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Indonesian Interests in the Agricultural Negotiations under the Doha Development Agenda: an Analysis of the "July 2004 Package"

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Abstract

This paper takes the 'July 2004 package' as a starting point to assess Indonesian interests in the agricultural negotiations under the WTO Doha Development Agenda. The ambitions on reforming domestic support in OECD countries seem to be moderate, at best, and a number of developing countries are less inclined to open their markets through improved access. Members now agree on far reaching exemptions from reforms in individual products (special products for developing countries and sensitive products for developed countries). This paper uses a large-scale economic model of trade and production (GTAP) to identify the possible impact of a realistic global liberalisation scenario in the spirit of the 'July 2004 package' on the Indonesian economy. Given the prevailing quite liberal trade regime in Indonesia the expected overall impacts on national income, trade and production are positive, but rather limited. For Indonesian agriculture global liberalisation offers positive prospects for vegetable oils and for animal products. There are small adverse effects on the protected rice and sugar sectors, which can be managed at modest costs by designating rice as special product (SP). An import ban or restrictive quota regime would entail significant welfare losses.

Contents

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1. Introduction

This paper discusses the interests of Indonesia in the agricultural negotiations under the Doha Development Agenda (DDA) of the WTO. It uses a global model of trade and production to quantitatively assess the possible effects of a successful Doha round on the world and on the Indonesian economy.

Since the start of the Doha round in 2001 the scope for liberalization in agricultural trade has gradually declined. The recent 'July 2004 package' reveals that WTO members agree on far reaching exemptions from reforms in individual products (special products for developing countries and sensitive products for developed countries). The ambitions on reforming domestic support in OECD countries seem to be moderate, at best, and a number of developing countries is less inclined to open their markets through improved access. It is against this background that we formulate our DDA scenario.

Several recent studies have shown that agricultural market access is one of the most important issues on the Doha development-round agenda (e.g. Anderson, 2004; Bouët et al 2004b; Francois et al. 2003; World Bank, 2003). There is much focus on tariff reductions in the present paper. Section 2 provides background to the Doha Development Agenda, and provides input into the discussions on formulae through an analysis at tariff-line level. We find that any formula that reduces post-UR bound rates by less than 80 per cent will leave most currently applied tariffs on agricultural imports into Indonesian untouched. Stated otherwise, Indonesia brings much capital to the negotiation table when it comes to improving other countries' access to its markets.

The GTAP model and database are geared to an analysis that provides most detail on the agricultural sectors in Indonesia, and the South and East Asian region (section 3). While the impact of the Doha Development Agenda on global income is modest, as reported in section 4, Indonesia is one of the countries that reap above-average gains driven by the improved export performance in agriculture. The income form farming activities will rise. The export opportunities compensate by far the limited contraction of the rice and sugar sectors that occur as imports grow; designating rice a Special Product will counteract contraction at modest costs (section 5). Criteria design for SPs is a potential deadlock, however, that may consume much of the scarce negotiating resources that developing countries have at their disposal. Section 6 concludes that there are firm interests for Indonesia in the Doha

Development Agenda. Some are on the defensive side, aimed at conserving flexibility for protectionist policies. Others are on the offensive side, and relate to the realization of export potential through domestic transformation of agriculture, and improved access to export markets.

2. The three pillars and protection in Indonesia

The Doha Development Round aims to obtain "substantial improvement of market access, reduction of all export subsidies, in view of their progressive withdrawal, and substantial reduction of domestic support having effects on trade distortion". These are the three "pillars" in the agriculture negotiations under the Doha Development Agenda: market access concerns reductions in tariffs and tariff rate quotas; domestic support concerns commitments to reduce trade-distorting farm income policies; export competition concerns the promotion of agricultural exports through direct subsidies, export credits, subsidy element in food aid and state trading enterprises.

Domestic support

Domestic support to agriculture is monitored in the WTO according to the concept of the Aggregate Measure of Support (AMS), and member countries have agreed to bind and reduce their domestic support in the last multilateral trade round, the Uruguay Round (UR). The domestic support ceilings have never been binding since the UR for any member, partly due to the relatively soft definition of AMS that allows reallocation of expenditures between categories. Most importantly, a significant part of domestic support has been shifted to the so-called 'Green box' which contains support that is considered minimally trade distorting and is not subject to reductions. Similarly, the so-called 'blue box', used mainly by the EU, has not been subject to reductions, and might possibly be extended in the DDA. Bringing down AMS will, therefore, not always result in actual reduction in domestic support.

Table 1 provides data on the subsidies from farm-income policies and export competition for selected countries and regions. These data are drawn from the OECD's estimates of producer support and adjusted to fit the GTAP database.[1] A

[1] The data does not include the so called 'Market Price Support' component, and is therefore lower than the OECD's Producer Support Estimates (PSE).

negative number refers to a net tax on producers in that sector. It is evident that the European Union, North America (USA and Canada), Japan an Korea choose to subsidize their agricultural sectors, while most of the developing countries are taxing their farmers.

Table 1. Domestic support and export competition (*)

	Indo-nesia	ASEAN	China P.R.	Japan and Korea	India	EU-25	North America	Brazil	South and Central America	Australia and New Zealand	All other countries
% of value of output											
Rice	-1	-2	-3	3	6	3	25	-1	0	1	0
Sugar	-7	-4	-2	0	0	0	1	-2	-1	2	-1
Oilseeds	-1	0	-2	35	3	42	27	1	-1	2	-1
Grains	-1	-11	-2	8	3	61	32	1	11	3	0
Vegetable Oils	-1	-1	-4	0	-1	0	0	-3	0	0	0
Animal Products	-1	-2	-2	1	0	3	2	-1	-1	1	-1
Other agriculture	-1	-2	-2	3	5	9	18	1	0	1	-1
Food processing	-7	-13	-13	-19	-4	-4	0	-3	-3	-1	-2

Source: GTAP version 6.4 pre-release (October 2004), calculations LEI
(*) Negative number means a net tax, positive number means a net subsidy

Export subsidies

Export subsidies have received much criticism from academics and policymakers, and are widely believed to be amongst the most trade distorting forms of policies. The issue has received high priority in the current Doha round of negotiations. Between the kick-off of the round with the Doha ministerial declaration (WTO, 2001) and the latest general council decision of July 2004 (WTO, 2004), the wording on export subsidies has changed from '…reductions of, with a view of phasing out ...' to a much more ambitious '… ensure the parallel elimination of all forms of export subsidies..'. This signals a broad consensus that export subsidies will have to disappear over time.

Under the Uruguay Round (UR) only direct subsidies were subject to discipline. While taking the removal of subsidies further, the DDA also addresses indirect forms of subsidization through various forms of institutional arrangements. These include food aid, officially supported export credits and state trading enterprises (STEs). The General Council decision (WTO, 2004) calls for the elimination of all forms of export subsidies, and Members have been instructed to work with the OECD to develop

monitoring tools. The OECD (2000) study on export credits is the forerunner of much more work in this area.

The WTO (2002a) provides data on the notified usage of direct export subsidies between 1995- 2000. All direct export subsidies average at US$ 7 billion annually. Of these, 90 per cent are from the EU, which is currently in the process of making sharp reductions in budget outlays on export subsidies. The dairy sector uses the largest share. The USA notified only US$ 487 million of direct export subsidies, but according to OECD (2000), the USA has been the largest user of export credits to subsidize exports. It is noteworthy that there are also positive notifications by developing countries, six of which did not make reduction commitments in the UR because they did not use them at the time. These countries are India, Korea, Morocco, Pakistan, Thailand and Tunisia.

Export subsidies display a considerable volatility over the years. The amount of export subsidies depends on the vagaries of world markets, in combination with the desire of some countries to stabilize their own domestic markets. In value terms the volatility is even greater, since an additional price component enters the picture.

Market access in agriculture

Countries protect their domestic markets in a number of ways. The resulting pattern of protection measures is often complex and faces the exporter with a non-transparent administrative burden, involving tariffs, quota, technical standards, sanitary and phytosanitary standards, import licenses, infrastructure charges, and, increasingly popular after the UR, anti-dumping duties. All these measures tend to raise the domestic price of the imported good above its 'world' price, i.e. the price that the exporter actually receives.

Tariffs are the most commonly applied form of import protection. Market access negotiations in the GATT/WTO have generally been based on tariff bindings, or schedules of concessions tabled under GATT rules that define a maximum or ceiling rate for trade restrictions. The coverage and level of these bindings is an important element of the initial conditions for the negotiations. While tariffs in the OECD (and Latin America) are generally bound, many Asian and African economy tariffs remain unbound despite more than a four-fold increase in the coverage of developing-country tariff bindings in the Uruguay Round.

For both industrial tariffs and agricultural tariffs, the phenomenon that bound rates exceed applied rates, or 'binding overhang' (Francois and Martin, 2003) is an important element for the initial negotiations in the Doha round. The binding overhang – sometimes called 'water in the tariff' – reduces the effectiveness of bound tariff reductions. For example, Francois et al (2003) show that, in general, for developing countries, binding overhang is large enough that reductions in the range of 50 per cent are necessary to force any reductions at all in average applied rates for countries like Brazil. Below we analyze the level of border protection in Indonesia. A more detailed discussion on the composition of agricultural tariffs, and the global pattern of protection is provided in Achterbosch et al. (2004).

Patterns of border protection in Indonesia

The current pattern of border protection in Indonesia, its profile of bound rates and its profile of applied rates determine the potential impact of the specific tariff reduction modalities that are to be agreed in the Doha negotiations. For Indonesia we observe that its applied protection is low on average, around 5 per cent in agri-food and slightly higher in manufacturing and textiles. We also see that the protection afforded is lower than the protection faced by Indonesian exporters, which points to potential export revenue gains from a multilateral reduction of tariffs.

Below we present data obtained from the AMAD database, which contains information on bound ad valorem tariff rates in agriculture, as well as information on TRQs.[2] The bound rates are directly from Indonesia's commitment schedule, and the AMAD database contains 1331 Indonesian tariff lines at the HS-10 level. Figure 1 provides a picture of the tariff landscape. With the exception of a few peaks, the landscape is rather flat, with most bound tariffs in the range 40 – 60 per cent. The important exceptions are found in dairy, sugar, rice and beverages. See table 2-3 for summary statistics for the agricultural commodities only, and calculated at the HS-2 group level. We also estimate the current binding overhang, i.e. the difference between bound rates and the post-UR applied rates. The overhang is very large indeed and this reflects the fact that Indonesia has reduced its tariffs far below the UR commitments in the wake of the Asia crisis. The current low rates reflect an already

[2] AMAD is a collaborative effort between USDA/ERS, OECD, Agriculture Canada, UNCTAD, FAO and the EC. See www.amad.org

liberal trade regime, with most tariffs around 5 per cent. Two exceptions are sugar and rice where specific tariffs are applied, and in the case of rice also quantitative import restrictions. Another exception is (alcoholic) beverages.

The DDA negotiations on agriculture have introduced several approaches to achieve tariff reform. The European Union has favoured a Uruguay Round approach in its agricultural proposals, which defines as the goal an average cut in tariffs. The Uruguay Round has in practice lead to the outcome that larger cuts were applied to tariffs that were already relatively low, while applying only modest reductions to high tariffs.

The USA and the CAIRNS group have proposed a formula approach. The fundamental difference to a UR approach is that a formula approach sets out rules to cut tariffs on each tariff-line. Specifically, these countries proposed to apply a Swiss formula approach on account that it achieves higher proportional cuts in higher tariff rates and results in a maximum ceiling tariff per tariff line. The Swiss formula is the most appropriate modality for a reduction of address tariff escalation. The so-called Derbez text that emerged during the 2003 Cancun ministerial proposed to combine both a UR approach and a Swiss formula in a 'blended' formula as a modality for market access negotiations. The more recent July package of 2004 speaks about 'tiered formulae', without specifying exactly what this might look like. See Sawit (2004) for a detailed analysis on Indonesia.

Table 2 clearly shows that very substantial reductions in bound rates would be required to actually reduce Indonesian applied rates. Required reductions larger than 80 per cent are not uncommon, given the enormous binding overhang. Consequently, all of the suggested reduction modalities would have little impact on applied tariffs, but could reduce some of the bound rates substantially. The consequent reduction of binding overhang would limit Indonesia's future ability to raise tariffs above current levels.

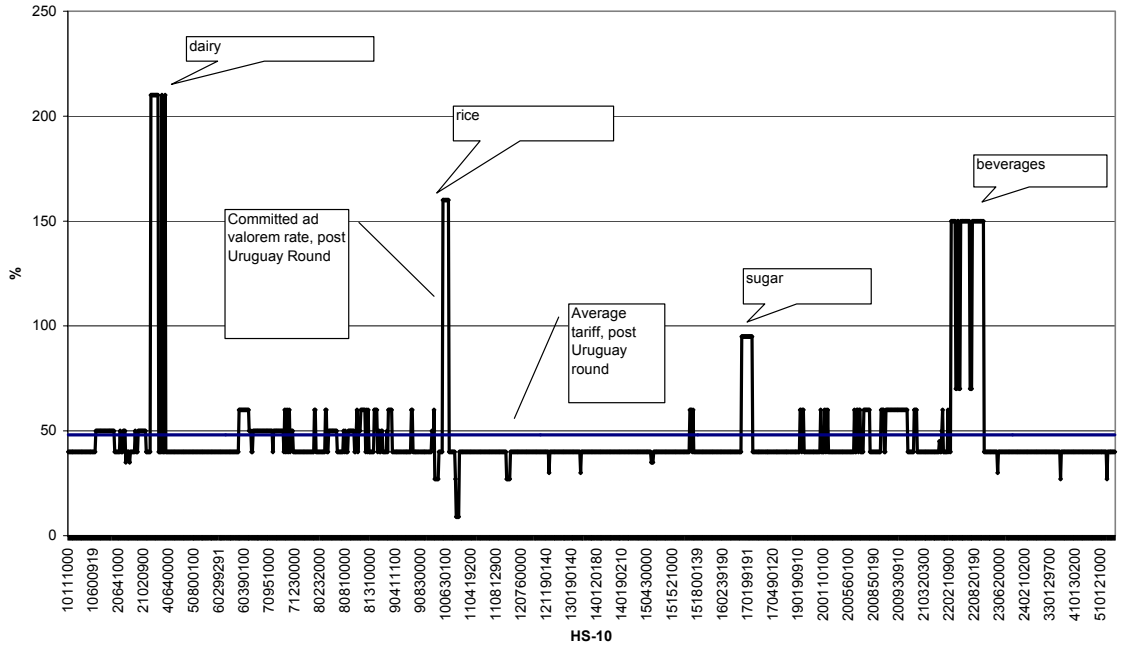

Figure 1. Post Uruguay Round tariff landscape Indonesia, bound rates

Table 2. Bound and applied tariff rates imposed by Indonesia (per cent ad valorem)

		Bound rate, %			Applied rate, %			Reduction of bound rates, required to equalize bound and applied rate %
HS 1996	**Commodity group**	**Max**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Mean**
01	Live animals	40	40	40	15	0	5	89
02	Meat bovine and non-bovine	50	40	48	5	5	5	89
03	Fish, fish products	.	.	.	15	0	5	100
04	Dairy, eggs and honey	210	40	90	5	0	4	92
05	Hair and feather	40	40	40	5	0	4	91
06	Ornamental plants	60	40	45	20	10	13	70
07	Vegetables	50	40	45	5	0	5	89
08	Nuts and fruits	60	40	46	5	5	5	89
09	Coffee, tea and spices	60	40	44	5	5	5	88
10	Rice and cereals (*)	160	27	103	5	0	3	91
11	Processed cereals (flours, flakes) and starch	40	9	36	5	0	4	87
12	Oilseeds	40	27	40	5	0	4	90
13	Vegetable saps	40	30	39	5	0	4	89
14	Bamboo, rattan and other plant fibres	40	40	40	5	0	2	95
15	Vegetable oil and animal oils	60	35	42	10	0	5	88
16	Animal products	40	40	40	5	5	5	88
17	Sugar and –products (**)	95	40	54	5	5	5	88
18	Cocoa products	40	40	40	5	5	5	88
19	Cereal products	60	40	41	5	5	5	88
20	Processed vegetables and –fruits	60	40	49	5	5	5	89
21	Soya sauce and other food preparations	60	40	41	5	5	5	88
22	Beverages	150	40	125	170	5	129	13
23	Animal feed products	40	30	40	5	0	1	96
24	Tobacco and –products	40	40	40	15	5	9	78

Source: Bound rates are from AMAD database, Applied rates have been obtained from Departemen Pertanian. Calculations LEI

Notes: Mean values per HS-2 group calculated from tariff-line data at HS-10 level; (*) For rice the bound rate includes estimate of the ad-valorem equivalent of specific tariffs. The column "applied rate" only contains the average of ad applied valorem tariffs. The current applied specific tariff is Rp 430/kg. At current world prices and exchange rates this is roughly 20% ad valorem. (**) For sugar the bound rate includes estimate of the ad-valorem equivalent of specific tariffs. The column "applied rate" only contains the average of applied ad valorem tariffs. The current applied specific tariff is Rp 700/kg for raw sugar (p 550/kg for cane sugar). At current world prices and exchange rates this amounts to roughly 30% ad valorem.

3. Model, data and scenarios

Scenarios

The challenge in constructing scenarios is to translate bound rates and bound AMS ceilings, which are negotiated under DDA, into changes to the applied levels that can be incorporated in the modeling analysis. As usual one has to make simplifying assumptions to capture the spirit of the likely set of policy changes without being trapped into the details of the (legal) agreements. Our analysis of the impact of the DDA on the world and on Indonesia is structured around one central DDA scenario, which assumes the following with regard to the three pillars in the agricultural negotiations:

- Market access: 30% reduction of applied levels of protection;
- Domestic support: 5% reduction of applied levels;
- Export subsidy: 75% reduction

This scenario purports to reflect the current stance in the negotiations: substantial progress in market access albeit less in applied rates than in bound rates; limited progress on domestic support – despite strong commitments to lower AMS ceilings, perhaps – as the EU and the USA strive to expand the definition of the blue box and put increasing amounts of support in the green box; finally, we believe that very substantial reductions of export subsidies can be achieved in this round.

In one of the scenarios we construct a potential modality for SP in developing countries along two lines. First, we see little fundamental difference between "sensitive products" proposed by OECD countries, and special products in developing countries. Special or sensitive are taken to be those products for which current levels of (bound) border protection are high. Second, we largely exempt sensitive/special products within this tariff range from liberalization by assuming a "symbolic" 5 per cent cut on applied support or border measures.

Model

Our analysis uses calculations done with the general equilibrium model of the Global Trade Analysis Project. The GTAP model is a comparative static multi-sector multi-region general equilibrium model. Each country or region is depicted within the same structural model. The regional household to which the income of factors, tariff

revenues and taxes are assigned represents the consumer side. The regional household allocates its income to three expenditure categories: private household expenditures, government expenditures and savings. For the consumption of the private household, the non-homothetic Constant Difference of Elasticities (CDE) function is applied.

A representative producer for each sector of a country or region makes production decisions to maximize profits by choosing inputs of labor, capital, and intermediates to produce a single sector output. Producers can substitute primary factors for each other, modeled with a Constant Elasticity of Substitution (CES) functional form, while intermediates are used in fixed proportions (Leontief). In the case of crop production, farmers also make decisions on land allocation. Intermediate inputs are produced domestically or imported, while primary factors cannot move across countries. Internationally traded commodities are assumed to be distinguished according to region of origin. Using this so-called Armington assumption implies that for example wheat imported from the US is different from wheat imported from the EU, and trade flows in both varieties have their own price tag. A great advantage of the Armington assumption is the possibility to model bilateral trade flows and bilateral trade policies.

The welfare changes are measured by the equivalent variation. This tells us how much money can be taken away from the representative household, or must be given to the representative household, to make it as well off as without the policy change. In practice, the equivalent variation correlates with changes in real GDP. We also report changes in farming income. This is measured as change in value added derived from agricultural activities, and hence excludes income from off-farm activities that the rural household may be engaged in.

Taxes are included in the theory of the model at several levels. Production taxes are placed on intermediate or primary inputs, or on output. Some trade taxes are modeled at the border. Additional internal taxes can be placed on domestic or imported intermediate inputs, and may be applied at differential rates that discriminate against imports. Trade policy instruments are represented as import or export taxes/subsidies. A detailed discussion of the basic algebraic model structure of the GTAP model can be found in Hertel (1997). Our model is implemented in GEMPACK, a software package designed for solving large applied general equilibrium models. The model is solved as an explicit non-linear system of equations, through techniques described by Harrison and Pearson (1996).

Data

We use the version 6.4 pre-release (September 2004) of the GTAP database that is benchmarked to the year 2001. A special feature of the database is the trade protection information that comes from the MacMaps database. This is a joint effort by the Centre d'études Prospectives et d'information Internationales (CEPII) and the International Trade Center (WTO/ITC). This database is used to convert tariffs applying to trade in products measured at a very disaggregate level (HS6) into their ad valorem equivalent. The import protection measures include ad valorem tariffs, specific tariffs, quota, tariff rate quota regimes, and anti-dumping duties. These are all converted into ad valorem equivalents. An important feature of this dataset is its inclusion of existing trade preferences, including GSP, ACP, AGOA and existing bilateral preferences. See Bouët et al (2004a) for a comprehensive documentation.

Information on domestic agricultural support is consistent with OECD producer Support Estimate information, but limited to OECD members and a few non-members.

The GTAP database contains economy-wide information 87 regions or individual countries and information on 57 commodities. For the purposes of this study we have aggregated those into 11 regions and 10 commodities, listed in Table 3.

Table 3. Aggregation of the database

	Commodities	**Regions**
1	Rice	Indonesia
2	Sugar	ASEAN (excl. Indonesia)
3	Oilseeds	China P.R.
4	Grains	Japan and Korea
5	Vegetable Oils	India
6	Animal Products	EU-25
7	Other agriculture	North America (US and Canada)
8	Food processing	Brazil
9	Manufactures	South and Central America
10	Services	Australia and New Zealand
11		All other countries

4. Impact of the Doha Development Agenda

As negotiations under the Doha Development Agenda (DDA) proceed, the prospects for strong economic benefits from the round get bleaker. Below we report on the results of our model simulations under a realistic Doha scenario.

Global Effects

On the global level, we estimate gains of USD 11 billion in agriculture, and of USD 10 billion in non-agriculture. Because of the small share of agriculture in the global economy, the relative gain is much bigger in agriculture (0.6 per cent of global agricultural GDP) than in non-agriculture (0.04 per cent of global non-agricultural GDP). Figure 3 reveals the distribution of national income gains over the agriculture economy and the non-agriculture economy, by region. Several developing regions score well above the global average, notably India, the ASEAN countries, and Brazil. Of the OECD countries, those in the far East (Japan, South Korea, Australia and New Zealand) reap substantial gains, which are largely driven by agricultural reforms in Japan and Korea. The benefits in the EU are in line with the EU share in the global economy. We report a slight net loss for the US, giving the US little incentive to push hard on a deal. The national income gain in Indonesia amounts to 0.3 per cent of GDP, far above the world average. Most gains occur in manufacturing and services.

Under the agriculture negotiations, the July package reveals that little action is expected on the critical pillars of domestic support and market access. Consequently, the gains in agriculture are quite small. What is the contribution of the three pillars to these global gains? 94 per cent of gains relate to improved market access for agricultural products, 4 per cent to reduced domestic support and just 1 per cent to the downscaling of export competition policies. The agriculture dossier under the Doha Round seems to have made most progress under a pillar that shows little potential for substantial welfare gains in developing countries.

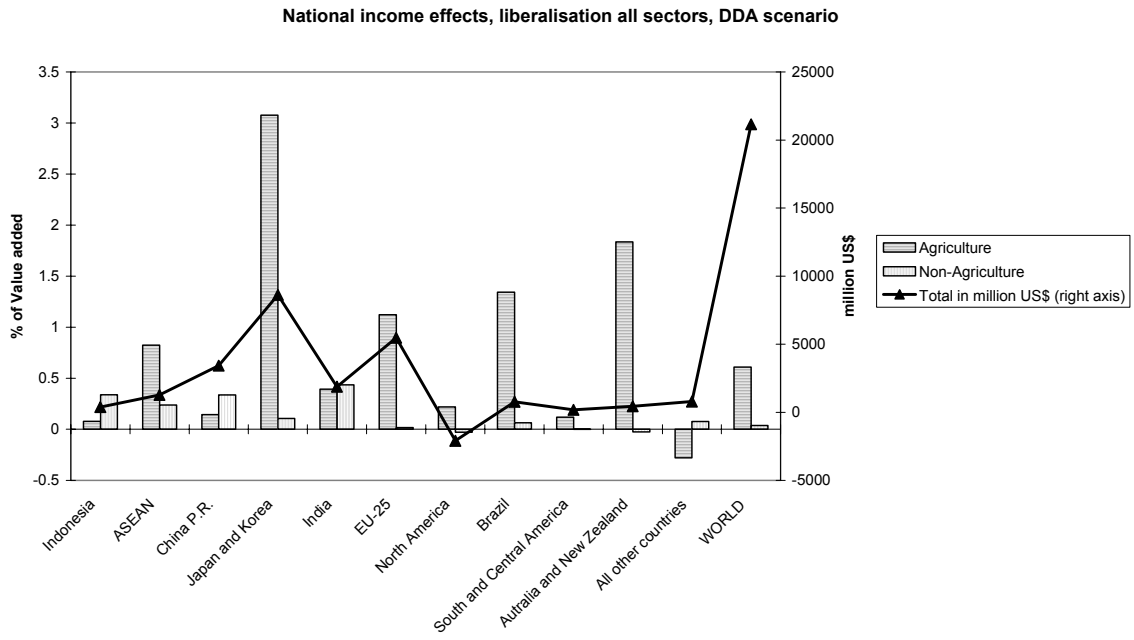

Figure 2. National income effects of a DDA liberalization in all sectors

The Impact of the Doha Round on Indonesia

Trade theory is straightforward in predicting that the gains from global liberalization accrue to those countries that remove their own distortions. Yet, Indonesia has quite a liberal trade regime, and few public means are allocated to support agricultural production or exports. This explains why the Doha round does little to boost Indonesian GDP (figure 2).

Comparing the impact on Indonesia with the rest of ASEAN, what strikes is that the gain in the latter region from countries opening up their markets is about four times bigger. Basically, the other ASEAN countries are able to materialize more export gains than Indonesia. The implication is that Indonesia – being a part of the global trading system – should aim to fulfill more of its export potential in order to derive firm benefits from the system. In addition, we see that Indonesia reaps indirect benefits from participating in a global liberalization effort. The matter returns below. First, we zoom in on the results of DDA reform for Indonesia.

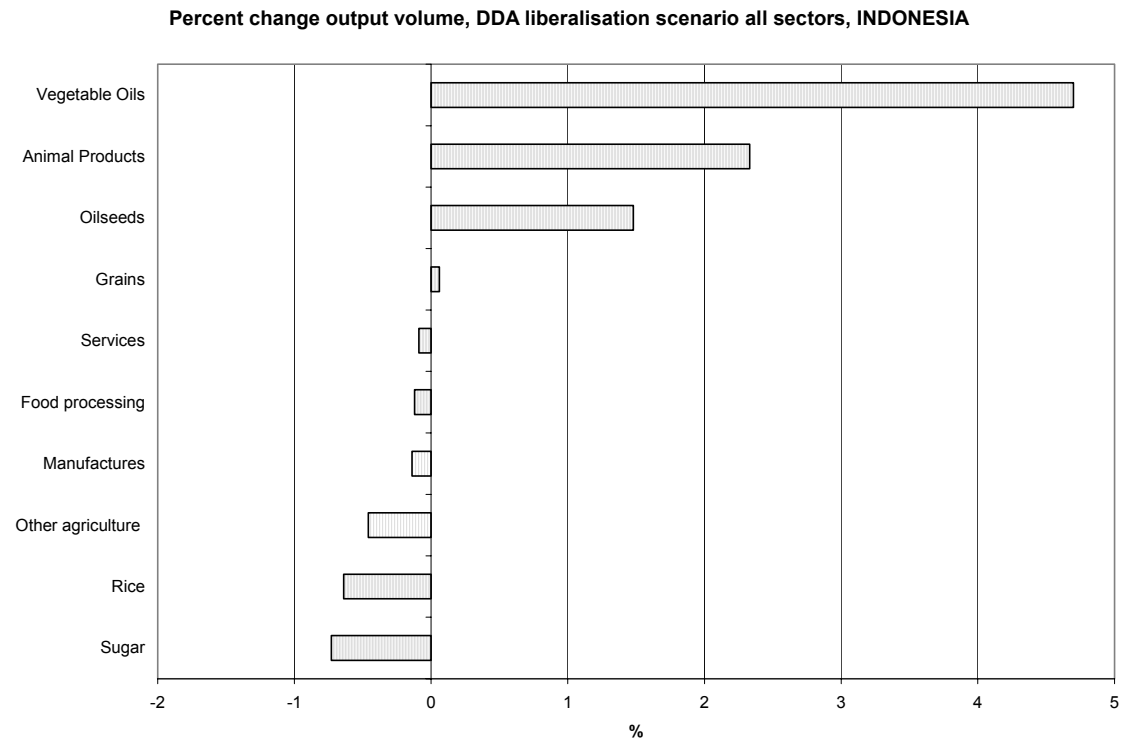

Figure 3. Output in Indonesia after Doha reform, by sector (per cent change)

Sectoral impact. Figure 3 compares the changes in value of output in sectors of the Indonesian economy. It should be read as an indication for changing patterns of specialization after reform.

In Indonesia most food crops are largely unaffected, and there is a substantial expansion in food production. For rice the share of domestic rice in consumption decreases slightly as a result of import growth of 20 per cent. Imports of sugar, already about half of domestic consumption, grow by an additional 10 per cent. The decline in rice and sugar farming allows resources to move into animal production and the oilseed/vegetable oil production, which both expand by 3 to 6 per cent. Looking just at quantities of output, there is 2.5 per cent growth in oilseeds and animal products, and over 6 per cent in vegetable oil.

The opportunities in animal products and vegetable oil relate to policy changes in Japan and Korea, which open up the highly protected market for rice, grains and oilseeds in these regions. ASEAN countries and North America fill the gap. More resources in these countries are absorbed by rice production, which opens up opportunities for Indonesia to increase its share on world markets for oilseed crops and vegetable oil. As the EU, Japan and Korea reduce their strong policies on dairy,

beef and other animal products, Indonesia can be among the countries that expand their livestock sectors, albeit in strong competition with Brazil, Oceania, and other ASEAN countries.

Below we discuss in more detail the impact on agriculture of a DDA reform that covers only agriculture and food.

Farm income. There will, of course, be a consequent adjustment in the revenues from farming over the various sectors. Figure 4 provides detail on the changes to real farmer income from a DDA reform, and to the drivers of change.[3] Regarding the level of farm income, we find strong losses in the OECD countries that result from reduced levels of trade-distorting support; losses are fully compensated, however, through increased support under the Green Box. Farmers in emerging Asia – Indonesia included – gain under DDA, largely because of increased prices for their output (table 4). The results for Indonesia have to be interpreted with care because farming is often a part-time activity. In the lowland and upland area the share of agricultural (and fishing) activities in income is just about 50 per cent, in the coastal area it is just one-third.[4] We report on changes to the income from farming activities only, and exclude the returns from fishing activities from the analysis. It will be clear that a proper analysis of the household impact from trade liberalization will have to include the effect on off-farm income.

We find that average real income from farming (all activities) in Indonesia could increase by 1.2 per cent after the DDA reform of global agricultural policies. For the potential gain to materialize, farmers will need to shift resources into the production of vegetable oil and animal products.

[3] Change in real farm income is calculated as the CPI-deflated change in value added of agricultural activities.
[4] These data are ICASERD data for 2001.

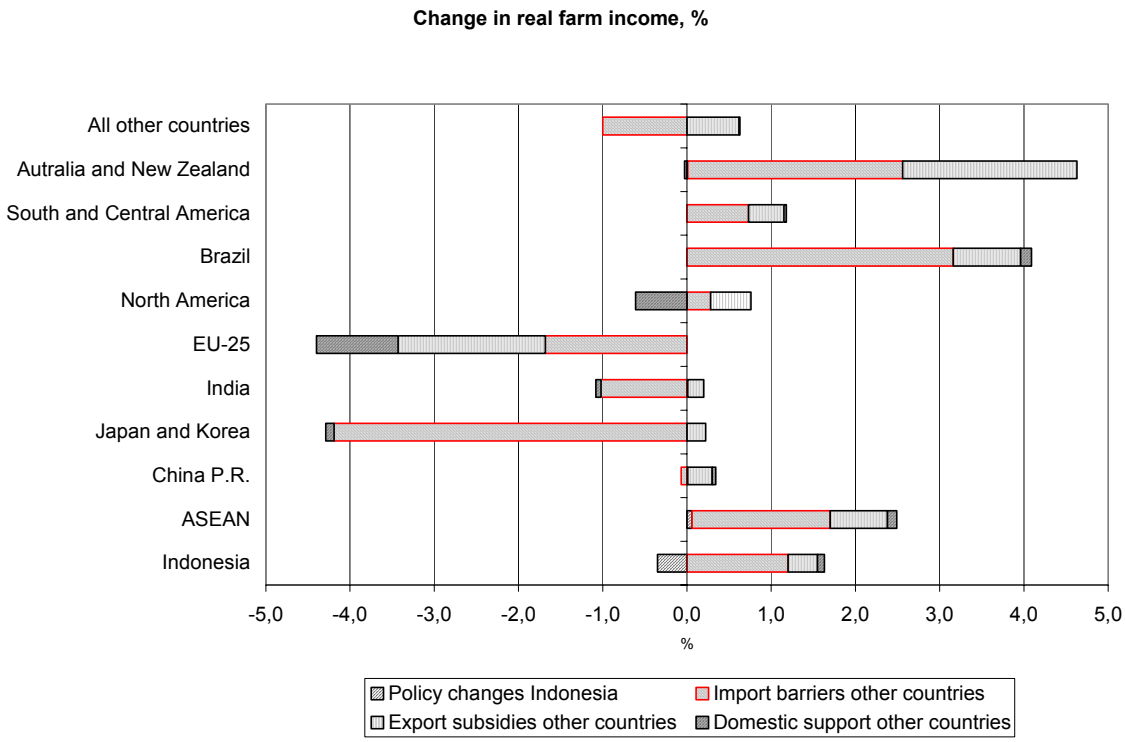

Figure 4. Impact of DDA on farm income, by region (per cent change)

The decomposition of the total change allows us to pinpoint the policies that drive change. Keep in mind our scenario design! The reduction of export subsidies and domestic support bears little impact outside the EU and Oceania. Nonetheless, Indonesian farmers benefit from rising market prices for their rice and oilseeds – as support policies become less distorting or decline, supply contracts, and prices rise. Increased market access is the biggest cause of adjustments worldwide. Indonesian export opportunities improve under the Asian rice domino; when Japan and Korea open up their markets for rice from the ASEAN region, Indonesian farmers get opportunities to step up their exports of animal products and vegetable oil, and take over market share from other ASEAN countries in these products. We find that a removal of protection on Indonesian agriculture slightly reduces farm income by about 0.4 per cent, a reflection of the minor contraction in rice and sugar production.

Most rural households are net buyers of food, i.e. consumption outweighs household supply. Although real farm income rises, the net impact on the rural household is likely to be negative. The income gain is partially based on the upward pressure on prices for agricultural products. The net impact in the household depends on their food balance. Hertel et al. (2004) show that poor agricultural households in

Indonesia are likely to witness a net income drop in the face of global liberalization, as their food budget rises without being fully compensated by rising remuneration for their activities.

Table 4. Farm revenue after DDA reform (per cent change to base data)

	Output (1)	Price (2)	Farm revenue (1+2)
Rice	-0.67	0.24	-0.43
Sugar	-0.56	0.19	-0.37
Oilseeds	2.36	1.4	3.76
Cereals	0.29	0.68	0.97
Vegetable oil	6.45	0.27	6.72
Animal products	2.7	0.57	3.27

Source: model simulations

Employment and wages. Before we discuss the impact of reform on employment and wages, first a note on the specification of the labor market in the GTAP analysis. In the analysis we assume full employment of labor resources at all times in the analysis. This reflects our hypothesis that trade reform will not increase total demand for labor.[5] In the agricultural economy in Indonesia, chances are bigger that trade reform will alter the structure of labor demand than its volume, basically because the labor force is already fully employed in farm and off-farm activities. The output changes reported above will affect the distribution over sectors. In addition, we expect the distribution of labor over the formal and informal economy to change, an effect that we cannot quantify.

We find that labor demand shifts follows the shifts in agricultural production, i.e. a slight reduction of the demand for labor in rice and sugar farming (and the processing of these crops) by less than 1 per cent; substantial increases of 2.5 to 4.5 per cent in the sectors vegetable oil and animal products. The agricultural economy specializes more into the supply of vegetable oil and animal products, which require more land and capital per unit of product, and less labor than rice and sugar. By consequence, wages decrease somewhat in comparison to wage levels in ASEAN and other East Asian regions, which experience the inversed output trend. In Indonesia the increase of land rents by 1 per cent transfers income from land laborers to land

[5] We assume full employment not only for labour but for land as well. This specification limits the scale of national income gains because we do not allow the endowment stock to grow.

owners. As trade theory predicts, the reduced border protection on manufactures results in a decline of domestic capital prices. The decline is partly undone by an increased demand for capital from agriculture.

The realization of potential gains. The results indicate that a key challenge to Indonesia is to improve export performance in agriculture. Globally, enterprises in the food sector have incorporated consumer concerns and regulatory demands regarding health, quality and the environment into their production, marketing and distribution activities. The core of large retailers and trans-national "agribusiness" corporations has introduced various technical specifications that govern quality and safety of local and imported food products, e.g. the guidelines from EurepGAP and British Retail Consortium.[6] As tariffs decline in global food trade, such technical standards that importers impose become the more impeding trade barriers. They were once skillfully described as 'the emerging rocks in the ebbing tide.'

The organizational response has generally been to integrate buyers and sellers within so-called supply chains, which is controlled by the dominant link in the chain. In many cases this requires direct investments of the controlling link into the primary stages of production. For such chains to reach out to agriculture in Indonesia requires quality and stability of supply, and a sound investment climate. The constructive attitude towards liberalization under the WTO signals a drive towards openness in Indonesia, which improves investment climate. Such intangible benefits from the WTO will support the value adding in agriculture through processing and exports.

5. Exempting SPs from multilateral liberalization

In the previous section we looked at the effects of a possible outcome of the Doha round, but without taking into account the important issue of 'special products'. Members agreed in the July package that

> "Developing country Members will have the flexibility to designate an appropriate number of products as Special Products, based on criteria of food security, livelihood security and rural development needs. These products will be eligible for more flexible treatment. The criteria and

[6] In marketing, standards operate as a response to an increasing demand for differentiation and quality (including safety) in food consumption. In production, standards are instrumental to achieving efficiency gains within a food chain, by reducing waste, co-ordination cost and incompatibility between links in the chain (Reardon et al., 2001).

treatment of these products will be further specified during the negotiation phase and will recognize the fundamental importance of Special Products to developing countries."

At the same time, developed country members are also granted considerable leeway by allowing them so-called 'sensitive products' that will also receive a more 'flexible' treatment with regard to market access commitments:

"Without undermining the overall objective of the tiered approach, Members may designate an appropriate number, to be negotiated, of tariff lines to be treated as sensitive, taking account of existing commitments for these products."

Developed countries will designate those products 'sensitive' that are currently subject to regulated trade under tariff rate quota (TRQ). The text speaks of no justification in the case of sensitive products. By contrast, developing countries will have to justify the designation of SPs according to food security, rural development, and similar considerations. Criteria design is a potential deadlock, however, that will draw heavy on the Geneva delegations of developing countries. Instead these might want to propose self-designation of SPs, quite in line with the approach of developed countries.

At this point it is difficult/impossible to foresee the outcomes on SPs. Still, we have undertaken to estimate the possible effects of exempting products from liberalization efforts. The coarse nature of our commodity aggregation limits the choice of products. In the simulation experiment, we therefore allow each region to designate at most one product as SP.

In order to arrive at some general principles for designation of SPs, we have used two simple indicators: (i) the existing level of border protection. Assuming that existing protection patterns reveals countries' preferences as to what they see as products that deserve protection, we select those agricultural products that currently have the highest applied tariffs. This indicator is combined with (ii) the output-weighted contribution to total farm income. This indicator should reveal the importance of the commodity concerned for rural incomes, and we choose those products that contribute the highest shares. All this leads us to a rather simple list: for all the Asian countries we assume rice to be a special product, except for India, where we assume vegetable oils to be of particular importance; the EU is very likely to continue some form of restrictive sugar policies, in spite of recent moves towards reforms of the EU sugar regime; for North America and South-and Central America

we assume animal products to be special; finally, Brazil, the Oceania region and our heterogeneous 'rest of world' are not assumed to designate SPs.

Modelling SPs. Our implementation of SPs is very straightforward, and is certainly an oversimplified representation of what will eventually be negotiated in the Doha round: we simply assume that members choose not to liberalize policies in their SPs. That is, they do not commit to further reductions in market access barriers, and if applicable no reduction of domestic support and no reduction of export subsidies.

Table 5 reveals the economy-wide welfare effects, from excluding SPs in the worldwide liberalization efforts. The world as a whole would forego 2.2 billion US$, or about 20 per cent, relative to the original 11.2 billion US$ gains (21.1 billion US$ including manufactures) discussed in the previous section. The foregone income gain is unequally distributed, though. It is mainly the high income regions that have high current protection levels and choose not to liberalize their sensitive products that would potentially loose: Not reforming the EU25 sugar regime and maintaining the practice of export subsidization implies a net loss of about 1.4 billion US$. Similarly, not opening the highly protected rice markets in Japan and Korea leads to a drop in welfare equivalent to 1.1 billion US$ in this region, with a negative welfare impact on rice exporting regions in Asia.

Even more disturbing is the effect on real farm incomes. While farm incomes in Japan and Korea and in the EU25 would rise relative to the original scenario, the low-income regions in our model would see a (very) slight, and negligible drop in their farming incomes. Hence, while high-income regions would transfer resources from consumers and citizens to farmers in sensitive products, farmers in low-income countries would not experience significant income gains from the exclusion of SPs. The reason for this result is that the multilateral non-inclusion of products in the liberalization efforts hampers export opportunities for low-income countries. This is especially evident in the rice (JAKO) and sugar (EU25) case. To Indonesia, the decline in export opportunities due to SPs is insignificant in our model.

Table 5. Welfare change after designating Special Products (million US dollar)

	Total EV Million US$	Border protection	Export subsidies	Domestic support	Real farm income (%)
	1 = 2+3+4	2	3	4	5
INDON	4	-4	8	0	-0.02

ASEAN	-48	-78	31	-1	-0.9
CHINA	58	-12	71	0	-0.06
JAKO	-1133	-1381	270	-22	1.11
INDIA	2	4	-2	0	-0.06
EU25	-1377	-120	-1273	15	1.37
NAME	-697	-685	-21	9	-0.83
BRAZ	-17	39	-56	0	-0.22
SCAM	-24	-114	89	1	-0.45
OCEA	49	161	-110	-3	0.21
ROW	946	-104	1050	-1	-0.27
TOTAL	-2239	-2293	57	-3	-

Source: model simulations
Note: table reports changes in income due to SPs, relative to Doha scenario without SPs

6. Conclusions

This paper has employed a large-scale economic model to quantify potential interests of Indonesia in the agricultural negotiations under the Doha Development Agenda. As with all such modeling studies the analysis represents an abstraction from many details and could be refined in various ways. From our analysis we can draw a number of conclusions.

Model results. Indonesia's quite liberal trade regime emerged in the wake of the financial crisis in Asia during the late 1990s. Given low applied protection in Indonesia, we estimate only small economy-wide welfare (efficiency) gains from own reforms. In fact, all effects of trade reform are rather small because the integration of Indonesian agriculture with global markets is quite limited. Small simulated drops in rice and sugar incomes are more than compensated through expansion in vegetable oils and animal products. Overall, this results in a small improvement of farmers' incomes. The realization of these potential benefits depends on the ability to shift resources into these promising areas of agricultural production. Indonesia's active participation in the DDA might facilitate this process of change through its impact on the investment climate in the country.

Trade negotiations. Our results quantify a range of interests of Indonesia in the agriculture negotiation. Some are on the defensive side, aimed at conserving flexibility for protectionist policies. Others are on the offensive side, and relate to the realization of export potential through domestic transformation of agriculture, and improved access to export markets.

Defensive interests of Indonesia in the negotiations include: (i) Current applied tariffs are very low, while bound rates are high. The resulting binding overhang gives a lot of flexibility to increase border protection should Indonesia want to protect domestic activities from world markets. (ii) Formula reductions of bound rates will have a limited impact on applied rates. A tiered formula retains flexibility, especially if 'special products' are to be exempted from reduction commitments. (iii) In rice we find a double-digit rise of imports in the DDA scenario due to reduced border protection at slightly rising world prices. The import surge could be mitigated through designating rice as special product (SP). The cost of this price-based policy in terms of national income loss is limited, while an import ban or restrictive quota regime would entail significant welfare losses. Not only would an import ban lead to losses in consumer welfare, through more restricted availability, but the country would also forego tariff revenues. Criteria design for SPs is a potential deadlock, however. (iv) Safeguards are an alternative to requesting high bound tariffs for stabilization purposes. To the extent that Indonesia will be able to negotiate higher bound tariffs on some agricultural products, the case for a safeguard mechanism in addition is diminished. However, if bound rates come down then it might be worthwhile to consider safeguard mechanisms.

Offensive interests in the negotiations include: (i) Domestic support reduction by OECD is estimated to have small negative impacts on the net importing Indonesian economy through higher import prices. However, higher world sugar prices that would result from some reforms in OECD countries would support expansion of the sugar sector in Indonesia. (ii) The simulations show a limited effect on Indonesia of improved market access to other countries. The limited realization of export potential is due to current specialization pattern. Diversification into first-stage processing to add value to primary products would lead to positive prospects in animal products and vegetable oils. (iii) If aggressive opening of other markets is attained, Indonesia will also have to lower its own bound rates, hence loosing some flexibility. This flexibility can be regained through pushing for a Special Safeguard Mechanism (SSM) and/or Special Products (SP). Alternatively, maintaining global protection levels would also leave Indonesia's flexibility untouched, but this comes at the cost of foregoing future benefits of opening markets.

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