SCOPE FOR DOHA TO REDUCE DISCRIMINATION IN AGRICULTURAL MARKETS

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I THE ISSUE

The vast majority of the world's poorest households depend on farming for their livelihood, as would many of the rest had prospects in agriculture not been so bleak as to force them into non-farm activities in search of a higher income. Earnings from farming have been depressed in low-income countries partly because own-country policies typically have had a pro-urban, anti-agricultural bias, and partly because richer countries (including some developing countries) assist and protect their farmers with import barriers and subsidies. Numerous developing country governments have made considerable progress over the past two decades in reducing their own sectoral and trade policy distortions, and many of them now believe high income countries should reduce their remaining protectionism that harms developing country exports of farm (and textile) products. Indeed one of the key difficulties in the World Trade Organization's ('WTO')[1] current round of multilateral trade negotiations (known as the 'Doha Development Agenda') is the fact that developing countries are calling for such commitments on farm policies before they will consider offering any further reform commitments of their own.

II BACKGROUND

Historically, in the course of their economic development countries have tended to gradually shift from taxing to subsidising agriculture, the latter to a

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1 Established pursuant to the *Marrakesh Agreement Establishing the World Trade Organization*, opened for signature 15 April 1994, 1867 UNTS 3 (entered into force 1 January 1995) ('*WTO Agreement*').

greater degree than in other sectors (albeit proportionately less so, and at a later stage of development, if the country has had a strong comparative advantage in agriculture).[2] Hence, at any point in time farmers in poor countries have tended to face depressed terms of trade relative to product prices in international markets – notwithstanding some assistance via subsidies for fertiliser, credit or irrigation[3] – while the opposite has been true for farmers in rich countries.[4] Again the exceptions were rich countries with an extreme comparative advantage in agriculture (Australia, New Zealand) and poor countries with an extreme comparative disadvantage in agriculture (South Korea, as with Japan earlier, and some oil-rich states particularly in the Middle East). Poor country farmers also were disadvantaged by an anti-rural bias in public investments in infrastructure and human capital (education, health, agricultural research and development), and sometimes also by having to effectively finance urban consumer food subsidy programs.[5] Within the agricultural sector of each country, import competing industries tended to enjoy more government support than those that were more competitive internationally.[6] The Krueger study also reveals that, at least up to the mid 1980s, direct disincentives for farmers such as agricultural export taxes were less important than indirect disincentives in the form of import protection for the manufacturing sector or overvalued exchange rates, both of

2 Kym Anderson and Yujiro Hayami , *The Political Economy of Agricultural Protection: East Asia in International Perspective* (1986), 2, 16; Peter H Lindert, 'Historical Patterns of Agricultural Protection', in Peter Timmer (ed), *Agriculture and the State* (1991) 29, 50–2.

3 Ashok Gulati and Sudha Narayanan, *The Subsidy Syndrome in Indian Agriculture* (2003). The most extreme cases in the 20th century of anti-agricultural industrialisation have led not just to impoverishment but to massive deaths, with 15–20 million in the Soviet Union in the early 1930s: Robert Conquest, *The Harvest of Sorrow: Soviet Collectivization and the Terror-Famine* (1986) 305–6; 17–30 million in China in 1959–61: Justin Yifu Lin, 'Collectivization and China's Agricultural Crisis in 1959–61' (1990) 98 *Journal of Political Economy* 1228, 1229; Wei Li, and Dennis Tao Yang, 'The Great Leap Forward: Anatomy of a Central Planning Disaster' (2005) 113 *Journal of Political Economy* 840, 841); up to two million in North Korea in 1995–2000: Daniel Goodkind, and Loraine A West, 'The North Korean Famine and its Demographic Impact' (2001) 27 *Population and Development Review* 219, 219–20. On the economic causes of these and other famines, such as the Irish potato famine of 1845–51 (1.1 million), the Bengal famine of 1943 (three to four million) and the Ethiopian famine of 1984–85 (up to one million) see: Amartya Sen, *Poverty and Famines: An Essay on Entitlement and Deprivation* (1981) 52; Martin Ravallion, 'Famine and Economics' (1997) 35 *Journal of Economic Literature* 1205, 1205.

4 Kym Anderson, 'Lobbying Incentives and the Pattern of Protection in Rich and Poor Countries' (1995) 43 *Economic Development and Cultural Change* 401, 405, 408.

5 See Derek Byerlee, and Gustavo Sain, 'Food Pricing Policy in Developing Countries: Bias Against Agriculture or for Urban Consumers?' (1986) 68 *American Journal of Agricultural Economics* 961, 964–6; Per Pinstrup-Andersen (ed.), *Food Subsidies in Developing Countries: Cost, Benefits, and Policy Options* (1988).

6 See, Anne O Krueger, Maurice Schiff and Alberto Valdés, 'Agricultural Incentives in Developing Countries: Measuring the Effect of Sectoral and Economy-wide Policies' (1988) 2 *World Bank Economic Review* 255, 264; Roland Herrmann, Patricia Schenck, Rainer Thiele and Manfred Wiebelt, *Discrimination Against Agriculture in Developing Countries?* (1992); Rainer Thiele, 'The Bias Against Agriculture in Sub-Saharan Africa: Has it Survived 20 Years of Structural Adjustment Programs?' (2004) 42 *Quarterly Journal of International Agriculture* 5.

which attracted resources away from agricultural industries producing tradable products.[7]

This pattern of distortions to incentives has been very wasteful from a global viewpoint, and detrimental to the vast majority of the world's poorest people who are small farmers in developing countries whose real incomes are lowered by those policies. Currently less than 15 million relatively wealthy farmers in developed countries, with an average of 78 hectares per worker, are being helped at the expense of not only consumers and taxpayers in those rich countries but also the majority of the 1.3 billion relatively impoverished farmers and their large families in developing countries who on average have to earn a living from just 2.5 hectares per worker (Table 1). Furthermore, the evolution from taxing to subsidising farmers as countries develop suggests that, left unchecked, agricultural protectionism would continue to spread to newly industrialising countries in the decades ahead as governments seek to protect domestic producers from import competition as the farm sector comes under pressure to shrink in relative terms and, eventually, in terms of absolute numbers of people engaged.

True, some developing countries have been granted greater access to developed country markets for a selection of products under various preferential agreements. Examples include the European Union's provisions for former colonies in the Africa, Caribbean and Pacific program and more recently for least developed countries ('LDCs') under the Everything But Arms agreement. Likewise, the United States has its *Africa Growth and Opportunity Act of 2000* and Caribbean Basin Initiative. While these discriminatory schemes reduce demands for developed country farm policy reform from preference receiving countries, they exacerbate the concerns of other often equally poor countries excluded from such programs and thereby made worse off through declining terms of trade – and they may even be worsening rather than improving aggregate global and even developing country welfare and poverty alleviation.

III WHAT CONTRIBUTION DID THE GATT MAKE TO DISMANTLING AGRICULTURAL DISTORTIONS?

The rules of the *General Agreement on Tariffs and Trade* ('*GATT*')[8] are intended, in principle, to cover all trade in goods. In practice, however, trade in agricultural products was largely excluded from their remit as a consequence of a number of exceptions.[9] This is despite the fact that agriculture is a small and

7 Anne O Krueger, Maurice Schiff and Alberto Valdés, 'Agricultural Incentives in Developing Countries: Measuring the Effect of Sectoral and Economy-wide Policies' (1988) 2 *World Bank Economic Review* 255, 261–3.

8 *Marrakesh Agreement Establishing the World Trade Organization*, opened for signature 15 April 1994, 1867 UNTS 3 (entered into force 1 January 1995); annex 1A (*General Agreement on Tariffs and Trade*) 1867 UNTS 190.

9 See, eg, Timothy E Josling, Stefan Tangermann and Thorald K Warley, *Agriculture in the GATT* (1996) 11–20, 105–110, 113–32; Dale E Hathaway and Merlinda D Ingco, 'Agricultural liberalization and the Uruguay Round', in Kym Anderson and Timothy E Josling (eds), *The WTO and Agriculture, Vol. 2* (2005) 4, 4–5.

declining sector in the global economy – its share of global gross domestic product ('GDP') has fallen from around one-tenth in the 1960s to little more than one-thirtieth today. In developed countries the sector accounts for only 1.8 per cent of GDP and only a little more of full-time equivalent employment. Mirroring that decline, agriculture's share of global merchandise trade has more than halved over the past three decades, dropping from 22 per cent to 9 per cent. For developing countries its importance has fallen even more rapidly, from 42 to 11 per cent.[10]

In the absence of strong *GATT* disciplines on agriculture, high and variable rates of import protection, together with sporadic export subsidy wars between the United States and the European Union, were depressing and destabilising international food prices. While the Uruguay Round provided a multi-pronged framework for reducing these distortions in farm production and trade, implementing the agricultural reforms agreed to in that Round involved only very modest liberalisation – even though that Agreement involved converting all agricultural protection to tariffs and limiting increases in virtually all tariffs through tariff bindings. Unfortunately, the process of converting non-tariff barriers into tariffs (inelegantly termed 'tariffication') provided numerous opportunities for backsliding that greatly reduced the effectiveness of the agreed disciplines.[11] As Figure 1 shows, there was thus very little decline in farm support in Organisation for Economic Co-operation and Development ('OECD') countries from the start of implementation of the Uruguay Round agreement in 1995. In addition, in developing countries, the option for 'ceiling bindings' allowed countries to set their bindings at high levels, frequently unrelated to the previously prevailing levels of protection. Hence agricultural import tariffs are still very high in both rich and poor countries, with bound rates half as high again as 'most favoured nation' ('MFN') applied rates (Table 2). Moreover, an additional form of discrimination in agricultural markets was introduced in the Uruguay Round, namely tariff rate quotas ('TRQs').[12] However, at least agriculture became part of the mainstream of the WTO, allowing the other agreements in the Uruguay Round to be concluded.

IV WHAT CAN THE WTO DO NOW TO REDUCE AGRICULTURAL DISTORTIONS?

Agricultural protection levels remain very high in developed countries, which means far more resources have been retained in agricultural production in developed countries – and hence fewer in developing countries – than would

10 World Bank, *World Development Indicators* (2007) <www.worldbank.org/data/wdi> at 28 August 2007.

11 Dale E Hathaway and Merlinda D Ingco, 'Agricultural Liberalization and the Uruguay Round' in Will Martin and L Alan Winters (eds) *The Uruguay Round and the Developing Countries* (1996) 30, 34–5, 39–47.

12 TRQs allow a certain quantity of imports to enter at a low tariff rate but above that rate imports are subject to a much higher tariff. The quotas are allocated in various ways, virtually all of them involving discrimination among competing import suppliers: Harry de Gorter, and Erika Kliauga, 'Reducing Tariffs versus Expanding Tariff Rate Quotas', in Kym Anderson and Will Martin (eds), *Agricultural Trade Reform and the Doha Development Agenda* (2005) 117.

have been the case if protection had been phased down in both agriculture and manufacturing simultaneously.

What does the available data say about current distortions in merchandise trade? As of 2001, the extent of tariff intervention in developing countries was even greater in agriculture than it was not only in other primary sectors, but also than in manufacturing (although less so than in high income countries), according to the Global Trade Analysis Project database at Purdue University (Table 3). In the absence of those distortions, incomes of developing country farmers would (according to recent global economic modelling) be 3 per cent higher on average, despite the negative effect they would face from the removal of their own governments' policies (Table 4). Agriculture would contribute almost two-thirds of the global welfare gains from such reform, notwithstanding the sector's tiny share of the global economy. The proportion is even higher for Sub-Saharan Africa, where more than three-quarters of its welfare gain would come from agriculture (Table 5).

Seven-tenths of those potential global gains from agriculture are accounted for by the farm policies of high income countries, and those policies also account for the majority of the overall gains to high income countries. For developing countries, as much of their gain from farm reform would come from so-called South–South agricultural liberalisation as from developing countries getting unrestricted access to high income country markets. That is almost equally true in manufacturing in aggregate, despite the big gains from textiles and clothing reform (US$14 billion from market access in high income countries compared with US$9 billion due to South–South textiles trade growth) (Table 5). In other words, reform by developing countries is equally as important, in terms of economic welfare gains to the South, as is reform by high income countries.

Of the 'three pillars' of agricultural distortions, import market access restrictions contribute 93 per cent of the cost of current farm programs globally, with export subsidies responsible for just 2 per cent and domestic support programs for 5 per cent.[13]

A particularly egregious form of discrimination is due to cotton trade distortions and subsidies (which raise producer prices by more than 50 per cent in the United States and even more in the European Union). Without them, the price of cotton in international markets would rise on average by one-fifth above the 2015 baseline, and cotton output and exports from Sub-Saharan Africa would be 44 and 73 per cent larger respectively. Indeed cotton is so important in Sub-Saharan Africa, minus South Africa, that it would contribute one-quarter of the region's net gain in agricultural value added from full global trade and subsidy liberalisation. The share of all developing countries in global cotton exports would be 85 per cent instead of 56 per cent in 2015, further vindicating the

13 Kym Anderson, Will Martin and Ernesto Valenzuela, 'The Relative Importance of Global Agricultural Subsidies and Market Access' (2006) 5 *World Trade Review* 357.

efforts to ensure cotton receives specific and substantial attention in the Doha negotiations.[14]

The above results are for full trade liberalisation. Smaller changes can be expected to result from partial reforms of the sort being negotiated currently under the Doha Development Agenda, and several elements of proposals under discussion will be discriminatory. How much smaller they would be, and how discriminatory, depends crucially on the details of the hoped-for agreement. To get a sense of what matters most, some scenarios are explored below.

A Some Doha Scenarios

It seems safe to assume agricultural export subsidies would be eliminated by 2013 in any likely scenario.[15] That will remove one form of discrimination in agricultural markets, and one of the anomalies within the WTO (since export subsidies are not allowed on non-agricultural goods); but, as just mentioned, it is a relatively small part of the global welfare cost of current farm programs. We also assume that domestic support for agriculture is cut in just four economies: by an average of 28 per cent for the United States, 18 per cent for Norway, 16 per cent for the European Union and 10 per cent for Australia.[16] More difficult to determine are the likely nature and extent of reductions in market access barriers, so a number of scenarios are considered initially for agricultural and food products in isolation of non-agricultural tariff cuts, before incorporating also some non-agricultural market access. Throughout this section, the WTO usage of the term 'developing countries' applies when allocating so-called special and differential treatment ('SDT')[17] in the form of lesser commitments to reform, which means Hong Kong, Korea, Singapore and Taiwan are all able to enjoy SDT despite their high income status.

1 *Scenario 1*

The experiments begin for scenario 1 with a progressive or tiered reduction formula with marginal agricultural tariff rate reductions of 45, 70 and 75 per cent within each of the three bands defined by inflection point tariff rates of 15 and 90 per cent for developed countries (that is, for low agricultural tariffs the marginal rate of reduction is 45 per cent, for medium level tariffs it is 70 per cent, and for the highest tariffs it is 75 per cent), and for developing countries the reductions are 35, 40, 50 and 60 per cent within each of their four bands (except LDCs are not required to undertake any reduction commitments). Even these large cuts to

14 Kym Anderson and Ernesto Valenzuela, 'The World Trade Organization's Doha Cotton Initiative: A Tale of Two Issues' (2007) 30 *The World Economy* 1281, 1289; see also Daniel A Sumner, 'Reducing Cotton Subsidies: The DDA Cotton Initiative' in Kym Anderson and Will Martin (eds), *Agricultural Trade Reform and the Doha Development Agenda* (2005) 271.

15 Kym Anderson, Will Martin and Dominique van der Mensbrugghe, 'Doha Merchandise Trade Reform: What's at Stake for Developing Countries?' (2006) 20 *World Bank Economic Review* 169, 183.

16 This is relative to 2001 levels, for reasons explained in Kym Anderson, Will Martin and Dominique van der Mensbrugghe, 'Doha Merchandise Trade Reform: What's at Stake for Developing Countries?' (2006) 20 *World Bank Economic Review* 169, 183–4.

17 See WTO, *Work on special and differential provisions* <http://www.wto.org/English/tratop_e/devel_e/d3ctte_e.htm> at 28 August 2007.

bound tariffs (which are about half way between those proposed by the United States and the European Union in late 2005 in the lead-up to the Hong Kong Ministerial meeting) would lead to the average applied tariffs on agricultural and food products in 2015 being only one-third lower globally (10.0 instead of 15.2 per cent) and 12.5 instead of 14.2 per cent for developing countries.

2 ***Scenario 2***

Scenario 2 examines the consequences of including 'sensitive' farm products as allowed for in the 'July 2004 Framework Agreement',[18] with developed countries allowed to treat 2 per cent of their HS6 agricultural tariff lines (six digit level of disaggregation of the UN's Harmonized System of tariff line items) as sensitive and, we assume, subject to just a 15 per cent tariff cut, and double those proportions of products for both developing countries and LDCs, in part to also incorporate their demand for 'special' products treatment.[19] This would lead to the average agricultural tariff falling only to 13.5 per cent in both high income and developing countries, and would clearly introduce yet another form of discrimination within the agricultural sector.

3 ***Scenario 3***

Scenario 3 considers the effects of adding to scenario 2 a tariff cap of 200 per cent, such that any product with a bound tariff in excess of that limit will be subjected to a reduction down to that cap rate, which would cause average cuts in agricultural tariffs of 18 per cent for both developed and developing countries. This would lead to the average agricultural tariff falling considerably more for high income countries (to 11.5 per cent) and but only very slightly more (to 13.3 per cent) for developing countries.

4 ***Scenario 4***

Scenario 4 adds to scenario 1 the cuts in non-agricultural tariff bindings of 50 per cent in developed countries, 33 per cent in developing countries, and zero in LDCs. That lowers the average tariff on all merchandise from 2.9 per cent in the baseline to 1.6 per cent for high income countries and from 8.4 to 7.5 per cent for developing countries.

5 ***Scenario 5***

Finally, scenario 5 makes developing (including least developed) countries full participants in the round, undertaking the same reductions in bound (but not

18 *Doha Work Programme – Decision Adopted by the General Council on 1 August 2004*, WTO Doc WT/L/579 (2004) ('July 2004 Framework'). This was essentially a broad roadmap aimed at reinvigorating the Doha Round after failed negotiations at Cancún in 2003; it consisted of general guidelines rather than any specific modalities for future negotiations.

19 'Sensitive' farm products are chosen for each country by taking into account the importance of the product, the height of its existing tariff, and the gap between its bound and applied tariffs in that country: Sebastien Jean, David Laborde and Will Martin, 'Consequences of Alternative Formulas for Agricultural Tariff Cuts', in Kym Anderson and Will Martin (eds), *Agricultural Trade Reform and the Doha Development Agenda* (2005) 81, 86–8.

necessarily applied) tariffs as the developed countries in scenario 4. That lowers the average tariff on all merchandise for developing countries from 8.4 to 6.8 instead of 7.5 per cent, a cut of almost one-fifth in this case instead of just one-ninth as in scenario 4.

B Estimated Welfare and Trade Effects of Those Scenarios as of 2015

The welfare consequences of implementing these various reforms over the 2005–2010 period and allowing the global economy to adjust to 2015 are summarised in Table 6 in dollar terms and as percentage changes in real income in 2015.

Column (a)1 of Table 6 suggests that agricultural liberalisation using the harmonising formula (scenario 1) would generate a global gain of US$75 billion even without the inclusion of non-agricultural tariff reform. However, almost all those benefits accrue to the reforming high income countries (with whom we include protective Korea and Taiwan as well as Hong Kong and Singapore in this and subsequent tables) such that developing countries would gain only US$9 billion because their tariff-binding overhang is so great as to lead to almost no cuts in their applied tariffs. Were countries allowed to have lesser cuts for even just 2 per cent of their farm products which they declare to be 'sensitive' (and another 2 per cent in developing countries for their 'special' farm products), those global gains would shrink to just US$18 billion and developing countries as a group would be worse off (scenario 2). If such exceptions are to be made, it would be important to exploit the opportunity – provided for in the Doha Ministerial Declaration[20] – to put a cap on bound tariffs. Scenario 3 shows that even a cap as high as 200 per cent, would restore at least half of the welfare gain foregone by allowing such exceptional treatment for 'sensitive' and 'special' farm products.

The final two scenarios add non-agricultural tariff cuts to the agricultural reforms in the preceding scenarios. In scenario 4, lesser cuts are provided for developing countries' non-agricultural tariffs, as is the case for all the preceding agricultural cut scenarios. Even so, the gain to developing countries doubles by adding these non-farm reforms, relative to scenario 1 where only agriculture is cut, contributing one-third of the extra boost to global welfare (US$7.1 billion out of the US$21.6 billion difference between the global gains from scenarios 1 and 4). In scenario 5, the developing (including least developed) countries fully engage in the reform process, foregoing the lesser cuts provided for in scenarios 1 to 4. That boosts their and global welfare substantially, because their cuts in bound tariffs lead to considerably larger cuts in applied tariffs. Nonetheless, the global average merchandise tariff hardly changes if there were just agricultural reform, whereas it falls by almost one-third or 1.5 percentage points when manufacturing is included in the reform package.

Retaining lesser cuts for developing countries as in scenario 4 would yield a global gain of US$96 billion from Doha merchandise liberalisation, which is a

20 *Ministerial Conference: Fourth Session – Ministerial Declaration, Adopted on 14 November 2001*, WTO Doc WT/MIN(01)/DEC/1 (2001).

sizable one-third of what is on the table (the potential welfare gain from full liberalisation of US$287 billion, reported in Table 5). But for developing countries the gain would be only US$16 billion, which is less than one-fifth of that group's potential gain shown in Table 5 of US$86 billion. If developing countries forego the option of reforming less than developed countries, their gain would rise by 42 per cent, or an extra US$7 billion. Much of those gains go to the largest developing economies, but note that, in percentage terms, Sub-Saharan Africa also gains substantially if it liberalises more – contrary to the presumptions of many commentators. By contrast, in scenario 4 the 'Rest of Sub-Saharan Africa' countries simply are not liberalising enough to get sufficient efficiency gains to offset the terms of trade losses suffered either as net food importers, or as recipients of tariff preferences that have eroded with the decline in high income countries' MFN tariffs, or because of the combined export growth from reforming economies with similar export compositions.

How big would be the consequences of partial reform for agricultural net income (value added by the farming sector)? Table 7 shows, not surprisingly, that agricultural value added would fall in those regions with the highest agricultural protection (Europe, Northeast Asia and to a lesser extent the United States). However, in the Doha reform scenario none of the developing countries/regions shown in Table 7 would suffer a decline in agricultural net income, despite the lowering of their own agricultural tariffs. The reason for their farmers faring better than protected rich country farmers – even though the average agricultural tariff in developing countries is nearly as high as that in high income countries (14.2 per cent compared with 15.9 per cent in the baseline) – is because a much larger proportion of developing country agriculture is producing exportables that do not have to be protected from imports.

V IMPLICATIONS FOR DEVELOPING COUNTRIES

To realise those potential gains from Doha, it is in agriculture that by far the greatest cuts in bound tariffs and subsidies are required. However, the political sensitivity of farm support programs, coupled with the complexities of the measures introduced in the Uruguay Round's *Agreement on Agriculture*[21] and of the modalities set out in the Doha Ministerial Declaration, ensure the devil will be in the details of the final Doha agreement. Outlawing agricultural export subsidies is the obvious first step. That will help bring agriculture into line with other sectors, and in the process help to limit the extent to which governments encourage agricultural production by other means (since it would remove one option for, and hence raise the cost of, surplus disposal). Concurrently, domestic support bindings must be cut very substantially to reduce binding overhang. Even more importantly, agricultural tariff bindings must be cut hugely so that some genuine market opening can occur. Yet allowing lesser cuts for even just a few 'sensitive' and 'special' farm products would reduce hugely the gains from reform, given the tariff peaks currently in place. If it turns out to be politically

21 *WTO Agreement*, above n 1, annex 1A (*Agreement on Agriculture*) 1867 UNTS 410.

impossible not to designate some products as 'sensitive' and 'special', the resulting welfare cost could be reduced by imposing a tariff cap such that any product with a bound tariff in excess of, say, 100 per cent would have to reduce it to that cap rate. Expanding non-agricultural market access at the same time as reforming agriculture would increase the prospects for a successful conclusion to the DDA.

An essential part of the DDA is South–South 'concessions', especially for developing countries, because that is where half their potential benefits lie. That means reconsidering the extent to which developing countries liberalise. Since developing countries are trading so much more with each other now than in the 1980s, they are the major beneficiaries of reforms within their own regions. Even LDCs need to consider reducing their tariff-binding overhang at least, since doing that in the context of the Doha round gives them more scope to demand 'concessions' (or compensation for preference erosion or other contributors to terms of trade deterioration) from richer countries than if they hang on to the opportunity, provided in the July 2004 Framework, not to engage in reform. What emerges from the above analysis is that developing countries would not *have* to reduce actual applied tariffs very much under Doha, because of the large gaps between their tariff bindings and applied rates. However, to realise more of their potential gains from trade, they would need to commit to additional trade (and complementary domestic) reforms, and to invest more in trade facilitation. High income countries could encourage them to do so not only by being willing to open up their own markets more to developing country exports but also by providing more targeted aid.

VI CONCLUSION

Even with the above reforms, numerous discriminatory features in agricultural markets will remain and others will be added – despite non-discrimination being a core WTO guiding principle. They include the continuing use of tariff rate quotas (for which no appetite for abolition has emerged, thanks to the rents they generate for exporters), the broadening of SDT for developing and least developed countries, the offering by a greater number of high income countries of duty-free access for UN-designated LDCs (thereby harming the much larger number of producers in other low income countries), the formal exceptional treatment of an as-yet-unspecified number of 'sensitive' and 'special' agricultural products that will be subjected to less reform, and a prospective broadening of the use of geographical indications beyond wine and spirits.

Furthermore, new forms of agricultural protectionism have been emerging. Food safety concerns have been used to erect barriers that discriminate against countries that adopt some new agricultural technologies (most notably the use of animal growth hormones and of transgenic varieties of crop seeds). Environmental, food security and regional development concerns also have been

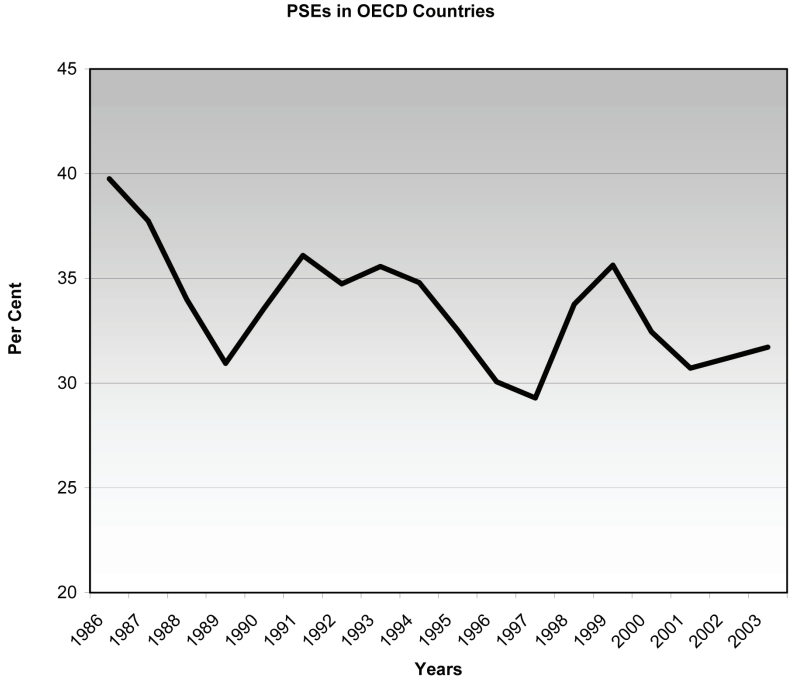
used to justify greater supports for farmers (under the name of agricultural 'multifunctionality').[22]

Behind these clouds are some silver linings though. One of the benefits of countries opening up to foreign direct investment over the past two decades has been the global supermarket revolution. This is affecting not just the retailing of food but also the ways in which farm products are procured, processed, transported and distributed potentially throughout the year even for seasonal fresh fruits and vegetables.[23] The multinational firms involved in this revolution will be imposing high standards on farmers, but at the same time they are a force for greater market access opening in importing countries and for greater rural infrastructure in exporting countries. The gradual 'thickening' of international markets for horticultural and other farm products that will result from this trend will bring greater stability to international food prices, further reducing the need for countries to maintain trade barriers for domestic market stabilisation reasons.

22 Timothy E Josling, Stefan Tangermann and Thorald K Warley, *Agriculture in the GATT* (1996), 232–41; Kym Anderson, 'Bringing Discipline to Agricultural Policy via the WTO', in Kym Anderson and Timothy E Josling (eds), *The WTO and Agriculture, Vol. 2* (2005), 124.

23 Kym Anderson, 'Measuring Distortions to Agricultural Incentives: Beyond Tariffs' (Paper presented at the Summer Symposium of the International Agricultural Trade Research Consortium (IATRC), Gustav-Stresemann-Institut (GSI), Bonn, Germany, 28–30 May 2006) 10.

Figure 1: Farm producer support estimate ('PSE'), high income (OECD member) countries, 1986 to 2003



Source: *Producer and Consumer Support Estimates, OECD Database 1986–2003* (2004) Organisation for Economic Co-operation and Development <http://www.oecd.org/document/58/0,2340,en_2649_37401_32264698_119656_1_1_37401,00.html> at 1 July 2007.

Table 1: Agricultural indicators for developed market economies, Europe's economies in transition, and developing economies

	GNP per capita (US$)	Population (billions)	Agricultural workforce (millions)	Agriculture's share of GDP (%)	Agric. GDP at int'l prices (US$ bln)	Agr. land per capita (ha)	Agr. land per farm worker (ha)	Agricultural exports fob (US$ bln) [& exports as % of agric GDP]	Agricultural imports fob (US$ bln)
	2001	2001	2001	2001	2002	2001	2001	1999–2001	1999–2001
Developed market economies	28,100	0.9	14	2.1	360	1.27	78.3	274 [75%]	267
Europe's transition economies	1,940	0.4	31	8.2	75	1.54	20.4	15 [20%]	24
Subtotal	*19,770*	*1.3*	*45*	*2.6*	*435*	*1.36*	*38.5*	*289 [67%]*	*290*
Developing economies	1,270	4.9	1,282	11.9	615	0.67	2.5	125 [20%]	124
WORLD	**5,230**	**6.1**	**1,327**	**6.2**	**1050**	**0.82**	**3.8**	**414 [40%]**	**414**

Source: Food and Agriculture Organization of the United Nations, *The State of Food and Agriculture 2003–2004* (2004) <http://www.fao.org/docrep/006/Y5160E/Y5160E00.HTM> at 30 July 2007.

Table 2: Agricultural weighted average import tariffs, by region, 2001
(per cent, *ad valorem* equivalent, weights based on imports)

	Bound tariff	MFN applied tariff	Actual applied tariff[a]
Developed countries	27	22	14
Developing countries	48	27	21
of which: LDCs	*78*	*14*	*13*
WORLD	37	24	17

[a] Includes preferences and in-quota TRQ rates where relevant, as well as the ad valorem equivalent of specific tariffs. Developed countries include Europe's transition economies that joined the European Union in April 2004. The 'developing countries' definition used here is that adopted by the WTO and so includes East Asia's four newly industrialised economies.

Source: Sebastien Jean, David Laborde and Will Martin, 'Consequences of Alternative Formulas for Agricultural Tariff Cuts', in Kym Anderson and Will Martin (eds), *Agricultural Trade Reform and the Doha Development Agenda* (2006) 81, Table 4.2.

Table 3: Import-weighted average applied tariffs, by sector and region, 2001
(per cent)

Importing region:	Agric and Processed food	Other primary	Other manufactures
High income countries	**16.2**	**1.0**	**1.9**
Developing countries	**17.9**	**6.5**	**10.1**
Asia	**29.2**	**8.2**	**12.3**
China	37.6	5.9	13.1
Indonesia	5.0	3.4	5.0
Malaysia	17.1	5.1	4.6
Philippines	9.5	3.6	2.2
Singapore	0.4	0.0	0.0
Thailand	29.4	4.6	9.6
Vietnam	36.6	10.0	15.4
Bangladesh	12.6	22.8	19.3
India	50.2	21.2	27.6
Sri Lanka	14.4	5.9	4.6
Latin America & Car.	**10.1**	**5.1**	**7.8**
Mexico	11.5	4.4	4.5
Colombia	10.3	7.6	9.8
Peru	15.9	9.9	11.6
Venezuela	11.8	12.2	12.2
Rest of Andean Pact	9.6	6.3	7.7
Argentina	6.9	6.3	10.7
Brazil	5.0	3.7	11.3
Chile	6.8	6.9	6.3
Uruguay	4.1	2.7	7.8
Rest of South America	8.9	3.6	7.4
Central America	8.6	4.0	7.7
Rest of FTAA	14.0	8.4	11.0
Rest of the Caribbean	10.4	2.4	10.0
Africa	**19.3**	**12.5**	**17.2**
Morocco	29.3	15.2	21.9
Tunisia	51.7	11.3	13.2
Botswana	4.5	0.5	2.2
South Africa	8.9	2.4	7.3
Malawi	11.1	7.0	10.4
Mozambique	13.3	6.7	10.2
Tanzania	19.2	10.4	14.0
Zambia	9.4	6.7	8.3
Zimbabwe	27.2	8.5	13.6
Madagascar	3.7	1.7	4.0
Uganda	8.2	4.5	5.4
Rest of Sth African CU	4.8	1.2	2.9
Rest of SADC	27.2	15.9	21.1
Rest of Sub-Saharan Afr	21.4	14.9	15.2
Rest of North Africa	10.4	15.5	25.4

Source: GTAP Version 6.05 database, *Global Trade Analysis Project* (2007) <http://www.gtap.org> at 13 August 2007.

Table 4: Effects of full liberalisation of global agricultural and other merchandise trade on agricultural value added, by country/region, 2015
(relative to baseline, 2001 dollars and per cent)

	US$ billion			per cent		
	Developing country agr & food policies	High income country agr & food policies	All goods trade policies	Developing country agr & food policies	High income country agr & food policies	All goods trade policies
Australia and New Zealand	2.5	3.2	6.4	10.1	13.0	25.6
EU 25 plus EFTA	7.3	-42.0	-39.1	4.9	-28.3	-26.4
United States	5.1	-20.7	-18.2	4.2	-17.0	-15.0
Canada	2.0	1.4	3.4	13.3	9.6	23.3
Japan	0.2	-17.7	-17.7	0.4	-39.6	-39.5
Korea and Taiwan	0.5	-10.1	-9.5	1.7	-35.4	-33.3
Hong Kong and Singapore	0.1	0.1	0.1	3.6	5.0	7.5
Argentina	0.4	4.9	6.1	2.1	27.4	33.8
Bangladesh	-0.4	0.2	-0.5	-3.3	1.7	-4.4
Brazil	0.0	15.1	15.1	0.1	46.2	46.3
China	-16.3	13.3	0.3	-3.8	3.1	0.1
India	-17.3	2.9	-17.1	-8.2	1.4	-8.1
Indonesia	-0.1	1.0	0.8	-0.4	3.3	2.7
Thailand	1.1	3.1	3.8	7.2	20.4	25.0
Vietnam	0.9	0.3	0.8	14.5	5.7	13.6
Russia	-1.8	0.7	-1.4	-8.4	3.2	-6.5
Mexico	-3.8	7.9	0.9	-9.9	20.9	2.5
South Africa	0.1	0.4	0.5	1.3	7.8	9.6
Turkey	-2.9	0.9	-2.0	-10.3	3.0	-7.2
Rest of South Asia	-1.7	1.2	-0.6	-3.7	2.7	-1.3
Rest of East Asia	-1.4	1.2	-0.2	-5.5	4.6	-0.7
Rest of LAC	1.9	19.7	22.9	2.5	26.0	30.2
Rest of ECA	-2.1	1.4	-1.1	-3.3	2.3	-1.8
Middle East and North Africa	-4.8	6.2	0.3	-4.4	5.6	0.3
Selected SSA countries	0.4	1.1	1.5	2.7	6.5	9.1
Rest of Sub Saharan Africa	-0.7	3.0	2.3	-1.7	7.2	5.4
Rest of the World	0.7	2.5	3.1	3.4	13.2	16.4
High-income countries	**17.6**	**-85.8**	**-74.6**	**4.6**	**-22.3**	**-19.4**
Developing countries	**-47.9**	**87.1**	**35.6**	**-3.9**	**7.0**	**2.9**
Middle-income countries	-29.6	74.8	45.3	-3.4	8.7	5.3
Low-income countries	-18.2	12.3	-9.7	-4.8	3.2	-2.5
East Asia and Pacific	-15.8	18.9	5.5	-3.2	3.8	1.1
South Asia	-19.4	4.4	-18.1	-7.2	1.6	-6.8
Europe and Central Asia	-6.8	3.0	-4.5	-6.0	2.6	-4.0
Middle East and North Africa	-4.8	6.2	0.3	-4.4	5.6	0.3
Sub Saharan Africa	-0.2	4.5	4.3	-0.3	7.1	6.7
Latin America and the Caribbean	-1.4	47.7	45.0	-0.9	29.0	27.4
World total	-30.3	1.3	-39.0	-1.9	0.1	-2.4

Source: Kym Anderson, Will Martin and Dominique van der Mensbrugghe, 'Distortions to World Trade: Impacts on Agricultural Markets and Farm Incomes' (2006) 28 *Review of Agricultural Economics* 168, Table 12.

Table 5: Regional and sectoral source of gains from full liberalisation of global merchandise trade and agricultural subsidy policies, developing and high income countries, 2015

(Change in real income in 2015 relative to baseline scenario)

	Gains by region in US$ billion			Per cent of regional loss				
	All devel-oping	All high income	World	All devel-oping	Middle-income	Sub-Saharan Africa	All high income	World
Developing countries liberalise:								
Agriculture and food	28	19	47	33	*34*	*35*	9	17
Textiles and clothing	9	14	23	10	*12*	*11*	7	8
Other merchandise	6	52	58	7	*1*	*14*	26	20
All sectors	43	85	128	50	*47*	*60*	42	45
High income countries liberalise:								
Agriculture and food	26	109	135	30	*31*	*43*	54	47
Textiles and clothing	13	2	15	15	*15*	*-0*	1	5
Other merchandise	4	5	9	5	*7*	*-3*	2	3
All sectors	43	116	159	50	*53*	*40*	57	55
All countries liberalise:								
Agriculture and food	54	128	182	63	*65*	*78*	64	63
Textiles and clothing	22	16	38	25	*27*	*11*	8	14
Other merchandise	10	57	67	12	*8*	*11*	28	23
All sectors	86	201	287	100	*100*	*100*	100	100

[a] Small interaction effects are distributed proportionately and numbers are rounded to sum to 100 per cent

Source: Kym Anderson, Will Martin and Dominique van der Mensbrugghe, 'Distortions to World Trade: Impacts on Agricultural Markets and Farm Incomes' (2006) 28 *Review of Agricultural Economics* 168, Table 4.

Table 6: Change in real income in alternative Doha scenarios, 2015
(2001 US$ billion and percentage changes from baseline)

	(a) Dollar change					(b) Percentage change				
	Scen. 1	Scen. 2	Scen. 3	Scen. 4	Scen. 5	Scen. 1	Scen. 2	Scen. 3	Scen. 4	Scen. 5
Australia & New Zealand	2.0	1.1	1.2	2.4	2.8	0.35	0.20	0.20	0.42	0.48
EU 25 plus EFTA	29.5	10.7	10.9	31.4	35.7	0.29	0.11	0.11	0.31	0.36
United States	3.0	2.3	2.1	4.9	6.6	0.02	0.02	0.01	0.03	0.05
Canada	1.4	0.5	0.4	0.9	1.0	0.15	0.05	0.05	0.10	0.11
Japan	18.9	1.8	12.9	23.7	25.4	0.38	0.04	0.26	0.48	0.51
Korea and Taiwan	10.9	1.7	15.9	15.0	22.6	0.86	0.13	1.26	1.19	1.79
Hong Kong and Singapore	-0.1	-0.1	-0.2	1.5	2.2	-0.02	-0.03	-0.04	0.35	0.52
Argentina	1.3	1.0	1.0	1.3	1.6	0.32	0.26	0.26	0.34	0.39
Bangladesh	0.0	0.0	0.0	-0.1	-0.1	-0.06	-0.03	-0.04	-0.10	-0.09
Brazil	3.3	1.1	1.1	3.6	3.9	0.50	0.16	0.17	0.55	0.59
China	-0.5	-1.5	-1.1	1.7	1.6	-0.02	-0.06	-0.04	0.07	0.06
India	0.2	0.2	0.2	2.2	3.5	0.02	0.03	0.02	0.25	0.40
Indonesia	0.1	0.2	0.0	1.0	1.2	0.05	0.07	0.01	0.37	0.44
Thailand	0.9	0.6	0.8	2.0	2.7	0.43	0.29	0.38	0.99	1.33
Vietnam	-0.1	0.0	-0.1	-0.5	-0.6	-0.20	-0.09	-0.16	-0.83	-0.97
Russia	-0.3	-0.7	-0.7	0.8	1.5	-0.06	-0.16	-0.15	0.16	0.31
Mexico	-0.2	-0.3	-0.3	-0.9	-0.2	-0.02	-0.04	-0.04	-0.11	-0.02
South Africa	0.1	0.3	0.3	0.4	0.7	0.06	0.17	0.17	0.25	0.49
Turkey	0.6	0.0	0.0	0.7	1.4	0.25	0.02	0.02	0.26	0.55
Rest of South Asia	0.2	0.1	0.2	0.3	0.7	0.13	0.05	0.14	0.17	0.39
Rest of East Asia	0.1	0.0	1.0	0.3	0.6	0.02	0.01	0.36	0.09	0.22
Rest of LAC	3.7	0.5	0.4	3.9	4.0	0.44	0.06	0.04	0.46	0.47
Rest of ECA	-0.2	-0.3	-0.2	-0.6	-0.7	-0.06	-0.09	-0.08	-0.22	-0.26
Middle East & N. Africa	-0.8	-1.2	-1.2	-0.6	0.1	-0.07	-0.10	-0.10	-0.05	0.01
Selected SSA countries	0.1	0.0	0.0	0.1	0.2	0.21	-0.02	-0.05	0.19	0.26
Rest of Sub-Saharan Africa	0.0	-0.3	-0.3	-0.1	0.3	0.02	-0.13	-0.14	-0.02	0.13
Rest of the World	0.4	0.0	0.0	0.6	0.6	0.19	0.00	0.02	0.26	0.28
High-income countries	**65.6**	**18.1**	**43.2**	**79.9**	**96.4**	**0.20**	**0.06**	**0.13**	**0.25**	**0.30**
WTO Dev. countries	**19.7**	**1.2**	**16.8**	**32.6**	**47.7**	**0.17**	**0.01**	**0.14**	**0.27**	**0.40**
Developing countries (WB)	**9.0**	**-0.4**	**1.1**	**16.1**	**22.9**	**0.09**	**0.00**	**0.01**	**0.16**	**0.22**
Middle-income countries	8.0	-0.5	1.0	12.5	17.1	0.10	-0.01	0.01	0.15	0.21
Low-income countries	1.0	0.1	0.0	3.6	5.9	0.05	0.01	0.00	0.18	0.30
East Asia and Pacific	0.5	-0.8	0.6	4.5	5.5	0.01	-0.02	0.02	0.13	0.16
South Asia	0.4	0.3	0.4	2.5	4.2	0.03	0.03	0.03	0.21	0.36
Europe and Central Asia	0.1	-0.9	-0.9	0.8	2.1	0.01	-0.09	-0.09	0.08	0.21
Middle East & N. Africa	-0.8	-1.2	-1.2	-0.6	0.1	-0.07	-0.10	-0.10	-0.05	0.01
Sub-Saharan Africa	0.3	0.0	-0.1	0.4	1.2	0.06	-0.01	-0.02	0.10	0.27
Lat. America & the Carib.	8.1	2.3	2.1	7.9	9.2	0.29	0.08	0.08	0.29	0.33
World total	**74.5**	**17.7**	**44.3**	**96.1**	**119.3**	**0.18**	**0.04**	**0.10**	**0.23**	**0.28**

Source: Kym Anderson, Will Martin and Dominique van der Mensbrugghe, 'Doha Merchandise Trade Reform: What's at Stake for Developing Countries?' (2006) 20 *World Bank Economic Review* 169, Table 3.

Table 7: Impact of reform scenarios on agricultural value added, 2015

(changes in value added relative to baseline, 2001 dollars and per cent)

	US$ billion		per cent change	
	Full global liberalisation	Scenario 4	Full global liberalisation	Scenario 4
Australia and New Zealand	6.4	2.4	25.6	9.8
EU 25 plus EFTA	-39.1	-20.4	-26.4	-13.8
United States	-18.2	-6.3	-15.0	-5.2
Canada	3.4	0.9	23.3	5.8
Japan	-17.7	-7.4	-39.5	-16.6
Korea and Taiwan	-9.5	-3.4	-33.3	-12.1
Hong Kong and Singapore	0.1	0.0	7.5	1.4
Argentina	6.1	1.7	33.8	9.4
Bangladesh	-0.5	0.0	-4.4	0.4
Brazil	15.1	5.5	46.3	16.7
China	0.3	1.8	0.1	0.4
India	-17.1	0.4	-8.1	0.2
Indonesia	0.8	0.5	2.7	1.7
Thailand	3.8	1.1	25.0	7.2
Vietnam	0.8	0.0	13.6	0.3
Russia	-1.4	-0.2	-6.5	-0.8
Mexico	0.9	1.2	2.5	3.2
South Africa	0.5	0.1	9.6	1.2
Turkey	-2.0	-0.1	-7.2	-0.3
Rest of South Asia	-0.6	0.8	-1.3	1.8
Rest of East Asia	-0.2	0.5	-0.7	1.9
Rest of LAC	22.9	8.4	30.2	11.1
Rest of ECA	-1.1	-0.1	-1.8	-0.2
Middle East and North Africa	0.3	1.0	0.3	0.9
Selected SSA countries	1.5	0.3	9.1	1.7
Rest of Sub-Saharan Africa	2.3	0.8	5.4	1.9
Rest of the World	3.1	1.0	16.4	5.4
High-income countries	**-74.6**	**-34.2**	**-19.4**	**-8.9**
Developing countries (WB)	**35.6**	**24.8**	**2.9**	**2.0**
Middle-income countries	45.3	20.9	5.3	2.4
Low-income countries	-9.7	3.9	-2.5	1.0
East Asia and Pacific	5.5	3.9	1.1	0.8
South Asia	-18.1	1.2	-6.8	0.5
Europe and Central Asia	-4.5	-0.3	-4.0	-0.3
Middle East and North Africa	0.3	1.0	0.3	0.9
Sub-Saharan Africa	4.3	1.1	6.7	1.8
Latin America and the Caribbean	45.0	16.7	27.4	10.2
World total	**-39.0**	**-9.5**	**-2.4**	**-0.6**

Source: Kym Anderson, Will Martin and Dominique van der Mensbrugghe, 'Doha Merchandise Trade Reform: What's at Stake for Developing Countries?' (2006) 20 *World Bank Economic Review* 169, Table 4.