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The **E15** Initiative

# STRENGTHENING THE GLOBAL TRADE SYSTEM



## **Agricultural Trade and Food Security: Some Thoughts about a Continuous Debate**

Eugenio Diaz-Bonilla

December 2013

E15 Expert Group on  
Agriculture, Trade and Food Security Challenges

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**Think Piece**

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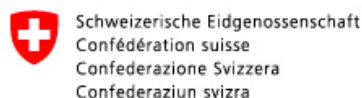
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# ABSTRACT

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Current WTO trade negotiations are being held at a time of higher prices for agricultural products (compared to the 1980s and the 1990s), stronger links between energy and agriculture (with some food and feed crops being diverted for the production of biofuels), and disruptive climate change (with more frequent extreme events, such as droughts and floods). Previous agricultural trade negotiations were conducted when global prices were lower. They focused on policies that artificially expanded supply in some countries, or reduced demand in other countries through protection. Now there seems to be more interest in policies that may artificially restrict supply to other countries or expand demand in some countries. Producers were the focus of previous trade concerns; now consumer concerns seem to have come to the fore. But policy instruments and approaches to the negotiations do not seem to have changed much. There are, just as when prices were lower, again strong suggestions for higher levels of protection and inefficient and inequitable subsidies as a way to combat high prices. Several trade measures contributed to the price spike in recent years and therefore there have been discussions about the need to consider tightening current trade disciplines, particularly on the export side. Although some of the proposals are sound, if another spike occurs, the protracted WTO process may not be enough to restrain governments of exporting countries that need to react to complaints from their citizens about the price of food. When such emergencies arise, multilateral interventions based on financial aid or physical stocks would prove useful. In terms of food policies, the old dilemma between supporting high prices to help with availability of food, and pushing for lower prices to contribute to access from poor consumers continues to be present. The only way out that dilemma is based on policies that improve profits for producers through greater productivity and efficiency while expanding supply at affordable prices for consumers. In that regard, it must be remembered that adequate trade policies and WTO disciplines can contribute to food security, but they are just a component of what must be a multidimensional approach.

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# LIST OF ABBREVIATIONS

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AMS	Aggregate Measure of Support
AoA	Agreement on Agriculture
CSIRO	Commonwealth Scientific and Industrial Research Organisation
EPA	Environmental Protection Agency
EU	European Union
GCM	General Circulation Model
GHG	Greenhouse Gas
ICSTD	International Centre for Trade and Sustainable Development
IPC	International Food and Agricultural Trade Policy Council
IFPRI	International Food Policy Research Institute
ILUC	Indirect Land Use Change
IMF	International Monetary Fund
IPR	Intellectual Property Rights
LAC	Latin American Countries
LDC	Least Developed Country
LIFDC	Low Income Food Deficit Country
LIRP	Low-income or Resource-poor
MENA	Middle East and North Africa
MHFR	Minimum Household Food Requirements
MIROC	Model for Interdisciplinary Research on Climate
NAMA	Non-Agricultural Market Access
NFIDC	Net Food Importing Developing Countries
OPEC	Organization of the Petroleum Exporting Countries
SDT	Special and Differential Treatment
SSM	Special Safeguard Mechanism
SPS	Sanitary and Phytosanitary
SSA	Sub-Saharan Africa
SVCs	Small and Vulnerable Countries
TOT	Terms of Trade
US	United States
WTO	World Trade Organization

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# INTRODUCTION

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This paper is an input to the work of the “Expert Group on Agriculture, Trade and Food Security Challenges” as part of the E15 Initiative of the International Center for Trade and Sustainable Development (ICTSD). The group on agriculture and trade is co-convened with the International Food and Agricultural Trade Policy Council (IPC).

This is a follow up to the meeting of 27–28 September 2012 in Geneva, and focuses on the topic assigned to subgroup 2—“Agricultural Trade Policy and Food Security: Overcoming Poverty and Ensuring Access to Food,” which I coordinated. Subgroup 2 was asked to “explore ... trends related to agricultural trade and food security, and identify options that policymakers could pursue to address them.”

What follows is a brief discussion of those topics. Section 2 defines some conceptual issues. Section 3 focuses on the current high food price context and tries to describe the present and future scenarios. Section 4 looks at the links between energy, biofuels, and food prices, and section 5 considers climate change issues. Section 6 summarily discusses food security concerns in the Uruguay and Doha rounds, as an introduction to section 7, where World Trade Organization (WTO) disciplines and some current debates are briefly reviewed. The next two sections focus on two specific topics currently being discussed in the context of food security concerns—food stocks and domestic food aid (section 8), and export constraints (section 9). The concluding remarks are in section 10.

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## SOME CONCEPTUAL ISSUES

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### WHAT IS FOOD SECURITY?

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It is important to start from a common definition of food security, such as the one adopted at the World Food Summit in 1996— “Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.” It is widely acknowledged that there are four main components of the concept.

- 1) Availability (which depends on domestic supply, stocks, and trade);
- 2) Access (which is influenced by income, employment, and poverty patterns related to economic growth and development);
- 3) Utilization (which depends on the quality of food, and also on other factors such as health services, water and sanitation infrastructure, education, and women empowerment); and
- 4) Stability (that physical and economic access and proper utilization should take place “at all times,” according to the definition of food security). Figure 1 (adjusted from Smith 1998) shows the different channels through which trade (and other macroeconomic factors) may influence the components of food security. Domestic production and imports determine national availability (component 1). A growth pattern that generates broad-based employment and income opportunities is crucial for food access (component 2). The figure includes the channel of government revenues, which may be used to implement policies and investments that help with different components of food security, such as agricultural research and development (R&D) (components 1 and 4), basic health services and water and sanitation systems (component 3). The figure also emphasizes that what counts in the end is the impact at the individual level (which is labelled ‘nutrition security’).

To discuss the multiple channels through which “trade” impacts food security, one must consider first three different ways the word is being used: first, it may refer in general to the economic exchange of goods and services; second, it may imply “trade policies” as border measures, such as tariffs or quotas; finally, it may be used to refer to “WTO trade disciplines,” which cover a far larger set of public policies. The different meanings of “trade” and the potential links to food security are discussed immediately,

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## TRADE AND FOOD SECURITY

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Most of the food consumed in developing countries is produced domestically. This could lead to the idea that trade is not necessarily a primary concern for food security. However, trade can provide the margin necessary to stabilize prices and adequate quantities of food in the domestic market, even if the largest percentage is produced and consumed domestically. Also, trade in agricultural and food products has been expanding (and projections suggest this trend will continue in the coming decades), which means that for some products and countries, food imports as a percentage of domestic consumption has been increasing, and will continue to rise.

Therefore, it is relevant to consider the implications of trade for food security. One fact to consider is that the variability of domestic production in individual countries appears larger than the variability of domestic consumption (Diaz-Bonilla et al. 2003). This implies the existence of mechanisms that keep domestic consumption stable in the face of more volatile domestic production (which, for individual countries tends to also be higher than variability in world production). Those mechanisms are international trade and domestic food stocks, which countries use in different proportions as complementary ways to keep consumption stable. Therefore, not using trade and depending on production self-sufficiency as insurance against fluctuations may increase volatility in food access.

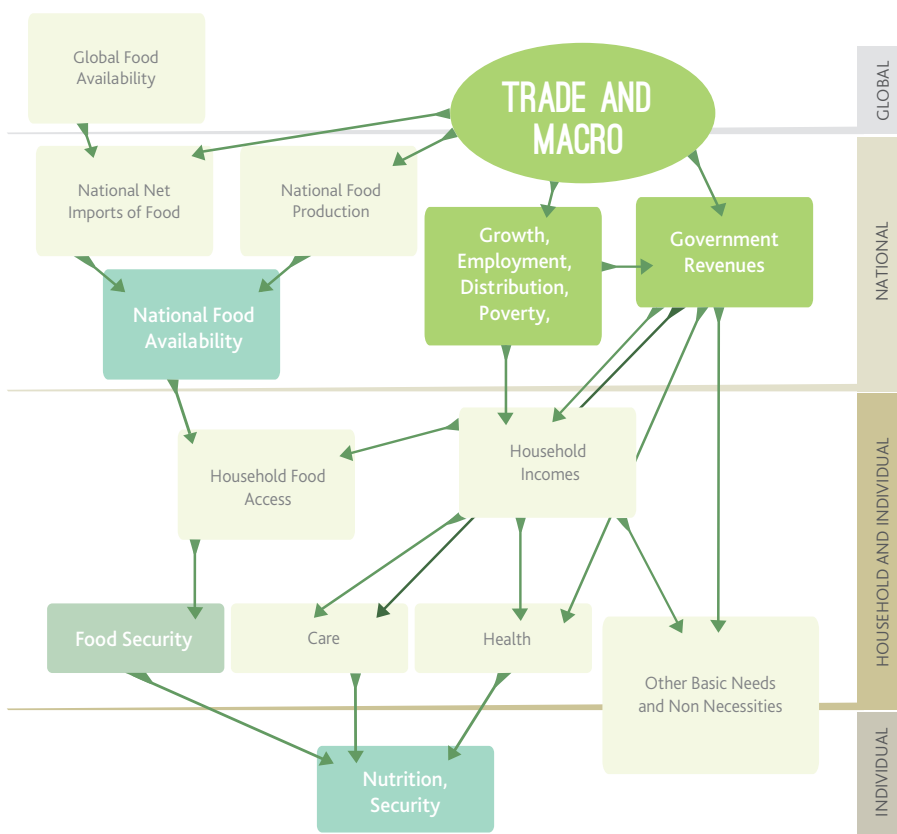
Recent research by the International Food Policy Research Institute (IFPRI) (Minot 2011 and 2012) has shown that

- a) domestic food price volatility in several Sub-Saharan countries has not changed much with recent increases in international price volatility;
- b) volatility seems larger in domestic markets than in international markets;
- c) commodities that are traded more internationally have lower volatility than those less traded; and
- d) volatility is higher in countries/commodities where governments intervene actively in markets through state-owned enterprises.<sup>1</sup>

These findings suggest that self-sufficiency may not be the best strategy for developing countries to reduce volatility in access.

Another way in which trade has helped food access is that the food import bill as a percentage of total exports (a more adequate indicator of food security problems at the country level than the net food importing status) has declined for different categories of developing countries such as Net Food Importing Developing Countries (NFIDC, a WTO category), Least Developed Countries (LDC, a UN category), and Low Income Food Deficit Countries (LIFDC, a category utilized by FAO) (Figure 2; data from FAOSTAT). This reduction in the food bill as percentage of total exports is not because food imports have declined in developing countries (they have increased) but because all exports (in value) have expanded (and by more than food imports), thanks to expanded global trade.

1 For the analysis of patterns of volatility, the dataset uses wholesale and retail food prices compiled from local statistical agencies by the Famine Early Warning System Network (FEWS NET) for 10 staple foods (beans, bread, cooking oil, cowpeas, maize, millet, rice, sorghum, teff, and wheat) in 15 countries (Chad, Ethiopia, Guinea, Kenya, Malawi, Mali, Mauritania, Mozambique, Niger, Nigeria, Rwanda, Tanzania, Uganda, Zambia, and Zimbabwe).



**FIGURE 1:**  
Channels through which Trade Affects Food Security



The 2007–08 food price spike (reflected mostly in trade data for 2009), although clearly visible in the 2000s, generated a ratio of food imports to total merchandise exports that is still below the values of previous decades (that is, at this level of aggregation, the recent spike in food prices put less pressure on trade balances than the previous ones during the 1970s). This smaller impact is, in part, because prices of other commodities exported by several developing countries have been increasing as well (see the discussion of terms of trade below).<sup>2</sup>

## TRADE POLICIES AND FOOD SECURITY

Since the E15 discussion is conducted in the context of the Doha Round, this paper focuses on trade disciplines related to WTO agreements, in particular the Agreement on Agriculture (AoA), although other issues related to non-agricultural market access (NAMA), intellectual property rights (IPR), sanitary and phytosanitary (SPS), and fisheries also have implications for food security.

Even within this narrow scope, it is important to highlight three additional points that complicate the analysis of the links between trade, trade policies, and food security.

First, trade, as shown in Figure 1, is only one of several factors affecting food security. The best trade policy or the best WTO framework will not solve food security problems if other, and perhaps more crucial, factors are not supportive. For instance, the importance of broad-based, pro-poor growth is obvious. Also, empowerment of women and the provision of health services appear equally or more relevant for food security than the usual indicators of food availability per capita in many developing regions (Smith and Haddad 2000).

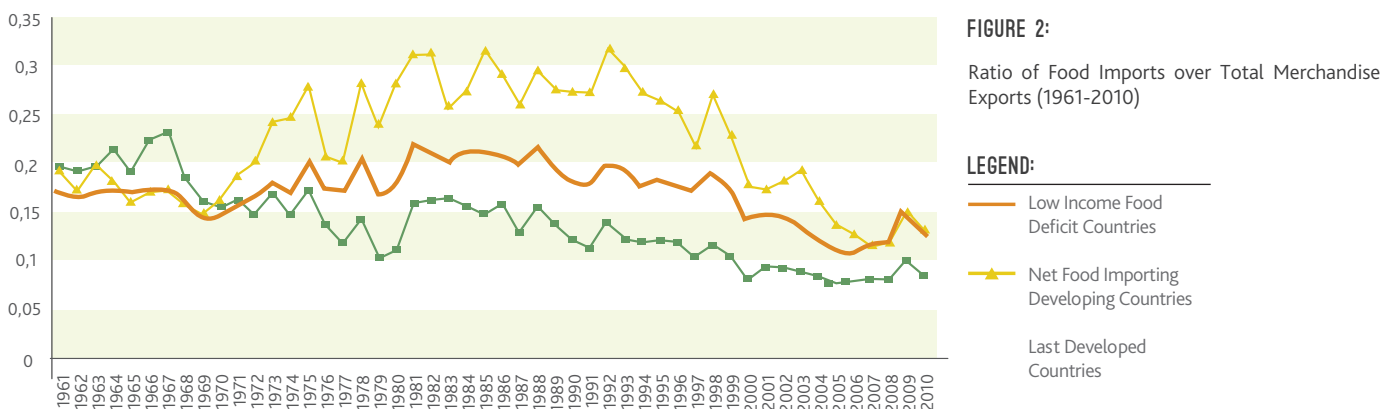
Second, the same trade policy may have different impacts depending on the interactions with other policies and structural factors. For example, reduction of tariffs in agriculture will have different results on a country depending on, among other things, whether this is done unilaterally by that country, or it is the result of a multilateral exercise. The effects of such tariff reduction in agricultural goods may differ

depending on whether that happens only in those products, or whether the policy change includes other products and services as well. These examples can be multiplied several times, including not only other trade policies, but also macroeconomic factors such as different exchange rate or monetary policies. Therefore, it is necessary to consider what economists call a “general equilibrium analysis” (that is, a reasonably holistic view of the policies, links, and impacts).

In the case of agriculture, structural aspects such as land distribution and rural infrastructure are also crucial to determining the effects of the same trade policy—reducing (or increasing) agricultural tariffs in a country with relatively equal land distribution and good infrastructure is likely to have very different impacts from the opposite case of unequal land holdings and bad infrastructure. For instance, general protection and subsidies of the type that are disciplined under the WTO AoA, although in many cases implemented in the guise of helping small farmers, tend to favour larger farmers, who have more produce to sell and will have their incomes increased. This additional income by large producers may lead to more rural employment (a positive impact), but could also tilt the field against smaller producers by reinforcing economy-of-scale advantages and providing them with the economic means to buy out and displace smaller producers. The best option to help small farmers is through an expansion of ‘Green Box’ interventions such as agricultural R&D and infrastructure aimed that focus on them and try to reinforce their competitiveness and sustainability.

Third, because of the heterogeneity of households, trade policies (or any other general policies for that matter) will have differentiated impacts. But it is at the household and individual levels that food security issues take a concrete form. Therefore, trade policy (or other general policies) may be blunt instruments to address food security problems, and more differentiated policy approaches are needed. Such differentiated approaches need to consider several issues.

2 It should be noted, though, that these aggregate numbers mask a broader range of situations for individual countries, some of which, like Haiti, were hit both by high food and high oil prices, without compensating developments in other exports.





First, economic access is not a problem of food prices per se, but also depends on the relationship between household incomes (broadly defined), on the one hand, and the cost of the minimum household food requirements (MHFR), on the other. Both income and costs involve price and quantity variables, and not just price variables as is sometimes implied by analyses that compare food prices only with wages while ignoring quantity effects, such as employment. Therefore, to assess economic access to food, the proper equations to consider are as below.

Incomes = Wages\*Employment (or Prices\*Quantity of goods and services sold by the poor)<sup>3</sup> + Subsidies/Taxes from government + Other transfers and services to the poor.

Costs = Food prices\*MHFR + Costs of complementary goods and services needed to properly utilize food (Diaz-Bonilla and Ron 2011).

The general poverty line is usually the cost of MHFR with an additional mark-up representing other expenditures by the poor; and the line for indigence is usually the cost of MHFR, without any additional expenditures. Therefore, poverty and food security measures should be closely linked, by construction.

An implication is that if a trade policy measure increases the cost of MHFR, this, other things being equal, would negatively affect both poverty headcount and food security for urban households, which are basically net food buyers. But within rural households there are families that are net buyers, such as landless rural workers, and even farmers who may experience seasonal variations as net sellers/buyers.

Only poor families that are net food sellers (which may not necessarily be the largest percentage of rural families in many developing countries) would benefit, if the analysis remains short term and static. However, there may be positive dynamic effects for net food buyers if the trade policy measure, even though it increases food prices, raises employment and/or wages as well (both in rural and urban areas) by amounts that compensate for the greater cost of food.

For example, higher agricultural and food prices may lead to increased investments by the private and public sectors in agricultural production and in rural areas that generate positive employment and wage effects. Also, there may be some positive dynamic effects if the trade policy measure, even though it increases food prices in the short term, leads to investments in productivity that may reduce production costs and prices in the medium term.

All these interactions need to be analyzed in a general equilibrium setting.

In any case, a typology of households regarding poverty/food insecurity must consider whether they suffer chronic poverty/food insecurity (which usually has more fundamental

determinants than trade issues) or it is a transitory problem, and, in the latter case, what are the external events (that Sinha and Lipton 2002 have called “damaging fluctuations”) generating the problems. Typically, only a small part of those fluctuations may be caused by trade and trade policies; most of them are related to macroeconomic crises, weather shocks, health events, the spread of conflict and war, and the like. From the point of view of poor and food insecure households, the main issues are their exposure and vulnerability to those “damaging fluctuations.” Those shocks may affect livelihood strategies in ways that perpetuate poverty if, for instance, producers lose productive or human capital as a consequence. Also, shocks may increase the levels of risk aversion, affecting the adoption of new and potentially more productive technologies or activities and thus creating poverty traps that keep people in low productivity activities (Sinha and Lipton 2002).

To summarize, when discussing poverty and food security problems it must be remembered that trade policies are just an instrument (and in several cases a blunt one) to address those concerns, with a variety of potential aggregate and distributive impacts that need to be considered. Trade policies can make a positive contribution to poverty alleviation and food security within a properly defined global program of macroeconomic, investment, institutional, and social policies, in which differentiated approaches and instruments are targeted to the households and individuals that suffer from poverty and food insecurity. Usually, trade policies aimed at a specific food product, even if labelled “special,” “food security staple,” or any other name suggesting the need for special consideration, do not necessarily represent the more effective, efficient, or even equitable, way of addressing poverty and food security problems of affected households.

3 | The sign \* means multiplication. Obviously, taxes enter with a negative sign.

4 | Of course, the opposite may also happen—farmers shielded by high protection may not need to incur additional costs and investments to attain the desired levels of profits; therefore, protection, in this scenario, may lead to less investments and productivity.

# HIGH FOOD PRICES AND FOOD SECURITY

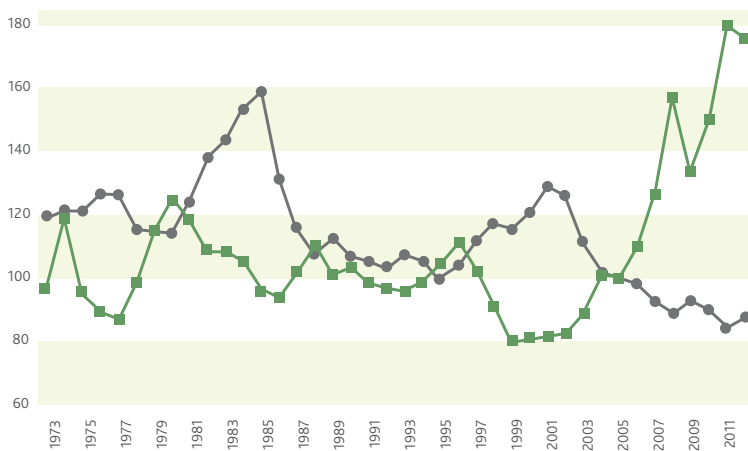
One of the key current questions is whether the world has moved from a scenario of low food prices in the 1980s and the 1990s to another of high food prices, now and in the foreseeable future. If so, this would be a crucial difference from the negotiations during the Uruguay Round and the starting of the Doha Round. To evaluate this claim, we need to consider several points.

First, it should be noted that nominal prices of commodities are correlated with the US dollar—when that currency strengthens vis-à-vis other currencies, the dollar price of commodities declines, and vice-versa (Mundell 2002). Figure 3 shows the inverse relationship between the US dollar and the nominal index of food products.<sup>5</sup>

An implication is that if the value of food in nominal terms is measured in a basket of currencies, such as the Special Drawing Rights issued by the International Monetary Fund (IMF), the recent price increase looks clearly lower than in US dollars: in fact, the current spike in nominal SDRs is not that much higher than in the 1970s and the 1980s (Figure 4).<sup>6</sup>

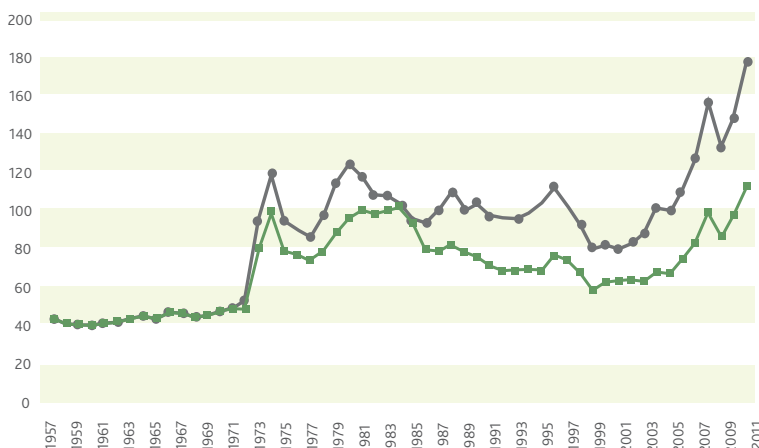
Second, the current price spike does not look as high or sustained as in the 1970s if the data is presented in real terms (that is, adjusted for the loss of purchasing power due to inflation during the last decades) (Figure 5).<sup>7</sup>

- 5 The nominal food index is from the data base IMF/IFS. The US exchange rate is the index for major currencies in nominal terms calculated by the Federal Reserve, [http://www.federalreserve.gov/releases/h10/summary/indexn\\_m.htm](http://www.federalreserve.gov/releases/h10/summary/indexn_m.htm).
- 6 The nominal food index is from the IMF/IFS as before, as well as the conversion between SDRs and US dollars.
- 7 The IMF/IFS nominal food index is deflated by the unit export value of the "advanced economies" also from the IMF/IFS database. Another deflator frequently used is the consumer price index (CPI) of the US. Using this deflator would not change the main trends.



**FIGURE 3:**  
US Nominal Exchange Rate and Nominal Food Index  
2005=100

**LEGEND:**  
● Food Index IMF  
■ USER Major IMF



**FIGURE 4:**  
Nominal Food Index in US dollars and SDRs

**LEGEND:**  
● Food Index nominal (US dollars)  
■ Food index Nominal (SDRs)

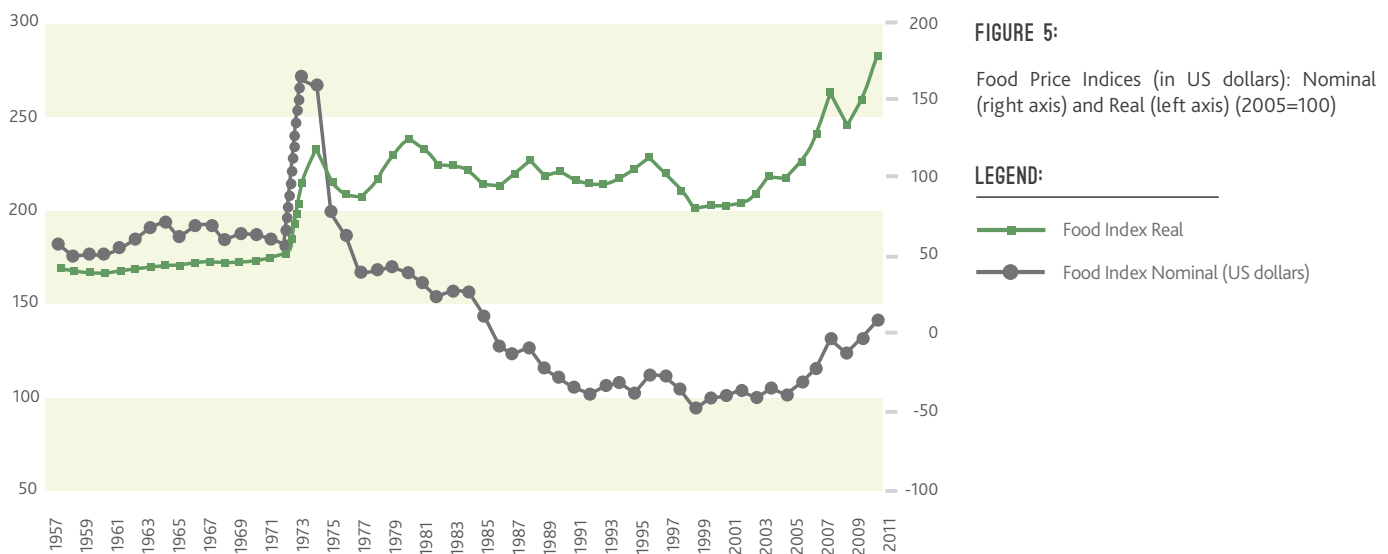
A third point to note is that when world food and agricultural prices go up, usually prices of other commodities go up as well (Díaz-Bonilla 2010). Therefore, one must look at the evolution of the terms of trade (TOT) in general rather than focus only on individual commodities, such as food. TOTs combine commodity prices with other goods and services, as exports and imports. Figure 6 shows the median of the net barter TOT for a sample of countries in these regions—Latin American Countries (LAC); Middle East and North Africa (MENA); Sub-Saharan Africa (SSA); and Asia for the period 1980 to 2011.<sup>8</sup>

The influence of the decline in commodity prices in the 1980s is clear in the median TOT of LAC, followed by MENA and SSA. Asia's TOT were more stable during the 1980s and the 1990s. The recovery in commodity prices after the lows that coincided with the recession of the early 2000s is reflected more in the increases in the TOT of SSA and MENA, and less in those of LAC. The TOT in Asia appear to have been affected negatively by recent increases in commodity prices, which is in line with Asia as a region being a net importer of commodities and an exporter of manufactured goods. On the

other extreme, MENA and SSA are producers of commodities with a larger percentage of metals and oil in their basket of exports. LAC is in an intermediate position, with more agricultural products than SSA and fewer manufactured goods than Asia.

Moving now to future prices, Figure 7 shows historical values and projections of prices for wheat and coarse grains by the OECD/FAO (2013) deflated by the export unit value of advanced economies.<sup>9</sup> The projections suggest a horizon of real prices that are lower than in the 1970s, but higher than in the 1980s and the 1990s, although with no further increases.

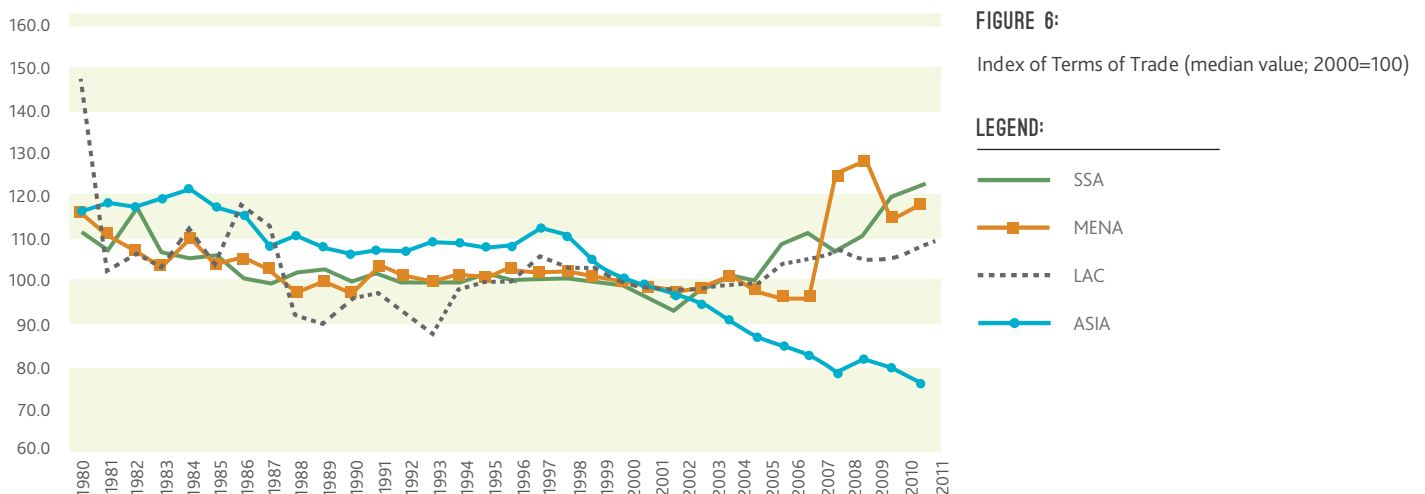
- 8 Terms of trade are defined as the price of exports divided by the price of imports, calculated from national accounts, using the World Development Indicators database of the World Bank. The figure shows the median values for 36 SSA, 17 LAC, six MENA, and 12 Asian countries, which had complete data for the period 1980–2011.
- 9 Historical and projected prices come from the OECD/FAO commodity database. The export unit value of advanced economies is from the IMF/IFS database until 2012; projections from 2013 are based on the IMF/WEO database using the inflation of manufactured exports of advanced economies.



**FIGURE 5:**  
Food Price Indices (in US dollars): Nominal (right axis) and Real (left axis) (2005=100)

**LEGEND:**

- Food Index Real
- Food Index Nominal (US dollars)



**FIGURE 6:**  
Index of Terms of Trade (median value; 2000=100)

**LEGEND:**

- SSA
- MENA
- LAC
- ASIA

However, there are substantial uncertainties regarding supply and demand issues, including world growth, the impact of aging, consumption patterns, technology developments, and climate change (Díaz-Bonilla et al. 2013).

In short, real food prices are higher than in the 1980s and the 1990s, but not as high as in the 1970s, and they are projected to stay flat at the new plateau. Other things being equal, this should provide better incentives for agricultural and food production if the higher prices are allowed to be passed on to farmers without the need for trade-distorting interventions.

The implication of this new scenario is that while previous agricultural trade negotiations, conducted in a context of lower global prices, focused on policies that artificially expanded supply in some countries, or reduced demand in other countries through protection, now there is a larger interest in policies that may artificially restrict supply to other countries or expand demand in some countries. The previous trade concerns focused on producers, while now there seems to be more thought given to consumers. However, trade policy instruments and approaches to the negotiations do not seem to have changed much, with many voices again suggesting higher levels of protection and inefficient and inequitable subsidies as a solution to high prices much as when prices were lower.

## HIGH FOOD PRICES AND ENERGY ISSUES

Commodity prices tend to move together, particularly food and energy products (Díaz-Bonilla 2010). Till now, the links between agriculture and energy were considered in terms of production, processing, transportation, storage, and cooking costs. High prices of energy affect agricultural production and prices through those channels (Díaz-Bonilla 2013).

Recently, another channel has been added with the use of agricultural products as raw material for the production of biofuels. This link has been singled out as one of the factors behind the recent price spikes—the way policies were designed and implemented, mainly in the United States (US) and the European Union (EU) (both large producers and consumers of biofuels), led to a significant and sudden increase in demand for corn and oilseeds in the mid-2000s, which, combined with low stocks-to-consumption ratios, negative weather shocks, reactive policies by exporting and importing countries, a weakening of the dollar and, perhaps, some other monetary, financial, and speculative developments, generated the price spikes of the latter part of the 2000s (Heady and Fan 2010, Torero 2012, Wright 2011).

Figure 8 shows the increase in biofuel production at the world level and in the three main countries/regions (the US, Brazil and the EU, which together represented about 84 percent of world biofuel production in 2012) in tons of oil-equivalent.<sup>10</sup>

<sup>10</sup> From BP database; <http://www.bp.com/en/global/corporate/about-bp/statistical-review-of-world-energy-2013/statistical-review-downloads.html>.

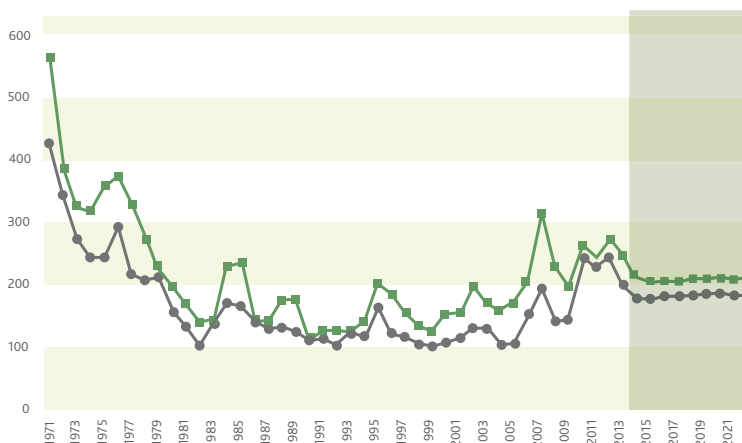


FIGURE 7:

Real Prices of Wheat and Coarse Grains Historical (until 2012) and Projected (2013 and forward) (Deflated by EUV with 2005=100)

LEGEND:

- Wheat
- Coarse grains

The accelerated increase in biofuel production in the last few years has been driven by policy changes, mainly quantitative mandates in the US and EU, and by an increase in oil prices that have made biofuel production more competitive (OECD/FAO Agricultural Outlook 2011, 2012, 2013; Schnepf 2013; Laborde and Msangi 2012).

That increase in production has required expanded use of corn, oilseeds, and other crops that were mainly used for food and feed. Figure 9 (with data from FAPRI) shows the change in trend utilization for corn as raw material for ethanol in the US after the Energy Policy Act of 2005 changed the new minimum-usage mandate (the Renewable Fuels Standard or RFS1), which was reinforced by the remarkable expansion under the Energy Independence and Security Act of 2007 (RFS2).

Those mandates, along with the impact in August and September 2005 of Hurricanes Katrina and Rita and then-low corn prices, created unique profit opportunities for the production of corn-based ethanol, which expanded significantly (Schnepf 2013).

Wright (2011) puts the US impact in stark context by noting that in 2011, when use of corn for biofuels represented about 30 percent of US output of that crop, diversion from food to fuel was "greater in calories than the entire increase in global calories available from wheat or rice since 2002."

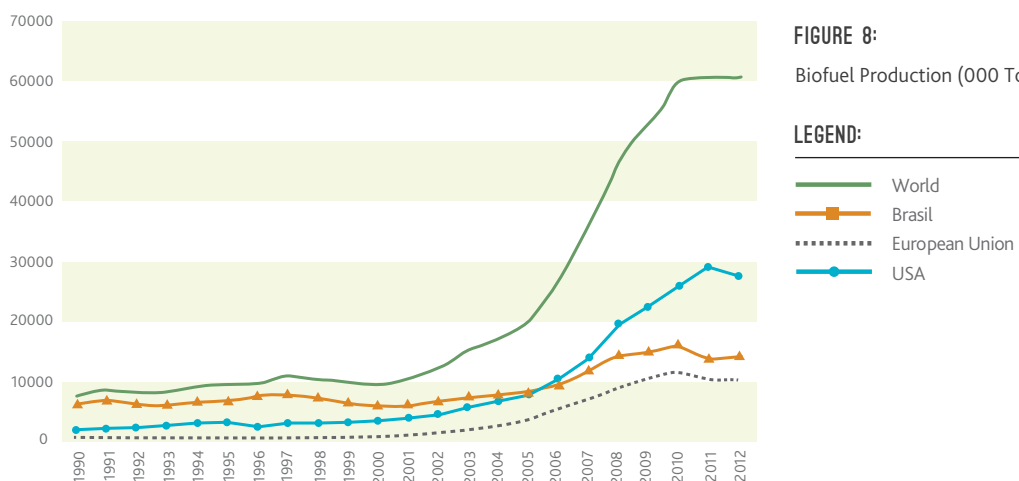
OECD-FAO (2013) estimates that by 2022 global ethanol (mainly from coarse grains and sugar) and biodiesel production (mainly from oilseeds), will require 12 percent of the world's coarse grains, 29 percent of sugar cane, and 15 percent of vegetable oil production under current policies. Simulations by IFPRI (Rosegrant et al. 2013; Al-Riffai et al. 2010) suggest that biofuel policies, if maintained, will mean higher prices for food products in the next decades.

Therefore, there are two (related but different) impacts of biofuels to consider—one is the price spike, and the other is the new higher plateau (or trend). The energy-biofuel-food

channel has important implications for food security, among other things, because the energy market is far larger than the food market, and events in the former tend to dominate developments in the latter. This can be seen by converting all non-food and food energy into a common measure, such as joules. The first is the energy needed for the operation of the world, except human beings, and food energy is the one required for human beings to function. Estimates for 2006 (Diaz-Bonilla and Robinson 2010) consider that food energy amounted to about 28 exajoules and non-food energy, some 460 exajoules, for a population of about 6,400 million people. In other words, the market for non-food energy was about 16 times larger than the market for food energy, suggesting that demands from the first market may dominate and determine what happens in food markets. Projections only increase the disparity—for instance, towards 2050 and with a population of about 9,000–10,000 million people, food energy consumption may reach about 39–43 exajoules, while non-food energy consumption can go up to 800–900 exajoules, or the non-food energy market will be 21 times bigger than the food energy market.

There are two different aspects to consider in this channel—one is biofuel policies, and the other is the evolution of energy prices. Even if policies become less supportive of biofuels (therefore, less distorting of food markets), very high energy prices may still provide enough incentives for further expansion of biofuel production. Therefore, for the food-versus-fuel debate it is necessary to look at both issues (biofuel policies and projections of energy prices).

Starting with energy prices, while real prices of agricultural commodities are lower now in real terms than in the 1960s and the 1970s, other energy commodities, particularly oil, currently have the highest real prices of the last 50 years (Figure 10).



The history of oil prices during the last half century shows that only in two periods, during the late 1970s and the early 1980s, and now in the 2000s, did the real world price stay for several years on average at or above US\$ 70/barrel, with peaks over US\$ 90/barrel in 1980, 2007 and 2011.<sup>11</sup> The strong global growth cycle during the 1960s and the 1970s led to commodity price spikes in the mid-1970s, but it was then followed by a collapse in oil prices due to the 1980s global recession, the debt crises in developing countries, and technological innovations that led to the development of deep sea oil extraction in the North Sea, which weakened the Organization of the Petroleum Exporting Countries' (OPEC) price setting. In the agricultural sector, changes in trade policies in industrialized countries and the recessionary global macroeconomic conditions also led to the collapse of the prices of agricultural goods in the second part of the 1980s. In that context, the continuous advance of the green revolution was supported by lower oil prices, which helped to keep fertilizer prices and energy costs, in general, under control.

In the shorter term, the question is whether the world is going to experience a scenario similar to the 1980s and the 1990s in which technological developments in energy (such as those related now to shale gas and unconventional oil) and depressed global economic conditions lead to a decline in energy (and agricultural) prices, or whether the world is moving to a scenario of sustained real energy prices at levels not yet experienced in history. The answer has serious implications for agricultural production, food security and poverty, management of natural resources, and climate change developments. In particular, high energy prices underpin the strong growth projected for biofuel production in the next decades, which raises questions about the food-versus-feed use of resources, highlighting the need to move to non-food raw material for the production of biofuels.

11 Here the focus is on oil because of its larger share in energy sources, the multiple uses in transportation, electricity, and manufacturing, and as the reference for the pricing of other sources of energy.

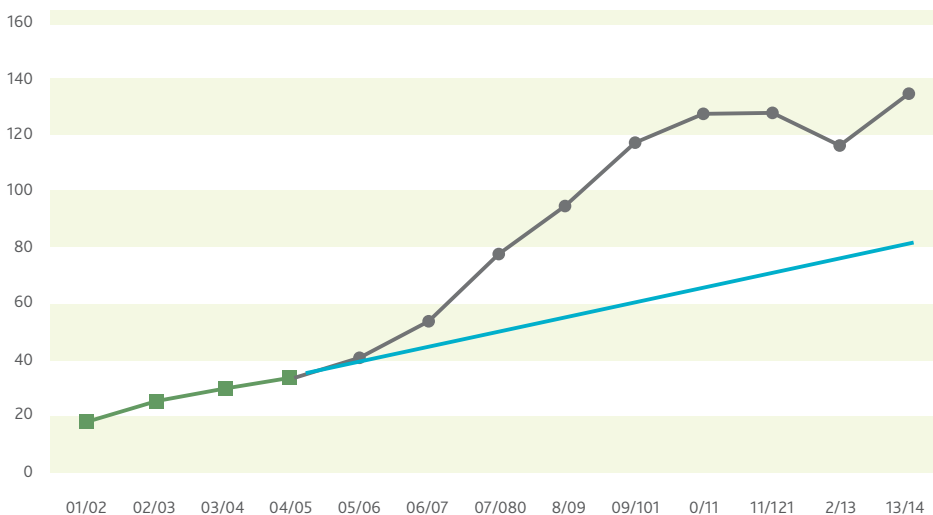


FIGURE 9:

Corn Utilized in Ethanol Production in the US (million tons)

LEGEND:

- Linear (MT of corn for ethanol trend 2001/04)
- MT of corn for ethanol production
- MT of corn for ethanol trend 2001/04

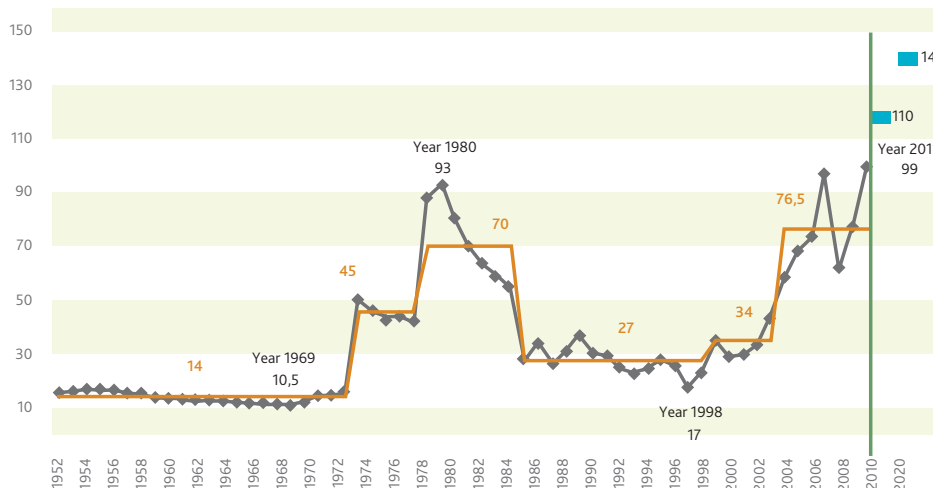


FIGURE 10:

Average World Oil Price (2009 US constant dollars per barrel)

LEGEND:

- Petroleum: average crude price
- Average per periods
- IEA Projections Current Policies



Notwithstanding the projections in Figure 10, if the most likely scenario is one with softer energy prices due to technological change and less buoyant world growth than several forecasts suggest, then large increases in biofuel production will mostly depend on public policies.

Current biofuel policies are based on objectives such as energy independence, reduction of greenhouse gas (GHG) emissions, and support for agricultural and rural development. But they have been criticised of late for contributing to high food prices, the significant cost to taxpayers and consumers of mandates and subsidies, the limited contribution to the reduction of GHGs (which may be even negative in some instances if indirect land use change [ILUC] is considered), and the limited contribution to energy independence under the current technological scenarios (Schnepf 2013; Laborde and Msangi 2011).

Apart from whether the policy objectives are being attained, there are also problems of policy design. Since biofuel policies tend to be based on rigid mandates that escalate annually, those policies contribute to making demand for some food crops inelastic, exacerbating price volatility in the face of supply shocks. The complexity of the mandates generates significant market uncertainties and the possibility of two-way international trade without economic rationale in the absence of policy mandates (OECD-FAO 2012 and 2013). For instance, the nested structure of the mandates in the case of the US; the possibility of waivers from the Environmental Protection Agency (EPA, the implementing US agency) if some sub-mandates, such as the cellulosic mandate, cannot be met because of objective production constraints; and the very different options the EPA may utilize to define the annual regulations imply significantly dissimilar impacts on production and trade, not only in the US but globally.<sup>12</sup> Also, there are regulatory uncertainties about how the EPA may deal with the issue of the “wall blend” (that at a 10 percent ethanol mix, total demand for biofuels, given the type of cars operating in the US, has a physical limit) and how the EU will treat the issue of GHGs linked to ILUC. What are the implications of these developments for trade and the WTO? One aspect is the emergence of trade disputes related to biofuels—from complaints about the high ethanol tariffs in the US (now reduced) to the current anti-dumping procedures by the EU on biofuel exports from the US, Malaysia, Indonesia, and Argentina, among others.

The global trading system and food security would benefit by at least freezing mandates at the current levels, making them more flexible and less complex, and opening up trade in biofuels (FAO et al. 2011). The whole topic would require a careful review within the WTO, considering the implications not only for the AoA (including issues of distorting and Green Box domestic support), but also for other WTO legal texts such as the Agreements on Subsidies and Countervailing Measures and Technical Barriers to Trade.

## PRICE SPIKES, CLIMATE CHANGE, AND FOOD SECURITY

Another link between energy, and agriculture and food production, is the one of climate change. The high-energy intensification of world agriculture starting with the green revolution, which allowed a significant increase in global availability of calories and proteins per capita with a relatively small expansion in land use, may not be possible in future, because of the potential impact of higher costs of energy and the significant levels of GHG emissions implied in such an approach.

Long-term data shows increasing flow emissions of GHGs over the last centuries, larger concentration of those gases in the atmosphere, and rising temperatures. The direct impact on agriculture comes mainly from changes in the mean and variability of temperature, precipitation, and availability of daylight shaping the length and quality of the growing season and water availability; the effect of CO<sub>2</sub> fertilization; the evolution of plagues and pests linked to climate change, and changes in sea levels, among other factors (Gornall et al. 2010).<sup>13</sup>

Those impacts of climate change on agricultural production are highly differentiated by regions and crops. The determination of tolerance and resistance thresholds for specific crops is a complex undertaking given the non-linear relations between the different variables. Further, in climate change simulations, different General Circulation Models (GCM) offer diverse projections of what climate outcomes may result from the same levels of accumulation of GHGs and aerosols in the atmosphere.

For instance, projections by IFPRI (Nelson et al. 2010) consider two different scenarios for climate change: one based on a model developed by Australia's Commonwealth

<sup>12</sup> The US biofuel policy has an overall mandate, and within it, in a nested fashion, an advanced biofuel mandate, which, in turn, includes, with some room for other alternatives, a bio-based diesel mandate and a cellulosic mandate. The latter has been difficult to meet because of the slower development of viable technologies. Therefore, the EPA has been granting waivers to that mandate, but this implies three options for the rest of the mandates—first, it may reduce all the nested mandates by the same amount; second, the opposite would be to maintain both the overall and the advanced mandates; and third, it may maintain the overall mandate but reduce the advanced one. The implications for US production and trade are very different (OECD-FAO 2012).

<sup>13</sup> Variability includes extreme events such as droughts, floods, hurricanes, and the like.

Scientific and Industrial Research Organisation (CSIRO) (which tends to project a drier world with lower increases in temperature), and the other using the Model for Interdisciplinary Research on Climate (MIROC), implemented by the University of Tokyo's Center for Climate System Research (which suggests greater increases in precipitation and a hotter world on average).<sup>14</sup> It must also be noted that the uncertainties about the path of GHG emissions and the impact on climate may not be solved by the Fifth Assessment of the IPCC currently being conducted, considering that the more sophisticated GCMs utilized in this Assessment are likely to expand, rather than narrow, the range of potential climate change outcomes (Maslin and Austin 2012).

Whatever the uncertainties about the evolution of GHG emissions, and of the overall and geographical medium- and long-term impact on agriculture and food production, it is important to consider the probability that the world may be on its way to surpassing the projected 2°C rise in temperature during the next decades, which will affect agricultural and food production, and will require sustained R&D investments in adaptation and mitigation.

All of this has implications for the AoA, particularly with regard to domestic support measures, as discussed in Blandford 2013. In the shorter term, one of the aspects of more immediate importance for agriculture is increased volatility around the long-term trend (Jarvis 2012). The warming of the atmosphere seems to have already increased the frequency of extreme events at the world level as well (Hansen et al. 2012). This greater volatility with more frequent extreme events, such as droughts and floods, may be the most important effect of climate change to consider currently for food security, taking into account that potentially negative consequences for yields due to increases in average temperature (the long-term trend) are projected to take place over several decades.<sup>15</sup>

If that is the case, then Green Box measures such as those related to food security stocks (AoA, Annex 2, paragraph 1) and domestic food subsidies (AoA, Annex 2, paragraph 4) may be more relevant topics to be discussed in the current context than in the past. (This is discussed below; see also Murphy 2010.)

<sup>14</sup> They report some results from two other GCMs, but the main simulations are based on CSIRO and MIROC.

<sup>15</sup> Also if CO<sub>2</sub> fertilization effects materialize, the impact of climate change may be lower or even positive for some crops and regions. On the other hand, most of the calculations do not consider the potential impact of spreading pests and plagues, and of sea-level increases due to climate change, all of which would have negative effects on agricultural production in many developing countries.

## IS FOOD SECURITY A NEW TRADE CONCERN?

The recent price spikes, although not as pronounced as in the 1970s, have nonetheless renewed food security as a trade concern. Within the WTO, this is exemplified by the current discussions at the Committee on Agriculture and some of the proposals, such as the G33 suggestion for changes in the treatment of food security stocks (WTO 2013).

Food security, however, is not a new trade concern. During the Uruguay Round the issue was reflected in the Marrakesh Declaration and the establishment of the NFIDC category. Also, several developed countries claimed food security concerns during those negotiations to justify barriers to food imports and higher levels of domestic support.

More recently, during the Doha negotiations, the concept appeared in the request by several developing countries for a Food Security Box, with more options to maintain high levels of protection (the proposal evolved eventually into the Special Safeguard Mechanism, SSM). However, simulations on a potential SSM showed that if that protection was sustained over time, developing countries using that safeguard would have been worse off in terms of food security and other dimensions as well, such as employment, production, and exports. On the other hand, using the money from the implicit tax on food protection of increased tariffs (which was privately collected, mostly by larger producers) to support R&D in agriculture would have improved food security, production, and employment in those countries (Diaz-Bonilla, Diao and Robinson 2004).<sup>16</sup>

Developed countries included food security concerns in the notion of multi-functionality again to justify barriers to food imports and higher levels of domestic support. However, no developed country fits the profile of food insecure according to objective indicators of food consumption, production and exports (Diaz-Bonilla, Thomas, Robinson and Cattaneo 2000). Also, if developed countries expand agriculture on account of multi-functionality using protection and domestic support, other countries' agriculture and their multi-functionality would suffer (Diaz-Bonilla and Tin 2006). Therefore, use of food security and multi-functionality by

<sup>16</sup> So far the negotiations on the SSM do not seem to have achieved the needed balance not only between importers and exporters, but also, more crucially, for food security between small farmers and poor consumers. At the technical level there are still many unresolved operational issues, and there are different opinions of what would be the real incidence of the SSM considering the specific operational variables in the Draft Modalities and that developing countries having access to the current Special Agricultural Safeguard (SSG) have not invoked it very often when compared to industrialized countries.

developed countries as the foundation for protection and subsidization of agriculture appears suspect.

While food security issues are not new in trade negotiations, what has changed, as argued in the previous section, is that earlier it was postulated in a context of low food prices and concerns about how those prices were affecting producers, while now it has reappeared against a background of high prices and volatility. Current food security fears centre on the potential impact on consumers.

Whatever the contextual novelty, some of the policies advocated seem very similar to the past, considering that in many countries the concern about high prices and volatility has led again to concepts of “self-sufficiency” using import barriers and distorting domestic support, much as when food security concerns were postulated to help producers affected by low prices. In this line of thinking, trade is uncertain and would not suffice to insure against volatility and price spikes; what is needed, in this view, is to expand productive capacity to reach some level of “self-sufficiency” and depend less on external sources.

However, import barriers and distorting domestic support to expand production may be a sub-optimal and potentially costly way to try to insure against price volatility (Minot 2011, 2012). Also, if import barriers are utilized, domestic prices will be kept at higher levels, which would affect the food security of the poor and the vulnerable. If distorting domestic support is implemented, it will have fiscal impacts, and other sectors in that country may have to contract to accommodate the larger use of resources by the artificially expanded agricultural sector (assuming that, as it is usually the case, there is at least some part of those resources currently employed in non-agricultural productive activities that will move to agricultural production due to the distorting policies. Since domestic production tends to be, for most countries, more volatile than global production, self-sufficiency may increase volatility (section 2.2).

A more appropriate way to expand agricultural productive capacity and make it less volatile (all of which is needed in many developing countries) is mainly through measures that increase productivity, such as infrastructure, agricultural R&D, and similar investments that are allowed under the Green Box of the AoA.

## WTO DISCIPLINES AND FOOD SECURITY

Given the new context discussed so far, a relevant question is whether WTO disciplines, in general, and special and differential treatment (SDT) linked to different categories of countries, in particular, are adequate to address food security concerns. More specifically,

- Does the WTO framework force/allow industrialized countries to follow “good” policies that help with global poverty reduction and food security and to avoid “bad” ones?
- Does it force/allow developing countries to do the same?

The first question is related to whether allowed trade policies for industrialized countries displace agricultural and food production in developing countries, denying employment and production opportunities that may help reduce poverty in the latter countries, or whether they help global consumers with expanded supply of cheap food. This paper focuses on policy issues for developing countries and, therefore, developed countries’ policies will not be discussed (see Díaz-Bonilla et al. 2003; Diaz-Bonilla and Ron 2011 for some aspects of that debate).

The second question is whether WTO disciplines allow enough “policy space” for developing countries. The discussion of what interventions should be allowed in this policy space as “good policies” to confront food security concerns revolves around an apparent policy dilemma—what contributes more to generating food security, high prices for producers or low prices for consumers?

Those that say that poor producers prefer high prices, arguing that the multiplier effect of agriculture has important benefits for employment and poverty alleviation, and tend to gravitate towards protection and price support. Those that take the perspective of poor consumers emphasize the importance of low prices, considering the impact on urban and rural poverty and malnutrition. They suggest lower levels of protection and the use of consumption subsidies.

However, the most effective way out of this policy dilemma is through interventions that increase production efficiency and reduce costs (mostly agricultural R&D, infrastructure, and related investments allowed in the Green Box), all of which increase profits for producers, while contributing to expand supply and reduce prices for consumers. The case of poor and vulnerable populations can be addressed through properly designed and funded safety nets and cash transfer programs.

In any case, the AoA allows a variety of policy interventions, not all of which may offer the best alternative to deal with the high price/low price policy dilemma in an efficient and equitable way. The list includes the following, among others.

- Green Box (Annex 2 of AoA): food security stocks (paragraph 3), domestic food subsidies (paragraph 4), and other Green Box measures.
- *De minimis* 10%.
- Article 6.2 on investment and input subsidies for low-income or resource-poor (LIRP) producers.
- Countervailing duties to subsidized exports.
- The possibility of using the difference between bound and applied tariffs.

The 'Revised Draft Modalities for Agriculture' circulated on 6 December 2008, with additional annexes, by the then chairperson of agriculture negotiations at the WTO (TN/AG/W/4/Rev.4) (from now on "Modalities") included further policy space.

Under the expanded Green Box of the Modalities there are more flexibilities for establishing stockholdings, supporting low-income producers, implementing insurance programs for natural disasters, and offering regional payments (Diaz-Bonilla and Ron 2011).

The Modalities include additional options to manage import protection, such as Special Products (Annex F, List of Criteria), the Special Safeguard Mechanism, and Sensitive Products. There is the need for instruments to protect from import surges and unfair trade practices, especially to avoid drastic shocks that affect survival strategies of the poor; but, at the same time, it must also be remembered that poverty and hunger materialize at the household/individual level, and protection for crops does not focus on the main problem. In fact, while predicated as a way to help small farmers, protectionist measures that increase the domestic price of crops benefit mostly large producers, and penalize poor consumers.

The Modalities also establish stricter disciplines on food aid (Annex L), and creates a new category of SVCs (which only half appear food insecure under some metrics of food security; see below).

For many of the existing instruments in the AoA and the expansion considered in the Modalities, the main issue does not seem to be the lack of policy space for developing countries, but the availability of fiscal resources to implement the allowed alternatives, and the adequate design of those interventions. For example, the design of adequate food stocks for food stability and domestic food aid tends to be affected by the same high/low price dilemma, and the operational problems and costs involved are probably more

important than the issue of policy space for developing countries (more on this below).

The other problem is more general, and combines at least three different topics. First, the nature of the WTO as an institution to manage trade disputes and/or the perception of also being a "development" institution. Second, the advances by developing countries during the last decades in agricultural production and trade, accompanied by increases in support for agriculture in those countries, as well as important gains in total GDP and incomes. And third, the definition of the categories of countries under the WTO.

The first two issues are briefly discussed here. The topic of categories under the WTO is analysed in the next section. Some analysts (such as Christian Häberli of the University of Berne)<sup>17</sup> have argued that the main point of the WTO is to develop a framework that avoids or limits trade disputes: that is, how to ensure that trade policies of country A do not hurt country B. In this view, the issue of designing and implementing trade policies for developmental purposes is something different from the basic mandate of avoiding trade frictions that may affect specific countries. Of course, the trade policies of country A may be affecting country B in such a way as to hinder development (in which case disciplining country A's trade policies would contribute to development); also, if the trade system functions smoothly without trade disputes, then that would support world growth and development in general. In those examples, avoiding trade frictions and developmental objectives complement each other. But that may not always be the case, and it is useful to keep both aspects conceptually separate.

The Doha Round has been labelled a "development round" and that has led to expectations and requests by developing countries for more "policy space" (usually predicated on food security concerns) to further such development. Industrialized countries (and some emerging countries that are important agricultural exporters), however, are of the opinion that enough policy space exists and that further expansions may begin to affect their trade interests. In turn, economists fret about the potentially negative impacts in terms of efficiency and equity of several of the policies allowed for developing countries under the AoA and further expanded in the Modalities, and sometimes view the WTO as the enforcer of what they consider "good policies." Trade negotiators see their job as expanding their own "policy space" to make sure that her/his country will not have to answer to WTO panels for alleged violations, while trying to limit the policy space of others. Finally, civil society groups add to the complexity with a large variety of views about development, the environment, human rights, and the like.

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<sup>17</sup> This is from a personal communication. I hope I am not mischaracterizing his views. See also Häberli 2013.

All these perspectives configure a complex agenda that requires to be clarified. Those conceptual issues are further complicated by a second, factual point—the clear advances of developing countries in the world economy. Figure 11 shows the percentage of world agricultural production of two groups of countries.<sup>18</sup> The first is the sum of Canada, the US, the EU-27, Australia, New Zealand, and Japan (the “developed regions”); and the second group includes Asia (minus Japan), all of Africa, and Latin America and the Caribbean (the “developing regions”).

While in the early 1960s both groups represented about the same share of world production, in 2011 the ratio was somewhat more than 70 percent for the developing regions against almost 25 percent for the developed regions (the balance is represented by other non-EU countries in Europe, countries of the former Soviet Union, and by smaller countries in Oceania). The increase in developing countries (almost 29 percentage points) is mostly explained by the expansion of Asia (23 percentage points) (of which China represents about 14.6 and India almost 2 percentage points). LAC increased by 3.5 percentage points and Africa by 1.2 percentage points. As a whole (and although there is a limited number of exceptions in the case of individual countries), in all developing regions agricultural production and availability of calories and proteins in per capita terms have increased since the 1960s (last data is for 2010–11).

If we look at trade data for the same groups, the numbers also show increases in global share, although less dramatic: according to FAOSTAT, the group of developing regions mentioned above increased its agricultural exports from about 27 percent of world exports in the early 1990s (in current US dollars) to 37.5 percent in 2010.<sup>19</sup>

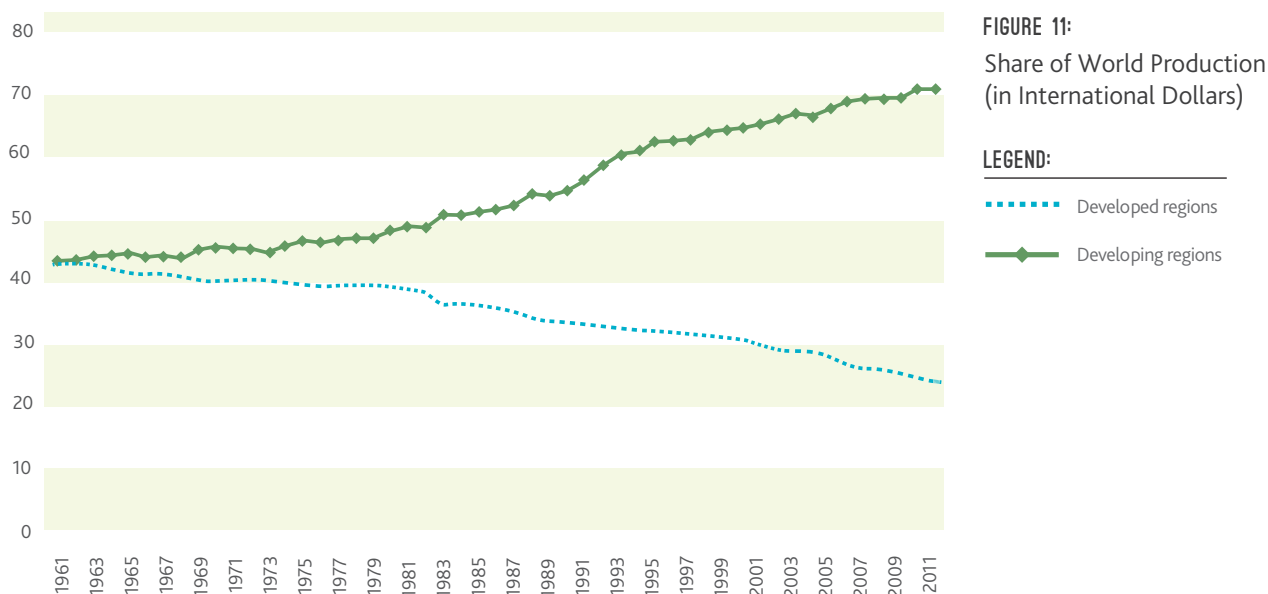
Another point to be noted is the advance in the measure of support to agriculture in developing countries, at least as calculated by the nominal rate of assistance (NRA) estimated in a recent World Bank exercise (Anderson and Valenzuela 2008).

The share of global GDP for developing countries, particularly when measured in purchasing power parity, has also increased significantly—according to the IMF/WEO database, the categories of advanced countries, and emerging and developing countries, moved from world shares of global GDP (at PPP values) from 69 percent and 31 percent in 1980 to 49 percent and 51 percent, respectively, in 2013. In 2013, for the first time in modern history, emerging and developing countries represented a larger share of global GDP than advanced economies (using the categories of the IMF, which are somewhat different from those in Figure 11). Those increases in GDP and incomes, among other things, have allowed the expansion of agricultural support.

The consequence of all these facts and conceptual issues is at least two very different narratives that, if they do not converge, will not see a resolution of world trade issues involving agriculture. Developing countries see industrialized countries that have productive advantages in land, water,

<sup>18</sup> Data is from FAOSTAT. Agricultural production is measured in constant international dollars (that corrects for purchasing power differences, and therefore allows for aggregation and comparisons) using 2004–06 as the base period.

<sup>19</sup> From the 1960s to the early 1990s there was a decline in share for the developing regions discussed here, mostly because of the sharp decline of Africa’s global export share during that period. Since then, Africa’s share has stabilized at between 3 percent and 3.7 percent of global exports.





climate, infrastructure, R&D, credit conditions, and the like, and ask, legitimately, why those countries should, in addition to all the natural and created advantages, need the levels of protection and distorting subsidies they are allowed under the AoA. Many developing countries see their own producers, who, as a general rule, are poorer, farm significantly smaller areas, struggle with water and climate constraints, and suffer from weak infrastructure, and lack of R&D and credit support, and conclude that there are clear imbalances in the AoA that benefit industrialized countries (a type of SDT for them) and affect poorer countries.

Industrialized countries appear to see the advances of developing countries in production and trade (while their own shares decrease), the expansion of agricultural support, the sheer number of farmers in those countries, and all the potential policy space that exists in the AoA and worry not only about current and future access to the markets of those developing countries, but also potential displacement of production in their domestic markets by some of the exporters from the largest emerging economies.

Although, in my view, the first narrative is more accurate, developing countries need to acknowledge their larger share in the world economy and in agricultural production, and the systemic effects they have as a consequence of that. They should then recognize and exercise the rights but also the responsibilities that flow from that larger presence. While many developing countries continue to argue that they are "small and poor," as a whole, they are not small anymore, and although they are not at the level of industrialized countries, some have advanced significantly in their per capita incomes. WTO negotiations, and more generally, a global governance review of rights and responsibilities, need a more realistic dialogue on those issues than what seems to be taking place now.

Certainly, one of the problems is the category of "developing countries" in the WTO that includes a large variety of situations and requires a finer classification. The next section presents some reflections on that topic.

## CATEGORIES OF COUNTRIES IN THE WTO AND TYPOLOGY OF FOOD SECURITY

As briefly discussed in section 4, many of the exemptions and requests for policy space, by industrialized and developing countries, seem to have been based on food security concerns. It is obvious that there are different profiles of food security across countries. Usually, the main distinction utilized is that between net food importers and net food exporters. However, a study using a cluster analysis of 167 countries (which included 155 WTO members, with 44 LDCs and 18 NFIDCs) showed a more nuanced view (Díaz-Bonilla et al. 2000).<sup>20</sup> That analysis was used to discuss whether the categories of countries under WTO rules (developing, LDCs, and NFIDCs) were adequate for analyzing food security.

The conclusions were as follows.

- The category of LDCs was better at identifying food-insecure countries. But some of them were not counted among the LDCs and that category included some that were classified in intermediate categories of food security (called "food neutral" in Díaz-Bonilla et al. 2000).
- The category of NFIDCs was not as good an indicator of food insecurity, considering that one-third of the countries appeared in the food neutral groups.
- The category of developing countries was spread over all categories, except the top group among the most food-secure countries.
- Among food-insecure countries, profiles also differed: some were rural (mostly in Africa and South Asia) while others were urban (LAC and Eastern Europe); some were considered "consumption vulnerable" (because they showed low levels of consumption of calories and proteins per capita), while others entered food-insecure categories because they were "trade vulnerable" (manifested in the use of large percentages of their exports to buy food).

<sup>20</sup> Countries were classified into 12 categories of food (in)secure countries, applying three cluster methodologies (hierarchical, k-means, and fuzzy) to five variables—calories per day per capita; proteins per day per capita (in grams); food production per capita; total exports (merchandise and services) over food imports; and non-agricultural population over total population.



- Developed countries were all in the food-secure category, showing that food insecurity in poor countries cannot be mixed with trade concerns in developed countries claiming food security reasons.

The extension of that analysis to the new category of SVCs considered in the Modalities also showed a great variety of situations, with only 23 out of the 45 SVCs appearing in the food-insecure groups (Díaz-Bonilla and Ron 2010).

A question then is whether it is necessary, or possible, to create new categories to accommodate food security concerns in the negotiations, as well as the implications of some developing countries being “systemically important” for the world agricultural and food system.<sup>21</sup>

## FOOD SECURITY STOCKS

Given what seems a more frequent occurrence of extreme weather events and the recent price spikes, the topic of domestic food stocks is discussed again as a general policy<sup>22</sup> (Gilbert 2011, IATP 2012, Galtier and Vindel 2013). Regarding trade issues, food stocks were at the centre of the proposal tabled by the G33 for changes in Annex 2, paragraphs 3 and 4, as part of the topics discussed in preparation for the Ninth Ministerial in Bali in December 2013 (Chatterjee and Murphy 2013).

The G33 proposal is based on Annex B of the Modalities document, which presents amendments to sections of Annex 2 of the AoA on food security stocks and domestic food aid. The amended language would exempt, from the obligation to count within the AMS, purchases from LIRP producers to build food security stocks or to provide domestic food aid in developing countries even if those purchases are made at “administered” prices instead of “current market prices.”

To understand the differences it is useful to start with the requirements in the current AoA, and then move to the Modalities and the G33 proposal.

First, Green Box measures (those considered in Annex 2 of the AoA) must be those that “have no, or at most minimal, trade-distorting effects or effects on production,” and include “all support policies provided through a publicly-funded government program not involving transfers from consumers” and which do “not have the effect of providing price support to producers” (Annex 2, paragraph 1). They are exempt from limits and reductions, provided they comply with other specific criteria established in that Annex (Annex 2, paragraph 1 of the AoA).<sup>23</sup>

Paragraph 3 of Annex 2 refers to “public stockholding for food security purposes” and paragraph 4 focuses on “domestic food aid.” Both explain the additional criteria that countries must follow so expenditures (or revenue forgone) in implementing those programs are protected in the Green Box.

Regarding public food security stocks, the AoA requires that they be an integral part of a food security program identified in national legislation. It may include government aid to private storage of products as part of such a program. They must correspond to predetermined targets related solely to food security, the process of stock accumulation and disposal must be financially transparent, and the products must be bought “at current market prices, and sales from food security stocks shall be made at no less than the current domestic market price for the product and quality in question” (Annex 2, paragraph 3). A footnote in the Annex indicates that “governmental stockholding programs for food security purposes in developing countries whose operation is transparent and conducted in accordance with officially published objective criteria or guidelines shall be considered to be in conformity with the provisions of this paragraph, including programs under which stocks of foodstuffs for food security purposes are acquired and released at administered prices, provided that the difference between the acquisition price and the external reference price is accounted for in the AMS.”

Therefore, if “administered prices” are utilized, they must be compared, according to the AoA, with the fixed reference prices for 1986–88 (which, in general, are lower than current prices, even adjusting for inflation), and that the price gap must be multiplied by all “eligible production” in the country, and not only by the amount actually bought (for instance, the panel report on the dispute about Korean beef, WTO 2000). That value has to be counted within the AMS, that is, the “Amber Box” subsidies that are limited and must be reduced. Because of both these aspects (the use of 1986–88 prices and the calculation over total production),

21 For instance, the IMF has defined 25 countries as “systemically important” for monitoring and surveillance activities regarding the global financial sector. The selection is based on the size and interconnectedness of each country’s financial sector.

22 There have been debates about global and regional food stocks, which are not discussed here to the extent that WTO rules mostly apply to national food stocks (except for the sections of Article 10 of the AoA on disciplines on international food aid as part of the anti-circumvention controls on export subsidies).

23 Under specific conditions, some Green Box measures may be “actionable” under the Agreement on Subsidies and Countervailing Duties, meaning that the complaining WTO Member must support its claim proving either serious prejudice (as in Article XVI, paragraph 1, of GATT, 1994 or Articles 5 and 6 of the Subsidies Agreement), or “non-violation nullification” or “impairment of the benefits of tariff concessions” (as in Article XXIII, paragraph 1[b] of GATT 1994). Further distinctions may be needed within the Green Box measures to determine which ones will not be actionable, with particular consideration for measures taken by poor and food insecure countries.

the amount calculated may be high and exceed the “de minimis” exceptions, in which case those purchases may place developing countries over their limits. The scenario outlined appears to be among the main reasons behind the G33 proposal.

Regarding domestic food aid, according to Annex 2, paragraph 4, food aid must target the population in need subject to clearly defined criteria related to nutritional objectives; food purchases by the government must be made at market prices; the financing and administration of the aid shall be transparent; food aid can be in the form of direct provision of food or the provision of means to allow eligible recipients to buy food at either market or subsidized prices. In the case of developing countries, a footnote indicates that “for the purposes of paragraphs 3 and 4 of this Annex, the provision of foodstuffs at subsidized prices with the objective of meeting food requirements of urban and rural poor in developing countries on a regular basis at reasonable prices shall be considered to be in conformity with the provisions of this paragraph.”

In both cases, the AoA allows for food security interventions, but imposes some sensible requirements, such as clear national plans with well-defined criteria for food stocks or domestic aid, and transparent financial and operational procedures. As in other instances, the issue may have less to do with legal restraints under the AoA, and more to do with how to design and finance adequate interventions (Coady and Skoufias 2001 for domestic aid; and Gilbert 2011, IATP 2012, and Galtier and Vindel 2013 on good experiences in managing food stocks, mostly in some Asian countries; and bad ones, mainly in Africa).

For instance, if a country wants to build emergency food stocks (different from using stocks to provide price support to farmers or stabilize domestic food prices, which may be very expensive), it would make sense to follow the AoA and buy at “market prices,” using clearly defined targets, for instance, as a percentage of total consumption. For poor and fiscally constrained countries, buying at “market prices” reduces the costs of the food security program or domestic food aid, while using above-market administered prices would tend to generate significant losses by buying high to support farmers and selling low to subsidize consumers. If a government buys at harvest time, say, 10 percent of the production of a crop paying market prices to achieve the stock-to-consumption ratio defined for food security reasons, then that operation would give price support with respect to the counterfactual of no intervention (Islam and Thomas 1996: 58–61; Thompson and Tallard 2010 estimate, for several large developing countries, the improvements in market prices by interventions to build food security stocks). Also, it would help public finances to limit the number of key food items (no more than three to five) to be stocked. Hazell (1993) suggests that relatively small percentages of total consumption may suffice to act as an insurance mechanism. He uses McIntire (1981), who estimates that stocks of 5 percent of total consumption may be enough for SSA countries. Also, the AoA requires

transparent financial arrangements, a sensible requirement to avoid waste and corruption.

Following those rules, the program should be part of the Green Box, not subject to restrictions on the AMS, and it would be financially sustainable.

The design of food stocks for stability and domestic food aid tends to be affected by the same high/low price dilemma, and the operational problems and costs involved are probably more important than the issue of policy space for developing countries within the WTO framework—if the level at which prices are stabilized is too high, it may help producers, but poor consumers, for whom not only the stability of domestic prices but also the level at which they are stabilized matters, may suffer. Then, there may be a trade-off for the poor between stability and level of prices. Here, as in other cases where food-security concerns are invoked, the focus of the policy analysis should be on people rather than on crops or food products (different evaluations of the chequered story of food stocks can be found in Hazell 1993, Knudsen and Nash 1990; new evaluations are in Galtier and Vindel 2013, who are more supportive of the use of food stocks for stabilization, and Gilbert 2011, who is more sceptical).

The proposal by the G-33 countries, as well as the Modalities, seem to consider that buying at market prices to build food security stocks and/or provide domestic food aid may be ineffective in attaining the policy objectives or impossible to do in the case of developing countries. Therefore, the suggestion focuses on exempting purchases from LIRP producers as a way of helping developing countries avoid bumping against AMS limits, given the 1986–88 reference prices and the definition of eligible production.

However, it is not clear why buying at market prices should be ineffective or impossible to do. To build food security stocks for emergencies and to provide domestic food aid for poor consumers, governments in developing countries would be far better off financially (and would attain the objectives of food security and nutrition) if they buy at market prices (specially now in a context of high food prices) and not above them. And if the idea is to provide income support to LIRP producers (which is a separate objective from food security and nutritional support), in addition to the investment and input subsidies of Article 6, paragraph 2, developing countries can use direct payments to producers (paragraph 5 of Annex 2 of the AoA).<sup>24</sup> Those payments are

24 Article 6, paragraph 2 has the advantage, from the point of view of equity, that it encourages developing countries to design specific programs for rural development or alleviation of rural poverty instead of resorting to general and non-transparent subsidy schemes that may benefit richer farmers or be wasted in corruption. The only problem may be that those subsidies may be actionable under Article 13b. The scenario for such complaints to happen appears unlikely for most, if not all, poor developing countries. Yet, it would be advisable to clarify in greater detail the interface between Article 6.2, *de minimis* exemption (Article 6.4), and Article 13, particularly for poor countries with problems of food insecurity (see Díaz-Bonilla et al. 2003).

easier to instrument and monitor (particularly with the extension of national identity cards and detailed records of households under conditional or unconditional cash transfer programs) than a system of public buying only from LIRP producers. Also, if the concern is poverty, providing income support to LIRP producers goes directly to the heart of the matter. If a country wants to help poor and vulnerable people, then targeting crops or livestock production is an indirect, and often inefficient and inequitable, way to reach the intended policy objectives aimed at reduction of poverty and food insecurity.

A related issue is how to make operational the concept of "low-income or resource-poor producers" in Article 6.2. A possible way of identifying farmers who would qualify for assistance under this article is to apply the usual poverty line used for international comparisons of one dollar (or two dollars) a day, or to use a relative measure of poverty within the country (for instance, producers with less than 40 percent of national income per capita) (Díaz-Bonilla et al. 2003). Now, the use of the LIRP category seems to be relatively elastic and changing over time, even for the same country (for instance, India has moved from declaring about 70 percent of producers as LIRP to more than 90 percent in recent notifications).

Another way to approach the issue, which the Committee on Agriculture has begun to explore, is to focus on other parameters such as a) changing the reference prices; b) the concept of "eligible production;" and c) the possibility of allowing some temporary period during which developing countries exceeding limits are not subject to legal challenges. The issue of reference prices may be more difficult to sort out in the short period before Bali. However, the issue of "eligible production" may not need additional negotiations if the interpretation simply follows the panel on the Korean beef case. This allowed "eligible production" to be more limited in cases when the eligibility criteria identified a specific region or, when it has a limit in the quantity purchased (although in the latter case the panel indicated that the specific operation of the scheme had to be analyzed). If purchases are limited to the product of LIRP producers, that is conceptually equivalent to the example of the region in the panel case. Even if LIRP producers are a large percentage of farmers, they would represent a far smaller proportion of all production. Otherwise, the "bona fide" interpretation of what is an LIRP producer may be in question. Another parameter that may need clarification is "current market prices," if, for example, governments announce future purchases at prices that are market based but depend on future markets or other forward determination.

To summarize, the legal issues involved in the G33 proposal may require further consideration to make sure that developing countries are not asking, in negotiations, for something that they may not use (because it is too expensive), or that may be already available in the texts or as extensions of panel cases.

A separate topic is the question of the diplomatic wisdom of plucking the language on food stocks and domestic food aid from the Modalities, where it was "protected" as part of the whole package, and exposing the different issues involved in that formulation. For example, during the debate in the WTO Agricultural Committee, it has been pointed out that one of the two criteria under which the Green Box measures are accepted is that they should "not have the effect of providing price support to producers," while the language in the G33 proposal and the Modalities would be providing price support (if stocks are bought at administered prices above market levels).

The current debate on food security stocks and on domestic food aid is a timely and welcome development that requires a full debate of the legal, economic, and even diplomatic issues involved, a task that exceeds what can be discussed in this paper.

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## DISCIPLINES ON EXPORT MEASURES

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The recent price spikes and restrictive trade measures by some major exporters have rekindled interest in disciplines on export restrictions. This discussion can be divided into legal issues and economic issues.

Regarding legal issues, in the AoA, export prohibitions and restrictions are considered in Article 12. According to that Article, Members that institute new export prohibition or restriction on foodstuffs (following Article XI 2(a) of GATT 1994) must "give due consideration to the effects of such prohibition or restriction on importing Members' food security" and must notify in writing, "as far in advance as practicable, to the Committee on Agriculture" explaining "the nature and the duration of such measure." The Member instituting the measure must consult, "upon request, with any other Member having a substantial interest as an importer" and must provide the latter with the requested information. These obligations do not apply to developing country Members, "unless the measure is taken by a developing country Member which is a net food exporter of the specific foodstuff concerned."

In the Modalities, disciplines on export restrictions are further tightened. Existing export prohibitions and restrictions on foodstuffs and feeds must be eliminated by the end of the first year of implementation of a potential Doha Round agreement. New export prohibitions or restrictions cannot "normally be longer than 12 months," and can exceed 18 months only with the agreement of the affected importing

Members. The obligation to consult, however, does not apply to LDCs and NFIDCs. The Modalities document has expanded the obligations to notify, inform, and consult by defining 90 days for the notification, and strengthened the surveillance role of the Committee of Agriculture in these matters.

Moving to economic issues, the first thing to recognize is that measures taken by countries to try to reduce price volatility in their domestic markets may exacerbate price volatility in world markets by transferring outside the national markets the necessary price and quantity adjustments. More stability for some domestic markets may mean more instability for the domestic markets of other countries, given the global inter-linkages in commodity trade.

There are some studies that try to determine the impact of export measures on domestic and global variables. On export restrictions and volatility, Anderson and Martin (2011) calculated that 45 percent of the increase in rice price and 30 percent of the increase in wheat price in the 2008 price spike was due to trade measures, in general (that is, not just export restrictions). In another work (Anderson et al. 2012), calculated that import measures, represented a not trivial percentage of those increases: 45 percent in the case of rice and 37 percent in the case of wheat, which, if applied at the impacts in Anderson and Martin (2011), would make the impact of export measures on prices about 25 percent and 19 percent of the total increase in rice and wheat, respectively,<sup>25</sup> with the difference of 75–81 percent caused by import measures (such as reducing import tariffs) or other (non-trade) factors.

Gouel and Jean (2012) showed, in a theoretical model of a small country, that an optimal combination of storage and trade policies (subsidizing imports and taxing exports) stabilizes domestic food prices. The optimal policy includes export restrictions, which the authors acknowledge may be harmful to export partners, but, at the same time, they note that “to refrain from using them is costly and entails substantial transfers from consumers to producers.”

Bouët and Laborde (2010), in a global general equilibrium model, show that import and export measures have an upward impact on world prices, and that exporters using export measures to stabilize domestic prices improve their welfare, but negatively affect net importers.

More of these studies may help to align the legal treatment with the economic impacts, considering that now there seems to be an asymmetric legal treatment of economic equivalents. For instance, the following pairs of trade actions would seem to have similar economic effects (for equivalently scaled interventions).

- Increasing export taxes or reducing import taxes.
- Reducing export subsidies or increasing import subsidies.

- Reducing production subsidies or increasing consumption subsidies.
- Using export tax differentials or import tax differentials (tariff escalation).
- Imposing an export quota or eliminating an import quota.
- An export ban or anticipatory hoarding by an importer.

Even though all those measures that try to stabilize domestic prices may lead to increases in world prices, affecting other countries (and, therefore, all being “beggar thy neighbour” policies in some sense), the discussion appears to have focused mostly on export restrictions. Non-export trade interventions have also had important effects as shown by Anderson et al. (2012).

Even if the food price spikes are trade related (for example, due to export restrictions), is WTO the right place to address those issues? A negative answer would point out that the process of notification and consultation within the Committee on Agriculture may be too slow and that the lengthy WTO dispute settlement mechanism would not be of much help during a price spike. There are strong economic incentives (Bouët and Laborde 2010) as well as political reasons for governments to “act now” to protect their citizens, and then wait to be challenged at the WTO dispute settlement mechanism later, if at all.

Positive arguments to consider stronger disciplines on export restrictions are that obligations about transparency and consultation may act as a reputational constraint, changing the cost-benefit analysis mentioned above. Perhaps it is even more important for exporters to consider that it may be necessary for them to be more flexible about accepting disciplines on export bans and restrictions if they want to avoid the doubts about the trading system that are leading to the re-emergence of “self-sufficiency” approaches, with the potential costs of those policies on their export markets.

Whatever the WTO trade remedies are to the problem of price spikes, it seems that non-WTO options may have to be explored as well. It is crucial to have better information about stocks and to develop improved forecasting and early-warning systems of impending problems in crucial food products. Schemes to finance food imports during price spikes have also been discussed and utilized in the past. Different financial hedging approaches and global physical stocks may also help. All these trade and non-trade options merit further analysis (FAO et al. 2011).

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<sup>25</sup> Of the total increase in the price of rice (45 percent), 55 percent was due to export measures and 45 percent to import measures. Therefore, the incidence of export measures on the price of rice was 45 percent multiplied by 0.55 = 24.75% (rounded to 25 percent in the text above). For wheat the calculation is similar—37 percent was due to import measures and 63 percent to export measures; therefore, the impact of export measures was 30% multiplied by 0.63 = 18.9% (rounded to 19 percent in the text).



# CONCLUSIONS

This paper looked at trade and food security in the new context of higher prices, strengthened links between energy and agriculture, and disruptive climate change. It discussed in somewhat greater detail the debates about food stocks and export restrictions, and the related WTO disciplines. The current WTO framework, in Annex 2 (Green Box measures), allows the creation of food stocks and the provision of domestic food aid in conditions that let developing countries attain food security and nutritional objectives. Current AoA language requires the inclusion in the AMS of the price gap with external reference prices if the purchase is made at above-market prices, but the AoA allows selling food at subsidized prices to consumers. Changes in the WTO language to allow developing countries to buy at above-market prices would be useful only to those rare countries that may incur large public expenditures, but many other developing countries will not be able to afford that approach. For the latter, it is not wise to ask in negotiations for policy options that cannot be used. If countries do have the money and want to help LIRP producers, there are better and more direct alternatives, such as providing decoupled income support (Annex 2, paragraphs 5 and 6), or using Article 6, paragraph 2, than using the indirect and less efficient approach of buying some products at above-market prices. In negotiations, it is not wise to ask for what you can already do.

Regarding export disciplines, although there were several trade measures (and not only export constraints) that contributed to the price spike, it seems to be in the interest of importing and exporting countries (the latter to avoid the drift towards self-sufficiency) to consider tightening current disciplines. At the same time, it is important to recognize that should another spike occur, the protracted WTO process may not be an adequate constraint to governments of exporting countries that need to react immediately to complaints from their citizens about the price of food. In these emergencies, other multilateral interventions based on financial aid or physical stocks would be of great help.

While the WTO framework is mostly based on legal considerations, in the debates about food security it is always useful to carefully consider the economic issues involved. The current period of volatile prices has led to more interest in food self-sufficiency approaches. Developing countries will be well advised to invest more in expanding and stabilizing domestic agricultural production. However, the instinctive reaction of many policymakers, in the previous context of low world food prices and the new one of higher ones, has been to resort to protectionist measures, when Green Box measures linked to investments in public goods are the real basis for competitiveness and productivity.

However, some people have argued that those investments “cost money and are difficult to administer,” with the implication that protection does not cost money and it is easier to implement. In fact protectionism costs money—it operates as a privately collected, and regressive, tax on food, whose costs are paid relatively more by poor consumers (given the share of food in their expenditures) and benefits large producers relatively more (considering that protection is a mark-up received per unit produced). High tariffs and related import-restriction measures also increase prices of agricultural inputs to other sectors (primary and agro-industrial), negatively affecting production and employment there. Higher costs of wage-goods may lead to higher salaries, affecting other labour-intensive export industries. Trade protection on a large scale also tends to overvalue the real exchange rate, with negative implication for other tradable sectors. Protectionism does not seem to have positive effects over technological change, investments, and productivity.

A conclusion from reviewing WTO trade disciplines is that the AoA does not constrain “good” policies in developing countries to address poverty and food security issues (programs aimed at poor producers or consumers, stocks for food security and domestic food aid for populations in need). Developing countries can have well-defined programs for poverty, food safety and environmental protection. But the AoA does not constrain many “bad” policies either, particularly in the case of industrialized countries. The result is the two narratives discussed in the text, with developing countries trying to expand their “policy space” and limit that of industrial countries, while the latter want to maintain the (excessive) trade dispensations they got in the Uruguay Round and resist general expansions of “policy space” for developing countries, warily watching the decline in their own market shares in the face of production and trade advances by several emerging economies. These two narratives must eventually converge on a more realistic appreciation, on all sides, of the new facts and responsibilities of the global agricultural system, if improvements in the governance of global trade that are fair to all and respect the development needs of the poorer countries are to take place. That more realistic appreciation of the global landscape may also require a reconsideration of WTO trade categories.

Overall, the most important constraints to designing and implementing adequate trade and non-trade policies to help with food security continue to be financial and human resources, and institutional capabilities in developing countries. Also, it must be remembered that trade is not the main factor affecting food security, and that trade policies are blunt instruments since poverty and hunger occur at the household/individual level. Therefore, SDT defined at the national, crop, or even farmer level may not focus on the main problems. It is important to have well-targeted safety nets for the poor. But there is still a need for well-designed, temporary instruments for protection from import surges and unfair trade practices, and for avoiding drastic shocks

that affect survival strategies of the poor, and worsen the welfare of poor and vulnerable countries.

The best policy approach would be a relatively neutral trade policy inserted in a general policy framework for poverty alleviation and food security, which would include, among other things, support to land ownership by small producers and landless workers; investments in human capital; investments in infrastructure and climate change adaptation and mitigation; expanded R&D in agriculture, food, climate change, and energy issues; appropriate management of natural resources; strengthened safety nets (conditional cash transfers, school lunches, women and infant nutrition programs, food-for-work); women's empowerment programs; community organization and participation; adequate functioning of product and factor markets; macroeconomic stability; and overall good governance.

Adequate trade policies and WTO disciplines can contribute to food security, but it must be recognized that they are just a component of what must be a multidimensional approach.



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