.5	2.5	2.4
Pakistan	13.2	8.5	8.5	11.8	10.0	10.4
Rest of Europe	20.4	11.9	12.0	15.9	14.3	13.6
Rest of Latin America and the Caribbean	13.4	6.7	6.8	10.1	7.2	9.6
Rest of Southeast Asia	15.2	11.7	11.9	13.9	13.0	12.8
South Africa	15.5	9.7	9.9	12.5	10.2	12.2
Sub-Saharan Africa	6.6	4.5	4.5	6.1	4.7	5.9
Thailand	23.7	13.3	13.8	19.2	15.3	17.8
Turkey	9.1	5.7	5.8	7.1	6.4	6.5
United States	14.0	8.5	8.7	11.3	9.5	10.5
World Bank classification						
All countries	14.6	9.0	9.2	11.9	10.0	11.0
Low- and middle-income countries (non-LDC)	14.3	8.6	8.8	11.5	9.6	10.8
High-income countries	15.1	9.3	9.6	12.3	10.5	11.3
LDCs	7.4	6.5	6.5	7.1	6.9	6.7
WTO classification						
Developed WTO	15.0	9.2	9.4	12.1	10.3	11.2
Developing WTO non-LDCs	14.4	8.8	9.0	11.7	9.8	10.9
Normal developing WTO	13.9	9.0	9.2	11.3	9.8	10.7
RAM WTO	11.8	5.9	5.9	9.7	6.2	9.4
SVE WTO	18.5	10.3	10.6	15.0	12.5	13.1

demanding and the industrial countries have much less binding overhang. The 'pain' in terms of lost market access from all the flexibilities considered is spread between the industrial and developing countries, with the average tariff facing the developing countries rising by 2.9 percentage points from

the post-formula tariff and that facing the industrial countries rising by 3 percentage points.

5 CONCLUDING COMMENTS

In this initial assessment, we first considered the features of the current draft modalities. On the basis of our reading of these texts and predictions of the likely implications of flexibilities, we assessed the consequences for applied tariffs. Finally, we considered the implications of reform for economic welfare.

When considering the tariffs levied by individual countries, we found that the formulas discussed in the modalities would, in the absence of flexibilities, result in substantial reductions in bound tariffs in both industrial and developing countries, but particularly in the industrial countries. In the industrial countries, these tariffs would frequently be cut by two-thirds of their original levels. In developing countries, the cuts are frequently around one-third of the original level, with the smaller cuts and wider bands more than compensating for the higher initial levels of bound tariffs and consequent larger cuts in bound rates. The flexibility provisions allow substantial increases in the post-formula tariffs in industrial countries such as Canada, where there are substantial numbers of products with very high tariff bindings. The resulting increases in developing countries tend to result in smaller proportional tariff increases than in the industrial countries.

Turning to applied tariffs, we find that the tiered formula would substantially lower applied agricultural tariffs in the industrial countries. In agriculture, the reduction in WTO developed-country tariffs would be by a factor of more than two, from 15.4% to 7.0%. While they may be needed to secure an agreement, the sensitive product provisions appear to result in a substantially smaller cut in these tariffs, and result in a final tariff of 10.4%: the resulting reduction in market-access opportunities considerably reduces the political capital available to 'sell' the overall agreement.

In developing countries, the cut in applied agricultural tariffs implied by the formula is much smaller, with the average falling from 13.7% to 11.2%. When flexibilities for particular country groups and for special and sensitive products are included, the average post-cut tariff is 13.6%, almost eliminating any improvement in market access to these countries.

In terms of tariffs faced, it seems that most countries would see significant reductions in the agricultural tariffs that they face if the formulas were implemented without exceptions. Worldwide, the average agricultural tariff would fall from 14.6% to 9.0%. Allowing for exceptions results in a final tariff of 11.9%. Most of this increase in the final tariff rate is accounted for by the sensitive product flexibilities for industrial countries, rather than by the more comprehensive flexibilities allowed to developing countries. The flexibilities for the industrial countries have more impact because they are implemented

in a context where the industrial countries face deeper formula cuts. Most countries see reasonably significant reductions in the tariffs that they face, despite the dramatic reduction in the cuts on tariffs resulting from exceptions for countries and for sensitive and special product treatment. The smallest reductions in tariffs faced occur in groups of countries such as the LDCs that currently benefit from preferences in the industrial countries, and see small tariff reductions in their developing-country partners. This suggests that the DFQF initiative discussed in Chapter 6 could be quite important as a means of delivering real market-access gains for these countries.

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3

Non-agricultural Market Access

DAVID LABORDE AND WILL MARTIN

1 INTRODUCTION

Liberalisation of market access in NAMA is the traditional core of multilateral trade negotiations. Prior to the Uruguay Round, developing countries played a very small role in negotiations, hoping to obtain some benefits in terms of increased market access without having to make substantial commitments to lower their own tariffs. The Uruguay Round agreement was the first in which developing countries made substantial commitments to subject their tariffs to binding maximum levels, and to begin to make reductions in their own tariffs. The coverage of NAMA imports into developing countries rose from 13% to 61% under the Uruguay Round, with tariffs on 32% of imports being subject to reduction (Abreu 1996). Despite the change in the role of developing countries in the Uruguay Round, most developing countries are concerned to retain elements of the traditional policies of SDT under which they are required to make smaller commitments to reduce their tariffs, and to have a longer period over which to make these reductions.

The traditional approach to multilateral liberalisation under the GATT involved bilateral negotiations on a request-and-offer basis, the results of which were multilateralised by extending the best offer to any partner to all members (Baldwin 1986, 1987). This bilateral approach proved to be unable to generate sufficient incentives for reform and was replaced by a multilateral formula-based approach in the Kennedy Round (1963–7). A key advantage of this approach, if it is implemented with a minimum of exceptions, is that the benefits of the agreement to exporters become more transparent and the ability of industry lobbyists to avoid liberalisation is reduced.

However, as noted by Hufbauer *et al* (2010), a feature of the Doha negotiations is the complexity and consequent non-transparency of the proposals for liberalisation under discussion. While the NAMA proposals are less prone to exceptions than those for agriculture, the formulas used to cut tariffs are complex, and there are many exceptions to these formulas for country groups and individual countries, and choices of regime with different depths of cut and ranges of flexibility. While countries can relatively easily assess the implications of the formulas and the exceptions that apply to them, they have

much greater difficulty assessing the implications of the overall modalities for the market access that they face, and hence for the overall value to them of the negotiations. Politically, this is particularly important, since it is the prospect of increasing market access that motivates countries to undertake politically painful reforms at home.

A key purpose of this chapter is to form a rough assessment of the implications of the proposals for liberalisation of non-agricultural commodities on key countries and regions in the negotiations. To do this, we first survey the key features of the proposals for reform, and then assess the impacts at a detailed level on the tariffs levied by WTO members and facing them in other members. We summarise these results using easily communicated average tariffs levied by, and faced by, key countries and country groups. The detailed databases of tariffs and trade underlying these averages are then used for the investigation of the welfare impacts of reform in subsequent chapters.

2   MODALITIES FOR NON-AGRICULTURAL MARKET-ACCESS IMPROVEMENTS

The central feature of the modalities for NAMA (WTO 2008) is the use of a non-linear tariff-cutting formula. The formula is applied on base rates equal to existing bound tariffs or average applied MFN rates (period 1999–2001) plus 25% for currently unbound tariff lines. The tariff formula in this case is the highly non-linear Swiss formula, which reduces the highest tariffs the most. The Swiss formula requires tariffs in *ad valorem* terms, and all tariffs are to be converted to *ad valorem* and bound in those terms.

The Swiss formula is defined as

$$t_1 = \frac{a_i \cdot t_0}{a_i + t_0} \tag{3.1}$$

where t_1 is the tariff after application of the formula, t_0 is the tariff rate before application of the formula, and a_i is a coefficient for group i, which differs between developed and developing countries, and according to the decisions made by each developing country regarding the number of products it would like to subject to smaller tariff cuts.

The operation of the formula is perhaps most easily viewed graphically, as in Figure 3.1. This figure shows the tariff after application of the formula on the vertical axis relative to the tariff before the formula. The dotted line on the graph shows the tariff after application of a formula with a coefficient of 20%, while the solid black line shows the results of the formula with a coefficient of 8%. As is clear from the figure, the Swiss formula cuts the highest tariffs the most, with tariffs of 100% being cut to 16.7% when using the coefficient of 20%, and to 7.4% when using a coefficient of 8%. By contrast, tariffs of 1% are barely cut under either of these formulas. Since the highest tariffs generate the largest economic costs, this top-down feature of the Swiss formula is highly

desirable from an economic efficiency viewpoint. Politically, however, it is much more difficult to convince policymakers of its merits, since it involves cutting high tariffs on important products substantially, and it is on these products that policymakers receive the strongest support for protection (Jean *et al* 2011). When it was used in the Tokyo Round of the GATT (1974–9), it proved difficult to avoid substantial numbers of exceptions (Baldwin 1986), a problem that has recurred for developing countries in the Doha negotiations (Falconer 2008; Schwab 2011), although the industrial countries have been willing to consider its use without exceptions in NAMA.

The draft modalities provide for a single value of a_i of 8% for industrial countries, and three different choices for developing countries: 20%, 22% or 25%. Members using a coefficient of 20% could choose to keep unbound, or to not apply, formula cuts on 6.5% of tariff lines as long as these products cover less than 7.5% of imports. Alternatively, they could choose to make half-of-formula cuts on 14% of lines as long as those products cover no more than 16% of imports. With a coefficient of 22%, 5% of tariff lines would be allowed no cuts as long as these lines accounted for no more than 5% of imports, or 10% of lines allowed half-of-formula cuts as long as they do not exceed 10%. With a coefficient of 25%, no flexibilities would be available.

While the formulas were originally intended to apply to all developing countries, many exceptions were made with the result that only around 22 developing countries will actually apply the formula. Least developed countries would not be required to make reductions, but are expected to increase their levels of binding coverage. Countries with binding coverage below 35%[1] are exempt from formula cuts but are required to bind 75% of lines if their binding coverage is currently below 15%, and to bind 80% of their tariffs if their coverage rate is higher. Another set of exceptions applies to SVEs. Small and vulnerable economies are divided into three groups. The first group, with average bound tariffs of 50% or higher, is to bind at an average level not exceeding 30%. The second group, with an average bound tariff between 30% and 50%, is to bind at 27% or to reduce average bound tariffs by 30%. A third group, with average bound tariffs below 30% but above 20%, is to bind at an average level of 18%. The last group (average bound tariff below 20%) should apply a line-by-line reduction of 5% on 95% of tariffs bound at the overall average that would result from such a line-by-line reduction.

Recently acceded members receive a grace period of three years and an extended implementation period of three years. In contrast with the case of agriculture, they do not receive smaller cuts in tariffs. However, very recent acceded members benefit from tariff-reduction exemption.[2] The NAMA

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[1] These are frequently called paragraph 6 countries because of the paragraph in the 2004 Framework Agreement that introduced this provision.

[2] Georgia is not included in the VRAM list for the NAMA negotiation, although it is in the AMA case.
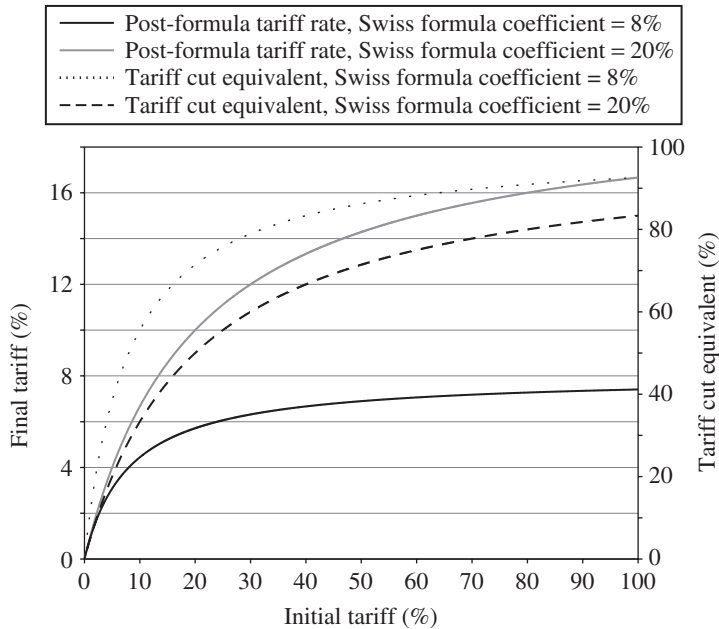
Figure 3.1: *Results of the Swiss formula for tariff cutting (in percent).*

proposal includes provision for sectoral initiatives, for which participation is not mandatory, but agreement is to be reached when 90% of world trade is included. In most proposals of this kind, the intention is to move to zero tariffs on all products in the industrial countries, with a relatively small number of exceptions permitted to developing countries (see Chapter 11).

3   SPECIFYING CUTS IN TARIFFS

As in the case of the agricultural modalities, the negotiated cuts in tariffs are based on bound tariff rates, while their implications for market access and for economic welfare depend largely on their implications for applied rates. Also, as with the agricultural tariff cuts, we use the MAcMap-HS6 version 2.1 database (Boumellassa *et al* 2009) for 2004 together with a set of bound tariff rates for which *ad valorem* equivalents have been calculated on the same basis. We first cut the bound tariff rates using the approaches considered in the modalities, then assess their implications for applied rates. In those cases where the modalities involve a range, we generally use the mid-point of that range. The specific choices of parameters used are set out in Table 2.2. In

this analysis, we use the conventional assumption that applied rates are not reduced unless the new bound rate falls below the initial applied rate.[3]

The tariff-reduction formulas and the flexibilities are intertwined in the sense that countries are frequently willing to consider more ambitious formulas when they have the flexibility to make smaller cuts for some products (see Jean *et al* 2010, 2011). A major problem for negotiators in this situation is that the 'price' paid for the flexibilities, in terms of efficiency and market access, is difficult to evaluate. In our analysis, we make a distinction between the cuts without flexibility and those resulting from the formula with flexibility. This decomposition is useful in order to allow some estimate to be made of the implications of the flexibilities, as long as it is recognised that agreement on the particular formulas was almost certainly contingent on the presence of flexibilities.

For the industrial countries, the NAMA formula can simply be applied to the bound tariffs because there are no exceptions. Since the gaps between bound and applied rates are typically small in today's industrial countries—many of whom have been through eight previous rounds of multilateral negotiations— the formula cuts frequently translate directly into cuts in applied rates. Other simple cases include the LDCs, who are not required to make any cuts. Initial investigations led us to conclude that the only SVE required to undertake cuts in applied rates would be Gabon.[4] For the cases where the formula is to be applied, the selection of products to be accorded flexibility was a multistage process, and it was necessary to examine the full range of choices available before the regime involving the least political cost could be identified. This was done in the manner of Jean *et al* (2010, 2011) by identifying a policymaker's objective function that explains the initial choice of tariffs, then seeking the choice of tariffs consistent with the constraints of the tariff-cutting rule that would minimise the loss of policymaker's welfare, assuming a constant elasticity of substitution demand system.

The political welfare gains associated with each of the potential five choices of regime were evaluated subject to the constraints identified in Table 3.1 for each of the 22 developing countries undertaking tariff reductions with the Swiss formula. This table also presents estimates of the initial and final bound tariffs for these countries. An interesting feature of the results presented in the table is the wide range of likely choices. For members with low and uniform tariffs such as Chile, Hong Kong (China) and Singapore, a choice of the highest coefficient with no flexibilities is likely to yield the lowest political

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[3]This assumption neglects the important value that can arise from bindings above current applied rates, ruling out incidents of higher tariffs in the future (Francois and Martin 2004).

[4]Gabon may need to renegotiate some of its bound tariff commitments since it is a member of the central Africa Custom Union, CEMAC, other members of which are either LDCs or developing countries with low binding coverage and therefore exempt from any requirement to change their applied tariffs.

Table 3.1: *Tariff-cutting formula menu for the NAMA negotiations.*

	Developed	Developing	LDCs	SVEs	Paragraph 6
Formula Flexibility	Swiss 8 None	20 (i) no cuts on 6.5%/7.5% of lines/imports; 20 (ii) $\frac{1}{2}$ cuts on 14%/16% of lines/imports; 22 (i) no cuts on 5%/5% of lines/imports; 22 (ii) $\frac{1}{2}$ cuts on 10%/10% of lines/imports; 25 no flexibilities	No cuts	No cuts	No cuts
Unbound	MFN 2001 + 25%				

Members self-select developing or developed country status. Members likely selecting developed-country status include the 27 members of the EU, plus Australia, Canada, Iceland, New Zealand, Norway, Switzerland and the United States. The Republic of Korea is a developed country for NAMA. Least developed countries are as identified in the UN list. Economies treated as SVEs for NAMA were Antigua and Barbuda, Barbados, Belize, Bolivia, Botswana, Brunei Darussalam, Cameroon, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Fiji, Gabon, Georgia, Ghana, Grenada, Guatemala, Guyana, Honduras, Jamaica, Jordan, Kenya, Macau, Mauritius, Mongolia, Namibia, Nicaragua, Panama, Papua New Guinea, Paraguay, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sri Lanka, Trinidad and Tobago, Uruguay and Zimbabwe. Paragraph 6 economies (those with less than 35% of tariffs bound) were identified as Cameroon, Congo, Cuba, Ghana, Kenya, Macau, China, Mauritius, Nigeria, Sri Lanka, Suriname and Zimbabwe. The following VRAMs are not required to make any tariff cuts beyond their accession commitments: Albania, Armenia, Cape Verde, Former Yugoslav Republic of Macedonia, Kyrgyz Republic, Moldova, Mongolia, Saudi Arabia, Tonga, Vietnam and Ukraine.

'pain'. For countries with higher and less uniform applied tariffs, the choice is less obvious. Using our methodology, which takes into account the value of trade and the squared reduction in the price of each good, we find that twelve countries are likely to opt for the lowest coefficient, 20%. Of these, most would likely choose half-formula cuts on no more than 14% of tariff lines and 16% of trade. An additional seven members are assumed to opt for 22%, with all but one electing for no cuts on no more than 5% of tariff lines and 5% of trade. The tariff scenarios reported are as follows.

(0) Tariffs that would apply in the absence of a DDA agreement in 2025. Based on tariffs in 2004, with adjustments for internationally binding commitments to reform. The Japanese generalised system of preferences (GSP) for LDCs has been updated based on 2007 improvements.

(B) Tariffs following implementation of the DDA formula without flexibilities.

(C) Tariffs following implementation of the formula with country exceptions, such as those for LDCs, SVEs and RAMs.

(D) Tariffs after the tariff-cutting formulas with flexibilities for countries and products

Table 3.2: *Choice of flexibility regime by developing countries using the Swiss formula.*

	Coefficient/ flexibility	Initial average bound tariff	Final average bound tariff
Argentina	22 (i)	31.5	15.0
Brazil	22 (i)	29.9	14.0
Chile	25	25.0	12.4
Colombia	22 (i)	35.2	14.7
Costa Rica	22 (i)	33.8	12.3
Egypt, Arab Rep. of	20 (i)	24.7	11.7
Hong Kong (China)	25	11.2	5.5
India	22 (ii)	32.2	13.3
Indonesia	22 (i)	35.1	14.2
Israel	20 (ii)	16.8	8.0
Malaysia	20 (ii)	12.5	7.7
Mexico	22 (i)	35.1	14.7
Morocco	20 (i)	40.2	15.5
Peru	20 (i)	30.0	12.5
Philippines	20 (i)	15.3	7.1
Singapore	25	9.1	5.0
Thailand	20 (i)	23.3	11.4
Macedonia, FYR	20 (ii)	11.0	11.0
Tunisia	20 (i)	42.6	16.1
Turkey	20 (ii)	20.6	10.3
United Arab Emirates	20 (i)	13.9	8.8
Venezuela	22 (i)	33.1	14.3

4   IMPLICATIONS FOR TARIFF BARRIERS LEVIED AND FACED

The tariff-cutting formulas are applied to bound tariffs, rather than to applied tariffs, and hence it is useful to first examine the implications of the formula and exceptions for the level of bound tariffs. We use the standard assumption in this literature that the applied rate at the finest available level is cut only when, and to the extent that, the new bound tariff falls below the initial applied tariff rate. We first present estimates of the average bound rates resulting from application of the formulas, and then turn to the average applied rates.

Bound Tariffs Levied on NAMA Products

Table 3.3 presents results for the tariffs used as a basis for cutting NAMA tariffs under the proposed agreement. For the industrial countries, these are generally bound tariffs currently scheduled at the WTO, although industrial countries do still have a few unbound tariffs, frequently on products such as oil. For developing countries, many non-agricultural tariffs are currently unbound and the tariffs used as a basis for cutting are the applied MFN tariff plus 25 percentage points.

The 'bound' tariff rates used in the analysis are presented in Table 3.3 for the baseline tariffs and the tariffs resulting after application of the formulas and exceptions. A comparison of the base column with column B reveals that application of the tariff-cutting formulas without exceptions would result in very sharp reductions in average bound tariffs. Globally, the average NAMA bound tariff would fall by 53%, from 9.9% to 4.7%. In developing countries, the reduction resulting from the formula would be broadly similar, at 51%, with the smaller cuts associated with the higher Swiss formula coefficients being balanced by the larger cuts imposed on the generally higher tariffs in developing countries.

In the industrial countries, the formula cut brings about substantial percentage cuts in all cases and, in the absence of flexibilities, the formula-cut outcome in column B is the final outcome. While this is not shown, the nature of the Swiss formula means that tariff escalation and the prevalence of tariff peaks are dramatically reduced. In developing countries, the flexibilities mean that the reductions in average tariffs, and the reductions in tariff dispersion, are reduced to some degree once flexibilities are considered. For developing countries as a group, the trade-weighted-average tariff decline is from 22.3% to 12.3% when flexibilities are taken into account, instead of 10.9% without flexibilities. For LDCs and SVEs, the flexibilities make a very large difference, replacing the requirement to reduce bound tariffs with increases in the coverage of tariff bindings.

4.1   Applied Tariffs Levied

Moving to the reductions in applied tariff rates in Table 3.4, we see that, if the formulas were applied without exceptions,[5] average applied tariffs would fall from 2.9% to 2.0%. In the high-income countries, the reduction is from 1.6% to 1.0%, a reduction of 0.6 percentage points. In non-LDC low- and middle-income countries, the reduction is estimated to be from 6.1% to 4.6%, or 2.5 percentage points: a cut of four-tenths of the original tariff. In some developing countries, such as Bangladesh,[6] Pakistan and Thailand, application of the formula without exceptions would appear to result in substantial cuts in average tariffs. When we consider the group of countries that would apply the standard developing-country formula, the reduction in tariffs is from 3.9% to 3.1%, a cut of 0.8 percentage points: a much smaller cut than would apply were this formula applied to the RAMs and SVEs.

The exceptions for country groups such as LDCs, SVEs and RAMs included in scenario C reduce the cut in the weighted-average NAMA tariff in developing

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[5]Under this no-flexibility scenario, a coefficient of 25 is chosen for all developing countries.

[6]In this scenario, no DFQF initiative for LDCs is considered.

Table 3.3: *Average (trade-weighted) bound tariffs levied on WTO non-agricultural products by scenario (in percent).*

Regions	Scenarios			
	0	B	C	D
Australia and New Zealand	10.7	3.2	3.2	3.2
Bangladesh	43.8	15.4	43.8	43.8
Brazil	29.9	13.2	13.2	14.0
Canada	4.8	2.3	2.3	2.3
Chile	25.0	12.4	12.4	12.4
China	5.7	3.9	3.9	4.4
Egypt, Arab Rep. of	24.7	10.8	10.8	11.7
EU27	3.1	1.6	1.6	1.6
Hong Kong (China) and Singapore	10.4	5.3	5.3	5.3
India	32.2	12.8	12.8	13.3
Indonesia	35.1	13.7	13.7	14.2
Japan	4.6	1.5	1.5	1.5
Korea, Rep. of and Taiwan (China)	8.1	3.2	3.2	3.4
Middle East and North Africa	41.2	15.0	15.0	15.7
Mexico	35.1	14.4	14.4	14.7
Nigeria	47.3	28.5	28.5	28.5
Pakistan	41.5	23.0	23.0	23.0
Rest of Europe	4.0	1.7	1.7	1.7
Rest of Latin America and the Caribbean	32.1	18.4	18.4	18.6
Rest of Southeast Asia	18.5	8.9	12.8	13.8
South Africa	17.8	9.4	9.4	10.3
Sub-Saharan Africa	40.0	20.3	36.9	36.9
Thailand	23.3	10.0	10.0	11.4
Turkey	20.6	10.2	10.2	10.3
United States	2.5	1.3	1.3	1.3
World Bank classification				
All countries	9.9	4.7	5.2	5.3
Low- and middle-income countries	22.3	10.9	11.8	12.3
High-income countries	4.6	2.1	2.1	2.1
LDCs	40.9	14.3	40.9	40.9
WTO classification				
Developed WTO	3.9	1.7	1.7	1.7
Developing WTO non-LDCs	18.7	9.3	9.9	10.3
Normal developing WTO	21.2	9.4	9.4	9.9
RAM WTO	40.7	24.9	25.0	25.0
SVE WTO	8.8	5.4	7.3	7.7

countries as a group. With these exceptions, the average tariff is 5.0% after the cut, rather than 4.6%, implying a reduction of 0.4% in the average for non-LDC developing countries. The introduction of product flexibilities in scenario D requires that countries choose a coefficient from the sliding scale or menu

of options between degrees of flexibility and coefficient values. Choosing greater flexibility means choosing a lower coefficient, introducing a 'price' for using flexibilities through larger cuts on other tariffs, and results in quite different choices between countries, as noted in the discussion of Table 3.3. Implementing these exceptions is found to reduce the size of the cut for developing countries as a group by 0.3 percentage points, as well as allowing countries the flexibility to choose a pattern of tariffs that is more consistent with their policy preferences.

4.2   Applied Tariffs Faced

In NAMA, the average tariff barrier falls from 2.9% to 2.0% for the world as a whole when the formulas are implemented without exceptions. For the high-income countries, this reduction is 0.9 percentage points, from 3.0% to 2.1%, while the reduction for non-LDC developing countries as a group is 1%. For LDCs, which face tariff peaks despite preferences, the reduction in the tariff that they face is larger, at 1.3 percentage points. Pakistan also benefits from a particularly large reduction in the average tariff that it faces, from 6.5% to 3.8%.

Partly because the industrial countries have no flexibilities, and partly because the flexibilities for developing countries are subject to meaningful disciplines, the increases in NAMA tariffs faced when flexibilities are introduced are more modest than in the case of agriculture. For the high-income countries, the tariff faced after application of the formula increases from 2.1% to 2.4%, but remains far below its original level of 3.0%. For developing countries, the tariff faced declines from 2.9% to 2.1%, a substantially larger cut than for the industrial countries. The flexibilities increase the tariff faced by only 0.2%, much less than for the high-income countries. While flexibilities result in higher tariffs faced, these remain much lower than before implementation. In addition, developed countries exporting to emerging markets in Asia will suffer significantly from the flexibility in NAMA: the average faced by exporters of industrial products will jump from a potential 3.0% to 3.5% for Japan, and from 2.0% to 2.6% for Australia and New Zealand.

In many cases, it is the nature of the tariff-cutting formula, rather than the flexibilities, that primarily accounts for the modest size of the cuts in tariffs facing some countries. For the United States, the average NAMA tariff faced declines from 1.8% to 1.4% when the formula is applied without exceptions, a decline of 22% from its initial level. Allowing for flexibilities increases the final tariff to 1.5%, leaving a still worthwhile 17% cut from the initial tariff level. Had the tariffs facing the United States fallen by the same proportion as average NAMA cuts, the cuts would have been 31% from the formula, and 21% from the formula with flexibilities. The smaller cut in U.S. tariffs mainly results from the structure of the tariffs facing the United States—with relatively low tariffs (and hence small Swiss-formula cuts)—on many important exports. The case

Table 3.4: *Average (trade-weighted) applied tariffs levied on WTO non-agricultural products by scenario (in percent).*

Regions	Scenarios			
	0	B	C	D
Australia and New Zealand	3.6	2.4	2.4	2.4
Bangladesh	18.3	12.5	18.3	18.3
Brazil	8.5	7.4	7.4	7.8
Canada	0.9	0.5	0.5	0.5
Chile	1.9	1.9	1.9	1.9
China	5.6	3.9	3.9	4.4
Egypt, Arab Rep. of	8.2	6.3	6.3	7.6
EU27	1.8	1.0	1.0	1.0
Hong Kong (China) and Singapore	0.0	0.0	0.0	0.0
India	12.9	11.7	11.7	12.0
Indonesia	3.9	3.5	3.5	3.9
Japan	1.3	0.7	0.7	0.7
Korea, Rep. of and Taiwan (China)	4.0	2.8	2.8	3.1
Middle East and North Africa	16.2	9.3	9.3	9.9
Mexico	3.0	2.5	2.5	2.5
Nigeria	21.4	13.0	21.4	21.4
Pakistan	15.3	11.0	15.3	15.3
Rest of Europe	0.2	0.1	0.1	0.1
Rest of Latin America and the Caribbean	7.6	6.5	6.7	6.9
Rest of Southeast Asia	5.7	3.6	4.6	5.4
South Africa	4.6	3.2	3.2	4.2
Sub-Saharan Africa	9.9	7.5	9.9	9.9
Thailand	8.1	5.4	5.4	6.7
Turkey	1.0	0.6	0.6	0.7
United States	1.5	0.8	0.8	0.8
World Bank classification				
All countries	2.9	2.0	2.2	2.3
Low- and middle-income countries	6.1	4.6	5.0	5.3
High-income countries	1.6	1.0	1.0	1.0
LDCs	10.9	8.0	10.9	10.9
WTO classification				
Developed WTO	1.7	1.0	1.0	1.0
Developing WTO non-LDCs	4.8	3.6	3.8	4.2
Normal developing WTO	3.9	3.1	3.1	3.4
RAM WTO	9.5	7.1	9.5	9.5
SVE WTO	5.3	3.9	4.0	4.4

of Bangladesh is quite the opposite, with the average applied tariff falling by roughly half because of the frequency of high tariffs on exports of textiles and clothing. Again, however, the result is not greatly affected by the introduction of the NAMA flexibilities.

Table 3.5: *Average (trade-weighted) applied tariffs facing exporters of non-agricultural goods (in percent).*

Regions	Scenarios			
	0	B	C	D
Australia and New Zealand	2.9	2.0	2.1	2.6
Bangladesh	3.7	1.7	1.7	1.8
Brazil	2.6	1.9	2.0	2.2
Canada	0.4	0.3	0.3	0.3
Chile	1.7	1.4	1.4	1.5
China	3.8	2.3	2.4	2.5
Egypt, Arab Rep. of	2.7	2.0	2.1	2.1
EU27	3.6	2.7	2.8	3.0
Hong Kong (China) and Singapore	3.7	2.5	2.7	2.8
India	4.6	3.1	3.5	3.6
Indonesia	3.4	2.2	2.4	2.5
Japan	4.5	3.0	3.1	3.5
Korea, Rep. of and Taiwan (China)	3.8	2.6	2.7	2.9
Middle East and North Africa	1.2	0.8	1.0	1.1
Mexico	0.3	0.3	0.3	0.3
Nigeria	1.4	1.4	1.4	1.4
Pakistan	6.5	3.8	4.2	4.2
Rest of Europe	1.2	1.0	1.0	1.0
Rest of Latin America and the Caribbean	2.6	1.9	1.9	2.0
Rest of Southeast Asia	2.4	1.4	1.5	1.5
South Africa	2.9	2.3	2.6	2.7
Sub-Saharan Africa	2.1	1.4	2.0	2.0
Thailand	3.4	2.2	2.4	2.5
Turkey	2.1	1.3	1.4	1.5
United States	1.8	1.4	1.4	1.5
World Bank classification				
All countries	2.9	2.0	2.2	2.3
Low- and middle-income countries (non-LDC)	2.9	1.9	2.1	2.1
High-income countries	3.0	2.1	2.2	2.4
LDCs	2.8	1.5	1.7	1.8
WTO classification				
Developed WTO	2.9	2.1	2.2	2.4
Developing WTO non-LDCs	3.0	2.0	2.1	2.2
Normal developing WTO	2.4	1.7	1.8	1.9
RAM WTO	3.4	2.1	2.4	2.4
SVE WTO	3.6	2.3	2.5	2.5

5   CONCLUDING COMMENTS

This assessment of the proposed NAMA agreement finds much to commend it. The formulas used would bring about substantial reductions in the highest tariffs on non-agricultural goods. The simple weighted-average measures of

tariff reduction used in this chapter result in significant reductions in the average applied tariffs faced by exporting countries, and hence expansions in their market access from the use of these formulas. While these benefits are reduced to some degree by the flexibilities available to developing countries, the extent of the reduction appears to be within manageable limits. This is partly because these flexibilities—unlike those in the draft agreement on agriculture—take into account the importance of the goods being allowed flexibilities, rather than merely the number of tariff lines affected.

If the formulas were implemented without exceptions, most countries would see substantial reductions in the tariffs that they face, with the worldwide average tariff falling from 2.9% to 2.0%. In this case, flexibilities are confined to developing countries, and result in the final global-average tariff increasing from 2.0% to 2.3%. A number of developing countries, such as Pakistan, India, China and Bangladesh, face substantially higher initial tariffs and experience larger improvements in market access. The average tariff measures used in this chapter do not take into account a key desirable feature of the NAMA liberalisation: that the reductions in tariffs are largest on the products with the highest initial tariffs, and that these products are likely to become substantially more important as exports as the tariffs on them decline. These features of the liberalisation are taken into account in subsequent chapters, including Chapter 10, where optimal weighting approaches are used to take into account the impact of changes in the product weights as tariffs are reduced.

An interesting and important finding is that the flexibilities proposed for NAMA do much less damage to market-access opportunities than is the case for agriculture. For the United States, for example, the flexibilities increase the average NAMA tariff faced by only 0.1 percentage points relative to the formula without exceptions. For Europe, the loss is slightly larger, at 0.3 percentage points. These flexibilities unfortunately do much more damage to countries and regions more heavily dependent on exports to developing countries, such as sub-Saharan Africa or the LDCs. While the overall cut in the NAMA tariffs facing the United States is only one-sixth of its initial level, the reason for this small cut is mainly the interaction between the pattern of tariffs facing the United States and the Swiss formula, rather than being a consequence of exceptions.

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The WTO Agricultural Modalities Proposals and Their Impact on Domestic Support in the EU and the United States

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1   DRAFT MODALITIES FOR AGRICULTURE

The WTO Doha negotiations on agriculture are premised on the notion that constraints introduced on domestic and trade policies in the Uruguay Round, though useful in themselves, need to be strengthened if the trading system is to become fully responsive to the needs of the global marketplace. One aspect is the enhancement of existing disciplines on domestic support, in particular to encourage countries to shift to less trade-disruptive policy instruments. The negotiations have made substantial progress in identifying ways in which domestic support that threatens to distort trade can be further constrained. Among the improvements is the introduction of a measure of the 'overall trade-distorting support' (OTDS) to complement the aggregate measurement of support (AMS) that was developed and constrained in the Uruguay Round.[2] The AMS would be strengthened through product-specific limits. The blue box, currently encompassing policies that are linked to supply control, would be expanded to embrace payments made on a fixed area and yield (or the equivalent for livestock) without requiring supply control. Total blue-box payments would also be limited and product-specific blue-

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[2]The base period OTDS is defined as the sum of the 'final bound' total AMS from the Uruguay Round agreement, 10% of the value of production in the 1995–2000 base period (to match the current product-specific and non-product-specific *de minimis* amounts that are excluded from the total AMS), and the larger of the blue-box support in the base period, or 5% of the base period value of production.

box caps would be introduced. The amount of *de minimis* support excluded from the notified current total AMS under the Uruguay Round Agreement on Agriculture (URAA) would be reduced, and certain provisions in the green box would be modified.

The United States and the EU are the most important economies in any discussion of domestic support measures, partly because their domestic support is so much larger than other countries, partly because of the symbolism of these domestic 'subsidies', and partly because no other major economies are likely to be disciplined (Hart and Beghin 2006). Given the complexity of the proposals, and the policies, a key question is whether expanded disciplines will have a marked effect on the conduct of domestic farm policy in the United States and the EU. If the actual level of payments is below the new caps, the DDA requirements would serve to reduce policy flexibility rather than forcing change per se, although constraints above the average rate of protection can be expected to reduce its average level, its variance and the cost of protection (Francois and Martin 2004). The impact of WTO rules will depend upon the evolution of domestic policy in relation to the new constraints and on future world market conditions. Assessing whether or not there is likely to be a 'real' impact on farm policy in the EU and the United States is the primary motivation for this chapter.

The long-standing chairman of the negotiating committee for agriculture, Crawford Falconer, issued periodic assessments of where a future Doha agreement may lie, including the depth of cuts and changes in the rules regarding domestic support (the 'modalities' of an agreement). The latest draft 'modalities' document was issued on 6 December 2008 and is the fourth revision. The aim in distributing the 'Rev. 4' document was to capture the progress made in intensive negotiations that took place prior to and during a meeting of several trade ministers in July 2008. The hope that agreement on the agricultural modalities could have been reached in time for the round to be concluded by the end of 2008 proved optimistic, but the range of unresolved issues was narrowed. Talks have continued in Geneva. There has been substantial progress on technical issues, so discussion of draft schedules could be expected to proceed rapidly if a final agreement can be reached on modalities.

One important factor for the translation of the provisions of the DDA into constraints on individual countries is that, unlike the rules introduced in the URAA, some of the disciplines envisaged are applied on a country-specific basis. This is manifested in two ways. Required reductions in the elements of domestic support are differentiated by 'tiers' related to existing URAA bound levels (in the case of the AMS) or new base period levels (in the case of the OTDS). Since countries fall into specific categories on the basis of these measures, the reductions differ. Indeed, the tiers were chosen specifically to encompass particular countries without the need to name them (a sensitive issue in a multilateral negotiation). However, initial values and reductions in

product-specific AMS and blue-box support do indeed cross that line, with the United States named in paragraphs 23 and 42 for separate, albeit parallel treatment. For the blue-box limits, the draft modalities actually includes an annex specifically devoted to the U.S. situation.

Reflecting this differing treatment, the main disciplines suggested in the draft modalities are shown in Tables 4.1 and 4.2 for the United States and the EU, respectively. The proposals would place a limit on OTDS in each country. The proposed reduction from the base level OTDS is higher for the EU. For the United States, the base period OTDS would comprise the final bound total AMS from the URAA, 10% of the 1995–2000 value of agricultural production (the current *de minimis* allowances), and an additional 5% of the value of production to accommodate future blue-box payments (to correspond to the price-based counter-cyclical payments (CCPs) introduced in the 2002 Farm Act).[3] The difference for the EU is that the base OTDS would include the actual average blue-box payments in the base period, since they exceeded 5% of the value of agricultural production.

The OTDS limit would be subject to a reduction of 70% over the implementation period of the agreement for the United States, with an initial reduction of one-third. The EU OTDS would also be reduced initially by one-third and by 80% in total. There would be a phased reduction of 60% in the final bound total AMS for the United States and 70% for the EU, with an initial reduction of 25% in both cases. Product-specific limits would be imposed on the AMS, binding these at base period levels. Reductions in the *de minimis* percentages (both product-specific and non-product-specific) would be 50% from current allowances (*ie* reduced to a maximum percentage of 2.5% of the relevant production value) effective from the first day of the implementation period. The blue box would have a limit, based on 2.5% of the value of production in the base period. In addition, there would be a limit on product-specific blue-box support on the basis of base period levels for the EU and determined with respect to the legislated maximum of qualifying payments under the 2002 Farm Act for the United States.[4] The cotton AMS would be reduced by a higher percentage (82% in the United States and 84% in the EU) than for all commodities, and the cut would be more rapid. The implications of these changes for the United States are shown in Table 4.3 and for the EU in Table 4.4.

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[3]These are currently notified to the WTO as non-product-specific support by the United States.

[4]The calculation is described in paragraph 42 of the draft modalities. The blue-box limit for each commodity would be based on either 110% or 120% of the amount obtained by applying the share of the legislated maximum expenditure for each commodity to 2.5% of the total value of production during the 1995–2000 base period.

Table 4.1: *Main domestic support provisions of the revised draft modalities (6 December 2008) as applied to the United States.*

Item	Initial values	Reduction
OTDS	Base OTDS = final bound total AMS + 15% of the average value of domestic production for 1995–2000	Total reduction of 70%. Immediate reduction of one-third at beginning of implementation period; remaining reductions in five equal steps
Total AMS	Base level is final bound total AMS (from Uruguay Round schedules)	Base level reduction of 60%. Immediate reduction of 25% at beginning of implementation period: remaining reductions in equal steps over five years
Product-specific AMS	Derived by applying product-specific AMS averages for 1995–2004 to total product-specific AMS average for 1995–2000[a]	Implemented in full on first day of implementation period, except when product-specific AMS in two most recent years is higher. Then limits implemented in three equal installments with starting point being the lower of the two year averages or 130% of the scheduled limit
De minimis	Current allowance of 5% of current value of production	Reduction of 50% effective on the first day of the implementation period. Additional reduction if necessary to satisfy the OTDS binding in any given year during the implementation period
Blue box	Counter-cyclical payments based on fixed and unchanging areas and yields, and 85% of fixed and unchanging base production would qualify	Capped at 2.5% of the average value of production for 1995–2000 from the first day of the implementation period

As indicated by Table 4.3 the U.S. base OTDS, from which reductions would be measured, would be $48.2 billion. The final bound OTDS would be roughly $14.5 billion. The total AMS limit would fall from $19.1 billion to $7.6 billion. The United States would have a maximum blue-box entitlement of roughly $4.9 billion. There would be a base value of $800 million for the AMS for cotton.

The quantitative implications of the proposals for the EU are summarised in Table 4.4. The base OTDS from which reductions would be measured would be €119.1 billion (for the EU27) and the final bound OTDS would be €23.8 billion. The AMS limit would be reduced from the current level of €72.2 billion to €21.7 billion (again for the EU27), given reasonable assumptions about how the 12 new members that have joined the EU since the inception of the WTO

Table 4.1: *Continued.*

Item	Initial values	Reduction
Product-specific blue box	(110)/(120)% of amounts derived from applying proportionately legislated maximum permissible expenditure under 2002 Farm Act to 2.5% average value of domestic production for 1995–2000; values as specified in the modalities	Scheduled limit can be increased with corresponding decrease in product-specific AMS (two-to-one) ratio for cotton. Limit can be increased during the implementation period subject to overall blue-box limit being respected
Additional cotton provisions		AMS reduction of 82.22% over two years. Product-specific blue-box limit to be one-third of that otherwise applicable

[a]Qualifications apply if product-specific AMS amounts above *de minimis* levels have been introduced since the base period (paragraph 24) or the product-specific AMS was below the *de minimis* level during each year of the base period (paragraph 25). In the former case, an average of the two most recent notified AMS values can be used as the base; in the latter case, the *de minimis* level for the base period may be used.

Source: authors' summary based on WTO (2008).

would affect the total reduction obligation.[5] However, the size of the cut could lead to contention. If the pre-membership statuses of these new members were considered relative to the draft modalities, they would be placed in the lowest category of AMS countries, and thus would only be obliged to cut their final bound total AMS by 45%. An aggregation of those amounts would give a higher final bound total AMS than reported in the table.[6] This would imply a slightly smaller cut for the EU27 than the full 70%.[7]

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[5]Most of the 12 new members that have joined the EU since 1995 have themselves notified support under the URAA. Ten new members joined the EU in May 2004 (Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia and Slovakia). Romania and Bulgaria joined in 2007. Of these 12 new members, 4 countries (Estonia, Lithuania, Malta and Romania) have bound AMS ceilings at zero (Butault and Bureau 2006). Poland, Hungary and the Czech Republic have significant AMS ceilings. Hungary is expected to be able to modify its own AMS ceiling in order to account for inflation before that amount is added to the EU limit. The choice of exchange rate for countries whose notifications are not in euros could also affect the final figure.

[6]A similar qualification should be made in the case of the base OTDS, as the final bound total AMS is a component of that base level. If the base OTDS for the EU27 was calculated from the aggregate of the EU15 and the base OTDS for each of the 12 new members, a slightly different figure would result.

[7]The agreement on a higher reduction on the product-specific AMS for cotton, which would result in a cut of 84% based on a general AMS cut of 70%, would marginally increase the average AMS cut.

Table 4.2: *Main domestic support provisions of the revised draft modalities (6 December 2008) as applied to the EU.*

Item	Initial values	Reduction
OTDS	Base OTDS = final bound total AMS + 10% of the value of production in the base period (1995–2000) + average blue-box payments in base period[a]	Base level reduction of 80%. Immediate reduction of one-third at beginning of implementation period: remaining reductions in five equal steps
Total AMS	Base level is final bound total AMS (from Uruguay Round schedules)	Base level reduction of 70%. Immediate reduction of 25% at beginning of implementation period: remaining reductions in equal steps over five years
Product-specific AMS	Base level is average of 1995–2000	Base period levels not to be exceeded[b]
De minimis	Base level is 5% of value of production for non-product-specific support and 5% of the value of production of products that receive product-specific support	Reduction of 50% from the start of the implementation period
Blue box		Capped at 2.5% of value of production in base period (1995–2000) applied from start of implementation period
Product-specific blue box		Product-specific caps at average value in 1995–2000 period[c]
Cotton AMS		Reduced by 84.29% in two years, with a 25% reduction at the start of the implementation period

[a]Blue-box payments exceeded 5% of value of production in base period. [b]Qualifications apply where product-specific AMS amounts above *de minimis* levels have been introduced since the base period (paragraph 21) and where the product-specific AMS was below the *de minimis* level during each year of the base period (paragraph 25). In the former case, the two most recent (notified) AMS levels may be taken as the base: in the latter case, the *de minimis* level may be used. [c]Qualifications apply when blue-box support was not provided for the whole of the base period (paragraph 41) and where there is a corresponding one-for-one reduction in the AMS for a product (paragraph 43). In the first case the EU can use the average of three years' blue-box payments and for the second the 'transferred' support may exceed the blue-box limit for that product.

Source: authors' summary based on WTO (2008).

The revised draft modalities document is also specific with regard to the timeframe for the implementation of the new disciplines, although obviously the date at which the implementation would start is still uncertain. The analysis assumed implementation starting in 2011. The (crop, budget or calendar) year starting in 2011 would therefore be the 'first year' of the

Table 4.3: *Calculation of OTDS, total AMS and total blue-box commitments for the United States.*

URAA final bound total AMS ($ million)	19,103.3
Value of production (average 1995–2000) $ million	194,139.3
10% value of production (average 1995–2000) ($ million)	19,413.9
5% value of production (average 1995–2000) ($ million)	9,707.0
Base OTDS ($ million)	48,224.2
OTDS: 70% reduction ($ million)	14,467.3
DDA final bound total AMS: 60% reduction $ million	7,641.3
AMS/production 1995–2000 (%)[a]	5.4
Total blue box 2.5% value of production: 1995–2000 ($ million)	4,853.5
Base AMS for cotton ($ million)	800.5
Cotton AMS reduction: with 60% total AMS reduction (%)[b]	82.2

[a]Test for the application of paragraph 15 is less than 40%; additional effort does not apply.
[b]Application of the cotton reduction formula paragraph 55.
Source: authors' calculations based on WTO notifications.

Table 4.4: *Calculation of OTDS, total AMS and total blue-box commitments for the EU27.*

URAA final bound total AMS (€ million) for EU27	72,224
Value of production (€ million) for EU27	259,269
10% value of production: 1995–2000 (€ million)	25,927
5% value of production: 1995–2000 (€ million)	12,963
Blue box (in excess of 5% value of production)[a]	20,888
Base OTDS EU15	119,059
OTDS: 80% reduction (€ million)	23,812
DDA final bound total AMS: 70% reduction (€ million)	21,673
AMS/production 1995–2000 (%)[b]	18.7
Total blue box	
2.5% value of production: 1995–2000 (€ million)	6,482
Average blue box relative to base OTDS (%)[c]	30.1
Cotton	
Base AMS for cotton (€ million)	753
Cotton AMS reduction: assuming 70% total AMS reduction (%)[d]	84.3

[a]Test for paragraph 1 condition, picks up blue box when above 5% of production value. [b]Test for application of paragraph 15, less than 40%, additional effort does not apply. [c]Test for paragraph 39: less than 40% so no phased reduction allowed. [d]Application of cotton reduction formula, paragraph 55 for AMS.
Source: authors' calculations based on WTO (2008) and WTO notifications.

agreement. The fifth year of the agreement would be 2015 and by that time the cuts would have to be fully implemented. This proposed phase-in is shown in Table 4.5 for the United States and in Table 4.6 for the EU.

Table 4.5: *Phased reductions of OTDS, AMS and de minimis limits under the revised draft modalities for the United States.*

	Immediate	Year 1	Year 2	Year 3	Year 4	Year 5
Reductions: proportions of the base OTDS and AMS to be cut						
OTDS: 70% reduction[a]	0.33	0.40	0.48	0.55	0.63	0.70
AMS 25% initial; 60% total reduction[b]	0.25	0.32	0.39	0.46	0.53	0.60
Cotton AMS 25% initial; 82.22% total[c]	0.25	0.25	82.22	82.22	82.22	82.22
Scheduled limits						
OTDS: 70% reduction ($ million)	32,310.2	28,741.6	25,173.0	21,604.4	18,035.8	14,467.3
AMS: 25% initial; 60% total reduction ($ million)	14,327.5	12,990.2	11,653.0	10,315.8	8,978.5	7,641.3
Cotton AMS: 25% initial; 82.22% total reduction ($ million)[d]	600.4	600.4	142.5	—	—	—
De minimis						
50% immediate reduction	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%

[a]Initial reduction of one-third with the remainder phased in in five equal steps (paragraph 15). [b]Initial reduction of 25% with the remainder phased in in five equal steps (paragraph 5). [c]Two-year phase-in period with higher total reduction percentage. [d]Implementation period is one-third of the general period.
Source: authors' calculations based on WTO (2008).

Table 4.6: *Phased reduction of OTDS and AMS, and de minimis limits under the revised draft modalities for the EU.*

	Immediate	Year 1	Year 2	Year 3	Year 4	Year 5
Reductions: proportions of the base OTDS and AMS to be cut						
OTDS: 33% initial; 80% reduction[a]	0.33	0.42	0.52	0.61	0.71	0.80
AMS: 25% initial; 70% total reduction[b]	0.25	0.34	0.43	0.52	0.61	0.70
Cotton AMS: 25% initial, 84.29% total[c]	0.25	0.55	0.84	0.84	0.84	0.84
Scheduled limits						
OTDS: 33% initial; 80% reduction (€ million)	79,373	68,260	57,148	46,036	34,924	23,812
AMS: 25% initial; 70% total reduction (€ million)	54,183	47,681	41,179	34,677	28,175	21,673
Cotton AMS: 25% initial; 84.29% total (€ million)[d]	564	341	118	118	118	118
De minimis						
50% immediate reduction	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%

[a]Initial reduction of one-third, with remainder phased in in five equal steps (paragraph 5). [b]Initial reduction of 25%, with remainder phased in in five equal steps (paragraph 15). [c]Two-year phase-in period for cotton, with higher total reduction percentage. [d]Implementation period for cotton specified as one-third of the general period.

Source: authors' calculations based on WTO (2008).

For both the United States and the EU, the OTDS limit would be cut by more than half by the end of the second year of the agreement, and by three-quarters in year four, if the higher reduction percentages are applied. The AMS limit would be cut in half by year three.

In addition to the constraints on total AMS and blue-box support, as noted above, the revised draft modalities document also proposes restrictions on product-specific AMS and blue-box amounts. These constraints might well be binding in specific instances. The revised draft suggests caps on product-specific AMS payments at the 1995–2000 levels. The methods used to calculate these caps differ for the United States and EU.

For the United States, the proposed starting point is the application of product-specific AMS averages for 1995–2004 to the notified total product-specific average for 1995–2000 (paragraph 23 of the draft modalities). The product-specific AMS limits are imposed in full on the first day of the implementation period, except when the product-specific AMS in the two most recent notified years (currently 2007–8) is higher (paragraph 24). In that case the limits are implemented with reductions in three equal installments, with the starting point being the lower of the two-year average or 130% of the average calculated as above. There are specific qualifications for cases in which product-specific AMS amounts in excess of *de minimis* levels have applied since the base period (1995–2004 for the United States). In that case, the 2006–7 average can be used as a base (paragraph 25). In addition, if support for a commodity was below *de minimis* throughout the period 1995–2000, the *de minimis* value for that period can be used (paragraph 26). These rather complex conditions are highly significant for the United States. Table 4.7 provides estimates of the product-specific AMS limits derived from applying the rules. The first column indicates which of the relevant conditions applies to each commodity.[8]

Overall, the application of the new rules preserves a considerable amount of 'policy space' by setting product-specific AMS limits at historical levels for virtually all important and minor U.S. agricultural commodities, even if notified support for some of these has been very small. There are only two commodities for which support has been notified by the United States that would not be eligible for AMS payments. One of these is avocados, for which a small amount of trade-adjustment assistance was notified to the WTO in 2005, but this does not qualify as establishing an AMS base. The commodity aggregate of beef, cattle and sheep, for which a modest amount of support was notified in 2006, also does not qualify, but support has been notified

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[8]In deriving some of these estimates it was necessary to supplement the information given in WTO notifications by other data, particularly on production values. The lack of data in a few cases required that assumptions be employed. As a result, the numbers in Table 4.7 should be viewed as estimates.

separately for each of the commodities that compose the aggregate, so a zero cap does not seem to be particularly significant.

As indicated by the final column of the table, the actual notified AMS in 2008 (the last year for which notifications had been provided by the United States at the time of writing) exceeded the year-three bindings for only three commodities (cotton, dairy and sugar). That year was one of particularly high prices for many commodities and the level of support was low in most cases. If prices were to decline to levels seen during the commodity slump of 1999–2001, for example, the product-specific limits could prove to be highly significant, particularly for politically important commodities such as corn.

The situation for cotton is especially noteworthy. If the conditions in the modalities were implemented, the cap applying to that commodity would be substantially reduced. A base value that would otherwise be roughly $1.5 billion is cut to $600 million in the first year of the implementation period, and to a final bound value of just under $143 million by the second year. That figure may be compared with an actual notified AMS for cotton of over $1.1 billion in 2008.

One interesting aspect of product-specific caps is that, if the methodology specified in the modalities is applied strictly, some commodities could be covered by more than one AMS limit. One important case concerns subsidy limits on livestock and on cattle and calves. The United States has notified payments on both of these product categories in the past (as well as in the beef, cattle and sheep category already discussed), so there may be some flexibility in future notification decisions.[9] A second case concerns support for 'orchards and vineyards' and its relationship to support for individual commodities, such as apples and grapes, which have also been notified separately.

The potential for ambiguity arises because of variations in the structure of notifications from year to year. It may have been difficult to apportion the support provided to a category of products (such as orchard and vineyard crops) to individual products in a particular year, even though notifications had been provided for those products in other years. However, the fact that commodity definitions have not been applied in a consistent manner in the notifications (presumably this was not challenged by other countries) and the tendency for support programmes to change over time appears to have opened up the possibility for the United States to create some additional 'policy space' in the AMS caps.

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[9]It is not entirely apparent what payments were included in the 'livestock' category. The historical value of production data from the National Agricultural Statistics Service does not precisely match the value of production data for the livestock category notified to the WTO, although data for cattle and calves (which has also been notified, though with zero support values) from the two sources are of a similar magnitude.

Table 4.7: *Product-specific AMS limits: United States ($ million).*

	Paragraphs	No blue-box trade-off				Notified AMS 2008
		Base	Year 1	Year 2	Year 3	
Apples	25	76.6	76.6	76.6	76.6	0.0
Apricots	25	1.8	1.8	1.8	1.8	0.0
Avocados	N/A	0.0	0.0	0.0	0.0	0.0
Barley	23, 26	27.4	27.4	27.4	27.4	0.0
Beef, cattle and sheep	N/A	0.0	0.0	0.0	0.0	0.0
Beef and veal	25	1,254.8	1,254.8	1,254.8	1,254.8	0.0
Blueberries, wild	25	1.8	1.8	1.8	1.8	0.0
Cattle and calves	25	1,255.4	1,255.4	1,255.4	1,255.4	0.0
Chickpeas	24	0.2	0.2	0.2	0.2	0.0
Corn	23, 26	1,106.4	1,106.4	1,106.4	1,106.4	0.0
Cotton	23, 26	1,136.1	600.4	142. 5	142. 5	1,130.0
Cranberries	25	10.7	10.7	10.7	10.7	0.0
Dairy	23, 26	5,030.3	4,947.2	4,864.0	4,780.9	3,973.0
Dry peas	24	34.8	34.8	34.8	34.8	0.0
Grapes	25	131.2	131.2	131.2	131.2	0.0
Hogs and pigs	25	512.8	512.8	512.8	512.8	0.0
Honey	23	2.9	2.9	2.9	2.9	0.0
Lentils	24	6.1	6.1	6.1	6.1	0.0
Livestock	25	1,255.4	1,255.4	1,255.4	1,255.4	0.0
Lychee	25	0.2	0.2	0.2	0.2	0.0
Minor oilseeds						
Canola	23	15.1	15.1	15.1	15.1	0.0
Crambe	24	0.0	0.0	0.0	0.0	0.0
Flaxseed	24	0.0	0.0	0.0	0.0	0.0
Mustard seed	23	0.1	0.1	0.1	0.1	0.0
Rapeseed	23	0.0	0.0	0.0	0.0	0.0
Safflower	23	0.5	0.5	0.5	0.5	0.0
Sesame	23	0.0	0.0	0.0	0.0	0.0
Sunflower	23	35.5	35.5	35.5	35.5	0.0

Table 4.8 shows the implications of product-specific limits on the AMS for the EU for 23 commodities where the base AMS was above €200 million. The requirement that the 1995–2000 base period values should not be exceeded clearly puts constraints on policy change. The table shows these constraints relative to the 2007–8 notified levels (the most recent notification from January 2011). The most recent notification does not exceed the proposed base for any of the 23 products. For the significant items, the level of AMS has been reduced by policy changes, including reforms in the sugar and

Table 4.7: *Continued.*

		No blue-box trade-off				Notified AMS 2008
	Paragraphs	Base	Year 1	Year 2	Year 3	
Mohair	23	3.1	3.1	3.1	3.1	1.1
Oats	23	9.4	9.4	9.4	9.4	0.0
Olives	25	2.9	2.9	2.9	2.9	0.0
Onions	25	35.1	35.1	35.1	35.1	0.0
Orchards and vineyards	25	798.2	798.2	798.2	798.2	0.0
Peaches	25	22.0	22.0	22.0	22.0	0.0
Peanuts	23	249.2	249.2	249.2	249.2	0.0
Pears	25	14.0	14.0	14.0	14.0	0.0
Pecan trees	25	11.7	11.7	11.7	11.7	0.0
Potatoes	25	133.4	133.4	133.4	133.4	0.0
Rice	23	313.7	313.7	313.7	313.7	0.0
Rye	25	1.4	1.4	1.4	1.4	0.0
Sheep and lamb	24	7.0	7.0	7.0	7.0	0.0
Sorghum	23, 26	42.6	42.6	42.6	42.6	0.0
Soybeans	23	1,123.7	1,123.7	1,123.7	1,123.7	0.0
Sugar	23, 26	1,257.8	1,213.9	1,169.9	1,126.0	1,146.0
Tobacco	23	142.9	142.9	142.9	142.9	0.0
Tomatoes	25	86.2	86.2	86.2	86.2	0.0
Wheat	23	231.4	231.4	231.4	231.4	0.0
Wool	23	10.1	10.1	10.1	10.1	4.9
Total product-specific AMS		16,392.3	15,729.5	15,144.5	15,017.4	6,254.9

The effective binding for cotton is implied by the special reduction provisions.

Source: authors' calculations based on U.S. notifications.

dairy regimes and, most significantly, changes in the policies for fruits and vegetables. The reform of fresh fruit and vegetables markets is reflected in the latest notification by the replacement of an equivalent measurement of support based on an applied administered price by the payments to producer organisations for market management. The market regime for processed fruits and vegetables has also been reformed, although some continuing price support is notified for processing plums, figs and potatoes. The implication is that the product-specific AMS constraint is unlikely to be binding for any products in the EU.

Blue-box limits at the product-specific level are also likely to have a rather different impact on the EU and the United States. As noted earlier, the proposed approach to deriving these allowable blue-box levels differs between the United States and the EU. The U.S. limits are based on the maximum potential expenditure ('legislated maximum payments') on CCPs under the

Table 4.8: *Product-specific AMS (and equivalent measure of support) limits, selected commodities: EU (€ million).*

	Average AMS 1995–2000	Notified AMS 2007–8
Common wheat	2,783.6	1,648
Barley	2,509.1	1,948
Maize	904.9	0
Rye	297.3	0
Rice	463.7	0
White sugar	5,852.0	3,550
Skimmed milk powder	1,561.5	976
Butter	4,287.6	2,742
Beef	13,154.8	0
Dried fodder	304.7	0
Olive oil	1,909.9	0
Tobacco	962.4	386
Bananas	226.0	0
Apples	2,155.0	0
Pears	622.2	0
Peaches/nectarines	439.5	0
Table grapes	247.1	0
Lemons	359.2	0
Oranges	389.5	0
Cucumbers	567.7	0
Tomatoes	3,146.4	0
Cotton	752.7	0
Tomatoes for processing	340.5	230
Other products	3,588.4	872
Total product-specific AMS	47,825.5	12,353

Source: authors' calculations based on EU notifications.

2002 Farm Act. The draft modalities include a year-by-year calculation of these amounts and the average for 2002–7 (see Table 4.9).[10] The summary table in the WTO draft modalities paper does not take into account the additional restriction on blue-box cotton payments. The numbers in Table 4.9 reflect that restriction.

The lower total of the blue-box cap (using 110% of the amount calculated from the application of the proportional maximum CCPs to 2.5% of the value of production) would permit expenditure on CCPs equivalent to roughly 61%

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[10]The calculations exclude some minor oilseeds (such as canola and sunflower) that were also eligible for such payments. However, these only accounted for roughly 0.2% of the legislated maximum payments for 2002–7. It is unclear whether the numbers in the draft modalities will be the ones that would be finally adopted, but if so it would appear that CCPs provided for minor oilseeds would have to be notified as non-product-specific AMS, as in earlier notifications.

Table 4.9: *Product-specific blue-box limits under two options: United States ($ million).*

	110%	120%
Barley	32.0	34.9
Corn	2,359.8	2,574.3
Cotton	336.3	366.9
Oats	5.3	5.8
Peanuts	149.5	163.1
Rice	234.9	256.3
Sorghum	106.8	116.5
Soybeans	400.4	436.8
Wheat	1,041.1	1,135.7
Total	4,666.1	5,090.3

The figures for cotton are adjusted values implied by paragraph 55, rather than the unadjusted figures in the revised draft modalities.

Source: WTO (2008) and authors' calculations.

of the legislated maximum under the 2002 Farm Act. The higher limit (120%) would allow 66% of the legislated maximum to be made. The maximum permitted expenditure under the blue box would be $4,835 million (see Table 4.3). This implies that it would only be possible to use the full 'allowance' provided by the individual blue-box caps under the lower binding (110%). If the binding were at 120% of the calculated amount, the absolute limit on blue-box spending would, in effect, further constrain blue-box expenditures on individual commodities.

Product-specific blue-box limits for the EU are grouped by programmes that are broadly linked to individual products, but with less precision than for the AMS. Table 4.10 shows the relationship between the blue-box limit (the average for 1995–2000) and the notification for 2007–8. Blue-box spending declined significantly between the base period and the latest notification, leading to the conclusion that the introduction of product-specific constraints will not be onerous. The average level of blue-box payments in the base period was €20.9 billion, while the 2007–8 notification identified €5.2 billion under blue-box programmes. The effect of the 2003 reforms (the introduction of the single farm payment system) has been to transfer much of the spending previously classified as blue to the green box.

Despite this, product-specific blue-box constraints will serve to 'lock in' Common Agricultural Policy (CAP) reforms. Although total blue-box spending is falling, the product-specific limits mean that subsidies under individual programmes cannot be increased to make use of the 'slack'. Moreover, for any payments that are currently tied to fixed yields, area and heads of livestock, the restriction implies that there is no possibility of a re-basing that would violate the limits.

Table 4.10: *Product-specific blue-box limits: EU (€ million).*

	Average 1995–2000	Notified blue box 2007–8
Payments: fixed area and yields		
Maize payments	1,206	0
Other cereals	9,404	0
Oilseeds payments	2,126	0
Pulses payments	548	0
Flaxseeds payments	147	0
Set-aside compensation	1,640	0
Durum supplements	1,020	127
Voluntary set-aside payments	0	0
Silage payments	10	0
Rice payments	60	169
Total crop payments	16,161	2,891
Livestock payments: fixed number of heads		
Suckler cow premium	1,876	1,244
Special beef and veal premium	1,352	111
Slaughter premium	494	348
Beef supplemental payments	25	0
De-seasonalisation premium	22	0
Ewe and goat premium	1,370	404
Total livestock payments	4,727	2,275
Total blue (notified)	20,888	5,166

Source: authors' calculations based on EU notifications.

The draft modalities include a provision that allows countries to shift allowable support from the AMS (thereby lowering the product-specific AMS binding) to the blue box (and, hence, increasing allowable blue-box subsidies). The notion is that a shift such as this would be help to reduce the most trade-distorting types of support; without this provision, countries may not have the ability to switch support from the AMS to the blue box.

This is particularly important for the United States, where the new definition of the blue box allows for the notification of CCPs in that category. Table 4.11 analyses the feasibility of reallocating U.S. support in order to increase the product-specific bindings for each commodity to the legislated maximum for payments under the 2002 Farm Act. The calculations show that this type of box-shifting could allow payments to be increased to legal limits for all commodities except cotton and wheat. For those commodities the AMS binding is too low to achieve the desired result. However, it should be borne in mind that the sum of the individual product bindings is only below the total blue-box cap under the 110% figure. That yields a total of $4,666 million in potential blue-box payments, compared with a total blue-box cap of $4,835. Consequently, there is only limited scope for box-shifting

for individual commodities if the United States is to remain within its overall blue-box constraint.

Despite this, the switch from AMS to blue-box payments might be possible for the politically important crop of cotton. Suppose, for example, that the United States could allocate all of its available blue box (under the 110% condition) to cotton. If that were possible, the blue-box binding would rise by 46% (from $336 million to $505 million). That would require a $338 million reduction in the cotton AMS. However, if the reduction had to be applied to the final cotton AMS of $143 million (Table 4.3), this would not be feasible. The maximum increase possible in the blue-box limit would be roughly $72 million ($143 million/2). If, on the other hand, the United States chose to increase the blue-box limit on wheat (the other commodity for which it is not possible to achieve the full increase to the legislated maximum), a maximum of $231 million could be shifted from the AMS to the blue-box cap. That would yield a cap of roughly $1,272 million, or roughly 90% of the legislated maximum expenditure on CCPs.

For the EU, with the general movement of subsidies from the AMS to the blue box in the 1990s and, more recently, a shift from blue- to green-box payments, the ability to transfer eligible subsidies from the AMS to the blue box is unlikely to be of any practical importance. However, there could be some individual products for which such flexibility could be useful.

2   RECENT NOTIFICATIONS OF DOMESTIC SUPPORT

To put the significance of the new disciplines on domestic support into perspective, it is necessary to consider recent levels of support notified to the WTO by the United States and the EU. To do this we use the actual notifications for the United States up to and including 2008 and the official notifications by the EU up to and including the 2007–8 marketing year.

The U.S. and EU notifications on domestic support indicate the changing balance between the boxes. Figures 4.1 and 4.2 show the composition of support since 1995. The first year of the U.S. notifications covered the last year of the 1990 Farm Act. The United States still had deficiency payments with acreage idling provisions, and this is reflected in the blue-box component of the notification. Crop prices were relatively high and so the notified total AMS and *de minimis* were both small. With the passage of the 1996 Farm Act, direct income support payments were introduced to replace the deficiency payments; the direct payments were notified in the green box. Support from the AMS remained low until crop prices started to deteriorate in 1998. From that time until the passage of the 2002 Act, production-linked 'emergency' payments were authorised that increased AMS support and its share of total support. During the life of the 2002 Act, AMS support has generally remained

Table 4.11: *U.S. blue-box product-specific bindings and the trade-off with AMS product-specific bindings ($ million).*

	A	B	C	D	E	F	G	H	I	J	K	L
					Implications of the reduction of the initial product-specific AMS to meet the legislated maximum CCP for each commodity							
	AMS binding[a]	Blue binding 110%	Blue binding 120%	Legislative maximum CCP	Required cut in AMS with 110% blue binding		New initial product-specific AMS	Maximum feasible blue binding[b]	Required cut in AMS with 110% blue binding		New initial product-specific AMS	Maximum feasible blue binding[b]
Barley	27.4	32.0	34.9	46.7	14.7	—	12.7	46.7	11.8	—	15.6	46.7
Corn	1,106.4	2,359.8	2,574.3	3,224.2	864.4	UNF	242.0	3,224.2	649.9	UNF	456.5	3,224.2
Cotton	800.5	336.3	366.9	1,376.5	2,080.4	—	0.0	1,136.8	2,019.2	—	0.0	1,167.4
Oats	9.4	5.3	5.8	8.7	3.4	—	6.0	8.7	2.9	—	6.5	8.7
Peanuts	249.2	149.5	163.1	200.9	51.4	—	197.8	200.9	37.8	—	211.4	200.9
Rice	313.7	234.9	256.3	323.1	88.2	—	225.5	323.1	66.8	—	246.9	323.1
Sorghum	42.6	106.8	116.5	147.4	40.6	—	2.0	147.4	30.9	—	11.7	147.4
Soybeans	1,123.7	400.4	436.8	550.3	149.9	—	973.8	550.3	113.5	—	1,010.2	550.3
Wheat	231.4	1,041.1	1,135.7	1,421.5	380.4	UNF	0.0	1,272.5	285.8	UNF	0.0	1,367.1
Total	3,904.4	4,666.1	5,090.3	7,299.3	—	—	—	6,910.6	—	—	—	7,035.8

'UNF' stands for unfeasible. [a]It is assumed that the applicable figures for the calculation are the bindings that result after the application of any reduction provisions. [b]Where insufficient product-specific AMS entitlement exists to reach the legislated maximum CCP, the maximum product-specific AMS entitlement is applied to the blue box. In the case of cotton, a $1 increase in the blue-box entitlement requires a $2 reduction in the product-specific AMS. This is applied to the figure in column A. Cotton blue-box bindings are reduced substantially by the paragraph 56 condition. Increases in blue-box limits only apply if initially scheduled; any subsequent changes would require reductions elsewhere, such that the initial overall blue-box limit is not exceeded (paragraph 45). Totals in denote exceeded permitted blue-box total of $4,835.5 million.

Source: authors' calculations based on WTO notifications.

high and variable. More recently, strengthening commodity prices have led to significant reductions in the total AMS.[11]

The first notification of domestic support by the EU, for 1995–6, encompasses the changes in the instrumentation of the CAP that were the central aspect of the MacSharry reforms.[12] Direct payments (area payments on cereals and oilseeds, and headage payments on beef and sheep) were placed in the blue box, since they were associated with limits on production. As a result, the original notifications from the 1995–6 marketing year included a large AMS component (€48 billion), a smaller but sizable blue-box element (€21 billion) and a relatively modest amount of green-box payments (€19 billion).[13] The nature of the CAP reforms since 1995 has been reflected subsequently by a major shift in the pattern of notifications for the categories of domestic support. Support prices have been reduced for most of the major products to narrow the gap between EU prices and those of the world markets. Export subsidies have also been reduced, partly as a result of WTO constraints.

The 'new' CAP, which began with the 1992 MacSharry reforms, places heavy reliance on direct payments to farmers based on past production patterns and these payments are broadly unrelated to current prices and output decisions. Thus, the 13 notifications from 1995–6 to 2007–8 show a marked reduction in price supports, compensated by an increase in direct payments. The current total AMS fell from around €50 billion in 1995–6 to €12.4 billion in 2007–8: a 75% decline. Blue-box payments rose over the period from €21 billion in 1995–6 to €27.2 billion in 2004–5 but fell sharply in the latest notification to €5.2 billion. Green-box payments rose from €18 billion in 1995–6 to over €62 billion in 2007–8.[14]

The mix of policies in the EU changed relatively little from 1995 to 2000, as reforms in the cereal and oilseed sectors were being assimilated. But budgetary pressures and the prospect of ten new members from eastern and central Europe prompted the EU to consider further changes in policy. These were incorporated in the so-called Agenda 2000 reforms agreed in 1999. The

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[11]Note also the significant increase in green-box support in the United States, due primarily to a major expansion in expenditures on domestic food assistance programmes.

[12]Compensation payments were introduced progressively in the marketing years 1993–4 to 1995–6.

[13]It is likely that, in the eight years between the 1986–8 base and the first year of the URAA, trade-distorting support (as measured by the AMS) fell from roughly €80 billion to €50 billion. This was due in large part to the introduction of the MacSharry reforms and the placing of these payments in the blue box. Green-box eligible policies probably rose modestly over the same period.

[14]Though this might appear to suggest that about €38 billion in less trade-distorting support has replaced €38.5 billion of more trade-disruptive payments, it should be remembered that much of the AMS is a calculation based on the difference between an administered price and a fixed reference price. So a drop in calculated support may not be directly reflected in either actual government payments or farm income.
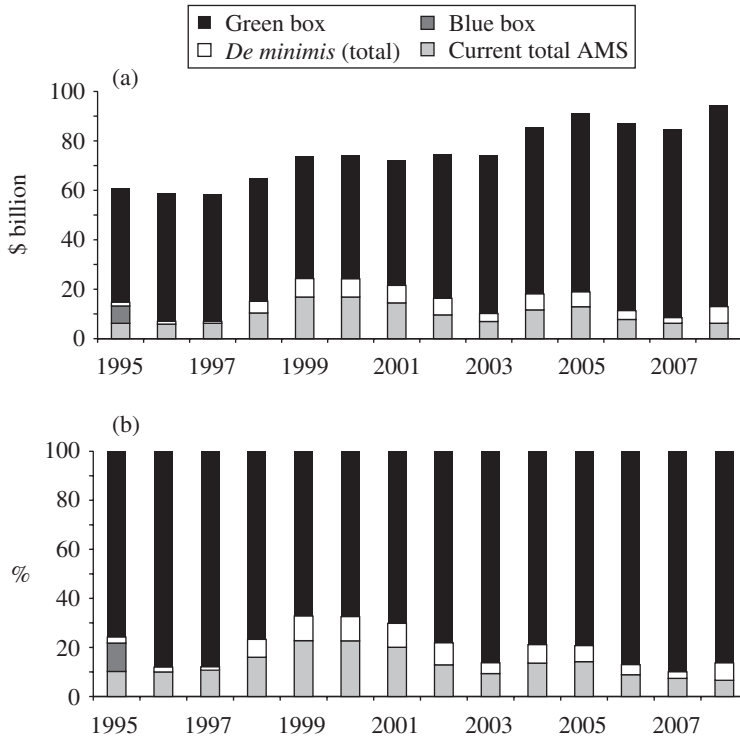
Figure 4.1: *U.S. notifications of domestic support, 1995–2008.*
Source: WTO notifications and authors' calculations.

policy changes had a noticeable impact on EU domestic support notifications, maintaining and strengthening the direction of the 1992 reforms. Intervention prices were reduced by 29% for cereals (including a more substantial cut for rice) and, from 2005, they were reduced by 15% for butter and for skimmed milk powder, reducing the gap between 'administered' prices and the fixed reference prices used in support calculations.[15] The AMS fell from €48 billion in 1999–2000 to €28 billion in 2002–3. Changes in the beef regime also affected the notifications somewhat; a slaughter premium and some supplementary payments were added to existing subsidies for suckler cows and the special beef premium. These new payments were notified as blue box as they were limited to base levels of livestock numbers. Blue-box payments increased by €5 billion over that period.

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[15]The Agenda 2000 package also included a new dairy premium from 2005, to compensate dairy farmers for scheduled reductions in butter and skim milk powder intervention prices. The EU indicated its intention to declare this as a blue-box payment in WTO (1999).
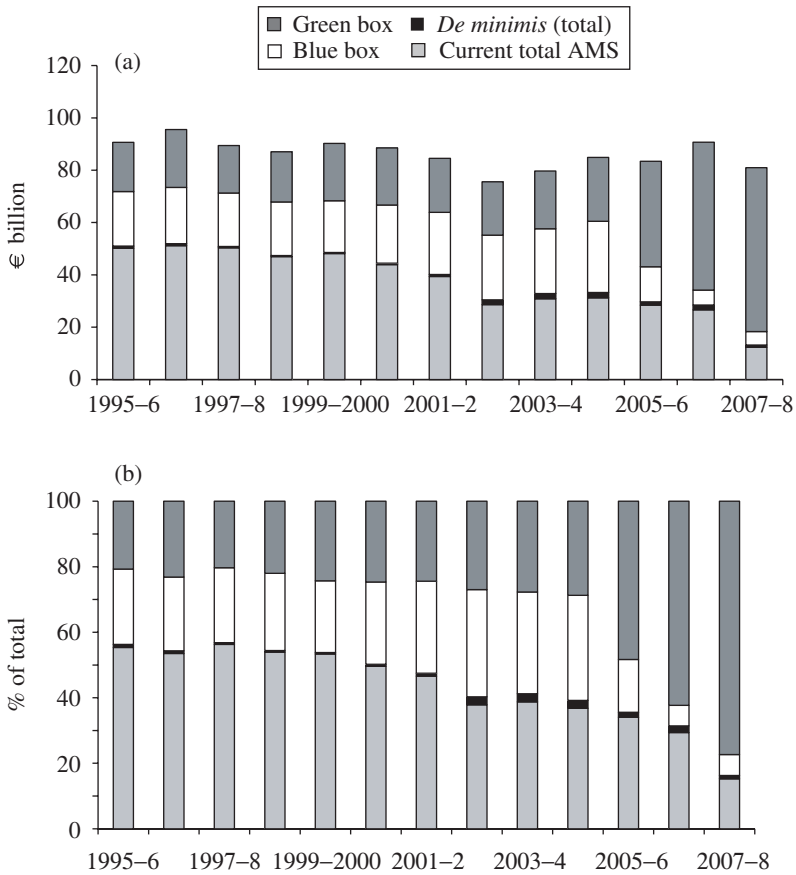
Figure 4.2: *European Union notifications of domestic support, 1995-6 to 2007-8.*
Source: WTO notifications and authors' calculations.

Even more significant for the EU's domestic support notification are policy changes since 2002–3: notably, the 2003 Fischler reforms, modifications to the regime for the Mediterranean crops in 2004, the change in sugar policy in 2005, and the reform of fresh and processed fruit and vegetable policies in 2007. The introduction of the Single Farm Payment, the key ingredient of the 2003 reform, further separates payments from current production. The 2004-5 notification of domestic support included some of these decoupled payments under the Fischler reforms, but the main impact shows up in the notification for 2007-8, and this will have influenced notifications at least through 2009-10, by which time most of the policy changes already announced had been implemented.
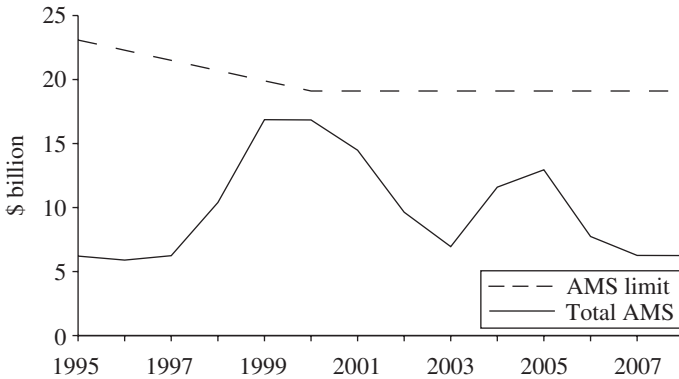
Figure 4.3: *Current total AMS in the United States relative to WTO AMS binding, 1995–2008.*
Source: authors' calculations.

The nature of EU direct payments has also undergone changes, with the relaxation of obligations to continue to produce specific products as a condition of eligibility. The Agenda 2000 reforms consolidated payments for cereals and oilseeds, and the Single Farm Payment system incorporates subsidies for most other producers in the same scheme. This will be reflected in the notifications as many blue-box payments become eligible for the green box, since they are no longer linked to current production. The projected notifications in this chapter reflect this shift.

Figure 4.1 indicates that the total AMS for the United States can be highly variable depending on market prices. As discussed below, this could pose some significant challenges in meeting future commitments under a DDA Agreement. Figure 4.2 indicates that the level and composition of AMS support in the EU has also varied over time, but that much of the variation has been due to systemic changes in policy.

The Uruguay Round Agreement included bindings on the level of the most trade-distorting domestic support, as included in the total AMS. The current total AMS was not to exceed the final bound AMS after the transition period. Figures 4.3 and 4.4 show the current total AMS and the final bound AMS for both the United States and the EU, with projections to 2016 in the United States and 2014–15 in the EU (see below for details on assumptions). Support has been comfortably within the bindings in both cases, although the pronounced variability of notified support by the United States is apparent. As discussed in Blandford and Orden (2008), support would probably have exceeded the binding if direct payments (notified as green box) and CCPs (notified as non-product-specific AMS) had been included in the product-specific AMS. The possibility that this may be required in the future is raised
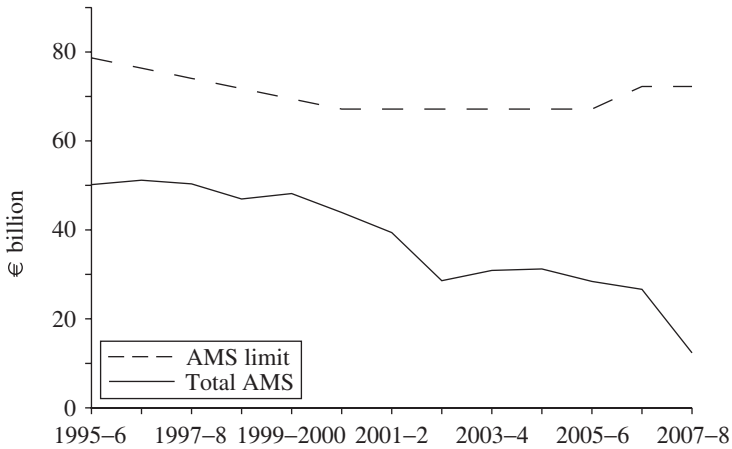
Figure 4.4: *Current total AMS in the EU relative to WTO AMS binding, 1995–6 to 2007–8.*
Source: authors' calculations.

in an ongoing WTO dispute settlement case brought by Brazil and Canada, but the detailed impact of such a change is not assessed in this chapter.

3   PROJECTED NOTIFICATIONS IN THE ABSENCE OF A DOHA ROUND

Projected notifications of domestic support in the absence of the DDA have been made using a spreadsheet-based 'domestic support simulator' developed initially by the authors of this chapter. The projections reported here are based on constructed assumptions with elements common to both the United States and the EU. Such projected notifications have been constructed as part of a study by the International Food Policy Research Institute that covers several countries (Orden *et al* 2011). Preliminary results for the EU were given in Josling and Swinbank (2008). The 'domestic support simulator' spreadsheets have been used to generate projected notifications for the period 2009–16 for the United States and 2008–9 to 2015–16 for the EU.[16] Policies in the United States are those incorporated in the 2008 Farm Act (assumed to be continued through 2016), and the assumption for the EU is that there would be no major policy shifts beyond the Health Check (2008) proposals. The projections are shown in Figures 4.5 and 4.6, as extensions of the historical series of official notifications.

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[16]A slightly longer period is used for the United States in order to facilitate subsequent analysis of the implications of price variability on notifications. However, there are only small differences between the numbers projected for 2015 (the last year of full implementation of the Doha commitments) and those for 2016.
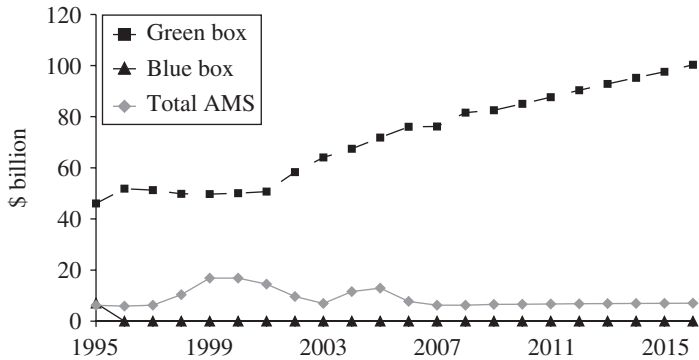
Figure 4.5: *Actual and projected notifications of domestic support: United States, 1995–2016.*
Source: authors' calculations.

Under the 2008 Farm Act, expenditures on domestic food assistance pro-
grammes and environmental programmes are anticipated to increase. Esti-
mates of these increases plus other green-box items, such as expenditures on
general services, are reflected in Figure 4.5. On the basis of our assumptions,
U.S. green-box support is projected to rise by over 25%: from $82 billion in
2008 to $118 billion by 2016. Support in this category has increased steeply
in recent years due to higher expenditures on food assistance programmes.
The projection assumes continued strong growth in expenditure on these
programmes, but budget reductions could constrain expenditures in the
future. On the other hand, the current total AMS is projected to decline from
$6.3 billion in 2008 to $3.4 billion in 2016. Our projections of prices and
production for the United States are based primarily on those published by
the U.S. Department of Agriculture (USDA). In the USDA baseline used for the
projections (to 2018), relatively high commodity prices are foreseen (although
not as high as those actually observed in 2008). As a result, price-related
support falls.

The Farm Act introduced an optional crop revenue stabilisation programme
called the Average Crop Revenue Election (ACRE). At the time of writing,
only 10–20% of the eligible acreage of the three most important crops (corn,
soybeans and wheat) have been enrolled in the programme, but if this
proportion increases in the future the programme could trigger significant
payments, even when crop prices are relatively high. The possibility that such
payments could be triggered in the future if enough producers sign up is not
reflected in the projections in Figure 4.5, but is discussed in the next section
of the paper.

Our projections for the EU suggest that the switch in the composition of
support as a result of changes in the CAP will have run its course by about
2009–10 (Figure 4.6). Green-box support stays steady from a notified level
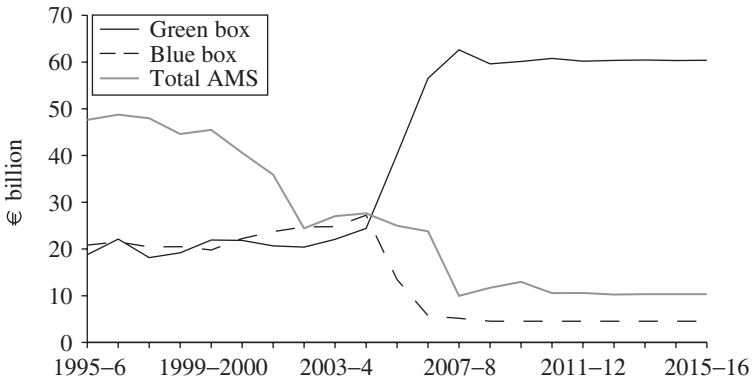
Figure 4.6: *Actual and projected notifications of domestic support: EU, 1995-6 to 2015-16.*
Source: authors' calculations.

of €62.6 billion in 2007–8 to €57 billion in 2015–16. The current total AMS stabilises at around €12 billion, compared with a notified level of €12.8 billion in 2007–8.

4   PROJECTIONS WITH DOHA LIMITS

Using the domestic support simulators, projections are made of the domestic support notifications that might be expected assuming that the modalities in the 6 December 2008 draft are accepted in full and implemented over the period 2011–15 (in effect from the crop year 2011–12 to the crop year 2015–16 for the major crop support programmes, and the calendar years 2011–15 for other subsidies). The assumption is made that there will be no significant domestic policy changes over this period other than those indicated above. Estimated notifications can then be compared with the constraints (both general and product-specific) that would be implied by the DDA. Any instances of conflict between the projected notifications and the constraints would presumably either trigger policy changes or modifications in the notifications as allowed by the modalities. Figures 4.7 and 4.8 show the proposed limits and projected values for the OTDS, the total AMS and the blue box for the United States and EU, respectively.

The United States is projected to stay comfortably within its total bindings for the duration of the projection period. In addition to the relatively high crop prices projected by USDA, an important contributing factor to this result is a change in dairy policy included in the 2008 Farm Act. Prior to that legislation, the U.S. dairy support programme was defined with respect to a support price for milk. The structure was reflected in U.S. notifications in that the per-unit
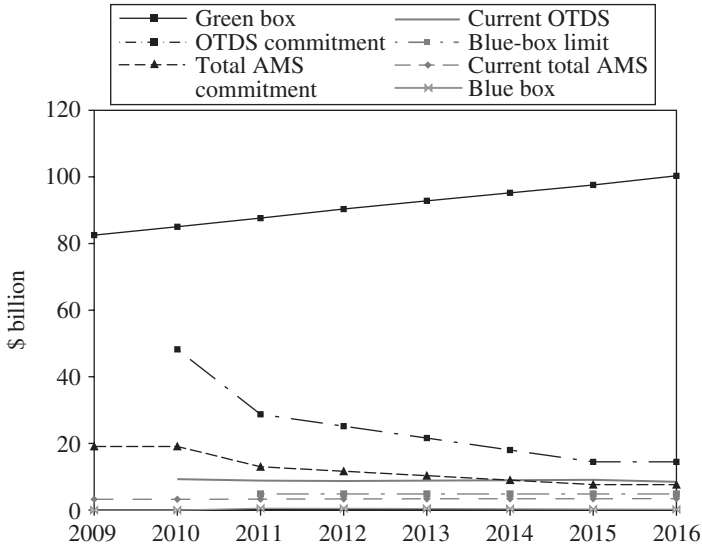
Figure 4.7: *Projected notifications of domestic support in the United States (2009–16) and proposed limits to OTDS, AMS and blue-box (revised draft modalities).*
Source: authors' calculations.

market price support calculation was applied to total milk production. The 2008 Farm Act redefines the support programme with respect to support for three dairy products: butter, cheddar cheese and non-fat dry milk.[17] Those support prices are defined to be consistent with the previous support price for milk ($9.90 per hundredweight). This change allows the United States to notify market price support for dairy on the basis of the volume of the three dairy products concerned, rather than the total volume of milk production. This has already been reflected in the U.S. notification for 2008. By applying the market price support calculation to the three dairy products, notified support fell to $2.9 billion compared with $5.1 billion in the previous year: a reduction of 41%. We build this change in the notification methodology for dairy into our projections. If this change had not been made, it is possible that the United States would come close to, or even exceed, its total AMS binding in 2016, instead of being comfortably below it.

The estimated current total AMS for the EU for the year 2015–16 is €18.9 billion. As Figure 4.8 shows, the reduced AMS binding would imply a significant restraint on EU policies after the final year of the transition period

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[17]Economists would argue that a price support programme for a subset of dairy products is likely to affect the prices of all dairy products, *ie* that the original formulation of the notifications is still appropriate in an economic, if not a legal sense.
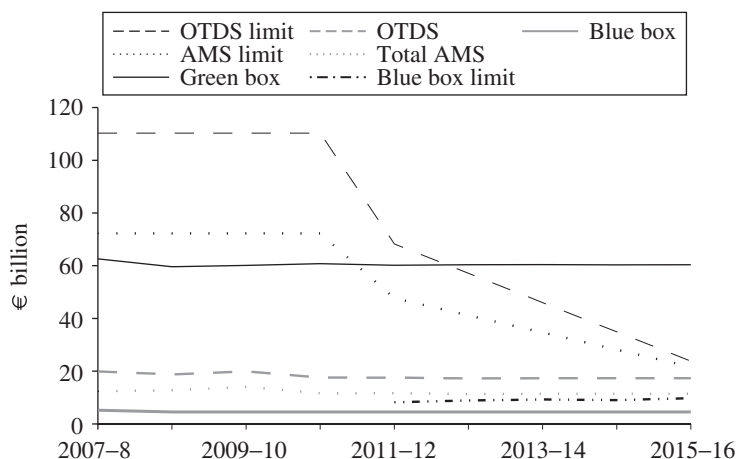
Figure 4.8: *Projected notifications of domestic support, EU (2007–8 to 2015–16) and proposed limits to OTDS, AMS and blue box (revised draft modalities).*
Source: authors' calculations.

if these policies continue on their current course. Thus, the new AMS limit (after the 70% reduction) would appear to limit further policy changes to those consistent with developments since 2003. The year 2013–14 is the start of a new budgetary cycle in the EU, at which time the funding for the CAP could well be trimmed for fiscal reasons.

Although the overall bindings relative to aggregate support would seem to suggest few problems for the United States, there are issues with some commodities (Figure 4.9). Our projections suggest that the draft modalities would result in the blue-box binding being exceeded for cotton during the early years of the implementation period of an agreement, with the AMS binding being exceeded for sugar throughout the period. As noted above, the change in the dairy programme is likely to remove a potential problem of exceeding the product-specific AMS binding for dairy. These results indicate that there are likely to be significant issues to be faced for a limited number of commodities, two of which (cotton and sugar) have proved to be highly politically sensitive in the United States.

The EU has less product-specific problems in meeting AMS and blue-box constraints as a result of significant product-by-product reforms over the past 15 years. Cotton and sugar policies have both been changed significantly in recent years, making the AMS constraint less intrusive. Products such as beef that are subject to cyclical market conditions could be affected by restraints that reduce the ability of the EU to respond to market collapse. So the future development of the CAP is likely to be influenced by the new constraints of the WTO agreement at least in the period after 2013.
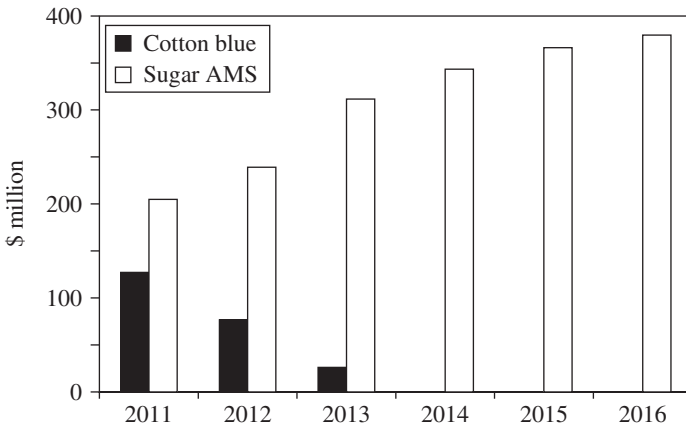
Figure 4.9: *Extent to which product-specific AMS and blue-box bindings would be exceeded by the United States, 2011–16 (110% option and no shift from AMS to blue box).*
Source: authors' calculations.

5   SENSITIVITY OF SUPPORT LEVELS TO EXOGENOUS SHOCKS

This section of the chapter explores the extent to which the assessment given in the previous section is dependent on world prices. Specifically, the issue is whether recent increases, which have now been built into the 'official' projected market outlook for the United States and the EU, at least to some extent, are the cause of the outcome described in the previous section that the proposed bindings on support have only a limited impact. If the relatively benign results, from the viewpoint of domestic producers, are robust in the face of significant price declines, then the implication is that the agreement poses a minimal threat to the incomes of farmers in the United States and the EU. If, by contrast, the United States or the EU were to be effectively constrained from reacting (using current policy instruments) to a major price decline, then the conclusion would be different. For those that seek 'real' reductions in the level of domestic support, this could be an agreeable outcome; for those concerned with keeping income supports in place, such a situation would be unwelcome.

As noted above, U.S. support notifications can be affected dramatically by fluctuations in prices. Consequently, we calculate the change in price that would have a significant impact on the current total AMS and the blue box (where appropriate) using the U.S. domestic support simulator. The chance that such price changes may occur in the next few years is not in itself calculated. The outcomes are compared with the limits implied by the current proposals.

Table 4.12: *Average reduction in market prices in the United States needed to trigger blue-box and AMS bindings in 2011–16.*

Commodity	AMS binding	Blue-box binding
Barley	54	41
Corn	26	a
Cotton	17	b
Oats	48	27
Peanuts	26	13
Rice	48	37
Sorghum	45	36
Soybeans	34	a
Wheat	26	a

[a]Not binding because of shift of payments from blue to amber due to ACRE programme. [b]Bindings projected to be exceeded under current policies for 2011–13; maximum 2% reduction in projected market prices for 2014–16 causes the binding to be exceeded.

First, we explore what reductions would be necessary in projected market prices to trigger support expenditures in excess of bound AMS and blue-box levels for several key commodities. Table 4.12 shows the average percentage reduction in market prices relative to those used above for the period 2011–2016 that would trigger notifications in excess of the AMS and blue-box caps. The smallest price decline that would trigger excess support is for cotton: a reduction of 1–2% in the projected market price for 2014–16 would result in the blue-box cap being exceeded. A reduction in projected market prices for peanuts of 13% would also move blue-box support above the cap. Apart from those two commodities (which are also likely to exceed their AMS bindings if prices were to fall by 17–26%), corn, wheat and, to a lesser extent, soybeans appear to be potentially exposed to exceeding their bindings if market prices were to decline significantly (by 26–34%) from projected levels. The figures in the table suggest that price reductions are most likely to trigger blue-box cap excesses before those for the AMS.

There is, however, a complicating factor that must be taken into account in this calculation. As indicated above, under the 2008 Farm Act, producers have the option of enrolling in a revenue stabilisation programme (ACRE). If they do so, they will experience a reduction in the amount of direct payments they receive (the payment rate is unchanged but the percentage of base acres on which payments will be based will be reduced from 85% to 83.3%). They will also face a 30% reduction in the loan rate and lose their eligibility for CCPs. In exchange, they will be eligible for revenue stabilisation payments calculated on a crop-specific basis.

It is difficult to estimate precisely the potential impact of this programme. It has been suggested that the programme will be most attractive to corn/soybean producers and that they are the most likely to enrol, but this is a function of market expectations. At the time of writing, 10–20% of the eligible

acreage of corn, soybeans and wheat had been enrolled in the programme. Reduced eligibility for existing CCPs would ease the pressure on blue-box caps if prices fall by the amounts indicated in Table 4.12, and on the AMS components that are associated with price support (loan deficiency payments, for example). However, since ACRE payments could be triggered when market prices are relatively high, this could put pressure on product-specific AMS caps even at relatively high price levels.

6   ANALYSIS OF THE IMPLICATIONS OF THE AVERAGE CROP REVENUE ELECTION PROGRAMME

To look more closely at the implications of price developments on the U.S. AMS, we turn to more detailed calculations of the potential impact of the new ACRE programme. We examined the impact of variations in prices for three key commodities: corn, soybeans and wheat. These commodities have been chosen because of their importance for U.S. notifications and because they are likely to be most affected by the ACRE programme. Price patterns for the commodities were examined for three historical periods when price volatility was evident (1974–80, 1980–6 and 1995–2001). The variability for the two most important crops, corn and soybeans, was greatest in the 1980s. The average year-to-year change in market prices for these commodities was 18–19% during that time period, compared with 1–2% in the projections. The price pattern for the 1980s was applied to the base data in order to examine the implications for payments under the ACRE programme.[18] As noted above, it is unclear how many farmers will eventually sign up for the ACRE programme. We use a range of figures from 30–90% in our analysis reflected in terms of 30–90% of annual production for each of the eligible commodities.[19] The baseline production numbers are not altered for the simulations. It is difficult to relate variations in national production to payments at the farm or state levels, so no attempt was made to do this. Our aim is to examine how price variation alone could affect U.S. notified support under the new programme. Actual payouts could be higher or lower than estimated here as a result of production variations.

A further issue to be considered in evaluating the impact of the programme is how it would be notified to the WTO. The counter-cyclical payment programme introduced under the 2002 Farm Act was notified under the

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[18]Percentage year-to-year changes in nominal average U.S. farm prices were computed from National Agricultural Statistics Service/USDA data. These percentages were then applied to the baseline prices used in the projections. Consequently, projected market prices in 2009 are computed as the USDA baseline price for 2010 multiplied by the percentage change from 1980 to 1981 and so on through to 2016.

[19]Actual sign-up is in terms of farms. The share of production used here reflects an assumption that major producers of the three crops will elect to enrol.
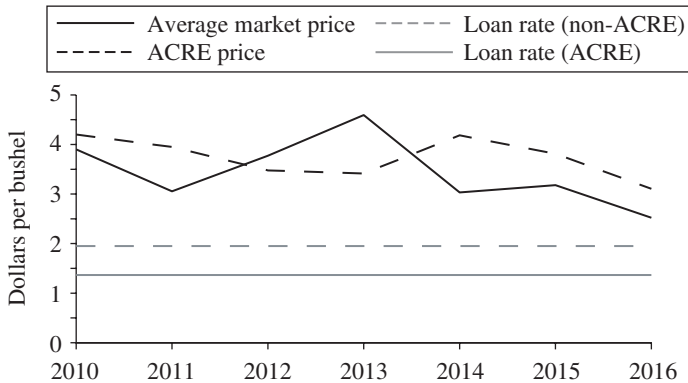
Figure 4.10: *U.S. corn (maize) prices over the projection period (2011–16) using the price pattern for the early 1980s (1980–6).*
Source: authors' calculations.

non-product-specific AMS. That programme makes payments to farmers when prices fall below a target level. Payments are linked to a fixed base area and do not vary with current production. As noted earlier, they would be moved into the blue box under the terms of the draft modalities for agriculture. Payments under the ACRE programme, in contrast, are linked to current yields for individual crops at the level of individual farms. It appears that these payments would not qualify for the existing or expanded blue box, and it is unlikely that they would qualify under the non-product-specific category due to the product-specific linkage to current production. They seem to qualify for notification as product-specific AMS. We make this assumption in our analysis. This is likely to have significant implications for the ability of the United States to meet future WTO commitments under a Doha agreement, particularly its commitments on the product-specific AMS.

To demonstrate the potential implications of the programme, we focus our attention on corn, which is one of the most important commodities involved. Figure 4.10 shows the relevant prices for corn over the projection period under the programme. The ACRE price that triggers payments is far higher than the loan rate for participants and non-participants in the programme. It tracks the market price, tending to increase when that price declines and to decline when that price increases, but without the sharp upward and downward swings evident in the market price.

Figure 4.11 shows the impact of the programme with respect to the product-specific AMS binding for corn under the three assumptions regarding the sign-up rate for the programme (30%, 60% and 90%). All three of these rates cause the product-specific AMS binding to be exceeded in four out of six of the years. The amounts involved range from roughly $0.5 billion under a 30% sign-up in 2011 to more than $6.5 billion under a 90% sign-up in 2014.
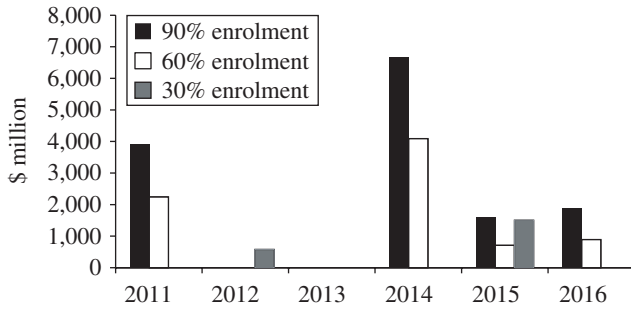
Figure 4.11: *Amount by which the U.S. corn AMS would exceed Doha commitments over the projection period (2011–16) under the ACRE programme with the price pattern for the early 1980s (1980–6).*
Source: authors' calculations.

The product-specific AMS caps are fully implemented from 2011 onwards (Table 4.7), so these numbers do not reflect any progressive tightening of WTO restrictions. Particularly sharp declines in prices, such as those that occurred historically for corn between 1985 and 1986, when the market price fell by over 30%, could trigger major increases in payments under ACRE. This could result in a substantial increase in notified support.

Payments under ACRE could actually result in the total AMS commitment, and even the OTDS commitment, being exceeded if price swings are dramatic. The substantial increase in corn payments in 2014 under a 90% sign-up causes the total AMS binding to be exceeded by over $2 billion in that year, and the United States to come within $1 billion of exceeding its OTDS binding.[20]

The analysis presented on the potential impact of the ACRE programme is not meant to be definitive. We may be overestimating its potential impact, particularly if the sign-up rate continues to be low. On the other hand, we may be underestimating the impact of price variability more generally, since we have only varied the prices for a subset of supported crops. Commodity prices tend to be highly correlated and low prices for corn, soybeans and wheat may be associated with low prices for other commodities, thereby generating additional support payments for other commodities. Though we make no attempt to predict the future pattern of prices, it seems likely that these will be more variable than assumed in the USDA baseline, and that this will open up the possibility that, under the 2008 Farm Act, the United States will exceed the tighter restrictions on domestic support adopted under a Doha

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[20]The OTDS binding in that year is $18 billion. If the final Doha binding of $14.5 billion had been in place in that year, the United States would have exceeded that binding by over $2 billion.

agreement in certain years as a result of the ACRE programme and its price support programmes for major crops.

Unlike the United States, where this is clearly an important issue, the impact of world price declines on EU notifications is not so noticeable. The way in which the AMS is constructed insulates this from changes in world prices. The reference prices are fixed and administered prices would be unlikely to increase sufficiently to make the AMS rise sharply. Administered prices could be increased in the future, and that is more likely to happen if world prices were to stay high. In those circumstances the increase in the AMS would be due to high rather than low prices. In practice, administered prices for products such as fresh fruits and vegetables are unlikely to rise, as the trend is to reorient producers to export markets. For grains, a higher intervention price could raise the AMS, but the tendency has been strongly towards reducing intervention, and in high price periods the need to intervene would be much less.

Prices of many agricultural goods are expressed and traded in U.S. dollars. So the question arises as to what would happen in the EU if the dollar were to become much stronger relative to the euro. European Union exports would benefit from the strengthening of the currency of a major competitor, but prices on the domestic market could rise. However, this would provide even more flexibility to dismantle the price support elements that remain in the CAP. Direct payments would presumably only be indirectly affected.

One result of a strengthening of the dollar relative to the euro would be to reduce the amount of protection given to EU farmers when expressed in dollars. If the dollar recovered its position of strength, rising to parity with the euro by 2013–14, the current total AMS of the EU expressed in U.S. dollars would almost halve over the next few years, approaching $20 billion (compared with $36 billion if the euro retained its recent strength). This gives an indication of the significance of exchange rates in making international comparisons of support levels.

7   RESPONSES TO WORLD TRADE ORGANIZATION CONSTRAINTS

This section assesses the extent to which adjustments might have to be made to keep within agreed WTO limits on domestic support. Such adjustments can be grouped under two headings.

- Changes in notifications that have no or minimal impact on domestic producers (and consumers) and, hence, will not reduce trade-distorting support to an appreciable extent. These changes may be *cosmetic* box-shifting in the notifications themselves, achieved through the modification of the scope of administered prices, or the use of smaller quantities of 'eligible production' or other mechanisms.

- Changes in policy that would change notifications to bring them into line with commitments but also have an impact on incentives for domestic producers. These changes can include *trade-friendly* box-shifting, reductions of policy prices, limits on support payments and other approaches.

The United States has already paved the way for reductions in notified domestic support through changes to the definition of the dairy support programme in the 2008 Farm Act. Only three dairy products are actually subject to support purchases: butter, cheddar cheese, and non-fat dry milk. By deriving an estimate of market price support on the basis of the production of these commodities and their support prices, the United States reduced its notified support significantly in 2008. Further changes in the U.S. dairy market in the future, in particular, more rapid growth in the output of non-supported products, could lead to a further reduction in notified dairy support (although this depends on future decisions regarding support prices). Such box-shifting has no practical effect on farmers returns but helps to avoid the possibility that the support price for milk will have to be reduced in order to meet future WTO commitments.

Are there other possibilities for making changes in U.S. notifications to change the apparent size or composition of support? The International Food Policy Research Institute project on support notifications revealed that countries use significantly different approaches to estimating similar types of support (Orden *et al* 2011). Beyond the legal issues involved (*ie* the status of notifications in the context of the WTO), there are some important conceptual issues. For example, some countries only notify an AMS for price support when actual government purchases are made, and then only by computing the value of support on the basis of actual purchases multiplied by a price gap. From an economic perspective it could be argued that, once purchases are triggered, the price for the entire production of the commodity concerned is affected and, consequently, the notified AMS should be computed as such. But what if there are no government purchases? In the U.S. dairy case, for example, domestic market prices for milk and dairy products have often been well above price support levels, and it could therefore be argued that the support programme has no impact on domestic prices, *ie* the AMS should be zero. However, in making such an assumption, the potential impact of trade barriers on domestic prices would be ignored when those prices are above world market prices.

The implication of such differences is that, in the absence of more effec-tive monitoring of notifications, it might be possible for the United States (and other countries) to change the methods used to calculate particular components of support in order to stay within future commitments. For example, the application of a purchase methodology to the calculation of sugar price support in the United States would virtually eliminate the sugar

AMS. However, it is not clear that the United States would attempt to do this.[21] Some countries, most notably Japan and Norway, have reduced their notified AMS by eliminating the administered prices used in calculating market price support. Redefinition of the rice programme as a food security programme (rather than a price support programme) in Japan, for example, resulted in a 75% reduction in Japan's notified AMS between 1997 and 1998. With protection from imports maintained through tariffs and tariff-rate quotas, actual domestic prices can still be kept at high levels (see the chapters on Japan and Norway in Orden *et al* 2011). The option for adopting a similar approach could apply to the United States, particularly for sugar, whose supply has been regulated in the past through marketing allotments. However, the market-access provisions of the Doha agreement would likely result in increased competition from imports and downward pressure on U.S. domestic sugar prices. In that case, existing administered prices (the loan rate) might have to be reduced in order to prevent the accumulation of government stocks, leading to a real reduction in both domestic support and in notified support to the WTO.

Actions such as these run this risk of opening up the methodology of support calculations to detailed scrutiny. This could be like opening Pandora's box, with potential implications for many countries. The current WTO notifications case brought by Brazil and Canada (the so-called total AMS (TAMS) case) could reflect the beginning of a closer examination of methods, but it is not easy to predict where such a process might lead.

In terms of other possibilities for box-shifting, the projections for U.S. notified support suggest that there is some potential for the United States to achieve this through an expansion of the non-product-specific category. Figure 4.12 summarises the projections for 2016 in terms of the components of domestic support. With projected payments equal to $8.6 billion of the 'available' $14.5 billion OTDS, the United States would still have $5.9 billion in support that could be used and stay within WTO commitments. The exact amount could change depending on what happens to product-specific AMS and blue-box payments under the ACRE programme in the 2008 Farm Act, but some shifting of support into the non-product-specific category would appear to be a possibility. Our projections suggest that non-product-specific support could be increased by roughly $2 billion while staying within the *de minimis*, which would allow the remaining amount of support (roughly $4 billion) to be absorbed by the product-specific AMS without violating the binding on the total product-specific AMS. Given the considerable pressure that was exerted

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[21]For sugar, there is also the issue of a shift in support towards ethanol production. Under the current Farm Act, purchases of surplus sugar are to be sold to bioenergy producers, opening up the possibility of a reclassification of support. The definition of what constitutes an 'agricultural' subsidy is an important issue that is discussed further in the concluding section.
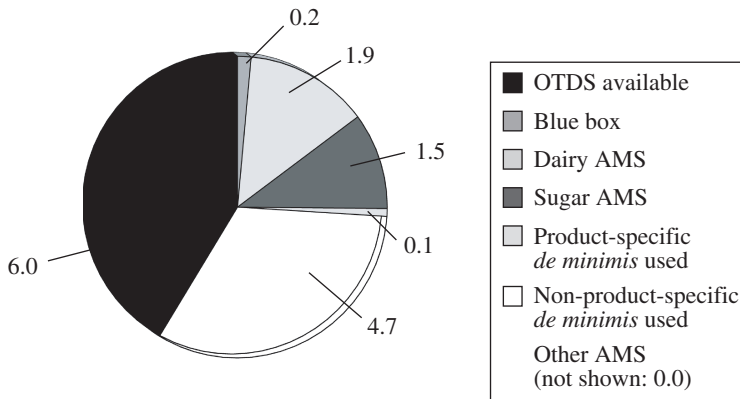
Figure 4.12: *Projected composition of U.S. notified support in 2016 and 'available' non-product-specific support, excluding ACRE payments ($ billion).*
Source: authors' calculations.

for a reduction in direct payments (green box) in the debate on the 2008 Farm Act, the popularity of such payments among farmers might well decline in the future with less support for box-shifting in that direction. This could exert pressure on policymakers to increase other categories of support.

The lack of any similar 'policy space' for the EU is illustrated in Figure 4.13. The flexibility for box-shifting to accommodate non-green support measures would shrink rapidly after 2013–14 if the DDA modalities are adopted. In 2011–12, at the start of the implementation period, the EU would have €62.3 billion to expend on AMS policies without breaking the OTDS constraint. The effective ceiling would be the AMS limit of €47.7 billion. Both of these constraints are well above the projected level of AMS, estimated at €11.6 billion for that year. By 2013–14, the OTDS limit will have been reduced such that only €40.1 billion would be available for AMS expenditure, still a less effective constraint that the AMS limit of €34.7 billion for that year. But by 2015–16, as shown in the figure, the OTDS constraint would impose a limit of €23.8 billion on the sum of the AMS, blue-box and *de minimis* support, and the AMS limit itself would have shrunk to €21.7 billion. Both constraints remove any 'slack' and imply that any future AMS of over €17.9 billion could violate the OTDS constraint, even if the AMS limit was not exceeded. So the OTDS constraint will become very important by the end of the transition period.

For many years the United States was in the lead with regard to agricultural policy reform, arguing that protection of the most sensitive sectors (dairy, sugar, rice and cotton) should be scaled back while the more competitive sectors of grains, oilseeds and beef, along with fruits and vegetables, should be allowed to trade more freely in the global market. The move to provide direct payments with little production restriction in the 1996 Farm Act was a
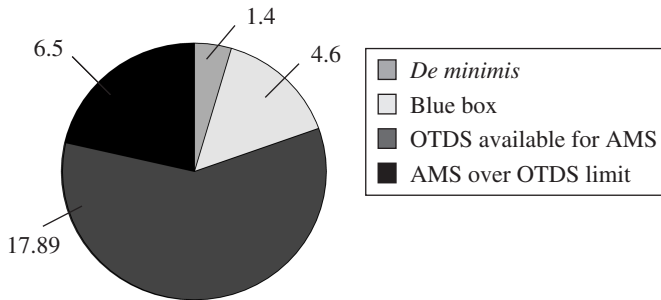
Figure 4.13: *Projected composition of EU notified support in 2015–16 showing AMS exceeding OTDS limits (€ billion).*
Source: authors' calculations.

development in the same direction. But recent changes in U.S. farm policy have been more hesitant and less clearly in favour of a liberal trade regime. Trade-friendly box-shifting has been sidelined for the time being as U.S. agriculture re-establishes confidence in its ability to compete in world markets with countries such as Brazil and China.

With respect to the EU, considerable amounts of price support have been notified for fruits and vegetables. This is the area where cosmetic box-shifting has taken place. The main price support activities for fresh fruits and vegetables (besides tariff protection) are implemented through producer organisations. Subsidies to these are provided for withholding produce from the market and engaging in market promotion and research. The EU chose, in its 2007–8 notification, to declare the payments made to these bodies (non-exempt) subsidies. One could imagine the EU declaring, with some justification, the 'eligible quantity' to be that taken in place of calculations based on an applied administered price, a reference price and an eligible quantity. This change would seem to have adequate logic, but once again it is an example of a reduction in notified price support with no immediate corresponding impact on farm incomes.

The EU, through its policy reforms, has also been box-shifting in a more trade-friendly way. The increase in subsidies classified as green box has provided flexibility for major AMS (and OTDS) cuts. It is likely that this trend will continue so long as farmers are content with direct payments (often at a relatively generous rate) and can secure reasonable prices for their products. Significantly lower tariff protection, combined with a fall in world prices, could undermine this position. Calls for the re-establishment of price-based protection could follow. However, having already taken so many steps in the direction of decoupling, the chances of a reversal by the EU are slight. More likely would be a move towards risk management tools and

insurance schemes. The continued shift of payments to the green box could be problematic if challenges were made on the decoupling issue (*ie* if an EU TAMS case were launched), although this is not very likely.

8   CONCLUSIONS

This concluding section summarises the results of the calculations and addresses the following questions.

- Would the DDA (as represented by the draft modalities of 6 December 2008) effectively constrain domestic support policies in the EU and the United States? How might the United States and the EU react to such constraints?
- What impact might tighter disciplines on adherence to the regulations (such as might emerge from current litigation on the U.S. total AMS notifications) have on policy outcomes?
- How useful would proposed improvements in monitoring and supervision be in imposing effective constraints on EU and U.S. trade-distorting support?

The analysis presented in this chapter suggests that, should commodity prices remain at reasonably high levels, the constraints imposed by the DDA on the domestic policies of the EU and the United States would be relatively modest. The United States is likely to be able to keep AMS and blue-box payments below negotiated limits, and the broader OTDS binding could also be respected with little change in current policy. But the constraints would have implications for a few commodities, particularly cotton and sugar. Significant reductions in commodity prices on world markets, of 30% or so relative to the recent past, would create problems. The new revenue stabilisation programme (ACRE) under the 2008 Farm Act could also pose a challenge to staying within new commitments, even if prices remain high.

On the basis of this assessment, it appears that the United States could largely live within the DDA commitments by making selective changes in domestic farm programmes. But this is not to imply that such changes would be easy to implement. The experience of the two most recent farm acts provides sobering lessons on the difficulty of reforming agricultural policy in the United States. Nevertheless, WTO disciplines are likely to play an increasing role in the future debate on farm policy. They provide ammunition to those who would like to shift the emphasis away from commodities and towards other aims, such as environmental quality. Whether the provision of such additional ammunition makes an assault on traditional programmes more likely to succeed remains to be seen.

The relationship between the level of the most trade-distorting support (the AMS) and the WTO constraints is shown in Figures 4.14 and 4.15. The
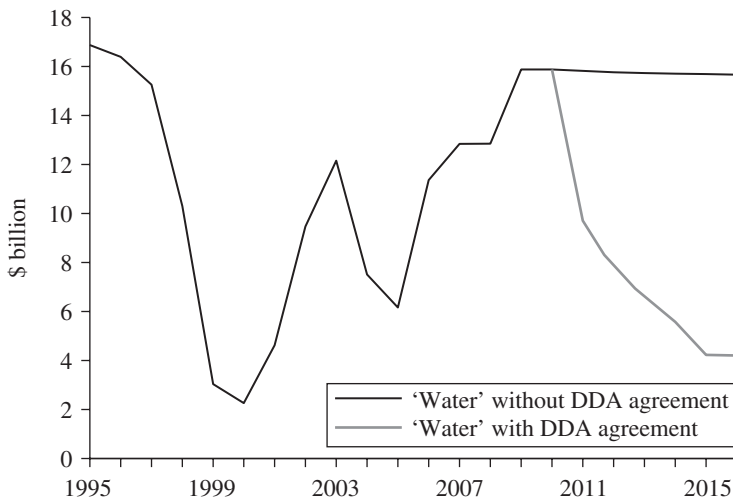
Figure 4.14: *Impact of DDA constraints on U.S. policy 'water' (AMS limit minus actual AMS): 1995–2016.*
Source: authors' calculations.

figures depict the difference between the actual total AMS (notified and projected) and the bound total AMS under the URAA and the DDA. In the U.S. case (Figure 4.14), the reduction in the total AMS squeezes out a large amount of 'water' from WTO commitments. As noted previously, the URAA constraint has never been binding, although large support payments in the late 1990s meant that the margin for manoeuvre for providing additional support was substantially reduced. By the end of the projections period, the continuation of the URAA provisions will imply almost $15 billion of 'water' in the commitment. The implementation of the largest reduction percentage under the DDA draft modalities squeezes that down to roughly $4 billion under the market conditions implied by the projections. As indicated earlier, that cushion may not be sufficient to absorb changes in support payments if world prices fall, or if price variability generates significant payments under the ACRE programme. If the United States chooses to meet its WTO commitments on support, this may imply that existing policies will have to change.

For the EU, the importance of continuing the pressure on the CAP to become more responsible in terms of its international impacts is shown in Figure 4.15. The Uruguay Round set a limit on domestic support, but the constraint was never binding. An agreement on the DDA modalities would impose greater discipline on support and eliminate the flexibility for making changes in the CAP that would disrupt world markets. The DDA seems likely to act as a deterrent to any backsliding on policy reform. The CAP has been modified
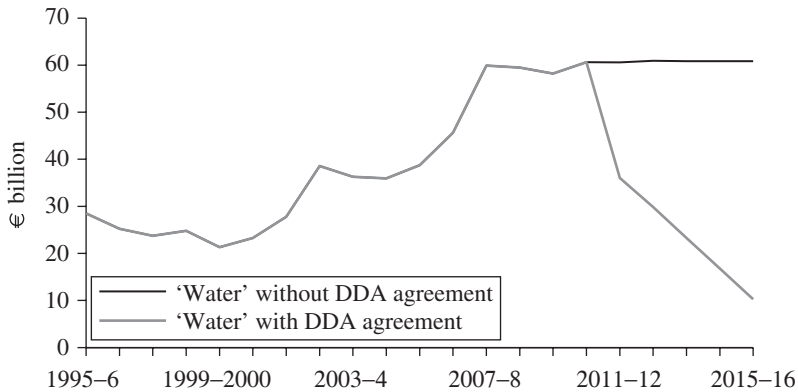
Figure 4.15: *Impact of DDA constraints on EU policy 'water' (AMS limit minus actual AMS): 1995-6 to 2015-16.*
Source: authors' calculations.

a sufficient amount that if current reform plans are implemented, the DDA constraints would not become binding until about 2015. But it is widely expected that the dairy sector will be reformed by then (the quotas are already due for removal) and that the budget allocation for the CAP will likely be less generous. As such, the 'reaction' of the EU to tighter WTO constraints is likely to be 'more of the same'.

It is important to view the constraints on EU domestic support in the light of other aspects of the DDA modalities for agriculture. At one level, the degree of improvement in market access will determine the domestic market conditions for many products. For fruit and vegetables, and other products without extensive price and income support mechanisms, this will in turn influence the extent to which domestic market support instruments are used. For those products for which export subsidies are still in existence, changes in allowable subsidy levels will also influence domestic prices. Domestic support operates within the price environment created by trade measures such as tariffs and export subsidies. The removal of domestic support without corresponding reductions in trade barriers and export subsidies would be less than effective. Reducing trade barriers and subsidies without removing trade-distorting domestic support is also a recipe for continued disruption of trade patterns. Modifying domestic support to rely less on the control of market prices and shifting to the provision of targeted assistance (when necessary) is a valuable complement to the reduction of border measures.

One issue that might be resolved in the relatively near future is whether the way in which the United States has chosen to notify particular policy instruments is in conformity with the URAA. This question was raised in the context of the cotton case, where the panel opined that U.S. direct payments are not compatible with green-box criteria, as they exclude the possibility

for farmers to grow fruits and vegetables on base acres. In a follow-up case, Brazil and Canada have combined two complaints to challenge the notification of the TAMS by the United States for a number of years. The claim is that if the notification had been correct, the United States would have been out of conformity with its obligations in five of the six most recent notifications. The TAMS case raises interesting issues for the dispute settlement panel to decide, and could result in a significant revision of the way in which governments (and the United States in particular) notify direct payments, emergency payments and several other common elements of domestic policy.

The United States had an opportunity in the 2008 Farm Act to bring its policy instruments more closely in line with WTO rules. In particular, the fruit and vegetable exemption could have been removed. But this would have been met with opposition at home and the opportunity was lost in the calculus of balancing domestic interests to produce the legislation. If the TAMS case is adjudicated in favour of Brazil and Canada, the issue will have to be addressed, along with other aspects of domestic policy. However, in the absence of a DDA agreement, as noted above, policy flexibility ('water') would allow most policies to continue without violating WTO constraints, so long as commodity prices do not collapse.

The EU is not directly threatened by the outcome of the TAMS case provided that the DDA negotiations are not concluded successfully. The Single Farm Payment is arguably less vulnerable to challenge than U.S. direct payments on green-box grounds now that the payment can be made to those who produce fruit and vegetables. In any case, there is plenty of 'water' left in the WTO AMS constraint given the actual level of AMS support, as shown in Table 4.15.

A successful conclusion to the Doha Round would have a more significant impact. Under the proposed modalities, the United States would be under much more pressure to revise its policy instruments to take advantage of the 'safe haven' of the green box. The incentive would be for the United States to follow the path of the EU by sheltering its policy transfers to make them immune from challenge. This could include moving to a system of 'stewardship payments' that are further removed from production incentives than current payments. Though such a move was rejected in the 2008 Farm Act debate by those who wished to preserve current policy mechanisms, it is generally understood that changes may be necessary in the future to bring the United States into conformity with its international obligations.[22]

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[22] In this context, it is interesting to note that the 2008 Farm Act introduced some changes into existing U.S. agri-environmental programmes that appear to be designed to clarify their green-box status. The maximum size of future payments under most programmes is to be limited to reimbursement for costs incurred or income foregone by participants, *ie* the same conditions specified in Annex 2 of the URAA for such programmes.

The EU also might be concerned about the possibility of a follow-up dispute settlement case, building on a ruling by the TAMS panel against the United States that claimed that the Single Farm Payment is not green box (perhaps because receipt of the payment requires keeping land in good agricultural condition). There has been some commentary on this possibility (see Swinbank 2007; Swinbank and Tranter 2005), but at a political level it seems less likely that the EU will undo its 2003 reforms as a result of a negative panel report than the United States will modify its direct payments to conform to green-box rules.

In addition to the influence of legal challenges to existing programmes, there is also the possibility that the definition of what constitutes an agricultural subsidy may be opened up for examination at some stage in the WTO. The most significant of the subsidies that are not presently counted as agricultural are those that form part of ethanol and alternative fuels strategies, although significant differences exist between the U.S. ethanol programme based on domestic corn production, and the EU biodiesel programme relying primarily on oilseed crops. Whether and when such policies might be challenged in the WTO is uncertain. The initiation of a case in this area would have to be based on a conscious decision to enter into risky waters.

The whole edifice of constraints on domestic support is built upon the notion that countries have up-to-date and reliable information on how the policies of other countries measure up to rules agreed in the WTO. The Agreement on Agriculture set up a Committee on Agriculture with a mandate to monitor compliance. Experience with the notification and monitoring of domestic support has shown that the current system is not working as well as was originally expected. An improvement in monitoring would be useful, both in terms of keeping countries up to date in supplying notifications and in providing a more critical review of the notification of support under various categories.

One difficulty arises when the political process of monitoring clashes with the legal process of determining conformity. This may rise on the agenda for future political discussions of domestic support if stricter limits under a DDA agreement begin to have a major impact on policy decisions. One can expect some improvement in monitoring as well as in more timely notifications as a result of the fact that the 'slack' in the system would be removed. In addition, the confidence of the developing countries with the effectiveness of the constraints needs to be increased. At present, there is considerable concern over box-shifting and a lack of appreciation of the difference between cosmetic and trade-friendly changes in notifications.

The question of timeliness in the notification of domestic support is largely a political matter. Countries may seek to avoid 'leading the way' and becoming a target for challenges by other WTO members. Consequently, the implementation of more rigorous schedules for monitoring would be useful. However, equally important is reaching an agreement on the way in

which domestic policy instruments are to be notified. The International Food Policy Research Institute project on WTO notifications (Orden *et al* 2011) has revealed wide variations in the methodology used to calculate market price support across countries. As noted above in the context of the calculation of product-specific AMS bindings, this appears to be an example of how an apparent lack of detailed scrutiny of domestic support notifications in the WTO has provided an opportunity for the creation of 'policy space'. If that continues to apply, the credibility of the constraints will suffer. If a new agreement on agriculture is forged in the DDA, these matters will become even more crucial.

So, in conclusion, what would the impact of the DDA domestic support modalities outlined in the Revised Modalities Draft be on U.S. and EU domestic support programmes? Essentially, the main effect of the DDA proposals would be to tighten constraints on U.S. and EU agricultural policies (and those of other industrial countries) such that it would be more difficult for them to revert to the massive distortions that have been seen in the past. These distortions have been at their worst when world market prices have been low, since more affluent countries try to maintain prices and incomes for their farmers that are substantially above those dictated by global supply and demand. It is this reaction that has the most deleterious impact on developing countries. They face depressed prices without the financial resources to indemnify farmers. By curbing the ability of governments of developed countries to pass the burden of agricultural adjustment on to other countries, the global market can only become stronger.

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9   APPENDIX: PRODUCT-SPECIFIC AGGREGATE MEASUREMENT OF SUPPORT
    BINDINGS IN THE EUROPEAN UNION UNDER PROPOSALS IN THE REVISED
    DRAFT MODALITIES

Table A4.1: *EU product-specific AMS bindings under revised draft modalities*
(€ million).

Product	Average AMS 1995–2000	Base AMS	Year 1	Year 2	Year 3	Notification 2007–8
Common wheat	2,784	2,784	2,784	2,784	2,784	1,648
Durum wheat	0	0	0	0	0	0
Barley	2,509	2,509	2,509	2,509	2,509	1,948
Maize	905	905	905	905	905	0
Rye	297	297	297	297	297	0
Oats	10	10	10	10	10	0
Sorghum	20	20	20	20	20	8
Triticale	211	228	222	217	211	375
Rice	464	464	464	464	464	0
White sugar	5,852	5,852	5,852	5,852	5,852	3,550
Skimmed milk powder	1,562	1,623	1,603	1,582	1,562	976
Butter	4,288	4,728	4,581	4,434	4,288	2,742
Milk	0	0	0	0	0	0
Beef	13,155	13,155	13,155	13,155	13,155	0
Pigmeat	0	0	0	0	0	0
Dried fodder	305	319	314	309	305	0
Chick-peas, lentils and vetches	70	71	71	70	70	0
Olive oil	1,910	2,386	2,227	2,069	1,910	0
Tobacco	962	962	962	962	962	386
Bananas	226	244	238	232	226	0
Apples	2,155	2,372	2,300	2,227	2,155	0
Pears	622	622	622	622	622	0
Apricots	124	124	124	124	124	0
Cherries	136	166	156	146	136	0
Peaches/ nectarines	439	439	439	439	439	0
Table grapes	247	247	247	247	247	0
Plums	77	85	82	79	77	0
Lemons	359	359	359	359	359	0
Clementines	188	195	193	190	188	0
Mandarins	48	48	48	48	48	0
Satsumas	32	32	32	32	32	0
Oranges	390	390	390	390	390	0

Table A4.1: *Continued.*

Product	Average AMS 1995–2000	Base AMS	Year 1	Year 2	Year 3	Notification 2007–8
Cucumbers	568	687	647	607	568	0
Courgettes	152	152	152	152	152	0
Artichokes	185	186	186	185	185	0
Tomatoes	3,146	3,146	3,146	3,146	3,146	0
Wine	1,711	1,711	1,711	1,711	1,711	0
Ethyl alcohol of agricultural origin	0	0	0	0	0	80
Seed for sowing	100	100	100	100	100	0
Hemp	14	14	14	14	14	0
Flax fibre	101	101	101	101	101	21
Silkworms	0	0	0	0	0	1
Hops	15	15	15	15	15	—
Cotton	753	753	753	753	753	0
Cauliflower	3	3	3	3	3	0
Aubergines	0	0	0	0	0	0
Other fruit and vegetables	0	0	0	0	0	2
Asparagus	0	0	0	0	0	0
Citrus fruit for processing	150	195	180	165	150	197
Lemons for processing	37	38	37	37	37	0
Tinned pineapple	4	4	4	4	4	0
Peaches for processing	69	69	69	69	69	22
Plums for processing	33	35	34	33	33	38
Pears for processing	32	32	32	32	32	16
Figs for processing	5	6	6	6	5	6
Tomatoes for processing	341	341	341	341	341	230
Grapes for processing	61	79	73	67	61	0
Potatoes for processing to starch	0	0	0	0	0	0
Total product-specific AMS	47,826	49,302	48,810	48,318	47,826	12,353

Source: authors' calculations based on WTO (2008).

Services in Doha: What's on the Table?

INGO BORCHERT, BATSHUR GOOTIIZ AND AADITYA MATTOO[1]

1 WHY SERVICES MATTER

The Doha negotiations are primarily focused on agriculture and manufactured goods. Services are mentioned, but more out of a sense of obligation than conviction. This is a puzzle. Some 80% of GDP in the United States and the EU originates from services. Together they account for over 60% of world services exports. The commercial services exports of India, China and Brazil have grown on average by 28%, 22% and 16%, respectively, every year for the last decade, and India may soon export more services than goods.

The potential gains from reforming trade in communications, finance, transport and business services are large, probably larger than those from comparable liberalisation of goods trade. Even exploiting the opportunities arising from goods trade liberalisation will require better services: sub-Saharan African exporters today pay transport costs many times greater than the tariffs that they face in industrial country markets.[2] Moreover, without progress in services there may simply not be enough on the table to allow progress in other market-access areas: services are the strongest export interest of WTO members such as the EU, India and the United States that are the focal point of efforts to liberalise agricultural trade.

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[2] Mattoo *et al* (2007) show that Indian horticultural producers receive, on average, only one-sixth of the price that consumers pay because of inefficient storage, transport and distribution. Providing farmers better access to services would enhance the economic gains from, and strengthen the political case for, agricultural trade liberalisation.

So services matter. But what is Doha doing about it? It has been hard to judge, because of the opaqueness of services policies and the opaqueness of the request–offer negotiating process. This chapter tries to assess what is on the table. It begins by summarising what we believe to be the first survey of *applied* trade policies in the major services sectors of 102 industrial and developing countries. These policies are then compared with those countries' Uruguay Round commitments in services and the best offers that they have made in the current Doha negotiations.[3]

In a nutshell, at this stage Doha promises somewhat greater security of access to services markets but not one iota of liberalisation. Ironically, two of the most protected sectors, transport and professional services (involving the international mobility of people), are either not being negotiated at all or are not being negotiated with any degree of seriousness. Uruguay Round commitments are, on average, 2.3 times more restrictive than current policies. The best offers submitted so far as part of the Doha negotiations improve on Uruguay Round commitments by about 10% but are still, on average, twice as restrictive as actual policies. At present, Doha offers not greater access to markets but a weak assurance that access will not get worse.

Negotiators have been content to let services lag. The 'request–offer' negotiating process has resulted in a low-level equilibrium trap. Just as importantly, services have not been given the political attention that their economic significance deserves. The WTO's Hong Kong Ministerial set out ambitious goals, and our analysis shows that those goals are still remote.

Section 2 describes our survey and the policies on the ground in the countries surveyed. Sections 3 and 4 describe how Doha improves on the Uruguay Round and how far offers are from reality. Section 5 concludes with unsolicited advice on how we might do better.

2   SOURCE OF DATA AND METHODOLOGY

The World Bank has an ongoing research project compiling data on *actual or applied* trade policies in services. To date, surveys have been conducted in 78 developing and transition countries and comparable information has been obtained for 24 OECD countries.

The following sectors were included in the survey: financial services (retail banking, life and automobile insurance, and reinsurance), telecommunications (fixed and mobile), retail distribution, transportation (air passenger, road and railway freight, maritime international shipping and maritime auxiliary

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[3]To facilitate comparison between the GATS commitments or offers and actual policy, we focus only on policies that fall within the scope of GATS commitments on market access (Article XVI) and national treatment (Article XVII). We do not consider other policies that may impede access to markets, such as the non-enforcement of competition policy.

services), and selected professional services.[4] In each sector, the survey covers the most relevant modes of supplying that service: cross-border trade in services (mode 1 in WTO parlance) in financial, transportation and professional services; commercial presence or foreign direct investment (mode 3) in each services sector; and the presence of service supplying individuals (mode 4) in professional services. The survey focused mainly on policies that would affect the entry and operations of foreign services suppliers.

In the 78 developing and transition countries, the surveys were completed by local law firms that were familiar with the policy regime in the sectors. For the 24 OECD countries, the comparable policy information was collected from various publicly available sources, including their GATS commitments and the most recent offers, and other sector-specific databases such as Economic Intelligence Unit Country Finance reports, the International Monetary Fund (IMF) Annual Report on Exchange Rate and Exchange Arrangements, and the Axco insurance database. All policy information has been shared with government officials of the respective country for vetting during 2008–10; the response rate was about 40%, and any feedback was incorporated into the database.[5] The Uruguay Round commitments and the Doha offers were obtained from the WTO.

First, to capture the broad restrictiveness of services trade policies and commitments, a summary of key restrictions was prepared for each sector–mode combination.[6] We then construct a simple and relatively transparent measure of openness that avoids the pitfalls of more sophisticated approaches (see the discussion in Borchert *et al* 2011). Essentially, we assess policy regimes in their entirety and map them onto five broad categories: completely open, *ie* no restrictions at all; completely closed, *ie* no entry allowed at all; virtually open but with minor restrictions; virtually closed but with very limited opportunities to enter and operate; and a final residual 'middle' category of regimes that allow entry and operations but impose restrictions that are neither trivial nor virtually prohibitive. When required for graphic illustration or comparison, each of the regimes is assigned a services trade restrictiveness index (STRI)

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[4]The survey also covered air transport services, but we do not describe the findings in this paper because air traffic rights were excluded from the scope of the GATS. Maritime auxiliary services cover cargo handling, storage and warehousing, customs clearance, container station and depot services, agency, and freight forwarding services. The professional services consist of accounting, auditing, and legal advisory services for domestic and international law.

[5]See Table A5.4 for a list of countries that sent the policy confirmation.

[6]The list of restrictions included in the summary is not exhaustive, but was selected to facilitate a comparison with restrictions scheduled during the Uruguay Round and the Doha Agenda. For example, an excessively high fee for establishing an international gateway in telecommunications emerges from our survey as a significant impediment to entry, but is not treated as a restriction because this measure is not scheduled under the GATS.

on an openness scale from 0 to 100 with intervals of 25. Table A5.2 illustrates the mapping from individual measures to openness categories.[7] When two or more measures are in place, the regime assignment reflects the overall restrictiveness of the measures.[8]

Furthermore, the sector results are aggregated across modes of supply using weights that reflect judgements of the relative importance of the different modes for a sector (see Table A5.3). For example, mode 4 (temporary movement of natural persons) is important for professional services but not for telecommunications, where mode 3 is the dominant mode for contesting a market. Sector restrictiveness indices are aggregated using sector GDP shares as weights.[9] Finally, the regional STRIs are computed as simple averages of the country indices within respective regions.

3   THE STATE OF ACTUAL POLICY IN SERVICES

It is much harder to make an evaluation of what Doha offers in services than it is for goods. First, there is no database of actual trade policies in specific services sectors, *ie* the counterpart of 'applied' tariffs. Second, the Doha negotiations in services are not based on an agreed formula for cuts in protection but on offers by each member of market access (and national treatment) in specific sectors. Third, it is hard to quantify services trade policies, which are akin to non-tariff barriers and include prohibitions, quotas, and discriminatory regulation. Here we describe efforts to overcome these difficulties and construct a picture of what Doha offers in services.

Figures 5.1, 5.2 and 5.3 summarise information on actual policies. Figure 5.1 is a scatter diagram in which the location of each country reflects the overall restrictiveness of its services trade policies and its per capita income. The rich countries are clustered together at the bottom right, showing that they are quite open overall (although, as we see below, some sectors remain restricted). There is much more variation in the restrictiveness of services policies for low-income countries. Some of the poorest countries, like Cambodia, Ghana,

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[7]In the quantification of GATS commitments and offers, if a country did not schedule a sector or if it entered 'Unbound' for a particular mode, the maximum score of 100 is assigned to the relevant modes.

[8]Measures covered can be divided into two tiers. The first tier measures include those that affect market entry decisions most significantly, such as a limit on foreign ownership and the number of licences allowed. The second tier measures are those that affect operations of service providers, such as the composition of the board of directors and repatriation of earnings, *etc.* If the first tier measures are prohibitive, the second tier measures are not considered. But if the first tier measures are not prohibitive, then any second tier measures are also considered when making a determination of overall restrictiveness.

[9]To ensure comparability, the same sector shares are used for all countries.
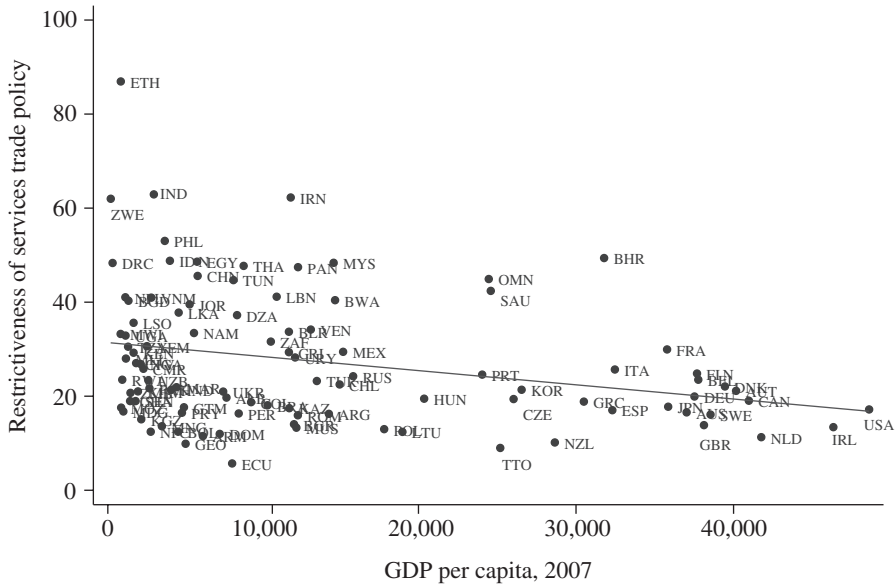
Figure 5.1: *Restrictiveness of services trade policies by GDP per capita, 2007.*
100 countries included. The following sectors are covered: banking (modes 1 and 3), insurance (modes 1 and 3), telecommunications (mobile and fixed telecom in mode 3), retailing (mode 3), transportation (maritime and air (for air transport, the policy information for mode 1 (BASA) came from the QUASAR database of the WTO)) (modes 1 and 3); maritime auxiliary services, rail and road (mode 3), and professional services (modes 1, 3 and 4).

Nigeria, Senegal and Mongolia are remarkably open, with World Bank/IMF reform programmes and accession to the WTO probably playing a significant role.

Interestingly, some of the most restrictive policies today are visible in the fast-growing economies of Asia, including China, India, Indonesia, Malaysia, Philippines and Thailand, as well as in the Middle East, including the Arab Republic of Egypt, Saudi Arabia and Tunisia. Figure 5.2 confirms that, in terms of regions, the most restrictive policies are observed in the Middle East and North African (MENA) and Asian countries. Policies are much more liberal in Latin America, Africa, Eastern Europe and the OECD countries.

The survey reveals that developing countries have significantly liberalised a range of service sectors over the last couple of decades, but in some areas protection persists (Figure 5.3). In fact, the overall pattern of policies across sectors is becoming increasingly similar in developing and industrial countries. In telecommunications, public monopolies seem, in most countries, to be a relic of history, with at least some measure of competition introduced in both mobile and fixed services. In banking too, domination by state-owned
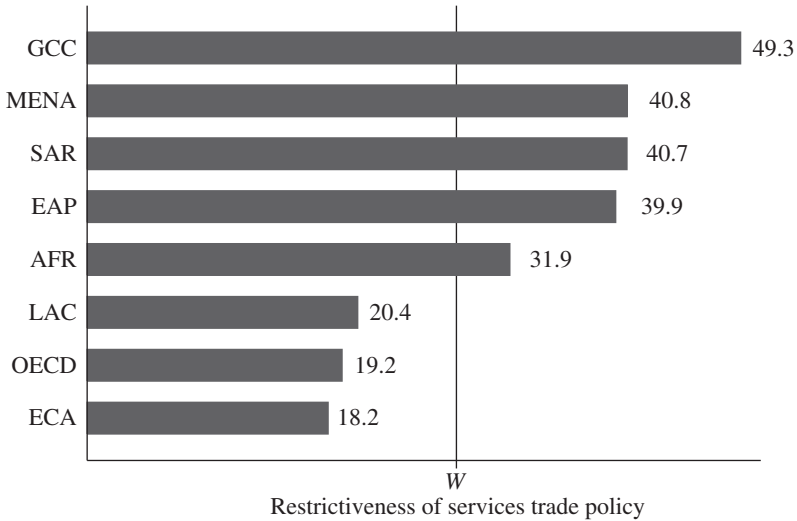
Figure 5.2: *Restrictiveness of services trade policies by region.*
The STRI scores at the regional level are calculated as a simple average of constituent countries' STRIs. Regional abbreviations: Gulf Cooperation Council (GCC), Middle East and North Africa (MENA), South Asia region (SAR), East Asia and Pacific (EAP), sub-Saharan Africa (AFR), Latin America and Caribbean (LAC), Organisation for Economic Co-operation and Development (OECD), Europe and Central Asia (ECA). 'W' indicates the average STRI across the sample. 102 countries included.

banks has given way to increased openness to the presence of foreign and private banks. Very few countries restrict foreign investment in retail. However, although the markets for these services are now more competitive, in most countries they are some distance from being truly contestable. In telecommunications, governments continue to limit the number of providers and, particularly in Asia, the extent of foreign ownership. In both banking and insurance, the allocation of new licences remains opaque and highly discretionary. In retail, a range of domestic regulations, such as zoning laws and single brand retailing, severely impede entry in both developing and industrial countries.

Transport and professional services remain a bastion of protectionism in high-income countries and are also subject to high barriers in developing countries. In maritime transport, although international shipping is today quite open, entry into cabotage and auxiliary services such as cargo handling is restricted in many countries. In professional services, although there is increased scope for international trade through electronic means, restrictions remain on foreign presence, particularly in terms of individual service providers. In general, accounting and the practice of international law tend to be more open than auditing and the practice of domestic law. In the
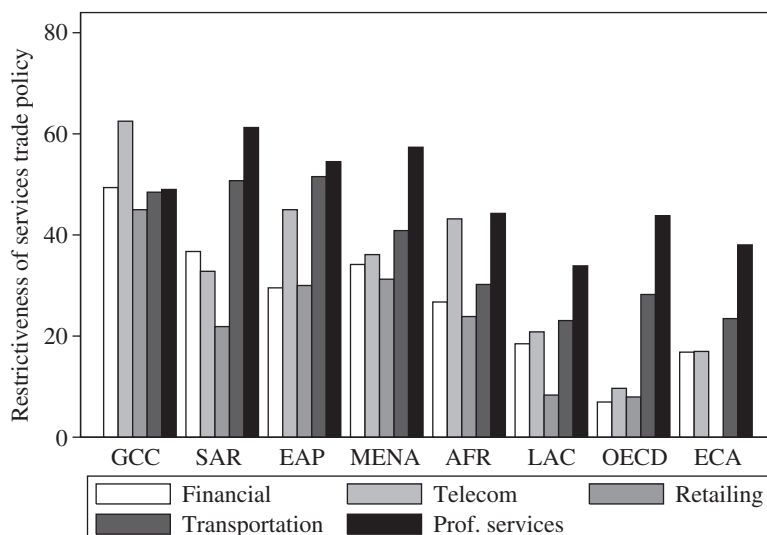
Figure 5.3: *Restrictiveness of services trade policies by region and sector.*
For regional abbreviations see Figure 5.2. For ECA, the retail STRI is equal to zero. Financial services include banking and life and non-life insurance and reinsurance, telecommunications include fixed and mobile telecom, transportation includes air passenger, maritime shipping, and auxiliary services, and professional services include accounting, auditing, and legal services. 102 countries included.

sectors and modes covered here, the restrictions on foreign investment are generally less stringent than the restrictions on cross-border trade, and far less stringent than the presence of foreign professionals.

4   WHAT DOES DOHA OFFER?

Most services liberalisation all around the world has so far been undertaken unilaterally. Multilateral negotiations on services began in the Uruguay Round. These negotiations reduced policy uncertainty by inducing countries to begin locking in unilateral liberalisation, but the negotiations produced little additional market-opening (Hoekman 2006). The same is true for most regional agreements on services, with a few exceptions.

What is currently on the table in Doha? Let us consider first what is not. Doha offers, as they stand today, do not offer any liberalisation of actual policy in the sectors and modes of supply examined here. Ironically, two of the currently most protected sectors, transport and professional services, are either not being negotiated at all or are not being negotiated with any degree of seriousness. The annex to the GATS on air transport services excludes from the scope of the GATS all measures affecting air traffic rights and services

directly related to the exercise of air traffic rights. The maritime negotiations are notionally underway (with offers from some countries) but they have never really got off the ground because the United States is unwilling to accept GATS disciplines (particularly the MFN principle) on maritime transport and has not made any commitments or offers in this area. As far as professional services are concerned, a vital mode of supply, the presence of natural persons, faces almost insurmountable barriers in most countries because trade negotiators have had little liberalising influence on immigration policy and domestic regulations such as licensing and qualification requirements.

Given that liberalisation is not on the table, the question is whether the current Doha offers involve any greater security of access than the Uruguay Round commitments under the GATS. What has so far been accomplished in this respect can be assessed by comparing actual policy with Uruguay Round commitments and with the offers submitted so far as part of the Doha negotiations. For the purposes of the subsequent analysis, let us define a 'binding gap' as the difference in restrictiveness between Uruguay Round commitments and actual policy. Analogously, let 'offer gap' denote the difference between Doha offers and actual policy. Lastly, we will denote as 'offer improvement' the difference between Uruguay Round commitments and Doha offers.

Of the 102 countries surveyed, nine countries were excluded from the comparative analysis because they are not yet WTO members. Of the remaining 93 countries, 62 submitted offers during the Doha Round.[10] Thus, we report offer improvements and offer gaps for 62 countries only. For each country, there exist 29 sector–mode combinations[11] (that is, a specific mode of supply in a specific sector) for which actual policies are compared with the Uruguay Round commitments and Doha offers. Looking across the full sample of 93 countries and their Uruguay Round commitments (the maximum possible number of sector–modes equals 29×93), countries did not make any commitment in 39% of the subsector–modes covered and entered 'unbound' in 12% of subsector–modes. Taken together, this leaves about half of all sector–mode combinations without a meaningful commitment at the end

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[10] The basic sample of 93 countries includes 17 accession countries that became new WTO members after 1995, and for which Uruguay Round commitments therefore do not exist. However, we include in the analysis the commitments made in their accession schedules (henceforth, we shall no longer distinguish between Uruguay Round and accession commitments). Accession commitments resemble those from the Uruguay Round in that they are legally binding (but came into force at a later point in time, sometimes subject to transition periods). Of the 17 accession countries, 7 have made offers under Doha. Generally, though, depending on the date of accession, it is not surprising that a country refrains from advancing new offers shortly after a full-fledged accession negotiation.

[11] See Table A5.3 for the list of 29 sector–modes. Air freight and air passenger sectors, though covered by the survey, are excluded from the comparison since countries did not submit commitments or offers in air transport services.

of the Uruguay Round. During the Doha Round, 62 countries submitted offers in two-thirds of all possible sector–mode combinations. The overall 'coverage' therefore increased compared with one-half of sector–modes that had previously featured some commitment under the Uruguay Round. This process of bringing additional sector–modes under the WTO umbrella—even if no additional liberalisation is offered—may be considered an improvement in itself. However, 72% of those Doha offers would not in fact constitute an improvement upon their Uruguay Round commitments in terms of actual openness.[12] Only 28% do offer an improvement, a small share of which improves to 'none'.

A central finding from all subsequent figures is that, in all regions of the world, *actual policy is substantially more liberal than Uruguay Round commitments.* Uruguay Round commitments are on average 2.3 times more restrictive than current policies (see Tables 5.1 and 5.3, and A5.1). In other words, the binding gap (Uruguay Round commitment minus actual policies) remains, on average, 133% more restrictive than the policies. As Figure 5.4 shows, poorer countries exhibit, on average, bigger binding gaps between commitments and actual policy.[13]

Another finding is that *Doha offers improve somewhat upon Uruguay Round commitments, but the offer gap still remains large.* Doha offers are on average twice as restrictive as the actual policies (see Tables 5.2, 5.4 and A5.1), meaning the offer gap (Doha offers minus actual policies) remains, on average, 97 more restrictive than applied policies. Figure 5.5 shows that the offer improvements in absolute terms are roughly equal across income groups. Many low-income countries, especially those in Africa, did not submit offers, while upper-middle- and high-income countries, including members of the OECD, participate in the Doha offers more actively and put more liberal offers

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[12]A leading example of such an instance would be an offer made in mode 4 (movement of natural persons as service suppliers), scheduling a sector as unbound except for horizontal commitments made. In terms of our quantification of restrictiveness, such a case would almost never warrant an incremental improvement in that sector–mode's STRI score.

[13]The data exhibit a few instances in which applied policies appear to be more restrictive than the corresponding Uruguay Round commitment. A substantial part of these cases are tied to accession countries, *eg* Saudi Arabia or Vietnam, and therefore perhaps reflect a situation in which the commitment represents the long-run target, whereas policies temporarily remain more restrictive during the transition period. Excluding the 17 accession countries as a robustness check leaves the magnitude of binding and offer gaps virtually unchanged. Note that, if anything, the few cases in which policies are more restrictive than commitments work towards attenuating our results in the sense that the binding gaps reported in Table 5.1 would be even larger with strictly non-negative binding gaps. In general, a number of non-discriminatory measures could be conceived that would potentially increase the restrictiveness score of applied policies, *eg* a moratorium on new licences, but that would not need to be scheduled under the GATS, thereby resulting in a seemingly negative binding gap but with the respective country in full compliance with its WTO obligations.

Figure 5.4: *Restrictiveness of Uruguay Round commitments and actual policy for 93 countries.*

on the table. Notwithstanding these differences, it remains true that Doha does not offer much liberalisation; rather, it offers some reassurance that access will not get worse.

Figures 5.6 and 5.7 highlight the differences in binding and offer gaps across world regions. It is noteworthy that some African countries have actual policies that are significantly more liberal than their Uruguay Round commitments, comparable with those of OECD countries. Three of the six African countries considered here (Ghana, Senegal and Tanzania) did not submit Doha offers. The offers of Kenya and South Africa did not make a significant improvement over their Uruguay Round commitments in the sectors covered in this survey, but Nigeria's offer made some improvements. Most of the African countries have not submitted offers. Some low-income countries did not schedule commitments in their major sectors. For example, Tanzania only scheduled the tourism sector. Botswana, Tanzania, Cameroon and Mali did not schedule commitments in the sectors covered by the database.

Countries belonging to the South Asia region (SAR) have both restrictive policies and restrictive Uruguay Round commitments. However, the offers made by the region significantly improve upon the commitments, especially the offers made by India and Pakistan. Compared with other non-OECD partners, countries in the SAR have made greater improvements in Doha.

Figure 5.5: *Doha offer improvement, offer gap, and applied policy for 62 countries.*
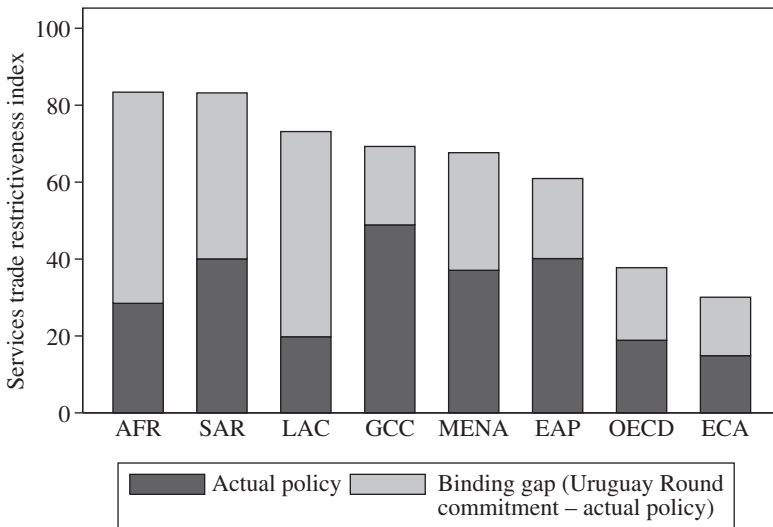
Figure 5.6: *The binding gap and applied policy by region for 93 countries.*
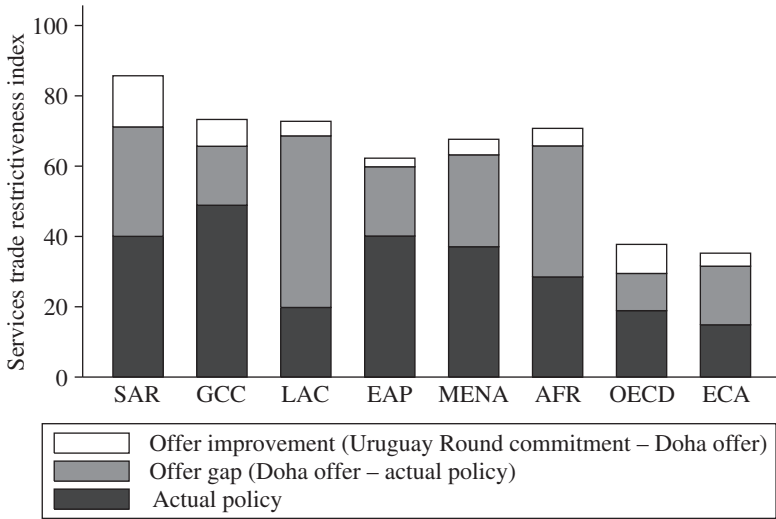
Figure 5.7: *Offer improvement, offer gap, and applied policy for 62 countries.*
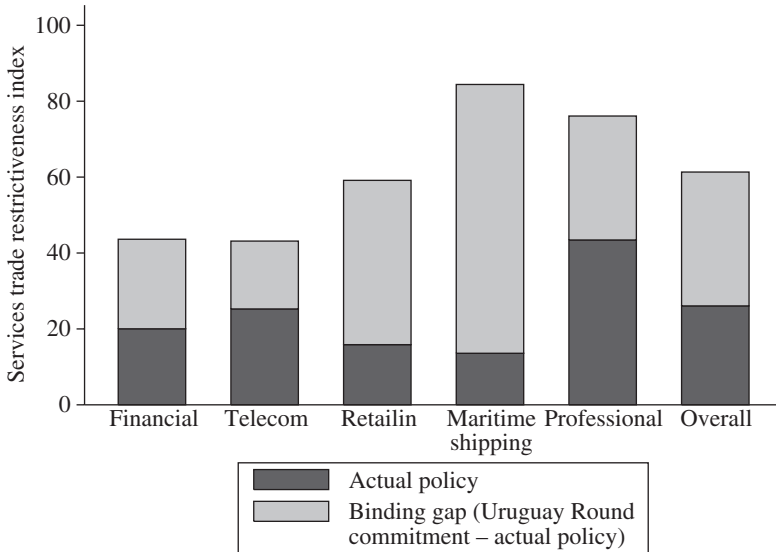
Figure 5.8: *Binding gap and applied policy by sector for 93 countries.*

Countries in the Gulf region, in the Middle East and North Africa, and in the East Asia Pacific region have applied policies that are, on average, as restrictive as those of South Asia, but their Uruguay Round commitments were closer to
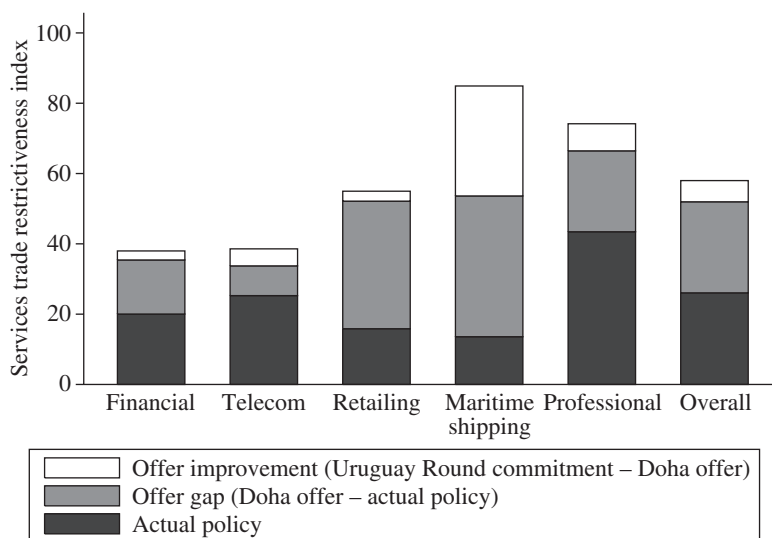
Figure 5.9: *Offer gain, offer gap, and applied policy by sector for 62 countries.*

their actual policies than those of South Asian countries. Their Doha offers do not improve significantly on their Uruguay Round commitments.

Eastern European countries have actual policies, Uruguay Round commitments, and Doha offers that are much more liberal than those of other regions. Their binding gap as well as their offer gap is therefore small. This is because the initial commitments of the Europe and Central Asia (ECA) countries were quite liberal and ambitious (see, for example, the accession schedule of Ukraine). In the Doha Round, Poland, Hungary, the Czech Republic and Lithuania did not make independent offers but were covered by the offer of the European Community.

The OECD countries and those in Latin America have actual policies that are more liberal than their Uruguay Round commitments. Their Doha offers improve somewhat upon their Uruguay Round commitments and narrow the gap with actual policies. The offer gap in the Latin America and the Caribbean (LAC) region remains very large, while the offer gap is small for the OECD.

Figures 5.8 and 5.9 explore the distribution of actual policy, binding gaps and offer gaps across sectors and subsectors. Financial and telecommunications services are relatively open, and the Doha offers have made a slight improvement on the Uruguay Round commitments yet the offer gap remains. Applied policies in retail distribution are even more liberal than the ones in financial and telecom. However, the binding gap is larger. Offers do not improve much on the Uruguay Round commitments and the gap between Doha offers and the actual policies thus remains one of the largest.
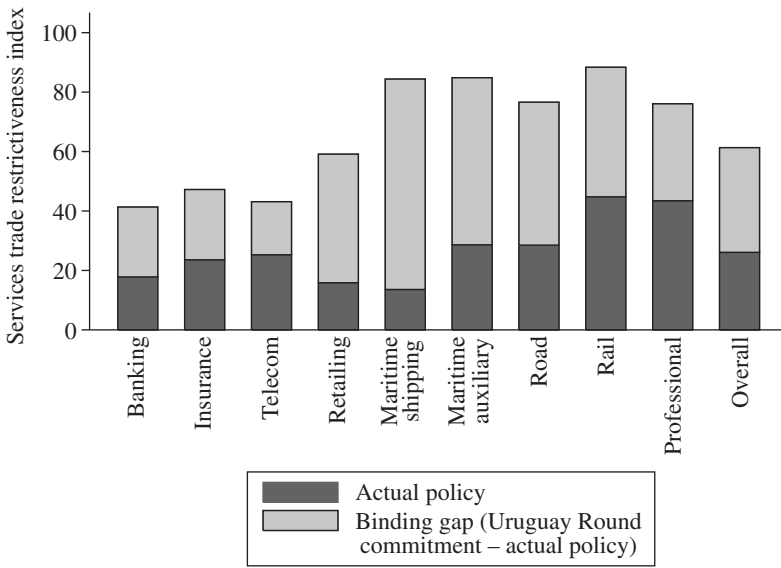
Figure 5.10: *Binding gap and applied policy by subsector for all countries.*
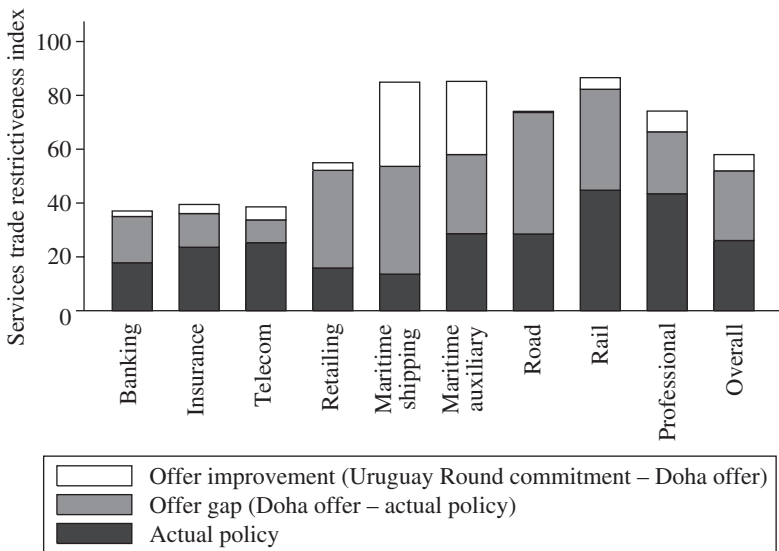
Figure 5.11: *Offer improvement, offer gap and applied policy by subsector for countries' submitted offers.*

Table 5.1: *Applied policy and binding gap by region for 93 countries.*

Regions	Actual policies	Binding gap: Uruguay Round commitment – actual policy	% of policy
AFR (21)	28.5	54.9	192
EAP (8)	40.1	20.8	52
ECA (12)	15.3	15.2	99
GCC (5)	49.2	20.1	41
LAC (18)	21.1	52.2	248
MENA (4)	38.3	29.3	77
OECD (20)	18.9	18.8	99
SAR (5)	40.0	43.2	108
World (93)	26.3	35.0	133

In maritime transport, there is a huge gap between Uruguay Round commitments (or the lack of them) and actual policy, which Doha offers have narrowed, but only by about one-half. Most improvements were made in maritime auxiliary services and cross-border maritime shipping, offered by the European Community member states, for example. Most OECD countries kept the status of 'unbound' in maritime transport through mode 3. The United States have still not made improvements in maritime transport.

In rail and road, the binding gap is large although, at least with respect to railway freight transport, applied policies are also among the most restrictive. In neither case do the Doha offers improve much. The offer improvements in the transportation sector are rather driven by offers made in maritime international shipping and maritime auxiliary services.

In professional services, actual policies are highly restrictive (especially regarding the presence of natural persons), and Doha offers have narrowed the gap between Uruguay Round commitments and actual policy only slightly. Since actual policies and the Uruguay Round commitments are both restrictive, the binding and offer gaps are small.

There is a reasonable prospect that offers will be improved. The latest report on the status of the services negotiations (WTO 2008) noted that further discussion was needed on issues relating to participants' level of ambition as well as their willingness to bind existing and improved levels of market access and national treatment. In addition, specific reference was made to modes 1 and 4 with respect to the treatment of sectors and modes of supply of export interest to developing countries. The chair of the Trade Negotiations Committee also held a 'signalling exercise' among a group of ministers, at the time that 'modalities' in agriculture and NAMA were being discussed. At the signalling exercise, participating ministers indicated that they might

Table 5.2: *Applied policy, the offer improvement, and offer gap by region for 62 countries.*

	Actual policies	Offer improvement: Uruguay Round commitment – Doha offer	% of Uruguay Round commitment	Offer gap: Doha offer – actual policy	% of policy	Binding gap: Uruguay Round commitment – actual policy	% of policy
AFR (4)	28.54	4.98	6	37.8	133	42.8	150
EAP (5)	40.11	2.44	4	19.8	49	22.3	56
ECA (7)	15.35	3.70	12	16.4	107	20.1	131
GCC (3)	49.19	7.62	11	16.3	33	23.9	49
LAC (16)	21.05	4.41	6	47.2	224	51.7	245
MENA (4)	38.32	4.43	7	24.9	65	29.3	77
OECD (20)	18.94	8.27	22	10.5	56	18.8	99
SAR (3)	40.03	14.55	17	30.6	76	45.1	113
World (62)	26.31	6.03	10	25.5	97	31.6	120

The numbers in parentheses indicate the number of countries covered per region. See Table A5.4 for the list of countries in each region.

Table 5.3: *Applied policy and binding gap by sector.*

Sectors	Actual policies	Binding gap: Uruguay Round commitment – actual policy	% of policy
Banking	17.76	23.59	133
Insurance	23.34	23.89	102
Telecom	25.13	18.01	72
Retailing	15.86	43.28	273
Maritime shipping	13.36	71.05	532
Maritime auxiliary	29.61	55.26	187
Road	28.49	48.12	169
Rail	44.77	43.60	97
Professional	44.65	31.51	71
Overall	26.31	35.03	133

significantly improve their services offers. This chapter does not analyse the indications of improvements that came out of the signalling exercise.

5 CONCLUSION

Our analysis suggests that negotiators have been content to let services lag. The best market-access offers do not even reflect the liberalisation that has already taken place. The 'request–offer' negotiating process, bilateral and plurilateral, seems to have resulted in a low-level equilibrium trap.

More effort to liberalise trade and investment in services at the multilateral level is required. Perhaps greater progress could be made by turning the negotiating progress on its head and, instead of the incremental and unproductive request–offer process, members could strive directly to define a final package. To be both worthwhile and attainable, such a 'package' on services would have to be balanced from a mercantilist perspective, commercially relevant from a business perspective, and offer substance rather than rhetoric from a development perspective (Mattoo 2005). Indeed, the WTO's Hong Kong Ministerial Declaration sketched out similar ambitious aims. An agreement could follow the precedent of the WTO's Information Technology Agreement, where participation is limited to a critical mass of signatories who would extend the benefits also to non-participants.

Such a package could have three elements. First, a promise not to impose new restrictions on trade in services. This would dispel the spectre of protectionism that hangs over the outsourcing of business services, which is producing huge cost savings in the North and ever-widening export opportunities for the South.

Table 5.4: *Applied policy, offer improvement and offer gap, by sector for 62 countries.*

Sectors	Actual policies	Offer improvement: Uruguay Round commitment – Doha offer	% of Uruguay Round commitment	Offer gap: Doha offer – actual policy	% of policy	Binding gap: Uruguay Round commitment – actual policy	% of policy
Banking	17.76	2.06	5	17.26	97	19.31	109
Insurance	23.34	3.37	7	12.76	55	16.13	69
Telecom	25.13	4.84	11	8.47	34	13.31	53
Retailing	15.86	2.82	5	36.29	229	39.11	247
Maritime shipping	13.36	31.27	37	40.35	302	71.62	536
Maritime auxiliary	29.61	27.19	32	27.63	93	54.82	185
Road	28.49	0.40	1	45.16	158	45.56	160
Rail	44.77	4.31	5	37.50	84	41.81	93
Professional	44.65	7.70	10	21.52	48	29.22	65
Overall	26.31	6.03	10	25.54	97	31.57	120

Second, a commitment to eliminate barriers to foreign direct investment, either immediately or, in sectors where regulatory inadequacies need to be remedied, in a phased manner. The greatest benefits of securing openness to foreign direct investment, especially in infrastructure services, would accrue to the South while offering increased business opportunities to the North.

Third, it would include an agreement to allow for somewhat greater freedom of international movement for individual service providers (mode 4 in WTO parlance) in order to fulfill specific services contracts. Research shows large potential benefits to both the North and the South from the liberalisation of mode 4, as it offers a way of realising the gains from trade while averting social and political costs in host countries and brain drain losses for source countries. Progress on mode 4 is critical to overall balance.

For there to be a reasonable prospect of achieving these goals, more attention needs to be given to the regulatory context in which services liberalisation takes place. Today, the WTO does nothing to help governments determine whether they have adequate national regulation in place and whether there is a downside risk associated with liberalisation. In general, improved prudential and pro-competitive regulation is necessary to deliver the full benefits of liberalisation in sectors including financial services, basic telecommunications and transport services.

Negotiators could focus primarily on securing 'national treatment', *ie* ending all discrimination on the entry and operation of foreign services providers, rather than on creating more intrusive disciplines. This would reassure regulators that multilateral commitments deprive them *only* of the freedom to discriminate, and do not limit their freedom to regulate in any other way or to adopt policies that improve sector performance.

Second, the development and trade community need to work together to establish a credible mechanism with which to provide regulatory assistance to support the liberalisation commitments of developing countries. This would reassure developing-country policymakers that regulatory inadequacies that could undermine the benefits of liberalisation will be remedied before any market-opening commitments take effect.

Third, there is a need for greater cooperation between national regulators to support liberalisation. For example, it should be possible to make temporary entry of foreign services providers conditional on the fulfillment of specific conditions by source countries. Immigration authorities in host economies need to be assured that source countries will cooperate to screen services providers, to accept and facilitate their return, and to combat illegal migration. Similarly, regulatory cooperation between financial regulators and competition authorities could provide reassurance that the gains from liberalisation will not be eroded by increased instability or vulnerability to anti-competitive practices.

The gains from properly managed liberalisation of services trade are substantial. World Bank analysis has shown this to be the case even in

very poor countries. An ambitious package in services may provide new dynamism to multilateral trade cooperation. Doing so may also allow the Doha Development Agenda to live up to its name.

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WTO (various years). Uruguay Round commitments and Doha offers of selected countries. World Trade Organization.

6 APPENDIX

Table A5.1: *Restrictiveness indices.*

(a) Restrictiveness of applied policy

Region	Financial	Telecom	Retail	Maritime shipping	Maritime auxiliary	Road	Rail	Prof.	Overall
AFR	23.87	40.48	20.24	5.58	28.85	13.10	45.83	42.26	28.48
EAP	34.16	34.38	31.25	31.43	50.00	40.63	59.38	57.81	40.12
ECA	9.36	2.08	0.00	3.75	9.38	16.67	43.75	41.77	14.87
GCC	49.37	62.50	45.00	17.00	70.00	55.00	25.00	46.75	48.88
LAC	18.60	19.44	8.33	9.06	28.13	20.83	35.29	32.47	19.80
MENA	29.55	25.00	25.00	33.13	62.50	37.50	68.75	54.84	37.08
OECD	6.45	10.63	8.75	11.18	5.26	43.75	35.00	44.00	18.89
SAR	29.54	45.00	30.00	33.75	56.25	35.00	80.00	54.25	40.03
World	20.04	25.27	15.86	13.59	28.62	28.49	44.77	43.44	26.07

(b) Restrictiveness of Doha offers

Region	Financial	Telecom	Retail	Maritime shipping	Maritime auxiliary	Road	Rail	Prof.	Overall
AFR	28.89	34.38	75.00	88.13	100.00	75.00	100.00	73.91	61.55
EAP	56.33	60.00	85.00	40.50	60.00	65.00	70.00	79.25	69.21
ECA	18.18	7.14	17.86	39.00	55.00	57.14	96.43	56.34	32.68
GCC	50.43	41.67	75.00	69.17	100.00	100.00	100.00	72.92	67.73
LAC	49.36	46.09	75.00	82.14	85.71	92.19	76.67	80.12	68.62
MENA	37.84	31.25	68.75	61.25	81.25	75.00	100.00	88.13	63.22
OECD	17.00	10.63	17.50	26.32	15.79	73.75	77.50	49.03	29.47
SAR	47.02	25.00	83.33	80.83	83.33	100.00	100.00	86.88	70.77
World	33.84	28.43	50.81	54.30	58.77	78.63	83.19	67.43	51.24

(c) Restrictiveness of Uruguay Round commitment

Region	Financial	Telecom	Retail	Maritime shipping	Maritime auxiliary	Road	Rail	Prof.	Overall
AFR	66.51	73.81	90.48	95.00	100.00	88.10	100.00	92.14	83.38
EAP	41.88	59.38	68.75	50.36	71.43	59.38	78.13	71.95	60.93
ECA	20.41	12.50	10.42	67.19	59.38	35.42	81.25	53.70	30.08
GCC	58.75	70.00	60.00	61.50	90.00	100.00	75.00	79.00	69.27
LAC	53.61	49.31	80.56	98.13	89.06	87.50	85.29	85.00	73.14
MENA	38.16	37.50	81.25	77.50	81.25	75.00	100.00	88.13	67.64
OECD	17.33	10.63	17.50	89.61	82.89	75.00	85.00	59.59	37.74
SAR	64.51	47.50	100.00	100.00	100.00	100.00	100.00	90.50	83.19
World	43.63	43.15	59.14	84.41	84.87	76.61	88.37	76.10	61.33

Completely open = 0; completely closed = 100.

Table A5.2: *Data and quantification methodology.*

Five-point scale	Policy	Uruguay Round commitments and Doha offers
0	Open without restrictions	None
25	Virtually open (*ie* only notification required)	Open with minor restrictions (*ie* some restrictions have been phased in)
50	Some restrictions (*ie* limits on foreign equity participation and/or legal form of entry)	Open with some restrictions (*ie* with more liberal commitments in the future)
75	Virtually closed (*ie* if obtaining loan from abroad requires proof of domestic unavailability of services or services allowed only to EU member countries)	Virtually closed (*ie* the supply of services reserved to one or two exclusive monopolies)
100	Completely closed	Unbound or no commitment (no legal binding)

Table A5.3: *Sector and modal weights.*

#	Aggregate sectors	Subsectors/modes	Modal weights used	Sector weights used[a]
1	Banking[b]	Mode 1:		
		(1) retail bank deposit[c]	0.15	6
		(2) retail bank loan	0.15	6
		Mode 3:		
		(3) Retail bank deposit	0.85	6
		(4) Retail bank loan	0.85	6
2	Insurance[b]	Mode 1:		
		(5) Life	0.10	4
		(6) Auto	0.10	4
		(7) Reinsurance	0.10	4
		Mode 3:		
		(8) Life	0.90	4
		(9) Auto	0.90	4
		(10) Reinsurance	0.90	4
3	Retailing	Mode 3:		
		(11) Retailing	1	10
4	Telecommunications	Mode 3:		
		(12) Fixed	1	4
		(13) Mobile	1	4
5	Maritime transport	Mode 1:		
		(14) International shipping	0.70	1.5
		Mode 3:		
		(15) International shipping	0.30	1.5
		Mode 3		
		(16) Maritime auxiliary	1	2
6	Other transport sectors	Mode 3:		
		(17) Road freight	1	2.5
		Mode 3		
		(18) Rail freight	1	1.5

Table A5.3: *Continued.*

#	Aggregate sectors	Subsectors/modes	Modal weights used	Sector weights used[a]
7	Professional services	Mode 1:		
		(19) Accounting	0.2	8
		(20) Auditing	0.2	8
		(21) International law	0.2	8
		Mode 3:		
		(22) Accounting	0.4	8
		(23) Auditing	0.4	8
		(24) Domestic law	0.5	8
		(25) International law	0.4	8
		Mode 4:		
		(26) Accounting	0.4	8
		(27) Auditing	0.4	8
		(28) Domestic law	0.5	8
		(29) International law	0.4	8

[a]Sector weights used are standardised weights for an average industrialised country (see Hoekman 1995). [b]See Mattoo (2000). [c]To aggregate the sub-sectors for a particular sector such as the indices for fixed and mobile telecom services, the simple averages were used.

Table A5.4: *Country coverage.*

#	Region (8)	Countries (102)	Submitted Uruguay Round commitment (93)	Submitted Doha Round offers (initial and/or revised) (62)	Offer publicly available[a] (49)	World Bank conducted survey (78)	World Bank survey year (2007/ 2008–9) (32/46)	Government comment received (42)
1	AFR	Botswana	Yes (no overlap)[b]	No	N/A	Yes	2009	Did not submit
2	AFR	Cameroon	Yes (no overlap)	No	N/A	Yes	2008	No
3	AFR	Congo, Dem. Rep.	Yes	No	N/A	Yes	2008	No
4	AFR	Côte d'Ivoire	Yes	No	N/A	Yes	2008	No
5	AFR	Ethiopia	No (Observer)	N/A	N/A	Yes	2008	No
6	AFR	Ghana	Yes	No	N/A	Yes	2007	No
7	AFR	Kenya	Yes	Yes (initial)	Unavailable	Yes	2007	No
8	AFR	Lesotho	Yes	No	N/A	Yes	2008	No
9	AFR	Madagascar	Yes (no overlap)	No	N/A	Yes	2008	No
10	AFR	Malawi	Yes	No	N/A	Yes	2008	No
11	AFR	Mali	Yes (no overlap)	No	N/A	Yes	2008	No
12	AFR	Mauritius	Yes	Yes (initial)	Yes (CSI)	Yes	2008	No
13	AFR	Mozambique	Yes	No	N/A	Yes	2008	No
14	AFR	Namibia	Yes (no overlap)	No	N/A	Yes	2008	No
15	AFR	Nigeria	Yes	Yes (initial)	Unavailable	Yes	2007	No
16	AFR	Rwanda	Yes	No	N/A	Yes	2009	Did not submit
17	AFR	Senegal	Yes	No	N/A	Yes	2007	No
18	AFR	South Africa	Yes	Yes (initial)	Yes (CSI)	Yes	2007	No
19	AFR	Tanzania	Yes (no overlap)	No	N/A	Yes	2007	No
20	AFR	Uganda	Yes	No	N/A	Yes	2008	No
21	AFR	Zambia	Yes	No	N/A	Yes	2008	No
22	AFR	Zimbabwe	Yes	No	N/A	Yes	2008	No

Table A5.4: *Continued.*

#	Region (8)	Countries (102)	Submitted Uruguay Round commitment (93)	Submitted Doha Round offers (initial and/or revised) (62)	Offer publicly available[a] (49)	World Bank conducted survey (78)	World Bank survey year (2007/2008–9) (32/46)	Government comment received (42)
23	EAP	Cambodia	Yes (accession)[c]	No	N/A	Yes	2007	No
24	EAP	China	Yes (accession)	Yes (revised)	Yes (CSI)	Yes	2007	Yes
25	EAP	Indonesia	Yes	Yes (initial)	Unavailable	Yes	2007	No
26	EAP	Malaysia	Yes	Yes (revised)	Yes (CSI)	Yes	2007	Yes
27	EAP	Mongolia	Yes (accession)	No	N/A	Yes	2007	Yes
28	EAP	Philippines	Yes	Yes (initial)	Unavailable	Yes	2007	No
29	EAP	Thailand	Yes	Yes (revised)	Yes (CSI)	Yes	2007	Yes
30	EAP	Vietnam	Yes (accession)	No	N/A	Yes	2008	No
31	SAR	Bangladesh	Yes	No	N/A	Yes	2008	No
32	SAR	India	Yes	Yes (revised)	Yes (CSI)	Yes	2007	No
33	SAR	Nepal	Yes (accession)	No	N/A	Yes	2008	No
34	SAR	Pakistan	Yes	Yes (initial)	Yes (WTO)	Yes	2007	Yes
35	SAR	Sri Lanka	Yes	Yes (initial)	Yes (CSI)	Yes	2007	No
36	GCC	Bahrain	Yes	Yes (initial)	Yes (CSI)	Yes	2008	No
37	GCC	Kuwait	Yes	No	N/A	Yes	2008	No
38	GCC	Oman	Yes (accession)	Yes (initial)	Unavailable	Yes	2008	No
39	GCC	Qatar	Yes	Yes (initial)	Unavailable	Yes	2008	No
40	GCC	Saudi Arabia	Yes (accession)	No	N/A	Yes	2007	No
41	MENA	Algeria	No (Observer)	N/A	N/A	Yes	2008	No
42	MENA	Egypt, Arab Rep.	Yes	Yes (revised)	Yes (CSI)	Yes	2007	Yes
43	MENA	Iran, Islamic Rep.	No (Observer)	N/A	N/A	Yes	2008	No
44	MENA	Jordan	Yes (accession)	Yes (initial)	Unavailable	Yes	2007	No
45	MENA	Lebanon	No (Observer)	N/A	N/A	Yes	2008	No

Table A5.4: *Continued.*

#	Region (8)	Countries (102)	Submitted Uruguay Round commitment (93)	Submitted Doha Round offers (initial and/or revised) (62)	Offer publicly available[a] (49)	World Bank conducted survey (78)	World Bank survey year (2007/2008-9) (32/46)	Government comment received (42)
46	MENA	Morocco	Yes	Yes (initial)	Yes (CSI)	Yes	2007	No
47	MENA	Tunisia	Yes	Yes (initial)	Unavailable	Yes	2007	Yes
48	MENA	Yemen	No (Observer)	N/A	N/A	Yes	2008	No
49	LAC	Argentina	Yes	Yes (initial)	Yes (CSI)	Yes	2007	No
50	LAC	Bolivia	Yes	Yes (initial)	Yes (CSI)	Yes	2008	No
51	LAC	Brazil	Yes	Yes (revised)	Yes (CSI)	Yes	2007	Yes
52	LAC	Chile	Yes	Yes (revised)	Yes (WTO)	Yes	2007	Yes
53	LAC	Colombia	Yes	Yes (revised)	Yes (CSI)	Yes	2007	No
54	LAC	Costa Rica	Yes	Yes (initial)	Yes (CSI)	Yes	2008	Yes
55	LAC	Dominican Republic	Yes	Yes (initial)	Unavailable	Yes	2008	No
56	LAC	Ecuador	Yes (accession)	No	N/A	Yes	2007	No
57	LAC	Guatemala	Yes	Yes (initial)	Yes (CSI)	Yes	2008	Yes
58	LAC	Honduras	Yes	Yes (initial)	Unavailable	Yes	2008	No
59	LAC	Mexico	Yes	Yes (revised)	Yes (CSI)	Yes	2007	Yes
60	LAC	Nicaragua	Yes	Yes (initial)	Unavailable	Yes	2008	No
61	LAC	Panama	Yes (accession)	Yes (initial)	Yes (CSI)	Yes	2008	No
62	LAC	Paraguay	Yes	Yes (initial)	Yes (CSI)	Yes	2008	Yes
63	LAC	Peru	Yes	Yes (revised)	Yes (CSI)	Yes	2007	Yes
64	LAC	Trinidad and Tobago	Yes	Yes (initial)	Unavailable	Yes	2007	Yes
65	LAC	Uruguay	Yes	Yes (initial)	Yes (CSI)	Yes	2008	No
66	LAC	Venezuela	Yes	No	N/A	Yes	2007	No

Table A5.4: *Continued.*

#	Region (8)	Countries (102)	Submitted Uruguay Round commitment (93)	Submitted Doha Round offers (initial and/or revised) (62)	Offer publicly available[a] (49)	World Bank conducted survey (78)	World Bank survey year (2007/2008–9) (32/46)	Government comment received (42)
67	ECA	Albania	Yes (accession)	Yes (initial)	Unavailable	Yes	2008	No
68	ECA	Armenia	Yes (accession)	No	N/A	Yes	2008	Yes
69	ECA	Belarus	No (Observer)	N/A	N/A	Yes	2008	Yes
70	ECA	Bulgaria	Yes (accession)	Yes (initial)	Yes (CSI)	Yes	2008	No
71	ECA	Czech Republic	Yes	Yes (revised)	Yes (WTO)	No	2007[d]	Yes
72	ECA	Georgia	Yes (accession)	No	N/A	Yes	2008	No
73	ECA	Hungary	Yes	Yes (revised)	Yes (WTO)	No	2007	No
74	ECA	Kazakhstan	No (Observer)	N/A	N/A	Yes	2008	Yes
75	ECA	Kyrgyz Republic	Yes (accession)	No	N/A	Yes	2008	No
76	ECA	Lithuania	Yes (accession)	Yes (revised)	Yes (WTO)	No	2007	Yes
77	ECA	Poland	Yes	Yes (revised)	Yes (WTO)	No	2007	Yes
78	ECA	Romania	Yes	No	N/A	Yes	2008	Yes
79	ECA	Russian Federation	No (Observer)	N/A	N/A	Yes	2007	Yes
80	ECA	Turkey	Yes	Yes (revised)	Yes (WTO)	Yes	2008	Yes
81	ECA	Ukraine	Yes (accession)	No	N/A	Yes	2007	No
82	ECA	Uzbekistan	No (Observer)	N/A	N/A	Yes	2008	No
83	OECD	Australia	Yes	Yes (revised)	Yes (WTO)	No	2007	Yes
84	OECD	Austria	Yes	Yes (revised)	Yes (WTO)	No	2007	Yes
85	OECD	Belgium	Yes	Yes (revised)	Yes (WTO)	No	2007	Yes
86	OECD	Canada	Yes	Yes (revised)	Yes (WTO)	No	2007	No
87	OECD	Denmark	Yes	Yes (revised)	Yes (WTO)	No	2007	Yes
88	OECD	Finland	Yes	Yes (revised)	Yes (WTO)	No	2007	Yes

Table A5.4: *Continued.*

#	Region	Countries	Submitted Uruguay Round commitment	Submitted Doha Round offers (initial and/or revised)	Offer publicly available[a]	World Bank conducted survey	World Bank survey year (2007/ 2008–9)	Government comment received
	(8)	(102)	(93)	(62)	(49)	(78)	(32/46)	(42)
89	OECD	France	Yes	Yes (revised)	Yes (WTO)	No	2007	Yes
90	OECD	Germany	Yes	Yes (revised)	Yes (WTO)	No	2007	Yes
91	OECD	Greece	Yes	Yes (revised)	Yes (WTO)	No	2007	Yes
92	OECD	Ireland	Yes	Yes (revised)	Yes (WTO)	No	2007	Yes
93	OECD	Italy	Yes	Yes (revised)	Yes (WTO)	No	2007	No
94	OECD	Japan	Yes	Yes (revised)	Yes (WTO)	No	2007	Yes
95	OECD	Korea, Rep. of	Yes	Yes (revised)	Yes (WTO)	No	2007	Yes
96	OECD	Netherlands	Yes	Yes (revised)	Yes (WTO)	No	2007	Yes
97	OECD	New Zealand	Yes	Yes (revised)	Yes (WTO)	No	2007	Yes
98	OECD	Portugal	Yes	Yes (revised)	Yes (WTO)	No	2007	Yes
99	OECD	Spain	Yes	Yes (revised)	Yes (WTO)	No	2007	Yes
100	OECD	Sweden	Yes	Yes (revised)	Yes (WTO)	No	2007	Yes
101	OECD	United Kingdom	Yes	Yes (revised)	Yes (WTO)	No	2007	Yes
102	OECD	United States	Yes	Yes (revised)	Yes (WTO)	No	2007	Yes

'AFR' denotes Africa; 'EAP' denotes East Asia and Pacific; 'SAR' denotes South Asia; 'GCC' denotes Gulf Cooperation council; 'MENA' denotes Middle East and North Africa; 'LAC' denotes Latin America and the Caribbean; 'ECA' denotes Europe and Central Asia. Column totals shown in parentheses under column headings. [a] According to WTO or CSI source. [b] No overlap means the country did not schedule sectors covered by the World Bank database. [c] There are 17 accession countries. [d] When no survey is conducted, the comparable information is collected from publicly available sources in that year. These countries often belong to the OECD.

Duty Free, a Round for Free and the Least-Developed Countries

ANTOINE BOUËT AND DAVID LABORDE[1]

1   INTRODUCTORY REMARKS

Least-developed countries are countries that, according to the United Nations, exhibit the lowest indicators in terms of income per capita, human resources and economic vulnerability. To address the issue of extreme poverty, the international community has defined a broad agenda of goals and policy actions focused on LDCs.[2] International trade is expected to play a major role in this process because this is one area where partner countries can directly provide opportunities to LDCs.[3] While there is broad agreement to help them through the Doha Agenda outcome, the potential implications of the proposed actions under the Doha proposals have not been thoroughly examined, taking into account the nature of the proposals and the heterogeneous nature of the LDC group in terms of economic and trading capabilities. Therefore, throughout the negotiation process so far, it has never been clear how this round of negotiations could address the trade and economic interests of LDCs, taking into account the potential erosion of the preferential-access opportunities that some LDCs will experience.

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[1]The authors thank Simon Mevel for his contribution to an earlier draft of this work, and Will Martin for comments on an earlier draft.

[2]In January 2010, there were 49 LDCs: Cape Verde graduated from the LDC group in 2008. In this study, we only consider LDCs that are WTO members, as the non-WTO members are not included in the DDA trade negotiations. World Trade Organization LDCs are Angola, Bangladesh, Benin, Burkina Faso, Burundi, Cambodia, Cape Verde, Central African Republic, Chad, Democratic Republic of the Congo, Djibouti, Gambia, Guinea, Guinea-Bissau, Haiti, Lesotho, Madagascar, Malawi, Maldives, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Senegal, Sierra Leone, Solomon Islands, Togo, Uganda, Tanzania and Zambia.

[3]However, non-WTO LDCs will generally benefit from anything offered to WTO-member LDCs.

This chapter examines whether the interests of LDCs are favoured by the DDA proposals currently on the table. Section 2 characterises LDCs' trade and market-access situations. More specifically, it examines whether LDCs benefit today from significant trade preferences compared with other groups of countries, and evaluates the implications of potential preference erosion from multilateral liberalisation. Moreover, an existing concern is that LDCs could be hurt by the removal of distortions prevailing in the agricultural sector. Trade reform under the Doha Round could entail a rise in world agricultural prices: as evidenced by the current food crisis, net-food-importing countries and poor people within these countries may be affected by higher agricultural prices. Furthermore, increased competition in the textile and apparel sector implied by the DDA could also inflict deterioration in the terms of trade for LDCs.

The December 2008 modalities provide a fairly complete outline of a potential agreement and allow a detailed simulation of a realistic DDA to be carried out. This is done in Section 3 using the MIRAGE model of the world economy[4] with detailed assessments of this trade reform on market access and economic variables concerning LDCs. In order to understand which elements of the global package are important for LDCs, Section 4 will carry out a sensitivity analysis, while Section 5 provides major conclusions.

2   MAJOR TRADE CHARACTERISTICS OF THE LEAST-DEVELOPED COUNTRIES

The welfare impacts from trade liberalisation come largely from changes in allocative efficiency and changes in the terms of trade. Least-developed countries are not well positioned to gain from global trade liberalisation in either of these respects.

2.1   The Role of Preferences

With regard to the terms of trade, the first element of concern is the potential erosion of preferences. Currently, LDCs benefit from substantial preferences under schemes such as the 'everything but arms' (EBA) initiative (Hoekman *et al* 2009). The first column in Table 6.1 shows that, on average, LDCs face a lower average duty on their exports (3.2%) than middle-income countries (MICs, 3.7%).

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[4]The MIRAGE (Modelling International Relationships in Applied General Equilibrium) model was initially developed at the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) in Paris, France. The version used in this paper is based on the recent developments of the model made at the International Food Policy Research Institute. More information is available at www.mirage-model.eu/.

Table 6.1: *Average duty faced on exports by groups of countries ranked by income in 2004 (level and decomposition, in percent).*

	Average duty faced by exporters	Apparent margin	Composition effect	Nominal margin
High-income countries	3.7	0.0	−1.6	1.6
Middle-income countries	3.7	0.0	−1.7	1.6
LDCs	3.2	0.5	−4.0	4.6

The nominal margin is defined by the difference between the MFN applied rate and the preferential rate at the HS6 level on a bilateral basis. The apparent margin is the difference between the average protection faced by the world and the average protection faced by the zone. The composition effect is defined as the difference between the apparent and the nominal margins.

Source: MAcMap-HS6v2.1 and authors' calculation. Trade-weighted 2004 data, updated for changes in main GSP programmes until 2008 with full implementations of current WTO commitments. Only WTO trade relationships, excluding intra-EU, are covered. Preferential margins related to TRQs are included. Full utilisation of preferences is assumed.

From the apparent margin, *ie* the difference between protection faced by a group of countries and the world average, it is possible to disentangle the composition effect (decrease in protection faced coming from the product composition of exports and their geographic destination) from the nominal margin effect (the decrease in protection faced coming from preferences, *ie* differences between applied MFN rates and preferential rates at the tariff-line level). This distinction clearly shows the reasons behind the relatively poor access to foreign markets for LDCs: a specialisation in products that are relatively highly taxed worldwide (cereals, dairy products, meat and meat products, sugar, textile and apparel) and/or in destination towards protectionist countries. Least-developed countries have been granted preferential trade regimes, but the nominal margin resulting from preferences is above 4.6 percentage points, and their trade specialisation hides most of it.

The figures in Table 6.1 are highly aggregated. Looking at national estimates delivers a richer picture. Figure 6.1 shows country positions with the composition effect on the vertical axis and the nominal margin on the horizontal axis. The size of each bubble is proportional to the average duty faced by a country's exports. As they are defined, the composition and nominal margin effects add up to the apparent margin, which is positive if and only if the country is taxed less than the world on average, and negative if its exports are more heavily taxed. Thus, all countries located under the $y = -x$ axis are penalised by taxation on their exports, which is greater than the tax faced by the world's exports. Similarly, countries above the $y = x$ line faced a low average tariff mainly due to their trade specialisation (the case of oil for Angola).

Out of 32 WTO LDCs, 17 faced a higher average duty on their exports than the world average in 2008. Thus, preferential schemes seem to be an insufficient means of compensating high import taxes on agricultural commodities or textile and wearing apparels.

Seven LDCs face low average tariffs, mainly due to their specialisation in products like oil, diamonds and gold (Sierra Leone, Mali, Guinea, Central African Republic, Chad, Congo Democratic Republic and Angola). For these countries, current preferences have a limited value. On the contrary, countries like Malawi are negatively affected by their trade structure. Despite benefiting from generous preferences (nominal margin of 19%), Malawi's specialisation in highly protected products, such as tobacco, creates a negative composition effect of 5.6%. The average tariff faced by Malawi's exports is 8.6%, which is nearly three times the world level.

Another important feature of LDCs is the geographic and sectoral pattern of their exports. Diversification across products and markets is desirable because, other things being equal, it tends to reduce the shocks to which the country is exposed. Diversification indicators may be calculated, either in terms of products exported or in terms of geographic destination, by using the inverse of the Herfindahl index. These calculations clearly show that LDCs used to export a limited range of products to just a few destinations. Among them, the least-diversified LDCs in terms of both indexes are Angola, Chad, Mali, Mozambique, Rwanda and the Democratic Republic of Congo.

This concentration of exports in a few products is not just a characteristic of oil- and gas-exporting countries (*eg* Angola, Chad): it includes cases of concentration in other mineral products like iron ore (Mauritania), diamonds (Democratic Republic of the Congo, Sierra Leone), copper (Zambia) and aluminum (Mozambique); agricultural crops like cocoa (Togo) and cotton (Benin, Burkina Faso, Mali, Togo); or industrial products like apparel (Bangladesh).

The worldwide protection on all of these products listed, except for apparel, is low. This means that many LDCs, mostly located in Africa, cannot expect a substantial improvement in access to foreign markets for their main exports from this round of trade liberalisation. But if these negotiations are successful, it could lead to diversification of the structure of the exports of LDCs due to reductions in protection by countries that currently penalise LDC exports (*eg* high-income countries other than the EU and the United States, the United States *vis-à-vis* Europe on imports of clothing from Bangladesh, and the middle-income countries).

As shown in Table 6.2, the high levels of export concentration and the structure of tariffs facing exports have dramatic effects on the pattern of protection faced by LDCs.

This concentration of tariffs paid by LDCs in a small number of products has potentially significant implications for one key aspect of the proposals, namely, the ability of importing countries to exclude up to 3% of products
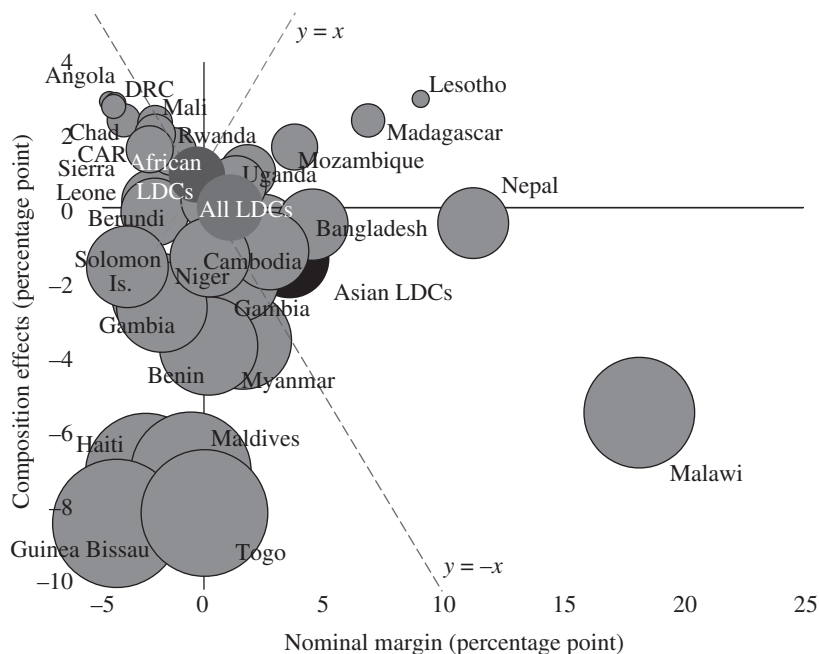
Figure 6.1: *Average duty faced on exports by WTO LDCs: decomposition of preferential margins structure.*

The nominal margin is defined by the difference between the MFN applied rate and the preferential rate at the HS6 level on a bilateral basis. The composition effect is defined as the difference between the apparent and the nominal margins. A negative composition effect indicates an adverse market specialisation. The size of the bubble displays the average tariff faced by the country. Trade-weighted 2004 data, updated for changes in main GSP programmes until 2008 with full implementations of current WTO commitments. Only WTO trade relationships, excluding intra-EU, are covered. Preferential margins related to TRQs are included. Full utilisation of preferences is assumed.

Source: MAcMap-HS6v2.1 and authors' calculations.

from the DFQF provisions for LDCs. For the high-income countries as a group, and for all OECD members other than Mexico, the top 3% of six-digit products by tariffs paid account for more than 97% of total tariff revenue collected on exports from WTO LDCs. For exports to middle-income countries the LDCs' current range of products is even narrower, and a similar picture appears: the 3% most-taxed products represent between 96.2% and 96.8% of duties collected by Brazil, China and India on their imports from LDCs. This means that even a few product exclusions on the part of the preference-giving countries could greatly reduce, or even obliterate, the value of a duty-free initiative.

Table 6.2: *Concentration of LDC exports and tariffs paid by LDCs (in percent).*

	(a) LDC export concentration				
	Top 0.5% of products	Top 1% of products	Top 3% of products	Top 5% of products	Top 10% of products
High-income countries	65.8	75.4	89.0	93.4	96.9
Australia	80.8	85.9	93.2	96.2	99.0
Canada	71.9	82.6	93.9	96.7	99.0
EU	65.5	76.8	89.1	93.0	96.6
Iceland	78.3	87.9	97.8	99.9	100.0
Japan	86.3	91.4	96.7	98.3	99.5
New Zealand	91.3	94.1	97.9	99.0	99.9
Norway	80.3	88.2	96.3	98.3	99.8
Switzerland	89.4	94.0	97.8	98.8	99.7
United States	76.7	85.4	96.1	98.1	99.4
Selected middle-income countries	85.9	90.0	94.7	96.5	98.4
Brazil	91.3	95.3	98.9	99.7	100.0
China	96.8	98.0	99.3	99.7	99.9
India	71.5	79.4	90.1	94.1	97.5
Korea, Rep. of	93.8	95.6	98.2	99.0	99.8
Mexico	60.3	74.3	90.9	96.0	99.3
Turkey	83.6	91.0	97.6	99.2	100.0

2.2   Initial Trade Deficit and Terms of Trade Exposure

Another potential source of deterioration of the terms of trade in the short term arises from LDCs' net trade balance in agricultural products. The world prices of these commodities may rise due to the removal of distortions that today reduce world demand and increase world supply.

Figure 6.2 shows that most WTO LDCs had negative net agricultural trade balances during 2002–4. Of the 28 of these countries for which statistics are available, 18 were net-food-importing countries. A measure of the contribution of agriculture to this deficit can be obtained by comparing the actual agricultural deficit with a counterfactual, calculated as the global deficit multiplied by the share of agriculture in total trade flows.[5] This simple comparison shows that the contribution of agriculture to the country's global trade position is positive even though the actual agricultural balance is negative in the case of six LDCs. For 18 out of 28 countries, actual agricultural trade balance is negative, as is the agricultural contribution to this global balance, calculated along the lines defined above.

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[5] This methodology was developed at CEPII (see Lafay 1994).

Table 6.2: *Continued.*

		(b) Tariff revenue on LDC exports			
	Top 0.5% of products	Top 1% of products	Top 3% of products	Top 5% of products	Top 10% of products
High-income countries	71.9	83.8	97.3	99.2	99.9
Australia	63.5	79.7	97.5	99.8	100.0
Canada	100.0	100.0	100.0	100.0	100.0
EU	94.4	97.4	99.5	99.9	100.0
Iceland	83.1	91.7	99.3	100.0	100.0
Japan	97.4	99.3	100.0	100.0	100.0
New Zealand	100.0	100.0	100.0	100.0	100.0
Norway	87.9	95.8	100.0	100.0	100.0
Switzerland	98.9	99.8	100.0	100.0	100.0
United States	70.1	84.1	98.4	99.7	100.0
Selected middle-income countries	77.8	84.1	92.7	95.4	98.0
Brazil	79.5	87.1	96.8	99.3	100.0
China	87.1	91.4	96.6	98.3	99.6
India	79.4	88.4	96.2	98.0	99.4
Korea, Rep. of	97.3	98.2	99.2	99.6	99.9
Mexico	65.8	78.0	92.8	97.1	99.5
Turkey	88.4	94.1	98.9	99.8	100.0

Source: MAcMap-HS6v2.1 and authors' calculation. Theoretical tariff revenue is computed as the product of actual trade times the applied preferential tariff.

In terms of products, LDCs' trade deficits are particularly high in sectors like milk and dairy products, rice, wheat, meat and meat products: sectors that are currently subject to large distortions[6] and are likely to have relatively larger increases in world prices.

While LDCs potentially stand to gain from increased market access for their agricultural exports, many of these commodities—such as tea, coffee and cocoa—typically face very low tariffs, making it likely that these gains will be relatively small. Welfare gains from LDCs' own liberalisation are likely to be small given that they are essentially not required to undertake any liberalisation.

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[6]For example, in the 2002–4 period, almost all LDCs had a trade deficit in the dairy products sector, 83% in the cereals sector and 75% in the meat sector. At the same time, the average global protection in the dairy sector was 38%, 35% in the meat sector and 54% in rice, compared with a global average protection of 4.3% (19.1% for agriculture).
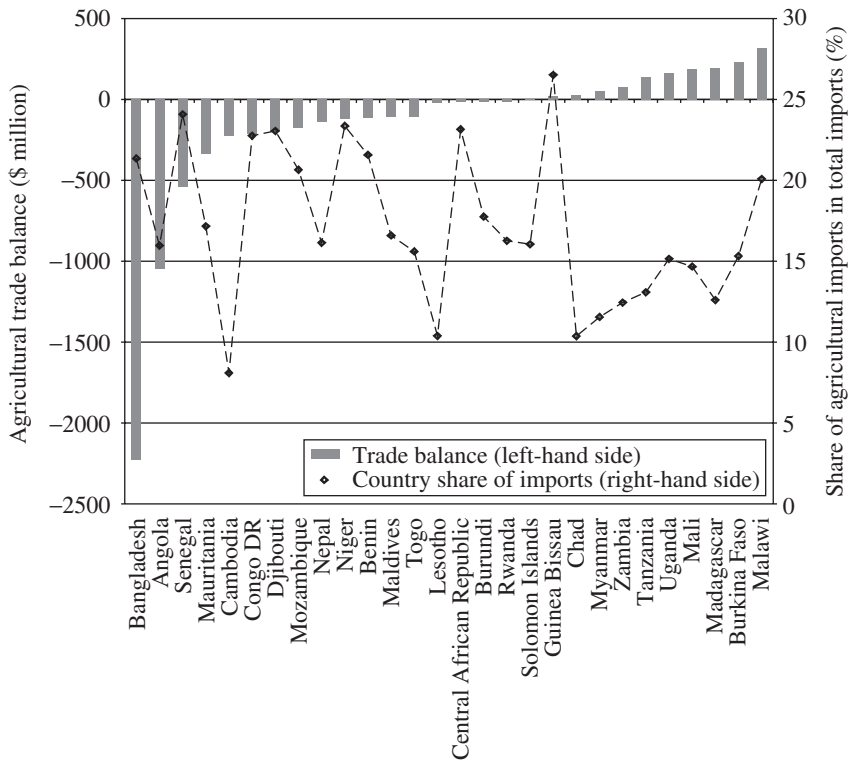
Figure 6.2: *Net agricultural trade balance for LDCs, 2002–4 average ($ billion).
Source: MAcMap-HS6v2.1 and authors' calculation.*

3   WHAT CAN LEAST-DEVELOPED COUNTRIES EXPECT FROM THE MODALITIES?

In order to study the potential impact of a DDA on LDCs, we implement the December 2008 modalities at the detailed level of the MAcMap-HS6v2.1 database: 5,113 products, 170 importing countries and 208 exporting countries. Then we re-aggregate at the level of sector and country decomposition used in the modelling exercise (25 sectors and 29 regions, see Table A6.1 and Table A6.2). This disaggregation is based on the idea of keeping important information for LDCs, both in terms of geographic structure of their trade and products exchanged internationally. This allows us to simulate the DDA and assess its consequences.

The modelling analysis is based on MIRAGE (Decreux and Valin 2007), which is a multicountry and multisector computable general equilibrium model that is especially well built for capturing trade effects from policy reforms such as

multilateral liberalisations. Macroeconomic data are extracted from the Global Trade Analysis Project (GTAP) 7.1 database (Narayanan and Walmsley 2008) with two major modifications made to this data set. First, GTAP 7.1 has been corrected as it accounts for 'virtual' merchandise trade flows related to travel expenditures. Second, we checked the quality of the input–output tables for key products in the LDCs on which we focused in order to avoid important mistakes due to data-quality problems.[7]

As we focus on LDCs, we keep six LDC regions, namely, Bangladesh; the 'LDCs: Asia' zone that consists of Cambodia and Lao People's Democratic Republic; Senegal; the East African LDCs (Madagascar, Mozambique, Tanzania, Uganda, Zambia and 11 other countries from Eastern Africa); Malawi; and the 'LDCs: South Central Africa' zone made up of Angola and the Democratic Republic of Congo (see Table A6.2). The rest of the LDCs are gathered into regions with countries that have a different level of development; hence, those LDCs cannot be clearly isolated. This is particularly true for African regions such as 'Rest of Western Africa',[8] 'Central Africa',[9] and 'Rest of South Africa'. Overall, our aggregation is composed of 7 high-income countries, 13 middle-income countries and 9 regions including LDCs. Our sector decomposition is very detailed in terms of agriculture and agrifood (13 sectors) since most of the protection faced is in this sector (see Table A6.1). All other sectors are non-agricultural, with, respectively, 9 industrial sectors that are also sectors in which LDCs are highly specialised (in particular, 'Petroleum and coal products', 'Mineral and metal products', 'Textiles' and 'Wearing apparel') and 3 services sectors.

Using the MAcMap-HS6 database, it is possible to design scenarios of trade liberalisation at a much more disaggregated level than the 57 sectors in the GTAP database. Indeed, the MAcMap-HS6v2.1 (Boumellassa *et al* 2009) provides data on market access at the Harmonized System (HS) HS6 level of 5,113 product lines, for 170 reporter countries and 208 partner countries for the year 2004. The database also includes all the regional agreements and preferential schemes that were concluded before 2004. Bilateral protection is extracted from the MAcMap-HS6 database, aggregated at the level of our geographic and sector decompositions, then integrated into the MIRAGE model using the optimal aggregator approach developed by Laborde *et al* (forthcoming) and implemented in the MIRAGE model by Laborde (2008).

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[7]Details of these procedures and other methodological elements may be found in the textual Appendix (Section 7).

[8]Composed of 11 LDCs (Benin, Burkina Faso, Gambia, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Sierra Leone and Togo) and 3 middle-income countries (Ivory Coast, Ghana, and Cape Verde).

[9]Made up 4 LDCs (Central African Republic, Chad, Equatorial Guinea and Sao Tome and Principe) and 3 middle-income countries (Cameroon, Congo and Gabon).

Chapter 10 of this volume discusses the role of the aggregator and the advantages of this method.[10]

Once the MIRAGE model has been calibrated with data for a base year of 2004, a pre-experiment is performed, incorporating the main changes that occurred between the base year and the implementation of the trade reforms from 2008. It incorporates the removal of the multifibre arrangement on textiles and clothing by 1 January 2005, the U.S. Farm Act on agricultural subsidies, and all of the main protection changes that occurred over the period: the integration of new WTO members between 2004 and 2008, enlargement of the EU to 27 members by 1 January 2007, full implementation of the EU's EBA initiative, Japan's 2007 GSP reform, *etc.* We do not remove unilateral preferences for short-term issues such as the removal of the African Growth and Opportunity Act for Madagascar following the period of political instability.[11]

Finally, we compare our trade scenarios with this reference scenario, and calculate the deviations for the main economic variables of interest between each scenario and the baseline by 2025. We study the following scenarios. First, in this section, we evaluate the potential impact of a DDA (also called a 'central scenario'). Second, in Section 4, we study what can be done for LDCs by evaluating the potential impact of variations on the central scenario.

3.1   Details of DDA Market-Access Modalities Concerning LDCs

After seven years of trade talks, the market-access modalities had reached a high level of sophistication by 2008. Although the general philosophy is simple, with progressive tariff cut formulas for both agricultural and non-agricultural goods, many flexibilities have been introduced, with different degrees of SDT for different groups of developing countries. Our core Doha scenario matches scenario D as described at length by Laborde and Martin in Chapter 2 (AMA, Table 2.2) and Chapter 3 (NAMA, Table 3.1) of this volume. Let us sum up the main features of the scenario and underline the expected consequences for LDCs.

Agricultural tariff cuts will be performed using a tiered formula. Very recently acceded members and LDCs are exempted from tariff reduction. All WTO members will be eligible to shelter a number of tariff lines (about 5%) from the full formula in return for TRQ creation and enlargement. For developing countries, some special products will be completely excluded from trade liberalisation. For non-agricultural products, a Swiss formula with a low coefficient (8) for developed countries and a higher coefficient for developing

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[10]We use the conservative value of 2 for the elasticity of substitution across HS6 products belonging to the same sector.

[11]These changes lead to a slightly different baseline than the one used in Chapters 2, 3 and 10. In particular, it leads to some new declines in tariffs faced by LDCs and some other developing countries.

countries (from 23 to 27) will be used. Once again, VRAMs, SVEs, low-binding-coverage countries and LDCs are not required to make new changes to their applied tariffs.

Due to the flexibilities that apply to developing countries in the Doha Round generally, LDCs should not expect major new market opportunities in terms of south–south trade with the core modalities. On the contrary, preference erosion is likely to take place in the rich markets.

First, in NAMA, the very aggressive formula will ensure that no tariff above 8% remains. This may sharply erode LDCs' existing preferential margins in goods such as apparel, leather products, fisheries, wood products, and aluminum. At the same time, it will create new market opportunities on an MFN basis in some markets where some LDC exports are currently restricted, such as the apparel sector in the United States. However, even in this case, a potential conflict of interest may appear between LDCs: Bangladesh will face new market opportunities but African LDCs that already enjoy free access to the U.S. market through the African Growth and Opportunity Act can be expected to suffer from preference erosion. In agriculture, a similar pattern appears with a major difference: developed countries have access to sensitive products with reduced tariff reductions. If this flexibility is aimed, first of all, at dealing with domestic political issues in the developed countries, one side effect will be the maintenance of high tariffs on some commodities and, at the same time, existing preferential margins. The LDCs may be inclined to support the perceived needs for flexibility in rich countries where they already benefit from preferential access such as Japan and the EU, even if this has adverse effects on MFN liberalisation on other markets and on potential gains of other developing countries.

These conflicts of interest across developing countries arise starkly in the additional cuts on tropical and diversification products requested by some Latin American countries. In these sectors, additional market access granted to the most efficient producers is seen as a threat by the Africa, Caribbean and Pacific (ACP) countries, a set of countries that includes many LDCs. These countries have asked to maintain existing preferential margins by reducing or at least delaying (for 10 years) tariff reduction on a list of products for which they enjoy preferences. The ACP and Latin American countries' lists of products overlap, and finding a compromise is a core issue in the current negotiations (Perry 2008). In our core scenario, we assume that a list of tropical and diversification products provided[12] by the December 2008 agricultural modalities will cut deeper than the tiered formula. For some agricultural products subject to the long-standing preference concerns, we simply delay liberalisation by five years, beginning tariff reduction in 2014 instead of 2009 in four markets (Canada, the EU, Japan and the United States). In NAMA,

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[12]This list is based on appendix G of the modalities and follows the Uruguay Round limited list, in contrast to the more ambitious Latin American countries proposal.

a similar procedure is implemented for apparel products detailed in the appendix for the EU and the U.S. markets, where the tariff reduction still starts in 2009 but takes seven years instead of five.

For some customs unions, *eg* the Southern African Customs Union (SACU) and the EU–Turkey customs union, the consequences of tariff reductions by the developed or non-LDC developing countries of the group will change the common external tariff for all members. Therefore, developing countries that could otherwise, thanks to SDT, reduce their protection by less than high-income countries will now have to cut their protection by as much as high-income countries (Turkey). Similarly, some LDCs will need to cut their protection because they are members of a customs union mainly composed of developing countries, although the round was supposed to 'be free' for LDCs (*eg* SACU region).

All scenarios include the cotton initiative, which implies tariff elimination on LDC exports of cotton to developed markets. We also take into account the removal of all export subsidies by rich countries by 2013 and the constraint on overall trade-distorting support as in Bouët and Laborde (2010a).[13]

3.2   The Impact of a Central Scenario on Market Access for LDCs

We implement this tariff scenario by applying all tariff-reduction modalities on bound tariffs at the six-digit level and then computing the real effects on MFN applied and preferential rates. Sensitive and special products are selected using the political-economy criterion proposed by Jean *et al* (2010). Table 6.3 displays the effects of the modalities on average protection by region. High-income countries[14] reduce most of their tariffs by 37% on average. Developing countries, due to SDT in the formula, large binding overhang and flexibility

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[13]Concerning domestic support, this scenario includes the constraint on OTDS for the United States and the EU. In contrast to most traditional exercises where domestic support commitments are translated into *ad valorem* or specific subsidy caps for current applied policies, we explicitly introduce the OTDS as an overall limit for domestic support spending for each year. In the dynamic context, and due to the growth of production in the baseline, the initial agricultural subsidy rates, based on 2004 prices, may lead to a violation of the new commitments. In our simulation, it appears that only the United States will face a real constraint forcing it to modify its production-distortive programmes. Any domestic support reduction is assumed to affect all sectors in a uniform way. Since this paper focuses on tariffs and tariff changes across scenarios, we have neither introduced a programme-specific modelling of domestic support policies nor a political-economy model attempting to explain how domestic support reduction across commodities will be handled. Our goal here is merely to show that the new OTDS commitments, even if they do not drive domestic support reduction today, have a real value in the medium term. The consequences of this treatment are discussed in Bouët and Laborde (2010a).

[14]This category is larger than the WTO developed countries group.

Table 6.3: *Average applied protection by zone: WTO trade relations (in percent).*

Zones	Baseline	Central scenario	Cut
WTO members	3.6	2.9	−21.52
High-income countries	2.3	1.4	−36.78
Developing countries (non-LDC)	6.6	5.9	−10.48
LDCs	10.7	10.7	−0.06

Source: MAcMap-HS6v2.1 and authors' calculation. Trade-weighted 2004 data, updated for changes in main GSP programmes until 2008 with full implementations of current WTO commitments. Only WTO trade relationships, excluding intra-EU, are covered. Preferential margins related to TRQs are included. Full utilisation of preferences is assumed.

provisions, reduce their applied tariffs by only 11%. The LDCs, initially the most protectionist group, keep their tariffs unchanged, with a few exceptions due to modification of some common external tariffs by regional blocks (*eg* SACU on some tariff lines).

Market-access opportunities—the reductions in protection facing each country group—are displayed in Table 6.4. Due to initial preferences and, to some extent, product specialisation, LDCs face very different outcomes in terms of market access. The average protection facing LDCs falls by 27% of its initial level, slightly more than the 24% for other developing countries. South markets do not open for trading, in contrast with north markets, where preferences already exist. However, African LDCs gain almost no market access (4% cut, −0.1 point). They already have preferential access to the EU, the United States and Japan. In contrast, the average protection against exports from the Asian LDCs, specialising in wearing apparel, is reduced by 46% (−2.1 points): one and a half times the world average.

At the same time, we see that multilateral trade liberalisation will erode preferences on a large scale (35% in average) but, due to their initial position, will affect LDCs more severely (43%). Interestingly, Asian LDCs are also the most exposed to this change. As previously discussed, African countries have significant preferences that benefit their exports, but these countries export many products that have low MFN rates and low preferences (nominal preferences). Asian LDCs that export labour-intensive goods with high MFN rates to the EU, Japan, Canada and Australia now benefit from a large expansion in market access in these countries. Therefore, Asian LDCs face a very challenging situation: the Doha Round will open markets where they currently face high protection (*eg* the United States) but will lead to strong preference erosion in existing preferential markets. African LDCs receive very few new market-access opportunities and they will suffer from preference erosion. However, due to their production structure, they are slightly less exposed to this mechanism than other African developing economies with larger stakes in EU agricultural markets.

Table 6.4: *Average faced protection by zone: WTO trade relations (in percent).*

	Applied tariff			Nominal preferential margin		
	Baseline	Central scenario	Cut rate	Baseline	Central scenario	Cut rate
All WTO members	3.7	2.9	−21	1.7	1.1	−35
High-income countries						
WTO members	3.7	3.0	−19	1.6	1.1	−32
Asia	4.6	3.6	−21	0.4	0.2	−56
Europe	3.9	3.3	−17	1.2	0.7	−39
North Africa	2.4	1.9	−19	3.4	2.5	−27
Latin America and the Caribbean	5.5	5.2	−6	0.8	0.6	−22
Developing countries (non-LDCs)						
WTO members	3.7	2.8	−24	1.6	1.0	−38
Africa	3.2	2.8	−12	3.0	1.8	−41
Asia	3.9	2.9	−25	1.0	0.6	−39
Europe	1.4	1.0	−24	4.8	2.8	−41
North Africa	0.5	0.4	−17	3.4	1.7	−49
Latin America and the Caribbean	5.0	3.9	−22	3.2	2.3	−28
LDCs						
WTO members	3.2	2.3	−27	4.6	2.6	−43
Africa	2.3	2.2	−4	3.4	2.3	−33
Asia	4.6	2.5	−46	6.7	3.2	−53
Latin America and the Caribbean	10.4	4.0	−61	1.5	0.6	−63

Source: MAcMap-HS6v2.1 and authors' calculation. Trade-weighted 2004 data, updated for changes in main GSP programmes until 2008 with full implementations of current WTO commitments. Only WTO trade relationships, excluding intra-EU, are covered. Preferential margins related to TRQs are included. Full utilisation of preferences is assumed.

3.3   The Impact of a Central Scenario on Trade, Production and Real Income for LDCs

Table 6.5 provides estimates of the effects on bilateral exports under the central scenario for selected pairs of trading countries/zones: importers are in rows, exporters in columns. Lastly, we focus on LDCs' exports, but it is important to keep in mind that global trade will increase by 2.7% in this scenario with the largest expansion for many emerging countries such as China (+4.5%), South Africa (+3.6%), Brazil and India (+2.1%) as well as richer economies such as the United States (+3.1%), Japan (+3.4%), the EU (3.5%) and Korea (+4.5%).

Globally, LDCs' exports fall by 0.5% in volume and value (Table 6.5 only shows impact in value). They are the only WTO group of countries that face a contraction in trade. This reflects, of course, a substantial erosion of LDC preferences, mainly Asian countries or African countries depending on a

few commodities (*eg* Malawi), in particular to Canada, the EU, Japan and the European Free Trade Association (EFTA) members. For example, Brazil's exports to Europe are augmented by a substantial 17.6% (in value), exports from Australia/New Zealand to the same destination increase by 20.2%, those of Korea by 6.4%, while exports of all LDCs to Europe decline, ranging from 2.6% for Central and Southern Africa LDCs to 5.9% for Bangladesh and to 7.7% for Malawi. At the same time, new market-access opportunities are taking place in the U.S. market for Asian LDCs (+10.0% in value) and for Bangladesh (+7.7%). African countries face preference erosion and see their exports reduced by 1 to 2%, except for Malawi, which manages to increase exports of highly distorted commodities that are not covered by the African Growth and Opportunity Act, such as tobacco.

Least-developed countries' exports to middle-income countries increase by 0.7%. This is lower than the increase in high-income countries' exports to this destination (4%). It is noteworthy, however, that the middle-income countries will represent a more important export destination for LDCs in terms of export value than the high-income countries by the end of the simulations (in 2025), and any gain in market access in these countries becomes increasingly important. African LDCs benefit mainly from tariff reduction in India (+5.2% of exports from Central/South African LDCs; +2.0 to +2.5 for other African LDCs).

This negative impact on LDC exports is particularly strong for agricultural products, as illustrated by Table 6.6(a), which shows that the central scenario cuts LDCs' agrifood exports by 1.0% with a large reduction in smaller Asian LDCs (−6.8%) and a reduction by 1–2.5% for most African LDCs. As expected, erosion of LDCs' preferences occurs in sectors like rice, sugar and other crops (tobacco, cocoa, coffee, *etc*). Animal product (meat and dairy) exports show a more contrasted picture, with increases or decreases depending on their initial position in EU markets and on how they are affected by the EU tariff reduction (preference erosion). At the same time, all new exports will need to comply with sanitary and phyto-sanitary norms that may represent an additional barrier for LDC exports that are not modelled here. Overall, opportunities are concentrated in fisheries and the oilseed value chain (*eg* palm oil, ground nut) whereas other high value crops (fruits and vegetables) are negatively affected.

The central scenario entails a small negative shock on LDCs' NAMA exports as well (−0.8% compared with −1.0% in agriculture). Losses are concentrated in apparel and leather products and affect Asian LDCs in particular. The reform implies particularly negative effects for Asian LDCs' leather product exports, and also for some African countries. In apparel, the shock is important for Bangladesh but even greater for Eastern African LDCs (including Lesotho) and Malawi, with falls of more than 10%. This reflects the erosion of preferences, primarily in leather, textiles and apparel, where MFN duties are relatively high in high-income countries.

Table 6.5: *Impact of the central scenario on bilateral exports upon value (until 2025, scenario/baseline, in percent).*

	Exporter								
	LDCs: Asia	LDCs: Bangladesh	LDCs: Central South Africa	LDCs: East Africa	LDCs: Malawi	LDCs: Senegal	Central Africa (mix)	West Africa (mix)	Rest of sub-Saharan Africa (non-LDCs)
LDCs: Asia	-0.1	-1.2	-1.2	-1.2	0.2	-2.0	-1.4	-2.6	-0.9
LDCs: Bangladesh	-0.2	0.0	-1.0	-1.0	0.6	-1.7	-1.7	-1.9	-1.1
LDCs: Central South Africa	1.0	1.0	-0.0	0.2	3.0	-0.6	-0.3	-1.7	0.1
LDCs: East Africa	0.7	0.7	-0.3	-0.2	2.1	-0.9	-0.4	-1.8	-0.0
LDCs: Malawi	-0.9	-0.9	-2.1	-0.9	0.0	-2.8	-2.1	-3.7	-1.8
LDCs: Senegal	1.5	1.6	0.3	0.9	3.0	0.0	-0.2	-0.1	0.8
Central Africa (mix)	0.9	1.1	3.1	2.0	2.8	-0.8	-0.2	-1.6	1.1
West Africa (mix)	2.2	2.1	0.9	1.1	0.8	0.4	0.5	0.1	1.4
Rest of sub-Saharan Africa (non-LDCs)	0.6	0.1	-0.9	-0.1	1.9	-1.4	-0.7	-1.5	-1.0
ANZCERTA	4.1	-4.0	0.1	0.9	7.3	-0.5	-0.3	-0.7	2.2
ASEAN	-0.8	15.4	1.4	1.7	3.8	5.1	1.9	4.4	3.9
Brazil	4.8	3.5	1.8	2.2	7.9	0.6	0.8	3.4	1.4
Canada	-19.4	-21.2	-1.3	-0.6	1.5	-1.7	-1.1	-0.3	2.2
China	2.4	10.3	-0.1	0.5	1.5	1.0	0.3	0.1	2.9
EFTA	3.2	-0.7	0.0	-1.2	-27.6	11.7	-1.3	-5.7	-1.2
EU (27)	-5.5	-5.9	-2.6	-2.5	-7.7	-2.0	-1.4	2.0	-0.6

Table 6.5: *Continued.*

		Exporter							
	LDCs: Asia	LDCs: Bangladesh	LDCs: Central South Africa	LDCs: East Africa	LDCs: Malawi	LDCs: Senegal	Central Africa (mix)	West Africa (mix)	Rest of sub-Saharan Africa (non-LDCs)
India	1.2	−0.4	5.2	2.1	2.0	2.5	3.0	2.0	5.0
Japan	−12.8	−4.9	1.4	1.0	0.6	−0.7	2.2	−2.4	3.0
Republic of Korea	−1.0	−3.4	1.0	0.6	3.0	4.8	1.2	−1.0	1.8
MENA	−1.3	8.9	19.4	−4.7	−0.4	7.8	43.5	23.3	0.1
Mexico	42.8	52.4	−0.8	3.9	3.8	6.5	−1.1	0.2	2.1
Oil exporters (non–LDCs)	0.3	−0.1	−0.5	0.0	1.9	−1.0	−0.6	−1.2	−0.1
Rest of East Asia	3.6	5.8	−1.2	2.6	5.5	3.4	−0.8	3.5	2.6
Rest of Latin Latin America	1.1	1.8	−0.8	0.7	2.2	−0.3	−0.6	−1.4	0.3
Rest of South Asia	2.4	4.3	1.5	3.5	3.5	1.9	2.9	2.7	2.3
Rest of the world	0.9	1.3	0.0	0.9	2.3	−0.3	−0.2	−0.4	0.9
South Africa	4.3	14.0	−1.2	−0.9	−3.1	−3.9	−5.1	−0.5	−5.5
Turkey	−3.0	−5.6	−1.0	1.2	1.4	−1.0	0.0	0.9	6.2
United States	10.0	7.7	−1.0	−1.7	44.8	−1.2	−1.0	−2.6	−0.9

'ANZCERTA' stands for Australia–New Zealand Closer Economic Relations Trade Agreement. 'ASEAN' stands for Association of Southeast Asian Nations.
Source: authors' calculation using the MIRAGE model.

This scenario has a small negative impact on agricultural output in LDCs as a group, −0.13%[15], while it expands by more than 1.1% for other developing countries. In industry, the impact is of the same magnitude overall (−0.13% for LDCs versus +0.25 for other developing economies). Details are provided in Table 6.6(b). Interestingly, some countries for which agricultural exports have decreased, such as Senegal (−0.1% in agricultural exports) may still have an increase in agricultural output (+0.2%) due to increased demand for local production.

Table 6.7 presents a summary of all these mechanisms through the assessment of macroeconomic effects: real income, terms of trade indicators, global exports and real wages for unskilled workers, with the last variable being important for evaluating the impact on the most vulnerable people within LDCs. The central scenario is clearly negative for LDCs in terms of their exports. The negative shock on exports is particularly substantial for Asian LDCs (Bangladesh, −1.5%) and also countries in Southern and Eastern Africa. West and Central Africa appears to be less exposed.

This trade reform leads to real income losses for almost all LDCs, except in West Africa. The loss is substantial for smaller countries (Asian LDCs except Bangladesh). This real income effect stems from a deterioration in the terms of trade that has two potentially cumulative origins: the erosion of preferences and rising world food prices for net-food-importing countries. However, different countries experience different levels of exposure to these problems. The exposure is very strong for countries like Malawi, Asian countries and Central Africa. Beyond the macroeconomic indicators, looking at the wages for unskilled workers is a good proxy for potential consequences on a poor population. Except for Senegal, for which agricultural production expands and increases the demand for unskilled labour, all other countries/groups of countries are negatively affected, although the magnitudes of these effects remain low.

These pessimistic results are strongly affected by the key assumption that existing preferences are fully utilised. Indeed, in this study we follow the default approach included in the MAcMap-HS6v2.1 database, used in the GTAP data set, and considered in the other chapters of this book: that the best available preferential tariff is used and that rules of origin do not lead to the underutilisation of preferential schemes. Laborde *et al* (forthcoming) show that the part of this adverse outcome that is due to preference erosion may be seriously overstated, particularly for preferential access to the EU. They reach this conclusion using a detailed data set on preference utilisation for the United States and the EU, a modified version of the MAcMap-HS6 database and a modified version of the MIRAGE model. By modelling trade flows at the HS6 level and using specific utilisation rates at the product level, they find a substantially lower value of preferences and lower costs of preference

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[15] This figure is not displayed in Table 6.6(b).

Table 6.6: *Impact of the central scenario on sectoral exports and output in volume (2025, scenario/baseline, in percent).*

(a) Impact on sectoral exports

Sector	High-income countries	Low-income countries	LDCs	LDCs: Asia	LDCs: Bangladesh	LDCs: Central South Africa	LDCs: East Africa	LDCs: Malawi	LDCs: Senegal	Central Africa (mix)	West Africa (mix)	Rest of sub-Saharan Africa (non-LDCs)
Agro-food	3.9	7.5	−1.0	−6.8	0.2	−1.4	−1.1	−2.5	−0.1	0.0	3.0	1.9
Industry	4.1	2.5	−0.8	−1.6	−2.5	−0.2	−0.4	−0.8	0.8	−0.1	−1.0	−1.4

(b) Impact on sectoral output in volume

Sector	LDCs: Asia	LDCs: Bangladesh	LDCs: Central South Africa	LDCs: East Africa	LDCs: Malawi	LDCs: Senegal	Central Africa (mix)	West Africa (mix)	Rest of sub-Saharan Africa (non-LDCs)
Agro-food	−0.8	0.0	0.0	−0.2	−0.8	0.2	0.0	0.2	0.3
Industry	−0.7	−0.5	−0.1	0.0	1.0	0.3	−0.1	−0.9	−0.6

Source: authors' calculation using the MIRAGE model.

Table 6.7: *Impact of the central scenario on macroeconomic variables (2025, scenario/ baseline, in percent).*

Sector	Real income	Exports (volume)	Terms of trade	Unskilled real wages
High-income countries	0.13	3.12	—	—
Low-income countries	0.12	2.46	—	—
LDCs	−0.09	−0.49	—	—
LDCs: Asia	−0.66	−0.82	−0.35	−0.64
LDCs: Bangladesh	−0.14	−1.54	−0.38	−0.17
LDCs: Central and South Africa	−0.11	−0.16	−0.17	−0.01
LDCs: East Africa	−0.03	−0.32	−0.05	−0.02
LDCs: Malawi	−0.24	−1.12	−0.34	−0.18
LDCs: Senegal	0.07	0.03	0.04	0.32
West Africa (mix)	−0.08	−0.01	0.09	0.01
Central Africa (mix)	0.13	0.66	−0.09	−0.23
Rest of sub-Saharan Africa (non-LDCs)	0.02	−0.10	0.04	0.12

Source: authors' calculation using the MIRAGE model.

erosion. Once this is taken into account, multilateral liberalisation leads to less preference erosion, since they are used less initially.

4   WHAT CAN BE DONE IN FAVOUR OF LEAST-DEVELOPED COUNTRIES?

In this section, we add the DFQF provisions of the modalities. To do this, we use the following eight scenarios.

- The DFQF 97 scenario supposes duty-free and quota-free market access for LDCs implemented in OECD countries, except Korea and Chile, but with Turkey and Mexico included. It authorises a 3% exemption clause in terms of products. In this experiment, a common list of exceptions is used by each OECD country *vis-à-vis* all LDCs. Finally, only WTO LDCs (members and observers) will benefit from this DFQF market access. We use the political-economy criterion proposed by Jean *et al* (2010) to build such a list.
- The DFQF 100 scenario is similar to scenario DFQF, but with 100% DFQF instead of 97% DFQF (specifically, a DFQF without any sensitive products) for high-income countries.
- The DFQF 97L scenario implements a geographic extension of the DFQF access for LDCs into India, China and Korea, with an exception list of 3% of tariff lines.
- The DFQF 100L scenario is similar to the DFQF 97L scenario, but it offers 100% DFQF instead of 97% DFQF for all participants in the initiative.
- The DFQF 97LS scenario, based on DFQF 97, includes removal of the long-standing preferences clause.

- The DFQF 97LSTP scenario, based on DFQF 97, includes removal of the long-standing preferences and tropical products clauses.
- The DFQF 97TP scenario, based on DFQF 97, includes removal of the tropical products clause.
- The DFQF 97MIC scenario includes trade reform by LDCs to the same extent as middle-income countries, retaining the features of scenario DFQF 97 in terms of market-access gains for LDCs.

4.1   The DFQF and Potential Variants

The DFQF initiative was introduced during the Ministerial Conference of Hong Kong (China) in December 2005. It aimed to extend the EBA European initiative by providing free access for LDC exports to developed markets and developing markets in a position to provide such access. However, the ambition was limited to 97% of the tariff lines of the granting countries. As we have seen previously, this 3% exclusion may represent close to all of the LDC exports to a given market. Since then, the negotiations have not progressed and in the December 2008 modalities, the provisions regarding 'developing countries in a position to do so' disappeared. Table 6.8 displays the consequences of different DFQF scenarios in terms of protection faced. First, the basic DFQF scenario (scenario DFQF 97), covering 97% of products granted by OECD countries (except Korea) and Brazil, has little impact on LDCs: the average cut increases from 27% without DFQF (central scenario) to 29%, adding a reduction of 0.1 points for a final faced tariff of 2.2%. This gain benefits African countries relatively more (market-access opportunities rise by half) than Asian countries, where no real additional gains are recorded (the cut in the average tariff rises from 45.6% to 46.4%).[16]

   Moving to 100% DFQF with the same set of granting countries (scenario DFQF 100) has a very powerful effect, nearly doubling the market-access opportunities created. Asian LDCs see the average rate of protection that they face reduced by three-quarters, and African LDCs by 11%. Once again, the apparel sector in the United States plays a crucial role for Bangladesh. It is noteworthy that this option (DFQF 100) benefits the Asian LDCs (the average tariff faced is cut by 75%) and will reduce the current preferential margins for African countries in the United States under the African Growth and Opportunity Act as they face greater competition from Asian LDCs. Extending the DFQF 97% initiative to other developing countries (China, India and Korea) has no real impact on the average tariffs (the faced tariff drops from 3.2% in the central scenario to 1.7% in the DFQF 100 case, and to 2.2% in the DFQF 97L case). The DFQF 100L scenario, by combining both aspects, appears to be a

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[16]Under scenario DFQF 97, each importer defines a common list for all LDCs. Allowing importers to define DFQF on 97% of the products on a bilateral basis would limit the ambition of the initiative to an even greater degree.

Table 6.8: *Average protection faced by WTO LDCs (DFQF scenarios, in percent).*

	Baseline	Central scenario	DFQF 97	DFQF 100	DFQF 97L	DFQF 100L
All WTO LDCs						
Average faced tariff	3.2	2.3	2.2	1.7	2.2	1.2
Cut rate	—	−27	−29	−47	−29	−62
African LDCs						
Average faced tariff	2.3	2.2	2.1	2	2.1	1.6
Cut rate	—	−4	−7	−11	−8	−30
Asian LDCs						
Average faced tariff	4.6	2.5	2.4	1.1	2.4	0.5
Cut rate	—	−45	−46	−75	−46	−88
Latin America and Caribbean LDCs						
Average faced tariff	10.4	4	4	0.1	4	0.1
Cut rate	—	−61	−61	−98	−61	−99

Source: MAcMap-HS6v2.1 and authors' calculation. Trade-weighted 2004 data, updated for changes in main GSP programmes until 2008 with full implementations of current WTO commitments. Only WTO trade relationships, excluding intra-EU, are covered. Preferential margins related to TRQs are included. Full utilisation of preferences is assumed.

win–win solution for the two regional groups of LDCs and will cut the average tariff barriers currently faced by the LDCs by more than 60%. It appears to be the only solution able to deliver significant market access to African countries.

Table 6.9 presents the impacts of the five variants of DFQF (with the central scenario for comparison purposes) on exports and real income. A glance over Table 6.9 shows that the DFQF regime, as agreed at the Hong Kong Ministerial, only has a small impact on the exports of LDCs: it reduces the fall in export volume by more than half (−0.2% versus −0.5%) and significantly cuts the welfare losses (−0.02% versus −0.1%).

Although the gains remain relatively low at the global level, some variations are important when it comes to specific countries and sectors. No gains from DFQF are evident for Central and Southern African LDCs, with moderate gains for Senegal and very large gains for Malawi. At the country level, the export composition of a country compared with the LDC group as a whole plays an important role. Indeed, having a different export structure from other LDCs reduces the risk of a country having its own products in the exclusion list applied by each importer to all LDCs. In our simulations, the selection criterion has not picked up[17] all tobacco products exported by Malawi to

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[17]We emphasise the point that we proceed to the selection of the 97% of liberalised products at the HS6 level and not at the tariff-line level. Due to the structure of U.S. imports, an HS6 product in wearing apparel or in sugar weigh much more than one HS6 line of tobacco. It is highly probable that, applying the 97% criterion at the tariff-line level, the United States will have enough freedom to protect the key tariff line for tobacco and to eliminate most of the market-access gains we have found here for Malawi.

the U.S. markets (most of the 3% of products were in the textile and apparel sectors) and, therefore, this country will experience very large export gains. For smaller Asian LDCs, we note that the DFQF 97% has reduced export losses by three-quarters but by one-third for real income: the terms-of-trade effect remains important.

Under the DFQF 100L scenario in terms of exports (value), the largest increases take place in the dairy sector (+824% for Bangladesh compared with the central scenario; +765% for East Africa), rice (+1,369% for Bangladesh compared with the central scenario), oilseeds (+938% for Asia LDCs compared with the central scenario) and other crops (tobacco +162 for Malawi compared with the central scenario). Remaining with the DFQF 100L scenario, these export augmentations are essentially directed towards low-income countries (+2.45% compared with the central scenario, with +113% to Mexico, +71% to India and +40% to Turkey).

Under the DFQF 100L scenario, the sectoral effects are concentrated in apparel, where export reduction is limited to −2.4% as compared with −4.9% under DFQF 97%, and in the other-crops sector, where exports are augmented by 17.2% under the DFQF 100L in place of 4% under the DFQF 97. The largest changes are concentrated in Asian LDCs, with the elimination of real income losses for Bangladesh and a significant dampening of export decreases (apparel exports are at −3.7% under the DFQF 100L compared with −4.8% with the DFQF 97%) and a stronger improvement for other Asian LDCs (apparel exports rise 2.25% under the DFQF 100L, compared with −3.90% under the DFQF 97). The key change occurs in the U.S. market, where total LDC exports increase by an additional 2.5% compared with the DFQF 97% with an additional increase of more than 12% for Asian LDCs' exports for a total effect of +19% for Bangladesh and +28% for other LDCs. Under the DFQF 100L scenario, African LDCs do not suffer from overall preference erosion with increased competition from Asian LDCs, since the losses on apparel or leather products are compensated by new export opportunities in other sectors (peanuts, tobacco) and the losses on exports to the United States are compensated by huge gains on exports towards middle-income countries.

As we have seen, involving emerging countries in a generous DFQF is important if it is to clearly benefit LDCs. In fact, the actual long-run gains may be even more important than our results would suggest. One reason for this is that a Doha Round outcome would likely contribute to shaping global trade relations during a 20-year period in which emerging markets are likely to grow substantially more rapidly than the OECD countries (and will be the largest markets for LDC exports by 2025). Second, SDT for developing countries allows many to retain relatively higher tariffs, creating the possibility of providing sizeable preferential margins to LDCs. Third, to make a deal politically acceptable, the benefits of liberalisation should be shared among all WTO members, especially LDCs. If emerging economies take part of LDCs' existing market shares in the developed world, it seems desirable for them to allow

Table 6.9: *Impact of the central scenario and five alternative scenarios on exports and real income (2025, scenario/baseline, in percent).*

Region	Real income					Exports (volume)				
	Central scenario	DFQF 97	DFQF 97L	DFQF 100	DFQF 100L	Central scenario	DFQF 97	DFQF 97L	DFQF 100	DFQF 100L
High-income countries	0.13	0.13	0.13	0.13	0.13	3.12	3.13	3.13	3.12	3.13
Middle-income countries	0.12	0.12	0.12	0.12	0.11	2.46	2.46	2.46	2.46	2.49
LDCs	−0.09	−0.02	0.03	0.01	0.29	−0.49	−0.19	0.03	−0.06	0.94
LDCs: Asia	−0.66	−0.40	0.15	−0.34	0.68	−0.82	−0.25	0.80	−0.15	1.26
LDCs: Bangladesh	−0.14	−0.07	−0.01	−0.05	0.34	−1.54	−0.95	−0.29	−0.82	1.83
LDCs: Central South Africa	−0.11	−0.11	−0.11	−0.11	0.02	−0.16	−0.15	−0.15	−0.14	0.13
LDCs: East Africa	−0.03	0.02	0.03	0.04	0.20	−0.32	−0.13	−0.13	−0.06	0.54
LDCs: Malawi	−0.24	2.25	3.06	2.26	5.95	−1.12	4.34	5.97	4.37	11.39
LDCs: Senegal	0.07	0.15	0.15	0.60	1.25	0.03	0.43	0.44	3.29	7.17
Central Africa (mix)	−0.08	−0.08	−0.08	−0.08	−0.08	−0.01	−0.01	−0.01	−0.01	−0.01
West Africa (mix)	0.13	0.17	0.18	0.18	0.37	0.66	0.81	0.82	0.86	1.38
Rest of sub-Saharan Africa (non-LDCs)	0.02	0.02	0.03	0.03	0.04	−0.10	−0.09	−0.08	−0.09	−0.07

Source: authors' calculations using the MIRAGE model.

the LDCs to find new market opportunities in their own economies. Moreover, in most cases, the technical and phyto-sanitary requirements of developing countries are much easier for LDC exporters to meet than the comparable non-tariff barriers in OECD markets. Another advantage of granting large and secure preferences to LDCs in emerging markets is that it contributes to their market diversification. The recent economic crisis has clearly illustrated how much LDCs currently depend on economic growth in high-income countries.

4.2   Disentangling the Role of Different Provisions Affecting LDCs in the Current Modalities

Least-developed countries might also be affected by three kinds of specific provisions: the long-standing preference clause, the tropical and diversification product provision, and SDT. In terms of the long-run protection faced by the LDCs, the long-standing preference clause has no impact, since it involves delaying the liberalisation of products subject to long-standing preferences. It appears that the tropical and diversification product provisions do not grant any additional market-access opportunities under the DFQF 97% assumption. These provisions would affect LDCs only indirectly by preserving or reducing their preferential margins.

The modalities exempt LDCs from the requirement to reduce their bound, and, therefore, their applied tariffs. To consider the consequences of this exception we implement a scenario called DFQF 97MIC, where the LDCs are subject to the same tariff-cutting rules as developing countries. Under these rules, LDCs would have to cut their applied tariffs by 21.1%, from 10.7% to 8.5%. Once again, strong differences appear between LDCs, with larger effects in Asia (−28%) and smaller ones in Africa (−15%) because of high binding overhang and relatively low applied rates, especially for members of regional customs unions. The DFQF 97MIC scenario leads to increases in LDCs' exports (see Table 6.10) thanks to the cost reductions in imported inputs, but also, and mainly, due to the macroeconomic closure of the model: assuming a constant current balance hypothesis, the increase in imports implied by border liberalisation implies a depreciation of the real exchange rate, which increases exports. The efficiency gains from this liberalisation dominate, and the LDCs' reform would deliver additional gains. This reform would remove most of the losses from preference erosion and terms-of-trade declines, confirming the importance of own domestic reforms in securing benefits from multilateral liberalisation.

Looking at the evolution of true preferential margins, we see that the only impact of the long-standing preferences clause is to delay the erosion of preferences, while the provisions for tropical products would only have a tiny impact at the aggregate level. This effect may be different at the country and sector levels. The scenarios DFQF 97LS, DFQF 97LSTP and DFQF 97TP have almost no impact on either LDCs' exports or real income relative to the

central scenario (see Table 6.10), except for Malawi in the long run. Overall, the effects are as expected.

Interestingly, we can see the overall effects of the different scenarios in terms of dynamics in Figure 6.3. Without the DFQF initiative, preference erosion[18] begins to negatively affect LDC exports and welfare from the beginning of the implementation period. On the other hand, the DFQF 97 initiative leads to important market-access gains at the beginning of the implementation period and LDCs experience gains up to the point where MFN tariff reduction reduces the value of these new preferences. Removing the tropical product liberalisation reduces the losses slightly (the gap between the DFQF 97 and DFQF 97TP) but it is not significant for the LDC as a group. Concerning the long-standing preferences, we see that their removal contributes significantly to increasing the losses of the LDCs in the 2013–17 period. Therefore, the period of grace granted by this clause may be important, particularly combined with the lag in implementing aid-for-trade measures. Based on these results we should acknowledge that, with limited dynamic effects in the model, we may neglect the value of additional preferential rents during the early years of implementation and their long-term effects through learning by doing, reinvestments of rents in productive capacity, *etc.*

5   CONCLUDING REMARKS

The Ministerial Declaration adopted in Doha on 14 November 2001 states that 'international trade can play a major role in the promotion of economic development and the alleviation of poverty', that the WTO members 'recognize the particular vulnerability of the LDCs and the special structural difficulties they face in the global economy' and that they are 'committed to addressing the marginalisation of LDCs in international trade and to improving their effective participation in the multilateral trading system'.[19]

This paper has shown that the benefits that LDCs can draw from the trade reforms outlined in the December 2008 modalities are likely very small, if not negative. This is the case for several reasons. Firstly, LDCs could be hurt by the erosion of preferences. Secondly, most LDCs are net-food-importing countries that would likely be negatively affected by rising food prices resulting from the removal of agricultural distortions. Thirdly, they are not committed to any reform of their own trade policies. At the same time, the modalities do not involve new disciplines on export restrictions in times of high world prices, a

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[18]As already indicated, we obviously overestimate the effects of preference erosion since we assume initially 100% utilisation rate of preferences. In reality, the initial Doha tariff cuts will still deliver some market access for LDCs, including on markets in which they have officially large preferences but which they underutilise.

[19]See www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_e.htm.

Table 6.10: *Impact of four alternative scenarios on exports and real income (2025, scenario/baseline, in percent).*

(a) Real income					
Region	DFQF 97	DFQF 97LS	DFQF 97TP	DFQF 97LSTP	DFQF 97MIC
High-income countries	0.13	0.13	0.13	0.13	0.13
Middle-income countries	0.12	0.12	0.12	0.12	0.12
LDCs	−0.02	−0.02	−0.01	−0.02	0.10
LDCs: Asia	−0.40	−0.40	−0.38	−0.39	0.15
LDCs: Bangladesh	−0.07	−0.10	−0.10	−0.10	0.22
LDCs: Central South Africa	−0.11	−0.11	−0.11	−0.11	−0.00
LDCs: East Africa	0.02	0.02	0.03	0.02	0.02
LDCs: Malawi	2.25	3.00	3.08	3.03	2.52
LDCs: Senegal	0.15	0.14	0.16	0.16	0.26
Central Africa (mix)	−0.08	−0.08	−0.08	−0.08	−0.08
West Africa (mix)	0.17	0.16	0.18	0.16	0.23
Rest of sub-Saharan Africa (non-LDCs)	0.02	0.03	0.03	0.03	0.01

(b) Exports, volume					
Region	DFQF 97	DFQF 97LS	DFQF 97TP	DFQF 97LSTP	DFQF 97MIC
High-income countries	3.13	3.13	3.11	3.11	3.14
Middle-income countries	2.46	2.46	2.46	2.46	2.48
LDCs	−0.19	−0.20	−0.19	−0.19	2.86
LDCs: Asia	−0.25	−0.25	−0.24	−0.24	5.44
LDCs: Bangladesh	−0.95	−1.11	−1.10	−1.10	10.42
LDCs: Central South Africa	−0.15	−0.15	−0.15	−0.15	0.29
LDCs: East Africa	−0.13	−0.14	−0.12	−0.13	1.27
LDCs: Malawi	4.34	5.91	6.03	5.97	6.02
LDCs: Senegal	0.43	0.43	0.51	0.50	2.40
Central Africa (mix)	−0.01	−0.01	−0.01	−0.01	0.14
West Africa (mix)	0.81	0.79	0.82	0.80	2.26
Rest of sub-Saharan Africa (non-LDCs)	−0.09	−0.09	−0.07	−0.07	−0.14

Source: authors' calculation using the MIRAGE model.

discipline that could reduce the vulnerability of food-importing LDCs (Bouët and Laborde 2010b).

To achieve a substantially better outcome for LDCs, more reforms appear to be needed. One option would be to extend the DFQF initiative to 100% coverage of LDC exports instead of 97% coverage, and to expand its geographic coverage
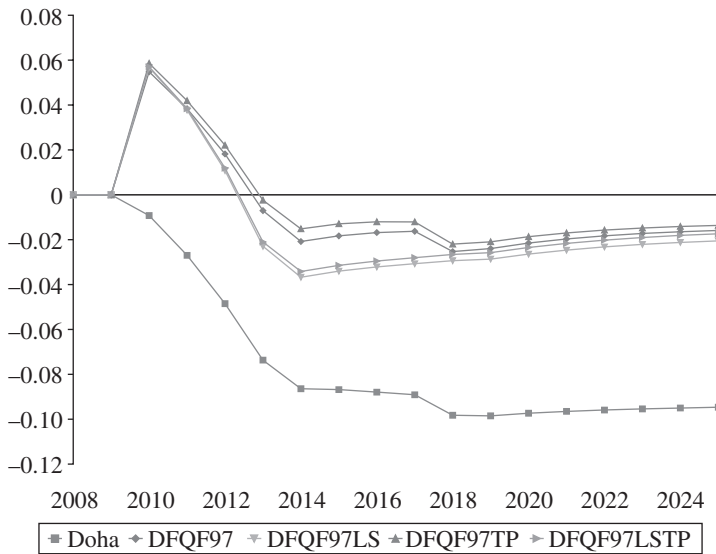
Figure 6.3: *Welfare change for LDCs: time profile.*
Source: authors' calculation using the MIRAGE model.

to include leading emerging countries. Interestingly, it is in the interest of Asian LDCs to prioritise full openness of OECD markets (100% DFQF regime), particularly full access to the U.S. market, while African countries would gain more from a geographic extension to emerging countries. Combining product and country coverage is important in order to limit the cost of preference erosion and to create new markets that could promote diversification of LDC exports. In addition, the design of rules of origin linked to this initiative will be critical. Finally, it is important to remember that economic impacts from a successful Doha Agenda will not arise only through its provisions on market access. The situation for LDCs might be improved through action in a number of other areas, including the negotiations on trade facilitation discussed in Chapter 8 and on aid for trade discussed in Chapter 9 of this volume.

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6   APPENDIX A: SECTORAL AND REGIONAL MAPPINGS

Table A6.1: *Sectoral mapping.*

Sector code	Sector label	GTAP sectors
Rice	Rice	PDR, PCR
Wht	Wheat	WHT
Gro	Other cereal grains	GRO
v_f	Vegetable and fruit	V_F
Osd	Oilseeds	OSD
Sgr	Sugar	C_B, SGR
Mat	Cotton wool silk forestry	PFB, WOL, FRS
Ocr	Other crops	OCR
Ani	Animal and meat products	CTL, OAP, CMT, OMT
Milk	Milk	RMK, MIL
Fish	Fish	FSH
Cog	Coal oil gas	COA, OIL, GAS
Min	Other minerals	OMN
Vol	Vegetable oils and fats	VOL
Ofd	Other food products	OFD
b_t	Beverage and tobacco	B_T
Tex	Textile	TEX
Wap	Wearing apparel	WAP
Lea	Leather products	LEA
Man	Other manufactured products	LUM, PPP, P_C, NMM, I_S, FMP, MVH, OTN, ELE, OME, OMF
Crp	Chemical rubber plastic products	CRP
Nfm	Metals	NFM
Ser	Other services	ELY, GDT, WTR, CNS, CMN, OFI, ISR, OBS, ROS, OSG, DWE
Tra	Trade	TRD
Trans	Transport	OTP, WTP, ATP

Table A6.2: *Regional mapping.*

Region code	Region label	GTAP regions
ANZCERTA	ANZCERTA	AUS, NZL
RoW	Rest of the world	XOC, XNA, ALB, BLR, HRV, UKR, XEE, XER, KGZ, XSU, ARM, GEO, XWS
CHINA	China	CHN, HKG
JAPAN	Japan	JPN
KOREA	Republic of Korea	KOR
RoEA	Rest of East Asia	TWN, XEA, SGP
LDCAsia	LDCs: Asia	KHM, LAO
ASEAN	ASEAN	IDN, MYS, PHL, THA, VNM, XSE
BGD	LDCs: Bangladesh	BGD
INDIA	India	IND
RoSA	Rest of South Asia	PAK, LKA, XSA
CANADA	Canada	CAN
USA	United States	USA
MEXICO	Mexico	MEX
LAC	Rest of Latin America	ARG, BOL, CHL, COL, ECU, PRY, PER, URY, CRI, GTM, NIC, PAN, XCA, XCB
BRAZIL	Brazil	BRA
OIL	Oil exporters (non-LDCs)	VEN, XSM, RUS, KAZ, AZE, IRN, NGA
EU27	EU (27)	AUT, BEL, CYP, CZE, DNK, EST, FIN, FRA, DEU, GRC, HUN, IRL, ITA, LVA, LTU, LUX, MLT, NLD, POL, PRT, SVK, SVN, ESP, SWE, GBR, BGR, ROU
EFTA	EFTA	CHE, NOR, XEF
TURKEY	Turkey	TUR
MENA	MENA	EGY, MAR, TUN, XNF
SENEGAL	LDCs: Senegal	SEN
WAF	West Africa (mix)	XWF
CAF	Central Africa (mix)	XCF
SCA	LDCs: Central South Africa	XAC
RSSA	Rest of sub-Saharan Africa (non-LDCs)	ETH, MUS, ZWE, BWA
LDCEaf	LDCs: East Africa	MDG, MOZ, TZA, UGA, ZMB, XEC
MWI	LDCs: Malawi	MWI
ZAF	South Africa	ZAF, XSC

7   APPENDIX B: THE MIRAGE MODEL AND KEY MODIFICATIONS TO THE GTAP7.1 DATABASE

The MIRAGE model[20] is a multicountry and multisector computable general equilibrium model that is especially well built for capturing trade effects coming from policy reforms such as multilateral liberalisations. In each country a representative consumer maximises a constant elasticity of substitution–linear expenditure system (CES–LES) utility function under a budget constraint to allocate its income across goods. In the baseline, preferences are dynamically recalibrated to maintain a meaningful pattern of income and price elasticities.[21] The origin of goods is determined by a CES nested structure following the Armington assumption.[22] In addition, northern countries are supposed to produce higher-quality industrial goods compared with those supplied by southern countries. On the production side, value added and intermediate goods are complements under a Leontief hypothesis. The value added is a CES function of unskilled labour and a composite of skilled labour and capital: this allows for including less substitutability between the last two production factors. In agriculture and mining, production also depends on land and natural resources. New capital is perfectly mobile across sectors while installed capital is immobile. Skilled labour is perfectly mobile across sectors while unskilled labour is imperfectly mobile between agricultural sectors and non-agricultural sectors. Total employment is constant. Investment is savings-driven and the real exchange rate is adjusted (through price adjustments) such that the current account is constant in terms of world GDP. This last assumption is important in this study, since tariff reductions (Doha scenario) and tariff increases (protectionist scenarios) will have positively correlated impacts on both imports and exports for every country.

Macroeconomic data (such as world trade flows, production, consumption, intermediate use of commodities and services) are extracted from the GTAP 7.1 database (Narayanan and Walmsley 2008) in order to implement a global social accounting matrix into the MIRAGE model for the base year. However, two major modifications of the data set have been performed.

The trade matrix was adjusted to discriminate between 'real' trade and virtual trade. In the latter case, the GTAP database includes 'virtual' merchandise trade flows related to travel expenditures. Rather than being treated as an export of services, the expenses of a Japanese tourist in Cambodia are translated in the database as a dutiable export of consumed goods from

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[20]URL: www.mirage-model.eu/.

[21]We target household preferences to be close to the elasticities provided by the USDA (www.ers.usda.gov/Data/InternationalFoodDemand/).

[22]The MIRAGE model is based on GTAP Armington elasticities, which are low compared with those used in other models (the World Bank's LINKAGE model, for example).

Cambodia to Japan. However, these 'virtual' trade flows can be problematic in our assessment when they create non-negligible exports from an LDC to an OECD country after a high tariff on a specific commodity is removed. For instance, the GTAP database shows that exports of about $100,000 of processed rice from Senegal to Japan face a 340% tariff. Based on the model parameters (Armington elasticities for imperfect substitutes), elimination of the duty could lead to a 15-fold increase in Senegalese exports of rice to Japan. Unfortunately, this flow is purely artificial, and there is no way of knowing whether trade liberalisation would boost Senegalese exports or by how much. Due to the magnitude of the shock, this problem will lead to a significant bias in our results. To address the problems created by constructed trade values, we split the GTAP trade matrix into two categories: real trade flows, based on the trade data inputs to the GTAP database by Mark Gehlhar, and virtual trade flows. The virtual trade flows are first consumed locally by the 'recreation' sector and then exported as a non-dutiable service.

In addition, we checked the quality of the input–output tables for key products in the LDC countries on which we focused to prevent important mistakes due to data-quality problems. For instance, the GTAP7 database shows that 15% of the production cost of processed rice in Senegal is due to imported wheat and 0% to local paddy rice. This mistake in the construction of the input–output table will lead to serious problems in a computable general equilibrium (CGE) assessment because it implies that Senegal can export rice without producing it simply by importing wheat. We fixed such issues by reallocating the intermediate consumption to the appropriate sector in the input–output table.

The Special Safeguard Mechanism: Previous Studies and Present Outlook

JASON GRANT AND KARL MEILKE

1 BACKGROUND

The authors began thinking about the economic implications of an SSM in 2004, based on one line in the 1 August 2004 WTO Doha Work Programme (WTO 2004, p. A-7): 'A Special Safeguard Mechanism (SSM) will be established for use by developing country Members'. At that time, analysis of an SSM seemed like a good topic for further research, albeit one whose policy relevance was uncertain (Grant and Meilke 2006). However, in an effort to complete the DDA, in 2008, the SSM proved to be one of the major sticking points in the agricultural negotiations and it remains a highly contentious issue (Blustein 2009; Wolfe 2009; WTO 2010a,b). It is worth noting that Grant and Meilke (2006) were not the only ones uncertain of the role the SSM would play in the agricultural negotiations. As late as July 2008, one ambassador at the WTO noted: 'until we got to the Green Room, I never knew the SSM was a big issue. We were all terribly [un]prepared' (Wolfe 2009, p. 520).

To understand the motivation behind the SSM, it is necessary to look back at the SSG established in the URAA (WTO 1994).[1] The SSG was a safeguard instrument made available to WTO members who 'tariffied' during the Uruguay Round and who placed the symbol 'SSG' by the appropriate tariff line in their Schedule of Commitments on agriculture.[2] This safeguard was considered necessary by members who were worried about import penetration for their most sensitive products following tariffication. The SSG allowed

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[1]If the SSM is agreed to in the DDA, it will become the fifth WTO legal measure that countries can use to protect domestic industries from imports. Two of the five measures are designed to counter unfairly traded products (anti-dumping and countervailing duties), while the remaining three (general safeguards, the SSG and the proposed SSM) are designed to provide temporary relief to domestic industries in the event of sharp price declines or rapid import surges. The SSG and SSM are specific to agriculture and the proposed SSM is specific to developing countries.

[2]Tariffication involved members converting their non-tariff barriers to bound tariffs during the Uruguay Round. Many developing countries, however, opted to create so-called 'ceiling' bindings that were unrelated to any estimates of prior protection (Ruffer and Vergano 2002; Valdés and Foster 2003, 2005; Grant and Meilke 2006).

an eligible importer to impose an additional duty on the specified product when there was an import surge or when import prices fell by more than 10% below a fixed trigger price. However, only 39 members (25% of the current WTO membership) are eligible to use the SSG because of the tariffication requirement. Of the 39 eligible members, 16 are high-income countries and there are no eligible LDCs. The SSG also constrained the use of the safeguard to 6,156 total tariff lines, ranging from just two lines in Uruguay to 961 lines in Switzerland (WTO 2004b).

The fact that many developing countries do not have recourse to the SSG did not go unnoticed in framing the negotiations of the DDA. In 2003, Sri Lankan Ambassador K. J. Weerasinghe pointed out that, under the URAA, most developing countries are unable to make use of the special agricultural safeguard and that 'this is an inequity that must be corrected'.[3]

Another reason for the interest in SSM-type measures in developing countries is the very frequent use of price insulating policies in these countries (Martin and Anderson forthcoming). In response to the volatility in world food prices, many developing countries (and developed countries) adjust the rate of protection—whether by changing import duties or introducing or changing export measures—in order to reduce the volatility of their domestic prices. If developing countries were to cut their agricultural tariff bindings in the Doha Agenda, their ability to follow this policy of price insulation would be reduced. While understandable as a policy response for individual countries, this is a beggar-thy-neighbour policy that results in higher volatility in world prices. If all countries follow this policy to the same degree following an increase in world prices, the decrease in border protection measures exactly offsets the increase in world prices, rendering the policy completely ineffective as a stabilising measure (Martin and Anderson forthcoming). In this case, its only effect is to destabilise national incomes by exacerbating the income redistributions to exporters during booms and to importers during slumps. Such a policy might work for developing countries if industrial countries could be persuaded to refrain from adjusting border measures, and there is some evidence that they are beginning to do so, but their share of the major commodity markets is very small.

From the perspective of many developing countries the SSM is one component of SDT agreed to at the launch of the DDA. It is argued that it provides developing countries with the option of a similar type of import protection for their poor and vulnerable farmers to that which developed countries demanded for their rich farmers in the Uruguay Round.[4] From the perspective

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[3]Third World Network, available at www.twnside.org.sg/title/twninfo102.htm.

[4]While the SSG provided a blueprint for the SSM, they differ in two crucial ways. First, the SSG was available to countries who replaced import quotas or their equivalents (variable levies) with bound tariffs, a situation where an import surge might be more likely than with a simple lowering of tariffs. Second, they applied to a limited number of tariff lines rather than to all tariff lines.

of exporting countries, however, a safeguard that covers all agricultural tariff lines in all developing-country members needs to be designed conservatively if liberalisation of agricultural markets is the ultimate goal. Additional care is needed because of the potential adverse implications of high food prices for poverty in low-income countries, given the high shares of food in the expenditure of the poor, and the fact that many poor farmers in low-income countries are net buyers of food (Ivanic and Martin 2008). One exception to this situation would be if the creation of the SSM encouraged developing countries to liberalise more than they otherwise would, in which case a win–lose situation could potentially be turned into a win–win situation.

Wolfe (2009) argues that the failure to resolve the SSM issue is deep-seated, resulting from negotiators' failure to agree, early on, on the principles and purpose of the SSM. He characterises this divide as one of whether 'the SSM should be designed to deal with market disruptions resulting from Doha Round liberalisation; or should it respond to any market disruption (whether or not due to imports)' (Wolfe 2009, p. 531). These issues assumed centre stage during the nine-day WTO ministerial meeting in July 2008. While the SSM was not the only issue that caused the negotiations to unravel, there is no question that it was one of the most divisive and seemingly intractable items on the negotiating agenda. With no prior agreement on the purpose of the SSM, Wolfe (2009) argues that it was not surprising that the negotiations broke down on the details: how it would work, the commodities it would cover, how it would be triggered, the approved remedies and what its transparency requirements would entail.

Blustein (2009) provides a blow-by-blow account of the 2008 ministerial meeting and the role the SSM played in the breakdown. Blustein (2009) recounts that, on the fifth day of the Ministerial, WTO Director General Lamy gathered the representatives of the G7 and presented them with a one-page 'compromise' on the key negotiating issues. Only one representative at the meeting rejected the compromise package outright: Kamal Nath of India. Nath's chief concern related to one line in the document circulated by Pascal Lamy: 'SSM for above bound trigger is 140% of base imports' (Blustein 2009, p. 266). Lamy's compromise suggested that, before developing countries would be allowed to raise tariffs (inclusive of SSM duties) above their bound rates, the volume of imports would have to exceed 140% of their average imports in the previous three years. That India, not China, was the one to raise objections to the SSM trigger level is perplexing. The average tariff applied to agricultural products in India is about 40% and its average bound tariff is around 116%, while in China its average applied and bound rates are both approximately 18%.[5] Hence, on average, India can unilaterally (and without

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[5]Tariffs are based on the trade profiles data set of the WTO, which summarises members' MFN applied and bound rates. URL: http://stat.wto.org/TariffProfile/WSDBTariffPF Home.aspx?Language=E.

recourse to the SSM) raise its tariffs by 76 percentage points. Following a bound tariff cut of 42.7%, India would still have a gap of at least 26 percentage points between its currently applied and average post-Doha bound tariff level.[6] Of course, the averages might hide some commodities where applied and bound tariffs are similar. The situation in China is very different: any additional tariff triggered by the SSM would push their applied rates above their bound rates, an option not available to them unless there was a 40% increase in imports under the 'Lamy compromise'.[7]

Lamy presented his compromise package to the G7 on a Friday and had grudging acceptance from six of the seven G7 countries, including major agricultural exporters the United States, Australia and Brazil. Over the week-end the U.S. trade representative, Susan Schwab, met with U.S. lobby groups representing both agriculture and manufacturing. Both groups had serious concerns over the Lamy compromise. Following that, Blustein (2009, pp. 269–71) reports that the United States approached China hoping to secure a pledge from China to buy more U.S. cotton and to keep certain products (cotton, wheat and corn) off its list of special products. In addition, the United States wanted China to agree to participate in a series of sectoral accords outside agriculture where tariffs would be cut to zero. In all cases, China said no and by Monday the United States was backing away from the Lamy compromise package. On Tuesday, the ninth day of the ministerial, Lamy announced: 'the Round has broken down…differences on the SSM are irreconcilable' (Blustein 2008, p. 275).

In the final months of 2008, Lamy again tried to find common ground among members and suggested that solutions had been found for 18 of the 20 topics on his agenda. In December, new draft modalities for agriculture and non-agricultural products were published but political support for another ministerial was lacking. One of the two unresolved topics was the SSM and, in particular, the extent to which applied tariffs could rise above their pre-Doha bound level when the SSM was triggered (Grant and Meilke 2009; WTO 2008a). It remains to be seen whether negotiators can eventually find rules for the SSM that strike an acceptable balance among developing-country importers and agricultural exporters in both the north and the south.

The objective of this chapter is to review and assess the existing literature on the SSM: what we know, what we don't know, and what we should know. The papers reviewed are categorised into two groups. First, we review the literature that is qualitative in nature: studies that offer perspective on the SSM or

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[6]The bound tariff cut of 42.7% is the reduction that would apply to a 116% tariff in a developing country that does not specify the product as either special or sensitive. If the product is specified as special or sensitive, it would face a much smaller tariff reduction, perhaps even zero.

[7]In the 'final' draft modalities tabled on 6 December 2008, two trigger levels for SSM duties going 'above the bound rate' were defined: one for import surges greater than 120% and the second for import surges greater than 140% (WTO 2008d).

advocate particular policy positions. These studies are often empirically based but do not use formal models in reaching conclusions, nor do they calculate welfare effects. We then turn to a discussion of the smaller body of literature that has made an effort to assess quantitatively the economic impacts of an SSM on world agricultural markets. These studies generate specific welfare implications and are based on fully structured partial or general equilibrium models, although in most cases they focus on a single commodity or subset of commodities. Before we begin our review, however, we step back to consider some basic economics that may or may not justify the application of the SSM, as well as some of the current negotiating stalemates surrounding this technical instrument.

2 THE SPECIAL SAFEGUARD MECHANISM: FOUR KEY QUESTIONS

Many reports and individuals who speak for developing countries contend, sometimes rather forcefully, that an SSM should be designed with only a few constraints because of the limited technical capacity of low-income countries. They argue that there should be

1. no requirement for proof of injury,
2. no compensation to exporters for SSM use,
3. no restrictions on the size of the additional duties the SSM triggers.

The last point implies that when a safeguard tariff is added to a country's normal applied rate, the SSM-inclusive tariff should be allowed to exceed previously negotiated bound tariffs agreed to in the URAA. Furthermore, some suggest that the quantity trigger levels as currently specified in Revision 4 of the December 2008, draft modalities (henceforth Rev. 4) for agriculture are too high to allow developing countries to effectively deal with import surges. While all of this may be true for some products and sectors in developing countries, it is important to recall that the SSM will be applicable to all tariff lines and, as such, it will need to be structured in a way that prevents its disingenuous use as an instrument of protection. No matter what the final design looks like, when contemplating whether or not to apply the SSM, policymakers in developing countries need to ask themselves four key questions:

1. What is the source of the shock that triggered the SSM?
2. What is the objective developing countries wish to accomplish by using the SSM if it is accessible?
3. How would the SSM affect the level and volatility of domestic market conditions?
4. How would the SSM affect the level and volatility of international market prices and trade?

Developing countries will have to arrive at answers to these questions before applying the SSM, while at the same time coping with the rent-seeking behaviour of domestic stakeholders. Below, we discuss some important features of the SSM and present several scenarios that illustrate the importance of understanding domestic market conditions when deciding whether to apply the SSM if it is accessible. As demonstrated in almost every scenario, international prices, not import volumes, provide a much better indication of the need for the SSM. Trade-defence mechanisms that are based only on mechanical triggers without any regard to domestic market conditions will often trigger a protectionist response *when it might not be needed*. Criterion 4 is important because this proposal is not just for individual, small countries but for developing countries that account for over three-quarters of the value of global agricultural production.

First, the use of the SSM will be *voluntary*. Just because a developing country has the right to impose an SSM duty does not mean that it will do so, nor does it mean that developing countries are obligated to apply the SSM duty when it is triggered. Thus, it is necessary for policymakers in developing countries to understand why the SSM is triggered, what policy objective the SSM will accomplish, and what the likely impacts will be on domestic markets. As noted by one reviewer, it will be important for developing countries to trace through the link between policy and outcome (questions 1–3 above) when contemplating SSM use. If the objective is to 'protect', then the SSM may be used whenever it is available and, given its current design, will surely lead to sizeable additional duties. One prominent, though flawed, study that has been widely circulated among trade negotiators contends that the SSM will be accessible roughly 33% of the time based on historical data for 6 countries and 27 products (Montemayor 2010). However, whether developing countries will actually use the SSM whenever the mechanical triggers allow is quite a different story. If the decision to apply the SSM is based on objective economics, the 33% figure reported in Montemayor (2010) may be an upper bound on SSM use. Below, we discuss why this is the case.

There seems to have been little criticism of the price-based trigger thus far. In a country that is a net importer of agricultural products, however, a price decline that harms net-selling producers and benefits consumers is generally welfare enhancing, so the SSM implicitly gives more weight to producer welfare rather than consumer welfare. There is more criticism of the quantity trigger of the SSM primarily because its trade-restricting motivation is clear. In the simplest case, imports result from the interplay of domestic supply, demand and local prices. Consequently, it is useful to consider five situations that might give rise to an import surge as summarised in Table 7.1: a local crop shortfall, a local rise in demand, an international bumper crop, international subsidies, and declining local tariffs, either from unilateral liberalisation or from the successful conclusion of the Doha Round. In each case, we ask whether local and international prices would be rising or falling and whether

protection in the form of an additional safeguard tariff on imports would be a wise policy choice. We focus most of our attention on the question of whether application of the volume SSM is justified, since this mechanism has received the most attention and scrutiny by trade negotiators. However, we do not rule out cases where the shock is 'global' in the sense that the price SSM may provide a better indicator of the need for policy action (see also Valdés and Foster 2005).

First, a local crop shortfall is probably the most likely source of a surge in imports when international prices are not falling. Domestic agricultural supply is typically much more volatile than demand, particularly for rain-fed crops. In this case there is upward pressure on local prices, although international prices could be rising or falling. Raising the price of imported food, however, by invoking the SSM when a local food shortage already exists seems like a distinctly surprising response.[8] Ivanic and Martin (2011) examine the consequences of using the volume-based SSM when import prices are not falling, a situation that the South Centre's Trade for Development Program (2009) argues characterises 85% of import increases of greater than 10%. Ivanic and Martin find that using the SSM in this situation would substantially increase poverty. Key problems are that high food prices tend to raise poverty because of the importance of spending on food for the poor, and that the adverse poverty impact of higher food prices is greater during years with poor harvests because many poor farmers need to buy more food than usual.

Second, a local spike in demand could also cause a surge in imports, again putting upward pressure on domestic prices regardless of what is happening to prices internationally. If world prices are stable or rising, then the SSM seems unnecessary. If world prices are declining sharply and contributing to the demand spike, then the SSM might be justified, but the price trigger provides a better guide to its need than the quantity trigger. As one reviewer has noted, demand for agricultural staples tends to be relatively stable, with rare exceptions typically caused by purchasing power problems and income inequality. Examples include the 1943 Bengal famine and the 1972–4 Ethiopian famine (Sen 1983).

Third, an import surge could also be caused by an international bumper crop when local and international prices are falling. Whether or not an SSM is justified in this situation depends on the size of the additional duties triggered and on whether developing countries should be expected to share in some of the adjustment process to lower prices. Again, however, prices provide a better guide than imports on whether external market conditions are imposing shocks on domestic markets.

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[8]In this discussion we have assumed that the importer is a small country, as may be the case with most developing countries and LDCs. If the importer is a large country, then the direction of world prices is obvious.

Table 7.1: *Sources of imports surges and the volume-based SSM.*

	Cause of import surge	Domestic price	World price	Suggested application of volume SSM
1	Local crop shortfall	Rising	Rising or falling	No action
2	Local increase in demand	Rising	Rising or falling	No action unless world prices are the cause of the local demand spike
3	Worldwide bumper crop	Falling	Falling	Price rather than imports provides better indicator of need for the SSM
4	International subsidies	Falling	Falling	Price rather than imports provides a better indicator of need for the SSM
5	Unilateral or Doha-mandated reductions in local tariffs	Falling	Rising or falling	Higher imports coupled with lower domestic prices justifies SSM action

Fourth, international subsidies could lower world market prices, resulting in an import surge. Rich country subsidies generally result in lower international commodity prices than would be the case in their absence. However, with the exception of targeted export subsidies, they are unlikely to cause a sharp increase in imports in a particular importer's market. Import prices can decline for any number of reasons, and developing countries will generally have open-ended access to the price-based SSM. The quantity trigger, devoid of market-based cross-checking on local supply conditions, does not seem well suited to identifying the effects of rich-country domestic subsidies.

Finally, an import surge could be due to lower local prices resulting from unilateral or Doha Round mandated tariff cuts. In this scenario, use of the volume-based SSM could be justified even if import prices are rising, although LDCs are generally exempt from tariff reform. Thus, for the SSM, one could argue that some form of trade liberalisation should be a prerequisite for its use.

Considered objectively, the quantity trigger of the SSM is an extremely blunt instrument with which to meet the legitimate purpose of a safeguard. For example, the Agreement on Safeguards sets forth the rules for the application of general WTO safeguard measures available to all countries under Article XIX of the GATT. In contrast with the current SSM being negotiated, WTO safeguards require both proof of injury and compensation when it is used. Indeed, when the original GATT members created safeguards, they knew that a volume-based instrument without proof of injury would 'protect' when imports were rising because of domestic shortages, increased incomes and other purely domestic disruptions. In most cases, international prices provide a better indication of when action is justified, except for the case of import surges caused by the lowering of tariffs. Furthermore, as

mentioned previously, concerns about the potential abuse of the SSM as a protectionist instrument are heightened when rent-seeking stakeholders weigh in on the decision to apply the SSM. The fact that decisions might be made in Ministries of Agriculture is especially troubling given their sectoral bias, their championing of the SSM, and the vulnerability of the poor to sharp increases in the prices of food staples. Finger (2009) argues that these decisions should reflect the broad public interest as opposed to being the sole responsibility of Ministries of Agriculture.

3 NEGOTIATIONS ON THE DESIGN OF THE SPECIAL SAFEGUARD MECHANISM

The 6 December 2008 revised draft modalities for agriculture (WTO 2008c) contained the Chair of the Agricultural Committee's attempt to summarise the current state of the negotiations. His frustration with the SSM discussions was apparent in his preamble (WTO 2008c, p. 3):

> on the SSM, we have made some progress. It is uneven, it is fragile, it has never been consolidated into a single structure. All previous informal efforts have failed. So, this is the first time this particular structure has seen the light of day. It is not, therefore, ready for inclusion in the text per se because it is utterly untested.

Little progress has been made since late 2008, so Rev. 4 and working paper 7 (henceforth, W7) (WTO 2008c,d) remain the best guide to the final outcome of the SSM negotiations. We note that the SSM parameters contained in Rev. 4 were copied verbatim from the 10 July 2008 revision 3 (WTO 2008e) modalities, indicating that no progress or movement had been made since the break down of the talks that summer. Because the issue of breaching pre-Doha bound tariffs continued to be a contentious issue after Rev. 3 was tabled, in addition to Rev. 4, the chairman (Ambassador Crawford Falconer) tabled a separate document, W7 (WTO 2008d), that attempted to forge a compromise on the so called 'above the bound rate' issue.

It has been agreed that the SSM is to contain both price and volume triggers and that either of these triggers can be used to invoke the SSM. However, in the event that both triggers are breached, the price and volume SSM may not be applied simultaneously. Table 7.2 outlines the parameters of the SSM as contained in Rev. 4, W7 and the existing URAA SSG. A safeguard is a temporary duty, in addition to a country's MFN applied tariff, that gives low-income countries additional policy flexibility to circumvent rapid import surges or sharp price declines. Two trigger levels (price and volume) determine when the safeguard can be applied. For the volume SSM, the calculation of the volume trigger is a rolling average of the most recent three-year period for which import data are available. Note that W7 did not make any changes to

Table 7.2: *Price and volume SSM and SSG parameters.*

(a) SSM: modalities based on December draft (TN/AG/W/4/Rev.4)			
Volume-based SSM		Price-based SSM	
Import surge (M)	Remedy	Price fall (P^M)	Remedy
$M < 110\%$	No remedy	$P^M < 0.85 \times \text{PT}$	$0.85 \times \{\text{PT}/P^M - 1\}$
$110\% < M < 115\%$	$\max\{\frac{1}{4} \times t^b,\ 25\% \text{ points}\}$		
$115\% < M < 135\%$	$\max\{\frac{2}{5} \times t^b,\ 40\% \text{ points}\}$		
$M > 135\%$	$\max\{\frac{1}{2} \times t^b,\ 50\% \text{ points}\}$		

(b) Working paper 7: 'above the bound rate' SSM revisions (TN/AG/W/7)			
Volume-based SSM		Price-based SSM	
Import surge (M)	% above bound rate	Price fall	Remedy
$M < 120\%$	May not exceed bound rate	No guidelines tabled for price SSM 'above bound rate'	
$120\% < M \leqslant 140\%$	$\max\{\frac{1}{3} \times t^b,\ 8\% \text{ points}\}^a$		
$M > 140\%$	$\max\{\frac{1}{2} \times t^b,\ 12\% \text{ points}\}^a$		

the calculation of the volume trigger: the three-year rolling average seems to represent an area of consensus. The volume trigger of the SSG is more complex and will be described shortly.

With respect to the volume SSM contained in Rev. 4 (part (a) of Table 7.2), the import surge (M) must be greater than 110% of the volume trigger before additional safeguard duties can be applied. Because the three-year average of the volume trigger of the SSM is centred two years prior, it is important to note that a steady 5% increase in imports is enough to define a 110% surge in imports. Thereafter, the additional SSM duties are increasing in the severity of the import surge. Import surges greater than 110% but less than 115% trigger additional duties of 25% of a country's bound tariff (t^b) or 25 percentage points, whichever is higher. If M is greater than 115% but less than 135%, the additional SSM duty is 40% of a country's bound tariff or 40 percentage points, whichever is higher. Finally, for $M > 135\%$, the volume SSM triggers an additional duty equal to one-half of a country's bound tariff or 50 percentage points, whichever is higher. Regardless of the extent of the surge in imports, Rev. 4 does not permit members to breach their pre-Doha bound tariffs when the SSM duty is added to its MFN applied tariff.

Working paper 7 of the December draft modalities ('above the bound rate') (WTO 2008d) contains additional constraints on the application of the SSM. Breaching pre-Doha bound tariffs requires an import surge (M in Table 7.2) of greater than 120% of the volume trigger before augmented applied tariffs

Table 7.2: *Continued.*

(c) SSG: Article 5 of the URAA			
Volume-based SSG		Price-based SSG	
Volume trigger level	Remedy	Price fall	Remedy
$M_{AV} \times 1.25 + Y_{t,t-1}$ if SHR $< 10\%$	$\frac{1}{3} \times t^{a}$	$0.9 \times PT < P^{M} < 0.6 \times PT$ $0.6 \times PT < P^{M} < 0.4 \times PT$	$0.27 \times (PT/P^{m}) - 0.3$ $0.39 \times (PT/P^{m}) - 0.5$
$M_{AV} \times 1.10 + Y_{t,t-1}$ if $10\% <$ SHR $< 30\%$		$0.4 \times PT < P^{M} < 0.25 \times PT$	$0.47 \times (PT/P^{m}) - 0.7$
$M_{AV} \times 1.05 + Y_{t,t-1}$ if SHR $> 30\%$		$P^{M} < 0.25 \times PT$	$0.52 \times (PT/P^{m}) - 0.9$

M denotes the import surge beyond the volume trigger of the SSM; P^{M} is the cost, insurance and freight import price of the product; t^{b} (respectively, t^{a}) denotes the current bound (respectively, applied) tariff; PT is the price trigger level; $Y_{t,t-1}$ is the annual absolute volume change in domestic consumption of the product used in the calculation of the volume trigger of the SSG; and SHR is the share of imports in domestic consumption during the three preceding years in the case of the volume-based SSG. [a]Additional constraints on above-the-bound-rate remedies apply. First, remedies are not normally applicable unless domestic price is falling if verifiable. Second, once the SSM is triggered above the bound rate, it may be applied for a maximum of four or eight months and will not be reapplicable thereafter until an equivalent period has lapsed. Third, above-the-bound-rate SSM duties will apply to 2.5% of tariff lines. Finally, there will be a two-year review of the operation of the SSM for seasonal and perishable product lines (WTO 2008c).

Source: WTO (2008b,c); Ruffer and Vergano (2002).

inclusive of SSM duties can go 'above the bound rate'. For example, imports greater than 120% but less than or equal to 140% would allow members to exceed their pre-Doha bound tariffs by one-third of a country's bound tariff or 8 percentage points, whichever is higher. For imports beyond 140% of the volume trigger, members can exceed their pre-Doha bound tariffs by up to one-half of a country's bound tariff or 12 percentage points, whichever is greater.

In comparison with the SSM, the volume-based SSG is more complicated in terms of the trigger level, because data on domestic consumption are required. However, the remedy allowed under the volume SSG is straightforward because it is fixed at one-third of a country's normal applied tariff (part (c) of Table 7.2). Thus, in contrast with the SSM, the remedy allowed under the volume SSG is not a function of the severity of the import surge. The SSG volume-trigger level is defined as the average quantity of imports over the preceding three years for which data are available (M_{AV}) adjusted by a multiplicative factor that depends on the share of imports in domestic consumption (SHR) plus the absolute volume change in domestic consumption of the product compared with the previous year ($Y_{t,t-1}$). M_{AV} is scaled up by 125%, 110% and 105% if SHR is less than or equal to 10%, greater than 10% but less than or equal to 30%, and greater than 30%, respectively. It is easy to see then that the volume trigger level of the SSG will be harder to breach the lower the import penetration ratio (*ie* imports as a share of domestic consumption (SHR)).

This important distinction between the SSM and SSG volume triggers is worthy of further emphasis. The SSG provides a much better method for distinguishing between import surges that threaten rural stakeholders in developing nations from those that do not. The SSM, on the other hand, considers only the absolute change in imports in comparison with the average of the previous three years. In other words, no attention is paid to supply conditions in the domestic market in determining whether a safeguard action is justified. Consider a simple yet illustrative example. Assume that the commodity in question is wheat and that beginning and ending stocks of wheat are fixed. Thus, domestic use is equal to production minus exports plus imports. Furthermore, assume that the production of wheat is 11 million metric tons (mmt), exports are 1 mmt and imports are 2 mmt such that the country in question is a net importer of wheat. With stocks fixed, domestic use is equal to 12 mmt. Imports as a percentage of domestic use (the import penetration ratio) used to compute the baseline volume trigger of the SSG is equal to 16.7% (2/12).

Next, assume that this country is 'shocked' with an import surge of 20% but that production and export levels remain at their historical levels. Compared with the baseline scenario, a 20% increase in imports would fall into the third band of the SSM volume trigger levels ($115\% < M \leqslant 135\%$, Table 7.2) and would trigger an additional duty of up to 40% of the country's bound tariff, or 40 percentage points! In other words, the SSM would prescribe a significant policy response despite the fact that developing-country livelihoods are likely to be largely unaffected by a 20% surge in imports, simply because the supply on the domestic market is increased only modestly. Using the hypothetical baseline numbers above, a 20% increase in imports from 2 mmt to 2.4 mmt translates into an increase in supply on the domestic market of only 3.3% $((12.4/12 - 1) \times 100)$, hardly indicative of any significant threat to rural and livelihood security in developing countries. If imports had averaged 2 mmt or less in the previous three years, the SSG would not have been triggered under the same circumstances. On the other hand, if production in some developing nations is much lower than in the example above, the import penetration ratio will be much higher and import surges may be more damaging. But these are clearly the countries in which a volume-based SSM is justified because imports and domestic supply conditions will move in the same direction and by similar magnitudes. It is unclear why the SSM negotiations have shied away from this basic principle on which the volume trigger of the former SSG was based. As it turns out, this is exactly the point that Finger (2009) makes: the SSM, in its current form, will frequently prescribe action when it is not needed!

Next, we turn to a discussion of the price-based safeguard in Table 7.2. The SSG price trigger is equal to the average reference price for the period 1986–8. A fixed reference price has some advantages in terms of transparency but quickly becomes dated, so, in the SSM, the price trigger is defined as the most recent three-year average of monthly cost, insurance and freight
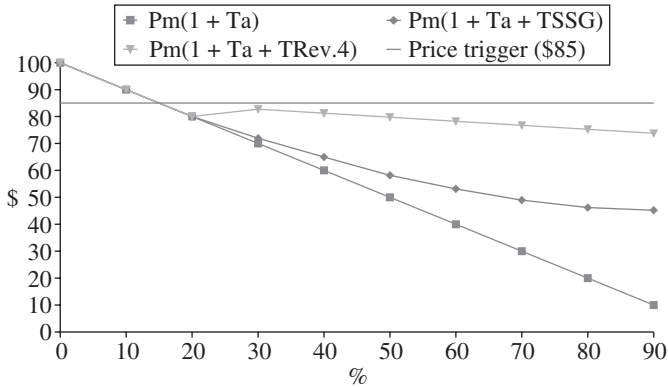
Figure 7.1: *Effects of the SSG and Rev. 4 SSM duties on import prices.*
The normal applied MFN tariff is denoted by 'Ta'; 'TSSG' denotes the Uruguay Round additional price-based safeguard duty and 'TRev4' denotes the additional SSM duty according to the most recent modalities contained in revision 4 (WTO 2008c).

import prices. Although the price SSM does not allow full compensation for the percentage drop in prices below the price trigger, such as that contained in the original G33 SSM proposal (WTO 2006), remedies allowed under the price SSM and SSG are an increasing function of the drop in import prices (PM in Table 7.2). Under the price SSM, import prices must fall more than 15% below the price trigger (PT in Table 7.2) before the SSM is accessible, and then the SSM remedy allows developing countries to compensate for up to 85% of the fall in the import price below the trigger level. The price SSG remedy depends on how far import prices decrease (Table 7.2). Four bands define the extent of the import price drop.

Figure 7.1 illustrates the operation of the price-based SSM and SSG. To keep things simple, assume that the SSM price trigger is $100 in Figure 7.1. Since the price trigger is equal to 85% of the previous three years of monthly cost, insurance and freight (CIF) import prices, this implies that the three-year average of previous prices is $117.65 (100/0.85). Under Rev. 4, import prices must fall by more than 15% below the trigger level, to $85, before additional SSM duties are triggered. The horizontal axis in Figure 7.1 measures the hypothetical percentage fall in import prices below the trigger level ($100) and the dashed line plots the behaviour of import prices if no safeguard action is permitted. The other two lines trace the behaviour of import prices when additional SSM and SSG duties are added to applied tariffs. Rev. 4 compensates for 85% of the price drop below the trigger as long as prices drop by 15% or more. Thus, the behaviour of import prices under the SSM is characterised by a linear decrease beyond a 15% fall below the $100 trigger level. Conversely, the SSG permits higher additional duties the greater the fall in import prices below the trigger, but never allows for the extent of compensation provided
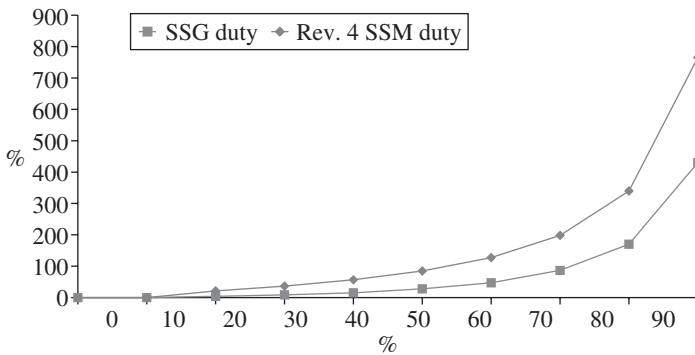
Figure 7.2: *Additional price-based SSM and SSG duties.*

by the SSM. For example, if import prices fell to $80, the percentage fall in the import price below the trigger would be $20\% (80/100 - 1 = 0.2)$. Under the SSG, this price drop would fall in the first band $(0.9 \times PT < P^M < 0.6 \times PT)$ and the SSG remedy would be $3.75\% (0.27 \times 100/80 - 0.3 = 0.0375)$. By comparison, the price-based SSM remedy would trigger a much larger additional duty equal to $21.25\% (0.85 \times (100/80 - 1) = 0.2125)$. If import prices fell to $60, 40% below the trigger, the SSG remedy would be $15\% (0.39 \times 100/60 - 0.5 = 0.15)$ and the SSM remedy would be 56.7% tariff $(0.85 \times (100/60 - 1) = 0.567)$.

Working paper 7 of the December draft modalities (WTO 2008d) did not mention additional criteria for the price-based SSM to go 'above the bound rate'. However, this is not to say that price SSM duties do not have the potential to exceed pre-Doha bound tariffs. Figure 7.2 traces out the potential size of the additional SSG and SSM duties when a hypothetical import price is allowed to fall by up to 90% below an exogenous trigger level. Interestingly, if the decline in import prices is sufficiently large, both safeguard instruments (SSG and SSM) could potentially go 'above the bound rate' when the safeguard tariff is added to current MFN applied rates. For example, if import prices were cut in half (*ie* fell by 50%) below the previous three-year rolling average of import prices (*ie* the price trigger), an 85% additional SSM duty would be accessible under the Rev. 4 modalities. This is more than double the 28% safeguard tariff that would be permitted if the SSM mirrored the SSG. While import prices may not fall by 50% or more, it is not beyond the realm of possibility. One only has to recall the surge in commodity prices in 2008, followed by an equally severe pullback in prices the following year.

Clearly, the design of an agricultural safeguard mechanism is important. Given its technical nature, perhaps it is of little surprise that the WTO talks stalled on this instrument especially considering that negotiators had given the SSM little thought before turning to a discussion of its elements. Subsequent discussion over the SSM, namely W7 (WTO 2008d), has thus

turned to other market-based conditions that may be required as part of an acceptable agricultural safeguard mechanism for WTO members.

Pro-rating: this market test is based on the premise that the volume trigger calculations should be based on normal trade growth not including periods in which the SSM was invoked. If the volume SSM was imposed in the preceding three-year average of imports and the current year trigger ($ONVT_t$) following invocation of the SSM is less than the previous year's trigger (VT_{t-1}), then VT_{t-1} is retained. This guarantees that the resulting trigger will always be greater than or equal to the previous period's volume trigger. In other words, without the pro-rating provision policymakers could continually drive down the trigger level by repeated SSM use.

Cross-checking: this market test applies to the volume and price triggers. In the case of the volume trigger, a cross-check with domestic and import prices would be required to ensure that these prices are falling and, hence, contributing to import surges (WTO 2008c). In the case of the price SSM, members would be required to monitor the volume of imports of the product concerned such that the price SSM would not be allowed if the volume of imports of the product was 'manifestly' declining (WTO 2008b).

Duration and 'holiday' periods: *duration* proposes various restrictions on the length of time an SSM can be in force. *Holiday periods* are proposals to limit the reimposition of an SSM to the equivalent length of time of the previous imposition of the SSM (a 'holiday' period).

In the next section we begin our review and assessment of the current literature on the SSM. Before we begin the review, we should preface our discussion by mentioning that, in nearly all of the studies reviewed that calculate the potential frequency of SSM use by developing countries, it is assumed that the SSM will be used whenever market conditions meet the criteria for its use, regardless of the cause of the import surge or price depression. As emphasised earlier, however, there is no guarantee that developing countries will use the SSM every time it is triggered. Hence, these studies may overstate the actual use of the SSM, although the degree of overstatement is impossible to judge.[9]

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[9]This is true to the extent that the quantitative studies can mimic the fluctuations in imports and market prices in the relevant markets. All of the quantitative analysis suffers from three serious shortcomings that likely results in an underestimation of the number of times a member will be eligible to use the SSM:

1. the quantitative analysis is not done at the tariff-line level;

2. it is impossible to capture day-to-day variations in the import prices of individual shipments of products;

3. the import unit values of some suppliers may always be far enough below the average import unit value, perhaps as a result of quality differences, to trigger the SSM (Finger 2009).

4 REVIEW OF THE EXISTING LITERATURE ON THE SPECIAL SAFEGUARD
   MECHANISM

4.1 Qualitative Studies

Ruffer and Vergano (2002) was one of the first studies offering recommen-
dations for the design of an SSM for developing countries. The authors
contended that an SSM for developing countries is a necessary compromise
in the DDA's agricultural negotiations in order to give them sufficient flex-
ibility to provide temporary relief for small-scale farmers from turbulent
world agricultural markets, and to correct the current imbalance in the rules
concerning the SSG where tariffication was a prerequisite for its use. To make
their case, Ruffer and Vergano (2002) recount the experience of Jamaica, for
whom import surges in poultry and beef products and sugar occurred, and
of Haiti concerning price fluctuations with respect to rice. Yet in both case
studies, the rationale for a safeguard mechanism is unclear, since both cases
centre on the perceived need for a trade-defence mechanism to cope with what
they term the subsidisation and dumping of beef, sugar and rice products.
However, the WTO has explicit trade remedies for unfairly traded products
as outlined in the Agreement on Subsidies and Countervailing Measures.[10]
Moreover, if import surges as a result of dumping were a legitimate threat
to rural livelihoods, then the price, not the volume, SSM would be a better
indicator of the need for policy action.

   Ruffer and Vergano's (2002) study was important because it was one of
the first studies to lay out a set of guidelines on which the SSM should be
negotiated. At the time of writing and several years thereafter, there was
very little in the way of detail and structure pertaining to the SSM. The first
set of modalities that was tabled in 2003 by the Chair of the Agricultural
Negotiations, Stuart Harbinson (WTO 2003), provided little guidance. Details
on the calculation of the volume and price trigger, the additional duties that
would be allowed under each, tariff ceilings when the SSM was applied and
product coverage all had to wait until 2006, when the G33 group of developing
countries tabled the first comprehensive proposal outlining the operation of
the SSM (WTO 2006).

   Ruffer and Vergano (2002) concluded by laying out a set of recommenda-
tions for consideration in the design of the SSM:

1. the SSM should avoid any requirement for compensation to be provided
   for countries adversely affected by the SSM;
2. the SSM should avoid any requirement of tariffication in the URAA;

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[10]In recent years, developing countries have become more active users of the trade
remedies available under the Agreement on Subsidies and Countervailing Measures, but
their use requires legal and technical resources that might be beyond the capabilities of
some developing countries (Lindsey and Ikenson 2001).

3. members should impose short time limits on the duration of the SSM;

4. there should be no requirement for changes in national legislation to invoke the SSM.[11]

Interestingly, the structure and language of the SSM proposed by Ruffer and Vergano (2002) follows the principal features of the current SSG, with the exception of the tariffication prerequisite (item 3). The SSG does not require an injury test or the provision of compensation when it is used.

In 2003, Valdés and Foster published the first of two articles arguing for a new SSM that takes into account the specific needs of developing economies. The authors noted the key structural shifts that have taken place in developing and transition economies towards greater trade liberalisation (often undertaken unilaterally) in the lead-up to the URAA. They argued that greater openness and integration in world markets increases the presence of global market forces in these regions. Like Ruffer and Vergano (2002), Valdés and Foster (2003) argue that, unlike industrialised nations, developing countries tend to have fewer financial and structural capabilities for dealing with import and price variability. On this particular issue the authors claimed that

> developing countries have fewer fiscal resources to manage price risk and aid their farmers through domestic supports, and have fewer alternative market instruments to compensate for the higher probability of periods of low domestic prices that might result from further moves towards trade liberalisation.
>
> Valdés and Foster (2003, p. 17)

The stochastic nature of world agricultural prices and the need for an SSM for developing countries is illustrated by analyzing price variability in four commodity markets (corn, rice, sugar and wheat) over a period of 37 years. First, Valdés and Foster (2003) compute coefficients of variation of the four commodities during three time periods: 1960–72, 1973–85 and 1986–97. The authors find periods of persistent price instability (1973–85). However, with the exception of corn and rice, the authors report less price instability for wheat and sugar over time. This result is consistent with Johnson (1973), Zwart and Meilke (1979) and Tyers and Anderson (1992), who suggest that domestic policy reform and trade liberalisation will substantially reduce world price instability.[12] It is not clear in Valdés

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[11]As Grant and Meilke (2006) point out, developing countries often have considerable gaps between their bound and applied tariffs, which contradicts the immediate need for an SSM. However, Grant and Meilke (2006) also point out that tariffs are often specified in domestic legislation and are not easily changed. Ruffer and Vergano (2002) make the point that once an SSM duty is triggered it will affect the effective applied tariff level, and notification of this change in a country's national legislation should not be required.

[12]On the flip side of the SSM, the rapid increase in staple commodity prices during 2006–8 has raised a number of issues concerning WTO rules dealing with export restrictions and the response of developing countries to these measures (Meilke 2008).

and Foster (2003) whether and to what extent international price instability is passed through to domestic prices that will ultimately determine the effect on producer welfare and rural livelihoods as well as the need for an SSM. Furthermore, the overwhelming majority of production of some key agricultural commodities (*ie* rice) occurs in developing countries, and the use of the SSM to insulate domestic prices of these commodities would be likely to cause international price instability. This is an important shortcoming of Valdés and Foster (2003), who evaluate the SSM through the microscope of single-country case studies without considering the impact on the world as a whole when proposing this in the context of rules for the trading system as a whole.[13]

Valdés and Foster (2003) also address the calculation of the reference price for the price trigger, arguing that taking simple averages of CIF import prices (usually based over three years) ignores the longer-run trend and cost implications of the commodity. They present two alternatives using a specific case study of Chilean sugar, wheat and powdered milk monthly CIF and tariff-inclusive import prices over the period 1980–2001. Their results suggest that a 20% safeguard duty (in addition to the applied tariff) applied 35–40% of the time would be sufficient to bring wheat and sugar prices back to trend levels. It is worth noting, however, that regression trends (the slope of the line fitted to the price data) are quite sensitive to the chosen sample period. Valdés and Foster (2003) employ a trend for the period 1980–2001. Yet a trend based on 1990–2001 might prescribe an entirely different set of safeguard actions. The authors identify this limitation in passing (p. 21) and recommend that the trend line be updated periodically. While regularly updated trends may be a better predictor of future prices, the same problem is faced in choosing an appropriate reference period. Moreover, it is less transparent and many low-income countries may not have the technical capabilities and data to maintain regularly updated regression-based trend lines. Many commentators on the SSM note the difficulty that developing countries have in monitoring imports and import prices on a shipment-by-shipment or even a monthly basis (Montemayor 2008; Ruffer and Vergano 2002). If the use of the SSM is to be transparent, then exporters need to know the relevant price and quantity triggers in importing markets. However, regardless of the technique, if developing countries lack the capacity to calculate average imports and prices, how will they know when they are eligible to impose the SSM?

Valdés and Foster (2005) present a follow-up study based on the Doha work programme (WTO 2004a), which committed members to establishing an SSM for use by developing countries subject to further technical work. The authors argued for the adoption of the existing price-based SSG for developing countries provided the SSG

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[13]We thank Will Martin for pointing this out.

1. enhances reductions in overall protection (see also Grant and Meilke 2006),
2. does not isolate producers from longer-run trends,
3. captures the persistence of prices to remain lower as opposed to higher.

Valdés and Foster (2005) contend that there is not a clear rationale for the volume-based SSM. First, as suggested above, developing countries may not possess the technical expertise to track daily or even monthly import statistics to determine import surges. Second, and perhaps more importantly, the authors suggest that import surges alone are not the source of damage to domestic producers. Rather, it is the decline in producer income related to sharp declines in market prices. However, this neglects the fact that most farmers in poor countries are net buyers of food and, hence, are hurt by higher prices for these goods.

One of the key arguments raised in support of creating a new SSM is the fact that developing countries were not able to use the SSG in the URAA. Hallaert (2005) criticises this viewpoint by drawing on some recent evidence of members' SSG notifications to the WTO over the period 1995–2004. This study suggests that a number of transition economies have recently begun using the SSG more frequently. Hallaert (2005) finds that actual SSG use is much higher than reported use, which appears to be on the decline, because the latter is based on members' notifications to the WTO. Many WTO members, particularly developed countries, stopped notifying their SSG use despite their obligation to do so under the URAA, or choose to notify their SSG use *ex post*, usually with a 'substantial [time] lag' (p. 5).[14]

Several interesting trends emerge from Hallaert's (2005) analysis. First, SSG use was dominated initially by three developed economies: the EU, the United States and Japan. Together, these three countries accounted for more than 90% of the SSG notifications until 1998 (92 notifications in 1995, followed by 95, 91, and 90 notifications in 1996, 1997, and 1998, respectively). By 2002, however, Hallaert (2005) finds a number of developing and transition economies making use of the SSG, although they were ineligible to use it because they did not meet the tariffication requirement. Korea, Costa Rica, Barbados, Nicaragua, the Philippines, and Taiwan (China) have contributed to the growing use of the SSG by developing countries. Significant SSG use prior to acceding to the EU was also observed for Poland, Hungary and Romania. Since 2001, Hallaert (2005) concludes that the SSG is acting as a protectionist mechanism rather than a temporary relief measure during import stress,

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[14] A quick scan of the WTO notifications of SSG use suggests that reporting has improved since Hallaert's study, although notifications are often delayed. For 2005 and 2006, eight members eligible to use the SSG have yet to notify, while 19 have yet to notify for 2008. Habitual laggards include Barbados (2002), Venezuela (1998), Czech Republic (2003), Hungary (2004), Korea (2004), Morocco (2003) and Slovakia (2005), where the date in parentheses is the date of their most recent notification.

because a number of countries have invoked the SSG without reporting its use to the WTO, and the WTO has ignored both the level of additional safeguard duties and the length of time that the SSG remains in effect. Hallaert's (2005) assessment of the SSG raises a number of interesting questions with regard to the WTO's methods for monitoring and enforcement of the SSM rules, although recent trends in SSG notifications suggest that this may not be as much of an issue as Hallaert (2005) suggests.

The South Centre's Trade for Development Program (SCTDP 2009) prepared a report based on the December 2008 modalities (WTO 2008c). This study analyses the extent to which the latest SSM provisions will affect developing-country import interests in case studies of individual commodities, including rice imports in Indonesia, sugar imports in Kenya, and poultry in Côte d'Ivoire. For Indonesian rice imports, the SCTDP argues that a volume trigger as low as 110% of the three-year import average is too high to permit Indonesia to cope with import surges. The SCTDP recommends that if the trigger levels are based on a formula, they should be implemented in increments of 5 percentage points of the previous three-year import average. Furthermore, using Kenyan sugar and Côte d'Ivoire poultry imports as examples, the SCTDP recommends that developing countries be given flexibility to breach their URAA bound tariffs given the small difference between applied and bound tariffs for these commodities.

It is true that, for some products in developing countries, there is very little binding overhang between bound and applied rates. This is the case for almost all products in China's tariff schedule and some other countries that have recently acceded to the WTO (Grant and Boys 2010). The fact that the WTO has required more stringent concessions from RAMs puts these countries in a different situation from most other developing countries if the so called 'above the bound rate' issues cannot be resolved. The other issue raised by the SCTDP—that the volume trigger levels be based on much narrower increments (5%)—seems to conflict with the various statements by several studies claiming that the SSM needs to be simple to use, both computationally and in terms of transparency, because developing countries lack the technical capacity to accurately track daily and even monthly import statistics (Ruffer and Vergano 2002; Valdes and Foster 2005; Grant and Meilke 2006; Montemayor 2008; Hertel *et al* 2010). Clearly, a 5% import surge could be trivial or modest depending on the initial degree of import penetration.

The modalities draft texts circulated between May 2008 and December 2008 (WTO 2008b–e) impose a considerable amount of structure upon the design of the SSM. Although the May 2008 SSM modalities (Rev. 2) still contained a number of bracketed areas and was based on the original G33 proposal (WTO 2006), the negotiated text contained, for the first time, enough information to provide a comprehensive assessment of a developing-country SSM. Montemayor (2008, 2010) provides two such assessments by evaluating monthly data (a proxy for individual shipments) for 27 agricultural commodities in six

developing countries over six years (2000–5).[15] Montemayor (2008) considers the May 2008 SSM modalities, while the follow-on study (Montemayor 2010) evaluates the December 2008 SSM modalities as presented in Rev. 4 (WTO 2008c) and W7 (WTO 2008d) (see Table 7.2). Both studies by Montemayor use identical modelling frameworks, but the results between the two studies differ slightly because of differences in the SSM trigger and additional duties permitted.

In what follows we focus our discussion on Montemayor's assessment of Rev. 4 and W7, although much of our analysis applies equally to Montemayor (2008) since the two studies are identical in design. Montemayor (2010) has been widely circulated among trade negotiators and policymakers as well as being endorsed by the International Centre for Trade and Sustainable Development, so it makes sense to focus on this assessment of what is on the table in the DDA. The study computes the price and volume triggers of the SSM as the previous 36-month average of CIF import prices inclusive of *bound* (not applied) tariffs, converted to local currency and the previous three-year (36-month) average of import volumes (excluding scheduled TRQ commitments if data are available), respectively. Montemayor is interested in two questions related to the SSM:

1. How frequently will the SSM be triggered?
2. Is the SSM 'effective' when it is triggered?

Frequency refers to a simple tabulation of months in which the SSM is accessible to the 6 developing countries and 27 commodities considered. Effectiveness is arguably the most important aspect of the SSM, both from a trade policy perspective and in terms of the specific needs of developing nations, so Montemayor is applauded for attempting to shed light on this important topic, although we have serious concerns about his methods, as noted below. In Montemayor (2008, 2010) SSM effectiveness is determined in two steps. First, Montemayor calculates the number of times the SSM is available during problematic months, defined as the number of instances in which import prices fall below 90% of an exogenous (but assumed comparable) domestic wholesale price of the commodity.[16] Second, having computed the

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[15]The countries are the Philippines, Fiji, Ecuador, Senegal, Indonesia and China. The 27 commodities are bananas, barley, beans, beef, carrots, chicken, coconut, coffee, corn, cotton, garlic, milk, mutton, onions, palm oil, pork, potato, powdered milk, rapeseed, rice, soy oil, soybeans, sugar, tomato, vegetable oil, wheat flour, and wheat grain.

[16]Whether Montemayor's domestic wholesale price is truly exogenous and a suitable benchmark from which to compute SSM effectiveness is questionable. The domestic wholesale prices Montemayor collects are likely to be endogenous and driven by political-economy choices and existing trade policies, not to mention the fact that countries with considerable binding overhang could raise applied tariffs to bound levels but they chose not to do so. Thus, SSM 'effectiveness' in Montemayor's study implies a more protectionist environment compared with the previous state of the world.

number of problematic months, Montemayor computes the effectiveness ratio defined as the number of times the price or volume SSM was able to bring import prices (inclusive of bound tariffs and the additional SSM duty) back to within 90% of the comparable domestic wholesale price. Thus, effectiveness is judged both on whether the SSM is triggered when it is needed (*problematic months*) and on whether the mechanism can bring import prices to within a 10% threshold of the local wholesale price (*effectiveness*).

Montemayor spends a good portion of his paper discussing the volume SSM, so we begin our review of this mechanism first. To summarise, Montemayor reports that the volume SSM could be invoked in 20 out of the 60 months in the sample period if the provisions of Rev. 4 were adopted apart from 'above the bound rate' caps and other market-based tests (discussed below). On average (*ie* across all countries and products), 50%, or 30 out of 60 months, were deemed to be problematic because import prices fell below domestic wholesale prices by more than 10%. The SSM was deemed effective—meaning that import prices inclusive of bound tariffs (not applied) and the SSM duty were brought to within 90% of domestic wholesale prices—in one out of every four 'problematic' months, or 25% of the time, on average.

Significant changes in the volume-based SSM results were obtained when tariff increases were capped at pre-Doha bound tariffs based on Rev. 4. Montemayor finds that the effectiveness of the volume SSM dropped from 25% to a mere 2% of problematic months in this scenario. It should be noted that some countries' effectiveness rates, notably China, dropped to 0%. In fact, the only reason Montemayor reports any positive effectiveness rates at all with pre-Doha bound tariff caps is because of the 11% tariff cuts to bound rates that he implements before running the SSM simulation, which effectively generates some wiggle room between a country's post-Doha applied rate and its pre-Doha bound.[17] However, as discussed below, this dramatic drop in SSM effectiveness is not surprising given the critical error that Montemayor makes by including bound (as opposed to applied) tariffs when calculating baseline import prices. The effectiveness of the SSM is increased slightly, to 10%, if countries are allowed to exceed their bound rates based on the provisions of W7. Similarly, the volume-SSM accessibility and effectiveness are all decreased from baseline results if other market-based tests are required (cross-checks, duration, and holiday periods) with the exception of the pro-rating provision whereby the volume triggers are computed from the previous three years of import data, excluding months in which the SSM was invoked.

Regarding the price-based SSM, Montemayor finds a very similar result but with smaller access and effectiveness rates. Access rates averaged only 18% (compared with 33% with the volume SSM) and effectiveness rates dropped to

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[17] Paragraph 129 of Rev. 4 prescribes 11% as the minimum average tariff cut to bound rates for special products, even though some products within the category of special products may be exempt from any tariff cuts at all.

an average of 6% of problematic months. When pre-Doha bound tariffs caps were applied, the results were similar to the volume SSM: effectiveness rates dropped below 2%. Similar decreases in the effectiveness of the price-based SSM were observed when market-based tests were applied. Montemayor goes on to recommend that negotiations over the price-based SSM revert to the original G33 proposal, which would trigger a remedy equal to 100% of the decline in import prices rather than 85% of the price decline as contained in Rev. 4.

There are two serious problems with the studies by Montemayor that may have fuelled some of the debate over the SSM between countries with an exporting interest in developing markets and low-income net-food-importing countries looking to provide protection for rural producers in times of depressed prices or import competition. The first problem relates to the domestic wholesale price series in the countries and commodities studied by Montemayor. Indeed, Montemayor's entire analysis—from the determination of problematic months to the effectiveness of the SSM—is driven by the relationship between import and wholesale prices. Thus, it makes sense to dig a little deeper into this relationship, since a different benchmark might yield an entirely different set of SSM results. The second problem is the use of bound rather than applied tariffs in his analysis, when the latter is clearly the more relevant benchmark (more on this later). We discuss each of these in turn.

First, we consider whether the wholesale price in Montemayor is a plausible benchmark. It is well known that the mapping of import tariff lines based on the Harmonized System of Trade Classification to a 'like' domestic product is imperfect, at best, no matter how homogeneous the products may be. This is because statistical agencies in most countries (especially developing countries) typically do not collect economic data at the tariff-line level. Moreover, it is often the case that product prices monitored in the domestic market do not map well into the HS classification of goods. In his earlier work developing the model, Montemayor (2007) recognises these limitations. In some cases his calibration to the domestic wholesale price relies on a composite of many tariff lines and headings. In other cases, products that are classified differently, but are considered substitutable, were used to match import data with the domestic wholesale price (*eg* coconut oil is compared with domestic palm oil prices in the Philippines). Montemayor agrees that these price comparisons are not easy, noting that it took 'more than a year of data gathering efforts' (Montemayor 2007, p. 29). These choices are not without consequence, however. Montemayor's use of bound rather than applied tariffs effectively means he is using the gap between applied and bound tariffs to proxy domestic marketing margins: another questionable policy choice that should have been reconciled with the data.

Nevertheless, it is reasonable to ask whether the wholesale benchmark price which determines SSM effectiveness is realistic. Montemayor uses import prices inclusive of bound tariffs, arguing that developing countries can legally raise applied tariffs within their bound rates before applying the SSM. This is

true, but it does result in a wholesale domestic price that seems unrealistic. An example of Montemayor's calculations may prove helpful. Let t^a (respectively, t^b) denote the developing country's applied (respectively, bound) tariff, and let P^w denote the world price of the commodity. Suppose that P^w is \$100, t^a is zero and t^b is 50%. Then the baseline import price in Montemayor's analysis is \$150 ($P^w(1 + 0.50)$). Cutting tariffs by 11% before carrying out the SSM analysis, as Montemayor does, generates a post-Doha bound tariff (t^{b1}) of $t^{b1} = 44.5\%$ such that the baseline import price in the simulation model, after tariff cuts, is \$144.5 ($P^w(1 + 0.445)$). If the import surge is between 110% and 115% of the previous three years of imports, the volume SSM triggers an additional duty of $0.25 \times t^{b1}$ or 25 percentage points, whichever is higher. Clearly, 25 percentage points is greater than 11.125 percentage points, so it is assumed that the developing country will apply a 25% additional SSM duty yielding a new import price of $P^w(1 + t^{b1} + 0.25) = \$100 \times 1.695 = \$169.50$.

Recall that Montemayor's criterion for determining the effectiveness of the SSM hinges on whether the additional SSM duty when added to current bound tariffs can bring import prices to within 90% of the domestic wholesale price (P^d). In this example, the SSM is effective if $P^w(1 + t^{b1} + 0.25) > 0.90 \times P^d$, suggesting that the baseline domestic wholesale price that renders the SSM *ineffective* is *at least* \$188.33 (\$169.50/0.90). Montemayor claims that the SSM was effective 25% of the time, which implies that 75% of the time, the domestic wholesale price (P^d) is greater than \$188.33, using our example, compared with an initial situation in which $P^w(1 + t^a) = \$100$. In other words, the average marketing margin between import and domestic prices is a striking 88.33 percentage points. Moreover, if the import surge triggered higher additional duties, say, 40 percentage points (third band, Table 7.2), the domestic wholesale price would need to be even larger for the SSM to be *ineffective* ($P^d > \$205$ in our example). Even if bound and applied tariffs were similar, say, $t^a = t^b = 20\%$, P^d would have to be at least \$158.70, or \$38.70 above the comparable import price of \$120 ($P^w(1 + 0.20)$) to generate *ineffective* SSM duties. Finally, it is worth noting that if Montemayor had used applied rather than bound tariffs to calibrate the baseline relationship between import and wholesale prices, it is likely that the SSM would have been ineffective 100% of the time using his method of evaluation.

There is a second problem with Montemayor's analysis in the use of bound rather than applied tariffs. If tariff-inclusive import prices are derived from bound rather than applied rates, the latter of which are often much lower (especially in developing countries), subsequent application of an SSM duty will almost always exceed pre-Doha bound rates, particularly given the smaller tariff-reduction commitments afforded to developing countries. In fact, when bound tariffs are used, LDCs will always exceed their pre-Doha bound tariffs since they are exempt from tariff cuts. In effect, the dramatic reduction in SSM effectiveness reported in Montemayor (from 25% to less than 2%) when bound tariff caps or W7 provisions are applied is both exaggerated and

misleading. Any 'above the bound rate' restrictions when tariffs are already at bound rates effectively eliminates the SSM policy altogether. This mistake makes interpreting Montemayor's results in the context of the proposed SSM modalities extremely difficult.

Another important review of the design and functioning of the SSM is provided by Finger (2009). In this study, the author reviews the implications of the proposed SSM from a different angle: whether the SSM is available when it is needed in periods of serious price declines or rapid import surges. Finger (2009) contends that negotiations over the SSM should be based on whether it provides a management tool for developing countries, rather than framing the debate in terms of a 'protectionist' versus 'market access' dichotomy. In other words, rather than trying to predict the frequency with which the SSM would allow additional duties, the usefulness of the SSM should be judged on how effectively it triggers import restriction when it might be needed compared with instances where import restriction may not be needed.

Drawing on evidence presented in Montemayor (2008) and his own work, Finger (2009) argues that the proposed SSM and the current SSG do a poor job of providing additional policy space when developing nations actually need it. Their analysis, which is similar to Montemayor (2008), is based on a reference price defined in terms of unit values of imports. Because unit value prices exhibit considerable variation across origin countries, Finger (2009) reports that the SSG was triggered when it was not needed in more instances than when it was needed. More importantly, unit value prices of products from developing countries are systematically lower, suggesting that the price-based SSM, which is applied on a shipment-by-shipment basis, will likely be applied more frequently to imports from developing countries. Based on these findings, Finger (2009) concludes that the SSM is a poor guide for effective policy because it frequently 'prescribes action when it is not needed and fails to prescribe action when it is needed' (p. 1).

4.2 Quantitative, Simulation-Based Studies

This section reviews three simulation studies that attempt to quantify the impacts of the SSM. We differentiate these studies from those discussed above since each one develops a formal model of economic behaviour in a framework that specifies supply-and-demand responses and resource allocation in the case of economy-wide models to provide equilibrium prices and measures of economic welfare.[18] In contrast with non-behavioural simulations, these models can capture the impacts of SSM application on demand, supply,

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[18]There is a fourth simulation-based working paper by Somwaru and Skully (2005). This particular paper uses an exogenously determined 10% tariff equivalent of a safeguard to model the welfare effects of the Uruguay Round SSG. This additional safeguard is then implemented in the GTAP model as an additional tariff that all developing countries can apply. We do not discuss this article in detail because of the different modelling approach it uses. For more details, however, we refer the reader to Somwaru and Skully (2005).

imports, and domestic and foreign prices in an internally consistent framework. This contrasts sharply with the Montemayor approach, where the domestic price target has no conceptual basis. For example, in the case of the SSM, fully structured partial and general equilibrium models show the number of times an SSM is triggered, its effects on market prices and price stability, and the welfare effects of introducing the SSM when it is combined with proposed DDA tariff cuts. However, direct comparisons between the quantitative studies are difficult because they use different modelling frameworks as well as different price and quantity triggers for the safeguard mechanism.

To capture the essence of the SSM, it is necessary to incorporate variability in domestic and world prices. This is generally done in the models under review by introducing random shocks to production and/or demand and considering both average outcomes and their variability using stochastic analysis. Grant and Meilke (2006) provided one of the first stochastic simulations of the SSM using the world wheat market as their case study. Instead of tabulating the frequency with which the SSM might be triggered, their analysis presents a formal modelling framework from which to quantify the expected value and variance of world and domestic prices, as well as the welfare implications of a developing-country SSM. The authors introduce a two-country, single-commodity stochastic supply-and-demand analytical model to show that the expected value and variance of world (respectively, domestic) prices increase (respectively, decrease) when bound tariffs are cut in the DDA by enough to force reductions in applied tariffs. When an SSM is triggered, however, the expected value and variance of world (respectively, domestic) prices can decrease (respectively, increase) depending on the relative magnitudes of the additional SSM duty compared with the percentage cut in applied tariffs when the two are modelled simultaneously. Grant and Meilke (2006) then develop a global stochastic partial equilibrium model of the world wheat market to simulate the operation of the SSG that closely parallels the SSM. The model is based on 1,000 pseudo-random errors drawn from each country's supply-and-demand variability around a linear trend and the variability of their monthly market-exchange rates. Random shocks to supply and demand generate random net imports, potentially triggering the volume SSM. Similarly, random shocks to exchange rates generate country-specific variation in domestic prices, potentially triggering the price-based SSM.

Grant and Meilke (2006) first consider tariff cuts according to the Harbinson formula (WTO 2003) and a more aggressive approach using the Swiss formula with a ceiling tariff of 25 (Swiss 25).[19] Grant and Meilke estimate a world

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[19]The Swiss formula originally advocated by the United States and Cairns Group is a harmonised tariff-cutting formula that invokes deep cuts on high tariffs and proportionately smaller cuts on lower tariff rates. For example, if the scaling factor is 25, as proposed by the Cairns Group, the Swiss 25 tariff cuts would result in all bound tariffs being less than 25%, regardless of their initial level. Like the current tiered formula, it cuts high tariffs by larger percentages than lower tariffs.

welfare gain of $716 million under the conservative Harbinson scenario, compared with a $1.79 billion welfare gain under the Swiss 25 approach. To understand the cost of an agricultural safeguard, the authors reassess the above tariff-cutting scenarios, except this time they allow developing-country WTO members to use the price or volume SSG.[20] The results suggest that even full application of the SSG would cost relatively little, decreasing the world welfare gain under the Harbinson tariff cuts by $146.1 million and raising the variance of world prices by 3.16%. In other words, virtually 80% of the gain in world welfare would still be realised if developing countries made cuts according to the Harbinson formula and negotiated an SSM that parallelled the current SSG. Under the Swiss 25, with a developing-country SSM, the SSM costs $133 million, or $13.1 million less than under the Harbinson scenario with a developing-country SSM. In this scenario, 93% of the gain in world welfare is still realised with a developing-country safeguard mechanism. Grant and Meilke (2006) point out that the lower cost of the SSM under the Swiss 25 formula is due to the fact that the volume-based SSG duties are tied to current applied tariffs. Aggressive tariff-cutting scenarios such as the Swiss 25 will simultaneously reduce the level of the additional SSM duties being triggered and therefore the economic cost of the SSM to developing countries.

In another paper, Grant and Meilke (2009) consider the SSM modalities in Rev. 3 and assess one of the most contentious issues surrounding the SSM negotiations: should developing countries be allowed to breach their pre-Doha bound rates when the SSM is triggered? The authors use the same stochastic simulation model and update the tariff-cutting scenario, the SSM rules for trigger levels and the additional SSM duties to the July 2008 modalities (WTO 2008), which are identical to the SSM modalities contained in Rev. 4.[21] They report on three scenarios: tariff cutting without an SSM, tariff cutting plus an SSM that cannot exceed the bound rate, and tariff cutting plus an SSM that can exceed the bound rate. First, the world welfare gain for global wheat markets is $1.24 billion from cutting tariffs according to the July 2008 modalities. In the second scenario, Grant and Meilke add a developing-country SSM to the July 2008 tariff cuts, with the provision that developing countries are not allowed to exceed their pre-Doha bound tariff levels. Under this scenario, world welfare falls by $204 million compared with the July 2008 tariff cuts without a developing-country SSM. In other words, 84% of the gain in world welfare is still realised if developing countries are granted an SSM. Also of

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[20]Under the SSG and the proposed SSM, members may not apply the volume and price safeguard duties concurrently. Furthermore, members are not required to apply the additional safeguard duties when it is triggered.

[21]Regarding tariff cuts and the SSM, the only difference between Rev. 3 and Rev. 4 is the final tier of the tariff cuts applicable to developed countries. Where developed country bound tariffs exceed 75%, the tariff cut in Rev. 3 contained bracketed text allowing for a 66% or 73% cut. Grant and Meilke (2009) assume a 73% cut in their scenarios. In Rev. 4 the developed country cut to bound tariffs is set at 70%.

interest is that domestic prices increase in 74% of developing countries, but become less stable in 68% of developing countries, whereas import volumes are stabilised in 87% of developing countries. In the final scenario, Grant and Meilke (2009) consider the July 2008 tariff cuts and the SSM for developing countries but allow developing countries to exceed their pre-Doha bound tariffs. The welfare cost of such a scenario is $223 million. To put this into perspective, the additional cost of allowing developing countries to exceed their pre-Doha bound tariffs compared with a scenario in which they are not amounts to $19 million in forgone world welfare. To the extent that world wheat markets are representative of other commodities, this important result suggests that all the hoopla and hype concerning the breakdown of the WTO agricultural negotiations and the issue of whether developing countries should be allowed to exceed their pre-Doha bound tariffs is just that: hoopla and hype.

More recently, Hertel *et al* (2010) published an important study employing a stochastic version of the Global Trade Analysis Project's Agricultural Model (nicknamed GTAP-AGR) benchmarked to 2001 to assess the effects of both the price and volume SSMs (modelled separately) on world wheat markets. The structure of the GTAP-AGR model differs from the partial equilibrium model developed in Grant and Meilke (2006, 2009) in that it allows for differentiation of products supplied by different countries using an Armington specification. This allows them to represent the differences in average prices between countries, which affects the frequency with which the price-based SSM will be invoked against particular countries.[22]

Hertel *et al* (2010) offer a number of intriguing insights concerning the design and operation of the SSM. First, they note that if SSM duties are always applied once the trigger is reached, application of the SSM duties will destabilise world prices. Most notable in its effect is the volume-based SSM, which has the largest effects on price destabilisation, reductions of import flows, increases in domestic prices and increases in the mean domestic production for SSM-imposing countries. Second, the authors argue that if imports are restricted by using the volume SSM, domestic price volatility increases, which may have unintended consequences in countries that face shortfalls in harvest volume, particularly by raising the cost of food to poor people. Third, Hertel *et al* (2010) report that the value of wheat imports declines by as much as 50% in selected regions, with a 4.7% reduction in global wheat trade. In terms of the price SSM, the effects are less pronounced, but world prices are destabilised and producer prices that are linked to world prices are frequently also destabilised as a result. Finally, Hertel *et al* (2010)

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[22]Regardless of the specification, trade models based on annual data are ill-equipped to mimic shipment-by-shipment price variation. The stochastic element in the Hertel *et al* (2010) simulations is the supply of wheat. Hence, there will be a tendency to drive all wheat prices down or up at the same time.

suggest that, in terms of a policy tool, the SSM should be considered in relation to the poverty reduction goals in net-food-importing countries. Low-income net-food-importing countries are characterised by small-scale producers that are often net buyers of staple foods. Moreover, Hertel *et al* (2010) note that the adverse impacts of higher prices on the urban poor in low-income countries also needs to be taken into account when considering whether to use this measure.

Grant and Meilke (2009) and Hertel *et al* (2010) address a similar question and both use the wheat market as a case study. However, the different modelling frameworks, the different way that the price trigger is incorporated in the two models, and the design of the policy scenarios makes direct comparisons of their results more difficult than might appear at first glance. Still there is considerable consistency in the two sets of results. First, both studies suggest that the use of an SSM (even one that breaches pre-Doha bound tariffs) would have only a minor effect on average producer prices and price variability in major wheat-exporting countries. They also consistently find that use of an SSM would generally lower and stabilise imports by individual developing countries, but in many cases these duties make their domestic prices less stable. Hertel *et al* (2010) model the price trigger and the quantity trigger as two different policy scenarios and find that world wheat trade declines by 4.7% under the quantity trigger, but by only 0.5% with the price trigger. Grant and Meilke (2009) do not report the change in world trade but, based on their results, it seems likely that the import volume change would be modest, perhaps because the price trigger is used more often than the quantity trigger in their scenarios.[23]

5   CONCLUSIONS

The WTO negotiators have agreed that developing countries will have recourse to an SSM at the conclusion of the Doha Round, that it will apply to all agricultural products, and that it will have both a price and a quantity trigger. There also seems to be reasonable agreement occurring with regard to the trigger levels included in the Chair's text of December 2008 (WTO 2008c). More contentious is the question of whether a country can breach its pre-Doha tariff bindings when it applies the SSM. Exporters argue that the pre-Doha tariff bindings should only be exceeded on a limited number of tariff lines and that additional criteria should be met in order to go above the bindings. Disagreement also exists on whether there will be additional criteria applied in determining if a country is eligible to use the SSM (pro-rating,

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[23]In the scenarios reported by Grant and Meilke (2006, 2009), either the price or quantity trigger can be used to impose the SSM, but not both. If both the price and volume triggers are breached, it is assumed that the importer would impose the larger duty possible.

cross-checking and duration/holiday periods) (WTO 2010a). For example, is a country allowed to use the price SSM when imports are falling or negligible? Developing countries, particularly the G33, argue that there should be no criteria imposed on importers using the SSM other than the basic trigger mechanism itself.

Is there anything in our review of the literature that might help the negotiators, or at least illustrate the economic impacts of the SSM in relation to the gains from trade liberalisation? Frankly, it is difficult to escape the conclusion of Wolfe (2009), who argues that inadequate research and meetings of minds on the purpose of the SSM plays an important role in the disagreements over the details. To conclude this review we will try to outline what we know and what we do not know about the SSM.

First, most developing countries have huge gaps between their applied and bound tariffs, and much of the 'water' in the tariff will remain after the Doha Round tariff cuts are completed. So why is the SSM at the centre of the negotiations? It is hard to escape the conclusion that the SSM has become a matter of principle to developing countries: something they are owed by the developed world regardless of its necessity or economic impacts. From the exporters' perspective, the one developing country that does not have water in its tariffs is China. Given China's role in world trade, selling a trade agreement to domestic stakeholders would be challenging if China had open-ended access to an SSM that raised tariffs above the levels negotiated during WTO accession.

Second, given the vaguely defined purpose of SDT—'operationally effective to enable developing countries to effectively take account of their development needs, including food security, livelihood security and rural development' (WTO 2001)—of which the SSM forms a part, it is difficult to provide a concise and objective evaluation of the SSM. However, based on the work of Finger (2009) and, to some extent, Montemayor (2008, 2010) it is clear that the SSM will sometimes trigger action when it is not needed, and fail to trigger action when it might be seen to be needed. Given that the rules of the SSM appear to provide little guidance as to when the flexibility to use the SSM might make sense, a key question for developing countries will be how to decide whether and to what extent to apply SSM duties, whenever the mechanical formulas indicate eligibility. We note that developing countries are presumably seeking domestic price stability from the SSM. A simpler policy like special products would allow higher protection rates without all the SSM complexity. As noted in Grant and Meilke (2006, 2009) and Hertel *et al* (2010), once you evaluate its price-stabilising ability, more often than not the volume-based SSM destabilises domestic prices.

Third, the SSM is biased in favour of (generally larger) producers who are net sellers of agricultural commodities, and it seems likely that these groups will become active rent seekers. While poor farmers might legitimately argue for an SSM duty when tariff reductions result in an import increase, the case

is much weaker when domestic prices are rising as a result of a crop shortfall, and imports surge for this reason. In the latter case, both the rural and urban poor are vulnerable. Since most poor people, including farmers, are net buyers of food in low-income developing countries, especially in years of poor harvests, an SSM duty is likely to reduce real incomes of the poor in these cases. Finger (2009) argues that the urban poor and other net buyers of food need a seat at the table when decisions on the use of the SSM are being made. There seems to be a logical case for ensuring that decisions on the SSM are taken by a broadly representative group, perhaps something like the tariff committees that are widely used in developing countries, rather than by a narrowly focused group based in the Ministry of Agriculture.

Fourth, the economic impacts of an SSM have only been evaluated quantitatively using models that account for the feedback from the SSM to trade flows and prices for one commodity (wheat). While wheat is a reasonable case study, the SSM is likely to apply to every tariff line in the developing world! It is impossible to know whether the lessons learned from studying wheat carry over to other commodities. From the case studies reviewed, and assuming the SSM is used whenever a developing country is eligible to use it, it appears that the SSM would be triggered often; that the quantity trigger is more trade distorting than the price trigger; that the volume-based SSM can stabilise imports but at the cost of destabilising world, and sometimes domestic, prices; and that the SSM has a small impact on the export price of wheat, but the volume trigger can influence world trade flows if it is frequently applied. A key issue is how countries decide to implement the SSM and how frequently they decide to implement it when the quotas are triggered.

Fifth, the issue of whether pre-Doha bound tariffs can be breached does not appear to be a big economic issue, at least when it comes to the world wheat market (Grant and Meilke 2009), but the key role that RAMs, including China, play in this debate cannot be overemphasised.

Sixth, the debate over the SSM is often cast as a north–south trade issue, but with the increasing importance of south–south trade and the fact that developing-country products often sell at lower prices than products from developed countries, the price trigger of the SSM is likely to be biased against developing-country exporters (de Gorter *et al* 2009).

Seventh, from the perspective of developed-country exporters, middle-income developing countries are likely to be the growth markets for agrifood exports moving forward (Haq and Meilke 2009, 2010). Hence, for agricultural exporters, whether developed or developing, the Doha Round is most importantly about securing additional market access to these economies. Market access to developing countries will be determined, perhaps to a considerable extent, by the scope and use of the SSM. Currently, all developing countries face smaller tariff cuts than developed countries, have access to sensitive and special products (5.3% of tariff lines for the former and 12% of tariff lines for the latter) (WTO 2008c, paragraphs 72 and 129, respectively), and will

have access to the SSM, which will probably cover all tariff lines. In addition, there are more lenient tariff-cutting rules for LDCs, SVEs and RAMs (WTO 2008c), and some developing countries will continue to have access to the SSG, although the future of this safeguard instrument is less certain. Similarly, the current stalemate on the SSM is all about exceptions to the rules for its use and how open-ended its use should be. All of the above serve to limit market access.

Eighth, in several places in this review we have drawn analogies between the SSG and the SSM. However, the safeguards are different in one important respect. The SSG was put in place when countries changed the 'instruments' they used to protect producers: when the URAA mandated the conversion of non-tariff barriers into bound tariff equivalents (tariffication). In moving from a system of quotas and variable levies to a system of tariffs and TRQs, the true tariff equivalent was not known *a priori* and, hence, an unpredicted import surge might be more likely than would be the case with the simple lowering of tariffs that are unequivocally more transparent. In some respects the volume SSM that is being sought by net-importing developing countries is the developing-country equivalent of a multitiered TRQ in the developed world, with the volume triggers serving as multiple quota levels and the additional SSM duties serving as progressively higher over-quota tariffs.

Finally, for an issue that has turned out to be so important in the multilateral arena, there is surprisingly little analytical research on the topic published in refereed journals. Where have all the trade economists gone?

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Doha and Trade Facilitation: Lending Specificity to the Multilateral Trade and Development Agenda

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1 INTRODUCTION: TRADE FACILITATION AND THE WORLD TRADE ORGANIZATION

One of the most successful outcomes of the Doha Development Round to date has been the productive negotiations surrounding a TFA. Although some critical aspects remain under negotiation, this sole remaining 'Singapore issue' represents a beacon of hope that developed and developing countries might yet be able to reach consensus more broadly and to salvage a deal that has now been ten years in the making.

The Doha Ministerial Declaration adopted in November 2001 announced an agreement to intensify work on four new subjects, now commonly known as the 'Singapore issues', for possible multilateral agreements, namely, investment, competition policy, transparency in government procurement and trade facilitation. These were to be taken up as negotiating issues provided the members reached explicit consensus with respect to modalities at a future meeting. This proved impossible for three of the four issues, and in July 2004 the Doha work programme (WTO 2004) dropped all of the issues except trade facilitation from the negotiating agenda. In keeping with previous statements, it also essentially[2] limited coverage of the negotiations on trade facilitation to 'clarify and improve relevant aspects of Articles V, VIII and X of GATT 1994'. These articles involve 'freedom of transit',[3] 'fees and formalities connected with importation and exportation', and 'publication and administration of

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[1] The authors would like to thank Nora Neufeld form the WTO for providing very helpful input.

[2] While the scope of the negotiations focuses on GATT Articles V, VIII and X, the mandate also contains references to other areas (*ie* customs cooperation).

[3] This is a matter of particular importance to landlocked countries, whose surface shipments of exports and imports must transit through other countries.

trade regulations', respectively.[4] This latter development is important to note, since it has significant implications with respect to the meaning of trade facilitation in a WTO context versus an international development context.

Trade facilitation in the WTO has a more specific and limited focus than trade facilitation for development, due not only to the decision to limit negotiations to the aforementioned three GATT articles, but also due to the fact that the WTO's mandate is limited to trade policy (see Chapter 9 of this volume for a discussion of the different approaches to trade and development from the vantage points of trade policy and economic development). Other realms of trade facilitation in a development context, including trade development and intensive infrastructure investment, are beyond the scope of any potential agreement under the WTO framework. In this sense, the TFA represents a small part of a much larger multilateral trade and development agenda. Nonetheless, the GATT articles covered under the TFA negotiating mandate cover many important areas that could yield significant gains if amended effectively (see Box 8.1). This is particularly true given the WTO's legally binding framework, which can be seen as a comparative advantage (*vis-à-vis* the capacities of multilateral development institutions) in ensuring that commitments for trade facilitation reform translate into substantive, enforceable policy changes.

Box 8.1. The negotiations on trade facilitation: illustrative examples.

GATT Article V provides a basis for creating an environment in which the transit of goods is free from barriers to transport, and discrimination between suppliers, firms, and traders from different countries. Members have suggested a number of modifications to this provision. They include, among others, simplifying and standardising customs procedures and document requirements, and clarifying fees and charges for customs services. Other proposals include redrafting sections of the article and extending its scope, and expanding national treatment on modes of transport to include new modes. Article V is of particular relevance to landlocked countries because it involves transit trade.

GATT Article VIII relates to customs clearance procedures and includes the general commitment of non-discrimination and transparency in fees and formalities applied to goods crossing borders. There have been proposals for new technical assistance and capacity building programmes to complement the reforms. This would reduce duplication and the cost to traders in time to cross borders. Some WTO members have suggested that the current article

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[4]The July 2004 work programme also furthered the shift of WTO attention towards dealing with the implementation requirements of future negotiations rather than resolving those created by the Uruguay Round agreements. The work programme devotes only eight lines in a 778-line document to 'those elements of the Work Programme which do not involve negotiations' (paragraph 1h).

lacks specificity and is not fully operational. There is also interest in reducing the number and diversity of fees and charges. Proposals also include steps to encourage accession to related international agreements (Kyoto Convention and the Istanbul Convention).

GATT Article X contains general commitments to assist in ensuring timely publication of regulations on imports, including fees, customs valuation procedures, and other measures. It also provides general obligations for transparent administrative procedures for review of disputes in customs. There have been recommendations to update the current text to reflect the importance of transparency and predictability in world trade. Proposals on how to improve and clarify trade rules have included the establishment of inquiry points on legal requirements for imports, formal consultations between customs administrations and traders, and the creation of standardised and streamlined import and export procedures, among others.

Source: for additional background see, among other sources, Adler *et al* (2009).

The value of a TFA as embodied through current proposals (see WTO 2011) is due, in large part, to the focus that the agreement would bring to trade facilitation reforms that, according to recent research, demonstrate the highest returns to investment and are relatively easy to implement in terms of both cost and time. These reforms include regulatory, administrative and institutional reforms. The agreement also includes some reforms to increase transparency in the general trading environment that would require little or no investment. This value would be augmented by the effect that the agreement would have in providing a legally enforceable framework of specific, best-practice trade reforms that developing countries could use as a model to mainstream trade policy reforms into their national development strategies.

Given the positive-sum nature of trade facilitation reform, there has been little disagreement over the need to improve the relevant articles. In the current stage of negotiations, one of the most contentious outstanding issues is SDT. This is largely the result of concerns among some developing members and some LDCs regarding the potential cost and administrative difficulty involved in implementing obligations arising from new WTO commitments. Proposed solutions to these concerns include delayed implementation mechanisms[5] for developing members, based on the acquisition of additional capacity at some later date. Some proposals go further, suggesting that such acquisition (and, by extension, implementation) should be tied directly to obligatory or pledged assistance from developed members.

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[5] According to discussions with WTO negotiation observers, there is now consensus, as a premise to ongoing negotiations, that all members will implement all reforms eventually.

However, while it is true that new rules could, under some circumstances, require investing in new technologies for customs management, for example,[6] it is also true that a number of administrative reform measures that are at the centre of the negotiations would probably not require large-scale investments or new infrastructure projects to support modified GATT rules (see McLinden *et al* 2011). They are also fundamentally incompatible with the *modus operandi* of most donor institutions (*ie* national development agencies and international financial institutions have strict guidelines that oversee their lending decisions and would no doubt find legal obligations for provision of assistance problematic). Most importantly, however, these proposals ignore the fact that the TFA represents just one facet of a much larger development-driven agenda *vis-à-vis* trade facilitation and aid for trade. With large sums of aid-for-trade assistance already supplied by the international development community, there is no need to make obligated assistance, and its potentially disastrous effects on otherwise productive negotiations, a part of the TFA.

Taking these factors into account, we propose that the TFA ought to serve as a legally enforceable framework of best-practice trade facilitation reforms that members can utilise to effectively identify needs, prioritise reform programmes, and leverage aid-for-trade assistance through already established donor–recipient channels. In this sense, an agreement under the WTO framework would effectively bolster and provide guidance to the larger aid-for-trade agenda. This can be achieved by ratifying an agreement that stimulates aid for trade in the areas of trade policy and regulation, emphasises the importance of transparency in trade facilitation reform, and encourages members to mainstream more complex trade reforms into their development strategies and established relationships with donors (thereby avoiding the complications and inevitable negotiation deadlocks that would arise with reinventing a new WTO platform for donor–recipient coordination in aid for trade).

As we will outline in this chapter, the first two suggestions are already well entrenched in the TFA, largely as a result of the negotiating mandate and modality. However, the resolution of the aforementioned debate surrounding SDT looms large, and a careful balance will need to be struck between the roles of international trade policy and international development policy, taking into full account the respective comparative advantages of the institutions that govern them.

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[6]Finger and Schuler (2000), based on an analysis of World Bank projects, estimated that each of the 16 areas of the customs valuations agreement would cost more than $2.5 million to implement.

2   EMPHASIS ON HIGH-RETURN REFORM

The various TFA proposals currently on the table focus on areas of trade facilitation reform that demonstrate the highest rates of return in terms of aid dollars spent to increases in trade flow volumes. Although this may seem straightforward, it stands in stark contrast to current allotment trends in aid-for-trade assistance. As recent trade facilitation-related research demonstrates, the most beneficial trade-related assistance, in terms of efficiency, is related to enhancements in border management, customs administration, and other 'behind-the-border' areas, including regulation and institutional integrity. Meanwhile, the proportion of aid for trade designated for these activities has stagnated in recent years, while amounts spent on infrastructure and broader trade development activities have increased (see OECD/WTO 2009). Implementing an agreement that prioritises trade facilitation reforms that have the highest return on investment would help to realign aid prioritisation to maximise the effectiveness of aid-for-trade assistance. In this sense, the TFA has the potential to be valuable to developing countries, particularly their trading sectors. This notion is reflected in recent estimations on the value of a successful TFA in terms of national GDP and trade gains.

Recent World Bank research (Helble *et al* forthcoming) highlights the need for a reprioritisation of aid for trade by analysing the links between various types of aid-for-trade assistance and trade flow volumes. The results measure the average effect of aid for trade on trade flows over a 16-year time period by simulating the potential impact on trade of a 1% increase (in U.S. dollars) across various types of aid-for-trade assistance. In sum, this research finds that money invested in policy and administrative reforms amplifies trade flows more than comparable investments in infrastructure and trade development schemes (see Box 8.2 for examples of policy and administrative reforms).

The authors' analysis uses the OECD/WTO's official development assistance (ODA) categories of 'economic infrastructure', 'trade development', and 'trade policy and regulation' as proxies for different types of aid-for-trade assistance. Using these as a framework, they construct alternative categories of aid-for-trade assistance using data from the OECD's creditor reporter system. 'Narrow trade facilitation' includes all aid allocated to the official development assistance category 'trade policy and regulation', whereas 'broad trade facilitation' represents an aggregate of the other two aforementioned development assistance categories of 'economic infrastructure' and 'trade development'.

Box 8.2. Illustrative policy- and administrative-related proposals for inclusion in the TFA.

Article 1, heading 2, 'Information available through internet': 'each member shall make available and update as appropriate…through the internet…a description of its importation, exportation and transit procedures'.

Article 2, heading 1, 'Interval between publication and entry into force': 'each member shall provide opportunities and a reasonable time period to traders and other interested parties to comment on the proposed introduction or amendment of laws and regulations'.

Article 5, heading 2, 'Detention': 'a member [shall/may] [notify/inform] the importer or his authorised agent promptly in case of detention of imported goods for inspection by Customs or other competent authority'.

Article 6, heading 2, 'Penalty disciplines': 'each Member [shall] specify a fixed, finite period within which it may initiate penalty proceedings in connection with a breach of customs law, regulation, and procedural requirement'.

Source: WTO (2011).

The 'trade policy and regulation' development assistance category holds 23 different subcategories of aid-for-trade assistance that focus on customs administration, transparency and government procurement. Most of these areas reflect the established parameters of what any TFA would embody, and so it is more or less accurate to infer that the characteristics of 'narrow trade facilitation', in this study, are reflective of a TFA.

The authors' conclusions yield two important distinctions between the effects of aid for trade defined in the narrow and broad senses. First, and perhaps most importantly with regard to the merit of the current TFA proposals on the table, aid-for-trade assistance, defined narrowly, has a stronger effect on stimulating trade flows than trade assistance defined broadly. Based on 2008 data, a 1% increase in the total amount of broad aid-for-trade assistance ($219 million) can be associated with about $291 million of additional exports for recipient countries. In contrast, a 1% increase in the total amount of narrow aid-for-trade assistance (trade policy and regulatory reform), of $117 million, is associated with an increase in recipients' exports of about $347 million. One dollar of broad aid for trade is associated with $1.33 of additional exports, whereas $1 of narrow aid is associated with $71 of additional exports by recipient countries (see Figure 8.1).

Second, with regard to the potential unique effects of aid for trade based on country income level, the authors run various estimations for developed donor countries, recipient developing countries, and other (non-recipient) developing countries. The results suggest that, when all groups are considered together, aid-for-trade facilitation is positively related to both exports and imports of the recipients, but that the magnitude of this relationship is more significant for exports (see Helble *et al* forthcoming). When considering trade between recipients and donors only, excluding intra-donor trade, the relationship between aid and exports is relatively more significant than when only considering trade among aid recipients. This suggests an important role for aid for trade in enabling recipient countries to export to both the developed and the developing world.
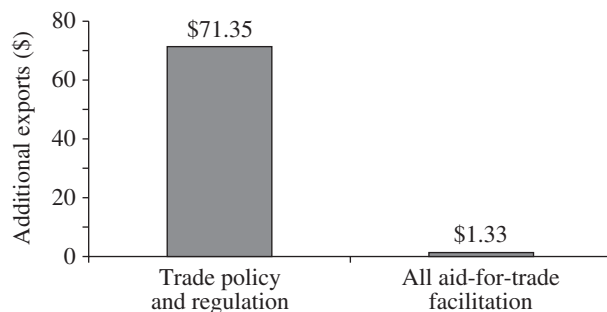
Figure 8.1: *Effect of additional $1 of trade policy, and regulation aid versus all aid for trade (in U.S. dollars).*
Source: Helble et al (forthcoming).

These results are complemented by research specifically estimating the value of the TFA. For example, Hufbauer *et al* (2010) estimate trade gains stemming from proposed measures currently on the table (based on a more general calculation in Wilson *et al* (2005)) and find that trade gains for developing countries exceed those for developed countries, both for exports and imports. According to the report, developing countries stand to gain $47.3 billion in exports and $84 billion in imports. For developed countries, trade gains are estimated at $39.5 billion and $54.5 billion, respectively. In terms of GDP, these gains translate to 0.6% ($60.4 billion) and 0.1% ($43.2 billion) for developing and developed countries, respectively. These figures are, in part, based on early estimations by Wilson *et al* (2005), who find that improvements in trade facilitation, similar to those proposed through the TFA, could increase exports in some developing regions by as much as 40% (Wilson *et al* 2005).

This empirical evidence with respect to the value of a TFA focused on trade facilitation *vis-à-vis* policy and administration reform is substantiated by feedback provided by partner countries through the Annex D organisations' self-assessment programme. According to results from the aid-for-trade questionnaires, the category of *trade facilitation*, which, according to the questionnaire, includes the simplification of customs procedures, is the second most frequently identified area where aid for trade is perceived to be effective. The only category that outranks it is *trade policy analysis, negotiation and implementation*, which includes technical assistance in understanding the rules of the multilateral trading system and capacity building in trade policy formulation (OECD/WTO 2009). Meanwhile, while areas such as infrastructure investments are often listed as top priorities, aid for trade in this area is perceived to be less effective.

Empirical estimates and operational evidence underscoring the relatively superior value of policy and regulatory reform are all the more noteworthy given current distribution patterns of aid-for-trade assistance at the global level. Although aid-for-trade flows have grown considerably over the past

decade, policy- and regulatory-related funding has taken a back seat to other forms of trade-related assistance.

As outlined in the OECD/WTO's 2009 report, donors have already surpassed their 2005 Hong Kong (China) aid-for-trade pledges, and in 2007, aid for trade grew by more than 10% in real terms. Total new commitments from bilateral and multilateral donors reached $25.4 billion, with an additional $27.3 billion in non-concessional trade-related financing. These gains notwithstanding, aid-for-trade assistance as a percentage of total sector allocable ODA continues to decline, falling to 32% in 2007 from 34% during the 2002–5 baseline period (see OECD/WTO 2009). Moreover, the vast majority of these increases in aid-for-trade assistance have been in categories other than the trade policy and regulation ODA (see Box 8.3). Given fears surrounding overall levels of development assistance in the medium term due to the current economic environment, it would seem that now is the time for a reprioritisation of aid-for-trade assistance that makes the most of the available resources.

A general consensus around this notion is apparent in the World Bank's forward-looking operations agenda with respect to trade facilitation. New projects through the Trade Facilitation Facility and a new public–private partnership on aid for trade have strong policy and regulatory administrations components, intended to complement World Bank trade-related lending in infrastructure and transport.[7]

Box 8.3. The distribution of aid-for-trade assistance.

In 2007, economic infrastructure, which serves as the OECD/WTO's proxy for trade-related infrastructure, continued to dominate aid-for-trade assistance, garnering 54% of total aid for trade. This represents an increase of $2.4 billion, or 21% from the 2002–5 baseline period average. Similarly, funds for building productive capacity, which has long been the second primary outlay of aid-for-trade assistance, grew by 21% in real terms from the baseline period to 2007. Meanwhile, support for trade policy and regulation represented just 3% of total aid-for-trade assistance, with $685 million pledged. Interestingly, the ODA category experienced a 60% uptick in 2006, attributed largely to the Hong Kong (China) aid-for-trade mandate in 2005, but fell back to near its baseline in 2007. The new categories of trade development and trade-related assistance, both introduced in 2007, garnered $5.9 billion and $17.7 million, respectively (OECD creditor reporting system (CRS)).

Although reforms related to trade policy and regulation cost much less than large-scale infrastructure and macroeconomic investment projects, the small amount of aid dedicated to this channel (see Figure 8.2) in light of its efficacy in stimulating trade flows is something that should be of significant interest
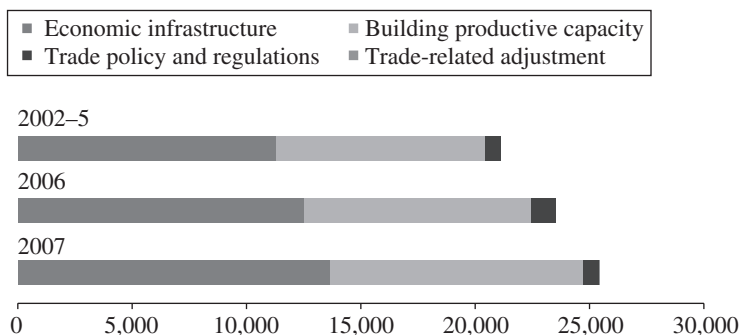
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[7] See www.worldbank.org/trade.

Figure 8.2: *Total aid for trade: sector distribution.*
Source: OECD/WTO (2009).

to those assessing the potential of a TFA to stimulate global trade. Given the significant uptick in trade policy and regulation aid that resulted from the aid-for-trade mandate in the 2005 WTO Ministerial Declaration (OECD/WTO 2009), it is reasonable to expect a TFA that elucidates specific, best-practice reforms in order to be highly effective in stimulating aid flows by at least the same margin and, ideally, in a much more sustainable manner.

3   EFFICACY OF TRANSPARENCY REFORM

As noted previously, the SDT provisions have proven to be one of the most contentious outstanding issues in the TFA negotiations. However, given recent evidence with respect to the capacities of developing countries, the majority of this uncertainty can be relegated to a narrow subset of the most complex reforms. The main controversy with regard to SDT surrounds questions with respect to how to determine

1. appropriate terms and required flexibility for implementation of Category B and Category C commitments,[8]
2. attainment of capacity to implement reforms.

These questions notwithstanding, a great share of proposed reforms under the TFA will require little to no investment at all. Thus, provided there is a strong effort to ensure all such reforms are implemented immediately (*ie* as Category A items in country schedules), the scope of stumbling blocks with

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[8]Provisions that developing-country members and LDC members are expected to implement after a transitional period of time following the agreement coming into force (Category B), or upon the acquisition of implementation capacity (Category C). See Section II, heading 2, 'Definitions of categories of commitments', of WTO (2011).

regard to SDT can be greatly reduced. Recent assessments have shown that many reform actions thought to be beyond the capacities of some developing countries are, in fact, obtainable in many instances.

While trade facilitation reforms often entail hard investments in new infrastructure and technology or adjustments to policies and procedures (as highlighted in the previous section), simple actions to increase transparency in the manner in which *existing* procedures and regulations are administered can generate returns at little to no cost. The mere availability of information surrounding import and export procedures, for example, can have an important impact in decreasing trade costs by increasing the simplicity and predictability of the general trading environment.

Many authors have ranked the various TFA proposals in terms of their ease of implementation (see Maur 2006), and there is fairly strong consensus with regard to the proper sequencing of proposed reforms to this end. Generally speaking, measures that concern basic matters of transparency in border management procedures are considered to be relatively easy to implement and outnumber proposed TFA action items deemed to be more complex. For instance, reform actions such as eliminating consular fees and the requirement of mandatory use of customs brokers would not require any new knowledge or assistance, but would simply require clear government mandates. On the other hand, reform actions involving the implementation of automated risk management systems or the institution of a single window system would require both investment in new technologies and institutional capacity building (World Bank 2007).

Although much of the recent literature surrounding the TFA has tended to emphasise the more involved reforms and the SDT implementation questions surrounding them, it is important to recognise the large gains associated with even the most basic proposed measures in order to build political will for maximum inclusion of these proposals in Category A of the national schedules.[9] Previous trade facilitation reform efforts and recent empirical research demonstrate that the most basic trade facilitation reforms are not only highly effective in lowering trade costs, but are also associated with the most successful type of trade-related reform operations, as measured by the World Bank. To this end, it should be in all members' best interests to pursue these reforms to the fullest extent possible.

According to the most recent review of World Bank trade operations by the Independent Evaluation Group, projects that focused on 'stroke of the pen' policy and regulatory reforms exhibited superior performance (with an 85% approval rating) when compared with the Bank's trade operations portfolio as a whole (World Bank 2006). In contrast, projects that required substantial institutional capacity building were among the least successful

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[9]According to the negotiating framework, members self-identify implementation capacity and are therefore responsible for determining their own implementation schedules.

in the World Bank's trade operations portfolio (with a 56% approval rating). This distinction not only highlights the inherent difficulties associated with supporting institutional development, but, with respect to the TFA, it also underscores the potential for successful and meaningful reform through decisive, 'quick-win' actions that can be achieved through an agreement that emphasises and prioritises these types of reforms *for all members* from the onset. The majority of these proposals take the form of increasing transparency in the general trading environment for private-sector actors.

World Bank research (Helble *et al* 2007) highlights the benefits of transparency in trade policy by looking at the gains associated with increased simplicity and predictability in a country's trade environment. It estimates that policies aimed at improving trade policy transparency in the Asia-Pacific Economic Cooperation (APEC) region could increase intra-APEC trade by as much as 7.5%, alongside comparable reductions in applied tariff rates and non-tariff barriers, which would generate trade gains of 0.9% and 1.8%, respectively. Indicators used by the authors as proxies for transparency in trade policy include the amount of documentation required to complete import/export transactions ('Doing business'), governments' e-readiness ranking (UN), and the number of border agencies involved in import/export procedures (Logistics Performance Index). These proxies reflect many of the TFA proposals currently on the table, including enhanced document alignment with international standards, establishment of average clearance times, and online publication of trade regulations, fees and procedures (WTO 2009). These findings are supported by the OECD's recent work on trade facilitation indicators, which shows that these types of reforms have among the biggest impact upon increasing trade flows and decreasing trade costs. Specifically, the OECD finds that information availability and efficacy of advance ruling procedures are two of the most important variables in terms of efficiency in the trade environment (OECD 2010). The streamlining of fees and charges, the harmonisation and simplification of documents, and the cooperation between border agencies are also cited as areas that can have the most substantive impact on trade flows. In short, therefore, it is very reasonable to expect the TFA, as embodied by just the most basic of proposals currently on the table, to have a significant impact in reducing trade costs amongst signatories, much greater than any tariff and/or non-tariff reforms likely to come out of the current Doha Round.

Furthermore, with respect to outstanding questions surrounding SDT, although some of the more advanced proposals under the TFA may require modest amounts of capacity building and financial support to implement, the majority of measures would be achievable for a large proportion of developing countries without further assistance. Indeed, by using APEC— a regional grouping that is extremely diverse in terms of economic development and institutional environment—for their study, the authors demonstrate that certain capabilities for enhancing trade performance are not directly
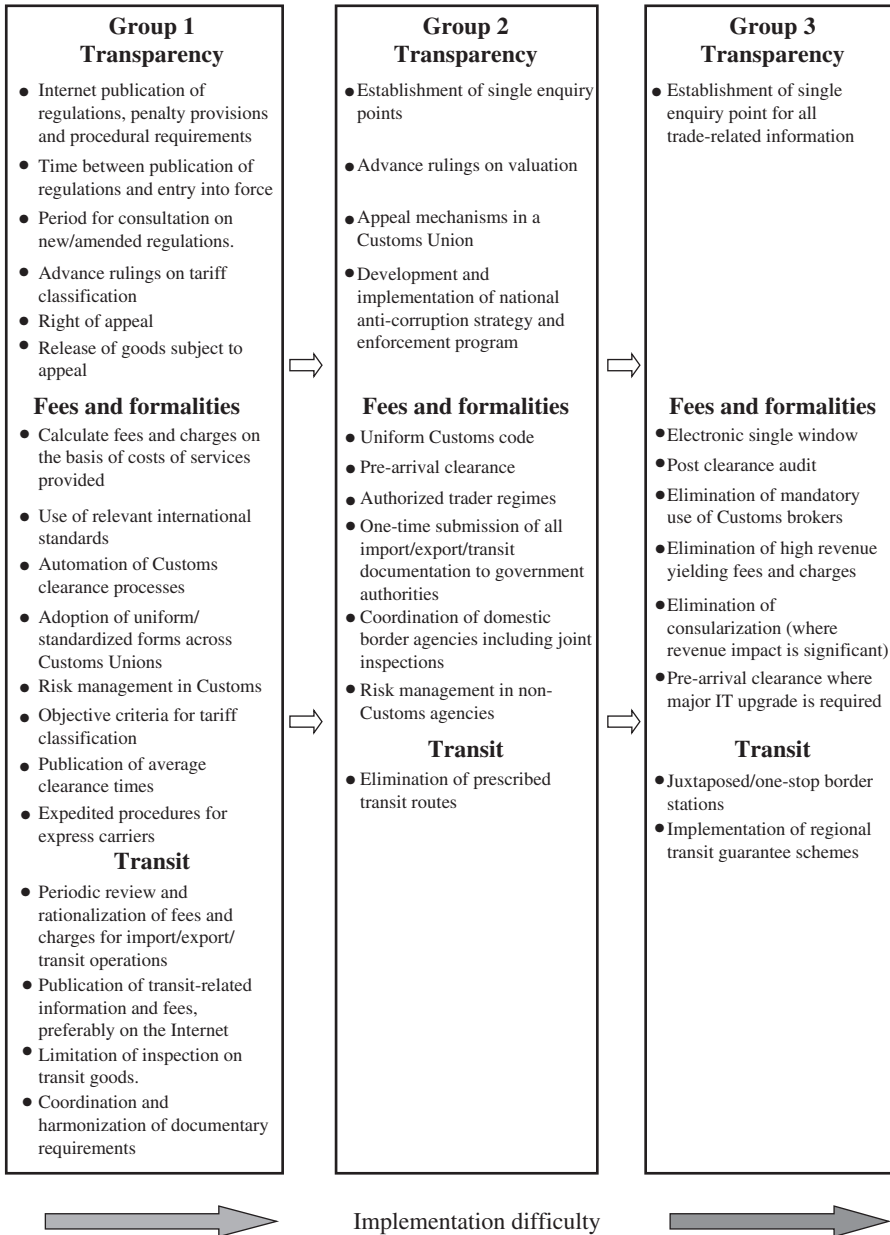
Group 1 Transparency	Group 2 Transparency	Group 3 Transparency
• Internet publication of regulations, penalty provisions and procedural requirements	• Establishment of single enquiry points	• Establishment of single enquiry point for all trade-related information
• Time between publication of regulations and entry into force	• Advance rulings on valuation	
• Period for consultation on new/amended regulations.	• Appeal mechanisms in a Customs Union	
• Advance rulings on tariff classification	• Development and implementation of national anti-corruption strategy and enforcement program	
• Right of appeal		
• Release of goods subject to appeal		
Fees and formalities	**Fees and formalities**	**Fees and formalities**
• Calculate fees and charges on the basis of costs of services provided	• Uniform Customs code	• Electronic single window
	• Pre-arrival clearance	• Post clearance audit
• Use of relevant international standards	• Authorized trader regimes	• Elimination of mandatory use of Customs brokers
• Automation of Customs clearance processes	• One-time submission of all import/export/transit documentation to government authorities	• Elimination of high revenue yielding fees and charges
• Adoption of uniform/ standardized forms across Customs Unions	• Coordination of domestic border agencies including joint inspections	• Elimination of consularization (where revenue impact is significant)
• Risk management in Customs	• Risk management in non-Customs agencies	• Pre-arrival clearance where major IT upgrade is required
• Objective criteria for tariff classification	**Transit**	**Transit**
• Publication of average clearance times	• Elimination of prescribed transit routes	• Juxtaposed/one-stop border stations
• Expedited procedures for express carriers		• Implementation of regional transit guarantee schemes
Transit		
• Periodic review and rationalization of fees and charges for import/export/ transit operations		
• Publication of transit-related information and fees, preferably on the Internet		
• Limitation of inspection on transit goods.		
• Coordination and harmonization of documentary requirements		

Implementation difficulty

Figure 8.3: *Categorisation of potential TFA measures by cost and implementation difficulty.*
Source: World Bank (2007).

correlated with levels of economic development. For example, they highlight that Vietnam has a trade performance, in terms of some trade performance metrics, that is on a par with that of Singapore, one of the most developed members of the group.

In further support of this argument, a comparative case study performed by the World Bank in 2007 (World Bank 2007) looks to identify the gaps between tabled TFA proposals and the systems and procedures currently employed across six developing countries: Rwanda, Egypt, Paraguay, Sri Lanka, Senegal and the Philippines. It observes that many of the tabled measures represent well-established best-practice standards in trade facilitation reform, and do not represent new reform strategies. In fact, it notes, many of the measures have already been introduced through other forums, including the World Customs Organization's Kyoto Protocol Convention.

The study concludes that, as a result, all case study countries have already begun work on implementing many of the proposed trade facilitation reform measures. For example, all six currently maintain websites containing a significant amount of the required import and export information, and offer it in at least one WTO language; have some form of formal appeal mechanism in place that allows disputes to be resolved without initial recourse to the judicial system; and utilise some form of basic risk management and selectivity system.

Interestingly, in acknowledging that some of the more complex TFA proposals would require more substantial amounts of technical assistance, it makes the case for a more integrated assistance approach, taking into account the broader national development objectives (World Bank 2007). In other words, longer-term technical assistance for broader, more in-depth reforms would be most effective if aligned with existing and future support by the development community to ensure that implementation of the TFA parameters is effectively coordinated across national government ministries and between the national government and donors (see Figure 8.3 for a categorisation of potential TFA measures by cost and implementation difficulty).[10] This important point highlights the primary advantage of integrating TFA assistance into already established platforms of donor–recipient coordination.

4   NON-MERCANTILIST APPROACH

Given the large amounts of aid for trade already available through bilateral and multilateral channels, building assistance obligations into a TFA would create more difficulties than it would resolve. It would significantly complicate the negotiations by necessitating a WTO-coordinated platform for the

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[10]This argument parallels World Bank Independent Evaluation Group data, cited earlier, highlighting the difficulties of short-term institutional capacity building.

matching and allocation of assistance, in some ways duplicating work that development agencies are structured to carry out (Finger 2007). Nevertheless, reliance on assistance from outside the WTO-mandated agreement furthers the case for a rigorous monitoring and evaluation framework to determine delivery of aid and successful implementation of reforms.

The large amounts of trade assistance currently available through the international development community means that developing members are unlikely to face a lack of aid to meet their TFA obligations. The supply of aid for trade increased over the 2002–8 period by more than 20% in real terms. According to the data reported by the OECD, in 2008, some 25% of ODA was directed towards aid for trade, and bilateral donors provided low-income countries, including LDCs, with about $15.6 billion (see Figure 8.4) (OECD/WTO 2009).

These vast increases in trade-related funding demonstrate that the importance of strengthening trade performance as a fundamental means of sustainable economic growth appears to be widely understood and well established. This is further evidenced in recent reports from various multilateral development institutions documenting the increased prominence of trade-related activities in national development strategies (World Bank 2009, OECD/WTO 2009).

For example, a World Bank report on the aid-for-trade agenda notes that about two-thirds of its partner countries now have trade as a primary area of focus in their Country Assistance Strategy agendas. Furthermore, 65% include operational work on trade to support their development objectives. As a result, the World Bank reports that trade-related lending reached its highest level in recent years, increasing from $560 million in fiscal year 2003 to $3.4 billion at the end of fiscal year 2009 (see Figure 8.5). Meanwhile, the report also notes that countries are increasingly indicating that they would like assistance in preparing strategic action plans to guide implementation of their trade facilitation commitments.

These trends, in addition to highlighting the increased importance of trade in the international development sphere, also demonstrate that the TFA, as positive a development as it may be, represents just one component of a much larger multilateral agenda with respect to trade facilitation. The global aid-for-trade agenda, unencumbered by the strictly trade *policy* focus of the WTO, includes work on investment in physical infrastructure, institutional reform (beyond border agencies), and other complex development objectives that involve large commitments of resources for capacity building and technical assistance.[11] This programme is becoming increasingly entrenched in donor–recipient relationships, as outlined above, and is receiving increased attention in the wake of the economic crisis. This includes work at the G20 and a

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[11]For a more in-depth discussion of the aid-for-trade agenda, see Chapter 9 of this volume.
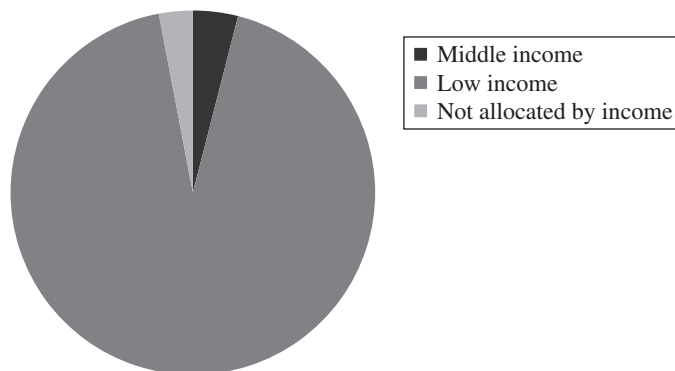
Figure 8.4: *Aid for trade from multilateral donors by recipient group (commitments of multilateral agencies in 2008).*
Source: Hoekman and Wilson (2010). 'Low-income countries' based on International Development Association-eligible countries.

renewed focus on trade and development with regard to the LDCs (Hoekman and Wilson 2010). Without this broader work to facilitate trade through more comprehensive development and investment activities at the macro level, the simplification of procedural and administrative requirements at a policy level can only accomplish so much.[12]

On the other hand, the 2009 OECD/WTO aid-for-trade report, while noting that more than half of OECD partner countries now self-report, having fully mainstreamed trade into their development strategies with well-developed priorities, also recognises that maintaining momentum behind the aid-for-trade initiative and sustaining the associated real growth rates in the volume of aid-for-trade commitments requires continued demand from partner countries for trade-related support. It also notes that, although more than half of all partner countries fully mainstream trade into their development strategies, there has been little progress towards developing concrete operational strategies. That is to say, although trade may be mentioned in official development plans, there are no outcome-driven action plans with achievable milestones linked to national budgets.

The TFA could therefore be useful, not only for sustaining the demand necessity highlighted in the OECD report, but also for refining this demand to encompass more specific objectives and providing a framework for implementation assistance through institutions such as the World Bank. The TFA would provide a linking mechanism for countries that are ambitious in achieving trade facilitation reform, but that have heretofore been unable to set priorities by which to develop realistic action plans.

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[12]See World Bank (2004) for a discussion of the importance of behind-the-border trade facilitation reform as a complement to at-the-border trade facilitation.
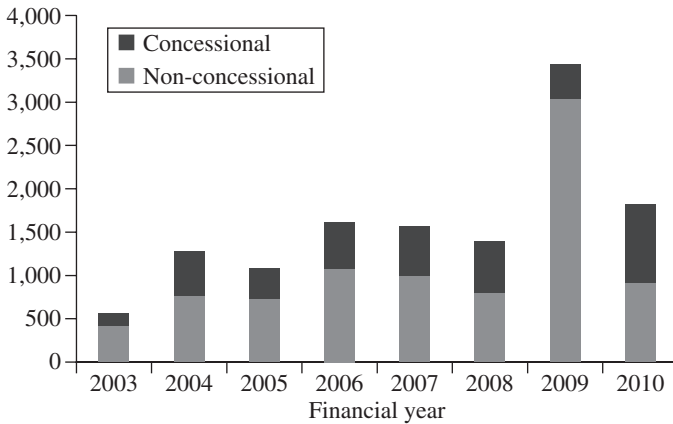
Figure 8.5: *World Bank trade-related lending.*
Source: www.worldbank.org/trade.

In conjunction with such an implementation framework, previously estab-lished procedures within the WTO could be utilised to monitor the progress of trade facilitation reform. As Finger and Wilson (2007) note, the strong arguments against binding assistance obligations in a TFA do not preclude an extensive monitoring platform, which would capitalise on the institutional strengths of the WTO while lending productive input to the provision of assistance through donors' aid-for-trade programmes.

As Finger and Wilson (2007) propose, one approach to this kind of monitor-ing system could be a revised trade policy review mechanism (TPRM). Rather than creating an entirely new mechanism within the WTO or another coordi-nating facility outside the WTO to review and seek to channel development aid funding, one could consider extending a TPRM beyond a tabulation of existing policy structures. This could include an assessment of where trade-related assistance has been supplied and to what effect it has been used in building capacity to implement reforms and/or successfully implementing notified reforms.

The positive and relatively informal approach that such a review might take to bringing a developing country's regulations and institutions up to international standards could also serve as an alternative to raising imple-mentation questions through the dispute settlement process, an issue that has yet to be discussed in great detail through negotiations, but is widely expected to be controversial once brought to the forefront of discussions. Proposals to utilise the existing TPRM mechanism could go a long way towards preempting deadlocks in ongoing TFA negotiations *vis-à-vis* dispute settlement applicability.

Within such a framework, the TFA would, in essence, serve as a set of standardised trade facilitation reform parameters that countries could use to implement trade reform into their development plans with multilateral financial institutions. Progress in implementing specific reform projects would then be subject to the official project review processes of the donor institutions, while progress towards meeting the terms of the TFA as a whole would be subject to a standardised review through the WTO's TPRM. Together, these review procedures would ensure that assistance was being used effectively and in a highly coordinated manner.

5   CONCLUSION

As the TFA negotiations proceed, members should strive to give increased clarity and transparency to SDT provisions. They should also attempt to reach a consensus that mandated funding within an agreement at the WTO complicates negotiations by attempting to address a problem that can be more effectively addressed by the larger development-driven aid-for-trade agenda. Lastly, should the Doha Round continue in its current holding pattern upon completion of TFA negotiations, members should act quickly to consider a plurilateral agreement outside of the official DDA.

With respect to SDT, the broader questions with regard to implementation schedules have been more or less settled through the now agreed-upon categorisation scheme. However, many questions remain with respect to the procedural aspects of the categorisation and review of specific reform actions. Although consensus has been reached regarding the principle of self-identification (*ie* members draw up their own implementation schedule based on self-identified capacities), notions surrounding the proper methods for assessment of implementation schedules remain undecided. As members work through these open questions, they should be mindful that transparency is the key to sustaining a fair and effective monitoring framework. Indeed, self-identification is necessary to maintain country-ownership of reform action plans, but it also necessitates careful design in order not to preclude objective, comparative review. This is especially true should, as we argue, provision of assistance remain outside the agreement's legally binding framework.

Should members, as per our suggestion, decide to forgo obligated assistance measures, a thorough review programme will be key to ensuring that members accurately monitor one another's progress in fulfilling their self-identified implementation schedules. As outlined in this chapter, the sums and sources of trade-related assistance are plentiful. Although this will have mostly positive implications for members' abilities to fulfill the TFA's mandated reforms, it will also make it more difficult to ensure that aid is used most efficiently. Thoroughness of the review process itself notwithstanding, maximum transparency and flexibility in the implementation schedules themselves can assist in lending efficacy to the monitoring and evaluation process.

Provided the intricacies related to SDT are resolved effectively, the TFA has the potential to serve as a highly effective multilateral implementation framework for the vast amounts of aid-for-trade assistance that is currently supplied by the international development community. Such an agreement would not only provide more precise direction for the global aid-for-trade agenda, but it would also increase aid-for-trade effectiveness and continue to ensure that trade facilitation is mainstreamed into developing countries' growth strategies. Given these positives, and the positive-sum nature of trade facilitation reform itself, this agreement should be seen as a means by which to foment momentum in other areas of the overall DDA. However, for these very same reasons, should the Doha Round falter, members should by no means squander what is achievable through a plurilateral TFA.

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9

Aid for Trade: Why, What, and Where Are We?

BERNARD HOEKMAN[1]

1 INTRODUCTION

While differing opinions persist regarding the appropriate role of government intervention, there is general agreement regarding the strong positive association between economic development and trade expansion. The WTO promotes trade and, in that sense, can be regarded as an institution that promotes development. However, despite the boom in world trade that has occurred in the last 30 or so years—partly under the stewardship of the WTO (and, before that, the GATT)—and the increasing participation of many developing countries in world trade, many observers are concerned that the impact of the WTO, and trade agreements more generally, is asymmetric: poor countries may not be able to fully harness market opportunities because of a lack of competitiveness and an inability to deal with adjustment costs (see, for example, Oxfam 2002; Rodrik 2005). Even where it is agreed that specific disciplines are appropriate, the burden of implementation costs may fall disproportionately heavily upon poorer countries (Finger and Schuler 2000).

One response to such concerns has been for high-income countries to provide assistance through preferential access and/or financial transfers. Preferential access can be regarded as a form of aid. If countries have preferred access to a protected market, this will generate rents (financed by consumers) for the preferred exporters. These are equivalent to a financial transfer. Official development assistance (direct financial transfers) delivered through development cooperation agencies working with recipient governments may also have trade expansion as an objective. Historically, however, there has been very little, if any, connection or interaction between development agencies and the GATT/WTO. This was by design: the GATT (now WTO) focuses on reducing international spillovers created by national

trade policies by supporting the exchange of reciprocal commitments; development agencies focus on supporting unilateral efforts by individual governments to raise per capita incomes and to improve human development indicators.

Since the launch of the Doha Round in 2001, there has been an increasing recognition that this historical parallelism or independence may not be desirable. Efforts to mobilise more 'aid for trade'—to allocate more development assistance to trade—reflected a view in parts of the development community (developing-country governments, donors, aid agencies, development-focused non-governmental organisations) that there had been some neglect on their part of the potential power of trade as an instrument for reducing poverty. It also reflected a concern that more attention needed to be devoted to ensuring that trade agreements 'made sense' from a development perspective. The result was greater engagement by development agencies in national trade policymaking in several traditional donor countries (*eg* Sweden and the United Kingdom) and an increased emphasis on building capacity in developing countries to define and defend trade positions and priorities. Conversely, the trade community (trade ministries, negotiators) became more cognizant of the need to mobilise resources to support implementation of negotiated trade policy-related disciplines, and to deal with the adjustment costs associated with trade reforms. More generally, starting in the early 2000s, there was an increased recognition that better market access is not sufficient. To be able to benefit from improved market access, firms in developing countries need to be competitive, that is, to operate in a business environment that enables them to compete with firms in other markets.

The goal of this chapter is to discuss the genesis of the aid-for-trade initiative, how it came about, and where we currently are (in terms of progress to date). The paper starts with a brief review of the status quo ante—the approaches that were pursued pre-DDA to address development concerns in the trading system (Section 2). It then discusses the emergence of aid for trade as a complement to the traditional focus on (preferential) market access, using trade as a form of aid (Section 3). This is followed by a discussion of the state of play on aid for trade as of early 2010 and the some of the challenges and options for moving forwards (Section 4). Section 5 concludes.

2   THE STATUS QUO ANTE

Given that the only instrument that GATT/WTO members have at their disposal is trade policy, it is not surprising that efforts to address development concerns by the trade community have focused on the instruments that they control. Thus, the approach taken by the GATT/WTO can be characterised as an effort to use 'trade as aid'. There are two dimensions to this approach. On the one hand, there is the focus of the institution on non-discriminatory trade

liberalisation, which benefits all members, including developing countries, through better access to export markets and helping to lower a country's own barriers to trade. On the other hand, this effort to lower trade barriers on an MFN basis is complemented by positive discrimination in favour of developing countries through the granting of *preferential* access to markets, as well as greater flexibility/opt outs for developing countries for specific GATT/WTO rules.[2]

A sizeable literature has emerged since then that analyses the effectiveness and desirability of using such positive discrimination. Views differ on this subject.[3] Some argue that the approach makes sense in principle but that, in practice, it has delivered limited benefits because of the way in which it has been implemented. For example, a good case can be made that the value of preferential access offered by developed countries was (greatly) reduced as a result of product exclusions and restrictive administrative conditions (rules of origin, quota limitations, *etc*; see, for example, Hoekman *et al* 2009).

Others are of the view that the use of trade preferences as a form of aid has had significant downsides, in part because it slowed down general liberalisation on a non-discriminatory basis. A large body of research has shown that although a number of countries benefited from preference programmes as a result of being granted quota rents on traditional commodities such as sugar and bananas, this has arguably worked against their export diversification. Moreover, the plethora of preferential-access programmes encouraged the proliferation of reciprocal trade agreements, further distorting world trade flows and moving the trading system away from non-discrimination.[4] The fact is that, despite preferences and SDT of developing countries, many of the poorest WTO members have seen their share of world trade stagnate or decline between the 1970s and today.

Both sides agree that a major factor impeding the use of preferential-access programmes is a lack of competitiveness and supply capacity in many of the beneficiary countries. This suggests that using other instruments that provide direct assistance to improve the competitiveness of firms and farmers would do more to improve the trade performance of the poorest countries. This insight has, to a significant degree, motivated the efforts to put aid for trade on the agenda of the WTO and international policymaking.

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[2]This paper ignores SDT provisions in the WTO (see Hoekman 2005).

[3]See, for example, Johnson (1967) for an excellent contemporaneous analysis and discussion. Suwa-Eisenmann and Verdier (2007) review the more recent literature on aid and trade.

[4]See, for example, the survey of the literature and the readings in Hoekman and Ozden (2007).

3   THE EMERGENCE OF AID FOR TRADE ON THE POLICY AGENDA

A discussion of some of the major forces that led to the emergence of aid for trade on the international policy agenda now follows.[5] As an organising device, the discussion distinguishes between considerations that were particularly prominent in the trade community and those that influenced the development community.

3.1   Trade Community Perspectives

From a trade community/WTO perspective, two types of concerns proved important. The first revolved around what can be called the 'Uruguay Round hangover': the gradual recognition on the part of many developing countries that the results of the round and the WTO coming into force entailed numerous implementation obligations, some of which may require substantial financial and human resources. An influential paper by Finger and Schuler (2000) highlighted that the costs of implementation (not defined narrowly in terms of required legal and regulatory changes, but in terms of what is necessary to benefit from a specific WTO set of rules) could be high.[6] However, the primary instrument used in the WTO to address implementation problems was the granting of transition periods to developing countries. Assistance to meet the costs of implementation was a matter for governments to request from national and international development agencies.

   It came to be recognised relatively rapidly after the WTO came into force that there was a need for coordination between such agencies and the WTO, and that it would be beneficial to create a mechanism to assist WTO members in obtaining assistance to address implementation challenges. This was the genesis of the Integrated Framework (IF) for Trade-Related Technical Assistance: a result of the 1996 WTO Ministerial in Singapore. Basically a coordinating device involving the WTO and five international agencies active in trade and development—the IMF, International Trade Centre (ITC), United Nations Conference on Trade and Development (UNCTAD), the United Nations Development Programme and the World Bank—the aim of the IF was to help the LDCs to undertake needs assessments for trade-related technical assistance. The intention was that these needs would be addressed as part of the regular delivery of assistance by the agencies and/or bilateral donors. Essentially an unfunded mandate established by trade ministers, the IF achieved little in its early years. Over time its functioning was improved as

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[5]This does not imply the DDA: as discussed below, there is no formal linkage between aid for trade and the DDA. See Finger (2008) for a complementary discussion.

[6]Implementation concerns and a widespread perception that the Uruguay Round had been (and the trading system was) unbalanced (Stiglitz 2000) were factors that led the Doha negotiations to focus on development and led the negotiations to be called the 'Doha Development Agenda'.

the development community began to devote greater attention to the trade agenda. One important change was the creation, in 2001, of a dedicated trust fund to finance trade diagnostic activities and small technical assistance projects. While this helped to cover the costs of identifying trade-related priorities in LDCs, the financing of projects and activities to address these priorities was left to existing mechanisms for the allocation of development assistance.

A perception on the part of LDCs that the IF was primarily a mechanism for studies, as opposed to an instrument for dealing with identified priorities, led to calls on their part to strengthen the mechanism and give it substantially greater resources. A 2006 task force recommended that the IF be enhanced with a dedicated secretariat and a funding mechanism for its work programme (to be undertaken by the agencies and contractors). This fund was recommended to be on the order of $200–400 million. As of 2010, the Enhanced Integrated Framework (EIF) was fully operational, providing assistance to national focal points in LDCs to define and identify trade priorities and integrate these into national development and poverty reduction strategies. The IF—the first formal effort to bring development agencies into the trade (WTO) picture—was an initiative that came from the trade community, not the development community.[7]

A second factor that increased the attention given by the trade community to aid (fiscal transfers) was the increasing difficulty in overcoming resistance to expanding the coverage of the WTO through the DDA. The standard GATT/WTO approach is to define a negotiating agenda that spans many areas. This helps to mobilise more support for reforms in 'sensitive' areas such as agriculture by creating new opportunities for workers and firms that operate in other sectors (manufactures, services, *etc*). Through the reciprocity mechanism, negotiators then seek to achieve enough concessions from trading partners to induce those groups that would gain (exporters) to balance the domestic political opposition by groups that would lose protection.

Many smaller/poorer developing countries have little to offer in the reciprocal negotiations game. They have no market power and cannot influence their terms of trade. Many were also worried about the potential adjustment costs associated with global liberalisation on an MFN basis. Developing countries that benefit from extensive preferential access to OECD markets stand to lose from non-discriminatory trade liberalisation. Global liberalisation may also increase the prices that net importers pay for certain staples. (This can

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[7]The same was true of another initiative that was launched around the same time as the IF: the Joint Integrated Trade Assistance Program (JITAP). The JITAP was a joint venture between the ITC, UNCTAD and the WTO, and was more narrowly focused on the delivery of trade-related technical assistance. As noted by Cameron and Njinkeu (2008), the JITAP was more limited in terms of its country coverage (16 beneficiary countries), but, in contrast with the IF, was not restricted to LDCs. Interventions by JITAP were aimed primarily at trade ministries and their immediate constituencies.

occur if production subsidies in rich countries are removed if these subsidies suppressed world prices.) For poor countries that have not diversified their economies and that depend on preferential access to major markets, there may be little immediate gain from multilateral trade reforms, especially if they do not undertake reforms of their own in trade and domestic economic policy to improve their competitiveness (Hoekman 2002).[8]

Adjustment costs are an inevitable outcome of ambitious trade reform, whether global or national. Addressing such costs, and putting a policy environment in place that assures households that the reforms will result in new job opportunities, is therefore an important political imperative (Bhagwati 2004; Sutherland *et al* 2004; Zedillo *et al* 2005). Trade policy changes have important distributive consequences within and across countries. Some countries and many individuals in all countries may experience losses as a result of trade liberalisation. In principle, aggregate gains will exceed aggregate losses,[9] so that it is possible to redistribute incomes to compensate the losers while still generating net overall benefits from the reform. In practice, however, political and technical constraints preclude full compensation. Political constraints include equity considerations: should those who introduced past trade-distorting policies at the cost of society as a whole be compensated? Technical constraints include limitations on the ability to tax and redistribute, and, more importantly, on the ability to identify losers and to design compensation programmes in a way that does not distort the incentives to adjust (Verdier 2005).

Adding financial transfers/aid to the mix of instruments available to trade negotiators can help to address these types of concerns, with the consequence being that those who control development assistance are brought into the picture. However, in the event, much of the push for more aid for trade came from the development side of the house, not the trade community.

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[8]Recent research on this topic suggests that, for most poor countries, the aggregate impact of preference erosion would be limited. Administrative requirements (rules of origin), the exercise of market power by importers (retailers and distributors), product exclusions, and low MFN tariffs for most manufactures and natural-resource-based products all imply that the effective value of preferential access is limited. Preference erosion is an important issue for some countries, but they are mostly middle-income economies. See Francois *et al* (2006) and the contributions in Hoekman *et al* (2009).

[9]Losses being the sum of adjustment costs and the present discounted value of the difference between the pre-reform and post-reform incomes of those individuals unable to ever find employment that pays wages at or above their pre-reform levels. Adjustment costs may be generated by own liberalisation commitments that result in greater imports, or reflect preference erosion resulting from liberalisation on an MFN basis by countries that have non-reciprocal trade preference programmes (Hoekman and Prowse 2009).

3.2 Development Community Perspectives

Support for integration into the world economy through liberalisation of trade-related policies was a major aspect of the lending programmes and activities of the IMF and the World Bank in the 1980s. In the 1990s there was a significant shift in the focus of these institutions towards improving access to health and education, and working more closely with governments to implement national poverty reduction strategies. A result of this shift in focus and *modus operandi* was that a larger share of development assistance was directed towards social services and public expenditure management, with less resources going to support infrastructure, agriculture and trade. In the early 2000s, many developing-country governments argued that more attention and resources should be devoted to stimulating economic growth. This view was supported by several major task force reports. Thus, the UN Millennium Task force on Trade stressed that trade could do a lot to help achieve the Millennium Development Goal of halving poverty by generating higher growth rates (UN Millennium Project 2005). The same message came from the Commission for Africa (2005).

The renewed recognition of the importance of trade for development led to an increased focus by the *development* community on removing barriers in export markets for firms and farmers in developing countries. However, the support for global liberalisation was accompanied by a strong emphasis on the need for complementary policies and investments in low-income developing countries to improve the competitiveness of firms and to offset adjustment costs. The magnitude of the gains made by poor countries from global trade reforms depends on actions to create new jobs, raise wages, and move producers out of subsistence agriculture. Global trade reform by itself will not ensure these outcomes.[10] Domestic supply constraints and high operating costs are the main reason for the lack of trade growth and diversification in many of the poorest developing countries. Without action to improve supply capacity, reduce transport costs from remote areas, facilitate movement of goods across borders, connect farmers to markets, *etc*, trade opportunities cannot be fully exploited and the potential gains from trade will not be maximised (Limão and Venables 2001; Prowse 2006).

The agenda is huge. Among possible complementary reforms, research in this area identifies, in particular, actions to move households out of subsistence production and to improve productivity. Given that poverty is concentrated in rural areas that depend heavily on agriculture, trade opportunities can raise incomes, but only if products are produced for the market. This may require active intervention to help households to make the switch, through extension services, access to credit, and investments in infrastructure. Poor roads and ports, poorly performing customs, weaknesses

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[10]See, for example, the contributions in Hoekman and Olarreaga (2007) and Hertel and Winters (2006).

Table 9.1: *Measures of domestic trade costs (averages by country group).*

	High income	Middle income	Low income
Logistics Performance Index (score)	3.9	3.0	2.8
'Doing Business' import cost (U.S.$)	813.6	1024.2	1212.0
'Doing Business' export cost (U.S.$)	774.4	867.2	949.3
Trade facilitation (score) (Wilson *et al* 2005)	6.1	4.2	3.7

Higher scores and lower U.S.$ figures are better. 'Doing Business' monetary measures reflect the average cost of shipping a standardized container to or from the port to warehouse.

Source: Hoekman and Nicita (2011).

in regulatory capacity, and limited access to finance and business services are all factors determining trade performance. They are all also areas where development assistance can help support reform efforts of governments and enhance the capacity to trade.

The World Bank Group regularly collects data on key trade-related regulatory costs in both developing and high-income countries, including through the 'Doing Business' report and a variety of logistics performance indicators. These data reveal that red-tape-related trade costs—both monetary and expressed in terms of time—are higher in developing economies, with low-income countries often having the worst performance indicators (Table 9.1). The trade-impeding effect of these costs is frequently greater than the restrictive impact of traditional border barriers such as import tariffs.

Table 9.2 reports the predicted effect on trade if low-income countries were to converge on a set of policies that would generate the observed average levels of some of the indicators in middle-income countries (as reported in Table 9.1). These estimates are based on a gravity regression (details of the methodology used can be found in Hoekman and Nicita (2011)). The results suggest that reducing real trade costs would have a larger impact on trade flows than a reduction in applied tariffs to a uniform 5% equivalent level. The predicted increases in trade volumes of low-income countries of this convergence experiment are substantial. The largest increases in trade are associated with actions to improve the logistics/trade facilitation scores (as measured by the Logistics Performance Index). Improving performance on the 'Doing Business' indicator 'trading across borders' (which measures the actual cost of getting a standardised container from/to the port) would have an effect similar to what could be obtained by reducing all applied tariffs to the 5% level.

In general terms, these results indicate that administrative and regulatory policies are an significant factor impeding trade. This type of data collection and associated research greatly increased the focus of governments on facilitating trade and taking action to reduce trade costs. A key question for policymakers is, of course, how performance can be increased: what

Table 9.2: *Effects of convergence by low-income countries to middle-income average.*

Indicator/policy area	Increase in imports (%)	Increase in exports (%)
Logistics Performance Index (score)	15.2	14.6
'Doing Business' cost of trading	7.4	4.1
Uniform tariff equivalent for low-income countries reduced to 5%	5.7	

Source: Hoekman and Nicita (2010).

needs to be done, and what are the priorities? While this requires country-specific analysis, a major dimension of facilitating trade is action to reduce the incidence of internal tax/customs/police controls. Addressing this source of operating cost—which increases the time needed for transport (an indirect cost) and often requires bribes to officials—would have a high return (Wilson *et al* 2005; Ikenson 2008). Djankov *et al* (2010) conclude that each day of delay reduces export volumes by 1% on average. For example, if Uganda reduced its factory-to-ship time from 58 days to 22 (the average for the world), exports may increase by 36%. This is equivalent to bringing Uganda 3,600km closer to its trading partners: the distance from Kampala to Dubai.

The delays just discussed are due to administrative hurdles (customs and tax procedures, clearance requirements and cargo inspections) often before the containers reach the port. In addition to dealing with red tape, the trade agenda covers actions to improve access to finance, telecommunications, power and transportation infrastructure. Currently, the road transport network is so poor in much of Africa that its diverse regions remain largely isolated from one another. Overland trade between West Africa and South Africa is practically nonexistent. Within many countries, fertile soil lies fallow because hauling produce to market is too expensive, time consuming and difficult. Much of the behind-the-border competitiveness agenda is services-related and goes beyond transport. Power outages cost the median firm in Tanzania 5% of sales. Firms try to cope by providing their own infrastructure: in Nigeria, over 90% of firms with more than 20 employees have generators. But the marginal cost of such power is about two and half times higher than power from the grid, and the capital cost of a generator is equal to about 20% of the total cost of machinery and equipment. Unreliable infrastructure can be most problematic for small firms, who are less likely to be able to cope. Aid for trade in all these areas can have a high payoff in terms of supporting greater trade.

Another potential barrier to export growth and diversification is product standards. Estimates of the investment costs for export industries of complying with market product standards can be as high as 1–3% of the value of

the trade flows concerned (Maskus and Wilson 2001). Firms in Africa report that product quality standards rank just behind freight and transport charges as the most important factor blocking export success (Wilson and Abiola 2003). Case studies focusing on the costs and benefits of health and safety standards come to similar conclusions, but also demonstrate that the overall gains from making the associated investments can be significant (World Bank 2005). This is another area where, by helping firms to upgrade in order to satisfy prevailing market standards, aid for trade can have a major impact on the ability of countries to benefit from trade opportunities. One response to this agenda was the creation of the Standards and Trade Development Facility (STDF) in 2004, a joint venture between the Food and Agriculture Organization, World Organization for Animal Health, World Bank, World Health Organization and the WTO. The STDF aims to assist developing countries in implementing and satisfying sanitary and phytosanitary measures through projects and capacity building programmes in the areas of food safety and plant and animal health.

4   PROGRESS AND CHALLENGES IN MOVING FORWARD

The factors discussed above all played a role in building support for an effort to expand aid for trade. The IF, Joint Integrated Trade Assistance Program (JITAP), and the STDF were three small-scale efforts to move forward, the first two largely driven by Geneva-based agencies, the third the initiative of the World Bank. The WTO hosted both the IF and the STDF, and was an active participant in JITAP (which included only the three Geneva-based trade agencies: ITC, UNCTAD, WTO). In addition to these initiatives, an increasing amount of donor support came to be allocated to capacity building efforts, especially for negotiations and for supporting institutions based in Geneva (*eg* the International Centre for Trade and Sustainable Development, which publishes the very informative newsletter *Bridges*). Missing—especially from the perspective of developing countries—was a substantial expansion of the magnitude of dedicated resources allocated to the trade agenda.

Arguments for increased focus on, and resources for, the national trade agenda in low-income countries were developed in a number of major reports and related task forces. These included the UN Millennium Development Goals task force on trade (UN 2005), a follow-on project supported by the U.K. Department for International Development focusing on the global trade architecture (Zedillo *et al* 2005), the Commission for Africa (2005) report, a report commissioned by Sweden on developing countries and the WTO (Page and Kleen 2005), and a study by the Commonwealth Secretariat (Grynberg and Silva 2004).

An important step towards mobilising additional resources to bolster trade capacity was the commitment by the G8 heads of government in May 2005 to

increase aid to developing countries to build physical, human and institutional capacity for trade, and to grant additional support to build developing countries' capacity to take advantage of the new opportunities for trade that would result from a positive conclusion of the Doha Round.[11] At the September 2005 IMF/World Bank annual meetings, agreement was reached on expanding the IF by providing it with additional resources with which to analyse trade needs and to ensure that these needs are considered by governments and donors through existing development assistance mechanisms (poverty reduction strategy papers and consultative groups/donor roundtables (IMF/World Bank 2005)). There was also an agreement to consider extending the approach to span additional countries, and recognition of the need to consider whether there should be a mechanism to support regional integration, rather than just country-specific actions.

Prospects for mobilising the required assistance increased with support for allocating additional aid to improve trade capacity at the 2005 Hong Kong Ministerial meeting of the WTO. That meeting called for a task force on aid for trade to be established to recommend how to move forward in operationalising this agenda. In its report (WTO 2006), the task force sketched out a number of the key elements of operationalising a concerted effort to expand aid to strengthen trade capacity and performance. This included mechanisms to better define priorities and to ensure that funds and expertise be made available to address demands. The task force also stressed the importance of more regular monitoring of the aid for trade provided to developing countries. Three key challenges were identified: determining trade priorities at the national and regional level, responding to this through assistance and financing, and effective monitoring and evaluation of both process and outcomes.

4.1 Determining Trade Priorities

The primary challenge in operationalising aid for trade is at the national level. There must be constituencies that push for *their* trade agenda and that work to make this a priority for the government and the private sector. These groups should encompass both exporters and importers, since they have common interests when it comes to the various factors that affect the cost of trade transactions. They need to organise and have an interlocutor inside or outside the government that will work to identify the priority areas for action, cost these, and make the case that these are *national* priorities. Once priorities have been identified and accepted by the government/parliament, it is necessary to help ensure that the case is made to the donor community, that projects are developed and financed, *etc.* Monitoring of the follow-up process and continued engagement is also important.

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[11] See G8 Declaration, Gleneagles, 2005, Africa text: paragraph 22 (a).

An effective system at the national level is by far the most important dimension of operationalising aid for trade. It is critical to solve a host of subsidiary issues related to delivery of assistance: who (which agency, firm, *etc*) should do what; ensuring that suppliers of assistance work together and complement each other; ensuring coherence with what is done at the regional level, be it through north–south cooperation (*eg* the EU's Economic Partnership Agreements) or south–south cooperation (*eg* through the regional economic communities in Africa), and so forth. The importance of this national challenge is recognised in both the WTO aid-for-trade task force report and the creation of the enhanced IF. The establishment of an earmarked trust fund of some $400 million for the EIF will help finance the activities of national focal points in governments that will raise the profile of trade interests in national forums, work with trade constituencies to identify priorities for action, and follow up on the action plans that are agreed. The effectiveness of the EIF to deliver the desired coordination will depend in part on engagement with the private sector: the trade constituency in each country.

According to the OECD/WTO partner country questionnaires, almost all countries receiving aid (79 of 83) have national development strategies, and more than half (43) have 'mainstreamed' trade in these strategies in the sense of having identified trade-related priorities and action plans (OECD/WTO 2009). Another 32 developing countries have partially mainstreamed trade activities, meaning that trade issues are mentioned in national strategies, but there is an absence of operational targets/goals and programmes. A recent review of trade in World Bank country assistance strategies (CASs) found that aid for trade is now on the agenda of the majority of the Bank's clients (65% of CASs) (Strachan 2009). This is translating into increased operational support to help countries in the trade area (see World Bank 2009).

Although much of the trade agenda at the country level will be sector- or activity-specific and will revolve around enhancing competitiveness and bolstering the 'supply side', there is also an equity dimension to the aid-for-trade agenda (Hoekman and Prowse 2009). Here the needs revolve around both *ex ante* identification of possible vulnerable groups that may be negatively affected by liberalisation (whether it be external liberalisation or own reforms) and design/financing of assistance, and *ex post* monitoring of impacts.[12]

As many if not all countries are active members of regional trade agreements, it is important that the process of setting trade priorities at the

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[12]The IMF and World Bank offer facilities to help countries finance adjustment shocks. The IMF's trade integration mechanism was created to provide for assistance in meeting balance-of-payments needs that might arise from multilateral trade liberalisation. An exogenous shocks facility was recently created by the IMF to provide policy support and financial assistance to low-income countries facing exogenous shocks, including sudden trade-related shocks.

national level also identifies regional trade priorities. Given that regional activities or projects must be consistent with national priorities, a conscious effort to integrate the regional agenda—including both north–south and south–south arrangements—into the national priority setting process will often be needed. Most of the focus of development support is at the national level; instruments to support multicountry projects and programmes are much less well developed (Hoekman and Njinkeu 2008).

4.2 Financing the Identified Priority Areas

The supply of aid for trade has been increasing over the 2002–9 period. Aid for trade, according to the definition of the OECD/WTO, comprised about 23% of total development assistance and about 33% of aid that donors and governments allocated to particular sectors on average over that period. (This 'sectoral allocable aid' excludes funds for debt relief, administrative costs and budget support.) Aid for trade increased 60% in real terms between 2002–5 (the baseline) and 2009, with commitments totaling some $40 billion in 2009. Aid for trade in each year goes largely to aid for building productive capacity and aid for economic infrastructure, in approximately equal proportions. Low-income countries saw their share of total aid for trade increase from 44% to 54%, while 59% ($4.7 billion) of the additional funds went to sub-Saharan Africa (OECD/WTO 2009). It should be noted that the OECD definition used here is a broad measure of aid for trade, in that it includes all financing of infrastructure except water and sanitation. The reason for this is that it is very difficult to distinguish to what extent specific forms of infrastructure support tradable, as opposed to non-tradable, activities. However, it clearly overstates the overall magnitude of aid for trade. It should also be noted that the OECD/WTO numbers exclude development assistance provided outside of the framework of the OECD Development Assistance Committee, and thus do not cover assistance provided by countries such as China.

Middle-income countries are the largest recipient of aid for trade provided by bilateral donors (including the European Commission), whereas multi-lateral aid agencies such as the World Bank allocate some 80% of aid for trade to low-income countries. This raises the question whether the 'right' countries get aid for trade. Gamberoni and Newfarmer (2009) created a measure of *potential demand* for aid for trade based on ten indicators of trade performance and trade capacity. Trade performance variables included export growth, improvements in global market share, and increasing diversification. Trade capacity included variables that were shown to affect trade growth controlling for other factors, including incentives, infrastructure quality, and effectiveness of trade-related institutions. Controlling for per capita income and the quality of the legal system as a measure of creditworthiness, they find that countries with the greatest potential demand—those that scored in the lower quintiles of these ten measures—on average receive the most aid
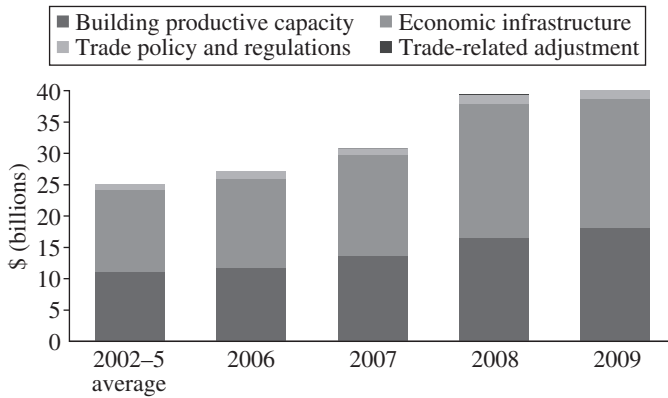
Figure 9.1: *Aid for trade (ODA), 2002–9 (constant 2009 $ million).*
Data are from the OECD CRS database and are based on the OECD/WTO definition of aid for trade. Following Development Assistance Committee practice, ODA data exclude non-concessional multilateral and bilateral lending.
Source: World Bank (2009).

for trade. But they also note that the match between supply and demand is far from exact: some countries received far less aid for trade than their potential demand would otherwise indicate, based on their trade performance and capacity.

Donors provided low-income countries, including LDCs, with aid for trade of about $15.6 billion in 2008. This amounted to some 40% of the total $39 billion in concessional aid-for-trade commitments in 2008. The LDCs received about a quarter of aid-for-trade commitments. Donors provided about half of aid-for-trade commitments to middle-income countries, mostly from bilateral sources. One generalisation of importance is that multilateral assistance (assistance through the International Development Association and the regional development banks) on average channelled a far higher proportion of their aid-for-trade concessional assistance to low-income countries than bilateral donors do. Some 83% of every aid-for-trade dollar goes to low-income countries ($5.8 billion of a total of $7.1 billion in assistance). Bilateral donors gave 30% of their aid for trade to low-income countries. Lending and projects supported by the World Bank group demonstrate a similar upward trend to aid for trade overall in the 2002–8 period.

Credibility and predictability of funding is critical for inducing the level of engagement that is needed to identify national trade-related priority areas for action. Previous 'best endeavour' promises to provide assistance for trade were only partly realised, and more promises provide little assurance to low-income countries that their concerns will be addressed. Various options have been proposed for financing aid for trade, of which only the EIF has become

a reality.[13] While the EIF has funding available to support the process of identification and follow-up activities, much (most) of the financing for trade-related projects and programmes will continue to come from and through existing mechanisms through which aid is allocated. There is, therefore, no guarantee that once projects and priorities have been identified, the financial resources needed for larger trade-related investments will be available.

This is often a major concern of proponents of aid for trade, but if the national-level process works, this should not be a problem. That process should be able, in principle, to work with the various agencies and actors that provide assistance, be it bilateral or multilateral. Managing and controlling this process is a major challenge that requires dedicated resources at the country/government level, but as long as this can be done, existing instruments can deliver. In the case of the World Bank, for example, there has been a significant increase in financing for trade projects in response to demand from developing countries.

World Bank trade-related lending has more than tripled since 2002, rising to some $27 billion in 2010 from about $7.2 billion in 2002 (Figure 9.2). This is based on a broad definition of trade-related lending, to correspond more closely with the OECD/WTO definition, and includes the sectors of agriculture, energy and mining, industry and trade, information and communication, and infrastructure. On the basis of the World Bank's own, more restrictive, classification of lending activities, in fiscal year 2010 the World Bank provided a total of $1.8 billion in trade-related lending. This is narrowly defined to cover only lending that is coded to the World Bank's trade and integration themes: export development and competitiveness; regional integration; technology diffusion; and trade facilitation and market access. It excludes infrastructure projects and trade finance. Based on this definition again, World Bank lending in fiscal year 2010 represented a threefold increase from fiscal year 2003 levels, when it amounted to $566 million.

As noted previously, the trade policy and competitiveness agenda is increasingly being pursued through regional integration and cooperation efforts. Hoekman and Njinkeu (2008) argue that existing instruments for supporting regional cooperation are inadequate, resulting in the under-provision of financing and assistance for multicountry trade-related projects. Existing support mechanisms, including the EIF, focus on countries. For many developing countries, regional cooperation is an important objective. It is also high on the agenda for the EU and the United States, which are increasingly negotiating reciprocal free-trade agreements with developing countries. The EU sees

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[13]See Zedillo *et al* (2005), Page and Kleen (2005), Grynberg and Silva (2004) and Prowse (2006). See Basu (2006) for a particularly ambitious proposal to generate funding for adjustment programmes, arguing for the introduction of an equity tax that would be redistributed to workers hurt by globalisation. As noted by Basu, such a tax would need to be coordinated at the global level, since the adoption of such a tax by a country unilaterally would lead to capital outflows, lower wages and higher unemployment.
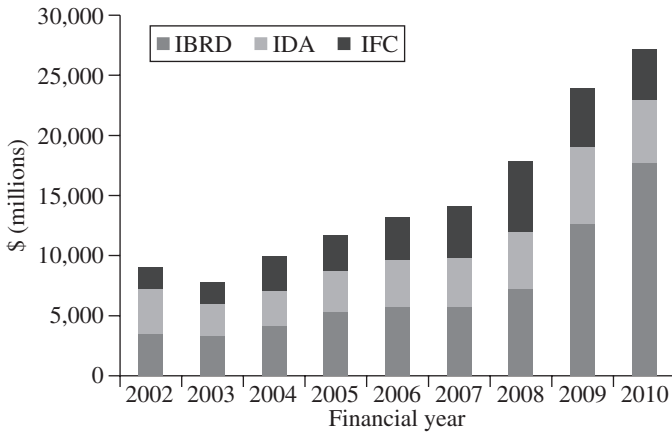
Figure 9.2: *World Bank group aid for trade, 2002–10.*
Source: World Bank.

these agreements as instruments to encourage the formation of economic integration arrangements among subsets of ACP countries.

Dedicated funds for supporting regional cooperation, covering both software (regulatory institutions, policy changes) and hardware (infrastructure to support cross-country flows of goods, services and people) could help to fill the gap that currently exists. A concerted focus on identifying and financing regional projects that would help to address the national priorities could also help overcome resistance to beneficial regional market integration (beneficial in the sense of helping to attain the competitiveness objective). A practical way forward would be for a proportion of donor funds for aid for trade to be allocated to regional development banks, as well as to multilateral agencies for regional projects.[14] Most regional and multilateral institutions already have trust funds through which such resources could be channelled. The regional agenda can, in principle, also be met through existing instruments such as the European Development Fund (EDF).[15]

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[14]While proposals for earmarked funds are controversial, as earmarking can be inconsistent with aid effectiveness (the activities for which funding is earmarked may not be a priority in individual countries), the creation of a mechanism that earmarks an overall amount for trade does not need to imply that countries must identify trade as a priority; it simply provides greater credibility to countries that if they decide that trade projects are a priority, development assistance will be available.

[15]For ACP countries, the ninth EDF was to provide a total of €20 billion through 2007. While this is intended for all types of development programme, the EDF offers a potential vehicle to address specific trade capacity concerns.

4.3   Monitoring and Evaluation of Aid for Trade

As donor commitments to increase aid for trade will not be implemented through a multilateral fund or through other forms of pooling funds for this purpose, the effective monitoring of delivery of aid for trade and the extent to which it responds to national priorities as defined by recipient governments is important. Effective monitoring is also important in order to allow accurate assessments and evaluation of outcomes. The WTO aid-for-trade task force (WTO 2006) called for multilateral monitoring of donor 'performance' (*ie* the delivery of resources to fund the priority trade projects identified by developing countries). Concretely, it suggested that the WTO organise an annual review of aid for trade. Such global reviews were held in late 2007 and mid 2009, in addition to a series of regional aid-for-trade reviews.

While aid, and the aid business, is not an area in which the WTO has expertise, as the world's trade body the institution does have a clear interest in monitoring and discussing what its high-income members have done to support trade competitiveness of lower-income members. It therefore seems appropriate that the WTO take on this role, working with international development agencies and bilateral donors to compile and report data on aid-for-trade projects. Much of the required data are already collected by the Development Assistance Committee of the OECD and reported in a joint Development Assistance Committee/WTO database.

Although much emphasis has been placed on the need to agree on a common classification and monitoring of aid-for-trade flows, an OECD/WTO driven process of annual summaries and scrutiny of aid delivery can only be of limited utility if it does not engage national government agencies, local donor representatives and the private sector. Data must be complemented by analysis of outcomes and assessments of impacts. To be most useful the information on aid must be related to the priorities and objectives that were identified by governments. Is the aid going to address those needs? Was the aid effective in helping to attain the objectives? If not, why not? The payoffs to such scrutiny will be at the national level, suggesting that monitoring and evaluation needs to take place locally and feed into the process and deliberations that inform the national prioritisation processes. There is a major role here for local and regional think tanks and research networks. The funding of such bodies should be a priority in the allocation of aid for trade.

5   CONCLUDING REMARKS

The aid-for-trade initiative was adopted remarkably rapidly by the trade and development communities. One reason for this is that the rationale and objective is greater trade; the aim is to maximise/leverage trade opportunities by

enhancing competitiveness. While the substance of the aid-for-trade agenda is certainly not a new one—indeed, all of the areas for potential intervention have been pursued by developing-country governments and donors over many years—what is new about the recent focus on this agenda is the recognition that these are matters that concern both the international trade and development communities.

The implementation of the aid-for-trade initiative builds on existing mechanisms for the delivery of assistance. By design, there is no central entity or global financial coordination mechanism that takes the lead or is the focal point for delivering aid for trade.[16] Instead, aid for trade is supplied through pre-existing country-based allocation mechanisms by bilateral donors and international development agencies, supported by a combination of smaller earmarked funds (most notably the EIF). The main objective of the EIF is to assist LDC governments in identifying trade projects that can be considered in the overall process of defining aid allocation priorities at the national level.

The country-centric approach is a major strength of the aid-for-trade initiative as it helps to ensure that aid targets priorities that have been identified by governments, but it has somewhat reduced the 'visibility' of the initiative. The recipient country-cum-donor community-centric focus of the initiative arguably also reduces the potential impact of the enterprise. Thus, there is relatively little engagement by and with the private sector, and few mechanisms that transfer resources from middle-income countries to low-income economies (*eg* investment, knowledge). Developing such mechanisms and greater involvement of the private sector could do a lot to enhance the effectiveness of aid for trade in supporting trade and employment growth in low-income developing countries (Hoekman and Wilson 2010).

With the benefit of hindsight, one could argue that a downside of the initial response of the trade community to the need for aid for trade was the IF, since this instrument is limited to the LDCs. The reason for this is that the LDC group is the only subset of developing countries that is formally recognised in the WTO, and that this, therefore, was seen as the only practical way of targeting assistance to a set of countries that needed it the most while allowing other more advanced countries to be excluded by donors. A result was that a number of countries that are in great need of assistance are excluded from the EIF. The resulting gap can be filled through bilateral action to support similar activities in non-LDCs, but the coverage of such assistance is unlikely to be as comprehensive and coordination will be more difficult to achieve.

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[16]In contrast with other areas that have recently been singled out as priorities for development assistance at a global level—such as the Global Agricultural and Food Security Program that was established in 2009 with earmarked funding of $1–1.5 billion to scale up agricultural assistance targeted at the food security of low-income countries—donors decided there was no need for such a mechanism in the trade area.

An important corollary of the emergence of the concept of aid for trade is that the WTO membership has recognised that trade liberalisation (market access and rules) alone is not enough to benefit poor countries, and that promises to provide technical assistance are an inadequate response to concerns about adjustment and implementation costs of trade agreements. The emergence of aid for trade is also a signal that the development community is according greater importance to the role that trade can play in fostering higher growth rates in low-income countries. The aid-for-trade initiative can therefore be seen as a move in the direction of greater international policy coherence. At the time of writing (April 2011) it appears increasingly unlikely that the DDA will be brought to a successful conclusion. Although a failure of the round would be a major setback for multilateral cooperation, the aid-for-trade effort that was spawned by Doha is one concrete way in which the negotiations will have contributed in a positive way to helping developing countries to leverage available trade opportunities.

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Potential Real Income Effects of Doha Reforms

DAVID LABORDE, WILL MARTIN AND DOMINIQUE VAN DER MENSBRUGGHE

1 INTRODUCTION

Policymakers engage in the complex and difficult process of multilateral trade negotiations primarily in an attempt to improve living standards. The goal of these reforms is to reduce the trade barriers that the same policymakers, or their predecessors, have erected. An important question is why policymakers should undertake such a roundabout path towards open trade. As economists, who tend to focus on the economic gains from reform, are fond of pointing out, individual small countries could obtain the major gains from reform simply by dismantling their own trade barriers. When policymakers do undertake partial liberalisation of the type that inevitably emerges from international trade negotiations, there is no guarantee that such reforms will actually raise national incomes, even though we know that complete, global reform of such barriers will raise global real incomes under the usual assumptions of economic theory. A key question, and the one to which this chapter is devoted, is the extent to which proposed trade reforms generate economic gains. Since the scale of the total gains may be difficult to interpret, another useful comparison can be made between the size of the gains from a particular reform proposal and those from complete liberalisation.

To understand the potential for negotiations such as those under Doha to contribute, we need to consider the nature of the policy challenge. Why is it that policymakers erect trade barriers in the first place? Two broad explanations for the emergence of trade barriers have been identified. The first focuses on the political-economy factors (see, for example, Grossman and Helpman 1994) that influence the level and the economic costs of protection. The second considers the terms-of-trade implications of trade barriers (Broda *et al* 2008), which have important implications for the real income effects of reform. Only with an understanding of why these barriers were first erected can we gain a meaningful understanding of how and why they might be

reformed, and the extent of the potential economic gains to be made from doing so.

The political-economy explanation for protection relies on the fact that some producers are better organised than other sectors and final consumers to seek support from governments. While policymakers recognise that protection creates economic inefficiencies and costs, the political-economy benefits to them are believed to outweigh these costs enough to generate substantial rates of protection even when the benefits to politicians of campaign contributions are only modestly higher than their perceptions of the social costs of protection (Goldberg and Maggi 1999). Negotiations over import protection to a particular industry also tend to be heavily influenced by the specific situation of that industry, without taking into account the general-equilibrium implications for other sectors. However, the cumulative effect of decisions to grant protection to industries that are collectively important is to impose cost burdens on the exporting sectors, both directly, by raising the costs of protected inputs, and indirectly, by raising the prices of non-traded goods. International trade negotiations can change the political-economy balance by causing export interests that are adversely affected by protection to become engaged in the political process.

Protection may also be motivated by a desire to benefit at the expense of foreigners. Importers may generate a benefit to the country by reducing the price that it pays suppliers for imported goods (Broda *et al* 2008). The cumulative effect of import protection (or the direct effect of export taxation) may be to increase the prices received for exported goods. While the resulting terms-of-trade changes generate benefits to an individual country, these benefits come at the expense of other countries, and provide a basis for international trade negotiations (Bagwell and Staiger 2011). Unfortunately for those seeking to analyse the implications of trade reforms, the distribution of these gains may be uneven and we need to take into account their distribution before we can make a complete assessment of the gains from any reform.

While international negotiations may improve on the outcomes arising from individual countries choosing their own policies, the extent to which they will do so is something that can only be determined empirically. Negotiators obtain a certain amount of negotiating capital from the market access obtained through the negotiations (Jean *et al* 2011). A problem with the original GATT approach of request and offer is that its bilateral basis limits the gain in terms of improved market access, causing countries to be reluctant to make adequate market-access offers. The Doha modalities attempted to deal with this problem by using a formula-based approach that creates market access in a pre-determined way, as suggested by Baldwin (1986). Whether the resulting agreement generates sufficient political gains to overcome the political costs associated with reducing protection depends upon the objectives of the negotiators. Bouët and Laborde (2010) use a game-

theoretic approach to show that the difficulties facing negotiators are very severe. If the negotiators seek to improve their countries' terms of trade, Bouët and Laborde are unable to identify solutions that meet the criteria for a Nash solution (the best solution that leaves all members better off). By contrast, if countries focus on expanding their exports or real GDP, Bouët and Laborde are able to identify solutions that would meet the criteria for a Nash solution. Martin and Messerlin (2007) identify a number of constraints that make it much more difficult to reach agreement in this round than in previous multilateral negotiations.

A key problem with a formula-based approach to negotiations—particularly for negotiations like the Doha Agenda which seek to make steep top-down reductions in tariffs—is political pressure for exceptions from these cuts. Ideally, such reforms involve very limited numbers of exceptions, but controlling exceptions is very difficult. In the Tokyo Round, when no explicit procedures for doing so other than a desire to keep the number small were enunciated, Baldwin (1986) points to a process of unwinding in which countries' exceptions lists grew in response to large numbers of exceptions in their trading partners. In the Doha Agenda, attempts were made to mitigate these problems by negotiating constraints on the numbers of products (in agriculture) allowed greater flexibility, and/or the share of imports (NAMA). As noted in Chapters 2 and 3, disciplines based on the number of products are flawed, since these exceptions are likely to be applied on relatively important products and to sharply reduce the benefits of liberalisation (Jean *et al* 2010). Since countries are free to choose the products for which flexibilities are utilised, we have projected which products are likely to be chosen using political-economy models outlined in Jean *et al* (2010).

In this chapter we abstract from the intense difficulties involved in obtaining political agreement, focusing instead on the potential implications of the reforms currently under discussion in the Doha Agenda for economic welfare in a wide range of countries. We use real income as our measure of the welfare gains from reform, and we focus on the total income gains to each country and to the world as a whole. These measures are offered in the spirit of Harberger (1971), as money measures of the benefits from reform that are potentially available to compensate the losers. A reform that does not meet the criterion of providing sufficient benefits to compensate all of the losers while leaving at least some people better off should generally not be adopted, certainly unless the distributional implications are extraordinarily favourable. Given the complexity of the agreements on the table, and the second-best nature of the reforms involved, an evaluation such as this is needed to ensure that the proposed reforms do not reduce overall real income or cause major income losses to particular regions. In the remainder of this chapter, we first briefly review the methodology and then turn to the approach used to implement it. Finally, we consider the results obtained.

2   METHODOLOGY

The approach used in this chapter builds on the assessment of the approaches used to reduce trade barriers considered in Chapters 2 and 3. These provide the inputs needed to make an assessment of the implications of reform for real incomes. To undertake this assessment, we build heavily on the modelling approaches applied in an earlier evaluation of the welfare implications of the Doha modalities (Anderson *et al* 2006). As in the earlier study, we use the LINKAGE model of the global economy, and estimate the gains using detailed estimates of changes in tariffs at a fine level of disaggregation. While they are necessarily more complex than simple textbook examples of the welfare benefits from liberalising trade, the approaches that we use can be shown (Martin 1997) to be based fundamentally on changes in measures of changes in producer surplus, consumer surplus and tariff revenues, plus changes in the countries' terms of trade resulting from changes in international prices.

In implementing this approach, however, we make some significant changes and enhancements. The major developments relative to the earlier analysis are: the inclusion of the much more specific proposals under discussion at the ministerial meeting in December 2008 rather than the more general 'framework' of 2004; the use of a more sophisticated political-economy approach to assessing the consequences of flexibility provisions, such as sensitive and special products in agriculture; and a new approach to modelling that takes into account the implications of changes in tariffs at the finest available level of disaggregation.

We make two important simplifications relative to the earlier analysis. Firstly, because current export subsidies are now little used, especially in the high-priced post-2008 environment—we do not take further reductions in these subsidies into account in assessing the welfare implications of an agreement. We make this simplification because, while we believe that the abolition of export subsidies is an important step forward in ruling out the emergence of large exports subsidies in the future, our approach of comparing the reduced level of subsidies in the future relative to current subsidies would necessarily result in trivially small estimates for the implications of export subsidy removal. For three similar reasons, we omit the welfare impacts of reducing domestic support measures in the industrial countries. The first of these reasons is that it is extremely difficult to assess the extent to which these measures will constrain domestic support (see Chapter 4). The second is that these measures contribute only an extremely small share of the total welfare costs of agricultural protection (Anderson *et al* 2006). The third is that these measures have increasingly been replaced by measures that are decoupled from output and, hence, are less important as sources of distortions to output.

The estimates of weighted-average rates of protection for agriculture and non-agriculture summarised in Chapters 2 and 3 are actually generated at a much higher degree of disaggregation for use in the modelling analysis: the

six-digit level of the Harmonized System (HS6), which is the highest level of disaggregation feasible using standard international classifications. The protection estimates that we use in the analysis are, for example, differentiated much more strongly by commodity, and distinguished by supplying country to each importer.

The challenge for our analysis is to aggregate these measures up to a level that is consistent with the much more aggregated level at which our model-based analysis of the implications of reform can be undertaken. If we take the standard approach of using trade-weighted averages, the results of our modelling will be flawed. Key problems with trade-weighted averages include the fact that the weight on each finely disaggregated commodity remains the same after the process of tariff reform begins, while we know that imports of commodities that are liberalised substantially are likely to increase, raising the appropriate weights on these goods. A related problem arises on the tariff revenue side. The decline in tariff revenues is likely to be less rapid than is implied by the usual fixed-weighted-average measures because increases in imports of products undergoing substantial tariff reductions raise the tariff revenues collected on those goods (and may even result in some increases in overall tariff revenues).

To overcome these problems, we replace the traditional trade-weighted-average tariff in each part of the model that is designed to capture the demand for imports or expenditure on imports with a tariff aggregator that takes into account the fact that reductions in higher tariffs tend to increase the volume of imports of these goods, making them more important as influences on the cost of imports. In the parts of the model that deal with tariff revenues, we take a different approach, replacing the fixed-weighted-average tariff with a variable-weight index in which the quantity of imports of a particular, finely specified commodity increases when its tariff declines and, hence, tariff revenues decline more slowly than would be implied by traditional aggregators The details of this approach are given in Laborde *et al* (2011); a short overview is presented below.

To understand the impact of a tariff reform on the real income of a country, we need to take into account three things: the impact of the tariff change on the consumers' costs of living and on the input costs of producers; its impact on producers' profits; and its impacts on the tariff revenues that are available for redistribution to consumers. Traditional measures of the size of the trade distortions affecting consumption, production and tariff revenues are based on trade-weighted averages of protection up to the level used for model-based analysis.

Because data on domestic production and consumption are only available in much more aggregated form than data on trade and protection, and because global modelling is best undertaken at an even higher level of aggregation, the trade-weighted averages used in this type of modelling exercise frequently cover many different tariffs, with over 200 six-digit tariffs in the average

product group used in the current paper. Unfortunately, weighted-average protection measures to this degree of aggregation are deeply flawed because they do not take into account the fact that the quantity weights on any particular product within a group change as the quantity of that product imported changes. If we start from a seriously distorted market, the quantity weights on the products with the highest protection are likely to be very small. When fixed weights are used in the analysis, these weights are assumed to stay the same throughout the analysis. In the most extreme case, products with very high tariffs are likely to have no trade, and, hence, have a zero weight.

In the analysis reported in this chapter, we deal with this problem by forming economically optimal aggregates of protection rates up to the level needed for use in our economic model. The essential difference between these estimates and traditional trade-weighted averages is that the optimal aggregators take into account the fact that the quantities of a good subject to a tariff depend upon the level of the tariff, with higher tariff rates resulting in lower import volumes. Including these changes in quantity weights has two important consequences. The first is that a tariff reduction of a given size on a particular product has a larger impact upon the cost of imports and on partners' export opportunities in later stages of liberalisation, after the tariff has been reduced substantially and its weight in the expenditure cost index has increased. The second is that the impacts of a tariff cut on tariff revenues may be quite different from what would be suggested when using a fixed weight, a difference that is largest in the early stages of liberalisation, when tariffs are at their highest levels and increases in import volumes have their largest impact on tariff revenues.

The simple graph presented in Figure 10.1 helps to understand both of these effects. In this figure we consider a single tariff in the absence of any other distortions. This tariff is initially t_0, and the initial quantity of imports is x_0. If we consider a reform that progressively reduces this tariff, the quantity of the good imported rises as we move along the line labeled x. When the tariff reaches zero, the weight on this good in the import-cost index becomes x_1 under the optimal expenditure aggregator. When we consider large cuts in tariffs, the difference between a weight of x_0 and x_1 may have important impacts on the estimated effects of a tariff change on the cost of living or on partners' market access. If we use the traditional fixed-weight approach, the weight may stay at a very low level, suggesting that even a large tariff change has little impact on the cost of living. This effect is clearly important for reforms that involve large tariff reductions on products whose tariffs are initially very high and, hence, have very low quantities of imports.

The marginal impact of a tariff decline on tariff revenues may be quite different from that on the cost of imported goods. While x_0 gives the marginal impact of a change in the tariff on the cost of imported goods, the impact on tariff revenues depends also on the change in the quantity of the good and on the initial tariff rate on that good. In the figure, this is shown by $x_0 + t_0 \, \mathrm{d}x/\mathrm{d}t$.
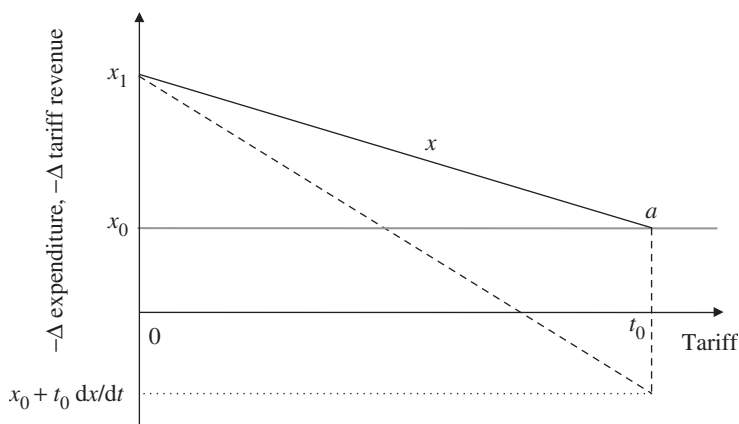
Figure 10.1: *Marginal impacts of tariff reductions on expenditure and tariff revenues.*

As the tariff declines further, the marginal effect of a reduction in the tariff on tariff revenues is shown by the dashed diagonal line. When the tariff is high, a tariff cut may (as shown) increase tariff revenues, because we start from a point beyond the peak revenues for this tariff.[1] As the tariff reduction proceeds, the incremental increases in tariff revenues decline, and turn into revenue declines where the dashed line crosses the horizontal axis. After the dashed line crosses the horizontal line corresponding to the initial level of imports, x_0, the tariff revenue aggregator shows a larger reduction in tariff revenues than the fixed-weight index, despite allowing for the increases in import volumes associated with tariff declines. The marginal decline in tariff revenues remains below the decline in required expenditure until the tariff reaches zero, and the impact of a tariff reduction on tariff revenues is the same as its impact on the cost of the good.

3   IMPLEMENTATION

We use a three-tier strategy to implement this approach in the World Bank's LINKAGE global computable general equilibrium model (van der Mensbrugghe 2011), a model that has been widely used for analysis of major policy reforms. We first calculate the tariff aggregators for expenditure and tariff revenues using the MacMapHS6 version 2.1 database (Boumellassa *et al* 2009) that provides detailed information on bilateral tariffs and trade flows at the HS6 level. We then modify the model to make a distinction between aggregate

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[1] Given the protectionist motivation of trade policy, the relatively high estimated values of the elasticity of substitution between products at fine levels, and the high and widely dispersed patterns of tariff rates frequently observed, this case seems likely to be common.

quantities computed at domestic and foreign prices that is needed for this type of global analysis (Anderson 2009). Finally, we perform a series of simulation experiments.

For the expenditure aggregators, we use the popular CES functional form that allows us to specify the ease of substitution between imported goods within the aggregates used in our modelling. By replacing the disparate tariffs in each group with the uniform tariff on all imported goods in the group that requires the same expenditure as is actually observed, we obtain a uniform tariff equivalent for expenditures on imports, including expenditures on imports of intermediate and final goods. For the tariff-revenue aggregators, we use a trade-weighted average, with the quantities of each good adjusting in a manner consistent with the same CES functional form, to obtain the uniform tariff that generates the same tariff revenues.

In implementing this approach we take into account two other levels of aggregation in applied modelling. The first of these arises from the practical problem that some regions in our global model are aggregates covering more than one economy. A second is the fact that the six-digit products considered above are likely to include varieties supplied by different countries. We deal with these challenges by using three different levels of nesting in the model. At the highest level of aggregation, in cases where we have multiple importing countries in an importing region, we assume CES preferences across importing countries with an elasticity of substitution σ_0. At the second level of aggregation, we assume CES preferences over the HS6 products within the composite goods appearing in the model. At this stage, our HS6 products are aggregates over varieties imported from all supplying regions. At this level, we use the procedures identified in Section 2 for the expenditure and tariff revenue aggregators, with elasticity of substitution σ_1. At the third level, we follow the Armington approach, assuming CES preferences across the six-digit varieties from different exporters. At this stage, we use an elasticity of substitution σ_2 between the products provided by different suppliers.

For this analysis, we need values of three different elasticities of substitution σ_0, σ_1 and σ_2:

- σ_0 is assumed to be equal to 1. We choose this value to hold constant each importer's share in the value of imports, primarily for want of better information;
- σ_1 is determined by the elasticity of substitution between imported six-digit products from all sources within a composite good, such as between apples and oranges within a composite of vegetables and fruits;
- σ_2 is the elasticity of substitution between varieties of six-digit products supplied by different countries/regions.

Assuming small trade shares for each product, which seems a generally reasonable approximation given that we have over 5,000 commodities at the HS6 level, these elasticities of substitution seem likely to be very close to the

elasticities of demand within the group. This allows us to draw on a number of relevant sets of parameter estimates in the literature. Kee *et al* (2008) provide estimates of import demand elasticities at the six-digit level, which average −3.12 for all HS products. These differ from the σ_1 elasticities that we seek in including substitution between domestic and imported varieties of the same six-digit product. Thus, if we were considering a fruit composite, we would include only substitution between imported apples, oranges and pears, while the Kee *et al* elasticities would allow substitution between domestic and imported varieties of each product. The exclusion of apples-to-apples comparisons suggests that our elasticities of substitution might be lower than the average for Kee *et al*. However, the high level of disaggregation at which we work suggests that our elasticities of substitution should not be too much lower than the Kee *et al* estimates.

Some other indirect evidence on the elasticities of interest is provided by Hummels and Klenow (2005, p. 712), drawing on Hummels (2001). They consider elasticities of substitution between varieties that are differentiated by HS6 product and by country of origin, concluding that these elasticities generally lie between five and ten. To the extent that these elasticities reflect the margins of substitution associated with both σ_1 and σ_2, we might expect them to be greater than our σ_1 elasticities of substitution but less than our desired estimates for σ_2. Broda and Weinstein (2006, p. 548) define varieties as goods produced by different countries, so that their elasticities of substitution are comparable to our σ_2 measures. They find (2006, p. 568) that the elasticity rises sharply as the categories considered become more finely distinguished, and estimate an average elasticity of substitution for products at the Standard International Trade Classification (SITC)-5 level (a slightly coarser level than HS6) of 13.1, compared with 4.0 at the SITC-3 level.

In our core scenario, we use $\sigma_1 = 2$, but we also consider a value of 5 in a sensitivity analysis. For σ_2, we use 10 in our base case, and raise it to 25 when using $\sigma_1 = 5$. A sensitivity analysis by Laborde *et al* (2011) shows that the results are much more sensitive to the value of σ_1 than σ_2. At this stage, we have limited information on the appropriate value for the critical σ_1 parameter. Based on our reading of the available literature, we tend to think that a value near 2 is probably the most appropriate, but we are open to the possibility that it might be higher.

4   RESULTS

The results for the key scenarios discussed above are presented in U.S. dollars in Table 10.1, which contains a number of interesting results about the implications of the negotiations for welfare. In considering the results, we first focus on those obtained using traditional trade-weighted averages of protection because these measures allow comparison with other studies that have used this approach.

Table 10.1: *Real income implications of Doha liberalisation ($ billion).*

	Total liberalisation		Doha formula cuts			Doha with flexibility		
	Weighted average	$\sigma = 2$	Weighted average	$\sigma = 2$	$\sigma = 5$	Weighted average	$\sigma = 2$	$\sigma = 5$
Australia and New Zealand	16.1	16.8	4.4	4.8	6.0	1.9	2.4	3.6
EFTA	20	31.6	6.1	7.6	9.5	3.0	4.2	6.2
EU27	135.3	180.4	45.4	58.7	81.2	29.6	39.3	52.9
United States	47.9	53.8	11.2	14.5	18.5	6.4	9.9	14.1
Canada	7.3	8.6	1.2	1.5	2.3	0.2	0.8	1.7
Japan	52	64.9	25.6	29.2	32.4	18.4	21.8	26.1
Korea, Rep. of and Taiwan (China)	77.1	98.7	19.6	21.2	23.0	9.3	9.8	10.5
Hong Kong (China) and Singapore	28.7	29.2	3.1	3.1	2.8	2.5	2.5	2.5
Chile	2.2	2.1	0.5	0.4	0.3	0.2	0.2	0.2
Bangladesh	−0.5	0.2	−0.8	−0.2	0.0	−0.4	−0.2	−0.3
Brazil	21.7	30.8	7.4	9.8	15.8	4.2	4.7	6.0
China	−21.4	−8.6	6.3	9.7	20.9	5.7	8.9	13.9
Egypt, Arab Rep. of	1.2	10	0.3	0.5	0.8	0.2	0.4	0.6
India	18.9	24.3	5.4	6.1	7.2	2.5	2.4	2.4
Nigeria	3	6.8	2.0	2.9	4.1	−0.1	−0.1	−0.1
Pakistan	4.1	4.6	0.7	0.9	1.3	0.1	0.1	0.1

Table 10.1: *Continued.*

	Total liberalisation		Doha formula cuts			Doha with flexibility		
	Weighted average	$\sigma = 2$	Weighted average	$\sigma = 2$	$\sigma = 5$	Weighted average	$\sigma = 2$	$\sigma = 5$
Indonesia	2.8	3.9	1.3	1.5	3.8	1.0	1.0	1.0
Thailand	6.6	8.7	3.7	4.5	5.7	1.8	2.6	4.2
Mexico	5.7	10.1	4.1	4.7	5.5	3.7	4.7	5.8
SACU	3.8	14.1	1.2	1.4	1.9	0.7	1.3	2.2
Turkey	8.2	11.3	1.5	1.6	1.7	0.4	0.5	0.6
Rest of Asia	6.8	24.5	2.4	2.9	7.3	−1.6	−1.2	−0.3
Rest of Latin America and the Caribbean	11.8	18.5	4.9	6.4	7.6	2.2	2.5	2.8
Rest of the world	26.4	64.3	2.2	3.8	4.9	1.4	1.9	2.5
Morocco and Tunisia	3.5	6.1	1.8	2.4	3.2	0.9	1.6	2.7
Rest of sub-Saharan Africa	6.4	9.4	1.7	2.3	3.1	−0.6	−0.6	−0.6
High-income countries	384.4	484	116.6	140.6	175.6	71.3	90.7	117.6
WTO developing countries	217.2	369.1	69.2	85.8	120.9	34.0	42.9	56.7
Low- and middle-income countries	111.4	241.2	46.5	61.5	95.1	22.2	30.7	43.7
Latin America and the Caribbean	41.5	61.6	16.9	21.3	29.2	10.4	12.1	14.8
Sub-Saharan Africa	13.2	30.4	4.8	6.6	9.0	0.1	0.6	1.5
World total	495.8	725.2	163.1	202.1	270.7	93.5	121.4	161.3

Using Weighted-Average Tariffs.   A first key finding is that the formulas used in the negotiations, if applied without exceptions as was envisaged by Baldwin (1986), would result in substantial real income gains. With the weighted-average tariff measures used in all previous analyses, the gains from applying the tariff reduction formulas for agriculture and non-agriculture would result in gains of around $163 billion per year,[2] or roughly one-third as large as those from full liberalisation. For low- and middle-income countries as a group, the gains would be a larger share of the total potential gains: a little over 40%. These real income gains are clearly very substantial, and would seem to more than justify the enormous investments that have been made in the decade of WTO negotiations under the Doha Agenda.

When the Flexibilities Are Introduced.   When the flexibilities are introduced the estimated benefits to the world as a whole decline sharply, from $163 billion to $93 billion where trade-weighted-average tariffs are used. The estimated gains for developing countries decline by more than half from the full application of the formulas, to $22 billion. These declines in the real income gains from reform are less surprising, since we expect that these exceptions will be used to sharply reduce the extent of liberalisation on relatively important products. The results from this scenario are particularly important from an analytical point of view, because they allow comparison with results from other studies of the impacts of the Doha Agenda.

These estimated real income gains from the Doha scenario with flexibilities can, in principle, be compared with other studies of similar scenarios. Comparisons with many earlier studies, such as Anderson *et al* (2006) are complicated by differences in the nature of the experiments conducted, changes in the baseline tariffs, and other reasons outlined in van der Mensbrugghe (2006). However, once attention turns to reasonably comparable experiments and models, the results do seem to be within the same order of magnitude. Bouët and Laborde (2010) use the MIRAGE model to consider a very similar liberalisation scenario for agricultural and non-agricultural trade and estimate real income gains in the same year (2025) of $69 billion, in comparison with the $93.5 billion reported above. The two main contributing factors to the differences between these results appear to be lower elasticities of substitution between domestic and imported goods in MIRAGE and, in the case of agriculture, the greater ability to reallocate land among agriculture uses in the LINKAGE model. Anderson *et al* (2006, p. 370) consider different experiments, with slightly deeper cuts in agricultural tariffs but only a stylised 50% cut in non-agricultural tariffs. Their estimated impact of $96 billion without exceptions is smaller than the $163 billion reported above, but this

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[2]These are the gains in 2025, representing an annual permanent increase of some 0.3% in global income, though with some slight upward drift generated by modest cumulation of dynamic gains in this version of LINKAGE.

is presented in 2001 dollars and is relative to a 2015 world economy that was only 65% of the size of the 2025 economy used in our analysis.

Another recent study of the Doha Agenda by Hufbauer *et al* (2010, p. 11) estimates a gain of $63 billion in 2010 dollars for the 'on the table' proposals (including flexibilities) for liberalisation of agriculture and non-agriculture. This result is broadly comparable with our estimate of $93 billion in 2025, an outcome that reflects two offsetting differences in methodology. On the one hand, the Hufbauer *et al* study uses a partial-equilibrium modelling framework that would typically result in lower estimates than a comparable general-equilibrium analysis. On the other hand, it uses a highest-tariff rule for selection of sensitive products that, in our view, underestimates the adverse impacts of the flexibilities in agriculture (see Jean *et al* 2011).

Using Optimal Aggregators.   When we address the aggregation problem by using our optimal aggregation procedure, the overall welfare gains from liberalisation rise. With an elasticity of substitution of two, the welfare gains from full liberalisation rise by 50% to $725 billion per year. The implications of aggregation for the results from full reform vary substantially across countries, with much larger measured gains for countries/regions such as the EU27, Brazil and Egypt, where some relatively costly protection is eliminated. The measured benefits actually decline for Chile, where a uniform tariff structure for non-agriculture means there are few additional measured gains from reform, and which faces low tariffs with little variability in its export markets because of its many free-trade agreements, and greater competition as the more heterogeneous tariffs facing its competitors in those export markets are reduced.

The gains from application of the formula without exceptions rise by roughly a quarter, from $163 billion to $202 billion when optimal aggregation techniques are used with an elasticity of substitution of 2. The gains to developing countries as a group rise by roughly a third, from $46.5 billion to $61.5 billion. When we turn to an elasticity of substitution of 5, the gains to the high-income countries are roughly 50% above their estimate using the weighted-average methodology. For developing countries, they are more than twice as high, at $95.1 billion per year. As in the case of full liberalisation, the implications of using optimal aggregation techniques vary considerably by country. The measured gains for countries/regions such as the United States, Europe, Brazil, China and Nigeria rise substantially as the costs of their own barriers decline and as they benefit from substantially improved market access. By contrast, economies such as Hong Kong (China), Singapore and Chile that have very few distortions of their own and/or preferential access to a number of markets see essentially no additional measured gains.

When we consider Doha liberalisation with flexibility, the gains decline considerably relative to the application of the formulas without exceptions. This is most striking when using the weighted-average approach, where the

global gains fall to $93.5 billion per year, and the gains to developing countries fall to $22 billion. When the aggregation problems are addressed using an elasticity of substitution of 2, the gains to the world rise to $121.4 billion, and the gains to developing countries rise from $22 billion to $30.7 billion. Moving to an elasticity of substitution of 5, the estimated global gains rise to $161 billion, with a little over a quarter of these gains ($43.7 billion) accruing to developing countries.

Allowing for flexibilities reduces the benefits of reform in almost all countries/regions, but by different amounts. If we focus on the case using an optimal aggregator with an elasticity of 2, we see a reduction of almost 40% in global gains. These losses tend to be larger in agricultural exporters such as Australia/New Zealand, Brazil, Canada and Thailand, where they are typically closer to 50%. These losses are similarly large in India, where the flexibilities allow retention of very high and costly agricultural barriers on import-competing products, and diminish potentially important export opportunities. The ability to retain high barriers, and the creation of greater variance in protection as some barriers are cut according to the formula and others are retained, leads to relatively high costs from the flexibilities in Korea and Taiwan (China). Interestingly, the use of these flexibilities has below-average costs for the United States (32% of formula gains), where a feature of the proposals, noted in Chapter 3, is the relatively small reduction under the Swiss formula of the NAMA tariffs facing the United States.

The estimated gains are presented in Table 10.2 as percentages of baseline income. As shown in this table, it is clear that the estimated real income gains are a small share of real income in virtually all cases, a result that is virtually always the case with Harberger-type estimates of real income gains, given their omission of the 'dynamic' gains considered in the next section. They also highlight the dramatic reduction in these gains that follows inclusion of the flexibilities in most cases, particularly in sub-Saharan Africa, where these flexibilities remove virtually all of the own-country liberalisation that is associated with real income gains in most other regions.

5   ADDING 'DYNAMIC' GAINS

The approach that we have taken in this assessment sticks very closely to the conventional Harberger (1971) measures of the real income gains from policy reform. These gains are typically quite small as a share of GDP, although, as we have seen, taking the problems of aggregation seriously raises the estimates substantially. In practice, there appears to be a very strong relationship between trade reform and productivity growth, and a key question is whether trade reform leads to, or follows from, this higher productivity growth. Many studies using aggregate data, following in the tradition of Arrow (1962), suggested that opening up to trade allowed firms to

learn by doing new activities, and increased productivity. However, a number of influential studies based on firm-level data, including Clerides *et al* (1998) and Bernard and Jensen (1999), concluded that increases in the productivity of exporting firms did not result from 'learning by doing', but from reallocation of resources to firms that were more productive even before entering export markets. Increased competition is another widely cited source of potential productivity gains following liberalisation, but now appears to have been less important as a source of productivity than was suggested in some earlier studies (Amiti and Konings 2007). Recent work (Handley 2011; Handley and Limão 2011; Laborde and Roy 2009) points to an important additional effect of reductions in policy uncertainty: it delays the entry of firms into exporting, which serves to reduce both the range of products exported and, hence, the benefits from product diversification. These gains appear to be particularly important when, as in Handley and Limão (2011), the gains associated with increases in foreign direct investment are taken into account.

In their survey of approaches to measuring the real income effects of trade reform, Francois and Martin (2010) identify several ways in which trade reform might generate gains additional to those estimated in this study. These are: increases in the range of varieties imported, increases in productivity arising from reallocation of resources to more productive exporting firms, improvements in the quality of goods imported and exported, and 'learning by doing' in exporting.

For modest reforms such as those proposed under the Doha Agenda, there seems good reason to be conservative regarding the likely increases in the range of varieties imported. A recent econometric study by Debaere and Mostashari (2010) concludes that modest liberalisation by an importing country appears to have very little impact on the range of products imported. Over the period from 1996 to 2006, they find that the share of manufactured imports into the United States attributable to new goods was less than 12%. From their econometric analysis, they conclude that between 5% and 12% of this increase could be explained by reductions in U.S. tariffs. Recent empirical work by Kehoe and Ruhl (2009) places greater emphasises on expansion of the volume of new products, but finds this to be large only in cases where one or both of a pair of trading partners undergoes a major structural transformation, and to be small for modest trade reforms. It seems likely that such major transformations are much more likely in the case of the sectoral liberalisation proposals considered in Chapter 11 than in the relatively modest liberalisation under the liberalisation formulas, with the important exception of the tariff peaks in manufactures in the industrial countries, which are to be sharply reduced without exceptions.

A simulation analysis by Zhai (2008) builds on the Melitz model to take into account both the preference for variety by users and improvements in productivity resulting from reallocation of resources to more productive firms. He concluded that allowing for both these phenomena could roughly

Table 10.2: *Real income implications of Doha liberalisation (% of baseline).*

	Total liberalisation		Doha formula cuts			Doha with flexibility		
	Weighted average	$\sigma = 2$	Weighted average	$\sigma = 2$	$\sigma = 5$	Weighted average	$\sigma = 2$	$\sigma = 5$
Australia/New Zealand	1.73	1.80	0.47	0.52	0.64	0.20	0.25	0.39
EFTA	2.87	4.53	0.88	1.09	1.36	0.43	0.60	0.89
EU27	1.03	1.37	0.34	0.45	0.62	0.22	0.30	0.40
United States	0.35	0.39	0.08	0.10	0.13	0.05	0.07	0.10
Canada	0.74	0.86	0.12	0.15	0.23	0.02	0.08	0.17
Japan	1.12	1.39	0.55	0.63	0.70	0.40	0.47	0.56
Korea, Rep. of and Taiwan (China)	3.94	5.04	1.00	1.08	1.17	0.48	0.50	0.54
Hong Kong (China) and Singapore	5.60	5.70	0.60	0.61	0.55	0.49	0.49	0.48
Chile	1.28	1.18	0.27	0.23	0.19	0.13	0.11	0.10
Bangladesh	-0.35	0.15	-0.61	-0.12	-0.04	-0.33	-0.19	-0.20
Brazil	2.55	3.62	0.87	1.15	1.86	0.50	0.56	0.70
China	-0.36	-0.14	0.11	0.16	0.35	0.10	0.15	0.23
Egypt, Arab Rep. of	0.78	6.21	0.21	0.33	0.53	0.12	0.22	0.37
India	0.87	1.12	0.25	0.28	0.33	0.11	0.11	0.11
Nigeria	2.60	5.81	1.70	2.44	3.46	-0.06	-0.06	-0.09
Pakistan	2.02	2.25	0.32	0.43	0.64	0.03	0.03	0.03

Table 10.2: *Continued.*

	Total liberalisation		Doha formula cuts			Doha with flexibility		
	Weighted average	$\sigma = 2$	Weighted average	$\sigma = 2$	$\sigma = 5$	Weighted average	$\sigma = 2$	$\sigma = 5$
Indonesia	0.47	0.65	0.21	0.24	0.64	0.16	0.16	0.17
Thailand	2.59	3.43	1.46	1.78	2.23	0.70	1.03	1.65
Mexico	0.61	1.08	0.44	0.51	0.59	0.40	0.50	0.62
SACU	1.07	3.98	0.32	0.40	0.53	0.21	0.36	0.63
Turkey	1.42	1.97	0.26	0.28	0.30	0.07	0.08	0.10
Rest of Asia	0.88	3.16	0.31	0.37	0.94	−0.21	−0.16	−0.04
Rest of Latin America and the Caribbean	0.77	1.21	0.32	0.42	0.49	0.14	0.17	0.18
Rest of the world	0.87	2.11	0.07	0.13	0.16	0.05	0.06	0.08
Morocco and Tunisia	2.94	5.07	1.48	1.97	2.66	0.74	1.35	2.27
Rest of sub-Saharan Africa	1.15	1.68	0.30	0.41	0.54	−0.10	−0.11	−0.10
High-income countries	1.05	1.32	0.32	0.38	0.48	0.19	0.25	0.32
WTO developing countries	1.04	1.76	0.33	0.41	0.58	0.16	0.20	0.27
Low- and middle-income countries	0.60	1.30	0.25	0.33	0.51	0.12	0.17	0.24
Latin America and the Caribbean	1.19	1.76	0.48	0.61	0.84	0.30	0.35	0.42
Sub-Saharan Africa	1.28	2.95	0.47	0.64	0.87	0.01	0.06	0.15
World total	0.90	1.31	0.30	0.37	0.49	0.17	0.22	0.29

double the welfare gains of global reform relative to standard approaches to trade liberalisation. These gains would likely be further augmented by the reduction in policy uncertainty analysed by Handley (2011). Improvements in the quality of goods exported may be an important source of gain to both importing and exporting countries (Hummels and Klenow 2005), although further work seems to be needed to assess whether these gains result primarily from economic growth or from trade reform.

Finally, a number of recent studies using firm-level data re-examine the evidence on productivity growth from 'learning by doing' following liberalisation. A number of these studies contradict the 'non-learning by doing' result with findings of empirically important increases in productivity after firms enter export markets in developing countries. Blalock and Gertler (2004) find evidence of an increase in firm productivity of between 2% and 5% after Indonesian firms enter export markets. Fernandes and Isgut (2011) find evidence of an increase in productivity from 'learning by exporting' when Colombian firms enter export markets. Van Biesebrock (2005) finds that African exporting firms had higher productivity before entering export markets, but that their productivity levels, and their subsequent rates of productivity growth, grew after entering export markets. Girma *et al* (2004) found both higher initial levels of productivity and higher productivity growth rates after entry into exporting. Moreover, these sources of productivity gain from improvements in production processes are additional to any resulting from improvements in product variety or product quality.

An important study by Amiti and Konings (2007) finds large impacts on firm productivity—more than 1% productivity increase per percentage point reduction in import duties—when duties on intermediate inputs are reduced. While they conclude that the increase in productivity from the input side is much larger than that from increased competition between firms in output markets, they are unable to disaggregate the improvement in productivity into components arising from input variety, input quality and learning effects. Whatever the source of these effects, it appears that they are considerably larger than the real income effects estimated in this study using conventional approaches to measuring real income effects.

6   CONCLUSIONS

In this chapter, we ask how and why governments might dismantle trade barriers that they, or their predecessors, have erected, and how an agreement to do this might generate real income gains. With this as background, we turn to the methodological approach used to measure the changes in real income resulting from the reforms outlined in the draft Doha agreements. Finally, we turn to the results obtained using these analytical techniques.

A key feature of this chapter is the use of new procedures for aggregating tariffs. Most previous studies have used the traditional trade-weighted-

average approach that unnecessarily wastes information contained in the detailed tariff and trade data that are needed for the analysis. The essence of the problem is that traditional trade-weighted averages ignore increases in the weight on individual tariffs as these tariffs decline. By allowing for this, we are able to obtain improved estimates of the impacts of reforms, particularly complex reforms involving changes in the tariffs on many different products, and changes that may increase the dispersion of tariff rates.

The analysis presented in this chapter shows that the liberalisation provided for under the December 2008 modalities would yield some quite worthwhile welfare gains. Liberalisation undertaken using the tariff-cutting formulas alone, without exceptions, would yield about a third of the potential benefits from global trade reform. Once the flexibilities are taken into account, the benefits decline to just under 20% of the potential gains when the traditional trade-weighted-average approach to tariff aggregation is used.

If we use optimal aggregation techniques to capture the effects of the important variations in tariffs within commodity groups, the welfare gains captured are noticeably larger, both for total liberalisation and for partial reform. Even with a very conservative estimate for the relevant elasticity of substitution, we find that the estimated welfare gains increase by around 30%, to $121 billion globally. The estimated welfare gains for developing countries as a group, and for many individual developing countries, rise more than proportionately. The impacts of using optimal aggregators vary considerably between countries, with countries undertaking substantial reduction in highly variable tariffs registering relatively large additional gains, with countries undertaking little reform seeing little additional benefit.

It seems likely that the estimated welfare gains reported in this study substantially underestimate the full real income gains from the reforms proposed in the negotiations. While the methodology for robust empirical analysis of such reforms remains poorly developed, it appears that the additional gains come from three primary sources: increases in the variety of goods imported both for consumption and as intermediate inputs; reallocation of inputs towards more productive firms engaged in exporting; and 'learning by doing' in new export-oriented activities.

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11

Sectoral Initiatives in the Doha Round

DAVID LABORDE

1   SECTORAL INITIATIVES: A NEW HOPE

The role of agricultural trade liberalisation has been emphasised since the beginning of the Doha Round negotiations. As agriculture is the leading employment sector for the majority of poor people around the world, removing agricultural trade distortions, especially those of developed countries, will be the cornerstone of the development dimension of the round. Although the Uruguay Round brought agriculture under WTO rules, both tariffs and subsidies remain high in this sector and no large multilateral liberalisation can occur before the completion of the Doha Round. Since the beginning of the GATT, tariffs in the manufacturing sectors, on the other hand, have been progressively reduced. Countries in the OECD have led the way in reducing them, leaving limited space for further cuts and gains, except in products like textiles and clothing. This asymmetry leads to an inherent challenge. Larger efforts are expected in the agricultural sector (a highly sensitive sector in all countries), while market-access gains for non-agricultural products into OECD countries will be limited due to previous tariff reductions.

   With limited possibilities for gain in the manufacturing sectors,[1] the fuel that drove previous rounds of negotiation rounds is running perilously close to dry, as noted in Martin and Messerlin (2007). This makes it difficult for policymakers in developed economies to engage the export interests whose support, and even enthusiasm, was critical in reaching earlier multilateral agreements. Without engaging these interest groups, it is difficult for policymakers to find a solution to counterbalance the pressure from agricultural interests to retain their protection. Since the critical determinant of success in a negotiation lies in ensuring the political costs of the tariff cuts do not exceed the political 'capital' available to the negotiators, this creates a difficult, and potentially insuperable, problem for negotiators. Especially in times of

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[1]It is expected that negotiations on services will lead to smaller gaps between applied policies and countries' policy commitments, but virtually no new liberalisation. See Chapter 5 by Borchert, Gootiiz and Mattoo.

economic crisis, it may be impossible to secure passage of a trade agreement only on the basis of the 'development' promises for the rest of the world.

Beyond solving the basic domestic political-economy equation, the Doha Round embodies a paradigm shift in global trade negotiations and their governance. A transatlantic agreement between the EU and the United States is no longer sufficient for a global agreement. Emerging countries, in particular Brazil, India and China, have become key players in terms of commercial and diplomatic strength. Obviously, increasing the number of players increases the difficulty of finding a positive outcome to the bargaining game (Bouët and Laborde 2010). It has also resulted in concerns about the traditional GATT practice of treating all developing countries in the same way in terms of disciplines and SDT. For example, key OECD countries seek more market access to the growing markets of emerging economies, partly on the grounds that these countries will benefit the most from developed countries' concessions (*eg* Brazil in agriculture, China in manufacturing).

Even though the draft modalities of the Doha Round would lead to substantial gains in market access and the security of that market access, the negotiations are still deadlocked. In this context, the sectoral initiatives appear to many to offer a very attractive potential solution to the problem. Indeed, they combine three critical dimensions. The first is that they are attractive to important export-oriented interest groups in developed countries, increasing the interest of the industrial countries in concluding the round. In particular, they have engaged the appetite of the private sector in the United States, a key country that currently has substantially smaller estimated welfare gains than the EU (see Table 10.1 in Chapter 10). Second, they could deliver large and effective cuts to applied rates of value to almost all members in the very short run.

By comparison, the Swiss formula used in the NAMA negotiations has two limitations. For developed countries with low initial tariffs and very little binding overhang, the Swiss formula with a coefficient of 8 used in these negotiations will translate into a cut of less than 50% in average bound tariffs. This is because of the fundamental nature of the formula in the current tariff structure. With 53% of the HS6 products, and more than 75% of MFN imports of these countries, having tariffs of 4% or lower, the cuts in average tariffs are likely to be modest. Had the objective of the negotiations been simply to deliver wide trade liberalisation in NAMA, a simple proportional cut would have been more efficient than the Swiss formula, whose key strength is in addressing tariff peaks that are now of limited relevance for imports of manufactured goods from other industrial countries. For developing countries, the Swiss formula options under consideration are more effective in reducing bound tariffs, but the large binding overhang and the flexibilities available to developing countries translate a sizeable cut in average bound tariffs (45%) into a much smaller cut in applied rates (13%).

The proposed modalities of liberalisation for the sectoral initiatives are more drastic than those for the formula-based negotiations. Developed economies would adopt a zero-for-zero rule (full tariff elimination for the covered products). Developing countries would bind their tariff to a low level, generally between 3% and 5% depending on the sector, that would not usually be achieved with the core Swiss formula with the coefficients of 20 to 24 used under the NAMA modalities. Finally, the sectoral initiatives involve flexible participation as long as a critical mass of world trade is covered. This last dimension is critical, since it would substantially reduce the number of participants needed in the bargaining game (OECD and emerging economies) and would respect the request in the NAMA framework for lower liberalisation by most developing countries.

While a superficial look at the sectoral initiative proposals might give the impression that they are a minor issue in the overall negotiation process, we demonstrate in this chapter that they can in fact deliver large market-access gains and potentially even double the overall welfare effects of the Doha Round. However, they also involve a redistribution of the gains from emerging economies to developed countries, a challenging feature in a 'development round'. To shed light on this complex but critical issue, we undertake a detailed analysis of the effects of the different proposals on sectoral initiatives for the Doha Round as defined in Appendix 6 of the December 2008 modalities (TN/MA/W/103/Rev.3). The different initiatives are described in Table 11.1, looking at each of the 14 initiatives implemented with alternative country coverage and with/without SDT. We will focus on the former case, which appears to be the most likely to get the participation of key emerging countries.

The next section gives details of the methodology used and the consequences on market access in a similar way to that used in Laborde and Martin (Chapter 3). Section 3 provides estimates of the trade and welfare consequences through CGE simulations performed with the MIRAGE model. These estimates are directly comparable with results from Chapter 6.

2 MARKET-ACCESS CONSEQUENCES: NON-AGRICULTURAL MARKET ACCESS STRIKES BACK

2.1 Methodology

Fourteen industrial sectors are currently listed for possible sectoral initiatives in the draft negotiating texts. At the product level, some overlap exists among these initiatives. To capture the potential impacts of these initiatives, we follow a methodology to that used in the other data-intensive chapters of this book, relying on the MAcMap-HS6 version 2 data set (Boumellassa *et al* 2009) for detailed information on tariffs and trade, and using the political-

economy criterion developed by Jean *et al* (2010) when discretionary choices of products are allowed.

The implementation of the sectoral modalities is carried out step-by-step. For each of the 14 initiatives listed in Appendix 6 of the December 2008 modalities (WTO 2008), we follow the following sequential procedure.

Tariff information: we start from the tariff simulations of the AMA and NAMA draft modalities made by Laborde and Martin (see Chapters 2 and 3) at the six-digit level, including implementation of the formulas and flexibilities.

Identification of the products: for the products listed under each sectoral initiative, we consider all tariff lines included in each HS6 position listed, even if some of them should be excluded according to the subsection of the draft modalities. All HS6 codes provided in the 2002 revision (Rev.2) are converted to the Rev.1 (1996) nomenclature.

Identification of the participating countries: for each sectoral initiative, two groups of countries are identified:

(a) The *sponsoring* countries correspond to the supporting countries of the initial proposal. They are listed in column 5 of Table 11.1. The table also displays the share that these countries represent in total WTO imports for the tariff lines covered in the relevant sectoral initiative (column 6, 2001–4 averages).

(b) *Additional* countries. For each initiative, column 7 displays the additional countries needed to reach at least 80% of WTO imports, excluding intra-EU trade. Lists of additional countries, beginning with the largest importers and working down, are displayed in Table 11.1, column 7.

Tariff reduction: all products covered by an initiative are assumed to become free of any duty or quota with exceptions for developing countries, as stated below. The implementation period follows the guidelines included in the draft modalities as summarised in the last two columns of Table 11.1.

Exceptions: to comply with the SDT principle, some exceptions are foreseen by the draft modalities. The exact procedure for exceptions is discussed in the next section.

Apart from the EU, no specific treatment is used for customs unions (*eg* participation of all member states, same product selection in the SDT options).

Special and differential treatment is implemented through two mechanisms in coherence with the draft modalities. First, as indicated previously, developing countries benefit from a longer period of implementation. This mechanism does not lead to observable changes in the final tariff rates presented in this chapter. Second, developing countries may exclude some products from each sectoral initiative in which they may take part. This is the option *i* mentioned

in most of the SDT provisions for the sectoral initiatives. The general rule is as follows.

The member binds up to X percent of the tariff lines covered by the initiative at Y percent, provided these lines do not exceed Z percent of the total value of the member's imports covered by the initiative. We implement the X percent on the HS6 product nomenclature. Z is based on the average imports of the member during the period 2001–4. The product selection for the SDT provisions is done using the Jean *et al* political-economy criterion (2010) with an extended version of the Kee *et al* (2008) import elasticities at the HS6 level.

Since the implementation of all sectoral initiatives may remain unreachable (all sectoral initiatives would represent 90% of world NAMA trade; see Table 11.1), we have organised[2] them into three categories: sectoral initiatives having substantial initial support 'S33%' (when supporting countries represent more than 33% of world imports; this is the case in seven initiatives[3]); an intermediate category 'S25%' (supporting countries representing 25–33% of world trade; this is the case for the textile and clothing initiative); and the remaining initiatives[4], where support is below 25% and sometimes as low as 0.7% (as is the case of hand tools; see Table 11.1, column 6).

2.2 Market-Access Consequences

Figure 11.1 displays the main consequences of the sectoral initiatives with a simple metric: the reduction in duties collected on imports and exports, in AMA and NAMA, by different groups of countries under alternative tariff cuts, assuming that trade flows will remain constant at their 2007 levels. While this computation is crude, it does not require modelling assumptions and it helps to show the relative importance of concessions among sectors and groups of countries.

For agricultural products, and under current modalities (including the provisions for sensitive products), simple computations show that duties levied on world exports would decrease by $17 billion out of global collections of $82.5 billion, with 95% of the concessions granted by developed countries and 40% benefiting developing countries. For non-agricultural products, duties would be cut by $53 billion; a third of this amount would come from a $19 billion (12.3%) reduction of levies by developing countries and two-thirds ($34 billion) by high-income countries (by a reduction of 39% of levies currently applied).

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[2]Using 2007 trade data does not change the results in terms of ranking of initiatives or list of participants.

[3]Chemicals; electronics and electrical products; industrial machinery; enhanced health care; forest products; gems and jewelry; and sports equipment.

[4]Fish and fish products; hand tools; raw materials; toys; bicycles and parts; and vehicles and parts.

Table 11.1: *Description of the initiatives.*

Init.	Sector	Number of HS6 products	% of NAMA imports	Sponsoring countries	% of world imports covered by sponsoring countries	Additional countries needed to reach 80% of world trade	SDT			Implementation periods	
							X (%)	Y (%)	Z (%)	D'loped	D'ping
A	Bicycles and parts	19	0.5	Japan, Singapore, Switzerland, Taiwan (China), Thailand	12.9	Australia, Canada, China, Korea, Mexico, United States, EU	5	5	5	5	5
B	Chemicals	911	12.2	Canada, EU, Japan, Norway, Singapore, Switzerland, Taiwan (China), United States	56.9	Australia, Brazil, China, Hong Kong (China), Korea, Mexico	4	4	4	6	11
C	Electronics and electrical products	489	29.5	Hong Kong (China), Japan, Korea, Singapore, Thailand, United States	45.2	China, Taiwan (China), EU	5	5	5	3	5
D	Enhanced healthcare	156	5.1	Singapore, Switzerland, Taiwan (China), United States	33.5	Australia, Canada, China, Japan, Mexico, EU	5*	5*	5*	1	3+5
E	Fish and fish products	107	1.1	Canada, Hong Kong (China), Iceland, New Zealand, Norway, Oman, Singapore, Thailand, Uruguay	10.9	Japan, United States, EU	15	5	100	1	5
F	Forest products	224	3.8	Canada, Hong Kong (China), New Zealand, Singapore, Switzerland, Thailand, United States	43.9	China, Japan, Korea, Mexico, EU	4	4	4	1	4

Table 11.1: *Continued.*

Init.	Sector	Number of HS6 products	% of NAMA imports	Sponsoring countries	% of world imports covered by sponsoring countries	Additional countries needed to reach 80% of world trade	SDT			Implementation periods	
							X (%)	Y (%)	Z (%)	D'loped	D'ping
G	Gems and jewellery	52	2.9	Canada, EU, Hong Kong (China), Japan, Norway, Singapore, Switzerland, Taiwan (China), Thailand, United States	68.2	India	3	3	3	1	5
H	Hand tools	32	0.1	Taiwan (China)	1.4	Australia, Canada, China, Hong Kong (China), Japan, Korea, Mexico, Norway, Singapore, Switzerland, United States, EU	5	5	5	5	5
I	Industrial machinery	432	7.5	Canada, EU, Japan, Norway, Singapore, Switzerland, Taiwan (China), United States	51.3	Australia, China, Hong Kong (China), Korea, Malaysia, Mexico, Thailand, Turkey	4	5	4	4	7
J	Raw materials	137	12.0	United Arab Emirates	0.7	Canada, China, Hong Kong (China), Japan, Korea, India, Singapore, United States, EU	5*	5*	5*	1	1
K	Sports equipment	28	0.4	Japan, Norway, Singapore, Switzerland, Taiwan (China), United States	43.6	Hong Kong (China), EU	5	5	5	5	5

Table 11.1: *Continued.*

Init.	Sector	Number of HS6 products	% of NAMA imports	Sponsoring countries	% of world imports covered by sponsoring countries	Additional countries needed to reach 80% of world trade	SDT			Implementation periods	
							X (%)	Y (%)	Z (%)	D'loped	D'ping
L	Textiles and clothing and footwear	851	7.6	EU	24.8	Canada, China, Hong Kong (China), Japan, Korea, Mexico, Switzerland, United Arab Emirates, Turkey, United States	5*	5*	5*	5*	5*
M	Toys	21	0.6	Hong Kong (China), Taiwan (China)	8.7	Canada, United States, EU	5*	5*	5*	1	3
N	Vehicles and vehicle parts	104	13.4	Japan	4.8	Canada, China, Hong Kong (China), Korea, Mexico, United States, EU	10	5	10	5	5

Trade information is based on a 2001–4 average. HS6 nomenclature used is Rev.1 1996. Additional countries are selected to cover 80% of WTO members' imports. '*' indicates that this information is not available in the draft modalities and we assume the central value. In the SDT option, X indicates the % of tariff lines, Y the tariff cap and Z the limitations in terms of imports value.

Including the sectoral initiatives significantly affects this picture. The seven initiatives gathered in the S33 group bring the developed countries' concessions to $64 billion (instead of $50 billion) and eliminate the asymmetry between these countries' concessions and gains. For developing countries, they also increase the gains substantially from $38 billion to $61 billion; at the same time, they reduce the initial asymmetry between duties saved on exports and waived on imports. Adding textile and wearing apparel in S25 increases the gains even more and restores some of the asymmetry of net gains in duties forfeited in favour of developing economies.

Effects on applied rates for key countries and for each initiative are displayed in Table 11.2 (in this case, without SDT to show the most extreme case). As previously shown, with the inclusion of all of the sectoral initiatives, we can double (or more) the effects of the DDA on market access. Of course, this gain is related to the large set of products covered (*ie* more than 90% of NAMA trade) and the zero–zero approach. As expected by their product/trade coverage, the most important initiatives are:

1. chemicals (B);
2. electronics (C);
3. textiles and clothing (L);
4. vehicles (N);
5. machinery (I);
6. raw materials (J).

Even with SDT, we see that participating developing countries would make larger concessions in absolute terms (tariff points) than developed countries: their tariffs would fall by 2.2 points (a 58% cut) with implementation of all the proposals[5] versus 0.8 points with the core modalities (a 27.5% cut); this is compared with 1.3 and 0.6 points for developed economies (a 53% and 22% cut), respectively. These larger cuts are driven by the concessions of China (−1.2 points with the formula, −3.4 points with the S33 and −3.7 points with the S25 group of initiatives) and India (up to −6.8 points with all the sectorals). Since developing countries have initially higher levels of protection, this result is not surprising, but confirms the potential tensions surrounding this issue. Last, but not least, even if they are not involved directly in these negotiations, LDCs can gain significantly from them, increasing the initial access driven by the Swiss formula by 60%. Even if the DFQF initiative discussed in Chapter 6 can deliver crucial additional market access for LDCs, the proposal initiatives will reduce MFN tariffs on several products of interest—potentially excluded from the DFQF—particularly for developing markets.

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[5]It is important to keep in mind that 'all the proposals' or a reference to the 'S33' bundle does not imply that all developing/emerging countries join and apply 'all the proposals' or all the proposals include in the S33. Participation is defined by Table 11.1. For instance, in none of the results does India apply proposal C on electronics.
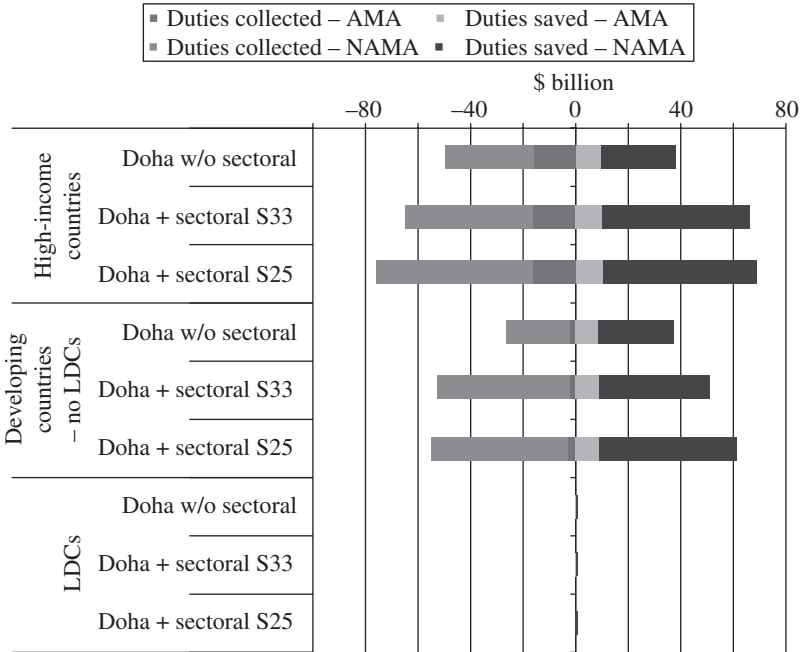
Figure 11.1: *Reduction in collected duties, static analysis on 2007 trade level, including SDT.*

This graph displays the reduction in collected duties using percentage tariff changes from the Doha scenario considered and 2007 trade flow values. 'Doha cut' is the relative contribution of the core DDA modalities. 'Additional cut S33%' includes the additional effects of all sectoral initiatives for which supporting countries represent 33% of world trade. 'Additional cut S25%' includes the additional effects of all sectoral initiatives for which supporting countries represent between 33% and 25% of world trade.

For developed countries, the largest market-access gains (via a reduction in tariffs faced by their exports) are delivered by initiatives B (chemicals, the most important for the United States), N (vehicles, particularly important for the EU, Japan and Korea), C (electronics), I (machinery) and L (textiles and clothing, for Korea).

On this metric, the improvements in market access for developing countries are smaller. The textile and clothing (L) initiative is more important, especially for India. In addition, China would benefit significantly in terms of market access from the chemicals (B) and electronics (C) initiatives.

Finally, it is important to keep in mind the relative contribution of the sectoral initiatives in terms of NAMA market access. The broad picture is given in Figure 11.2. We see that group S33 would be sufficient to double the gains from developed countries in terms of market access and to more than double them for a country like the United States. For developing countries,
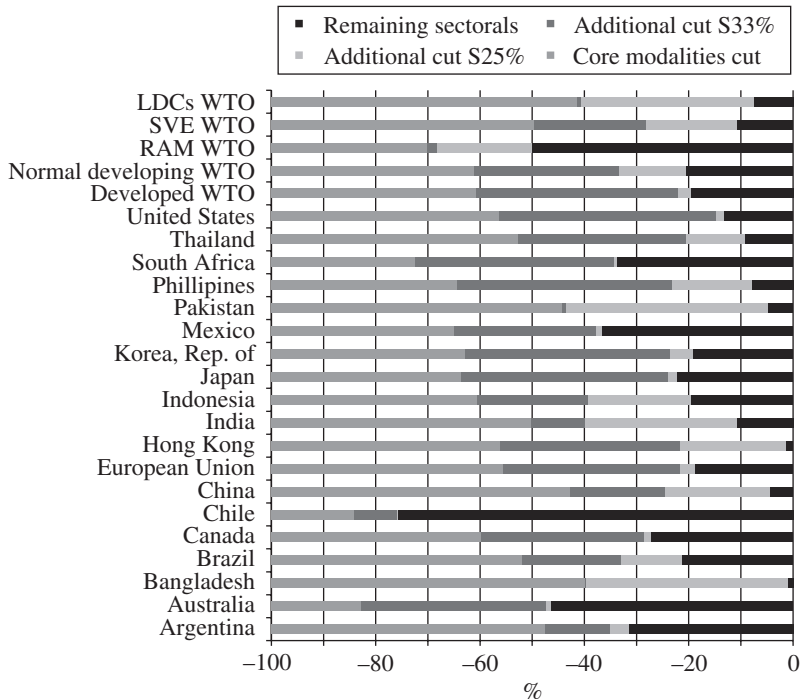
Figure 11.2: *Decomposition of relative contribution of sectoral initiatives to market-access gains in NAMA, including SDT.*

This graph displays the relative tariff reductions on exports generated by the different components of the NAMA modalities. 100% equals the Doha modalities and all 14 NAMA sectoral initiatives. 'Doha cut' is the relative contribution of the core DDA modalities. 'Additional cut S33%' includes the additional effects of all sectoral initiatives for which supporting countries represent 33% of world trade (initiatives B, C, D, F G, I and K). 'Additional cut S25%' includes the additional effects of all sectoral initiatives for which supporting countries represent between 33% and 25% of world trade (initiative L). 'Remaining sectorals' represent the marginal effects of remaining initiatives.

the effects of the S33 bundle remain more limited (+47%). Adding wearing apparel to the package (S33 to S25) has significant effects compared with the impacts on developed economies by increasing the market-access gains by 84%; this particular initiative is quite important for some LDCs (Figure 11.2 includes the DFQF 97% in the Doha package)[6] and RAM (*ie* China and Vietnam) countries.

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[6]As shown in the next section, the improved market access for LDCs will be combined with increased preference erosion leading to a negative net outcome.

Table 11.2: *Tariff reduction (points) on average NAMA tariffs by country/region, with SDT (trade weighted).*

(a) Tariffs applied on imports

	Doha without sectorals	S33	S25	S: all	Sectoral initiatives													
					A	B	C	D	E	F	G	H	I	J	K	L	M	N
Selected countries																		
Canada	−0.4	−0.5	−0.7	−0.8	−0.4	−0.5	−0.4	−0.4	−0.4	−0.4	−0.4	−0.4	−0.5	−0.4	−0.4	−0.6	−0.4	−0.6
EU	−0.8	−1.2	−1.4	−1.6	−0.8	−0.9	−1.0	−0.8	−0.8	−0.8	−0.8	−0.8	−0.8	−0.8	−0.8	−1.0	−0.8	−1.0
Japan	−0.6	−0.7	−1.0	−1.2	−0.6	−0.6	−0.6	−0.6	−0.7	−0.6	−0.6	−0.6	−0.6	−0.7	−0.6	−0.9	−0.6	−0.6
Korea	−1.3	−2.6	−2.8	−3.8	−1.3	−1.7	−1.9	−1.3	−1.3	−1.4	−1.3	−1.3	−1.6	−2.2	−1.3	−1.5	−1.3	−1.5
United States	−0.7	−0.9	−1.2	−1.5	−0.8	−0.8	−0.8	−0.8	−0.7	−0.7	−0.8	−0.7	−0.8	−0.7	−0.7	−1.0	−0.7	−0.9
Brazil	−0.7	−2.3	−2.3	−2.3	−0.7	−2.3	−0.7	−0.7	−0.7	−0.7	−0.7	−0.7	−0.7	−0.7	−0.7	−0.7	−0.7	−0.7
China	−1.2	−3.4	−3.7	−4.7	−1.3	−2.2	−2.0	−1.3	−1.3	−1.3	−1.2	−1.2	−1.8	−1.4	−1.2	−1.6	−1.2	−1.9
India	−0.9	−3.9	−3.9	−6.8	−0.9	−0.9	−0.9	−0.9	−0.9	−0.9	−3.9	−0.9	−0.9	−5.4	−0.9	−0.9	−0.9	−0.9
Aggregates																		
High-income countries	−0.6	−0.9	−1.1	−1.3	−0.6	−0.7	−0.7	−0.6	−0.6	−0.6	−0.6	−0.6	−0.7	−0.8	−0.6	−0.8	−0.6	−0.7
Developing countries (non-LDC)	−0.8	−1.7	−1.9	−2.2	−0.8	−1.1	−1.1	−0.9	−0.8	−0.8	−1.0	−0.8	−1.0	−0.8	−0.8	−0.9	−0.8	−1.0
LDCs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 11.2: *Continued.*

(b) Tariffs faced on exports

	Doha without sectorals	S33	S25	S: all	Sectoral initiatives													
					A	B	C	D	E	F	G	H	I	J	K	L	M	N
Selected countries																		
Canada	−0.1	−0.2	−0.2	−0.2	−0.1	−0.1	−0.1	−0.1	−0.1	−0.1	−0.1	−0.1	−0.1	−0.1	−0.1	−0.1	−0.1	−0.1
EU	−0.6	−1.2	−1.3	−1.5	−0.6	−0.8	−0.7	−0.6	−0.6	−0.6	−0.7	−0.6	−0.8	−0.7	−0.6	−0.7	−0.6	−0.8
Japan	−1.0	−1.8	−1.9	−2.5	−1.0	−1.2	−1.4	−1.0	−1.0	−1.0	−1.0	−1.0	−1.2	−1.0	−1.0	−1.0	−1.0	−1.5
Korea	−0.9	−1.9	−2.1	−2.3	−0.9	−1.2	−1.2	−1.0	−1.0	−1.0	−1.0	−0.9	−1.1	−1.0	−0.9	−1.2	−0.9	−1.3
United States	−0.3	−0.7	−0.7	−0.8	−0.3	−0.5	−0.4	−0.3	−0.3	−0.3	−0.3	−0.3	−0.4	−0.3	−0.3	−0.3	−0.3	−0.4
Brazil	−0.4	−0.6	−0.7	−1.0	−0.4	−0.5	−0.5	−0.5	−0.5	−0.5	−0.5	−0.4	−0.5	−0.6	−0.4	−0.6	−0.4	−0.5
China	−1.3	−1.7	−2.2	−2.3	−1.3	−1.4	−1.5	−1.3	−1.3	−1.3	−1.3	−1.3	−1.3	−1.3	−1.3	−1.8	−1.3	−1.3
India	−1.0	−2.0	−2.0	−2.1	−1.0	−1.2	−1.0	−1.0	−1.0	−1.1	−1.0	−1.0	−1.0	−1.2	−1.1	−1.7	−1.0	−1.0
Aggregates																		
High-income countries	−0.6	−1.1	−1.2	−1.5	−0.6	−0.8	−0.7	−0.6	−0.6	−0.6	−0.6	−0.6	−0.7	−0.6	−0.6	−0.7	−0.6	−0.8
Developing countries (non-LDC)	−0.8	−1.1	−1.4	−1.6	−0.8	−0.9	−0.9	−0.8	−0.8	−0.8	−0.8	−0.8	−0.8	−0.9	−0.8	−1.1	−0.8	−0.8
LDCs	−1.0	−1.0	−1.6	−1.8	−1.0	−1.1	−1.1	−1.0	−1.0	−1.0	−1.0	−1.0	−1.0	−1.0	−1.0	−1.3	−1.0	−1.0

Source: author's computations.

3   ECONOMIC IMPACTS: THE RETURN OF LARGE GAINS

In this section we assess the effects of the sectoral initiatives using the MIRAGE dynamic multisectoral, multicountry computable general equilibrium model using the same methodology as Bouët and Laborde in Chapters 6 and 12. We use the same tariff aggregation procedure (optimal tariff aggregator as defined in Laborde *et al* (2011)) and the same baseline and model version (see the textual Appendix (Section 7) in Chapter 6 for additional details). The only difference from the approach used in those chapters is a slightly modified sectoral nomenclature in order to better capture the coverage of the sectoral initiatives.

As before, we focus only on the trade and real income effects related to the tariff and domestic reduction of the round in AMA and NAMA (no consideration is given to services or trade facilitation). We compare the 'central' Doha scenario (AMA and NAMA modalities with flexibilities but without sectoral initiatives) with each bundle of initiatives.

3.1   *A Strong Source of Global Gains…*

The benefits for the global economy of concluding a substantial agreement on sectorals would be considerable, as shown in Figure 11.3.[7] If all sectors listed were included with SDT factored in for developing countries, world real income gains could double in comparison with the other Doha AMA and NAMA modalities and reach $180 billion based on the MIRAGE baseline projections. World trade in goods and services could increase by more than 7%, and 9% for NAMA trade (being worth a constant $1.6 trillion in 2025).

More realistically, if the seven most 'popular' sectors listed above were to go ahead with SDT and 80% of sectoral world trade covered under each initiative, world income gains would still be 50% larger than under the current Doha scenario, reaching 0.23% of world real income and increasing NAMA trade expansion by 60% at $970 billion (+5.6% of world NAMA trade). The S25 scenario delivers an intermediate outcome, still increasing welfare gains by 70% and leading to a more homogeneous pattern of trade expansion between AMA and NAMA trade flows (above 7.5% of global trade growth for each), a remarkable result considering the initial gap in the level of protection and the potential reduction in the power of the tariff.

Looking at global trade by sector (Table 11.3), the effects are even stronger, with the impact on a particular sector depending heavily on whether it is included or excluded from the initiative. Therefore, looking at all the initiatives gives a good overview of potential gains. For most sectors directly

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[7]The results for the scenario 'Doha with flexibilities' are directly comparable with those of Table 12.3. Small differences occur due to the different aggregation (sectors and regions used in the CGE) that leads to changes in some effects (factor reallocation, *etc*) since the more disaggregated the model is, the more valuable the elimination of distortions.
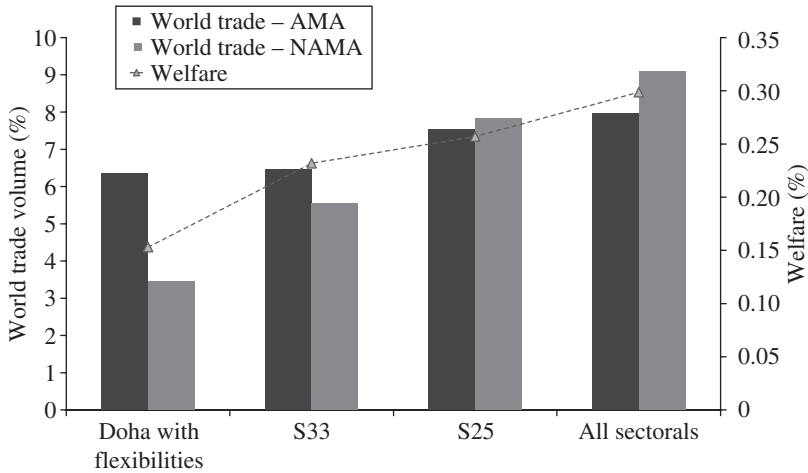
Figure 11.3: *Welfare and world trade changes, compared with the baseline (in percent). Source: MIRAGE simulations.*

involved in the initiatives, global trade is multiplied 2.5 times or more. Relative effects are stronger for raw commodities (mineral resources, oil, forestry products) for which initial tariffs are low. This is because the Swiss formula will have little effect on tariffs for these commodities, and the sectoral initiative plays the important role of eliminating these small tariffs (*eg* for fossil fuel, trade creation from the formula reductions is multiplied by 5.8, but the initial increase is only 0.76). Nevertheless, some sectors combine large effects and significant final increase, such as the motor vehicle sector (multiplied 4 times compared with the Swiss formula, which reaches 7.2%) or the metals sector (multiplied 3.8 times leading to a 4.9% increase of global trade).

Adding the sectoral initiatives to the formula cuts from the Doha Round would lead to a very large expansion of global trade in the textile sector (+20% compared with the baseline for 'S: all' and S25%, which includes the textile/wearing apparel initiative) and the capital goods sector (+24%). Another interesting effect of these initiatives is their positive effect on other sectors such as cotton (plant fibres), for which the decline in global trade estimated in our core scenario (driven by some subsidy reduction) is limited when the textile and wearing apparel sector is liberalised. The livestock trade experiences the same effect for the same reason (driven by the leather market). Due to the importance of non-agricultural goods in global trade, the expansion of these sectors also benefits international trade in services with a threefold increase of international transportation expansion (reaching +1%).

Table 11.3: *Global trade, main impacted sectors (percentage changes compared with baseline).*

	Doha with flexibilities	S33	S25	S: all
Plant fibres	−4.08	−4.18	−3.07	−3.04
Processed food	7.48	7.85	7.88	9.45
Textile	7.78	7.42	20.38	20.26
Wearing apparel	7.71	7.95	13.14	13.38
Leather	8.24	8.21	11.45	11.59
Chemicals	2.93	8.75	8.63	9.28
Motor vehicles	1.81	1.58	1.2	7.24
Other transportation goods	1.22	2.17	2.31	2.72
Electronics and electric appliances	1.26	2.8	2.64	2.62
Other manufacturing goods	2.14	5.09	5.47	6.26
Livestocks	19.67	19.77	26.36	26.27
Fisheries	2.44	2.38	2.22	3.86
Fossil fuels	0.76	0.66	0.6	4.45
Other natural resources (excl. forestry)	0.19	0.62	0.51	0.88
Wood products	0.6	2.86	2.68	2.78
Paper products	1.66	4.36	4.3	4.28
Minerals inputs	2.74	3.94	4.11	5.04
Metals	1.28	2.72	2.68	4.85
Capital goods	9.64	13.57	23.28	23.28
Business services	0.18	0.41	0.55	0.69
Transportation services	0.3	0.58	0.87	0.98
NAMA average	3.45	5.55	7.83	9.1
AMA average	6.36	6.47	7.54	7.96

Source: MIRAGE simulations.

3.2   … But Involving Significant Redistribution of the Gains

We have seen in Tables 11.1–11.3 that the dividends from including the sectoral initiatives in the DDA would be high for the world and would provide potentially important mercantilist benefits in the NAMA sectors, bringing more or less the same relative trade increases as agriculture. However, bringing balance among sectors would also lead to a redistribution among countries. Indeed, some emerging countries might be asked to open their economies more than initially expected. This would boost the relative prices of industrial goods compared with agricultural goods on world markets thanks to stimulated demand, leading to terms-of-trade gains for the exporters of the former and negative effects for other countries. Lastly, we should not forget that, due to their participation in nearly all initiatives, the developed countries are also the ones taking the step of liberalising their industrial sectors, leading to the elimination of remaining distortions (even if they are small) and grasping important efficiency gains due to the size of the industrial

goods sector compared with the agricultural sector in their economies, both as final goods (gains for consumers) and as inputs for firms (including gains for the services sector, which still relies on many industrial inputs).

Table 11.4 displays the welfare results for key countries/regions used in the model, as well as aggregated results for groups of smaller countries. Looking at the impact on each group (high-income countries, middle- and low-income countries, and LDCs), the implementation of all sectorals would be beneficial. For the two first groups, it would double welfare gains, with a slightly larger effect for developing countries than developed economies. For LDCs, the initial losses (see Chapter 6 on DFQF) would be reduced by one-third. For this group, a specific combination of sectoral initiatives, S25, would lead to a deterioration of the situation: the inclusion of the textile and wearing apparel initiative boosts preference erosion and increases welfare losses. Overall, the world economy would be better off (in terms of income effects) and the elimination on an MFN basis of remaining industrial tariffs by developed economies and leading emerging economies would lead to positive effects on non-participating countries. The latter effect is important and shows the global value of having this type of agreement within the WTO rather than in an OECD-focused type of free-trade agreement: a potential threat if NAMA talks cannot be unlocked within Doha since this would create a 'club for rich countries' outcome and lead to more trade diversion away from developing countries.

Among the winners, East Asian economies (Hong Kong (China), Singapore, Taipei, Korea and Japan) benefit substantially from the initiatives. It is important to note that they both give and receive market-access concessions and that their comparative advantage in the manufacturing sectors helps them to grasp the fruits of the agreement. However, the gains are very widely spread, including the MENA countries, Pakistan and Sri Lanka (if the textile/wearing apparel initiative is included, their gains are multiplied between two and four times), and African countries (gains multiply by five when all initiatives are included). The latter effect is directly driven by the increased demand for natural resources needed to feed the growth of the industrial sectors. Among developed countries, and excluding Japan (which can double its gains), we find that the United States is relatively most affected: its gains could increase by 50–83% (from S33 to all initiatives). EFTA's gains could rise from 45% to 59% (from S33 to all initiatives), reaching more than 1% of real GDP, while Canada's gains could rise by 38%, and the EU's by 19% to 38%.

The findings might appear to be very optimistic: all categories of countries would win, from the richest (Japan) to the poorest (African LDCs exporting raw commodities). However, some middle-income countries may experience some losses. Three groups of such countries can be identified. The first group, represented by Brazil, is made up of countries that do not join the liberalisation movement directly (only one initiative in our scenario) and suffer strongly from the change in the terms of trade between agricultural and

non-agricultural goods when we boost NAMA liberalisation (this question is discussed in more detail later). Gains for Brazil remain positive but are reduced from +0.45% of its real income to +0.39%. The second group includes emerging countries that benefit from completely free NAMA access with their key partners (*eg* Turkey with the EU, and Mexico with the United States) and that will suffer from preference erosion. We should acknowledge that our analysis is biased towards overstating preference erosion since we assume that existing preferences are used fully and without cost. Therefore, the actual consequences for these countries could be less serious than suggested by the estimates we report. In our analysis, Turkey's small gains +0.03% of real income are replaced by small losses +0.04 as soon as textiles and apparel are introduced into the bundle of initiatives. For Mexico, the movement is qualitatively the same, with a fall from +0.1% to −0.17% of real income, but all initiatives have an impact. Lastly, China falls into a category of its own, for which large concessions significantly erode the DDA gains from +0.11 to −0.27, with a strong reduction of its terms of trade.

These results also should be considered carefully for three reasons. First, tariff concessions from China are overestimated for many sectors. Indeed, in our model, we do not represent the duty drawback mechanism and therefore we overestimate the adverse effects of tariff elimination on China's terms of trade. Second, the terms-of-trade effects are driven by the closure of the model (constant trade surplus) that leads to a strong depreciation of the real Chinese exchange rate (this question is discussed at length at the end of the section). Third, the real income effect is driven by the terms-of-trade effect, but the NAMA sectoral initiatives will still increase activity and employment in Chinese industries (from +0.3% in the core scenario to +0.8% with all the initiatives), leading to very different social consequences. In the long term, there is considerable uncertainty about whether these terms-of-trade effects would really be so large. They would certainly need to be weighed against the welfare gains, not measured in this study, from increases in the range of goods trade (see Broda *et al* 2006).

Nevertheless, we should not generalise excessively. Several emerging economies benefit significantly from the initiatives, even when they do not participate directly: India, joining only two initiatives (gems and raw products) may appear similar to Brazil but, due to its more NAMA-oriented interests, could still double its gains from the round if other countries reach an agreement and lower their tariffs. Similarly, Thailand (included in six initiatives in our scenario) increases its gains by 55–60%, allowing it to reach 2% of its annual real income, a significant proportion.

Of course, it is important to understand that these results depend on the participation (or lack thereof) of each country in the initiatives (a key guiding principle in this type of analysis 'what I do is what I get'), the sectoral composition of production, consumption and trade pattern of each country, and also its 'post formula' protection (what is the marginal impact of the

Table 11.4: *Welfare and terms-of-trade results (percentage compared with baseline).*

	Welfare				Terms of trade			
	Doha with flexibilities	S33	S25	S: all	Doha with flexibilities	S33	S25	S: all
African LDCs	0.04	0.11	0.13	0.22	0.05	0.13	0.15	0.28
ANZCERTA	0.21	0.28	0.64	0.8	0.41	0.59	1.9	2.53
Argentina	0.39	0.43	0.46	0.49	0.6	0.78	0.83	0.93
Brazil	0.45	0.38	0.4	0.39	1.24	0.96	1.03	1.01
Canada	0.11	0.15	0.14	0.15	−0.01	0.08	0.02	0.02
China	0.11	−0.03	−0.19	−0.27	−0.35	−0.84	−1.36	−1.57
EFTA	0.74	1.08	1.08	1.17	−0.03	0.24	0.24	0.37
EU (27)	0.16	0.19	0.2	0.22	−0.07	−0.03	−0.04	−0.02
Hong Kong (China) and Singapore	0.77	1.26	2.2	2.23	0.57	0.95	1.55	1.58
India	0.08	0.12	0.15	0.31	−0.01	−0.41	−0.33	−1.63
Japan	0.24	0.34	0.47	0.51	0.47	0.9	1.36	1.51
Korea and Taipei	0.45	0.55	0.95	1.55	0.26	0.25	0.7	0.77
MENA	0.09	0.84	0.83	1.04	−0.08	0.05	0.04	0.29
Mexico	0.1	0.02	−0.09	−0.17	−0.76	−1.21	−1.65	−1.85
Pakistan	0.28	0.28	0.55	0.56	0.64	0.62	1.18	1.23
Rest of Africa	0.06	0.22	0.24	0.3	0.16	0.2	0.21	0.24
South Africa	0.21	0.35	0.36	0.52	−0.62	−0.36	−0.34	−0.05
Sri Lanka	0.33	0.33	0.55	0.69	0.64	0.64	1.02	1.18
Thailand	1.21	1.88	1.89	1.94	−0.29	−0.25	−0.23	−0.27
Turkey	0.03	0.03	−0.05	−0.04	−0.03	−0.07	−0.27	−0.25
United States	0.06	0.09	0.1	0.11	−0.02	0.06	−0.04	−0.05
High-income countries	0.16	0.21	0.26	0.3				
Middle-income countries	0.15	0.29	0.26	0.31				
LDCs	−0.1	−0.06	−0.13	−0.07				
All WTO countries	0.15	0.23	0.26	0.30				

'ANZCERTA' stands for Australia–New Zealand Closer Economic Relations Trade Agreement.
Source: MIRAGE simulations.

initiatives?). While our modelling exercise allows for a detailed answer for each country, we prefer to focus here on the channel affecting all countries: the evolution of the terms of trade. The picture is quite simple. All countries that have benefited from welfare increases with the sectorals also see an improvement in their terms of trade. Similarly, all countries whose terms of trade are hurt also see their welfare decrease, with the exception of India, for which efficiency gains on the domestic markets still dominate the terms

of trade losses when the full package of initiatives is implemented.[8] Based on Table 11.4, a simple regression on the changes in welfare, between the modalities scenario and the 'S: all' case, shows that 31% of the evolution can be explained by the changes in terms of trade, with an average elasticity of one.

We should now examine these results, keeping in mind the model closure used in this assessment. We assume that the trade surplus or deficit must remain constant. Therefore, the increased openness of a large emerging country like China will translate into more imports. However, instead of reducing the net trade surplus, we consider that China needs to maintain its large surplus and export more, forcing a large real depreciation of its currency and leading to a strong loss in terms of trade. As noted above, there is good reason to be cautious about whether such large deteriorations in the terms of trade are likely to arise, particularly when taking into account the large increases in product variety—and consequent welfare gains—when trade expands substantially.

4   CONCLUSION

We have shown that the proposed sectoral initiatives could play a substantial role in encouraging mercantilist gains in market access that might provide additional political capital to allow a conclusion of the Doha Round. Although initially less protected than agriculture, due to its size and role in world trade of goods and services (91% of trade in goods, 78% of all trade in 2010), any concessions on NAMA could potentially have large-scale effects. By cutting (and, for developed countries, eliminating) applied tariffs, the sectoral initiatives could deliver direct and real market access. They mainly do this by solving a key problem of the Swiss formula in cases where large volumes of products are subject to relatively low tariffs.

We have found that the potential of the sectoral initiatives is quite important, since implementing all of them would double the welfare effects of the DDA from tariff reductions. Even a subset of seven initiatives out of fourteen (those that have already been supported by countries representing more than 33% of world imports in that sector) would increase both the expected expansion of world trade and real income by more than half. At the aggregate level, we see that all groups of countries joining the initiative or staying on the sidelines, depending on their level of development, would benefit from them. Instead of being an initiative *by* and *for* developed countries that would concentrate the gains, we found that, by boosting the world economy and doing so within the WTO on an MFN basis, the fruits of these initiatives are well

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[8]Keeping in mind that, for India, the 'all initiatives' package means only cutting tariffs on raw products and gem-related products since we have included this country in these two initiatives.

distributed. Nevertheless, some emerging countries, particularly agricultural exporters, could see their gains reduced due to the impact of the initiatives on global terms of trade: the DDA would initially reinforce agricultural prices compared with industrial ones. However, the NAMA sectoral initiatives would limit this trend, leading to a more balanced expansion of world trade and prices. Instead of opposing the sectoral initiatives based on these arguments, these countries should avoid fighting over terms-of-trade effects, a zero-sum game, and see how, by joining the initiatives themselves, they could extract the best efficiency gains for their economy.

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The Hidden Gain of the Doha Round: Lowering the Cost of Trade Wars by Reducing Binding Overhang

ANTOINE BOUËT AND DAVID LABORDE

1   INTRODUCTION

After ten years of negotiations, members of the WTO are still having difficulty completing the negotiation of the DDA. Several explanations emerge: specific conflicts still exist on several issues like domestic support to the cotton sector, or the role of sectoral negotiations, and the ability to use flexibility in NAMA negotiations. Beyond these very specific elements of disagreement, it has also been argued that the incentives to conclude the Doha Round are weak (Martin and Messerlin 2007): because large market-access gains have already been achieved in the manufacturing sectors of developed country markets, the impetus that existed in previous multilateral negotiations has vanished. Lastly, regional and bilateral liberalisations have fostered resistance to multilateral liberalisation that will erode existing preferences. Thus, relative to previous negotiations, the incentives to conclude a successful round are much weaker.

In parallel, impact assessments using a CGE model have provided increasingly accurate quantitative information concerning the expected benefits associated. However, improved information has shown that the gains from the Doha Round are lower than previous estimates (Bouët 2008), since the models now capture the fact that applied tariffs are, in most cases, lower than their MFN bound level, due to both binding overhang (the gap between MFN bound and applied rates) and preferences (the gap between MFN and bilateral applied rates). In addition, the implementation of trade scenarios has become more and more precise, adding details and including numerous flexibilities and exceptions that exist, limiting the scope of liberalisation (Jean *et al* 2010).

The goal of this chapter is to re-examine the value of a multilateral trade agreement by adopting a *systemic* approach and by considering the *global public good* provided by the WTO. This institution promotes an international

regime, that is to say 'sets of implicit or explicit principles, norms, rules and decision-making procedures around which expectations converge in a given area of international relations' (Krasner 1983, p. 2). This international regime is a global public good, as underlined by several authors such as Birdsall and Lawrence (1999), Maskus and Reichmann (2004), Conybeare (1987), Jackson (1997), Krasner (1983) and Hasenclaver *et al* (1997). Maskus and Reichmann (2004) focus on trade-related intellectual property rights and Birdsall and Lawrence (1999) focus on labour standards. Our focus, like Conybeare (1987), Jackson (1997), Krasner (1983) and Hasenclaver *et al* (1997), is on the role of WTO as a preventative scheme of trade wars and trade conflicts, and in securing the global trade system.

Trade war is

> a category of intense international conflict where states interact, bargain and retaliate primarily over economic objectives directly related to the traded goods or service sectors of their economies, and where the means used are restrictions on the free flow of goods and services.
>
> Conybeare (1987)

Trade wars may occur because of situation typical of a prisoner's dilemma where

> two or more parties face similar incentives to 'defect' from cooperation unless mechanisms are established to facilitate communication and build trust.
>
> Kaul *et al* (1999)

In trading relations, incentives to defect may come from the capacity of a big country to improve its terms of trade through the implementation of either import duties or export taxes (the 'optimum tariff' argument on the import side (see Johnson 1953) or the export side (see Bouët and Laborde forthcoming)), profit-shifting motives in strategic sectors (Brander and Spencer 1985; Krugman 1984) or changes in policymakers' preferences. In times of economic stagnation, governments may prioritise economic activity (producers' surplus) and public revenues. Trade wars can also occur as a result of lack of information and mistakes in monitoring the behaviour of trading partners. Axelrod (1981) has brilliantly shown how this kind of 'noise' can undermine cooperation and result in devastating conflicts.

According to these authors (Jackson 1997; Krasner 1983; Hasenclaver *et al* 1997), the WTO contributes to the maintenance of stability in trading relations as it offers a framework to settle trade disputes. It also improves the monitoring of trade policies and increases the information of all members through trade policy reviews.

We focus on the role played by *bound import tariffs* and their reduction obtained through multilateral trade negotiations like the DDA. One role played by bound tariffs is to reduce the risk that exporters face in the destination market: Laborde and Roy (2010) design a microeconomic model explaining

how the existence of bound duties and the extent of binding overhang affects the investment decisions of exporters and test this relation empirically.

In this chapter we adopt a different methodology. We use a computable general equilibrium model of the world economy in order to simulate a 'trade war' and how the implementation of the DDA can reduce the negative consequences of such an eventuality. In fact, WTO members negotiate reductions in bound tariffs and the binding of tariff lines unbound until now. By doing so, the WTO imposes more commitments on each of its members and reduces their room for manoeuvre, locking in many unilateral trade liberalisation episodes that have occurred in the past. After the adoption of a potential DDA, WTO members will have less flexibility to increase import tariffs. Consequently, trade wars will be less devastating in terms of trade and real income.

Aside from the DDA scenario, we study two protectionist scenarios that are characterised by different orders of magnitude in terms of trade conflict and different approaches to trade restriction: either we consider the adoption of bound tariffs by each WTO member on each product, or we simulate the imposition of the maximum tariffs applied by each country on each product between 1995 and 2006, taking into account the current level of bound duties.

We implement these different tariff scenarios in the MIRAGE model of the world economy[1] in order to evaluate the economic consequences of these potential outcomes using a similar approach to Bouët and Laborde (2010). We consider the WTO agreement as a 'preventative' scheme against potential trade wars. This is why a comparison is undertaken between a resort to protectionism when the DDA is implemented and a resort to protectionism when the DDA is not implemented. It is shown that this trade agreement could potentially reduce trade losses by $1,171 billion. It therefore acts as an efficient multilateral 'preventative' scheme against the adverse consequences of 'beggar-thy-neighbour' trade policies. The reference scenario for this figure is a situation in which countries adopt bound duties. Alternatively, if we consider a situation where countries adopt the highest tariffs implemented between 1995 and 2006, world trade would be reduced by a supplement of $733 billion if the DDA was not implemented.

These new findings clearly reappraise the potential cost of a failed Doha Round and show that 'the Doha Round is the most effective way to further constrain protectionist pressures by reducing the gap between bound commitments and applied policies' (Lamy 2009).

The chapter is structured as follows. Section 2 describes the methodology. Section 3 presents the results of all scenarios, both in terms of level of border

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[1] See MirageWiki (2011) for the latest information on the model.

protection and in terms of economic impact at the world level. Section 4 presents results at the country level. Section 5 concludes.

2   ALTERNATIVE TRADE POLICIES

We aim to evaluate how a negotiated DDA could protect the world trading system from the adverse impacts of a rise in protectionism. With this objective, we design two protectionist scenarios that might represent potential 'trade war' situations. The first is an elimination of binding overhang, and the second is implementation of the highest MFN tariff applied during the 1995–2006 period for each importing country at the product level. We compare the implementation of these protectionist scenarios in a situation where the DDA is not implemented with a situation where it has been implemented. This element will show us how a new trade negotiation could protect the world trading system from costly trade wars.

These assessments are carried out using the MIRAGE CGE model of the world economy with protection data coming from the MAcMap-HS6 database and a new historical database on MFN applied protection. The remainder of this section offers a methodological overview, followed by a detailed description of each scenario.

2.1   Methodology

Using the MacMapHS6v2.1 database, we implement tariff reforms at the HS6 level (Boumellassa *et al* 2009) with bound and applied tariff data for 2007 (including 5,113 products, 170 importing countries and 208 exporting countries). We add several updates to take into account all major changes that occurred up to 2010, including major regional trade agreements, new WTO members (such as Ukraine), and the trade policy consequences of ongoing domestic reforms (as the EU sugar trade reform (see Chapter 6)).

The TRAINS database was used to investigate tariff changes since 1995, and a special procedure was adopted to ensure comparability of MFN tariff rates between MacMapHS6 and TRAINS. To ensure intertemporal comparison of nominal protection, all specific tariffs are converted using the reference group unit values for 2007 from MAcMap-HS6v2.[2] The WTO has, however,

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[2]This method (exporter's reference group unit value) implies that the unit value taken for the *ad valorem* equivalent calculation of specific tariffs is the median unit value of world exports by a group of countries similar—from the point of view of trade—to the exporting country. It aims, firstly, to reflect the different restrictive impact of specific tariff on exporting countries according to their vertical specialisation (the specific duty imposed by the EU on pork sausages, for example, has a different protectionist impact whether the partner exports low price or high price pork sausage); and secondly, at exhibiting non-excessive volatility (see Bouët *et al* 2008).

published detailed guidelines in order that users will know which reduction coefficient has to be applied on specific duties.[3] Therefore, in our design of the policy scenario, and for the purpose of tariff-reduction formula classification, the official guidelines for computing unit values are used.

The Doha scenario gives countries the freedom to select products to be subject to smaller-than-formula tariff cuts. In agriculture, these include 'sensitive products' or 'special products' provisions that allow countries to choose lists of products to be subject to smaller cuts. In NAMA, developing countries also have flexibility to make smaller cuts on some products. Since this rule is 'no rule' for these products, we have to define a criterion for selection of these products in our modelling. We use the idea of the model developed by Jean *et al* (2010). It is based on a political-economy approach where the government (common agent) gives protection to economic sectors (multiprincipals) against financial transfers and maximises a function which includes national welfare and these financial transfers. Concerning exemption clauses, as a result of this model, the government selects lines which maximise a political-economy indicator depending positively on the size of the tariff cuts and the magnitude of imports. An extension of this model is used to define the choice of tariff lines to be bound by developing countries in the DDA scenario. Indeed, for a particular scenario when we combine tariff increases with the DDA implementation, it is very important to have a theoretically based approach to define the new bound tariffs, particularly for countries (SVEs, LDCs and initially low binding countries) that benefit from wide flexibilities in order to achieve their new binding coverage goal.[4] The DDA modalities (WTO 2008b) define, in this case, the overall constraints faced by each country. Finally, when WTO members liberalise under the DDA, we assumed that the market access remained unchanged for non-WTO members.

Tariffs are aggregated from the HS6 level to the model aggregation (see Table A12.1 in the Appendix (Section 6)) and then integrated into the MIRAGE model using the optimal aggregator approach developed by Laborde *et al* (2011) and implemented in the MIRAGE model in Laborde (2009). We use the conservative value of 2 for the elasticity of substitution across HS6 products belonging to the same sector.

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[3]In agriculture, WTO members negotiate the reduction coefficient to be applied on *ad valorem* tariffs defined by intervals: tariffs from $x\%$ to $y\%$ will be reduced by $z\%$. This does not specify to what extent specific duties (U.S.$ per ton, for example) will be reduced. These official guidelines describe in particular how *ad valorem* equivalents of specific duties have to be calculated to select the right reduction coefficient. Our approach follows the guidelines published by WTO as well as the timetable of implementation where specified.

[4]The only difference from the approach defined in Jean *et al* (2010) is that, in order to compute the political cost of any new commitments, we do not take into account the applied tariff in 2004 (the base year), but the highest tariff during the 1995–2006 period.

2.2   Description of Scenarios

The Doha scenario[5] considered in this chapter follows the December 2008 modalities and is the scenario 'D' presented in Laborde and Martin (Chapters 2 and 3 of this volume). In addition to this, we consider four scenarios that represent four protectionist alternatives. These are as follows.

Up to bound: Non-FTA applied tariffs increased to existing bound levels.

Up to bound with DDA: implementation of December 2008 modalities plus non-FTA applied tariffs increased to new, post DDA, bound level.

Up to max: Non-FTA applied tariffs increased to their maximum over the last ten years, capped by existing bound tariffs.

Up to max with DDA: implementation of December 2008 modalities plus non-FTA applied tariffs increased to their ten-year maximum, capped by new, post DDA bound tariffs.

Two of the four scenarios include a successful Doha outcome based on December 2008 modalities. Due to the complexity of integrating other elements of the DDA agenda into the simulations, other sources of potential gains are omitted, such as liberalisation in services, WTO rules, trade facilitation and intellectual property rights. Similarly, in the case of protectionist scenarios, we do not implement any change or shock in these areas.

Two protectionist scenarios are analysed in order to offer a contrasting picture with the DDA. The first option, the 'up to bound' scenario, examines the possibility that WTO countries increase their tariffs up to their Uruguay Round bound level in a five-year period (2010–15). It assumes that the entire binding overhang will be eliminated. For unbound lines, the existing average binding overhang is applied to compute new tariff targets.[6] In this

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[5]Concerning domestic support, this scenario includes the constraint on OTDS for the United States and the EU. In contrast with most traditional exercises where domestic support commitments are translated into *ad valorem* or specific subsidy caps for current applied policies, we explicitly introduce the OTDS as an overall limit for domestic support spending for each year. In the dynamic context, and due to the growth of production in the baseline, the initial agricultural subsidy rates, based on 2004 prices, may lead to a violation of the new commitments. In our simulation, it appears that only the United States will face a real constraint forcing it to modify its production-distortive programmes. Any domestic support reduction is assumed to impact all sectors in a uniform way. Since this paper focuses on tariffs and tariff changes across scenarios, we have introduced neither a programme-specific modelling of domestic support policies nor a political-economy model aimed at explaining how domestic support reduction across commodities will be handled. Our goal here is to simply show that the new OTDS commitments, even if they do not drive domestic support reduction today, have a real value on the medium run. The consequences of this treatment are discussed by Bouët and Laborde (2010).

[6]We estimate a linear relation for each country relating bound duties to MFN applied duties (bound rate $= a$ MFN rate $+ b$), where bound rate is an MFN bound duty and MFN rate is an MFN applied duty. We then apply estimated parameters a and b to applied MFN rates to estimate theoretical bound tariffs for the unbound lines.

scenario, only MFN applied rates and non-reciprocal, preferential rates are modified. The only non-reciprocal programme that is maintained is the EU's EBA initiative due to the way this programme has been implemented and renewed in the EU legislation. Other non-reciprocal preferences given by rich countries to poor countries are removed.[7] Tariff rate quotas are maintained. This scenario represents a strong increase in protection by eliminating all unilateral liberalisation, but does not represent an open trade war between WTO members. Existing commitments are still respected.[8]

On one hand, this scenario may appear extreme, since many developing countries used ceiling bindings to bind their tariffs during the Uruguay Round to levels that they have never applied and may never apply. Countries also apply zero tariffs on a large selection of raw materials and imported inputs even if the existing bound tariffs are strictly positive.

On the other hand, 'up to bound' is not the worst scenario that could be imagined. Many countries have not bound their import tariffs yet and are not constrained today by any upward limitation. In our scenario, applying bound duties can, in some cases, underestimate the desire for high protection on some specific products. Moreover, anti-dumping duties and safeguard mechanisms can be activated and can restrict trade, even in rich countries where binding overhang is low or zero.

The other option we follow is to consider a more realistic protectionist scenario. Historical data were used to determine the highest MFN applied protection rate implemented by every country during 1995–2006. In order to take into account bound tariffs implemented during the Uruguay Round, the lesser of the historical maximum level and the existing bound tariff was applied. This 'up to max' scenario corresponds with a case in which governments apply the most adverse trade policies of the past ten years, but still respect their Uruguay Round commitments. On a historical basis, tariffs evolve as a response to changes in world prices, domestic production structure, and political pressures. In that sense, this scenario is politically realistic. It is important to note that, in all scenarios with increasing tariffs, the preferential tariffs protected by bilateral or regional agreements are unchanged, as well as Uruguay Round TRQs.

These two scenarios are intended to measure the extent by which the implementation of the December 2008 package could reduce the potential cost associated with a new trade war by lowering bound duties. The scenario 'bound and DDA' combines the DDA scenario and the 'up to bound' scenario,

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[7]Examples of preferences removed are the U.S. African Growth Opportunity Act, the U.S. Caribbean Basin Initiative, the European GSP (given to non-LDCs), and other GSPs from Japan, Norway, *etc.* Economic Partnership Agreements are supposed to be reciprocal agreements, and they are, therefore, not removed.

[8]Even while adhering to their commitments, we might imagine that countries will use additional tools to increase their protection above bound levels by using contingent protection, and by initiating litigation cases that would allow them to retaliate.

but the bound duties that are used are those derived from the December 2008 package. Therefore, the difference between this scenario and the 'up to bound' one represents the extent by which the DDA could reduce the capacity of WTO members to augment MFN tariffs. The treatment of unbound tariffs is very different in this scenario from the treatment in the 'up to bound' case. In contrast with the previous case, where an average binding margin was applied in a uniform way based on existing binding overhang, in this scenario we apply the new DDA constraints in terms of binding rules based on the Jean *et al* (2010) political-economy approach combined with past trade policy behaviour (see the discussion in the previous section). As previously, only MFN applied rates and non-reciprocal preferential rates are modified.

In the 'max and DDA' scenario, the same combination (DDA plus a protectionist option) is adopted, but the DDA scenario is combined with the 'up to max' scenario. As new bound duties have been defined in the December 2008 package, and as the tariff applied is the lesser of the highest duty applied during the 1995–2006 period and the newly defined bound duty, this scenario differs from the 'up to max' scenario. The difference between them represents the benefit from the DDA as a 'preventative' scheme against trade wars. As previously, only MFN applied rates and non-reciprocal preferential rates are modified.

2.3   Consequences on Applied Tariffs

Figure 12.1 displays the consequences of these five scenarios on average world tariffs (the baseline is also represented).

Moving to bound tariffs ('up to bound' scenario) more than doubles the level of protection, on average, from 3.7% to 8.2%. The elimination of unilateral tariff reductions enacted during the past ten years ('up to max' scenario) has a more limited impact but still represents an increase of 33% in world tariffs compared with the baseline (from 3.7% to 4.9%).

The implementation of the December 2008 package has a significant impact on the potential outcome of future trade wars. If the DDA is not implemented, current protection can be raised by 125% when countries resort to bound levels, while it increases by only 55% in cases where the DDA is implemented ('up to bound with DDA'). Under the 'up to max' with DDA scenario, world protection decreases slightly from 3.7% to 3.6% compared with an augmentation by 33% under the 'up to max' scenario. Implementation of the DDA would cut the bound tariff enough to constrain WTO members and severely limit the potential of them resorting to protectionism. These comparisons show the extent to which the implementation of the December 2008 package could avoid costly protectionism.

In agriculture, the differences between scenarios are more extreme. World agricultural protection decreases by 19% if the December 2008 package is implemented, while it increases by 192% if bound duties are applied ('up to
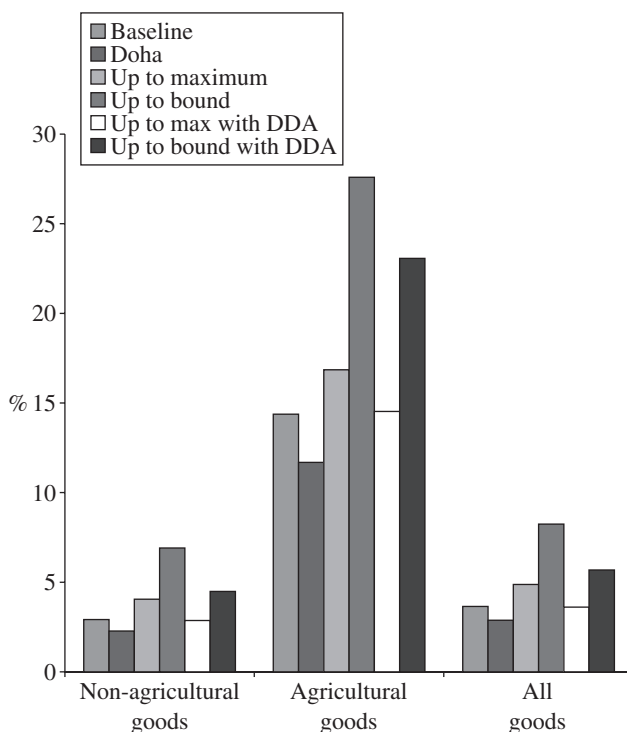
Figure 12.1: *World average tariffs by scenario (2025 level).*
Source: MAcMap-HS6v2.1, TRAINS and authors' calculations (trade weighted).

bound' scenario). A comparison of world agricultural protection under a DDA (11.7%) and under a global resort to pre-DDA bound duties (27.6%) provides a ratio of 1:2.36. When the reference is maximum duties applied in the 1995–2006 period, it is 1:1.44.

Table 12.1 displays the results in terms of protection applied on imports by country group. The DDA scenario will cut applied protection by more than one-third for high-income countries (from 2.3% to 1.4% in all sectors, but from 15.1% to 10.7% in agriculture) and by one-tenth for middle-income countries (from 6.4% down to 5.7% in all sectors), a significant achievement compared with previous GATT rounds. It will also lock in existing market access due to unilateral liberalisation on an MFN or non-reciprocal preferences basis. Indeed, under the 'up to bound' scenario, protection could increase by 52% in high-income countries, 163% in middle-income countries and 466% in LDCs compared with the current levels. Under the 'up to max' scenario, protection in the same three groups of countries increases by 18%, 45% and 34%, respectively.

Table 12.1: *Protection applied by category of countries (in percent).*

	Baseline	Doha	Up to max	Up to bound	Up to max with DDA	Up to bound with DDA
Non-agricultural goods						
High-income countries	1.5	0.9	1.8	2.4	1.0	1.7
Middle-income countries	5.8	5.1	8.6	15.3	6.5	9.5
LDCs	10.5	10.4	14.0	56.1	13.6	38.5
WTO members	2.9	2.3	4.1	6.9	2.9	4.5
Agricultural goods						
High-income countries	15.1	10.7	16.4	19.6	13.1	14.9
Middle-income countries	13.5	13.3	17.6	36.6	16.7	31.9
LDCs	12.1	12.1	16.6	83.6	16.7	83.6
WTO members	14.4	11.7	16.8	27.6	14.5	23.1
All goods						
High-income countries	2.3	1.4	2.7	3.4	1.7	2.5
Middle-income countries	6.4	5.7	9.3	16.9	7.3	11.2
LDCs	10.7	10.7	14.4	60.7	14.1	46.1
WTO members	3.7	2.9	4.9	8.2	3.6	5.7

Source: MAcMap-HS6v2.1, TRAINS and authors' calculations (trade-weighted scheme).

At the same time, the December 2008 package gives world exporters a 'preventative' scheme against potential rises in applied protection by middle-income countries and LDCs: in the case of middle-income countries, while protection could be augmented from 6.4% up to 11.2% (bound level) following implementation of DDA agreement, it could be increased to 16.9% today. As far as LDCs are concerned, if we compare the 'up to the bound' scenario with the 'up to the bound with DDA' scenario, we can see that tariffs increase from 10.7% in the baseline up to 60.7% and 46.1%, respectively.

Table 12.2 displays how access to foreign markets is modified under the baseline and other scenarios. It calculates the average duty faced when a group of countries (or the world) exports to the rest of the world, either in all sectors, or only in agriculture or in industry. In relative terms, the Doha scenario manages to deliver broadly similar market-access gains with an average decrease of about 19% in the tariffs facing high-income countries, compared with 24% for middle-income countries and 28% for LDCs: a change from 3.7% to 3.0% for high-income countries, from 3.6% to 2.8% for middle-income countries, and from 3.2% to 2.3% for LDCs. The other scenarios,

Table 12.2: *Protection faced by category of countries (in percent).*

	Baseline	Doha	Up to max	Up to bound	Up to max with DDA	Up to bound with DDA
Non-agricultural goods						
High-income countries	3.0	2.4	4.0	6.8	2.9	4.5
Middle-income countries	2.8	2.1	4.1	7.0	2.8	4.4
LDCs	2.7	1.7	4.7	6.8	2.6	4.0
WTO members	2.9	2.3	4.1	6.9	2.9	4.5
Agricultural goods						
High-income countries	15.1	12.2	17.3	26.7	14.9	22.6
Middle-income countries	13.8	11.2	16.6	28.3	14.3	23.4
LDCs	6.8	6.5	10.2	36.7	9.9	30.5
WTO members	14.4	11.7	16.8	27.6	14.5	23.1
All goods						
High-income countries	3.7	3.0	4.8	8.0	3.6	5.6
Middle-income countries	3.6	2.8	5.1	8.6	3.6	5.8
LDCs	3.2	2.3	5.3	10.3	3.4	7.1
WTO members	3.7	2.9	4.9	8.2	3.6	5.7

Source: MAcMap-HS6v2.1, TRAINS and authors' calculations (trade weighted).

however, have significantly different results. Though the two protectionist scenarios have similar effects for high-income countries and middle-income countries (protection faced is doubled under the 'up to bound' scenario, and augmented by 30–40% under the 'up to max' scenario), the LDCs are more severely affected due to losses of non-reciprocal preferences,[9] particularly the preferences given by the United States and Japan: here, protection faced by LDCs is more than tripled. Consequently, the implementation of a DDA is of great interest for LDCs not only because it improves access to foreign markets even if this comes at the price of an erosion of preferences, but also because it locks in unilateral schemes, particularly the most recent initiatives. It would prevent potential increases in protection faced by their exports: based on the maximum protection faced during the 1995–2006 period, protection faced by LDCs' exports would rise from 3.2% to 5.3% if the DDA was not implemented, while it could increase up to only 3.4% if the DDA had been implemented. This is an indirect but potentially substantial advantage of the DDA.

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[9]Except on the EU market, where the EBA programme is maintained.

3   ECONOMIC CONSEQUENCES

We use the MIRAGE multicountry, multisector dynamic model—assuming perfect competition across all sectors—to assess the economic consequences of these trade policy alternatives. We provide a brief description of the MIRAGE model and then focus on the impact on key indicators (real income, trade flows, factors' rate of return).

3.1   The MIRAGE Computable General Equilibrium

The key features of the model are listed in this paragraph. More detailed information is available on the MirageWiki.[10] In each country, a representative consumer maximises a CES–LES (constant elasticity of substitution–linear expenditure system) utility function under a budget constraint to allocate his/her income across goods. In the baseline, preferences are dynamically recalibrated to maintain a meaningful pattern of income and price elasticities.[11] The origin of goods is determined by a CES nested structure following the Armington assumption.[12] In addition, northern countries are supposed to produce higher-quality industrial goods than those supplied by southern countries. On the production side, value added and intermediate goods are complements under a Leontief hypothesis. The value added is a CES function of unskilled labour and a composite of skilled labour and capital: this allows for including less substitutability between the last two production factors. In agriculture and mining, production also depends on land and natural resources. New capital is perfectly mobile across sectors, while installed capital is immobile. Skilled labour is perfectly mobile across sectors, while unskilled labour is imperfectly mobile between agricultural sectors and non-agricultural sectors. Total employment is constant. Investment is savings-driven and the real exchange rate is adjusted (through price adjustments) such that the current account is constant in terms of world GDP. This last assumption is important in this study, since tariff reductions (Doha scenario) and tariff increases (protectionist scenarios) will have positively correlated impacts on both imports and exports for every country.

   Macroeconomic data (such as world trade flows, production, consumption, intermediate use of commodities and services) are extracted from the GTAP 7.1 database in order to implement a global social accounting matrix into the MIRAGE model for the base year of 2004. However, two major modifications of the data set have been performed. The trade matrix was

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[10]See www.mirage-model.eu.

[11]We target household preferences to be close to the elasticities provided by the USDA (www.ers.usda.gov/Data/InternationalFoodDemand/).

[12]The MIRAGE model is based on GTAP Armington elasticities, which are low compared with those used in other models (the World Bank's LINKAGE model, for example).

adjusted to discriminate between 'real' trade and virtual trade. To address the problems created by constructed trade values, we split the GTAP trade matrix into two categories: real trade flows (based on the trade data inputs to the GTAP database by Mark Gehlhar) and virtual trade flows. The virtual trade flows are then consumed locally by the 'recreation' sector and then exported as a non-dutiable service. In addition, we correct for data-quality problems in several input–output tables. More details on these corrections are provided in Chapter 6 of this volume.

A baseline is implemented from 2008 to 2025, which depicts the world without a new multilateral agreement, including key changes in trade policies between 2004 and 2008. This baseline serves as a point of comparison with all the scenarios. The results are reported for the year 2025. Results are presented as the difference for a macroeconomic variable in 2025 between the baseline and the scenario. Therefore this variation represents the unique impact of the policy shock described in the scenario. The analysis does not account for the recent surge in world prices of energy and food products between 2004 and 2008. However, exogenous increases in active populations are included in the model and each country's global factor productivity is affected such that GDP evolution, as described by the model, corresponds to the World Bank's GDP predictions.

Based on standard and robust assumptions, it should be noted that the model may underestimate the positive effects of trade reform, particularly when such reform drives new investments, technology improvements, or important trade or production diversification.

3.2 Global Consequences

Table 12.3 shows the global results of all scenarios for the world economy in 2025. Under the Doha scenario considered here, world trade is augmented by a mere 2.9% ($562 billion) and world real income by $103 billion in 2025. Compared with the findings of other studies, the welfare impact is augmented due to the use of consistent tariff aggregator (+0.16% in terms of world welfare compared with 0.09% in Bouët and Laborde (2010); see also Decreux and Fontagné (2006) and Bouët *et al* (2006)). However, these numbers are driven by the assumption that no major political shock will take place if the DDA is not signed. Such an assumption should be considered carefully.

In case of the 'up to bound' scenario, world trade would contract by 6.7% ($1,285 billion) and world real income by $330 billion. In the case of the less damaging 'up to max' scenario, world trade would decline less, by 2.1% ($413 billion). While the latter increase in duties would especially affect developing countries' exports, particularly LDCs' exports (−12.5%), the exports of goods by rich countries would only be affected by a reduction of 1.0%.

In the case of an implementation of the December 2008 package and a subsequent augmentation of protection up to bound levels, the decrease in

world exports would be only $113 billion, while it would be $1,285 billion if the DDA was not applied. In other words, according to this assessment, the DDA implementation could prevent a potential reduction in trade of $1,171 billion. If the rise in protectionism is to the maximum protection applied during the 1996–2006 period, the DDA could prevent a potential reduction of $733 billion of trade.

4 COUNTRY-SPECIFIC RESULTS

In this section we focus on the impact of various scenarios on countries' macroeconomic variables. In order to simplify the presentation, we focus on 17 countries/zones instead of 27.

Table 12.4 illustrates how various scenarios affect countries' exports in volume. The impact of the Doha agreement does not provide any surprising effect compared with previous assessments: high-income and middle-income countries' exports augment in general, while LDCs' exports may decrease due to erosion of preferences (see, for example, the results for 'LDC Asia' and 'sub-Saharan African LDCs').

A look at the protectionist scenarios, without the DDA implemented, reveals how some countries could be greatly affected by a global resort to protectionism. Brazil, for example, is particularly affected by an augmentation of protection: let us recall that the 'up to bound' scenario implies an increase in world agricultural protection of 13.2 percentage points, against 4.0 percentage points in industry (see Table 12.4). Brazil's exports are especially reduced (−20.6%) under the 'up to bound' scenario. If the DDA is agreed upon, Brazil would be hurt less by a potential rise in protectionism. Its exports would be reduced by only 4.1% if bound duties were adopted after this agreement. The same mechanism is in play under the 'up to max' and 'up to max with DDA' scenarios, but the magnitude is smaller.

Table 12.5 records the welfare impacts of various scenarios. The Doha scenario implies gains or very small losses for all regions except Nigeria and LDCs from Asia.[13] In the latter case, the loss can be explained by an erosion of preferences towards the EU in case of an agreed multilateral liberalisation. In general, welfare gains under the DDA scenario are small.

A rise in protectionism would mainly affect the welfare of middle-income countries and LDCs, while high-income countries would only be slightly hurt: −3.4% for India, −4.4% for Pakistan, −13.8% for Nigeria, −4.5% for Asian LDCs and −5.6% for sub-Saharan LDCs. All these figures are compared with −0.1% for the United States and Canada and −0.2% for the EU and Japan under the 'up to bound scenario'. Clearly, the relative loss of welfare is much larger for developing countries than for developed countries (see

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[13]Nigeria and the rest of Eastern Africa are also affected by a slight decrease in welfare.

Table 12.3: *Global results led by tariffs and domestic support changes: change compared with baseline in 2025.*

(a) Percentage change					
	DDA	Up to bound	Up to bound with DDA	Up to max	Up to max with DDA
World exports in goods and services[a]	2.92	−6.67	−0.59	−2.14	1.66
High-income countries	2.9	−2.7	1.4	−1.0	2.2
Middle-income countries	2.9	−10.4	−2.3	−3.2	1.2
LDCs	−1.2	−51.3	−41.0	−12.5	−12.7
World welfare	0.16	−0.51	−0.06	−0.15	0.07
High-income countries	0.17	−0.18	0.01	−0.05	0.10
Middle-income countries	0.14	−1.21	−0.22	−0.37	0.01
LDCs	−0.12	−4.95	−2.00	−0.30	−0.31

(b) $ billion change					
	DDA	Up to bound	Up to bound with DDA	Up to max	Up to max with DDA
World exports in goods and services[a]	561.81	−1284.53	−113.21	−413.01	319.68
High-income countries	282.4	−257.8	134.5	−95.5	216.3
Middle-income countries	280.4	−988.3	−215.5	−309.6	113.0
LDCs	−1.0	−44.4	−35.5	−10.8	−11.0
World welfare	102.83	−330.46	−41.41	−94.49	46.57
High-income countries	75.97	−81.93	6.19	−21.45	44.49
Middle-income countries	27.15	−236.31	−42.66	−72.29	2.85
LDCs	−0.29	−12.22	−4.94	−0.74	−0.77

Source: authors' calculations. MIRAGE simulations. Welfare changes are computed as the equivalent variation. Export volumes are defined using a Fisher index. [a] Intra-EU trade flows excluded.

Table 12.5). Asian developing countries and all LDCs are particularly badly affected. The implementation of the DDA is important for these countries as a 'preventative' action against the risk of trade wars, particularly as far as India is concerned.

Table 12.4: *Variations in exports (volume: intra-trade excluded) by countries led by tariffs and domestic support changes: percentage changes compared with 2025 baseline.*

Region	Doha	Up to bound	Up to bound with DDA	Up to max	Up to max with DDA
Argentina	0.7	−7.2	−1.6	−2.4	−0.6
Australia and New Zealand	3.3	−6.3	0.2	−2.7	1.8
Brazil	3.2	−20.6	−4.1	−5.9	−0.8
Canada	1.1	−1.0	0.2	−0.7	0.8
China	5.8	−2.9	5.1	−1.3	5.7
EFTA	0.9	−2.3	−0.3	−2.4	0.1
EU27	3.7	−2.5	1.6	−1.0	2.5
Hong Kong (China) and Singapore	0.5	−0.6	−0.1	0.1	0.4
India	2.4	−39.7	−5.6	−10.9	−0.8
Japan	2.9	−2.8	1.4	−1.6	2.1
Korea and Taiwan (China)	4.1	−5.2	2.8	−1.0	3.5
LDCs Asia	−1.8	−55.5	−45.5	−15.1	−15.8
Mexico	1.9	−7.7	−0.9	−2.5	−0.0
Middle East and North Africa	0.8	−7.9	−3.9	−1.2	0.1
Nigeria	−0.1	−25.6	−17.0	−20.9	−12.9
Pakistan	0.4	−43.1	−38.2	−31.0	−25.7
Rest of East Asia	2.0	−17.1	−6.9	−5.3	−1.0
Rest of Eastern Europe	0.0	−1.2	−0.8	−0.7	−0.5
Rest of Latin America and the Caribbean	0.4	−24.4	−18.0	−5.2	−3.9
Rest of Southern African Development Community	−0.1	−24.9	−22.1	−7.1	−5.9
Rest of South Asia	−0.6	−25.5	−30.2	−16.6	−17.5
Rest of sub-Saharan Africa	−0.2	−24.5	−19.4	−3.6	−3.0
Russian Federation	−0.1	−0.8	−0.2	−0.3	0.0
Sub-Saharan African LDCs	−0.4	−46.2	−35.5	−9.3	−9.0
South Africa	4.1	−13.7	−5.3	−3.1	1.3
Sri Lanka	2.5	−37.4	−31.7	−24.8	−19.8
Thailand	5.3	−11.8	−0.8	−3.9	3.4
Turkey	0.7	−10.2	−6.8	−3.6	−2.8
United States	2.9	−2.1	1.6	−0.6	2.7

Source: authors' calculations. MIRAGE simulations.

Tariff changes implied by one's own policy reform may have different, or even opposite, effects on welfare from those implied by other countries' policies. Decomposing the mechanisms that affect welfare is crucial for understanding the results. In particular, assessing the strength of the 'what I do is what I get' argument is important. Indeed, in a context of global trade policy changes, a country will be affected by both changes in its own tariffs

Table 12.5: *Variations in welfare by countries led by tariffs and domestic support changes: percentage change compared with 2025 baseline.*

Region	Doha	Up to bound	Up to bound with DDA	Up to max	Up to max with DDA
Argentina	0.4	−0.3	0.4	−0.2	0.1
Australia and New Zealand	0.2	−0.1	−0.1	−0.1	0.0
Brazil	0.5	−0.2	0.5	−0.1	0.5
Canada	0.1	−0.1	0.0	−0.0	0.1
China	0.1	−0.5	0.0	−0.2	0.1
EFTA	0.8	−0.6	0.4	−0.3	0.6
EU27	0.2	−0.2	0.0	−0.0	0.1
Hong Kong (China) and Singapore	0.7	−1.2	0.0	−0.3	0.5
India	0.1	−3.4	−0.6	−0.4	−0.2
Japan	0.2	−0.2	0.2	−0.0	0.3
Korea and Taiwan (China)	0.4	−0.6	0.2	−0.2	0.3
LDC Asia	−0.2	−4.5	−1.3	−0.1	−0.2
Mexico	−0.0	−1.4	−0.2	−0.3	−0.1
Middle East and North Africa	0.1	−1.6	−0.5	−0.3	−0.0
Nigeria	−0.2	−13.8	−5.3	−12.8	−5.6
Pakistan	0.2	−4.4	−2.5	−2.9	−1.6
Rest of East Asia	0.5	−0.6	0.7	−0.3	0.7
Rest of Eastern Europe	0.1	−0.6	−0.2	−0.3	−0.1
Rest of Latin America and the Caribbean	0.0	−0.8	−0.4	−0.1	−0.0
Rest of Southern African Development Community	−0.0	−6.2	−4.7	−2.0	−1.1
Rest of South Asia	−0.0	−1.2	−1.6	−0.5	−0.5
Rest of sub-Saharan Africa	0.0	−2.8	−1.7	−0.3	−0.4
Russian Federation	−0.0	−0.7	−0.1	−0.3	−0.0
Selected sub-Saharan African LDCs	−0.0	−5.6	−2.9	−0.6	−0.5
South Africa	0.2	−0.6	−0.0	−0.3	0.0
Sri Lanka	0.3	−2.3	−1.1	−1.0	−0.1
Thailand	1.2	−0.5	1.3	−0.3	1.0
Turkey	−0.0	−0.9	−0.5	−0.3	−0.2
United States	0.1	−0.1	−0.1	−0.0	0.0

Source: authors' calculations. MIRAGE simulations. Welfare changes are computed as the equivalent variation.

(domestic policy effect) and in its partners' tariffs (foreign policy effect).[14] In terms of a domestic tariff increase, the main effects are a positive effect on welfare related to the 'optimal tariff' argument, and a negative effect

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[14]Countries can also be affected by the tariffs of countries they do not trade with because these changes may affect world prices. This effect is taken into account in the 'foreign tariff' increase and is less important than other effects.

Table 12.6: *Variations in factor remunerations by countries led by tariffs and domestic support changes (percentage change compared with 2025 baseline in 2025).*

Region	Real return to capital			Real return to land			Skilled wages			Unskilled real wages in agricultural sectors			Unskilled real wages in non-agricultural sectors		
	Doha	Up to bound	Up to bound with DDA	Doha	Up to bound	Up to bound with DDA	Doha	Up to bound	Up to bound with DDA	Doha	Up to bound	Up to bound with DDA	Doha	Up to bound	Up to bound with DDA
Argentina	−0.1	−0.2	−0.4	2.7	−6.7	−2.1	0.2	−0.6	0.3	2.9	−7.5	−2.5	0.2	−0.5	0.1
Australia and New Zealand	0.1	0.1	0.1	4.2	−4.0	−0.9	0.3	−0.9	−0.0	5.3	−4.8	−0.9	0.3	−0.8	−0.1
Brazil	0.7	−0.3	0.2	7.9	−6.6	5.7	−0.2	−1.4	−0.4	10.5	−7.6	7.7	−0.3	−1.3	−0.8
Canada	0.2	−0.1	0.1	3.5	−1.6	−0.8	0.1	−0.2	0.0	3.5	−1.3	0.1	0.2	−0.2	0.0
China	−0.1	0.1	−0.1	0.8	0.4	0.6	0.4	−0.7	0.3	0.8	0.2	0.6	0.4	−0.4	0.3
EFTA	0.4	−0.2	0.4	−4.1	1.4	−4.4	0.9	−1.1	0.4	−3.0	1.0	−3.8	0.8	−0.8	0.4
EU27	−0.2	−0.1	0.0	−30.5	0.7	−1.5	0.4	−0.2	0.1	−4.6	0.8	−2.9	0.2	−0.2	0.1
Hong Kong (China)/Singapore	−0.2	−0.3	−0.4	1.2	0.1	−0.7	0.8	−1.4	−0.0	1.6	0.2	−0.2	0.8	−1.1	0.2
India	−0.1	−1.5	−0.4	0.8	−4.1	−0.1	0.1	−7.4	−1.1	0.8	−5.2	−0.5	0.1	−5.6	−0.8
Japan	0.2	0.0	0.1	−2.6	0.9	−3.9	0.4	−0.4	0.2	−2.9	0.7	−4.2	0.3	−0.3	0.1
Korea and Taiwan (China)	0.1	−0.1	−0.1	0.2	1.5	−0.6	0.9	−1.2	0.5	0.4	1.2	−0.5	0.9	−1.0	0.5
LDC Asia	−0.0	1.4	−2.2	−0.0	2.4	4.2	−0.2	−8.0	−4.6	−0.2	0.8	3.3	−0.2	−6.7	−4.7
Mexico	0.3	0.4	0.2	1.9	−0.6	−0.0	0.0	−2.6	−0.4	2.0	−1.0	−0.1	−0.0	−1.6	−0.5
Middle East/North Africa	0.1	−1.2	−0.7	1.5	2.7	2.0	0.2	−2.5	−1.1	1.3	1.4	1.1	0.1	−1.9	−1.0
Nigeria	−0.2	−10.4	−8.3	0.6	6.0	5.8	−0.3	−11.4	−3.3	0.9	7.8	8.2	−0.0	−8.2	−2.6
Pakistan	−0.1	−1.0	−1.7	0.8	−2.9	−1.2	0.1	−8.1	−4.9	0.7	−4.8	−2.7	0.2	−7.9	−5.7

Table 12.6: *Continued.*

Region	Real return to capital			Real return to land			Skilled wages			Unskilled real wages in agricultural sectors			Unskilled real wages in non-agricultural sectors		
	Doha	Up to bound	Up to bound with DDA	Doha	Up to bound	Up to bound with DDA	Doha	Up to bound	Up to bound with DDA	Doha	Up to bound	Up to bound with DDA	Doha	Up to bound	Up to bound with DDA
Rest of East Asia	−0.1	−2.0	−1.7	1.2	3.5	3.3	0.8	−4.0	−0.8	1.2	1.9	2.6	0.6	−3.9	−1.4
Rest of Eastern Europe	−0.1	0.0	0.1	1.4	−1.8	−2.0	0.0	−0.6	−0.2	1.2	−1.6	−1.7	0.0	−0.4	−0.2
Rest of Latin America and the Caribbean	−0.1	−1.3	−1.2	1.9	0.0	0.8	−0.0	−2.4	−1.6	2.0	−0.6	0.4	−0.1	−2.2	−1.6
Rest of SADC	0.0	−2.2	−1.9	1.3	0.4	−0.8	−0.1	−12.3	−10.2	1.2	−0.9	−2.1	−0.2	−8.5	−7.4
Rest of South Asia	−0.0	−1.0	−1.6	0.1	−0.0	−0.0	−0.1	−6.0	−6.4	−0.1	−1.2	−1.7	−0.1	−4.9	−5.2
Rest of sub-Saharan Africa	−0.2	−1.3	−1.4	0.4	−3.3	−3.0	−0.1	−7.0	−4.3	0.6	−4.8	−4.2	0.0	−5.0	−3.5
Russia	0.0	0.0	0.0	0.4	0.1	0.2	−0.1	−0.6	−0.2	0.5	0.1	0.2	−0.1	−0.3	−0.1
Sub-Saharan African LDCs	−0.1	0.9	−1.4	0.1	−4.0	−2.0	−0.1	−16.1	−10.1	0.1	−6.7	−3.6	−0.1	−9.6	−6.5
South Africa	−0.1	−0.8	−0.8	1.5	−0.2	−0.7	0.5	−1.4	−0.2	1.8	−0.5	−0.8	0.3	−1.3	−0.6
Sri Lanka	0.4	−4.5	−4.1	0.1	−0.2	−0.7	0.1	−6.6	−4.7	0.2	−1.6	−1.7	0.4	−6.2	−4.8
Thailand	0.4	−2.9	−1.5	2.0	−3.0	−2.2	2.3	−3.5	1.0	2.9	−4.4	−2.5	1.8	−4.4	−0.6
Turkey	0.0	−1.9	−1.5	0.5	0.6	0.3	−0.0	−1.9	−1.1	0.6	0.2	−0.1	0.0	−1.9	−1.2
United States	−0.2	−0.1	0.0	−7.6	−0.7	−0.1	0.1	−0.1	−0.0	−4.1	−0.6	0.5	0.0	−0.1	−0.0

Source: authors' calculations. MIRAGE simulations. Real returns to factor are computed as the nominal return deflated by the representative household price index. 'SADC' stands for Southern African Development Community.

on welfare led by increasing distortions in domestic economy. Concerning a foreign tariff increase, the main effects are a positive effect for exporters benefiting from preferences on increasingly protected market, and a negative effect for exporters facing increased barriers.

For example, Canada, by increasing its own import tariff, may reduce the world price of imported commodities since it is a large country, but this would simultaneously increase economic distortions in its economy. When a foreign tariff increases, it can benefit from augmented preferences in the case of the United States elevating tariffs on imports from the rest of the world while free trading with Canada, and it can be hurt in the case of Japan or the EU, since this policy decision reduces market access for Canadian exporters.

Laborde (2009) develops a new methodology to decompose these welfare effects consistently. Bouët and Laborde (2010) compute normalised relative effects of 'domestic' and 'foreign' reform and show, in the case of a worldwide resort to protectionism, how several large countries like Canada, ASEAN, Brazil, India, EU27 and others can benefit from their own tariff increases as opposed to small countries, for which a resort to high tariffs would be negative. Finally, we examine how the real remuneration of factors is modified under three scenarios: Doha, 'up to bound' and the 'up to bound with DDA' scenario (see Table 12.6). The objective is merely to illustrate how productive factors are affected differently by a further liberalisation of a country's economy or a global resort to protectionism.

In agricultural countries like Australia, New Zealand and Brazil, productive factors related to agriculture (land, agricultural unskilled labour) should be very supportive of a Doha agreement and opposed to a global increase in protection up to bound levels. In Brazil, for example, the real remuneration of land and agricultural unskilled labour increases by 7.9% and 10.5%, respectively, if a Doha agreement is signed, while they decline by 6.6% and 7.6% if the 'up to bound' scenario is implemented. The DDA agreement also plays a valuable role for land and unskilled agricultural labour in these countries, since under the 'up to bound with DDA' scenario their remuneration augments due to reduced protection compared with the baseline.

On the other hand, in rich countries like Japan, the EU, the United States and the EFTA countries, owners of productive factors like land and agricultural unskilled labour should be opposed to further liberalisation, while, in general, they would be supportive of increased protectionism.

It is noteworthy that in rich countries (such as the EU, Japan, the United States and the EFTA), skilled labour should support increased multilateral trade openness, since it increases their real remuneration, and oppose increased protectionism, as it reduces their real remuneration. The variations of real remuneration implied by these trade policies are less than those concerning land and agricultural unskilled labour. This can be explained by differences in the degree of intersectoral mobility. These results are consistent with the traditional Heckscher–Ohlin–Samuelson framework.

5   CONCLUSION

The DDA will not only increase trade, but it will also reinforce binding commitments and reduce existing bound duties. In so doing, it will play its 'international public good' role by making the trade environment more secure and decreasing the costs associated with potential trade wars. We concretised this idea by comparing the application of bound duties based on their current levels with the same policy based on the level of bound duties implied by the DDA. In that case, this difference is up to \$1,171 billion in terms of trade volume and \$289 billion in terms of real income.[15]

Strikingly, these conclusions are especially important for poor countries: in terms of real income, if we consider that the real value of the DDA is measured by the 'preventative' role that it plays, from a global value of \$289 billion, \$201 billion (more than two-thirds) represents the potential benefits to developing countries (see Table 12.5). This explains why the DDA should ultimately be considered as a development round.

In a period of economic stagnation, the risk that this failure would give WTO members the incentive to pursue protectionist policies is high. In such a case, international trade would face a dreadful iceberg: the visible opportunity cost of not concluding the DDA, \$562 billion of trade, will be outweighed by the immersed part: namely, a potential reduction of at least \$1,285 billion in world trade if countries fail to reach an agreement and were to implement protectionist policies. The stakes in Geneva are therefore very high, and the December 2008 package and a WTO agreement are the best 'preventative' measure for avoiding world trade colliding with this iceberg. The DDA appears to be the closest and most promising step towards a global development agenda for a world in turmoil.

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[15] $1,171 = -113 - (-1,284)$ and $289 = -41 - (-330)$.

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6   APPENDIX

Table A12.1: *Geographical decomposition.*

Region code	Region label	GTAP regions
anz	Australia and New Zealand	AUS, NZL
xea	Rest of East Asia	XOC, XEA, IDN, LAO, MYS, PHL, VNM, XSE
chn	China	CHN
hyc	Hong Kong (China) and Singapore	HKG, SGP
jpn	Japan	JPN
hya	Korea and Taiwan (China)	KOR, TWN
lda	LDC Asia	KHM, BGD
tha	Thailand	THA
ind	India	IND
pak	Pakistan	PAK
lka	Sri Lanka	LKA
xsa	Rest of South Asia	XSA
can	Canada	CAN
usa	United States	USA
mex	Mexico	MEX
xer	EFTA	XNA, CHE, NOR, XEF, XER
arg	Argentina	ARG
rlc	Rest of Latin America and the Caribbean	BOL, CHL, COL, ECU, PRY, PER, URY, VEN, XSM, CRI, GTM, NIC, PAN, XCA, XCB
bra	Brazil	BRA
e27	EU27	AUT, BEL, CYP, CZE, DNK, EST, FIN, FRA, DEU, GRC, HUN, IRL, ITA, LVA, LTU, LUX, MLT, NLD, POL, PRT, SVK, SVN, ESP, SWE, GBR, BGR, ROU
xec	Rest of Eastern Europe	ALB, BLR, HRV, UKR, XEE, KAZ, KGZ, XSU, ARM, AZE, GEO
rus	Russian Federation	RUS
mna	Middle East and North Africa	IRN, XWS, EGY, MAR, TUN, XNF
tur	Turkey	TUR
nga	Nigeria	NGA
sld	Selected sub-Saharan African LDCs	SEN, MDG, MWI, MOZ, TZA, UGA, ZMB
xss	Rest of sub-Saharan Africa	XWF, XCF, ETH, XEC
xsd	Rest of SADC	XAC, MUS, ZWE, BWA, XSC
zaf	South Africa	ZAF

'SADC' stands for Southern African Development Community.

Table A12.2: *Sectoral decomposition.*

Sector code	Sector label	GTAP sectors
ric	Rice	PDR, PCR
cereals	Cereals	WHT, GRO
v_f	Vegetables and fruits	V_F
osd	Oilseeds	OSD
sug	Sugar	C_B, SGR
pfb	Plant fibres	PFB
ocr	Other crops	OCR
cattle	Cattle	CTL, RMK, CMT, MIL
otherAni	Other animal	OAP, OMT
oagr	Other agricultural	WOL
onr	Other natural resources	FRS, OMN
fish	Fisheries	FSH
ffl	Fossil fuel	COA, OIL, GAS, P_C
vol	Vegetable oil	VOL
ofd	Other food	OFD
bevtob	Beverage and tobacco	B_T
tex	Textile	TEX
waplea	Wearing apparel and leather	WAP, LEA
mat	Materials	LUM, PPP, NMM
crp	Chemical and plastic products	CRP
metals	Metals	I_S, NFM, FMP
mvh	Motor vehicles	MVH
cgd	Capital goods	OTN, OME
ele	Electronics	ELE
omf	Other manufacturing goods	OMF
svc	Services	ELY, GDT, WTR, OSG, DWE
cns	Construction	CNS
privser	Private services	TRD, CMN, OFI, ISR, OBS, ROS
trans	Transports	OTP, WTP, ATP

13

What's the Appropriate Agricultural Protection Counterfactual for Trade Analysis?

KYM ANDERSON AND SIGNE NELGEN[1]

1 INTRODUCTION

In recent years, there has been renewed interest in projecting global commodity markets and the overall economy two to four decades ahead. Demand for such long-term projections has been driven by the recent rises in food and energy prices, rapid growth in large emerging economies, and worries about greenhouse gas emissions and policy responses to them. Such projections are also sought by trade policy analysts as a baseline for estimating the effects of proposed or alternative trade policy reforms that tend to be phased in over anything up to two decades. One such proposal is the WTO's DDA. There are also numerous regional and other plurilateral economic integration proposals under discussion, including a trans-Pacific partnership.

A common assumption in developing baseline projections for such analytical purposes is that trade-related policies do not change over the projection period. This may be a reasonable assumption for manufacturing protectionism now that most major countries have liberalised most of their markets for industrial products. Agricultural policies, however, remain highly distortive, and they have been evolving in fairly systematic ways. How different might farm policies be in, say, 2030 from those in 2004 (the base year of the latest GTAP protection database) in the absence of a Doha agreement to undertake multilateral policy reform and any other plurilateral trade agreements?

This chapter addresses that question by drawing on the World Bank's agricultural distortions database for 75 countries, political-economy theory, a set of political-econometric equations for the most important agricultural products, and knowledge of current WTO-bound tariffs. Agricultural price

distortion rates are generated for the world in 2030 using those equations and projections of pertinent variables from recent economy-wide modelling. This provides an alternative to the common 'business as usual' projections approach of assuming that the status quo will prevail on the policy front. We thereby offer an opportunity for modellers to explore the extent to which results could differ depending on the chosen counterfactual against which future trade-liberalising scenarios are compared.

The chapter begins with a brief summary (Section 2) of the post-World War II history of distortions to agricultural (relative to industrial) incentives globally. Section 3 draws on political-economy theory and institutional history to propose a set of political-econometric equations for the most important agricultural products, and aims to provide a means of projecting future agricultural distortions for any country in the absence of further trade reform.[2] Section 4 presents the econometric results, and Section 5 shows how different the welfare effects of trade-distorting policies are when these alternative price distortions are inserted into a global economy-wide model (version 7.1 of GTAP). The key finding is that the contribution of farm policies to the estimated welfare cost of trade-distorting policies by 2030 is considerably higher—especially for developing countries—than if one assumes no change in farm policies over the next two decades. Section 6 draws out some policy implications.

2   BRIEF HISTORY OF DISTORTIONS TO AGRICULTURAL INCENTIVES GLOBALLY

Some agricultural (and other) trade policy developments over the past half century or so have happened quite suddenly, have not been predicted, and have been transformational. But others have been more gradual, and therefore less noticeable, but nonetheless understandable in political-economy terms. Events surrounding the former include the end of colonisation in many of today's developing countries from the late 1950s; the creation of the common agricultural policy in Europe in 1962; the floating of exchange rates and associated liberalisation, deregulation, privatisation and democratisation from the mid 1980s in many countries; and the opening of markets in China from 1979, Vietnam from 1986, Eastern Europe following the fall of the Berlin Wall in 1989, and the demise of the Soviet Union in 1991.

What about policy trends either side or in the absence of such shocks? For advanced economies, the most commonly articulated reason for farm policy interventions has been to protect domestic producers from import

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[2]Bouët and Laborde (2010) also seek to assess the implications for the world economy of protection growth that might result if the WTO's Doha Round fails to agree to liberalise trade multilaterally. However, their assumed alternative protection rates are more ad hoc than in this study.

competition as they come under competitive pressure to shed labour as the economy grows and real wages rise. In the process, however, those protective measures not only hurt domestic buyers of food and producers of other products, but also foreign producers and traders of farm products. They also reduce national and global economic welfare. For decades, agricultural protection and subsidies in high-income (and some middle-income) countries have been depressing international prices of farm products, which lowers the earnings of farmers and associated rural businesses in developing countries. The Haberler (1958) report to GATT contracting parties forewarned that such distortions might worsen, and indeed they did between the 1950s and the early 1980s (Anderson and Hayami 1986).

In addition to this external policy influence on developing countries, the governments of many of them have directly taxed their farmers over the past half century. A well-known example is the taxing of exports of plantation crops in post-colonial Africa (Bates 1981). At the same time, many developing countries also chose to overvalue their currency and to pursue an import-substituting industrialisation strategy by restricting imports of manufactures. Together, the latter measures indirectly taxed producers of other tradable products in developing economies, most of whom were farmers (Krueger *et al* 1988, 1991). Thus, the price incentives facing farmers in many developing countries have been depressed by both own-country and other countries' agricultural price and international trade policies.

This disarray in world agriculture, as Johnson (1973) described in the title of his seminal book, means there has been overproduction of farm products in high-income countries and underproduction in low-income countries. During the past 25 years, however, numerous countries have begun to reform their agricultural price and trade policies. This has raised the extent to which farm products are traded internationally, but not nearly as fast as globalisation has proceeded in the non-farm sectors of the world's economies.

Empirical indicators of agricultural price distortions (called 'producer support estimates' (PSEs) and 'consumer support estimates' (CSEs) have been provided in a consistent way for more than 20 years by the Secretariat of the OECD (2010) for its 30 member countries. However, the OECD provides no comprehensive time series rates of assistance to producers of non-agricultural goods to compare with those PSEs, nor of farm assistance rates in those advanced economies in earlier decades. As for developing countries, almost no comparable time series estimates were generated in the two decades following the first paper by Krueger *et al* (1988), which covered the 1960–84 period for just 17 developing countries.[3] However, a

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[3]An exception is a set of estimates of nominal rates of protection for key farm products in China, India, Indonesia, and Vietnam since 1985, by Orden *et al* (2007). OECD (2009) has also released PSEs for Brazil, China and South Africa, as well as several Eastern European countries.

new database of agricultural distortions has been developed recently by the World Bank (Anderson and Valenzuela 2008) which complements and extends the OECD's PSE/CSE work and the seminal Krueger *et al* (1988, 1991) study. It builds on them by providing similar estimates for other significant (including many low-income) developing economies, by developing and estimating new, more comprehensive policy indicators (defined in the next subsection), and by providing estimates for non-agricultural tradables to compare with the average for the agricultural sector (summarised in the following subsection, drawing on Anderson (2009, Chapter 1; 2010a, Chapter 2)).[4]

2.1 Indicators of Price Distortions

Trade measures (taxes and non-tariff barriers), both agricultural and non-agricultural, plus the use of multiple exchange rates, have historically distorted product prices at the border much more commonly than trade subsidies or direct domestic producer or consumer subsidies or taxes that alter product or input prices. In high-income countries from the 1970s, however, agricultural export subsidies grew in importance. Furthermore, since the 1980s, domestic farm support measures that are decoupled from production to varying extents have begun to play a bigger role. Also, most non-tariff barriers were converted to tariffs following the inception of the WTO in 1995. Those tariffs, however, have been legally bound well above applied rates in many countries, leaving ample room for such countries to continue to vary border measures as international prices (or domestic supplies) fluctuate from year to year or as the demands for protection rise.

Government-imposed distortions that create a gap between domestic prices and what they would be under free markets are indicated by the nominal rate of assistance (NRA). This has been computed for each farm product as the percentage by which government policies have raised gross returns to farmers above what they would be without the government's intervention, or lowered them if NRA < 0.[5] Any product-specific input subsidies are included. In Figure A13.1 the NRA averages and ranges are shown for 25 key farm

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[4]The new database includes estimates for 75 countries that together account for between 90% and 96% of the world's population, farmers, agricultural GDP, and total GDP. The sample countries also account for more than 85% of farm production and employment in Africa, Asia, Latin America and the transition economies of Europe and Central Asia, as well as virtually 100% of agriculture in OECD countries. Price distortions are estimated for more than 70 different products, with an average of almost 12 per country. That product coverage represents around 70% of the gross value of agricultural production in each of the focus countries and just under two-thirds of global farm production valued at undistorted prices over the period covered. Not all countries had data for the entire 1955–2007 period, but the average number of years covered is 41 per country. For a comparison of those estimates with those of Krueger *et al*, see Anderson (2010b).

[5]We also calculated a consumer tax equivalent (CTE), which is equal to the NRA if and only if no domestic producer or consumer measures also are in place.

products, for each of the developing-country regions and for all 75 countries for the periods before and after 1985.

A weighted-average NRA for all covered products is derived using the value of production at undistorted prices as product weights. We add to this a 'guesstimate' of the NRA for non-covered products (which, on average, account for around 30% of the total in value terms) and an estimate of the NRA from non-product-specific forms of assistance or taxation. Since the 1980s, some high-income country governments have also provided so-called 'decoupled' assistance to farmers. Because, in principle, that support does not distort resource allocation as much as direct price supports, its NRA has been computed separately and is not included for comparison with the NRAs for other sectors or for developing countries. Each farm industry is classified as either import competing, as a producer of exportables, or as producing a non-tradable (with its status sometimes changing over the years), so as to generate for each year the weighted-average NRAs for the two different groups of covered tradable farm products.

Also generated is a production-weighted-average NRA for non-agricultural tradables, for comparison with that of agricultural tradables via the calculation of a relative rate of assistance (RRA), defined in percentage terms as

$$\text{RRA} = 100 \times [(100 + \text{NRAag}^t)/(100 + \text{NRAnonag}^t) - 1], \quad (13.1)$$

where NRAag^t and NRAnonag^t are the percentage NRAs for the tradable parts of the agricultural (including non-covered) and non-agricultural sectors, respectively.[6] Since the NRA cannot be less than −100% if producers are to earn anything, neither can the RRA (since the weighted-average NRAnonag^t is non-negative in all the country case studies). If both of those sectors are equally assisted, the RRA is zero.

Anderson and Neary (2005) show that it is possible to develop a single index that captures the extent to which both the mean and the standard deviation of protection rates within a sector each year together contribute to the welfare cost of that sector's distorting policies. Their index recognises that the welfare cost of a government-imposed price distortion is related to the square of the price wedge, and so is larger than the mean; more so the bigger the dispersion of industry protection rates within the sector, and positive regardless of whether the government's policy favours or hurts producers in that sector. Lloyd *et al* (2010) show that, once NRAs and CTEs have been calculated, they can be used to generate such an index even in the more complex situation where there may be domestic producer or consumer taxes

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[6]The RRA is generated because farmers are affected not just by prices of their own products but also by the incentives non-agricultural producers face. That is, it is relative prices and hence relative rates of government assistance that affect producer incentives. More than 70 years ago, Lerner (1936) provided his symmetry theorem to prove that in a two-sector economy, an import tax has the same effect as an export tax. This carries over to a model that also includes a third sector producing only non-tradables (Vousden 1990).

or subsidies in addition to import tariffs or any other trade taxes, subsidies or quantitative trade restrictions. Lloyd *et al* call this a welfare reduction index (WRI), which is the percentage agricultural trade tax (or uniform NRA and CTE) that, if applied equally to all agricultural tradables, would generate the same reduction in national economic welfare as the actual intrasectoral structure of distortions to domestic prices of farm goods. They show that if the domestic price elasticities of supply (demand) are equal across farm commodities, then the only information needed to estimate the WRI, in addition to the NRAs and CTEs, is the shares of each commodity in the domestic value of farm production and consumption at undistorted prices.

2.2   Sectoral Distortion Differences across Countries

Historically, national NRAs to agriculture have tended to rise with a country's income per capita and be negatively correlated with a country's agricultural comparative advantage. There has also been a (somewhat weaker) tendency since the 1960s for manufacturing protection to be lower, the higher a country's income per capita and the stronger a country's manufacturing comparative advantage. Together, these tendencies would expect one to observe the RRA to farmers to be positively correlated with per capita income and negatively correlated with an index of comparative advantage in farm products. This is indeed what the World Bank's agricultural distortions panel database reveals (Figure 13.1).

Figure 13.2 shows that the RRA has been rising over time for developing countries as a group, and also for high-income countries prior to the 1990s. The developing countries' RRA rose from around −50% in the latter 1960s to almost zero in 2000–4, while the RRA for high-income countries rose from 14% in the latter 1950s to a peak of just above 50% in the latter 1980s. A movement in the RRA towards (respectively, away from) zero might indicate an improvement (respectively, worsening) in economic welfare, suggesting that the welfare cost of developing-country policies may have been falling but may begin increasing if they follow the high-income countries' earlier example in raising their now positive average RRA further. That is certainly what Korea and Taiwan (China) did, following Japan China and India also appear to be on a similar trajectory (see Figures 13.3 and 13.4).

A disaggregation of the NRA estimate for the agricultural sector into the NRAs for the export and import-competing subsectors, as shown in Figure 13.5, reveals that developing-country exporters of farm products faced a tax of around 50% on average in the first decades of post-colonial government, but that rate of taxation has gradually fallen to almost zero since the mid 1980s. Meanwhile, however, the NRA for import-competing farmers in developing countries has been positive and steadily rising throughout this period (apart from a spike in the mid 1980s when international prices fell to a near-record low as a consequence of a farm export subsidy war between

the two sides of the north Atlantic). The trend for exporters could have reduced the welfare cost of agricultural distortions in developing countries, but the fact that import-competing farmers were increasingly assisted reduces that possibility. As for high-income countries, Figure 13.5(b) shows that their exporters received increasing levels of support until the end of the north Atlantic farm export subsidy war, but that import-competing farmers enjoyed higher and faster-rising support over that period than exporters.

Together, these estimates suggest that a mapping of the WRI against the log of per capita income may at first decrease but would then increase beyond some middle-income level. That is indeed what both the combined panel data set of national WRIs, and even the set for just developing countries, reveal (see Figure 13.6). When the border component of the WRI for developing countries is tracked across time and broken down by trade policy instrument, it indicates that export taxation contributed increasingly to the welfare cost of agricultural distortions there until the late 1980s, but that the welfare cost of agricultural import restrictions also was sizeable and grew somewhat each decade (Figure 13.7).

3   WHAT DETERMINES THE EVOLUTION OF NOMINAL RATES OF ASSISTANCE OVER TIME?

Political-economy theory aiming to explain the pattern of agricultural distortions across countries and over time made some progress during the 1980s, but then stalled. Only now are theorists again beginning to focus on improving our conceptualisation of the issue, to suggest hypotheses, compile appropriate data, and use political econometrics to test those hypotheses (see, for example, Anderson 2010a; Rausser *et al* forthcoming). However, even the earlier analysis goes some way towards understanding the evolution of agricultural price-distorting policies. Anderson (1995), for example, suggests that the following factors distinguish the domestic polities of developing and high-income countries.

First, in a poor agrarian economy (PAE), urban wage earners, and, hence, their employers, care a great deal about the price of food, and are relatively well organised. Farmers, by contrast, are numerous but poorly organised, and many are so small as to only be able to sell a little or none of their output in the market. In a rich industrial economy (RIE), by contrast, farm products (especially net of post-farm-gate costs) represent a small fraction of urban household expenditure and, hence, of real wages. Furthermore, urban households are far more numerous and so suffer from a free-rider problem of collective action in RIEs, just as farmers do in PAEs.

Second, a typical PAE has the majority of its workforce employed in agricultural pursuits and relatively few in manufacturing, whereas, in RIEs, there could be up to ten times as many engaged in industrial jobs as on farms.
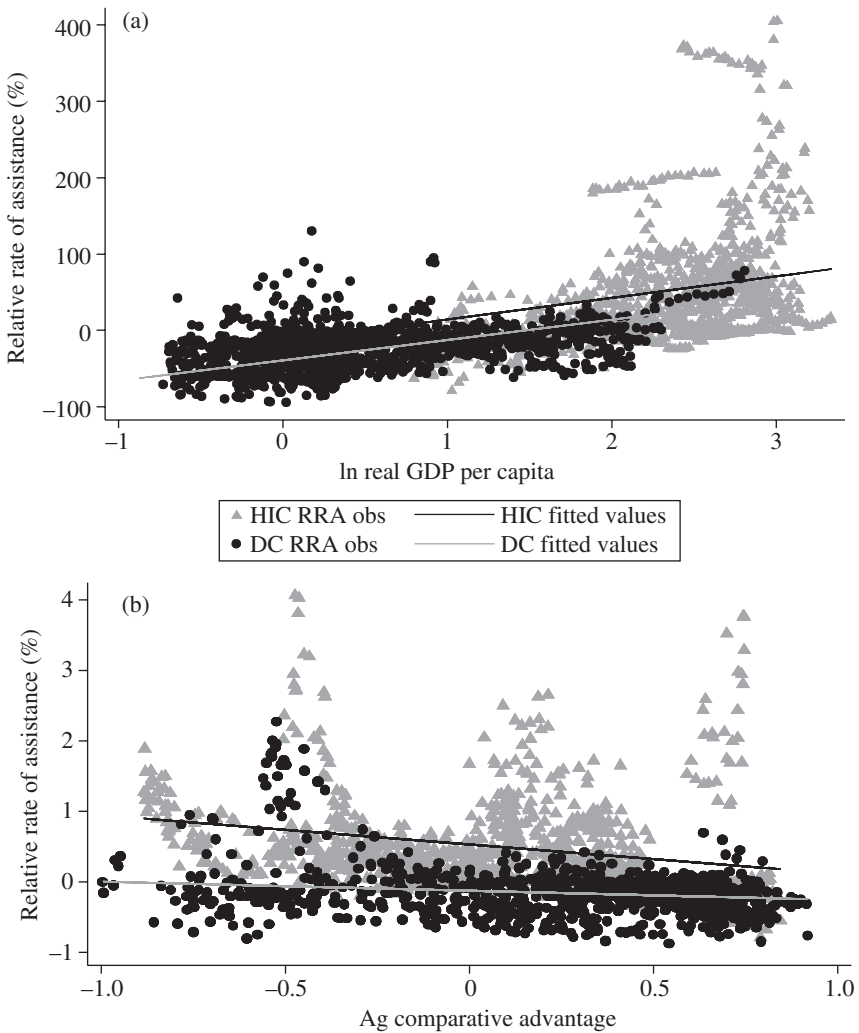
Figure 13.1: *Relative rates of assistance mapped on (a) real income and (b) agricultural comparative advantage, 1955–2007.*
(a) log of real GDP per capita. (b) Agricultural comparative advantage defined as agricultural net exports divided by the sum of agricultural exports and imports.
Source: Anderson (2010a, Figures 2.2 and 2.3).

Altering the domestic price of farm relative to industrial products thus has a far bigger impact on the price of mobile labour in a PAE than in an RIE. Industrial capitalists are therefore more likely to be able to lobby successfully for (and governments face less opposition to) taxes on agricultural exports
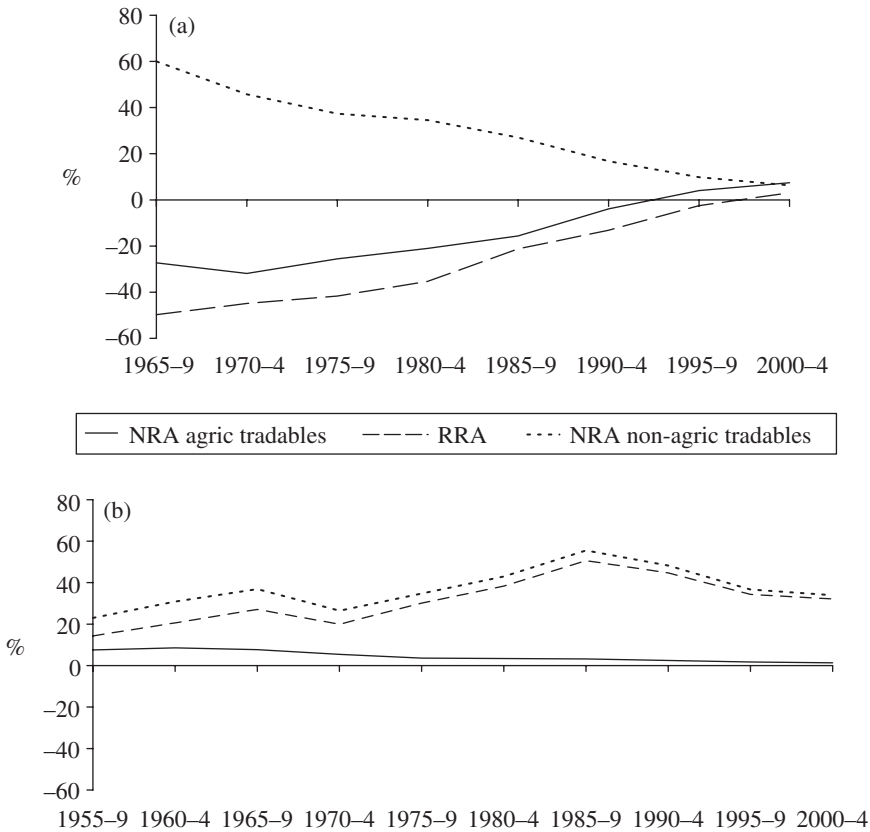
Figure 13.2: *Nominal rates of assistance to agricultural and non-agricultural tradable sectors and RRA: (a) developing and (b) high-income countries, 1955–2004.*

The RRA is defined as $100 \times [(100 + NRAagt)/(100 + NRAnonagt) - 1]$, where NRAagt and NRAnonagt are the percentage NRAs for the tradable parts of the agricultural and non-agricultural sectors, respectively.

Source: Anderson (2009, Chapter 1), based on estimates in Anderson and Valenzuela (2008).

and on imports of manufactured goods in PAEs, whereas agricultural interests are more likely to be able to lobby successfully for (and governments face less opposition to) agricultural subsidies and import tariffs in RIEs.

Third, in PAEs, the high costs of collecting taxes in a manner other than at the border make them much more likely than RIEs to employ trade taxes and, thus, to be prone to an anti-trade bias in their sectoral policies. Furthermore, the high costs of dispersing funds make PAEs less fiscally capable of subsidising any sector. By definition, the PAE has a comparative
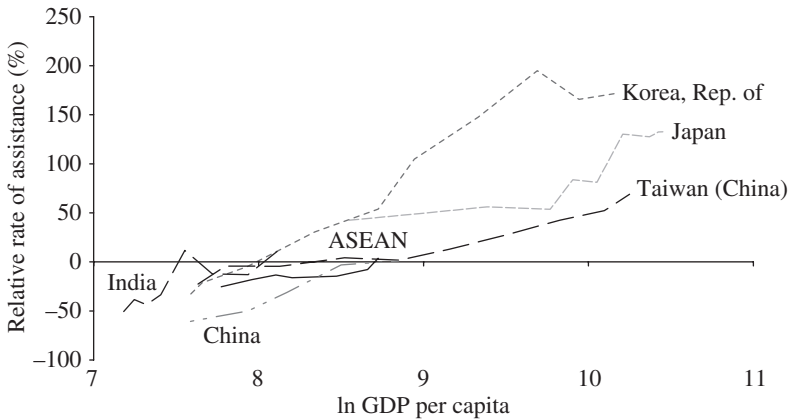
Figure 13.3: *Relative rates of assistance and log of real per capita GDP: India and East Asian focus economies, 1955–2005.*
Source: Anderson and Martin (2009, Chapter 1).

advantage in agricultural goods. Hence, this anti-trade bias adds to the anti-agricultural bias in PAE policies.

Together, these forces lead us to expect to observe countries gradually switching from a negative to a positive RRA as their per capita income grows, and more so if their agricultural comparative advantage declines in the process of that development. This is consistent with the evidence presented in Figure 13.1. It is also consistent with a formal econometric test using those two variables for the full sample of countries in the Anderson and Valenzuela (2008) panel data set, as well as separately for each of the three developing-country regions and for high-income countries (Anderson 2010a, Table 2.12).

The domestic political equilibrium can also come under external pressure from time to time. Three sets of external forces during the past quarter of a century are worth mentioning. One is the URAA, negotiations for which began in 1986 and implementation of which concluded in 2004. That led to agreements to convert non-tariff barriers to tariffs, to set caps (bindings) on those tariffs, and to phase down and cap domestic and export subsidies.[7] The caps were somewhat above applied rates in high-income countries, but they were very much above applied tariffs in the case of middle-income and

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[7]A further consequence of the Uruguay Round was that it contributed to the unilateral decisions in Australia and New Zealand to phase out most of their agricultural assistance, although the main political drivers there were domestic and led to even larger cuts to what had been high rates of manufacturing protection. Hence the (negative) RRA in those countries rose to zero, just as happened in developing countries (Anderson *et al* 2007).
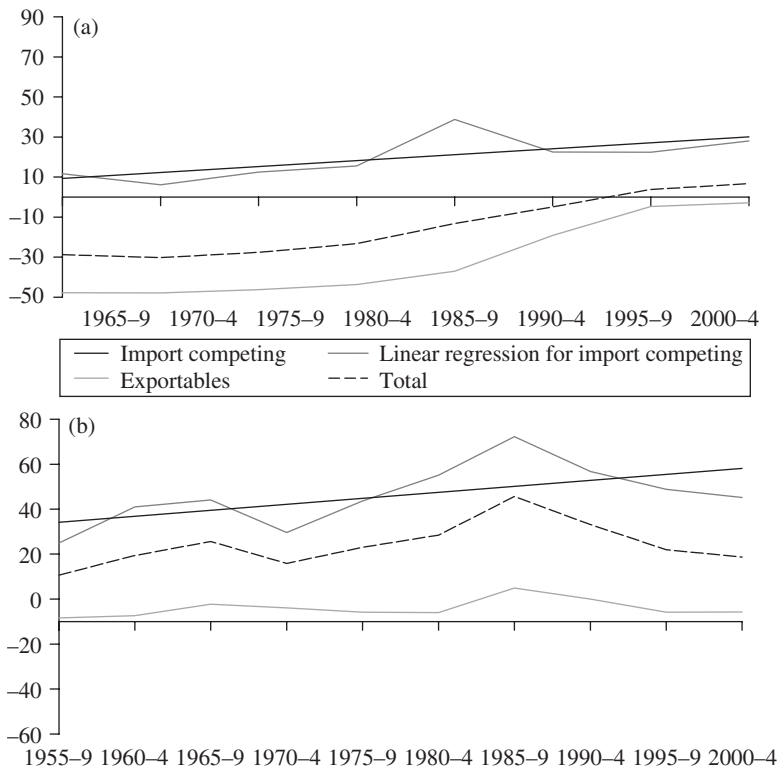
Figure 13.4: *Nominal rates of assistance to exportable, import-competing and all cov-ered agricultural products, 1955–2004: (a) developing countries and (b) high-income/transition countries.*

Five-year weighted averages. (a) Developing countries. (b) High-income countries plus Europe's transition economies. Covered products only. The total also includes non-tradables. The straight line in the upper segment of each graph is from an ordinary-least-squares regression based on annual NRA estimates for agriculture's import-competing subsector.

Source: Anderson (2009, Chapter 1), based on estimates in Anderson and Valenzuela (2008).

especially low-income countries. Hence, those bindings currently provide little discipline on the agricultural policies of most developing countries.[8]

A second, complementary force in Europe was the likelihood and then reality of an eastern enlargement of the EU, which required the budget for

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[8]They are still valuable in limiting the scope for countries to raise tariffs when international food prices spike downwards though (Francois and Martin 2004), as they have tended to do in the past, thereby accentuating the fall in the international price (Anderson and Nelgen forthcoming).
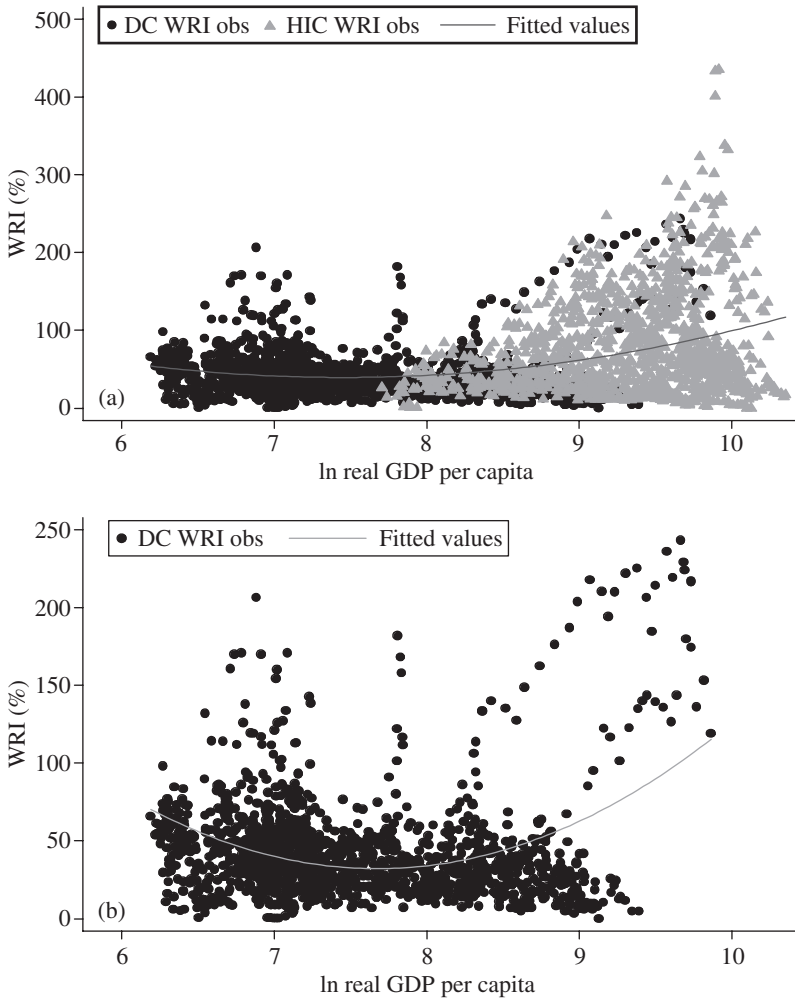
Figure 13.5: *Agricultural WRI mapped on real GDP per capita, 1955–2007: (a) all focus countries; (b) developing countries only.*
The GDP per capita data are 1990 international Geary–Khamis dollars (Maddison 2010).
Source: authors' derivation, based on WRI estimates in Anderson and Croser (2009).

subsidies under the CAP to be gradually spread over a dozen more countries. One consequence was a move away from price-support instruments to more decoupled measures such as single farm payments. The reforms came in various stages, under McSharry in 1992 and under Fischler in the early 2000s (Swinnen 2008), which explains much of the gradual fall in EU and, hence,
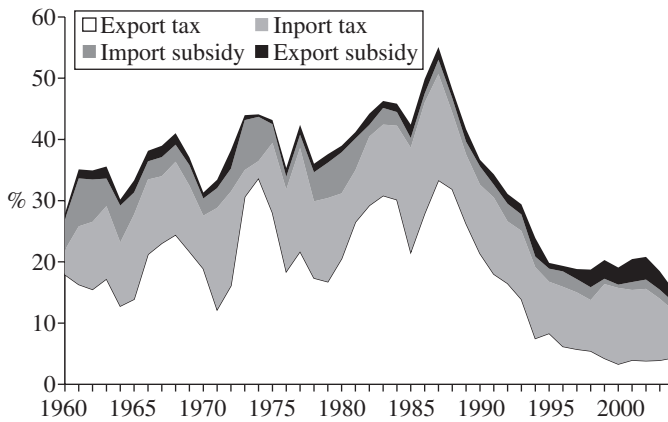
Figure 13.6: *Contributions of different instruments to the border component of the WRI for developing countries, 1960–2004 (in percent).*

Source: authors' derivations, based on estimates reported in Croser and Anderson (2011).
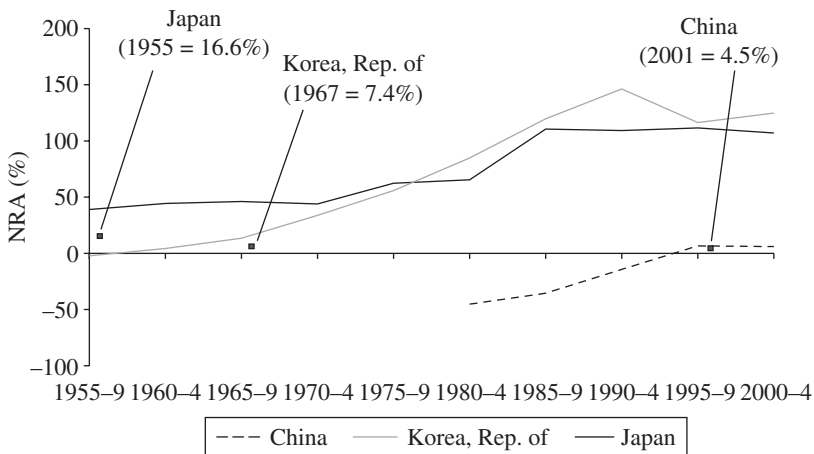
Figure 13.7: *Agricultural NRAs for Japan, Korea and China, and date of accession to GATT or WTO, 1955–2005 (in percent).*

Source: Anderson and Martin (2009, Figure 1.16), based on estimates in Anderson and Valenzuela (2008).

high-income agricultural NRAs after the late 1980s (see Figure 13.4(b)). For intra-EU political and budgetary reasons, they are unlikely to trend back upwards in the foreseeable future.

The third external force came from international financial institutions whose loans and other assistance to developing countries became some-

what conditional on better economic governance, including more openness of their economies. That helped to bring down their NRAs for non-farm tradable sectors (Figure 13.2(a)) and to phase out their taxes on farm exports (Figure 13.4(a)). However, with so little discipline on farm import tariffs coming from the URAA, those tariffs have continued to drift upwards for developing countries over the past two decades.[9] It also means it has been difficult for the WTO membership to demand tight constraints on out-of-quota farm tariffs of countries seeking to accede to the WTO. This is the case even for China, where strong pressure resulted in low tariffs only on in-quota volumes of imports.

This suggests that high-income countries (including Eastern Europe's transition economies, which are now part of the EU) are unlikely, in the foreseeable future, to raise their assistance to farmers via price-distorting measures; developing countries are unlikely to return to farm export taxation (apart from temporarily at times of price spikes, discussed in footnote 9); and all countries are unlikely to return to high levels of protection for the manufacturing sector. But if the WTO's DDA fails to conclude with an agreement to greatly reduce developing countries' bindings on agricultural import tariffs, political-economy theory and past experience would suggest that their agricultural protection growth may well continue. More specifically, such protection increases could be expected to be related to growth in per capita income and in agricultural comparative disadvantage, and to be higher for import-competing than exported farm products. According to the econometric evidence reported in Anderson (2010a, Table 2.12), an equation worth considering for projecting each country's tradable food products is the following:

$$\mathrm{NRA}_i = f(\mathrm{YPC}, \mathrm{LPC}, \mathrm{TSI}_i), \qquad (13.2)$$

where YPC is the log of real per capita national income, LPC is the log of arable land per capita (an indicator of agricultural comparative advantage), and TSI_i is a trade specialisation index for product i (exports minus imports as a fraction of exports plus imports of i), which, by definition, ranges between minus and plus one.

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[9]There are virtually no effective WTO disciplines on export taxes though. Some developing countries have chosen to use that freedom to impose export taxes (and lower import taxes) temporarily when international food price spike upwards, so as to not transmit all of such price spikes to their domestic food market. As already mentioned, the gap between their applied and bound import tariff also gives them the latitude to raise applied rates when international prices fall, so as to protect their farmers from that slump. Evidence of extensive use of these freedoms is provided by Anderson and Nelgen (forthcoming).

4   PROJECTING DEVELOPING-COUNTRY NOMINAL RATES OF ASSISTANCE
     FROM 2004 TO 2030

Most modellers of trade-related policies for the global economy make use
of the GTAP database, the latest version of which is for 2004 (Narayanan
and Walmsley 2008).[10] Modellers wishing to estimate the likely effects of a
future structural or policy shock need to first project a baseline of the global
economy to a target future date such as 2030 in the absence of that shock. This
can then serve as the counterfactual against which to compare the economy
in that year in the presence of the shock of interest (*eg*, the implementation
of a multilateral trade agreement such as that being sought under the WTO's
DDA).

Typically, modellers would assume for their baseline that trade-related
policies remain unchanged over the projection period. The purpose of this
section is to provide an alternative counterfactual. It does so by reporting
estimates of Equation (13.2) for ten key traded farm products as of 2004, and
of projections of NRAs for each of those products to 2030 for each developing
country in the World Bank distortion database compiled by Anderson and
Valenzuela (2008). The sample for the regression equation is all 75 countries
in the World Bank distortion database in 2004.

The regression equations are reported in Table 13.1. The results are not
highly significant, although, apart from maize, at least one of the three
explanatory variables is statistically significant in each equation. The signif-
icant result for maize is unsurprising considering the very small range of its
NRAs in the panel data and their average of almost zero (see Figure A13.1(e) in
the Appendix). For the other nine products, the R^2 values are between 0.21 and
0.55. All product equations have a positive coefficient for YPC and a negative
coefficient for LPC, as predicted by theory. All except soybeans have a negative
coefficient for TSI, again consistent with the above theory. (Figure A13.1(e) in
the Appendix shows that, in the panel data, soybean has an even smaller range
of NRAs around its zero average than maize.)

To use these equations to project NRAs, it is necessary to have projected
values for the three exogenous variables. These are taken from a recent
exercise that employs the GTAP economy-wide model to project the world
economy to 2030 (Anderson and Strutt 2011). That projection assumes the
2004 trade-related policies of each country do not change over that 26-year
period, but that national real GDP, population, unskilled and skilled labour,

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[10]For modellers with a particular interest in developing-country agriculture, an alter-
native set of distortion estimates has been provided by Valenzuela and Anderson (2008),
based on the World Bank distortion database compiled by Anderson and Valenzuela (2008).
This alternative set goes beyond the GTAP set (which mainly includes import tariffs) to
incorporate also export taxes, import subsidies, and domestic producer or consumer taxes
or subsidies. It is the set adopted in the present study.

Table 13.1: *Relationship between NRA and income, arable land endowment and a product's trade status: developing countries, 2004 (endogenous variable NRA).*

Exogenous variables	Beef	Cotton	Maize	Milk	Pigmeat	Poultry	Rice	Soybean	Sugar	Wheat
YPC	0.378*** (0.0662)	0.150** (0.0655)	0.0222 (0.0306)	0.198*** (0.0594)	0.0895 (0.0579)	0.197** (0.0928)	0.396*** (0.0891)	0.330* (0.173)	0.268*** (0.0542)	0.0555* (0.0306)
LPC	−0.200** (0.0977)	−0.0477 (0.120)	−0.0735 (0.0717)	−0.265*** (0.0817)	−0.135* (0.0776)	−0.265* (0.145)	−0.725*** (0.173)	−0.849** (0.311)	−0.122 (0.112)	−0.122* (0.0691)
TSI_i	−0.169 (0.120)	−0.00249 (0.107)	−0.00486 (0.0747)	−0.0383 (0.101)	−0.0795 (0.0973)	−0.354* (0.187)	−0.369** (0.159)	0.115 (0.328)	−0.176 (0.126)	−0.114 (0.0733)
Constant	−2.978*** (0.592)	−1.227** (0.552)	−0.141 (0.261)	−1.483*** (0.530)	−0.693 (0.522)	−1.439* (0.833)	−3.701*** (0.766)	−3.517** (1.561)	−1.295*** (0.482)	−0.481* (0.271)
Observations	44	22	56	41	35	42	37	26	57	53
R^2	0.554	0.241	0.031	0.410	0.214	0.268	0.527	0.309	0.336	0.265
Adjusted R^2	0.521	0.114	−0.0248	0.362	0.138	0.210	0.484	0.215	0.298	0.220

Standard errors are shown in parentheses. '***', '**', and '*' denote significance at the $p < 0.01$, $p < 0.05$ and $p < 0.10$ levels, respectively. The exogenous variables are defined in Equation 13.2.

Source: authors' estimates, based on NRA estimates and other variable data compiled from the World Bank (World Development Indicators) and the United Nations (COMTRADE data) by Anderson and Valenzuela (2008).

capital, agricultural land and other natural resources (oil, gas, coal and other minerals) grow at exogenously set rates. Those exogenous growth rates are based on Asian Development Bank, OECD, USDA and World Bank projections, using historical trends in mineral and energy raw material reserves. Given those exogenous growth rates, the model is able to derive implied rates of growth in total factor productivity and GDP per capita. For any one country, the rate of total factor productivity growth is assumed to be the same in each of its non-primary sectors, and to be somewhat higher in its primary sectors. Higher productivity growth rates for primary activities were characteristic of the latter half of the 20th century (Martin and Mitra 2001), and are necessary for this projection if real international prices of primary products (relative to the aggregate change for all products) are to rise only modestly to 2030.[11] Once those total factor productivity growth rates for primary sectors are determined, the uniform rates for non-primary sectors are recalculated to ensure that the targeted GDP levels are obtained.

In addition to taking the real GDP, land and population values for 2030 from the Anderson and Strutt (2011) study, we also use its estimated trade structure for 2030 to estimate a value for TSI for each product and country. That provides all the exogenous variables needed to estimate a potential endogenous value for the NRA for each product and country. This estimated value is then subjected to the following series of tests. First, if a farm product was a net export product in 2004 and is projected to remain so in 2030 (TSI > 0), the NRA is assumed to be less than its 2004 NRA or zero. That is, we assume that all export taxes will be phased out by 2030, and that no new export subsidies will be introduced. Second, if it is projected to be an import-competing product in 2030 (TSI < 0), then its 2030 NRA is assumed to be the lesser of the equation's projected NRA or its WTO-bound tariff rate. That is, we assume that all developing-country governments respect their commitment to WTO not to exceed their tariff bindings, but, otherwise, they feel free to respond to domestic political forces in determining the degree of protection provided to import-competing farm industries.

Using this methodology and set of selection criteria, we obtain projected values for each of the 10 products and for each of the 39 developing countries

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[11]That calibration is consistent with the World Bank's projections over the coming decades (see van der Mensbrugghe and Roson 2010) and with the calibration of the GTAP model used below. An alternative in which agricultural prices fall is considered to be unlikely over the next two decades, given the slowdown in agricultural research and development investment since 1990 and the consequent delayed slowing of farm productivity growth (Alston *et al* 2010). A fall is even less likely for farm products if fossil fuel prices and biofuel mandates in the United States, EU and elsewhere are maintained over the next decade. Another alternative is that real international primary product prices will rise over coming decades, in which case assistance to farmers might be lower than suggested below. For reasons of space, neither of these alternatives is considered below, but they could be worthy of subsequent analysis.

Table 13.2: *Nominal rate of assistance averages by region and product: estimated 2004 and projected 2030 (in percent, using 2004 value of production at undistorted prices as weights).*

	2004	2030
Asia		
Beef	72	38
Cotton	1	7
Maize	7	23
Milk	21	14
Pigmeat	2	18
Poultry	4	17
Rice	14	85
Soybean	9	33
Sugar	49	92
Wheat	13	30
Africa		
Beef	−23	17
Cotton	−35	0
Maize	−13	12
Milk	−2	13
Poultry	20	5
Rice	−5	34
Soybean	−49	0
Sugar	51	51
Wheat	2	14
Latin America		
Beef	−8	24
Cotton	1	0
Maize	−9	14
Milk	32	51
Pigmeat	−8	25
Poultry	11	15
Rice	31	55
Soybean	−8	0
Sugar	22	21
Wheat	−7	13
High-income countries		
Beef	36	36
Cotton	26	26
Maize	17	17
Milk	62	62
Pigmeat	15	15
Poultry	23	23
Rice	328	328
Soybean	3	3
Sugar	162	162
Wheat	3	3

Source: authors' compilation (see text for methodology).

in the World Bank sample. Their averages across countries for each region and across products for each country are reported in Tables 13.2 and 13.3, respectively.

Table 13.3: *Nominal rate of assistance ten-product averages by country: estimated 2004 and projected 2030 (in percent, using 2004 value of production at undistorted prices as weights).*

(a) By country		
	2004	2030
Bangladesh	−4	172
China	2	30
India	22	27
Indonesia	15	113
Korea	258	166
Malaysia	65	71
Pakistan	−1	22
Philippines	10	91
Sri Lanka	−9	0
Thailand	1	27
Vietnam	26	48
Benin	0	0
Burkina Faso	0	0
Cameroon	0	12
Chad	0	0
Côte d'Ivoire	9	19
Egypt, Arab Rep. of	−11	9
Ethiopia	−2	15
Ghana	46	20
Kenya	7	15
Madagascar	11	30
Mali	43	1
Mozambique	65	55
Nigeria	−16	32
Senegal	4	27
South Africa	4	26
Sudan	−15	9
Tanzania	−1	22
Togo	6	1
Uganda	6	34
Zambia	−41	16
Zimbabwe	−75	15
Argentina	−23	0
Brazil	5	4
Chile	0	72
Colombia	25	67
Dominican Republic	24	11
Mexico	0	43
Nicaragua	−6	8

What do those estimates reveal? For developing countries as a whole, the average NRA for these products is projected to rise from 7% in 2004 to 35% by 2030. It just happens that 35% is the 2004 average for high-income countries

Table 13.3: *Continued.*

(b) By region		
	2004	2030
Asia	11	42
Africa	−9	16
Latin America	−1	17
All developing	7	35
All high-income	35	35
World	20	35

Source: authors' compilation (see text for methodology).

(including Europe's transition economies). Since we assume that the NRAs for the latter countries do not change over the projection period, this means that the NRA for these ten products for the world as a whole is projected to rise, from 20% in 2004 to 35% by 2030, other things being equal. As shown in Table 13.3(b), the biggest increase is in developing Asia, where the average NRA rises from 11% to 42% over the projection period, followed by Africa (a rise from −9% to 16%) and Latin America (a rise from −1% to 17%). The biggest rises are in rice and sugar, which is unsurprising, since they are the most distorted products in high-income countries (see bottom of Table 13.2).

For farm products other than these ten major ones, and for highly processed food and other merchandise, we assume that developing-country import protection rates in 2030 are the same as in 2004, and that any agricultural export taxes in 2004 are eliminated by 2030.

5   PROJECTING THE COST OF TRADE-DISTORTING POLICIES AS OF 2030

What would those projected NRAs imply about the cost of agricultural and other price-distorting and trade-distorting policies in the world economy in 2030, compared with assuming no changes in trade policies since 2004? Answering that question requires the results from two global trade liberalisation simulations to be compared using a global economy-wide model that has been projected to 2030 with the 2004 GTAP protection database amended using the alternative fuller agricultural distortions for developing countries in Valenzuela and Anderson (2008). The first experiment assumes that those 2004 distortions remain unchanged over the projection period, while the second assumes those 2004 distortions to have changed in the ways described in the previous section for developing countries, but that tariffs in high-income countries stay the same as in 2004. The import tariffs for the first simulation are shown in the first three columns of Table 13.4, while the average tariffs for all of agriculture and processed food for the second simulation are shown in the final column of Table 13.4.

Table 13.4: *Average import-weighted tariff protection rates, by sector, 2030 (in percent).*

	2030 rates assuming no policy changes (same as 2004)[a]			2030 agricultural and food rates, assuming higher developing-country agricultural protection[a]
	Agricultural and processed food	Other primary	Manufactures	
Western Europe	5.0	0.1	1.1	5.0
Eastern Europe and Russia	12.9	0.6	5.5	12.8
United States and Canada	5.9	0.2	1.8	6.1
Australia and New Zealand	2.2	0.0	4.1	2.2
Japan	24.2	0.0	1.1	24.7
China	10.9	0.8	6.5	20.4
ASEAN	13.1	0.7	4.6	19.6
Pacific Islands	22.4	0.6	7.9	32.4
Rest of East Asia	26.6	4.3	3.4	36.8
India	11.8	10.5	13.5	30.0
Rest of South Asia	13.1	5.3	14.8	18.9
Central Asia	10.3	0.1	5.5	23.4
Latin America	7.5	1.6	7.0	20.0
Middle East and Africa	13.1	2.6	9.4	26.6
High-income countries	7.3	0.2	1.7	7.3
Developing countries[b]	12.3	3.3	6.7	23.0
Of which: Asia	12.6	3.4	5.9	22.6
Total	10.3	2.1	3.7	16.2

[a]See text for description of the two alternative simulations. [b]Developing countries are defined as all but the first five in the above list (and so include Central Asia). Turkey is included in 'Eastern Europe'; the new EU27 members of Central and South-East Europe are included in 'Western Europe'.

Source: Anderson and Strutt (2011).

Such an exercise has been undertaken recently by Anderson and Strutt (2011), using the standard GTAP model of the world economy (Hertel 1997) and its version 7.1 database for 2004. They aggregate the model to 33 countries/country groups and 26 sector/product groups, then project the global economy to 2030 by first assuming no policy changes and then assuming the agricultural protection growth in developing countries described earlier. Welfare results from those two simulations are summarised in Tables 13.5 and 13.6.

Table 13.5 shows the distribution of the gains that would come from the full global liberalisation of all merchandise trade as of 2030. A comparison of parts (a) and (b) of Table 13.5 suggests, unsurprisingly, that the global welfare cost of trade policies would be somewhat higher with that agricultural protection growth. In particular, the welfare cost of developing countries'

Table 13.5: *Effects of full global liberalisation of agricultural and other merchandise trade on global economic welfare: 2030, by sectoral policies and regions.*

(a) Core simulation

	Regional gain (2004 $ billion)			Regional gain (%)		
	Developing countries	High-income countries	All countries	Developing countries	High-income countries	All countries
Developing countries liberalise						
Agricultural/food	68	15	84	34	11	25
Other products	87	29	116	43	22	34
All products	155	45	200	76	33	59
High-income countries liberalise						
Agricultural/food	20	105	125	10	78	37
Other products	29	−15	15	14	−11	4
All products	49	91	140	24	67	41
All countries liberalise						
Agricultural/food	88	121	209	43	89	62
Other products	116	15	131	57	11	39
All products	204	136	340	100	100	100

(b) Assuming agricultural protection growth in developing countries

	Regional gain (2004 $ billion)			Regional gain (%)		
	Developing countries	High-income countries	All countries	Developing countries	High-income countries	All countries
Developing countries liberalise						
Agricultural/food	87	26	114	38	18	30
Other products	90	30	120	39	20	32
All products	177	56	233	78	38	62
High-income countries liberalise						
Agricultural/food	20	107	126	9	72	34
Other products	32	−15	17	14	−10	4
All products	51	92	143	23	62	38
All countries liberalise						
Agricultural/food	107	133	240	47	90	64
Other products	121	15	136	53	10	36
All products	228	148	376	100	100	100

Source: Anderson and Strutt (2011).

agricultural policies would be more than a quarter higher, increasing the cost of their policies overall by one-ninth, and raising agriculture's contribution to the global cost of all goods trade distortions from 62% to 64%.

Table 13.6: *Effects of full global liberalisation of agricultural and other merchandise trade on global economic welfare (by country/region, without and with developing-country agricultural protection growth, 2030).*

	Global MFN from 2004 protection rates[a]	Global MFN from higher agricultural protection case[a]
Western Europe	60.2	65.2
Eastern Europe and Russia	17.0	20.4
United States and Canada	5.0	18.7
Australia and New Zealand	6.8	8.4
Japan	32.1	30.8
China	30.2	25.2
ASEAN	37.6	38.5
Pacific Islands	1.0	1.2
Rest of East Asia	38.8	37.2
India	28.4	35.1
Rest of South Asia	6.3	0.3
Central Asia	3.3	4.4
Latin America	25.6	34.3
Middle East and Africa	47.8	56.6
High-income countries	121.1	143.6
Developing countries[b]	218.8	232.8
Of which: Asia	145.5	141.9
Other[b]	73.4	90.9
Total	339.9	376.4

[a]See text for description of the two alternative simulations. [b]Developing countries are defined as all but the first five in the above list (and so include Central Asia). Turkey is included in 'Eastern Europe'; the new EU27 members of Central and South-Eastern Europe are included in 'Western Europe'.

Source: Anderson and Strutt (2011).

Table 13.6 disaggregates those results to reveal their effects on major economies. The differences in the two sets of effects are a combination of higher protection rates and consumer prices for some farm products in some developing countries; substitution towards the production and away from the consumption of those more protected products in those countries; and, as a consequence of those adjustments, terms of trade changes for all countries. For most, but not all, of the countries/country groups shown in Table 13.6, their welfare would be lower (and their gain from liberalisation greater) in the scenario in which agricultural protection was greater. The exceptions are food-importing Japan, China and the rest of South Asia, all of whom would have benefited from the lower international prices associated with higher agricultural protection and who, thus, would suffer a greater terms-of-trade deterioration with reform.

6   CONCLUSIONS

The above analysis suggests that the common assumption in developing baseline projections for the world economy (namely, that trade-related policies do not change over a projection period as long as a quarter-century) may lead to underestimation of the gains from the phased implementation of prospective trade agreements. Had Japan and Korea been required to bind their agricultural tariffs at the rates in place when they signed onto the GATT in 1955 and 1967, respectively, estimates of the economic benefits of their membership of that club would have differed greatly had it been assumed their farm tariffs would remain unchanged over the following quarter-century rather than rise, as indeed they did, and spectacularly so (Figure 13.7).

At the time of China's accession to WTO in December 2001, its NRA was less than 5% (see Figure 13.7), or 7.3% for import-competing agriculture, according to Anderson and Valenzuela (2008). Its average bound import tariff commitment was about twice that (16% in 2005), but what matters most is out-of-quota bindings on the items whose imports are restricted by TRQs. The latter tariff bindings as of 2005 for China were 65% for grains, 50% for sugar and 40% for cotton (WTO, ITC and UNCTAD 2007, p. 60). Hence, it too has scope to raise its agricultural protection substantially, making the assumed doubling in the present study (see Table 13.4) look quite feasible.

The alternative to the common 'business as usual' approach projections of assuming the status quo will prevail on the policy front, as developed in this study, illustrates the extent to which results could differ depending on the chosen counterfactual against which future trade-liberalising scenarios are compared. The key finding is that the contribution of farm policies to the estimated welfare cost of trade-distorting policies by 2030 is considerably higher—especially for developing countries—than if one assumes no change in farm policies over the next two decades.

If developing countries are concerned that their food import dependence would increase if they did not raise their import tariffs over time, greater farm productivity growth could alleviate that concern. Since further investments in agricultural research and development typically have very high expected payoffs in developing countries (Alston *et al* 2000) and are also very likely to reduce poverty (Ivanic and Martin 2010), a boost to such public investment would be welfare enhancing, in contrast to the costly alternative of agricultural protection growth.

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7 APPENDIX
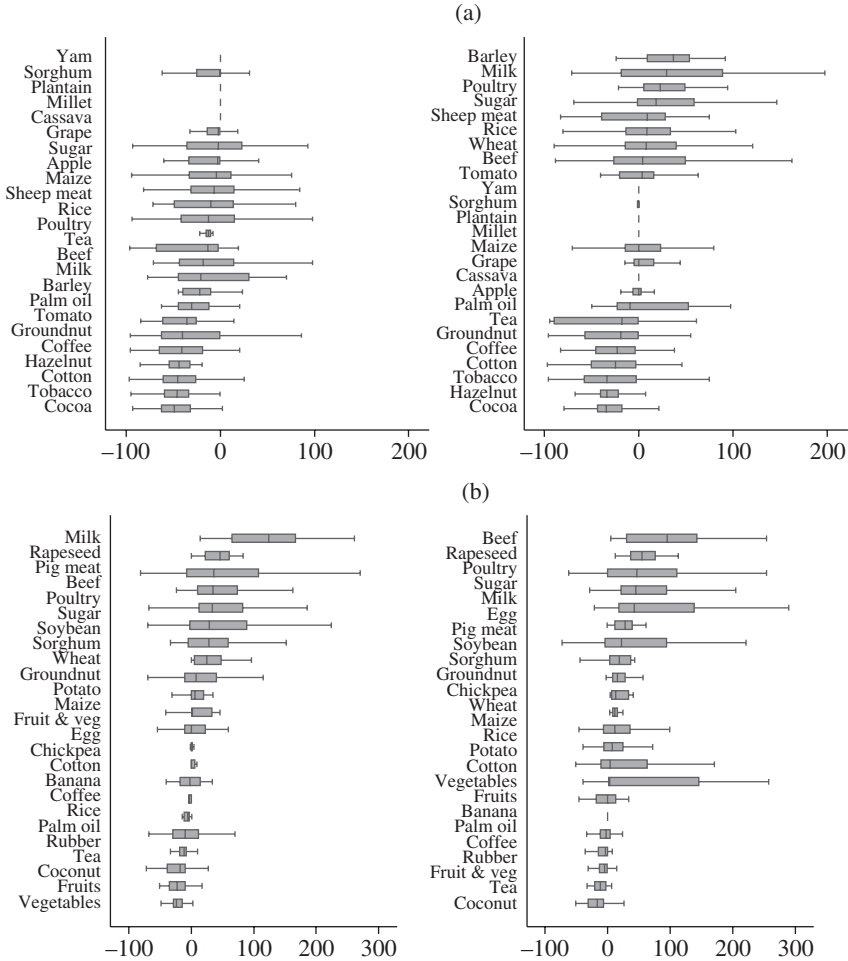
Figure A13.1: *Box plot distributions of NRAs for 25 major agricultural products: various world regions, 1955–2007.*

(a) All 21 focus African countries, plus Turkey (n = 7988). (b) All 12 focus Asian developing economies (excluding Japan) (n = 5410). Long bar shows range within which 95% of the NRAs fall: 50% fall in the shaded area, and the vertical line within the shaded area is the median NRA for the sample period.
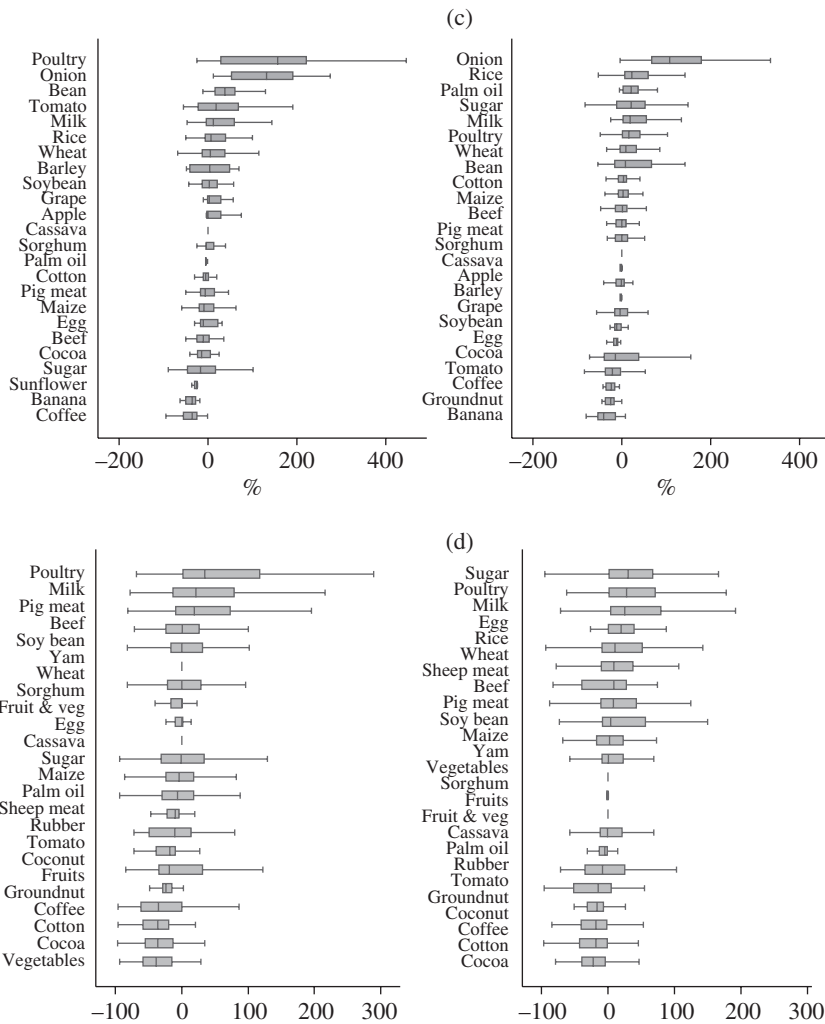
Figure A13.1: *Continued.*
(c) All 8 focus Latin American countries (n = 4180). (d) All 41 focus developing economies (including Turkey) (n = 14392).

(e)
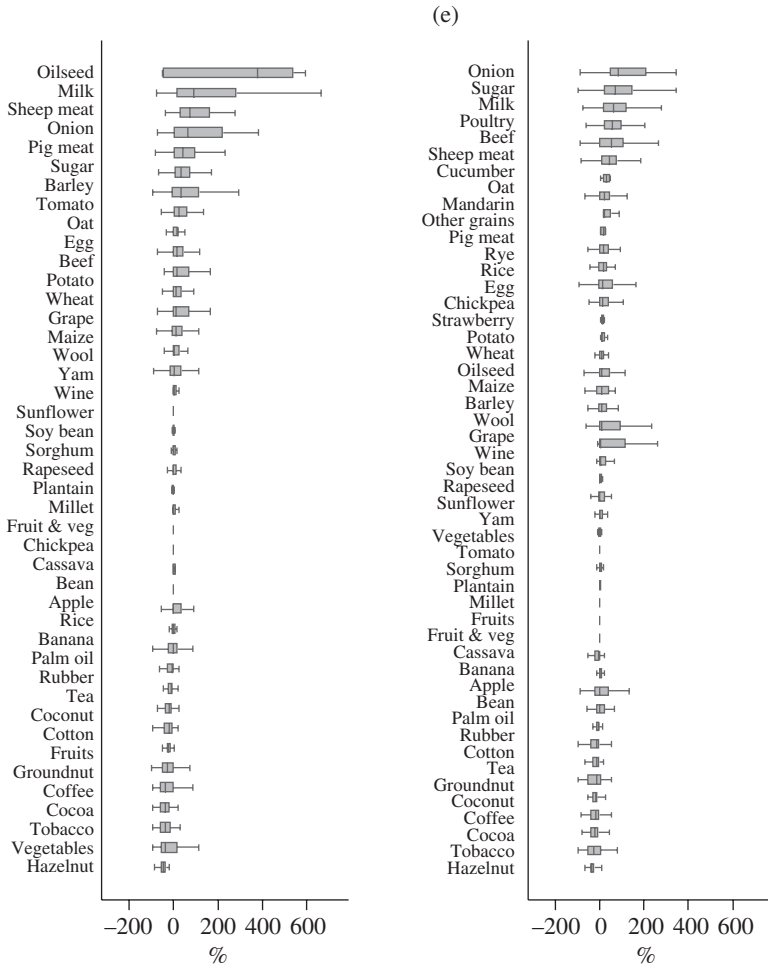
Figure A13.1: *Continued.*

(e) All 73 focus economies of the world, including high-income and transition economies (n = 34833).

Source: Anderson (2010a, Appendix), drawn from estimates in Anderson and Valen-zuela (2008).

U.S. Anti-dumping: Much Ado about Zeroing

CHAD P. BOWN AND THOMAS J. PRUSA[1]

1 INTRODUCTION

One of the Uruguay Round's more notable achievements was the establishment of the WTO Dispute Settlement Understanding (DSU). When the Uruguay Round negotiations were initiated in 1986 there was a growing consensus that the original GATT dispute settlement system was ineffective (Hudec 1993). Compliance was a key failing of the old system; GATT contracting countries either blocked or simply ignored the findings of panels.[2] This was particularly problematic and embarrassing for high-profile trade disputes involving both the United States and the EC over, for example, bananas, beef hormones and tuna-dolphin. The failure to resolve these prominent disputes undermined the credibility of the GATT dispute process.

Consequently, a dispute settlement process that improved on both the timeliness and enforceability of dispute decisions was one of the major goals of the Uruguay Round. In many respects, the WTO DSU does represent a significant advance over the toothless GATT system.[3] However, frustrations remain. In theory, the new system induces compliance by increasing the possibility that plaintiffs will obtain the right to levy compensatory/retaliatory tariffs against defendants who do not adjust their policies. In reality, compliance has, on occasion, continued to be a problem. Countries continue to argue about what

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[2]The need to reach consensus also affected how panels constructed their rulings, as the three panelists knew that their report also had to be accepted by the losing party in order to be adopted. Accordingly, there was an incentive to rule not solely on the basis of the legal merits of a complaint, but to aim for a 'diplomatic' solution by crafting a compromise that would be acceptable to both sides.

[3]Hudec (1999) refers to the increasingly legalised WTO dispute settlement as one of 'jurist's jurisprudence' when compared with the GATT system's 'diplomat's jurisprudence' (Hudec 1970). Jackson (1997) and Hoekman and Kostecki (2009, Chapter 5) also provide useful discussions of the evolution of the GATT and WTO dispute systems. Bown (2009) emphasises the implications of WTO dispute settlement for developing countries.

constitutes compliance, and half measures can delay even 'compensatory' tariffs for years.[4]

While the GATT dispute system was damaged by its failure in highly prominent cases, the shortcomings of the WTO DSU are most apparent in a series of seemingly minor disputes involving the esoteric practice of zeroing in anti-dumping investigations. Zeroing refers to the practice of replacing the actual amount of dumping that yield negative dumping margins with a value of zero prior to the final calculation of a weighted-average margin of dumping for the product under investigation with respect to the exporters under investigation. Zeroing drops transactions that have negative margins and, hence, increases the overall dumping margins and the resulting size of the applied anti-dumping duty. As we will show, zeroing makes it extremely difficult for a firm to avoid dumping. This makes zeroing a major irritant to exporters while being highly desired by import-competing industries.

Over the past decade, the WTO AB has heard more than a dozen disputes involving zeroing, and, *each* time, has found that the practice violates the WTO Anti-dumping Agreement (ADA).[5] The first zeroing case was initiated by India in 1998 against the EC (*EC – Bed Linen*).[6] All but one of the remaining cases has involved the United States as a respondent. The EC changed its anti-dumping procedures after losing at the WTO and no longer 'zeros'. The United States, by contrast, has not yet fully complied with the WTO decisions and many WTO AB cases involving the United States' zeroing practice remain unresolved.

The WTO's current inability to resolve the zeroing issue is reminiscent of the enforcement problems that plagued the GATT dispute system. While the DSU may be working more or less as designed, is the zeroing issue a first indication that the WTO DSU must be reformed? Put differently, is zeroing an

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[4]Wilson (2007) notes that the respondent country has eventually brought itself into compliance in the vast majority of WTO disputes that have resulted in adverse panel and Appellate Body rulings. Bown and Pauwelyn (2010) provide a collection of research examining the WTO dispute settlement process for the roughly dozen cases over the 1995–2007 period that resulted in at least a period of non-compliance and, thus, WTO Article 22.6 arbitration rulings that authorised formal retaliation by the complainants. Examples of such disputes include *Brazil – Aircraft Subsidies (Canada), Canada – Aircraft Subsidies (Brazil)*; *EC – Bananas (Ecuador)*; *EC – Bananas (US)*; *EC – Hormones (Canada)*; *EC – Hormones (US)*; *US – Anti-dumping Act of 1916 (EC)*; *US – Continuing Dumping and Subsidy Offset Act (Byrd Amendment) (Brazil, Canada, Chile, EC, India, Japan, Korea, Mexico)*; *US – Foreign Sales Corporations (EC)*; *US – Internet Gambling (Antigua and Barbuda)*; and *US – Upland Cotton (Brazil)*.

[5]At least four more cases involving zeroing are pending AB decisions.

[6]Janow and Staiger (2003) and Grossman and Sykes (2006) provide an analysis of a variety of legal–economic issues associated with the first zeroing dispute of *EC – Bed Linen*. See also Crowley and Howse (2010), who examine the zeroing issues in *US – Stainless Steel (Mexico)*.

issue that could be better resolved through multilateral negotiations? If so, who should be at the negotiating table and what is at stake?

This chapter presents a positive analysis seeking to provide some perspective on the zeroing issue. How did we get here? What exactly is zeroing? Why was the EC able to stop zeroing, while the United States was not? Are developing-country exporters also exposed to zeroing? To date, zeroing disputes have been dominated by developed countries, not only on the respondent side, but also on the complainant side. Should we expect a blizzard of zeroing complaints filed by developing countries? Even if the disputes fail to arise, is there evidence that zeroing impacts exports from developing countries as much as those from developed countries? Finally, we will try to get a better sense of zeroing's importance. Is it a 'big' issue? Or perhaps is this whole mess over zeroing (with apologies to William Shakespeare) much ado about nothing?

Anticipating our conclusions, we find that a unique set of characteristics have conspired to make zeroing such a bothersome issue. The WTO legislative history and technical nature of the zeroing violation likely contribute to the United States' feeling that its current policy is in compliance. The United States' retrospective duty collection system complicates the task of complying with the WTO AB decisions. By contrast, the prospective nature of the EC's duty collection system made zeroing a much less economically important issue, which explains why it was relatively easy for the EC to comply.

Any U.S. intransigence cannot alone explain why zeroing consumes so much of the WTO dispute settlement caseload, which thus serves to heighten the political sensitivity to the issue. The United States has anti-dumping duties on thousands of companies, on hundreds of separate products, and on more than 50 different WTO members. Given that the United States 'zeros' in *every* anti-dumping margin review calculation, the scope of the potential violation is enormous. The WTO AB could become a full-time zeroing body.[7]

The rest of this chapter proceeds as follows. Section 2 provides a discussion of the economic relevance of the zeroing issue in the context of the U.S. anti-dumping caseload. In Section 3 we more formally introduce anti-dumping and zeroing, and we identify how key factors such as export price volatility are likely to accentuate the impact of zeroing on the calculation of dumping margins. Section 4 then reviews the WTO dispute settlement caseload over the zeroing issue. We describe in detail the United States' retrospective system for assessing anti-dumping margins and the impact that this has on zeroing in Section 5. Section 6 focuses on the existing evidence of impact of the zeroing

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[7]It also should be mentioned that the AB may have inadvertently exacerbated the issue of a high volume of zeroing-related cases through its initial choice of addressing zeroing in a piecemeal fashion. Bown and Sykes (2008) describe the implications of the AB's narrow and iterative approach to ruling on zeroing, comparing it with a more expansive approach that might have clarified the full scope of permissibility and impermissibility of zeroing across all of the procedures of the anti-dumping process in which it might be used.

methodology on dumping margins. Section 7 provides our own empirical evidence into the question of zeroing's impact, and we find that zeroing is as likely to impact the anti-dumping margins on developing-country exports (which has typically not been brought forward to WTO dispute settlement) as anti-dumping margins on developed economy exports (which has frequently been brought to the DSU). Finally, Section 8 concludes.

2   THE ECONOMIC RELEVANCE OF ZEROING

Whether zeroing is a 'big' or 'small' issue depends on one's perspective as well as recognition of the likely policy alternatives in a world without zeroing. We begin by discussing some factors that suggest that zeroing is a major trade issue.

2.1   *Scope: Number of Cases*

In Figure 14.1 we provide one measure of U.S. anti-dumping activity. Here we plot the number of products affected by U.S. anti-dumping actions since 1990.[8] The solid line depicts the stock of products under order, while the dashed line shows the number of new products being investigated in each year. As shown, the U.S. Department of Commerce (USDOC) currently has orders on more than 400 products. The dashed line reveals that about 75 products are subject to new investigations each year, though with fluctuations that are broadly consistent with macroeconomic fluctuations (Knetter and Prusa 2003). This means that, in addition to the large stock of products that have been 'zeroed', many new additional WTO zeroing violations probably occur each year.

   Moreover, given that most products are exported by multiple firms and by multiple countries, these numbers are probably a lower bound on the number of potential zeroing complaints. This raises the real possibility that the United States (and the WTO AB) could potentially be confronted with hundreds of zeroing disputes.

2.2   *Scope: Countries Affected*

Despite a dispute settlement history that has mainly entailed industrialised countries challenging the United States' use of zeroing in anti-dumping cases, there is every reason to believe that zeroing is just as important for developing-country exporters. First, developing countries are increasingly affected by U.S. anti-dumping. In Figure 14.2 we report the stock of U.S. anti-dumping measures in effect for each year from 1990 through 2009. In this chart we include information for both the products and the exporting country.

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[8]In this figure we follow the common practice of using the eight-digit tariff line to define what constitutes a product.
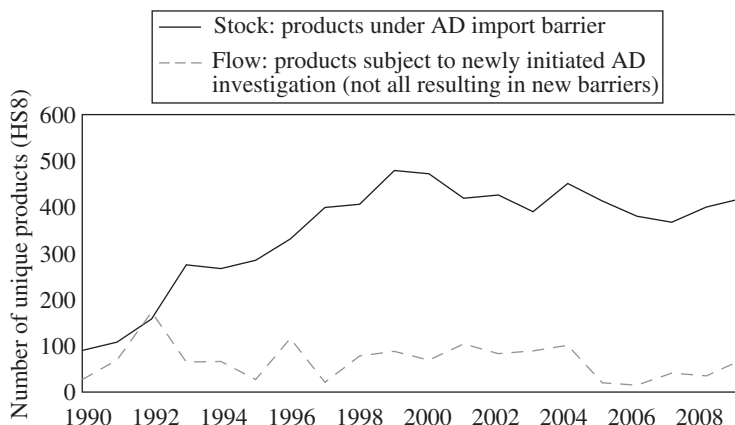
Figure 14.1: *Stock and flow of U.S. anti-dumping measures, 1990–2009.*
The stock is computed on a yearly basis as the number of eight-digit HS products subject to U.S. preliminary and/or final anti-dumping measures. The flow is computed on a yearly basis as the number of eight-digit HS products subject to U.S. anti-dumping investigations, some of which may not result in a duty. Since the data rely on the HS system, the stock does not reflect any imposed or removed anti-dumping measures that were imposed before 1988 under the annotated Tariff Schedule for the United States product classification system.
Source: compiled by the authors from Bown (2010a).

We divide the exporting countries into three groups: developed countries, China, and other (non-China) developing countries.[9] The information in Figure 14.2 indicates that over 60% of the stock of products covered by U.S. anti-dumping orders in place between 2006 and 2009 were on exports sourced from developing countries, more than doubling the share of total products affected at the onset of the WTO in 1995. The stock of measures affecting developing-country exports has been increasing over time, as exports from many emerging economies have continued to expand.[10] Looking forward, it is reasonable to think that this emerging pattern of anti-dumping measures

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[9]We separate China due to the heavy incidence of anti-dumping cases brought against it (Bown 2010c).

[10]Note that it is notoriously difficult to compute estimates of the incidence of trade barriers such as anti-dumping. Thus, here we address this not by attempting to construct a measure in value terms but instead by examining the count of eight-digit HS and exporter combinations subject to U.S. anti-dumping measures. On a value-weighted basis, it is likely that a larger share of the incidence of the stock of U.S. anti-dumping activity falls on developed-economy exports, given the larger dollar values associated with their trade. It should also be noted that, while the United States frequently uses anti-dumping to restrict imports from middle-income economies such as Brazil, China, India, Indonesia, South Africa, Thailand and Turkey, the United States has typically not used anti-dumping to restrict imports sourced from low-income economies, with the exception of Vietnam.
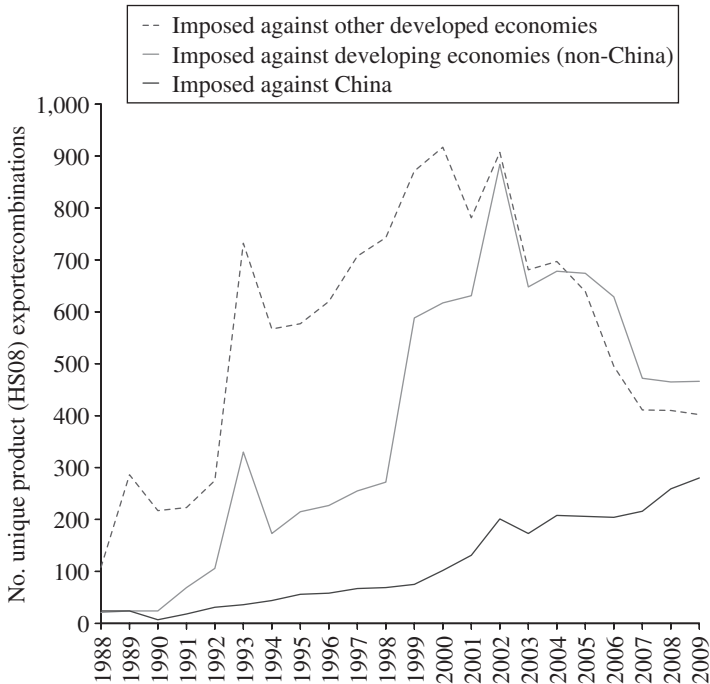
Figure 14.2: *The stock of U.S. anti-dumping measures imposed and in place, 1990–2009.*

The stock is computed on a yearly basis as the number of eight-digit HS product-exporter combinations subject to U.S. preliminary and/or final anti-dumping measures. Since the data relies on the HS system, the stock does not reflect any imposed or removed anti-dumping measures that were imposed before 1988 under the annotated Tariff Schedule for The United States product classification system.

Source: compiled by the authors from Bown (2010a).

involving developing countries will also be seen in the pattern of zeroing complaints at the WTO AB. Although developing countries have currently only filed a few complaints challenging the practice, if the United States continues its non-compliance stance, there will, in all likelihood, be more and more zeroing cases against the United States, especially given that the AB's position towards zeroing is well established.

2.3   Impact and Incidence

To date, the best evidence we have suggests that, were the United States to stop zeroing, perhaps as much as half of all U.S. anti-dumping measures would be removed and the duties in the other cases would fall significantly. Our analysis also suggests that dumping margins calculated and, hence, duties imposed on developing countries are as likely to be affected by zeroing as

those imposed on developed countries. As we will explain, zeroing punishes suppliers with export price variation in particular. We collect import pricing data for a number of the biggest anti-dumping disputes over the past decade (many of which were the basis for WTO zeroing complaints) and review the price volatility for developed and developing countries. We find that developing countries have about the same price variation and, hence, their anti-dumping duties are likely to be similarly affected by zeroing.

While zeroing is likely to impact developing-country exporters and may lead to escalating tensions through WTO dispute settlement, there are other factors suggesting that zeroing may be less important than the above discussion indicates.

2.4   *Anti-dumping and WTO AB*

First, when it comes to dispute settlement, a broad and general point is simply that WTO disputes over anti-dumping are highly likely to continue to occur for reasons that have nothing to do with zeroing. Bown (2009, p. 80) estimates that, over the 2001–8 period, more than 30% of the entire WTO dispute initiation caseload involved challenges to just two policies: anti-dumping or countervailing duties, anti-dumping's sister 'unfair trade' policy.[11] Because much of this caseload of WTO anti-dumping disputes confronted other countries' (and not the United States') use of anti-dumping, it was not intended to address the specific issue of zeroing. Even if there were no disputes involving zeroing, a large fraction of the WTO AB's workload would still involve anti-dumping and countervailing duty issues.

There are a number of reasons why WTO disputes challenging anti-dumping frequently occur. Perhaps the most important explanation is the simple fact that the basic use of anti-dumping import restrictions has increased over time and across the WTO membership (Prusa 2001).[12] Dozens of economies now

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[11]Only 15% of the dispute caseload during the WTO's first six years in existence (1995–2000) related to anti-dumping or countervailing duties. While a large share of the DSU caseload does involve challenges to many countries' use of anti-dumping, this is not to imply that most imposed anti-dumping measures get challenged through the DSU. In fact, it is quite the opposite. Bown (2009, p. 82) estimates that fewer than 7% of the total WTO membership's anti-dumping investigations that resulted in (more than 1600) imposed measures over the 1995–2008 period faced formal challenges through dispute settlement. Nevertheless, this figure is much higher for the United States; Bown and Crowley (2010) note that almost 21% (27 out of 130) of the U.S. anti-dumping measures imposed against WTO members over the 1997–2006 period were challenged through formal dispute settlement, including a number via the zeroing cases we describe below.

[12]Bown (2009) discusses a number of other reasons that contribute to anti-dumping being a frequent subject of WTO disputes, including the transparency of the policy and the fact that anti-dumping does not require political coordination of adversely affected firms and, hence, has fewer free-rider problems than those facing exporting firms subject to many other sorts of trade barriers.

have in place thousands of anti-dumping orders, and they are imposed and removed with great frequency. Nevertheless, it is unlikely that anti-dumping will go away any time soon, as most of the largest WTO members have adopted the policy and appear to appreciate its flexibility, for better or for worse. This is especially apparent in light of the global economic crisis of 2008–10 in which many WTO members increased their use of the policy (Bown 2010b), and yet this increased anti-dumping activity did not result in a massive and global protectionist backlash.

2.5 Trade Cost

Despite anti-dumping frequently being used in the United States, the total value of trade affected by anti-dumping (let alone zeroing) may be relatively small.[13] Furthermore, any single country subject to U.S. anti-dumping actions is likely to have a similar fraction of its exports affected. In many cases the elimination of zeroing would just reduce the margin, not eliminate the order, which means the impact of zeroing on the amount of trade affected is considerably smaller than the impact of anti-dumping. The small dollar value involved is one likely reason why the spectre of retaliation has apparently not induced the United States to alter its policy.

2.6 The Alternative Policy

Suppose that zeroing were eliminated and this policy change resulted in significantly less use of anti-dumping by the United States. Would this mean that U.S. imports would be subject to much less protection? Perhaps not. More likely is that some new type of protection would emerge. What would be the alternative to anti-dumping? Given that countries appear to desire access to flexibility with their trade policy and the historical evidence of episodes in which there is 'some' political-economy need for some form of discretionary import protection, anti-dumping may be less worrisome economically than many other scenarios that might emerge.

3 ANTI-DUMPING AND ZEROING: THE THEORY

If a company exports a product at a price lower than the price it normally charges in its own home market, it is said to be 'dumping' the product. If, in addition, the dumped imports are found to be causing, or threatening

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[13]The issue is unresolved and two recent papers even provide different interpretations of the estimated impact of anti-dumping on trade flows. Vandenbussche and Zanardi (2010) argue that the costs of anti-dumping are larger than generally recognised because it depresses overall bilateral trade, whereas Egger and Nelson (forthcoming) provide evidence that the impact on overall trade is small.

to cause, material injury to the competing domestic industry, the WTO ADA allows governments to take action against dumping. The ADA contains rules that define how anti-dumping remedies should be implemented.[14] Of particular relevance for our discussion, the ADA states that the anti-dumping duty can be no greater than the calculated dumping margin. In the simplest terms, a dumping margin of, say, 5% means that on average the export price is 5% lower than the average home market price. The size of the dumping margin is therefore crucial, determining both whether there is a right to levy the duty and also the size of the duty.

In the process of computing the anti-dumping duty, a government must aggregate the results of comparisons between the normal value and export prices. Hundreds or even thousands of individual transactions are aggregated to produce a single anti-dumping duty. The ADA provides rules for how such calculations should be done. Zeroing refers to one particular step in the calculation. Zeroing is the practice of replacing the actual amount of dumping that yields negative dumping margins (*ie* export transactions for which the export price exceeds the calculated normal value) with a value of zero prior to the final calculation of a weighted-average margin of dumping for the product under investigation with respect to the exporters under investigation. Because the zeroing method drops transactions that have negative margins, it has the effect of increasing the overall dumping margins.[15]

In practice, zeroing is much easier to understand than the formal definition suggests. In Table 14.1 we present an example of a foreign firm's home and export sales in a given month.[16] We assume that the data in Table 14.1 represent net prices for separate transactions on a series of dates in the month of September.[17] To keep the example as simple as possible, we will assume that each transaction is for the same volume, *ie* one unit. Governments compute dumping margins on a weighted-average basis, but, for the purposes of our illustration, the introduction of different quantities on different dates just serves to complicate the computations, and needless complication is a primary reason why anti-dumping is so misunderstood.

As seen, prices vary from transaction to transaction in both markets. As is often the case in the real world, on some dates the export price is below the

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[14]Blonigen and Prusa (2003) provide a survey of the economic research literature on anti-dumping.

[15]There are two zeroing methods: simple and model. For purposes of this chapter, we limit our discussion to simple zeroing. Readers interested in the fine details of both methods should consult Prusa and Vermulst (2009).

[16]The example is drawn from Prusa and Vermulst (2009).

[17]Net prices are the exporter's prices following a series of adjustments. For example, all expenses incurred to promote, sell, store and transport the products are deducted from both export price and domestic price. In addition, various other adjustments, such as level of trade and accounting for physical differences are made.

Table 14.1: *An example of zeroing.*

Sales date	Export transaction	Home market transaction	Difference: no zeroing	Difference: zeroing
2 September	75	90	15	15
4 September	75	95	20	20
8 September	95	95	0	0
10 September	100	95	−5	0
12 September	105	95	−10	0
16 September	105	105	0	0
18 September	110	105	−5	0
20 September	115	110	−5	0
24 September	120	110	−10	0
Weighted-average price	100	100		
Dumping value			0	35
Dumping margin			0.0%	3.9%

home market price, on others the export price is above the home market price and, occasionally, the same price is charged in both the markets.

Under ADA rules, a government can calculate the difference in price on a transaction-by-transaction basis and then compute the weighted average of these price differences, *ie* the individual export transactions are compared with the individual domestic transactions made at or at about the same date as the export transactions concerned.[18]

In column 4 of Table 14.1 we compute the difference for each comparable transaction. Accordingly, for some comparisons the difference is positive (which means dumping) and for other comparisons it is negative. When we sum the weighted price differences we find that, for all comparable transactions, the cumulative difference is zero. Put differently, the dumping amount (35) for the two transactions with positive dumping is exactly equal to the amount (−35) for the five transactions with negative dumping. In this example, as long as the dumped and the non-dumped export transactions are allowed to offset each other, the conclusion, using the transaction-to-transaction method, will be that there is zero dumping.

As clean and simple as the above calculations are, the United States has long had a practice of not computing the margins as described. Instead, in the process of the transaction-to-transaction comparisons, the United States

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[18]There are three common methods for calculating dumping margins: a weighted-average-to-weighted-average comparison, a transaction-to-transaction basis, and a weighted-average-to-transaction comparison. Zeroing has been used in all methods. For simplicity, we will just discuss zeroing in the context of the transaction-to-transaction approach. Prusa and Vermulst (2009) discuss all three methods.

employs the practice of zeroing. In our example, and, in fact, in most 'real world' cases, the use of zeroing leads to dramatically different margins. To see this, in the last column of Table 14.1 we have computed the difference for each comparable transaction using zeroing. Each of the five negative margins is set to zero. In our example, the amount of dumping is 35, which implies a dumping margin of 3.9% (35 divided by the total export value of 900 equals 0.039).[19]

Four important insights are gleaned from this example. First, zeroing can never lower the margin. Zeroing only drops negative margins. Second, zeroing treats some foreign prices as if they were something different than they actually are. On both 12 and 16 September the foreign firm charged $105, but a government using zeroing could treat the 12 September price as if it were just $95. Third, zeroing is driven by price variation over the sample period. If the foreign firm charged exactly the same price for all transactions, then zeroing would not matter.[20] Fourth, zeroing can be the difference between no dumping (or a *de minimis* margin) and a positive dumping margin, *ie* whether an anti-dumping duty is applied at all.

We elaborate on the last two insights in Figures 14.3 and 14.4. In Figure 14.3 we provide examples of hypothetical pricing data where zeroing does *not* change the anti-dumping duty. In the figure we provide two different pricing scenarios over a 12-month period. In both cases we assume that the foreign firm's home market price is constant at $100.[21] In Scenario A (solid line, circular markers) we consider a case when the foreign firm always charges an export price higher than $100. There is month-to-month variation but there is no dumping in any month. In Scenario B (dashed line, square markers) we depict the polar opposite situation. In this case the foreign firm always charges a lower export price than the comparable home market price. In this case the month-to-month pricing variation does not generate any potential offsetting margins.

Figure 14.4 depicts the more typical situation. We again assume that the foreign firm's home market price is constant at $100. We now assume that, in some months, the foreign firm's export price is above $100 and, in other months, it is below $100. The firm's actual export prices are depicted by the black dashed line and circular markers.[22] With zeroing, the government treats the foreign firm's prices as if they instead looked like the grey dotted line with

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[19]We note that this approach as adopted by the United States does, however, include all comparable transactions in the denominator (even though it zeroes many transactions in the numerator).

[20]This statement can be generalised to account for 'model' zeroing (Prusa and Vermulst 2009).

[21]Alternatively, $100 could be the average home market price over the period.

[22]As with the example given in Table 14.1, without zeroing the actual export prices in Figure 14.4 would generate no dumping margin.
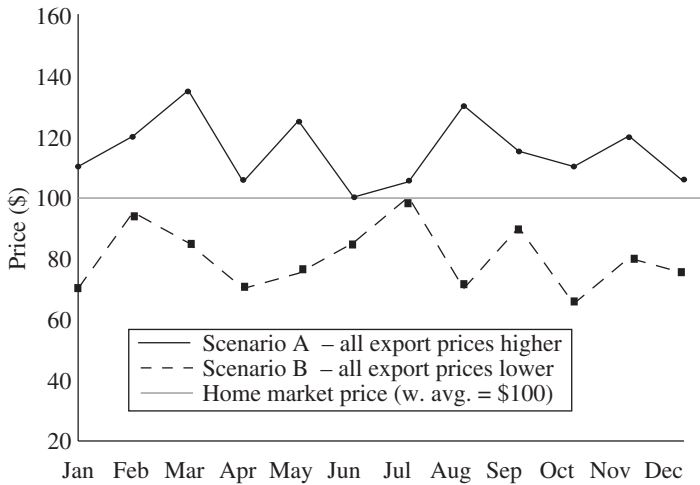
Figure 14.3: *Examples of export pricing when zeroing does not change dumping margin.*
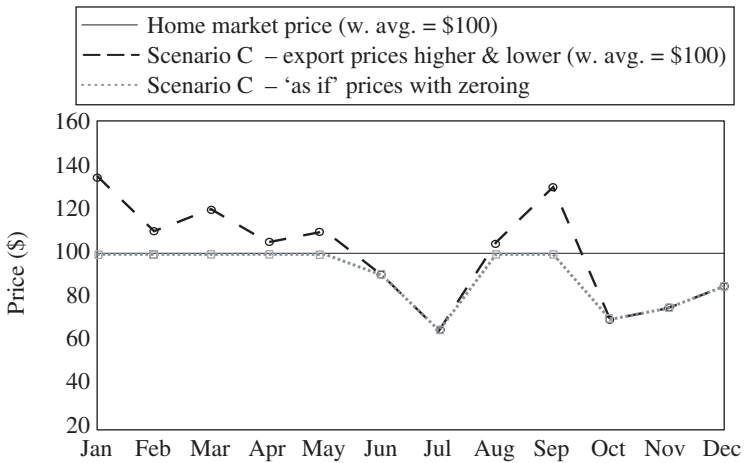
Figure 14.4: *Example of export pricing when zeroing alters dumping margin.*

square markers. In January, for example, a government practicing zeroing would act as if the foreign firm's price were $100 instead of $135.

As these examples show, zeroing makes it extremely difficult for a firm to avoid dumping. In January through May the foreign firm was making pricing decisions with no knowledge that those prices would be treated as something very different by the investigating foreign government. Unless a

firm's export prices are always high or low (relative to some home market benchmark), zeroing combined with price variation will generate dumping margins. Moreover, the reasons for the price variation (seasonality, exchange rates, variations in freight costs over time, *etc*) are irrelevant. In some cases, the product could be sold pursuant to a long-term contract, which might mean no price variation and, hence, zeroing might not matter. In other cases, the product could be sold on a spot basis, which could mean heightened price variation.

Price variation significantly affects the extent to which zeroing impacts the dumping margin. All else being equal, zeroing will have a larger impact for products with greater price variation. To see this, we will now compute dumping margins across distributions with different variation but holding the average price constant.[23] We assume the average *export* price is $100 in each scenario.

We begin by supposing that export prices are uniformly distributed between p^{low} and p^{high}.[24] In the first scenario we will assume that the weighted-average *home* market price is $100.[25] Hence, if there was no zeroing, the anti-dumping margin would be 0%. With zeroing, however, prices greater than $100 will be treated as if they were just $100. The extent of the zeroing impact depends on how much prices are adjusted: the greater the variation, the greater the adjustment. In Figure 14.5 we show the dumping margins as a function of different levels of price variation. The solid line depicts the anti-dumping duty with zeroing. As shown, price deviation of as little as 5% will generate margins in excess of the *de minimis* level.[26]

In the second scenario we consider a starker example of the impact of zeroing. Here we assume the weighted-average home market price is $90. In other words, in this scenario the average export price ($100) *exceeds* the home market price by 11%. Yet, as depicted by the dashed line, with zeroing a moderate amount of price deviation will again generate significant anti-dumping margins.

In the third scenario we consider a more extreme case when the weighted-average home market price is $75. In this scenario the average export price ($100) *exceeds* the home market price by 33%. However, zeroing combined with price deviation will nonetheless generate anti-dumping margins.

Two lessons emerge from these three scenarios. First we see that the greater the degree of over-selling (*ie* the bigger the difference between the average export price and the average home market price) the greater the required price

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[23]Nye (2009) also points out that price volatility affects the zeroing distortion.

[24]For a uniform distribution the average price is $(p^{high} - p^{low})/2$ and the standard deviation is $(p^{high} - p^{low})/12^{1/2}$.

[25]For simplicity, assume one unit is sold at each transaction.

[26]For administrative reviews the United States imposes a *de minimis* margin of 2%.
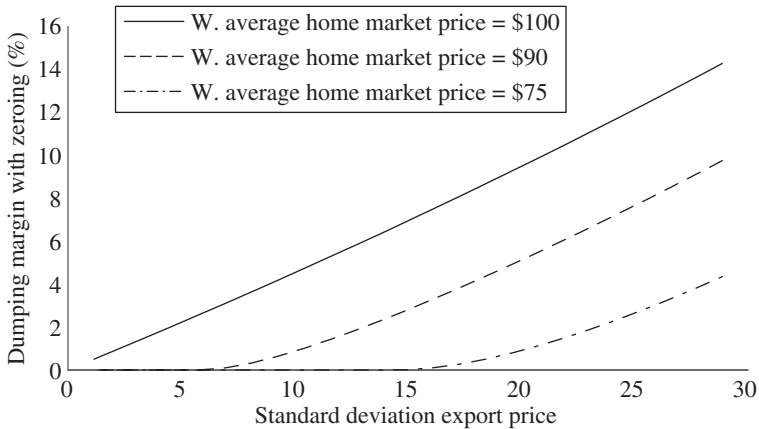
Figure 14.5: *Export price variation and zeroing (uniform distribution).*

variation before non-*de minimis* anti-dumping margins are created. Second, despite substantially higher export prices, zeroing can produce positive dumping.

The positive relationship between price variation and zeroing is quite general. In Figure 14.6 we depict dumping margins with zeroing for three different distributions of export prices: uniform, normal, and bimodal normal. As with the first scenario in Figure 14.5, we restrict the export prices so that the average is $100; this means there would be a zero dumping margin without zeroing. As shown, this is not the case with zeroing. For all three distributions the dumping margin increases with the pricing variation.

There are two key observations to be made from this discussion. First, export characteristics that are associated with *greater* price variation will tend to be more seriously affected by zeroing. These characteristics could be associated with the product (*eg* seasonality, volatile input prices), the exporting firm or industry (*eg* more or less competitive), or the exporting country (*eg* exchange rate regime).

Second, volatility will play a significant role in assessing whether zeroing is as relevant for developing countries as it has been for developed countries. As we will discuss in the following section, to date, most of the WTO cases involving zeroing have been initiated by developed countries. One possible explanation for this is that zeroing does not affect developing-country exports. Later in the chapter we review export price volatility, and our results suggest this is probably not the case. Consequently, the lack of zeroing cases involving developing countries is most likely explained by other reasons (*eg* unwillingness to increase trade tensions with the United States, inexperienced legal staff, *etc*).
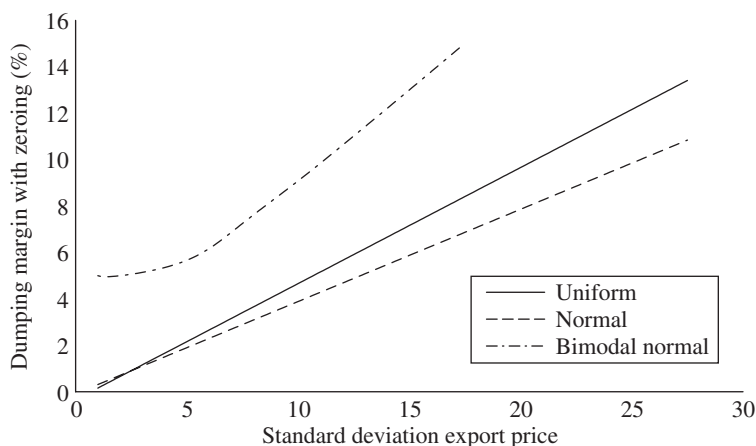
Figure 14.6: *Export price variation and zeroing (across distributions).*

4   WORLD TRADE ORGANIZATION DISPUTES INVOLVING ZEROING

There are four stages in the WTO dispute resolution system.[27] The first is the consultation phase, where the two complaining and respondent countries meet and attempt to negotiate a resolution. If they are unable to do so, they can request a 'panel' to hear the evidence (the second phase). Other WTO members with an interest in the dispute can join the process at this stage as an 'interested third party'. The panel hears the evidence and issues a legal ruling. If either of the primary countries is unhappy with any aspect of the panel's rulings, it can appeal the case to the WTO's AB (the third phase). After reviewing the case and hearing arguments from the parties, the AB will issue its final decision. At that point, if a country's policy has been found to be in violation of its WTO obligations, it is supposed to bring its policy into compliance. If the complaining party is unhappy with the compliance, it can request a compliance panel to rule on whether the respondent country has actually lived up to the AB's rulings (the fourth phase). If it has not, the AB can authorise the complainant to retaliate against the respondent, usually in the form of higher tariffs.

In Table 14.2 we list all WTO AB disputes that have involved zeroing. Between the first zeroing dispute of 1998 and early 2010, of the more than 260 disputes initiated during that time period, nearly 20 disputes have involved zeroing.[28] Furthermore, while 60% of all WTO disputes are resolved at the

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[27]For a detailed description of the legal process, see Mavroidis (2007, pp. 398–445).

[28]Five of the cases are pending AB decisions. Zeroing was only a minor issue in several disputes. However, in most of the aforementioned disputes zeroing was the focal issue being adjudicated.

consultation phase, this has not been the case for any zeroing disputes. As a result, zeroing accounts for a greater share of panel and AB time than the above statistics suggest. Zeroing has been the subject of more than 13% of all WTO panel investigations (phase 2) and almost 20% of all WTO AB reports (phase 3). It is quite likely that the WTO AB has devoted more time to zeroing than any other single issue in the WTO.

The number of separate panel and AB decisions that have found the practice of zeroing to be inconsistent with the ADA is noteworthy. By our accounting, there have been at least 22 separate decisions finding the practice of zeroing to be inconsistent with the ADA (11 panel, 11 AB). Several comments about these decisions are warranted.

First, there has been some tension between the panels and the AB. The panels have sent mixed messages at least twice about zeroing. In two cases, (*US – Stainless Steel* (*Mexico*) and *US – Zeroing* (*Japan*)), the panel ruled that zeroing in original investigations was inconsistent but zeroing in review proceedings was consistent.[29] The panels' rationale hinged on their reading of Article 2.4.2 of the ADA, which states that

> the existence of margins of dumping during the investigation phase shall normally be established on the basis of a comparison of a weighted-average normal value with a weighted average of prices of all comparable export transactions or by a comparison of normal value and export prices on a transaction-to-transaction basis. A normal value established on a weighted-average basis may be compared with prices of individual export transactions if the authorities find a pattern of export prices which differ significantly among different purchasers, regions or time periods, and if an explanation is provided as to why such differences cannot be taken into account appropriately by the use of a weighted-average-to-weighted-average or transaction-to-transaction comparison.

The panels agreed with the United States' contention that the phrase 'during the investigation phase' limits the applicability to the original investigation, not to any type of review proceeding. However, in both cases the AB overturned the panel and found zeroing to be inconsistent in both original investigations and reviews.

The WTO AB has repeatedly determined that allowing zeroing in reviews but not in original investigations would lead to unequal treatment between prospective and retrospective duty systems. In the prospective system (used by most WTO members), the dumping margin is established on the basis of the original investigation. In the retrospective system used by the United States, the dumping margin calculated in the initial investigation only establishes the deposit rate. The actual dumping margin is established during an

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[29] Adding more confusion, in *US – Continued Zeroing (EC)*, the panel stated their sympathy with the U.S. position but determined zeroing to be inconsistent only because of prior AB rulings.

Table 14.2: *World Trade Organization jurisprudence on zeroing.*

Case	Dispute	Year initiated	Third parties	Panel	AB
US – Shrimp (Vietnam)	404	2010	—	—	—
US – Use of Zeroing (Korea)	402	2009	Japan	—	—
US – Stainless Steel (Mexico), Article 21.5	344	2009	—	—	—
US – Carrier Bags (Thailand)	383	2008	Argentina, Chinese Taipei, EC, Japan, Korea	Y	—
US – Orange Juice (Brazil)	382	2008	Argentina, Chinese Taipei, EC, Japan, Korea, Thailand	—	—
US – Zeroing (Japan), Article 21.5	322	2008	China, Chinese Taipei, EC, Hong Kong (China), Korea, Mexico, Norway, Thailand	Y	Y
US – Zeroing (EC), Article 21.5	294	2007	Chinese Taipei, India, Japan, Korea, Mexico, Norway, Thailand	Y	Y
US – Continued Zeroing (EC)	350	2006	Brazil, Chinese Taipei, China, Egypt, India, Japan, Korea, Mexico, Norway, Thailand	Y	Y
US – Shrimp (Thailand)	343	2006	Brazil, Chile, China, EC, India, Japan, Korea, Mexico, Vietnam	Y	N/A
US – Stainless Steel (Mexico)	344	2006	Chile, China, EC, Japan, Thailand	Y/N	Y
US – Shrimp Anti-dumping Measure (Ecuador)	335	2005	Brazil, Chile, China, EC, India, Japan, Korea, Mexico, Thailand	Y	N/A
US – Zeroing (Japan)	322	2004	Argentina, China, EC, Hong Kong (China), India, Korea, Mexico, New Zealand, Norway, Thailand	Y/N	Y
US – Softwood Lumber Anti-dumping Final (Canada), Article 21.5	264	2005	China, EC, India, Japan, New Zealand, Thailand	Y	Y
US – Zeroing (EC)	294	2003	Argentina, Brazil, China, Chinese Taipei, Hong Kong (China), India, Japan, Korea, Mexico, Norway	Y	Y
US – Softwood Lumber Anti-dumping Final (Canada)	264	2002	EC, India, Japan	Y	Y
US – Corrosion-Resistant Steel Sunset Review (Japan)	244	2002	Brazil, Chile, EC, India, Korea, Norway	N	Y
EC – Pipe Fittings (Brazil)	219	2000	Chile, Japan, Mexico, United States	Y	Y
EC – Bed Linen (India)	141	1998	Japan, Korea, United States	Y	Y

'—' indicates unavailable/pending. 'N/A' indicates cases where the panel's zeroing decision was not appealed to the AB.

Source: compiled by the authors from information on the WTO website.

administrative review. If the United States' position held, then a country with a retrospective system would be able to zero but a country with a prospective system (like the EC) would not.

Second, the nature of the WTO's jurisprudence has likely contributed to the number of disputes. The practice of the panels and the AB has typically been to craft very narrow determinations in an attempt to reduce accusations of 'judicial activism' and thus not limit infringement on member countries' sovereign rights. As a result, important issues are often left unaddressed for 'judicial economy', which opens the door for the respondent country to limit the applicability of a ruling. What the AB intended their decision to mean is often unclear until essentially the same issue is brought to the WTO DSU again (and again). With respect to zeroing, the judicial economy exercised by the AB in the initial cases meant that many issues (*ie* alternative methods of zeroing, appropriate use during different stages in a case) were not discussed. This allowed the United States to interpret the early rulings very narrowly and resulted in more cases being filed (Bown and Sykes 2008).

Any ambiguity stemming from the AB's piecemeal approach to decision-making should now be resolved in light of the recent decisions against zeroing. The first few cases challenging zeroing made claims just against the use of zeroing in original investigations as applied in specific cases. However, in more recent cases (*US – Continued Zeroing* (*EC*); *US – Zeroing* (*Japan*); and *US – Zeroing* (*EC*)), the complainants made very expansive claims against the practice. The WTO AB's decisions now imply that the practice of zeroing is inconsistent except under exceptional circumstances.

The number of countries complaining about the practice is also noteworthy. In Table 14.3 we list the number of countries who have either initiated a WTO dispute involving zeroing (*ie* the 'complainant') or have filed supporting briefs as interested third parties. In total, 19 countries have been involved in zeroing disputes, 10 as complainant parties.

5   THE UNITED STATES RETROSPECTIVE SYSTEM AND THE IMPACT OF ZEROING

Despite the ongoing cases against it, the United States argues that it has complied with the WTO AB rules and that its practice is now consistent with the ADA. The United States contends that it has brought its policy into compliance in response to the initial WTO AB decisions against zeroing. In January 2007 the USDOC decided to stop zeroing in original investigations. The USDOC has not agreed, however, to stop zeroing in reviews. This raises the question—why would the United States only take half-measures when resolving this trade issue? We believe the answer is inextricably tied to the retrospective duty assessment system using by the United States.

Compare the EC and U.S. response to the WTO AB's decisions regarding zeroing. As a general rule, no WTO member happily accedes to dispute

Table 14.3: *Economies involved in WTO jurisprudence on zeroing.*

	Number initiated	Number of third party
Argentina	—	4
Brazil	2	5
Canada	2	—
Chile	—	5
China	—	8
Chinese Taipei	—	6
EC	3	10
Ecuador	1	—
Egypt, Arab Rep. of	—	1
Hong Kong (China)	—	3
India	1	9
Japan	3	13
Korea	1	11
Mexico	2	8
New Zealand	—	2
Norway	—	6
Thailand	1	8
United States	—	2
Vietnam	1	1

Source: compiled by the authors from information on the WTO website.

settlement decisions that go against their existing policies. However, when the EC's zeroing practice was found to be inconsistent with the WTO ADA, it fairly quickly changed its procedures to eliminate zeroing. When the United States' zeroing methodology was found to be inconsistent, the United States has been unable (or unwilling) to fully change its procedures.

The duty assessment systems in the EC and U.S. partly explain why they responded differently to the WTO rulings. Under the prospective duty assessment system used by the EC (and all other WTO members), the exporter is assigned a duty calculated on past pricing data and the duty applies to future transactions. By contrast, under the U.S. retrospective system, the anti-dumping duty imposed at the end of the original investigation only constitutes an estimate of the future liability. The actual payment of anti-dumping duties will depend on the calculations made in the course of the annual administrative or duty-assessment reviews.

Under either system, zeroing will serve to increase margins. It is fair to say that import-competing industries in both the EC and the United States want zeroing because it serves to inflate the size of margins and, hence, leads to the imposition of larger import restrictions that shield them from foreign competition. The difference, however, is that the impact of zeroing is amplified when used in a retrospective system. Hence, the cost of eliminating

zeroing in the United States is greater, thereby increasing U.S. reluctance to abolish the practice.

The retrospective system adds an element of uncertainty that is not present in the prospective system. Under a prospective system, an importer purchasing from an exporter under an anti-dumping order will know the exact size of its extra duty. Under a retrospective system, on the other hand, an importer purchasing from an exporter under an anti-dumping order only has an estimate of its extra duty. It is conceivable that the uncertainty could have as big an impact as the margin itself. Suppose, for instance, that the exporter is subject to a 5% duty and that duty exactly (or nearly) offsets her cost advantage relative to 'non-subject' suppliers, *ie* exporters which sell the same product in the U.S. market but that were not confronted with (subject to) the U.S. anti-dumping duty. An importer might be unwilling to purchase from the exporter under order because of the possibility of a higher liability once the administrative review is conducted. While uncertainty is inherent in the retrospective system, zeroing greatly compounds the phenomenon. As shown in Figure 14.4, the importer can have numerous purchases made during the period of review that are treated by the USDOC as if they were conducted at a different price than they actually were. This makes importers even more reluctant to purchase from subject exporters.

As a result, U.S. import-competing industries are much more opposed to eliminating zeroing than EC import-competing industries were. In turn, their strong opposition to reform makes it difficult for the USDOC to stop zeroing. Put differently, the current U.S. compliance—stopping zeroing in original investigations—is essentially costless. The *de minimis* dumping margin in original investigation is 0.5%. In other words, if the home market price is $100 and the export price is $99.49, then the case will be allowed to proceed. However, when the administrative review is conducted, the exact same trans-actions would result in a larger dumping margin because of zeroing. Thus, the real economic impact of zeroing—both in terms of the margin imposed and the uncertainty surrounding that margin—is driven by the *review* stage.

6   THE IMPACT OF ZEROING ON MARGINS AND DUTIES

We now turn beyond the theory to the empirical question of the impact of zeroing on anti-dumping margins.[30] Obtaining an accurate measure of the impact of zeroing on margins is difficult. The fundamental problem is that the USDOC uses firm-level pricing in both the home and export markets to calculate margins. What we would like to do is compute the counterfactual

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[30]An important effect of zeroing is the additional uncertainty created for importers buying from subject suppliers. We know of no empirical evidence on this latter impact, so we will just focus on how zeroing affects the size of the margin.

'what if there were no zeroing?' and then compare the counterfactual margin with the actual margin with zeroing. The calculation of this counterfactual requires access to confidential firm-level pricing data, and that is something we do not have. We do, however, have results from previous studies that did have access to such data and were able to perform the counterfactual exercise.

We begin by reviewing the result from what we believe is the only published study of zeroing that utilises the same firm-level data as USDOC. We then examine evidence of the impact of zeroing as contained in submissions to the WTO AB where countries submit the results of the counterfactual calculations.

6.1 Firm-Level Evidence

The only published firm-level analysis of the impact of zeroing is contained in a series of papers by the Cato Institute (Lindsey and Ikenson 2002a,b; Ikenson 2004). Lindsey and Ikenson were able to get 18 firms from 5 different countries to share the exact pricing data they had submitted to the USDOC as part of their dumping investigations. The determinations covered 14 original investigations and 4 administrative reviews. For each of these determinations, Lindsey and Ikenson used the USDOC's own dumping calculation computer programs. They first recreated the dumping margins determined by the USDOC. They then altered those programs to gauge the effect of zeroing on margins. They state that

> using actual case data and the DOC's dumping calculation computer programs, it was possible to calculate the actual effects of zeroing in these particular cases. In 17 of the 18 determinations, the dumping margin was inflated by zeroing. In 5 of the cases, the overall dumping margin would have been negative. On average, the dumping margins in the 17 cases would have been 86.41% lower if zeroing had not been employed. Ikenson (2004, p. 2)

Due to confidentiality issues, Lindsey and Ikenson are unable to report the actual size of the original dumping margin. As a result we are unable to determine how great the 86% reduction is: it could imply a change in the actual dumping margin of 2, 20 or even 50 percentage points. While we do not know the identity of the individual firms, we do know what cases were involved (*eg* stainless steel bar from Germany) and we know the 'all others' duty reported for each case.[31] Using the 'all others' duty we estimate that the Lindsey and Ikenson estimate of an 86.41% reduction due to zeroing implies that the *average* impact of zeroing is at least 17.50 percentage points, *ie* a change in the margin of dumping from 20.2% to 2.7%.

Lindsey and Ikenson's results with respect to reviews are particularly noteworthy. Their results confirm that zeroing has a particularly powerful

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[31]We note that the 'all others' rate often does not necessarily correspond to any individual firm's duty but is better thought of as the average margin for all firms involved in the case.

impact at the review phase. They had access to case data for just four review calculations and, in each instance, they found the margin to be *entirely* driven by zeroing. That is, without zeroing, there would have been no margin. Their results are consistent with the idea that firms subject to anti-dumping orders make an effort to comply with the dumping order but are ultimately bedevilled by the distortion created by zeroing: transactions that they thought would be treated as occurring at one price were assigned a lower price by USDOC, which, in effect, creates margins.

6.2   Evidence from WTO Dispute Documents

While the Lindsey and Ikenson study is compelling, it involves a small sample of firms. We have also reviewed the WTO disputes for evidence on the impact of zeroing. We found reports of the impact of zeroing in the public documents for only three cases: *US – Stainless Steel (Mexico)* (dispute 344); *US – Zeroing (Japan)* (dispute 322); and *US – Zeroing (EC)* (dispute 294). From these three disputes we have information on the impact of zeroing for 74 separate margin calculations.

The tabulation of the findings is given in Table 14.4. For each margin calculation, we report the name of the product under investigation, the name of the company subject to the investigation, and the anti-dumping duty as calculated by the USDOC (inclusive of zeroing). For original investigations this is the final anti-dumping duty for each firm, while for administrative reviews this is the duty margin actually imposed by USDOC. In the final column we report the results of the counterfactual exercise: what the margin would have been if zeroing were not performed. Given the individual firms' sensitivities about revealing confidential pricing information, in many cases we do not know the exact 'what if no zeroing?' margin. Instead, the public documents often simply report 'lower', 'negative', or *de minimis*. 'Lower' simply means the margin would have been lower but would have still been above the *de minimis* level; 'negative' means the margin would have been negative (*ie* no dumping); *de minimis* means the margin would be positive but sufficiently small to be considered zero. In either of these latter two cases, the case would have been terminated (if an original investigation) or no duties would have been paid (if an administrative review).

In Table 14.5 we summarise the information reported in Table 14.4. Without zeroing, the dumping margin would have been lowered in 30 instances, and the margin would have been eliminated (*ie* a zero margin) in 42 instances. Put differently, more than half of the cases submitted to the WTO would have no dumping but for the practice of zeroing.

One needs to be cautious in extrapolating the statistics from the WTO AB cases to all U.S. anti-dumping activity. There are two reasons why we are concerned that there is a possible selection issue that might result in the WTO AB evidence overstating the impact of zeroing. First, the cases submitted

to the WTO may have been selected precisely because they were particularly egregious examples of zeroing. While we have no evidence for this, it is nevertheless a concern given the complainants' desire to submit the most compelling cases to the WTO.

Second, the cases chosen for WTO appeal might have lower margins and, thus, be more likely to have a zero margin if the practice of zeroing ceased. There is some evidence that this is the case. Using information from Bown (2010a), we compared the dumping margins for cases that were the basis for WTO zeroing complaints with all other U.S. anti-dumping cases. The average margin for cases not brought to the WTO is 62.6%, while the average margin for cases that have been the basis for WTO zeroing complaints is 36.2%.[32] This does not mean that the practice of zeroing has not affected the margins in the other cases, but it does suggest that the margins for most cases are not entirely driven by zeroing. It also suggests that countries choose to file WTO appeal on cases where it is more likely that the elimination of zeroing could mean *de minimis* margins and the removal of anti-dumping duties altogether.

The more robust finding is that the impact of zeroing is to increase the dumping margin. In Table 14.6 we use the WTO disputes and calculate the impact on the margin due to zeroing. On average, dumping margins would have been 12.3 percentage points lower. While this is smaller than the Lindsey and Ikenson study estimates, we note that it is greater than the average margin (10.5%) for these cases. This is again compelling evidence that zeroing has a large and significant impact on margins.

If we focus solely on the WTO cases in Table 14.4 that involve administrative reviews, we have a sample of 45 dumping margins. Of this sample, the margin would have been eliminated in 35 of the 45 cases if zeroing were not employed. If one is willing to assume that this is a representative statistic for other cases, the evidence from the current WTO jurisprudence suggests that about 75% of review margins would be eliminated but for zeroing. This is consistent with the Cato study which also found the impact of zeroing at the review phase to be particularly significant.

We again urge caution in applying the WTO AB statistics to the overall sample of U.S. anti-dumping cases. As discussed above, the margins for cases brought to the WTO AB are generally lower than those for other cases. It may simply be the case that the low-margin cases give the complaining country the 'biggest bang for the buck' and, therefore, that they are more likely to result in WTO challenges.[33]

Moreover, given that non-challenged cases tend to have higher margins, it is uncertain what the impact of zeroing is on the trade volumes. That is, suppose that the United States stopped zeroing in all cases. The elimination of zeroing may result in lower margins but nevertheless have little impact on trade. This

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[32]The difference is statistically significant at the 1% level.

[33]Bown (2005) argues that this selection issue applies more generally in WTO disputes.

Table 14.4: *World Trade Organization disputes: reported impact of zeroing (case by case).*

Case number	Case name	Company	Anti-dumping duty (with zeroing) (%)	Anti-dumping duty (without zeroing)[a]
DS294: No. 1	(OI) Certain hot-rolled carbon steel flat products from the Netherlands	Corus Staal BV	2.59	Negative
DS294: No. 2	(OI) Stainless steel bar from France	Ugine-Savoie Imphy Aubert & Duval S.A.	3.90 71.83	Negative Lower
DS294: No. 3	(OI) Stainless steel bar from Germany	BGH Einsal EWK KEP	13.63 4.17 15.40 33.20	Lower *De minimis* Lower Lower
DS294: No. 4	(OI) Stainless Steel Bar from Italy	Acciaierie Valbruna Srl /Acciaierie Bolzano D.p.A. Acciaiera Foroni SpA Rodacciai S.p.A. Cogne Acciai Speciali Srl	2.50 7.07 3.83 33	Negative Lower Lower N/A
DS294: No. 5	(OI) Stainless steel bar from the United Kingdom	Corus Engineering Steels Crownridge Stainless Steel, Ltd/ Valkia Ltd and Firth Rixson Special Steels, Ltd	4.48 125.77	Negative N/A
DS294: No. 6	(AR) Industrial nitrocellulose from France	Bergerac NC	3.26	Lower
DS294: No. 7	(AR) Industrial nitrocellulose from the United Kingdom	Imperial Chemical Industries	3.06	Negative
DS294: No. 8	(AR) Stainless steel plate in coils from Belgium	ALZ NV	3.84	Negative
DS294: No. 9	(AR) Certain pasta from Italy	Pastificio Guido Ferrara S.r.L. Pastificio Antonio Pallante S.r.L. PAM S.r.L.	1.25 1.78 4.10	Lower Lower *De minimis*
DS294: No. 10	(AR) Certain pasta from Italy	Pastificio Garofalo S.p.A.	0.55	Lower

Table 14.4: *Continued.*

Case number	Case name	Company	Anti-dumping duty (with zeroing) (%)	Anti-dumping duty (without zeroing)[a]
DS294: No. 11	(AR) Stainless steel sheet strip in coils from Italy	Acciai Speciali Terni SpA	0.66	Negative
DS294: No. 12	(AR) Stainless steel sheet strip in coils from Italy	Acciai Speciali Terni SpA	5.84	Negative
DS294: No. 13	(AR) Granular polytetrafluoroenthylene resin from Italy	Ausimont SpA	2.15	Lower
DS294: No. 14	(AR) Granular polytetrafluoroenthylene resin from Italy	Ausimont SpA	12.08	Lower
DS294: No. 15	(AR) Stainless steel sheet and strip in coils from France	Ugine	3.00	Negative
DS294: No. 16	(AR) Stainless steel sheet and strip in coils from France	Ugine	1.44	Negative
DS294: No. 17	(AR) Stainless steel sheet and strip in coils from Germany	KTN	2.61	Negative
DS294: No. 18	(AR) Stainless steel sheet and strip in coils from Germany	TKN	4.77	Negative
DS294: No. 19	(AR) Ball bearings from France	SKF France SA and Sarma	8.51%	Negative
DS294: No. 20	(AR) Ball bearings from Italy	SKF Industrie SpA	3.70%	Negative
DS294: No. 21	(AR) Ball bearings from United Kingdom	FAG Italia SpA	1.42%	Negative
		NSK Bearings Europe Ltd	16.87%	Negative
		Barden Corporation U.K.	3.87%	Negative
DS294: No. 22	(OI) Stainless steel wire rod from Sweden	Fagersta Stainless AB	5.71%	Negative
DS294: No. 23	(OI) Stainless steel wire rod from Spain	Roldán SA	4.73%	Lower

Table 14.4: *Continued.*

Case number	Case name	Company	Anti-dumping duty (with zeroing) (%)	Anti-dumping duty (without zeroing)[a]
DS294: No. 24	(OI) Stainless steel wire rod from Italy	Cogne Acciai Speciali Srl	12.72%	Lower
DS294: No. 25	(OI) Stainless steel wire rod from Belgium	ALZ	3.84%	Lower
DS294: No. 26	(OI) Stainless steel sheet and strip in coils from France	Usinor	9.38%	Lower
DS294: No. 27	(OI) Stainless steel sheet and strip in coils from Italy	Acciai Spaciali Terni SpA	11.23%	Lower
DS294: No. 28	(OI) Stainless steel sheet and strip in coils from the United Kingdom	Avesta Sheffield	14.84%	Lower
DS294: No. 29	(OI) Certain cut-to-length carbon-quality steel plate from France	Usinor	10.41%	Lower
DS294: No. 30	(OI) Certain cut-to-length carbon-quality steel plate from Italy	Palini and Bertoli SpA	7.85%	Lower
DS294: No. 31	(OI) Certain pasta from Italy	Italpasta La Molisana Liguori Pagani	21.34% 14.78% 12.41% 18.30%	Lower Lower Lower Lower
DS322: No. 1	(OI) Certain cut-to-length carbon-quality steel plate products from Japan	Kawasaki Steel Corporation	10.58%	Lower (9.46%)
DS322: No. 2	(AR) Tapered roller bearings, four inches or less in outside diameter, and components thereof, from Japan	Koyo Seiko Co., Ltd	14.86%	Negative (−1.27%)

Table 14.4: *Continued.*

Case number	Case name	Company	Anti-dumping duty (with zeroing) (%)	Anti-dumping duty (without zeroing)[a]
DS322: No. 3	(AR) Tapered roller bearings and parts thereof, finished and unfinished, from Japan	NTN Corporation	17.58%	Negative (−6.01%)
DS322: No. 4	(AR) Tapered roller bearings and parts thereof, finished and unfinished, from Japan	Koyo Seiko Co., Ltd	17.94%	Lower (13.32%)
DS322: No. 5	(AR) Ball bearings and parts thereof from Japan	NTN Corporation	6.14%	Negative (−25.15%)
DS322: No. 6	(AR) Cylindrical roller bearings and parts thereof from Japan	NTN Corporation	3.49%	Negative (−25.24%)
DS322: No. 7	(AR) Spherical plain bearings and parts thereof from Japan	NTN Corporation	2.78%	Negative (−26.06%)
DS322: No. 8	(AR) Ball bearings and parts thereof from Japan	Koyo Seiko Co., Ltd	10.10%	Negative (−5.51%)
		NTN Corporation	9.16%	Negative (−15.21%)
		NSK Ltd	4.22%	Negative (−20.76%)
DS322: No. 9	(AR) Cylindrical roller bearings and parts thereof from Japan	Koyo Seiko Co., Ltd	5.28%	Negative (−11.70%)
DS322: No. 10	(AR) Spherical plain bearings and parts thereof from Japan	NTN Corporation	16.26%	Negative (−8.08%)
		NTN Corporation	3.60%	Negative (−10.31%)
DS322: No. 11	(AR) Ball bearings and parts thereof from Japan	NSK Ltd	6.07%	Negative (−18.78%)
		Asahi Seiko Co., Ltd	2.51%	Negative (−26.83%)
		NTN Corporation	9.34%	Negative (−12.17%)

Table 14.4: *Continued.*

Case number	Case name	Company	Anti-dumping duty (with zeroing) (%)	Anti-dumping duty (without zeroing)[a]
DS322: No. 12	(AR) Ball bearings and parts thereof from Japan	NTN Corporation NSK Ltd	4.51% 2.68%	Negative (−25.99%) Negative (−29.90%)
DS322: No. 13	(AR) Ball bearings and parts thereof from Japan	Koyo Seiko Co., Ltd NTN Corporation NSK Ltd	5.56% 2.74% 2.46%	Negative (−10.83%) Negative (−25.86%) Negative (−29.61%)
DS344: No. 1	(OI) Stainless steel from Mexico	ThyssenKrupp Mexinox S.A. de C.V.	30.85%	Lower
DS344: No. 2	(First AR) Stainless steel from Mexico	ThyssenKrupp Mexinox S.A. de C.V.	2.28%	Negative
DS344: No. 3	(Second AR) Stainless steel from Mexico	ThyssenKrupp Mexinox S.A. de C.V.	6.15%	Lower (1.83%)
DS344: No. 4	(Third AR) Stainless steel from Mexico	ThyssenKrupp Mexinox S.A. de C.V.	7.43%	Lower (4.96%)
DS344: No. 5	(Fourth AR) Stainless steel from Mexico	ThyssenKrupp Mexinox S.A. de C.V.	5.42%	Lower (1.54%)
DS344: No. 6	(Fifth AR) Stainless steel from Mexico	ThyssenKrupp Mexinox S.A. de C.V.	2.96%	Negative

[a]This column indicates what would have been the outcome if zeroing were not applied; 'lower' simply means the margin would have been lower; 'negative' means the margin would have been negative (*ie* no dumping) and as a result the case would have been terminated (for original investigations) or no duties would have been paid (for administrative reviews). '*De minimis*' means the margin is too small to be subject to an order. 'OI' indicates original investigation whereas 'AR' indicates administrative review.

Source: compiled by the authors from the public documents submitted as part of each AB dispute; case information available from the WTO website.

Table 14.5: *World Trade Organization disputes: reported impact of zeroing (summary).*

Dumping margin lower	30
Dumping margin eliminated	42
Dumping margin change 'N/A'	2
Total cases	74

Source: compiled from the information in Table 14.4.

Table 14.6: *World Trade Organization disputes: change in margin due to zeroing (percentage point change).*

	Median (%)	Mean (%)
Cases where dumping margin was lowered but not eliminated	3.9	3.3
Cases where dumping margin was eliminated	7.2	13.3
All cases	4.8	12.3

Source: compiled from the information in Table 14.4.

would be the case, for instance, if the computed margin without dumping was still quite high. Suppose a firm has a dumping margin with zeroing of 80% and that its margin without zeroing was 35%. It is not likely that a margin of 35% would result in a significantly different volume of imports than a margin of 80%: a duty can easily be prohibitive at 35%.

7 LIKELY IMPACT OF ZEROING ON DEVELOPING COUNTRIES

Until relatively recently, most of the WTO disputes over zeroing had been dominated by cases initiated by developed-economy complainants such as EC, Japan and Canada. While there have been a few cases involving developing-country complainants, zeroing was a side issue in many of these cases.[34]

Since 2008, however, a growing number of developing countries such as Vietnam, Korea, Thailand and Brazil have initiated zeroing complaints at the WTO. Can we expect other developing countries to join the fray? The answer seems to be yes. First, the United States applies its practice of zeroing against all subject import suppliers. Every developing country with products subject to U.S. anti-dumping orders has had zeroing applied. Second, as Figure 14.2 indicates, there are many developing-country exports subject to current U.S. anti-dumping orders. This means that there are many cases that could be the basis for a WTO complaint. Third (and perhaps the most compelling reason

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[34]Disputes 206, 335, 343 and 345 all contained zeroing complaints but they were primarily about other procedures.

why one should expect more zeroing cases), the WTO AB's views on zeroing are now well established. As discussed above, numerous decisions have been made against zeroing. Moreover, the most recent WTO decisions have clearly established the general inconsistency of zeroing and have responded to all criticisms by panels of the early zeroing decisions. Given these decisions, it is hard to see how the United States could win any zeroing dispute at the WTO. This reality is likely to embolden other countries to initiate their own actions against the United States.

The key unknown is the extent to which zeroing has a different impact on developed- versus developing-country margins. If zeroing has a smaller impact on developing countries, then arguably there is a smaller benefit to be gained from filing a costly WTO dispute. This might be the case, for instance, if developing-country prices are consistently low or consistently high (as shown in Figure 14.3). In these cases, even though zeroing is technically applied to the pricing data, it may not have any influence (or only a small impact) on the margin. It could also be the case that import prices for developing countries were subject to less volatility than those for developed countries. As shown in Figure 14.5, if this were the case, then, all else being equal, zeroing will have less of an impact on the anti-dumping duty for countries with less price variation. In these situations, developing countries will have a smaller stake in a WTO dispute and, hence, will be less compelled to initiate a dispute. Finally, and as discussed in the last section, it may also be the case that the counterfactual dumping margins applied in the absence of zeroing might still be so high that the applied U.S. anti-dumping duty is still prohibitive; that is, *de facto*, there is no positive trade-enhancing effect of eliminating zeroing from the dumping calculation.[35]

This discussion suggests that it is possible that both the benefits and costs of WTO disputes may differ for developing countries, and we might not see a lot of developing-country-initiated zeroing disputes as a result. Because the failure to initiate a dispute is not clear evidence that there has been no harm, whether or not the U.S. zeroing process is also likely to adversely impact developing-country exporters is therefore an important empirical question.

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[35]Moreover, as Bown (2009) notes, in general, the cost relative to benefits for developing countries to challenge the United States at the WTO might be higher than for developed countries. Nevertheless, this does not appear to be much of an issue for potential developing-country complainants when the trade barrier at issue is the trading partner's use of anti-dumping, of which there are many disputes. Indeed, Bown (2009, Table 6.6) points out that, with access to the Advisory Centre on WTO Law—which provides DSU legal assistance to developing-country clients—there have been a number of disputes in which the imposed anti-dumping measure being challenged was restricting less than $3 million of trade per year.

For our purposes, we limit ourselves to the question of whether zeroing has a significant effect on any potential duty imposed on developing countries. To get a sense of the possible extent of zeroing's impact on developing countries, we gathered U.S. import data for some of the most prominent products subject to U.S. anti-dumping-duty scrutiny over the past decade.[36] Two factors influenced what products we included in our sample. First, we wanted to capture cases that were economically 'important' for developing countries and were in products most likely to be subject to anti-dumping examination. Second, we wanted to focus on products where we had strong independent evidence that there had been a WTO zeroing violation. With respect to the first criterion, we included cases where there was both significant anti-dumping activity and also substantial import supply by developing countries. With respect to the second criterion, we included products for which there already had been WTO disputes.

Once we selected the products to review, we then calculated the monthly price variation over the 12 months of the year prior to the filing of the case, a time generally used by the USDOC in its anti-dumping-duty calculations. Products were identified at the Harmonized Tariff Schedule (HTS) ten-digit level. To assist in comparability across the various products, we normalised the prices for each HTS product so that the mean price for each HTS product was 1 for the sample period. With that normalisation we then computed the pricing variation over the period.

We used the World Bank's country classification guide to divide countries according to their development status (World Bank 2010). We group countries designated by the World Bank as 'low income' and 'lower-middle income' as *low income* and those designated 'upper-middle income' and 'high income' as *high income.*[37]

We can use a regression analysis to test for the statistical significance of the difference in price variation. The ordinary least-squares results for a linear specification are given in Table 14.7. We also control for whether a supplying country was subject to the investigation in these regressions. For each product, suppliers fall into one of four categories: subject high income; subject low income; non-subject high income; and non-subject low income. All parameters are measured relative to the subject-high-income countries; *ie* the economies filing the zeroing disputes against the United States at the WTO. In specification A we include just the basic controls; in specification B we attempt to control for the possible correlation between price variation and price levels by also controlling for the general level of prices. In this specification 'low prices' (respectively, 'high prices') correspond to exporters with prices at least

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[36]A list of cases included in the analysis is given in Appendix 14.1.

[37]Most countries in our sample that we call 'low income' fall under the World Bank's 'lower-middle income' category.

Table 14.7: *Ordinary least-squares regression: month-to-month variation in prices, by supplying country.*

	A	B
Subject, low income	−0.164 [0.122]	0.026 [0.802]
Non-subject, high income	0.379 [0.000]***	0.331 [0.000]***
Non-subject, low income	0.197 [0.070]*	0.341 [0.001]***
'Moderate' prices		0.297 [0.000]***
'High' prices		1.174 [0.000]***
Constant	1.070 [0.000]***	0.608 [0.000]***
Observations	1,948	1,948
Adjusted R^2	0.021	0.105

p-values are shown in square brackets. '*', '**' and '***' denotes significance at the 10%, 5% and 1% levels, respectively.

30% below (respectively, above) the average for the product. The third category ('moderate prices') denotes export prices within 30% of the average price. In specification B moderate- and high-price suppliers are measured relative to low-price suppliers.

The table reveals several interesting insights. First, let us focus solely on the subject suppliers that were confronted with U.S. anti-dumping. The results indicate that there is no statistically significant difference in price variation for low-income and high-income countries. In specification A the estimate is negative and in specification B the estimate is positive. In both specifications the parameter estimates are statistically insignificant. This is important because it suggests that price volatility for developing countries is comparable with that of developed countries, at least with respect to the products in our sample. What does this mean for zeroing? Given that many products in our sample were the basis for WTO zeroing disputes, we know that zeroing has affected the margins for developed countries in the sample. All else being equal, the similarity in price volatility makes it likely that zeroing has affected the margins and duties that the United States imposes on *developing* countries. Thus, even though developing countries did not initiate the WTO disputes, they are quite likely to be affected by zeroing in the same way as the developed countries that did initiate the disputes. Put differently, the results suggest that the lack of WTO activity is not a sign that zeroing is less relevant for developing countries.

Second, both specifications show that price volatility for non-subject suppliers is higher than for subject suppliers. The parameter estimates are

statistically significant in both specifications. This suggests that the spectre of zeroing also looms over non-subject countries. While they were not investigated in these cases, their price variation is greater than for firms that were investigated, which makes it likely that zeroing would also have affected their dumping margins.[38]

Third, in specification B, we control for the suppliers' export price levels. This is an attempt to capture some of the insights from our earlier discussion about the impact of price levels on zeroing. While the estimates clearly show that higher volatility is associated with higher price levels, the main results with respect to subject and non-subject suppliers are consistent across both specifications.

Overall, the results from this analysis indicate that developed and developing countries have comparable price volatility. Thus, although developing countries have not yet initiated many WTO disputes about zeroing, the pricing evidence suggests that their margins have been similarly affected by zeroing.

8 CONCLUDING COMMENTS

Zeroing has emerged as a particularly irksome issue for all affected parties. For the United States, the numerous negative decisions fuel the belief in Congress that the WTO is biased and lessens U.S. support for the WTO. For U.S. trading partners, the United States' unresponsiveness to the zeroing decisions sends a signal that compliance is voluntary, and this effectively erodes the legitimacy of the WTO. At one level, the WTO's current inability to resolve the zeroing issue echoes of the enforcement problems that eroded support for the GATT dispute system in the 1980s.

The evidence suggests a real possibility that developing countries will also soon begin filing WTO complaints over the United States' use of zeroing. First, WTO AB has now a long series of decisions striking down virtually all use of zeroing.[39] This makes it far more likely that a developing country will prevail in a dispute against the United States. Second, the evidence indicates that the elimination of zeroing significantly reduces the anti-dumping margin. This means there is the potential for a large economic return to the filing dispute.

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[38] One potential explanation for why the non-subject countries were not investigated is that they were not 'dumping'. However, without any information on home market prices, we cannot infer whether these suppliers are selling at less than fair value.

[39] The AB decisions suggest that zeroing in response to 'targeted dumping' is consistent with the WTO. What constitutes 'targeted dumping' is unclear. Recent actions by USDOC seem to indicate that the United States will try to use this exception in order to continue zeroing (*eg* zeroing was applied in the final determination of sales at less than fair value in a recent case involving polyethylene retail carrier bags from Taiwan (China), 75 Fed. Reg. 14569, March 26, 2010).

Third, the empirical evidence implies that developing countries' export prices are at least as volatile as developed countries. This makes it likely that zeroing has affected developing-country margins and, thus, the size of anti-dumping duties that their exporters face. Fourth, at this point in time, there is no clear sign that the United States is ready to stop zeroing. This means that the WTO violations will remain unless pursued by the affected developing countries.

All signs, therefore, point towards more WTO cases and more strain on the system. However, we do not believe that the zeroing problem will be the ruin of the WTO DSU. The WTO dispute mechanism is, to a large extent, working as designed. While complainant parties have every reason to be frustrated with the pace of compliance, the WTO dispute settlement process was designed to proceed at a somewhat ponderous pace. As of early 2010, several cases are in, or have just finished, the Article 21.5 compliance phase of the DSU. As specified by the WTO agreement, complainant parties will probably soon have the right to retaliate against U.S. trade to offset the damage due to zeroing.

Much to the frustration of the other WTO members, the retaliation value is likely to be quite small for most instances of violation. For most countries and most products, the value of trade subject to anti-dumping orders is quite small. Even if half the orders are removed, the dollar value of current WTO decisions against the United States is probably insufficient to spur action by Congress. While zeroing is consuming a large amount of AB time, the reality is that it might be too small a violation to induce a difficult policy change.

The resolution to the zeroing issue may well be that the retaliatory claims against the United States—likely including many by developing countries—will have to continue to amass until the impact is sufficient enough to spur the USDOC to change its policy. In effect, the large number of zeroing cases at the AB is one indicator that it is a small issue economically.

Nevertheless, for the WTO itself, the growing number of very similar, unimplemented decisions against a prominent and powerful member challenge the stature of the institution. If the WTO cannot resolve something as simple as zeroing, how can any of its members hope that the AB can help resolve truly complicated and politically charged issues like genetically modified organisms, intellectual property standards, agriculture reform, labour standards or border tax adjustments for climate change? From this perspective, it is in the WTO's best interests to see that the zeroing conflict is resolved sooner rather than later.

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9 APPENDIX

Table A14.1: *U.S. anti-dumping cases used in price variation analysis.*

Product	Case ID (Bown 2010)
Ball bearings	USA-AD-391a, USA-AD-392a, USA-AD-393a, USA-AD-394a, USA-AD-399a
Brass sheet/strip	USA-AD-317
Certain frozen and canned warmwater shrimp and prawns	USA-AD-1063, USA-AD-1064, USA-AD-1065, USA-AD-1066, USA-AD-1067, USA-AD-1068
Chlorinated isocyanurates	USA-AD-1083
Citric acid and certain citrate salts	USA-AD-1151, USA-AD-1152
Cold-rolled carbon steel products	USA-AD-829, USA-AD-830, USA-AD-831, USA-AD-832, USA-AD-833, USA-AD-834, USA-AD-835, USA-AD-836, USA-AD-837, USA-AD-838, USA-AD-839, USA-AD-840
Cold-rolled steel products	USA-AD-964, USA-AD-965, USA-AD-966, USA-AD-967, USA-AD-968, USA-AD-969, USA-AD-970, USA-AD-971, USA-AD-972, USA-AD-973, USA-AD-974, USA-AD-975, USA-AD-976, USA-AD-977, USA-AD-978, USA-AD-979, USA-AD-980, USA-AD-981, USA-AD-982, USA-AD-983
Corrosion-resistant carbon steel sheet	USA-AD-617
Cut-to-length carbon steel plate	USA-AD-815, USA-AD-816, USA-AD-817, USA-AD-818, USA-AD-819, USA-AD-820, USA-AD-821, USA-AD-822
Cylindrical roller bearings	USA-AD-391c, USA-AD-392c, USA-AD-393c, USA-AD-394c, USA-AD-399c
Granular polytetrafluoroethylene resin	USA-AD-385
Hot rolled carbon steel flat products	USA-AD-806, USA-AD-807, USA-AD-808
Hot-rolled carbon steel products	USA-AD-898, USA-AD-899, USA-AD-900, USA-AD-901, USA-AD-902, USA-AD-903, USA-AD-904, USA-AD-905, USA-AD-906, USA-AD-907, USA-AD-908
Industrial nitrocellulose	USA-AD-443
Nitrocellulose	USA-AD-96

Table A14.1: *Continued.*

Product	Case ID (Bown 2010)
Oil country tubular goods	USA-AD-1000, USA-AD-1001, USA-AD-1002, USA-AD-1003, USA-AD-1004, USA-AD-1005
Oil country tubular goods	USA-AD-992, USA-AD-993, USA-AD-994, USA-AD-995, USA-AD-996, USA-AD-997, USA-AD-998, USA-AD-999
Pasta	USA-AD-734
Purified carboxymethylcellulose	USA-AD-1084, USA-AD-1085, USA-AD-1086, USA-AD-1087
Spherical plain ball bearings	USA-AD-394e
Stainless steel bar	USA-AD-913, USA-AD-914, USA-AD-915, USA-AD-918
Stainless steel plate in coils	USA-AD-788
Stainless steel sheet and strip	USA-AD-797, USA-AD-798, USA-AD-799, USA-AD-802
Steel concrete rebar	USA-AD-878
Tapered roller bearings	USA-AD-343

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Multilateralism Beyond Doha

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1 INTRODUCTION

There is a fundamental shift taking place in the world economy, to which the multilateral trading system needs to adapt. We advance five propositions. First, the traditional trade negotiating dynamic, driven by private-sector interests largely in the rich countries, is running out of steam. Second, the world economy is moving broadly from conditions of excess supply to stresses on supply, and so economic security has become a paramount concern for consumers, workers and ordinary citizens. Third, international economic integration can contribute to enhanced security. Fourth, addressing these new concerns requires a wider agenda of multilateral cooperation involving not just the WTO but other multilateral institutions. Fifth, despite shifts in economic power across countries, the commonality of interests and the scope for give and take on these new issues make multilateral cooperation worth attempting.

The Doha Round has always been plagued by a private-sector interest deficit. The corporate *demandeurs* (the traditional protagonists) of the north were conspicuous by their absence. This absence was the result of a number of factors, mainly unilateral and regional liberalisation in goods and services, which has reduced the incentive to negotiate multilaterally. With all of this happening outside the WTO framework, northern countries do not have to expend negotiating coinage within the WTO to secure outcomes that their firms are obtaining costlessly.

This is not to deny that the WTO's rules and procedures, underpinned by an effective dispute settlement system, have a lot of value that needs to be preserved. Historically, the WTO has also had an important role to play

in liberalising trade. However, the WTO was more effective in liberalising industrial-country trade policies than those of developing countries. Indeed, in Subramanian and Wei (2007), the positive trade effects of WTO membership are strong only for industrial countries.

Meanwhile, the global economic landscape has changed. The period 2002–8 saw the largest consecutive period of world growth ever, fuelled by productivity increases and low inflation. We now seem to be moving from a period of abundant supply to stresses on supply. This new landscape has revealed serious threats to economic security, broadly defined. Rising commodity prices threaten food and energy security. On trade, we see, especially in the United States, perceived threats to economic security for workers and the middle class that are reinforced by distorted exchange rates. Financial security has been threatened by the recent crisis; moreover, the world is uncomfortable with the massive global transfer and renationalisation of finance that is reflected in the emergence of sovereign wealth funds.

We propose that the appropriate response to some or all of these threats to security is in fact multilateral cooperation, and that this cooperation is either superior or complementary to unilateral responses.[2] On food security, the imposition of export taxes by any one country might help to reduce domestic prices, but, when undertaken by many countries simultaneously, results in increases in world prices, rendering unilateral actions ineffective. Oil subsidies and/or reductions in gasoline taxes may reduce domestic prices in any one country, but, when implemented by many countries, serve to raise world prices. Similarly, unilateral actions against undervalued exchange rates or investments by foreign governments are also less effective and prone to being captured by protectionist interests. In the aftermath of the recent financial crisis, unilateral efforts to strengthen regulation in some jurisdictions will be ineffective or even undermined if other jurisdictions do not take similar actions. In each of these cases, appropriate multilateral rules—relating to export restrictions, cartelisation of oil markets, persistently undervalued exchange rates and core financial regulation—would sustain economic integration, while also enhancing economic security.

Many of these new issues should be on any future agenda of multilateral cooperation. The drivers of this new agenda could be new actors, for whom security will be an overriding concern: consumers (affected by food, energy and financial insecurity), immobile labour (affected by undervalued exchange rates) or just the population at large with concerns about environmental security. That these diffuse interests can have a strong influence on national policy has already been demonstrated. Around the world, the swift actions of governments—whether on food, energy, or inflation—attests to the power of

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[2] We focus here on multilateral cooperation, but it is conceivable that, in some cases, regional and bilateral approaches may be more appropriate.

these interests. The question is whether governments can now exploit more fully the scope for international cooperation to render policy more effective in serving those concerned about security. The forum for such cooperation need not exclusively be the WTO, except where only trade measures are involved (as in agriculture). On other issues, such as exchange rates, financial regulation and the environment, other multilateral institutions would clearly have to be involved.

The post-mortems of the failed WTO ministerials have highlighted the divergent interests of the new powers (notably China and India) and the traditional ones (such as the EU and the United States). Extrapolated into the future, this divergence leads to a pessimistic prognosis for future cooperation. However, there is much greater shared interest and scope for give and take between the old and new powers in an agenda that addresses the new concerns. Achieving successful multilateral cooperation will nevertheless be a challenge.

This chapter is structured as follows. Section 2 elaborates on the issues that threaten security, their implications for international integration, and how multilateral cooperation would help. Section 3 identifies the new actors who could shape and drive this agenda. Section 4 considers the structure of, and forums for, international cooperation. Section 5 concludes.

2   THREATS TO SECURITY

In this section we will elaborate on these threats to security, highlighting the case for cooperation and assessing whether the WTO is the appropriate forum. Our claim is not that stresses on supply and other threats to security are durable. It is rather that current multilateral rules are less attuned to dealing with these threats. These rules therefore need to be relevant, not just to the 'good' states of the world where supply is plentiful and the traditional protectionist concerns paramount, but also to the 'bad' states of scarcity where food and energy security are important.

2.1   Agriculture and Food Security

As Figure 15.1 shows, prices of major commodities increased substantially between 2006 and 2008. According to the World Bank, about 100 million people have been thrown back into the ranks of the poor because of these price rises. There were riots in a number of countries. The poor are especially vulnerable because they spend the largest portions of their income on food. For example, in Nigeria, about 70% of income is spent on food, 75% in Vietnam, and 50% in Indonesia compared with 12% in the United States (although that figure is also now on the rise).
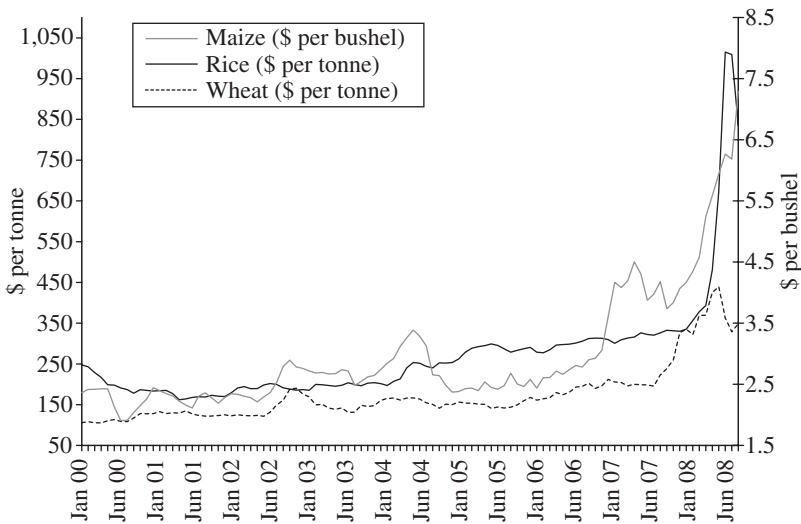
Figure 15.1: *Prices of three major commodities: January 2000–July 2008. Source: IMF's WEO database.*

Pressure on food supplies, and associated high food prices, could be a medium- to long-term reality because some of the driving factors—rising prosperity in the developing world which creates more demand, high fuel prices, stagnant agricultural productivity, and climate-change induced pressure on agricultural supplies—could also be of a durable nature.

These fundamentals are being exacerbated by two types of trade policy interventions: export restrictions on foodstuffs, and trade-related biofuels policies in the industrial countries. As of April 2008, 18 developing countries had imposed some form of export restrictions during the crisis.[3] Each country tried to keep domestic supplies high to ensure food security. However, as more countries implement export controls, global supply contracts, pushing prices up further and aggravating global food security.[4]

There are few restrictions on the use of export taxes in the WTO, and the disciplines on export restrictions are incomplete. Article XI of the GATT does prohibit quantitative restrictions on exports, but paragraph 2(a) permits

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[3] See the World Bank's study (2008) at http://siteresources.worldbank.org/NEWS/Reso urces/risingfoodprices_chart_apr08.pdf.

[4] Food security goals are best served not by restricting trade but through domestic policy instruments such as targeted safety nets. Moreover, the existence of such safety nets would dilute the political-economy bias in favour of trade interventions.

temporary restrictions in order to prevent critical shortages of food or other goods.[5]

This permissiveness on export taxes and restrictions has resulted in the worst of all possible worlds. Under 'normal' agricultural conditions, we have huge distortions in terms of costly taxpayer support in order to reduce imports and to encourage production and exports. Under abnormal conditions, such as those currently prevailing, we have the opposite, where countries liberalise their imports but prevent exports. We need a system where *both* imports and exports remain free to flow in good times *and* bad. This is especially important if trade is to remain a reliable avenue for food security. If, in bad times, importing countries are subject to the export-restricting actions of producing countries, they will consider trade to be an unreliable way of maintaining food security and will reconsider how to manage their agriculture. There will be a greater temptation to move towards more self-reliance as insurance against the bad times. This is exactly what the EU agriculture minister had in mind when he said that vulnerable African countries should try to emulate the EU's policies in order to attain greater self-reliance in agriculture.[6]

The second threat to food security comes from biofuels policy. In the United States, the combination of the Renewable Fuels Standard (the ethanol mandates), the blenders' tax credit, and tariffs on imported Brazilian ethanol (and, of course, the production subsidies) have diverted land, especially from wheat and soya bean production, and contributed to food price increases. Estimates vary on the magnitude of this contribution: the International Food Policy Research Institute suggests that a moratorium on biofuel production in developed countries through 2008 would ease corn prices by 20% and wheat prices by 10%, but Mitchell (2008) estimates that the impact of biofuels-related policies could account for as much as 70% of the increase in prices.

Only some of the offending policies (corn subsidies and the tariffs on imported ethanol) fall squarely into the trade domain. However, addressing

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[5]This exception appears to have been interpreted relatively broadly in justifying the application or threat of export barriers, in cases such as the U.S. proposal for an export ban on soybeans in 1973. Article 12 of the WTO Agreement on Agriculture requires that developed members and net-exporting developing-country members introducing export restrictions under this provision take into account the implications for importing members' food security, and notify the Committee on Agriculture, preferably in advance. However, it appears that this has rarely been done: the most recent notification is from Hungary in 1997 (Gamberoni and Newfarmer 2008).

[6]Unsurprisingly, WTO members that depend heavily on world markets for food have pushed for disciplines on export controls and taxes (Congo 2001, Japan 2000, Jordan 2001, Korea 2001, Switzerland 2000). Recognising that importers' concerns about the reliability of supply might inhibit liberalisation, some exporting countries have also advocated multilateral restrictions on the right to use export restrictions (Cairns Group (2000), the United States (2000) and, more recently, Japan and Switzerland (2008)). See http://worldtradelaw.typepad.com/ielpblog/export_restrictions/index.html.

these policies could alter the political economy of even the non-trade aspects of biofuels policies, for example, by ensuring that the benefits to ethanol producers are contested and, hence, spread more widely. This in turn could weaken the demand for biofuels mandates, leading to more rational environmental policies that do not place additional demands on food, and alleviating food shortages at national and international levels.

The Doha Round of trade negotiations has not addressed these problems yet. The round has been devoted to traditional forms of agricultural protection—trade barriers in the importing countries and subsidies to food production in producing countries—which are now becoming less important as food prices have soared and import barriers have declined.[7] We need to enlarge the trade agenda so that trade-related biofuels policies such as tariffs on imported ethanol, and all trade barriers, import and export, are put on the trade agenda.[8]

2.2   Oil and Energy Security

High oil prices, fuelled by rising demand in emerging market economies such as China and India and uncertainties about available supplies (the 'peak' oil fear), have created or, rather, resuscitated fears about energy security. There is a 'scramble' for oil resources as countries such as China and India seek to obtain direct control over them through foreign direct investment. But another important factor underlying rising prices is the cartelisation of oil markets by the oil exporters. Even the IMF has talked about 'inadequate investments in supply' which could be a euphemism for cartelisation in the form, if not of restricting supply, then at least of not increasing supply commensurate with demand increases. It is one of the striking omissions of the trading system that there are no multilateral rules on government restrictions affecting the most important traded commodity.

The oil price rise has led to a number of unilateral responses. The governments of many developing-country oil importers have attempted to cushion consumers against these increases through implicit and explicit subsidisation. In the more advanced countries, there have been calls to reduce gasoline and

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[7]Despite their current irrelevance, negotiators remain unwilling to give up agricultural safety nets: witness the persistent high subsidy limits in the United States and EU and the creation of special safeguard mechanisms for developing countries.

[8]Protection measures designed to encourage the use of domestically produced biofuels are subject to WTO rules on binding of tariffs and other duties and charges, and would normally be expected to be subject to reductions in protection under the Doha Agenda negotiations on reductions in agricultural (ethanol) or non-agricultural (biodiesel) tariffs. One surprising feature of the current negotiations is that the important protection of ethanol, which diverts the sourcing of ethanol from lowest-cost international sourcing to reliance on domestically produced maize, is not currently subject to significant tariff reductions because almost all of this protection is provided by a measure classified as an 'other duty and charge'.

related taxes in response to these increases. All these unilateral responses have, perversely, had the effect of putting further upward pressure on oil prices, or at least have impeded the normal market mechanism of consumption responding to price increases.

Unilateral action has taken other forms. In the United States, this concern has led to a revival of legislative initiatives against oil-exporting countries. The House of Representatives has passed legislation to combat record gas prices by cracking down on OPEC-controlled entities and oil companies for oil price fixing.[9] The legislation, also called the 'NOPEC' bill, gives the U.S. Justice Department the ability to prosecute anticompetitive conduct by OPEC members.

On the Senate side, U.S. Senator Frank R. Lautenberg (D-NJ) introduced legislation to force action against OPEC for its anticompetitive practices and illegal export quotas on oil, which ultimately lead to higher gas prices. Senator Lautenberg's bill would require the U.S. Trade Representative to initiate consultations with countries that are members of both OPEC and the WTO.

The House and Senate responses point to two possible approaches to multilateral cooperation. The first would be a competition-policy-based approach, and the other would be a trade-policy-based approach. While the former would seem most appropriate to deal with collusion, it does face the challenge of securing broader international cooperation on competition policy. Furthermore, competition policy has tended to be more permissive about the action of governments (the 'sovereign immunity' exception) and, hence, is less likely to be effective against OPEC behaviour.

The trade-policy approach has the advantage of addressing government action, but the existing WTO case against OPEC is far from watertight. Article XI only prohibits export quotas but OPEC's country quotas limit production, not exports. Second, the WTO also permits commodity agreements between countries that are designed to stabilise prices (Article XX (h)). Countries are also permitted to take action to conserve exhaustible natural resources (Article XX (g)).

The WTO cannot prevent individual countries from making decisions about the exploitation of oil. For example, a country may justifiably reduce production and exports when prices are high, an example of a backward-bending supply curve (Cremer and Salehi-Isfahani 1989).

The real issue is joint action by international governments (as in OPEC) to restrict trade and impede access to energy. Such collusive behaviour is against the spirit of open multilateral trade. Given that oil is one of the most important traded goods (see Figure 15.2) and is vital for energy security, it might be possible to design multilateral rules to prevent such collusive behaviour if it restricts trade, even if the measures ostensibly take the form of production restrictions.

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[9]The bill, the Gas Price Relief for Consumers Act (HR 6074), passed by a vote of 324–84.
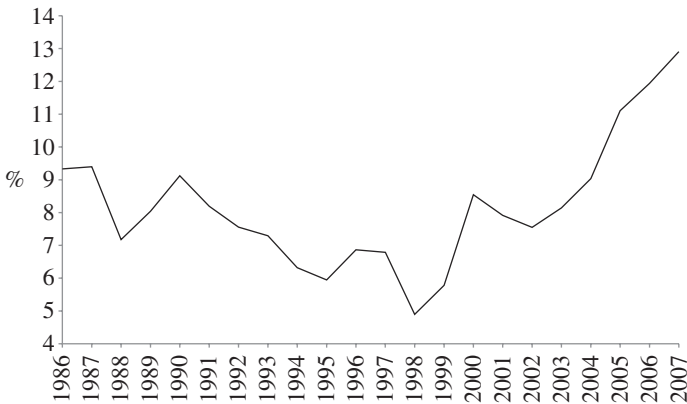
Figure 15.2: *Share of oil in world imports: 1986–2007.*
Source: IMF's WEO database.

Of course, rules should allow for legitimate interventions for stabilisation and environmental protection. For example, one principle for distinguishing trade restrictions from stabilisation could be to see whether agreements are one-sided (*ie* comprising producers or consumers) rather than two-sided, including both consumers and producers. If the aim of collective action is to stabilise prices, producers and consumers could come together to agree on price bands, intervention rules, *etc*.[10] In such a case, there should be scope for bringing together the producer cartel (OPEC) and the consuming countries (represented, for example, in an International Energy Agency with wider membership). Thus, institutional cooperation between the WTO, OPEC and the International Energy Agency would be necessary and even fruitful for such a multilateral response. Thus, it should be possible to design rules against collusive behaviour that threatens energy security, always allowing for legitimate exceptions on grounds of price stabilisation and environmental protection.

2.3 Undervalued Exchange Rates and Economic Security

These last few years, exchange rate changes, particularly the persistent undervaluation of major currencies, have been substantial. The perceived undervaluation of the Chinese currency (estimated at about 20–60% by Cline and Williamson (2008)) and those of the oil exporters in particular (whose

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[10]In fact, there is a precedent in the WTO for making exceptions for commodity agreements, provided that they comprise producers and consumers. Article XX (h) refers to commodity agreements, which conform to the principles approved by the ECOSOC in its resolution 30 (IV) of 28 March 1947.

currencies on some estimates should have appreciated in real terms by about 125% because of the oil price increase) have given rise to one of the most pressing contemporary problems of global imbalances and distorted trade (see Mattoo and Subramanian 2008 for more details). But undervalued exchange rates are also contributing to the economic insecurity of labour in the richer countries, an issue that has acquired increasing resonance in the domestic politics of trade, especially in the United States.

Montek Ahluwahlia suggests that there is an 'intellectual climate change' on globalisation. From Paul Samuelson to Paul Krugman, and Alan Blinder to Larry Summers, misgivings have been expressed over the impact of globalisation on the United States. Dani Rodrik asserts that the 'consensus on globalisation' is dead. Underlying this changing attitude is the effect of growing imports from developing countries on the middle class, which are usually unskilled and semi-skilled workers who are less mobile internationally than capital and skilled workers.

One of the key problems affecting the economic insecurity for relatively immobile labour in the industrial countries is undervalued exchange rates by partner countries, especially China. An undervalued exchange rate is *both* an import tax and an export subsidy, which hurts the profitability of all tradable industries in partner countries. Mobile capital escapes this adverse consequence by relocating abroad, leaving the immobile factor to bear the brunt of the decline in competitiveness.[11]

But would unilateral affection against undervalued exchange rates be effective? The answer is 'probably not'. First, undervalued exchange rates affect more than just one country. For example, any undervaluation by the Chinese not only affects the EU and United States, but also a number of emerging market countries and African countries that compete with China. The undervaluation of oil exporters reduces imports, the counterpart of which is reduced exporting opportunities for all countries that are potential suppliers. Second, in the specific case of China, unilateral action has been attempted—by the United States—and has proven to be unsuccessful. Only a coalition of affected countries coming together offers any prospect of this issue being successfully resolved (see Mattoo and Subramanian 2008). Finally, unilateral action against undervalued exchange rates will, by definition, be partial and, hence, ineffective. Countries can, in principle, take some action against exports emanating from countries with undervalued exchange rates. But they have little recourse against the fact that undervalued exchange rates also reduce their exporting opportunities.

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[11]The fact that capital has been less affected by globalisation is reflected in the rising share of profits in GDP across the OECD countries (Ellis and Smith 2007) over the last two decades. Broda and Romalis (2008) note that the adverse impact of imports from developing countries on the wages of unskilled labour may be attenuated by the fact that a relatively large share of workers' consumption includes cheaper imports from developing countries.

What about the multilateral options? In the historic division of labour between the IMF and the WTO, the former has had jurisdiction over exchange rate matters. But IMF surveillance on exchange rates has been weak or even non-existent (Mussa 2008) for reasons of inadequate leverage and eroding legitimacy. While the IMF has been able to effect changes in member-country policies that have sought its financial assistance in times of crisis, it has not been influential without the leverage of financing. In its key surveillance function (where no financing is involved), there have been relatively few instances where IMF intervention has led to changes in the policies of large creditor countries, even when such policies have had significant spillover effects on others. Moreover, the IMF has had a history and tradition of non-adversarial dialogue between its members in a surveillance context and has not had to develop a real dispute settlement system.

Compounding this problem of limited leverage is the IMF's eroding legitimacy. The IMF's role has been diminished, and it has lost some of its status as a trusted interlocutor in emerging-market countries, particularly in Asia in the aftermath of the Asian financial crisis. There is also the more general perception that the IMF's governance structure is outdated, reflecting the receded realities of Atlantic-centred 1945 rather than of ascendant Asia in the 21st century.

To what extent do current WTO rules already provide for redress against undervalued exchange rates? Recourse is potentially possible to Article XV (4) of the GATT, which states that 'contracting parties shall not, by exchange action, frustrate the intent of the provisions of [the WTO] Agreement'. But this is too vague an obligation to provide a basis for effective enforcement (Hufbauer *et al* 2006). Indeed, there is no jurisprudence on this provision of the GATT, and it is highly unlikely that WTO dispute settlement panels would be willing to rule against undervalued exchange rates on this tenuous basis.[12]

One possibility would be for the WTO and IMF to cooperate on cases of significant undervaluation that are clearly attributable to government action. The rationale for WTO involvement is that there are both large trade and distributional consequences of undervalued exchange rates, and that the WTO's enforcement mechanism is credible and effective. The WTO would not be involved in exchange rate management, and our proposals do not entail the WTO displacing the IMF: rather, they would harness the comparative advantage of the two institutions, with the IMF providing the essential technical expertise in the WTO enforcement process. Cooperation between the trade and monetary institutions would thus be essential for tackling the economic insecurity concerns arising from undervalued exchange rates.

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[12]Hufbauer *et al* (2006) also make this point. In addition, they argue that the addenda to the interpretation of Article XV (4) make clear that another '*specific* GATT article needs to be frustrated in an important way before the strictures of Article XV (4) can be invoked' (p. 19).

2.4   Sovereign Wealth Funds and National Security

Capital is increasingly being held in the developing world, not in private hands but with the government in the form of foreign exchange reserves (Wolf 2007). Morgan Stanley has estimated, using reasonable assumptions, that there is now close to $5 trillion in sovereign wealth funds (SWFs) and that this figure will increase to $12 trillion by 2015. Most of this will be in the hands of oil-exporting governments and China and other countries in East Asia.

In turn, these surpluses are being disposed of through acquisition of foreign assets (government bonds and, increasingly, private-sector assets). But this acquisition is raising concern, even alarm, in the industrial world, which was traditionally on the other side of the capital equation. Summers (2007) gives the following examples:

> In early 2007, government-controlled Chinese entities took the largest exter-
> nal stake (albeit non-voting) in Blackstone, a big private equity group that,
> indirectly through its holdings, is one of the largest employers in the United
> States. The government of Qatar is seeking to gain control of J. Sainsbury, one
> of Britain's largest supermarket chains. Gazprom, a Russian conglomerate, in
> effect controlled by the Kremlin, has strategic interests in the energy sectors
> of a number of countries and even a stake in Airbus. Entities controlled by
> the governments of China and Singapore are offering to take a substantial
> stake in Barclays, giving it more heft in its effort to pull off the world's largest
> banking merger, with ABN Amro.

These developments provoke two distinct fears. The first is a macro-economic one: namely, that decisions by these entities—for example, to suddenly change portfolio allocations—could destabilise currency and bond markets. The second is a microeconomic one: namely, that foreign govern-ments could attain control of industries that are considered sensitive or strategic.

Why do we need multilateral action in this area? From the perspective of countries with SWFs, the attractions of a multilateral approach are more obvious. They do not want to be subject to unilateral actions by receiving countries. For example, the United States is in the process of adopting legislation to tighten scrutiny of foreign investments by government entities where they raise security concerns (Jackson 2006). Similarly, the European Commission is investigating whether takeovers by publicly controlled foreign investment funds are a concern and need remedial action.[13] But why should recipient countries forgo such unilateral action?

There are at least three problems with unilateral action. First, unilateral action could easily acquire a protectionist slant, especially if protectionists

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[13]The announcement came after the German Chancellor Angela Merkel said that her government was considering setting up a system, similar to that in the United States, where a Committee on Foreign Investment can recommend that the U.S. President block foreign direct investments that are deemed to be a threat to national security.

articulate their concerns in the language of national security, as was the case in the aborted acquisition effort by Dubai Ports World, and in the case of the Chinese national oil company, China National Offshore Oil Corporation. Second, there could be proliferating and, hence, highly heterogeneous standards imposed by different capital-receiving governments, which could impose undue costs of compliance on SWFs and, hence, affect the efficient flow of capital. Third, even where unilateral legislation is enlightened and uniform and takes the form of stipulating reasonable restrictions on SWFs in return for secure access, there are likely to be difficulties in monitoring compliance with these restrictions unilaterally or even bilaterally.

The case for a multilateral approach is clear. The new capital exporters (and there are several of them now) want free and secure access to industrial-country assets to maximise the returns on their holding of capital while diversifying the attendant risks. But capital importers have legitimate concerns about the motivations and consequences of these transactions, especially since the wealth is owned and invested by governments and related entities. A mutually beneficial bargain is there for the taking. Furthermore, it is interesting that there is a well-established legal precedent for regulating similar transactions in the WTO. No radical legal leaps are necessary.

Discussions organised by the IMF have led to a voluntary code of conduct for SWFs. This is an important step forward, but the process needs to be taken further. The IMF may be a convenient location for multilateral action on the macroeconomic aspects of SWFs, but concerns remain over the microeconomic consequences of their being able to acquire corporate control. The latter can only be addressed in the context of rules on cross-border flows of direct investment.

There are two reasons to believe that the WTO is a natural home for such an agreement. First, the WTO already, albeit somewhat opaquely, covers investments by SWFs in its services agreement, the GATS. A second argument in favour of WTO regulation is its dispute settlement mechanism (as in the context of exchange rates). Consider a situation where a WTO member felt that a foreign SWF was behaving inconsistently with its obligations. Instead of taking unilateral action based on its own judgment—actions that can provoke retaliatory protection and spiral into a trade or investment war—the member would now have recourse to the WTO dispute settlement mechanism. The well-established mechanism would offer institutionalised consultation and, when necessary, impartial assessment of conformity with mutually agreed conditions. As is the case for exchange rates, with SWFs there will be need for cooperation between the WTO and the IMF.

2.5   Trade, Capital and Financial Security

Seismic changes shook the world financial system in 2008, with many of the icons of financial capitalism either disappearing or passing into government

control. Commentators are heralding the end of the current system of over-innovating and under-regulated finance. Regardless of how national choices evolve, there are new and serious international dimensions that need to be addressed and resolved.

The first dimension relates to the causes of the recent crisis. A number of factors have been at play, including lax regulation, perverse incentives for managers and rating agencies, and bubble psychology. But one of the key macroeconomic causes has been excess liquidity, which created cheap money, led to worsening of lending standards, and facilitated the build-up of the bubble in the housing market. In turn, excess liquidity resulted from a global 'savings glut', which was another name for the large current account surpluses that had built up in China and the oil-exporting countries.

Limiting such global imbalances must therefore be an important part of preventing the re-emergence of liquidity-fuelled bubbles in asset markets. The agenda that we have proposed (multilateral cooperation on undervalued exchange rates and excessively high oil prices) will naturally contribute towards global financial security.

In addition to addressing the deeper macroeconomic causes of financial crises, multilateral cooperation will also be needed for regulatory reform. Finance has become global, while its regulation has remained national. This discrepancy creates problems and can be addressed in one of two ways. First, if regulation is to be zealously national, then countries should have the freedom to determine the pace of financial integration. This would mean that international negotiations, both in the WTO and in the context of regional agreements, should be more cautious about pushing financial sector liberalisation and, especially, capital account convertibility.

A second possibility would be to move towards a more global regulation of finance. Any reconfiguring of the financial system in the United States and United Kingdom will involve stricter national regulation. National regulators will, however, be concerned if other jurisdictions do not take similar action. Two examples illustrate these problems. First, in the context of the U.S. effort to take over distressed housing-related assets, the question has arisen as to whether assets owned by foreign financial institutions should be covered. Put starkly, who should bail-out UBS: the U.S. Treasury, the Swiss government, or should the burden be shared? Second, in the medium term, there are likely to be efforts to limit leverage and to impose higher capital adequacy requirements on a wider set of financial actors. These efforts are more likely to succeed if the attendant problem of jurisdiction-hopping regulatory arbitrage is minimised through concerted action by a wide set of countries.

Multilateral cooperation to coordinate the greater national regulation of finance is, therefore, almost inevitable in the wake of the recent crisis. These

efforts will require coordination between institutions such as the Bank for International Settlements and Financial Stability Forum, which deal with financial regulation, and the IMF and the WTO, which deal with securing financial openness.

2.6   Climate Change and Environmental Security

Climate change is now increasingly recognised as the gravest danger to humanity and its physical existence. But as the momentum for acting decisively on the environment grows, there is also talk of using trade as an instrument for furthering environmental objectives. But this focus on trade is really on restricting, rather than liberalising, trade in the pursuit of environmental objectives. Recourse to trade restrictions is typically sought on two grounds: as actions to affect or offset competitiveness in particular industries (countervailing duty action or border tax adjustments), and as broad enforcement mechanisms.

Trade provisions in the WTO currently exist on environmental issues, and the jurisprudence is evolving (Charnovitz *et al* 2008). However, as far as the climate change issue is concerned, the environment–trade policy link is likely to be determined by, and be a derivative of, climate change negotiations. In other words, the international community—representing environmental and trade interests—will have an opportunity to determine the trade-climate change regime. If these negotiations are successful (in the sense that all the major carbon emitting countries, including developing ones, become parties to the agreement), any resulting rules could have the effect of superseding the current trade provisions/jurisprudence.

Meanwhile, the most prominent U.S. Congress climate bills (Lieberman–Warner and its predecessor from Senators Bingaman and Warner) all envisage some form of trade-restrictive action against imports from countries that are not deemed to take 'comparable action' to that of the United States. The EU, too, has been contemplating similar action. The call for restrictive action is heard particularly loudly from producers in energy-intensive sectors in the United States (ferrous metals, non-ferrous metals, chemicals, paper and non-metallic mineral products) and is aimed at imports from China and India where environmental standards are especially low.

A promising and effective way to address climate change seems to be to work towards international cooperation without the threat of trade sanctions (a view expressed by Nicholas Stern[14]). Addressing the climate change problem will require cooperation from a number of countries such as China and India, which have been reluctant to take on commitments partly because of developmental concerns, but also partly because of their perception that industrial countries have been primarily responsible for the climate change

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[14]See www.cgdev.org/doc/events/6.26.08/Final_Sabot_Transcript.pdf.

problem. Being threatened by trade sanctions from parties that they consider to be the perpetrators will only vitiate the atmosphere for cooperation.

Trade-restrictive actions on competitive grounds will also be difficult to implement in practice (Houser *et al* 2008). First, assessing what 'comparable action' is and converting it into an equivalent trade tax that will compensate for, or offset, the competitiveness effect will be difficult.[15] Second, trade actions against imports would only cover the manufacturing sector, which does not account for the bulk of greenhouse gas emissions.[16] Third, if countries accept economy-wide emissions targets, they may wish to retain flexibility in allocating them across sectors of the economy, and accordingly seek immunity from trade action in specific sectors by partner countries on grounds of competitiveness.

Of course, as in the Montreal Protocol, there could be provision for trade sanctions between participants to an eventual agreement on emission reductions. But these trade sanctions would have the character of being enforcement mechanisms after cooperation is secured, rather than mechanisms to induce cooperation in the first place.

3   CHANGING CONSTITUENCIES

Historically, the process of multilateral trade liberalisation in the WTO has been driven by corporate interests, most notably in the United States and Europe, in search of access to foreign markets. The early rounds of trade liberalisation in the GATT were driven by U.S. private-sector interests threatened by the trade diversion consequences of the formation of the EU and its subsequent enlargement. The impetus for the Uruguay Round came, in large part, from the services, and especially intellectual property interests, in the United States and Europe, which were looking to boost their sales and profitability during the macroeconomically difficult times of the 1980s.

In contrast, the Doha Round has always been plagued by a private-sector interest deficit. The corporate *demandeurs*—the traditional protagonists—of the north were conspicuous by their absence. This absence was the result of a number of factors, mainly unilateral and regional liberalisation in goods and services, which has reduced the incentive to negotiate multilaterally. With all of this happening outside the WTO framework, northern countries do not

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[15]For other technical difficulties with trade measures, see Houser *et al* (2008).

[16]According to Lord Stern, industrial countries should agree to four things to induce cooperation from developing countries: '80% cuts, low carbon in terms of targets, low carbon growth, carbon financial flows, development and sharing of technology. That is conditionality by the developing countries on the developed countries' (Stern 2008).

have to expend negotiating coinage within the WTO to secure outcomes that their firms are obtaining costlessly.[17]

It is possible that the old way of doing business in the WTO, with large, corporate interests seeking market access abroad and driving multilateral negotiations, may have run its course. What the WTO perhaps needs is not just an agenda that addresses issues of contemporary significance, but also a new set of actors to bring these issues to the negotiating process.

In the new agenda that we have identified, a common theme is security. The main actors, for whom security will be an overriding concern, are not likely to be traditional corporate interests, who have been the driving forces behind multilateral liberalisation. Rather, they are likely to be consumers (affected by food and energy insecurity), immobile labour (affected by undervalued exchange rates), or just the population at large, concerned about financial and environmental security.

It is an axiom of trade politics that concentrated interests (typically producers) trump diffused interests (typically consumers) because the quantitative stakes for the former overwhelm the stakes for individual, isolated consumers. The genius of the reciprocal trade framework in the WTO was, in fact, its harnessing concentrated producer interests (of exporters) to overcome opposition to reform from concentrated domestic producers fearful of foreign competition. The diffuse consumer interests were incidental beneficiaries of the resulting liberalisation. But in the proposed agenda, it is these diffuse interests that would need to be more active protagonists in driving the agenda. Is this feasible?

In a world of excess demand, these consumers have already asserted their presence and articulated their interests much more powerfully than in the era of growth and stable prices. This is already reflected in the unilateral actions of governments around the world. First, the swift and surprising abandonment of measures such as imports tariffs designed to protect producer interests in favour of measures designed to protect consumer interests (*eg* import liberalisation in the EU and export restrictions in Argentina and Vietnam). Second, in response to fuel price increases, governments have expanded budgetary support in the form of subsidies. Third, an increasing number of governments have resorted to tighter monetary and exchange rate policies in order to bring down inflation, even if it has meant higher interest rates for producers and lower economic activity.

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[17]Even in the area of intellectual property, northern corporate interests are not looking to the Doha Round. Many of their objectives were accomplished in the Uruguay Round. Where residual interests remain in seeking higher standards of intellectual property protection, they are using the regional route to pursue them, and have achieved some success. For example, in the regional agreements negotiated by the United States with Jordan, Morocco and Vietnam, these countries have had to provide protection for pharmaceuticals and test data used in obtaining regulatory approval for pharmaceuticals that goes beyond the WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).

The problem is that a number of these national policy interventions have been ineffective and even counterproductive. Consider several examples: export taxes by any one country might help reduce domestic prices, but, when undertaken by many countries may simultaneously result in increases in world prices, rendering unilateral actions ineffective. Second, oil subsidies and/or reductions in gasoline taxes may reduce domestic prices in any one country, but, when implemented by many countries, serves to raise world prices. Similarly, unilateral actions against undervalued exchange rates or investments by foreign governments are also less effective and prone to being captured by protectionist interests. In the aftermath of the recent financial crisis, unilateral efforts to strengthen national regulation will be ineffective or even undermined if other jurisdictions do not take similar action. On the environment, unilateral actions can vitiate the atmosphere for key international negotiations over greenhouse gas emissions as well as resulting in inefficient domestic policies.

That these diffuse consumer interests can have a strong influence on national policy has already been demonstrated. The natural next step is for governments to exploit more fully the scope for international cooperation to render policy more effective in serving security-minded interests.

4   INTERNATIONAL COOPERATION: FORM AND FORUM

The post-mortems of the failed WTO ministerials have highlighted the divergent interests of the new powers (most notably China and India) and the traditional ones (such as the EU and the United States). Extrapolated into the future, this divergence leads to a pessimistic prognosis for future cooperation. The same is true if some of the new issues that we have raised are addressed in isolation. However, there is a much greater shared interest and scope for give and take between the old and new powers across the range of issues that could be part of a new agenda.

In the recent food crisis, both India and China chose restrictive policy options that did not promote their long-term food security. On energy, oil-consuming countries across the world (the United States, EU, China and India) have shared interests in undistorted energy markets without artificial restrictions on supply. In fact, China and India are in greater danger of counterproductive non-cooperative strategies where each seeks to foreclose supply sources through costly bilateral deals with energy suppliers. On exchange rates, a number of emerging market countries (India, Brazil, Turkey) share with the United States and EU an interest in ensuring that China and the Middle Eastern countries follow less distorting policies. Both capital-importing countries and those with SWFs have a shared interest in keeping investment flowing while addressing legitimate security concerns. On finance, the United States and the United Kingdom, who have a pressing imperative

to strengthen national regulation, have strong interests in inducing other jurisdictions to cooperate.

How these issues are negotiated and which coalitions form around each issue is less important than the fact that there is scope for mutually beneficial cooperation amongst at least a set of countries. It is not necessary, and may not even be desirable, that future efforts follow the Uruguay Round model of a single undertaking where all negotiate all issues, and are equally bound by any resulting rules. It was this overreach by the Uruguay Round that may have encumbered its successor with a constant and ultimately unsuccessful striving for a set of rules that would be uniformly applicable to an increasingly diverse membership.

The fast-moving nature of the issues that we have identified will require flexibility and speed of response. Some of these issues can only be effectively negotiated by a subset of the most concerned countries. In some cases, the benefits of agreed rules could then be extended to all WTO members (as in the WTO's information technology agreement). But this MFN obligation must not inhibit cooperation between smaller groups of countries in new areas. For example, advances in GATT/WTO rules on government procurement, subsidies, standards and anti-dumping (*ie* the Tokyo Round codes) were facilitated by allowing participants to deny the benefits of the deeper obligations that they assumed to non-participants. The key point is that negotiations should allow greater scope for variable geometry than currently exists.

While the issues identified in the paper are related to international economic integration, it is not necessary that the WTO should be the forum for discussion and negotiation on all issues. For the five issues we have identified, the WTO is the exclusively appropriate forum for only one issue: trade restrictions in agriculture. For exchange rates and sovereign wealth funds, there clearly needs to be cooperation between the IMF and the WTO. On energy, the extent to which the WTO is the appropriate forum depends on the approach taken; in any case, organisations representing both oil exporters (OPEC) and importers (*eg* International Energy Agency with an expanded membership) need to be involved. On the environment, the WTO would probably be subordinate to, say, the Copenhagen process for negotiations on climate change. On finance, the IMF and the WTO will need to cooperate with the Bank for International Settlements and the Financial Stability Forum, ideally with more representative membership. All of this, of course, raises the question of whether there needs to be a meta-process, akin to the original Bretton Woods negotiations, encompassing all the relevant interests (*ie* not just trade ministries but ministries of finance, energy, agriculture and environment) to decide on the content of international cooperation and on the allocation of responsibilities between international institutions.

5   CONCLUSIONS

The challenges for multilateral cooperation posed by the new agenda are substantial and success is far from assured. What does the proposed agenda imply for the pursuit of the WTO's traditional liberalisation agenda? In principle, there is no reason why taking up the new and important issues should be at the expense of the WTO's striving to open markets in agriculture, goods and services. But whether the WTO will continue to do the latter will depend on which of the two current views about the future is correct.

The sanguine view is that liberalisation will continue apace because most countries have come to accept openness as a key principle of economic policy. On this view, the private sector's interest in multilateral liberalisation will remain attenuated, and the traditional agenda will correspondingly feature less prominently in the WTO. The more pessimistic 'bicycle theory', associated with Fred Bergsten, is that inactivity on the multilateral front will lead to policy rollback, which could take the form of increased protectionism and/or increased litigation in the WTO, particularly in agriculture, where the stakes are high and the rules are murky. If this were to happen, the private sector, threatened with loss in market access, could return re-energised to the multilateral arena.

The importance of the proposed agenda similarly depends on international economic circumstances. For example, if food and oil prices were to fall dramatically now or in the near future, these threats to security would become less pressing and the need for cooperation less urgent. Nevertheless, multilateral cooperation must be responsive to the big issues of the day—mindful, of course, that new rules must transcend the vicissitudes of the economic cycle—rather than being the expression of dreary habit.

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