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Agricultural Policy as a Barrier to Global Economic Integration

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Agricultural Policy as a Barrier to Global Economic Integration

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Abstract

For decades, trade between countries in agricultural products has been distorted by policies of richer countries favoring their farmers with import barriers and subsidies. Agricultural trade has often also been limited by an anti-agricultural, pro-urban bias in many developing country policies. Both sets of policies have reduced national and global economic welfare. They also have added to inequality and poverty in developing countries, because three-quarters of the world's billion poorest people depend on farming for their livelihood. Over the past two decades numerous developing country governments have reduced their sectoral and trade policy distortions, while some high-income countries also have begun reforming their farm protectionist policies. Drawing on results from a new multi-country World Bank research project, this paper summarizes estimates of the extent of those distortions to prices of farm products over the past 5 decades, and of their effect in reducing the integration of the world's agricultural markets.

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Agricultural Policy as a Barrier to Global Economic Integration

While the benefits from specialization in production and international exchange have been recognized for millennia, most governments restrict international trade to some extent, especially in agricultural goods. Sometimes it would be via export taxes, to raise government revenue or to lower the price of food for domestic consumers. More commonly it takes the form of import duties or bans. While food security concerns are sometimes mentioned as a reason for intervention in both sets of countries, for advanced economies the most likely reason for farm trade restrictions in the past century or more has been to protect domestic producers from import competition as they come under competitive pressure to shed labor in the course of economic development. In the process those protective measures hurt not only domestic consumers and exporters of other products but also foreign producers and traders of farm products, and they reduce national and global economic welfare. For many decades agricultural protection and subsidies in high-income (and some middle-income) countries have been depressing international prices of farm products, which lowers the earnings of farmers and associated rural businesses in developing countries. That worsened between the 1950s and the early 1980s (Anderson, Hayami and Others 1986), thereby adding to global inequality and poverty because three-quarters of the world's poorest people depend directly or indirectly on agriculture for their main income (World Bank 2008).

In addition to this external policy influence on rural poverty, the governments of many developing countries have directly taxed their farmers over the past half-century. A well-known example is the taxing of exports of plantation crops in post-colonial Africa (Bates 1981). At the same time, many developing countries chose also to pursue an import-

substituting industrialization strategy, predominantly by restricting imports of manufactures, and to overvalue their currency. Together those measures indirectly taxed producers of other tradable products in developing economies, by far the most numerous of them being farmers (Krueger, Schiff and Valdés 1988, 1991).

Thus the global integration of markets for farm products has been reduced by policies of both high-income and developing countries. This disarray in world agriculture, as D. Gale Johnson (1991) described it in the title of his seminal book, means there has been over-production of farm products in high-income countries and under-production in more-needy developing countries. It also means there has been less international trade in farm products than would be the case under free trade, thereby thinning markets for these weather-dependent products and thus making them more volatile. Using a stochastic model of world food markets, Tyers and Anderson (1992, Table 6.14) found that instability of international food prices in the early 1980s was three times greater than it would have been under free trade in those products.

During the past quarter century, however, numerous countries have begun to reform their agricultural price and trade policies. To get a sense of how much that has increased the integration of global markets for farm products, the present chapter draws on the results of the recent World Bank multi-country study of distortions to agricultural price incentives over the past 5 decades. That study includes 75 countries that together account for 92 percent of the world's population and agricultural GDP and 95 percent of total GDP. The sample countries also account for more than 85 percent of farm production and employment in each of Africa, Asia, Latin America and the transition economies of Europe and Central Asia, and their spectrum of per capita incomes ranges from among the poorest (Zimbabwe and Ethiopia) to among the richest (Norway).

Specifically, this chapter summarizes estimates of the nominal rates of assistance and consumer tax equivalents (NRAs and CTEs) for more than 70 different farm products, with an average of almost a dozen per country.[1] Not all countries had data for the entire 1955-2007 period, but the average number of years covered is 41 per country. Having such a comprehensive coverage of countries, products and years offers the prospect of obtaining a reliable picture of long-term trends in price-distorting policies (as well as annual fluctuations around those trends, not reported here) for country groups, regions, and the world as a whole (as well as for individual countries and commodities, also not reported here because of space limitations).

The chapter begins with the methodology used to generate annual indicators of the extent of government interventions in markets, details of which are provided in Anderson et al. (2008). The NRA and CTE estimates are then summarized across regions and over the decades since the 1950s. A summary is also provided of an additional set of indicators of agricultural price distortions that are based on the trade restrictiveness index first developed by Anderson and Neary (2005) and modified for the Bank's research project by Lloyd, Croser and Anderson (2009). Then a new set of results from a global economy-wide model provide quantification of the impacts on global agricultural trade of the reforms since the early 1980s and of the policies still in place as of 2004. The chapter concludes by drawing on the lessons learned to speculate on the prospects for further increasing the global integration of agricultural markets.

Methodology for measuring the extent of policy induced price distortions

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[1] In aggregate the coverage represents just under two-thirds of global farm production valued at undistorted prices over the period covered. Of the world's 30 most valuable agricultural products, the NRAs cover 77 percent of global output, ranging from two-thirds for livestock, three-quarters for oilseeds and tropical crops, and five-sixths for grains and tubers. Those products represent an even higher share (85 percent) of global agricultural exports.

Government-imposed distortions can create a gap between domestic prices and what they would be under free markets. The Nominal Rate of Assistance (NRA) for each farm product is computed as the percentage by which government policies have raised gross returns to farmers above what they would be without the government's intervention (or lowered them, if NRA<0). A weighted average NRA for all covered products is derived using the value of production at undistorted prices as weights (unlike the producer and consumer support estimates (PSEs and CSEs) computed by OECD (2008), which are expressed as a percentage of the distorted price). To that NRA for covered products is added a 'guesstimate' of the NRA for non-covered products (on average around 30 percent of the total value of farm production) and an estimate of the NRA from non-product-specific forms of assistance or taxation. Since the 1980s some high-income governments have also provided so-called 'decoupled' assistance to farmers but, because that support in principle does not distort resource allocation, its NRA has been computed separately and is not included for direct comparison with the NRAs for other sectors or for developing countries. Each farm industry is classified either as import-competing, or a producer of exportables, or as producing a nontradable (with its status sometimes changing over the years), so as to generate for each year the weighted average NRAs for the two different groups of covered tradable farm products.

Also computed is a production-weighted average NRA for nonagricultural tradables, for comparison with that for agricultural tradables via the calculation of a percentage Relative Rate of Assistance (RRA), defined as:

$$RRA = 100*[(100+NRAag^t)/(100+NRAnonag^t)-1]$$

where NRAag^t and NRAnonag^t are the percentage NRAs for the tradables parts of the agricultural (including non-covered) and non-agricultural sectors, respectively.[2] Since the NRA cannot be less than -100 percent if producers are to earn anything, neither can the RRA (since the weighted average NRAnonag^t is non-negative in all our country case studies). And if both of those sectors are equally assisted, the RRA is zero. This measure is useful in that if it is below (above) zero, it provides an internationally comparable indication of the extent to which a country's sectoral policy regime has an anti- (pro-)agricultural bias.

Also considered is the extent to which consumers are taxed or subsidized. To do so, a Consumer Tax Equivalent (CTE) is calculated by comparing the price that consumers pay for their food and the international price of each food product at the border. Differences between the NRA and the CTE arise from distortions in the domestic economy that are caused by transfer policies and taxes/subsidies that cause the prices paid by consumers (adjusted to the farmgate level) to differ from those received by producers. In the absence of any other information, the CTE for each tradable farm product is assumed to be the same as the NRA from border distortions.

The cost of government policy distortions to incentives in terms of resource misallocation tend to be greater the greater the degree of substitution in production. In the case of agriculture which involves the use of farm land that is sector-specific but transferable among farm activities, the greater the variation of NRAs across industries within the sector then the higher will be the welfare cost of those market interventions. A simple indicator of dispersion is the standard deviation of the covered industries' NRAs.

However, it would be helpful to have a single indicator to capture the overall welfare effect of each country's regime of agricultural price distortions in place at any time (taking

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[2] Farmers are affected not just by prices of their own products but also by the incentives nonagricultural producers face. That is, it is *relative* prices and hence *relative* rates of government assistance that affect producer incentives. More than seventy years ago Lerner (1936) provided his Symmetry Theorem that proved that in a two-sector economy, an import tax has the same effect as an export tax. This carries over to a model that also includes a third sector producing only nontradables.

account of both the mean and variance of the product NRAs and CTEs), and to trace its path over time and make cross-country comparisons. From the viewpoint of global integration, an index of the international trade volume effect of of national government interventions also would be helpful. To that end, the family of indexes first developed by Anderson and Neary (2005), under the catch-all name of trade restrictiveness indexes, is drawn upon.

To generate partial equilibrium indicators of the impact of distortions imposed by each country's border and domestic agricultural policies on its economic welfare and its agricultural trade volume, Lloyd, Croser and Anderson (2009) define a Welfare Reduction Index (WRI) and a Trade Reduction Index (TRI) and estimate them for the same focus countries, taking into account that for some covered products the NRA and CTE differ (because there are domestic measures in place in addition to or instead of trade measures). As their names suggest, these two new indexes respectively each provide a single indicator of the direct welfare- or trade-reducing effects of distortions to consumer and producer prices of covered farm products from all agricultural and food price and trade policy measures in place (while ignoring non-covered farm products and indirect general equilibrium effects of sectoral and trade policy measures directed at non-agricultural sectors). Specifically, the WRI (or TRI) is that ad valorem trade tax rate which, if applied uniformly to all farm commodities in a country that year would generate the same reduction in economic welfare (or trade) as the actual cross-commodity structure of agricultural NRAs and CTEs for that country, other things equal.

The WRI measure reflects the partial equilibrium welfare cost of agricultural price-distorting policies better than the NRA because it recognizes that the welfare cost of a government-imposed price distortion is related to the square of the price wedge. It thus captures the disproportionately higher welfare costs of peak levels of assistance or taxation, and is larger than the mean NRA/CTE and is positive regardless of whether the government's

agricultural policy is favoring or hurting farmers. In this way the WRI and TRI go somewhat closer to what a computable general equilibrium (CGE) model can provide in the way of estimates of the trade and welfare (and other) effects of the price distortions captured by the product NRA and CTE estimates, while having the advantage over a CGE model of providing an annual time series and not requiring a formal model.

Empirical estimates: muted global integration to the 1980s, but then some reforms

The study launched by the World Bank in 2006 involved 75 countries (including 20 high-income countries) that together account for more than 90 per cent of the world's population and agricultural GDP. The global summary of these new results is provided in Figure 1. It reveals that the nominal rate of assistance to farmers in high-income countries rose steadily from the mid-1950s until the end of the 1980s, apart from a small dip when international food prices spiked around 1973-74. After peaking at more than 50 per cent in the mid-1980s, that average NRA for high-income countries has fallen a little, depending on the extent to which one believes that some new farm programs are 'decoupled' in the sense of no longer influencing production decisions. For developing countries, too, the average NRA for agriculture has been rising, but from a level of around −25 per cent during the period from the mid-1950s to the early 1980s to nearly 10 per cent in the first half of the present decade.

The average NRA for developing countries conceals the fact that the exporting and import-competing subsectors of agriculture have very different NRAs. Figure 2 reveals that while the average NRA for exporters has been negative throughout (going from −20 per cent to −30 per cent before coming back up to almost zero in 2000-04), the NRA for import-competing farmers in developing countries has fluctuated between 20 and 30 per cent (and even reached 40 per cent in the years of low prices in the mid-1980s). Having increased in the

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1960s and 1970s, the anti-trade bias within agriculture (the taxing of both exports and imports of farm products) for developing countries has diminished since the mid-1980s, but the NRA gap between the import-competing and export subsectors still averages around 20 percentage points.

Figure 2 also reveals that the NRA for import-competing farmers in developing countries has increased at virtually the same pace as that in high-income countries. This suggests that growth in agricultural protection is something that begins at relatively low levels of per capita income rather than being a phenomenon exclusive to high-income countries.

The improvement in farmers' incentives in developing countries is understated by the above NRA estimates, because those countries have also reduced their assistance to producers of non-agricultural tradable goods, most notably manufactures. The decline in the weighted average NRA for the latter, depicted in Figure 3, was clearly much greater than the increase in the average NRA for tradable agricultural sectors for the period to the mid-1980s, consistent with the finding two decades ago of Krueger, Schiff and Valdés (1988, 1991). For the period since the mid-1980s, changes in the NRAs of both sectors have contributed almost equally to the improvement in incentives to farmers. The RRA, defined in the previous section, provides a useful indicator of relative price change: the RRA for developing countries as a group went from −46 per cent in the second half of the 1970s to 1 per cent in the first half of the present decade. This increase (from a coefficient of 0.54 to 1.01) is equivalent to an almost doubling in the relative price of farm products, which is a huge change in the fortunes of developing country farmers in just a generation. This is mostly because of the changes in Asia, but this relative price hike even for Latin America is one-half, while for Africa this indicator improves by only one-eighth. As for high-income countries, assistance to manufacturing was on average much less than assistance to farmers, even in the

1950s, and its decline since then has had only a minor impact on that group's average RRA (Figure 3).[3]

Turning to the single indicators of the impact of agricultural distortions on national economic welfare and trade volume, Lloyd, Croser and Anderson (2009) estimate their TRI and WRI for the 75 countries in the above-mentioned World Bank study. The TRI estimates indicate that the trade-reducing impact of agricultural policies for developing countries as a group was roughly constant until the early 1990s and thereafter it declined, while for high-income countries the decline in TRI began a few years later (Figure 4(a)). The TRI for developing countries is driven by the exportables subsector which was being taxed until recently and the import-competing subsector which was and is increasingly being protected (albeit less than in high-income countries – see Figure 2 above). For high-income countries, policies have supported both exporting and import-competing agricultural products and, even though they strongly favor the latter, the assistance to exporters has offset somewhat the anti-trade bias from the protection of import-competing producers.

The WRI estimates for agricultural policies, shown in Figure 4(b), indicate a steady rise from the 1960s to the 1980s, but some decline in the 1990s. This reflects the fact that NRAs for high-income and developing countries diverged (in opposite directions) away from zero in the first half of the period under study and then converged toward zero in the most recent quarter-century. That meant that, while their weighted average NRA traces out a fairly flat trend, the WRI traces out a hill-shaped path and thus provides a less misleading indicator of the trend in resource misallocation in world agricultural markets.

Effects of past reforms and of remaining policies: results of economy-wide modelling

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[3] Australia and New Zealand were clear exceptions, where manufacturing protection had been very high and its decline occurred several decades later than in other high-income countries, so their RRAs have risen much like the average for developing countries (Anderson, Lloyd and MacLaren 2007).

It is clear from the above that there has been a great deal of reform over the past quarter of a century of policy distortions to agricultural incentives throughout the world: the anti-agricultural and anti-trade biases of the policies of many developing countries have been reduced, and the farm export subsidies of high-income countries have been cut. As well, there has been some re-instrumentation toward less inefficient and less trade-distorting forms of agricultural support, particularly in Western Europe (see the dashed line in Figure 1). However, protection from agricultural import competition has continued to show an upward trend in both rich and poor countries, notwithstanding the Uruguay Round Agreement on Agriculture that aimed to bind and reduce farm tariffs.

What have been the net economic effects of agricultural price and trade policy changes around the world since the early 1980s? And how do those effects on global markets, farm incomes and economic welfare compare with the effects of policy distortions that were still in place as of 2004? Valenzuela, van der Mensbrugghe and Anderson (2009) use a global economy-wide model known as Linkage (van der Mensbrugghe 2005) to provide a combined retrospective and prospective analysis that sought to assess how far the world had come, and how far it still has to go, in rectifying the disarray in world agriculture. Those authors quantify the impacts both of past reforms and current policies by comparing the effects of the recent World Bank project's distortion estimates for the period 1980-84 with those of 2004.[4]

Several key findings from that economy-wide modelling study are worth summarizing here. First, the policy reforms from the early 1980s to the mid-2000s improved global economic welfare by US$233 billion per year, and removing the distortions that remained in 2004 would add another US$168 billion per year (in 2004 US dollars). This suggests that in

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[4] While international food prices in mid-2008 were well above those of 2004, the slump in these prices over the second half of 2008 suggests that prices in 2009 may not be so different from those of 2004, and in any case the Doha round negotiations have been using such a historical period against which to draw up reform proposals.

terms of global welfare the world moved three-fifths of the way towards global free trade in goods over that quarter century.

Second, developing economies benefited proportionately more than high-income economies (1.0 per cent compared with 0.7 per cent of national income) from those past policy reforms, and would gain nearly twice as much as high-income countries if all countries were to complete that reform process (an average increase of 0.9 per cent compared with 0.5 per cent for high-income countries from freeing the distortions in place in 2004). Of those prospective welfare gains from global goods trade liberalization, 70 per cent would come from agriculture and food policy reform. This is a striking result given that the shares of agriculture and food in global GDP and global trade are only 3 and 6 per cent, respectively. The contribution of farm and food policy reform to the prospective welfare gain for developing countries alone is slightly greater, at 72 per cent.

Third, the share of global farm production exported (excluding intra-European Union (EU) trade) in 2004 has been slightly smaller as a result of those reforms since 1980-84, because of less farm export subsidies. The 8 per cent share for agriculture in 2004 contrasts with the 31 per cent share for other primary products and the 25 per cent for all other goods – a 'thinness' that is an important contributor to the volatility of international prices for weather-dependent farm products. If the policies distorting goods trade in 2004 were removed, the share of global production of farm products that is exported would rise from 8 to 13 per cent, thereby reducing instability of prices and expanding the quantities of those products traded.

Fourth, the developing countries' share of the world's primary agricultural exports rose from 43 to 55 per cent, and its share of global farm output from 58 to 62 per cent, because of the reforms since the early 1980s, with rises in output of nearly all agricultural industries except rice and sugar. Removing the remaining goods market distortions as of 2004

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would boost the developing countries' shares of global agricultural exports and output even further, to 64 and 65 per cent, respectively.

Fifth, the average real price for agricultural and food products in international markets would have been 13 per cent lower had policies not changed over the past quarter century. Evidently the impact of the fall in RRA in high-income countries (including the cuts in farm export subsidies) in raising international food prices more than offset the opposite impact of the RRA rise (including the cuts in agricultural export taxes) in developing countries over that period. By contrast, removing the remaining distortions as of 2004 is projected to raise the international price of agricultural and food products by less than 1 per cent on average. This is in contrast to earlier modelling results based on the Global Trade Analysis Project (GTAP) protection database. (For example, Anderson, Martin and van der Mensbrugghe (2006) estimated that they would rise by 3.1 per cent or, for primary agriculture alone, by 5.5 per cent). The smaller impact seen in these new results is because export taxes in developing countries, based on the above NRA estimates for 2004, are included in the new database (most notably for Argentina) and their removal would offset considerably the international price-raising effect of eliminating import protection and farm subsidies elsewhere.

Sixth, for developing countries as a group, net farm income (value added in agriculture) is estimated to be 4.9 per cent higher than it would have been without the reforms of the past quarter century, which is more than ten times the proportional reform gain in non-agricultural value added. If the price and trade policies remaining in 2004 were removed, net farm incomes in developing countries would rise a further 5.6 per cent, compared with just 1.9 per cent for non-agricultural value added. In addition, unskilled workers in developing countries – the majority of whom work on farms – would see their returns rise more than returns on other productive factors from that liberalization. Together, these findings suggest

that both inequality and poverty could be alleviated by such reform, given that three-quarters of the world's poor are farmers in developing countries (Chen and Ravallion 2008).

Prospects for further agricultural reform

The reasons why some countries have reformed their price-distorting agricultural and trade policies more than others in recent decades are varied. Some have reformed unilaterally, apparently having become convinced that it is in their own national interest to do so. China is the most dramatic and significant example of the past three decades among developing countries, and Australia and New Zealand among the high-income countries (Huang et al. 2009; Anderson, Lloyd and MacLaren 2007). Other developing countries may have done so partly to secure bigger and better loans from international financial institutions and then, having taken that first step, they continued the process, even if somewhat intermittently. India is one example, but there are numerous other examples in Africa and Latin America. Few have gone backwards in terms of increasing their anti-agricultural bias, but Zimbabwe and perhaps Argentina qualify during the present decade – and numerous others joined them in 2008, at least temporarily, in response to the sudden upward spike in international food prices. And some have reduced their agricultural subsidies and import barriers at least partly in response to the GATT's multilateral Uruguay Round Agreement on Agriculture, the European Union (EU) being the most important example (helped by its desire for otherwise costly preferential trade agreements, including its expansions eastwards in 2004 and 2007 and its preferential trading arrangements with former colonies and other least-developed countries). The United States, by contrast, has slipped back into higher support after showing signs of reform in the latter 1990s (Orden, Blandford and Josling 2010).

The EU reforms suggest that growth in agricultural protection can be slowed and even reversed if accompanied by re-instrumentation away from price supports to decoupled measures or more direct forms of farm income support (Josling 2009). The starker examples of Australia and New Zealand show that one-off buyouts can bring faster and even complete reform.[5] But in the developing countries where levels of agricultural protection are generally below those in high-income countries, there are fewer signs of a slowdown of the upward trend in agricultural protection from import competition over the past half-century.

Indeed, there are numerous signs that the governments of developing countries want to keep open their options to raise agricultural NRAs in the future, particularly via import restrictions. One indicator is the high tariff bindings to which developing countries committed themselves following the Uruguay Round: as of 2001, actual applied tariffs on agricultural products averaged less than half the corresponding bound tariffs for developing countries of 48 per cent, and less than one-sixth in the case of least-developed countries (Anderson and Martin 2006, Table 1.2).

Another indicator of reluctance about agricultural trade reform is the demand by many developing countries to be allowed to maintain their rates of agricultural protection for reasons of food security, livelihood security and rural development. This view has succeeded in bringing 'special products' and a 'special safeguard mechanism' into the multilateral trading system's agricultural negotiations, even though such policies, which would raise domestic food prices in developing countries, may worsen poverty and reduce the food security of the poor (Ivanic and Martin 2008), and would exacerbate instability in international markets for farm products.

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[5] Anderson, Lloyd and MacLaren (2007). For a detailed analysis of the buyout option versus the slower and less complete cashout option (moving to direct payments), as well as the uncompensated gradual squeeze-out or sudden cutout options, see Orden and Diaz-Bonilla (2006).

Those developing economies that continue to free up domestic markets and practice good macroeconomic governance will keep growing. Typically the growth will be more rapid in manufacturing and service activities than in agriculture, especially in the more densely populated countries where agricultural comparative advantage is likely to decline. Whether such economies become more dependent on imports of farm products depends, however, on what happens to their relative RRA. The first wave of Asian industrialisers (Japan, and then Korea and Taiwan), like some western European countries before them, chose to slow the growth of dependence on food imports by raising their NRA for agriculture even as they were bringing down their NRA for non-farm tradables, such that their RRA became increasingly further above the neutral zero level. A key question is: will later industrialisers copy advanced economies, given the past close association of RRAs with rising per capita income and falling agricultural comparative advantage? Figures 2 and 3 suggest developing countries' RRA trends of the past three decades have been on the same upward trajectory as the high-income countries prior to the 1990s. So unless new forces affect their polities, the governments of later industrialising economies may well follow suit.

One new force is disciplines on farm subsidies and protection policies of WTO Members since the Uruguay Round. Earlier industrialisers were not bound under GATT to limit their agricultural protection. Had there been strict disciplines on farm trade measures at the time Japan and Korea joined GATT in 1955 and 1967, respectively, their NRAs may have been halted at less than 20 per cent (Anderson 2009, Figure 1.12). At the time of China's accession to WTO in December 2001, its NRA was less than 5 per cent according to Huang et al. (2009), or 7.3 per cent for import-competing agriculture alone. Its average bound import tariff commitment was about twice that (16 per cent in 2005), but what matters most is China's out-of-quota bindings on the items whose imports are restricted by tariff rate quotas. These tariff bindings, as of 2005, were 65 per cent for grains, 50 per cent for sugar and 40 per

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cent for cotton (Anderson, Martin and Valenzuela 2009). Clearly the legal commitments even China made on acceding to WTO are a long way from current levels of support for its farmers, and so are unlikely to constrain the government very much in the next decade or so. The legal constraints on developing countries that joined the WTO earlier are even less restrictive. For India, Pakistan and Bangladesh, for example, their estimated NRAs for agricultural importables in 2000–2004 are 34, 4 and 6 per cent, respectively, whereas the average bound tariffs on their agricultural imports are 114, 96 and 189 per cent, respectively (WTO, ITC and UNCTAD 2007). Also, like other developing countries, they have high bindings on product-specific domestic supports of 10 per cent and another 10 per cent for non-product specific assistance, a total of 20 more percentage points of NRA (17 per cent in China's case) that legally could come from domestic support measures – compared with 10 per cent currently in India and less than 3 per cent in the rest of South Asia.

Given this need to tighten the constraints on agricultural protection and assistance policies, it is especially unfortunate that the WTO's Doha Development Agenda is struggling to deliver a new agreement, and makes it more likely that developing countries will follow the same agricultural protection path this century as that taken last century by high-income countries.

There are some relatively new forces at work that have recently, and will continue to raise international prices of farm products above what they would otherwise be, and thus reduce the NRAs of countries that maintain constant domestic prices. One is the emergence of demand for biofuels, which is driven largely by subsidies and mandates in the United States and EU (whose NRA equivalents have yet to be calculated for those countries). Another is the growth of demand for protein-rich foods (e.g., livestock products) in rapidly emerging economies such as China. Global climate change also is expected to raise the mean (and variance) of international prices of farm products, thereby raising the denominator of the

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domestic-to-border price ratio. By contrast, the emergence of the new biotechnologies that provide genetically modified (GM) foods, feedstuffs, fibres and biofuels are helping to lower international food prices – although not in those countries that are banning the production and importation of GM farm products. Such bans purportedly are for local food safety and environmental reasons, although countries that have adopted and export GM crops suspect these new protective measures also have a traditional economic protective motive. Regardless of the rationale for those bans, the new biotechnologies on the one hand are providing lower-cost (and potentially higher quality and less-pollutive) farm products in those developing countries that share the view of current adopters that this is a benign technology.[6] On the other hand, until there is general acceptance of GM technology globally this issue is going to be a force that fragments the world into two parts: the group of countries that accept the technology and enjoy lower-priced farm products, and the residual set of countries where consumers will have to continue paying higher prices for their food.

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[6] On the potential global economic welfare effects of GM technologies and associated trade policies for GM farm products, and their distributional consequences, see, for example Anderson and Jackson (2005) and Anderson, Valenzuela and Jackson (2008).,

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Figure 1: Nominal rates of assistance to agriculture in high-income countries (HIC) and European transition economies[a] and in developing countries, 1955 to 2004 (per cent, weighted averages, with 'decoupled' payments included in the dashed HIC line)
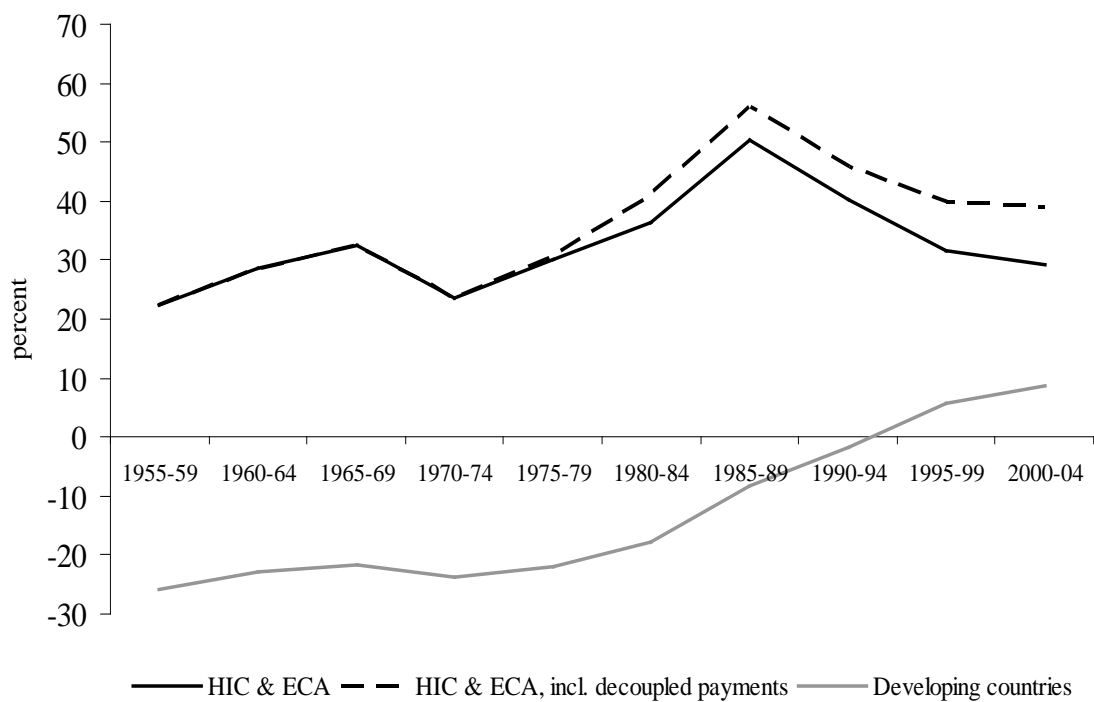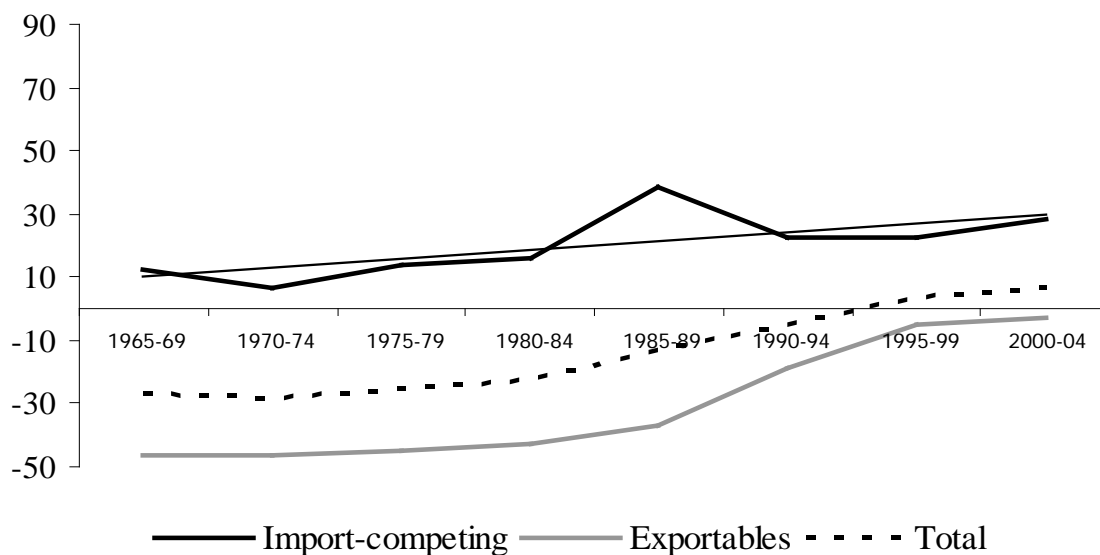

[a] Denoted by the World Bank as ECA, for (Central and Eastern) Europe and Central Asia.

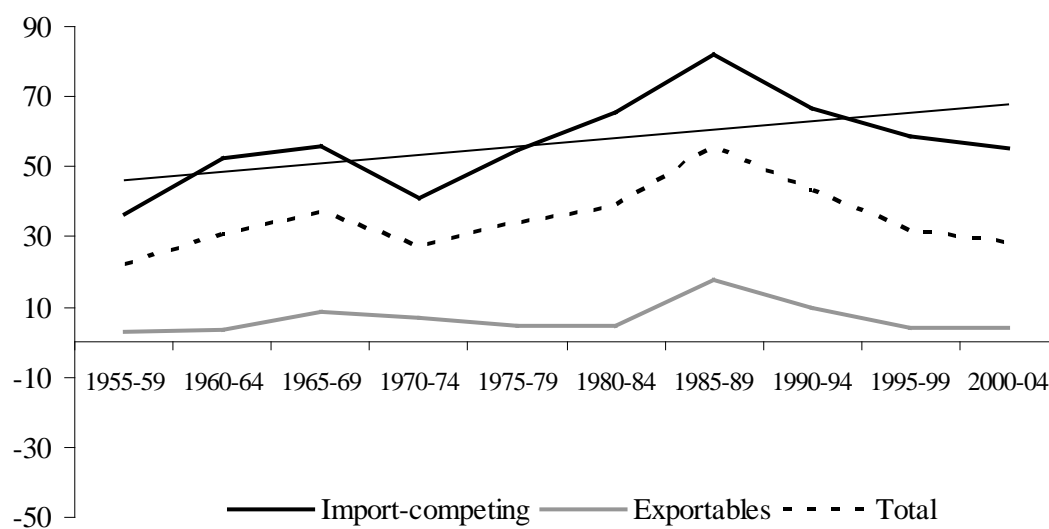Source: Anderson (2009, Ch. 1), based on estimates in Anderson and Valenzuela (2008).

Figure 2: Nominal rates of assistance to exportable, import-competing and all covered agricultural products,[a] high-income and developing countries, 1955 to 2004

(per cent)

(a) Developing countries

(b) High-income countries plus Europe's transition economies

[a]Covered products only. The total also includes nontradables.

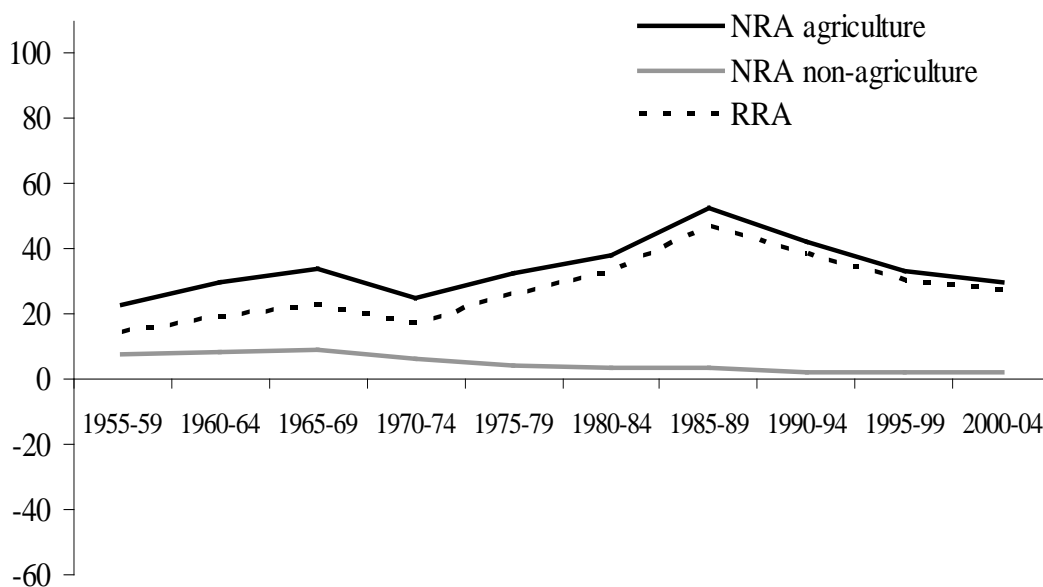Source: Anderson (2009, Ch. 1), based on estimates in Anderson and Valenzuela (2008).

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Figure 3: Nominal rates of assistance to agricultural and non-agricultural sectors and relative rate of assistance,[a] developing and high-income countries, 1955 to 2004

(per cent, production-weighted averages across countries)

(a) Developing countries
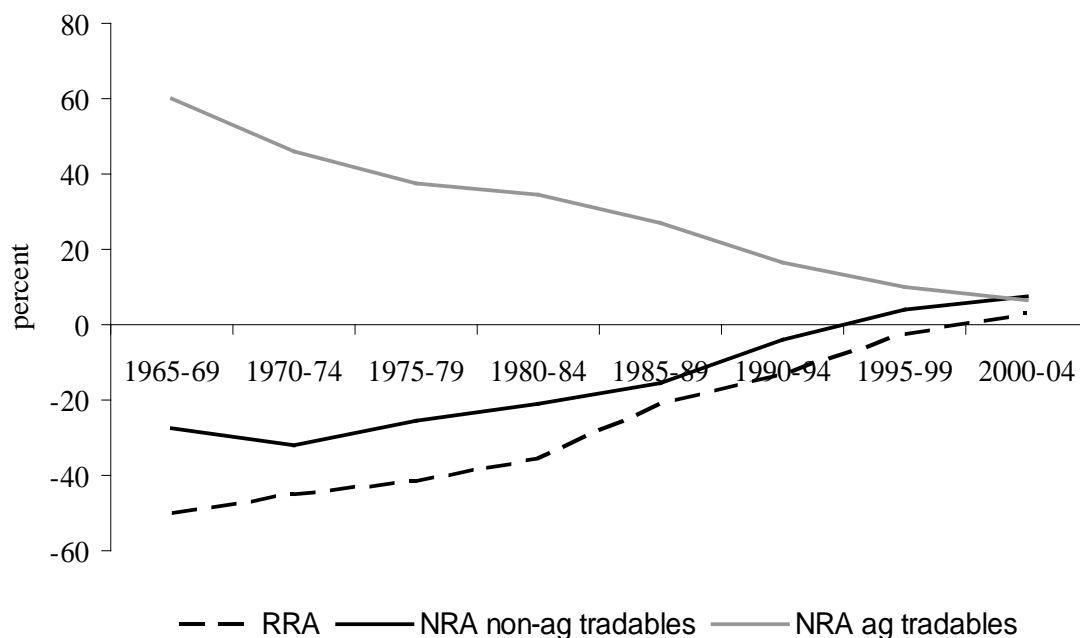
(b) High-income countries

[a] The RRA is defined as $100*[(100+NRAag^t)/(100+NRAnonag^t)-1]$, where $NRAag^t$ and $NRAnonag^t$ are the percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively.

Source: Anderson (2009, Ch. 1), based on estimates in Anderson and Valenzuela (2008).

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Figure 4: Trade reduction and welfare reduction indexes for tradable farm products, by region, 1960 to 2007

(percent)
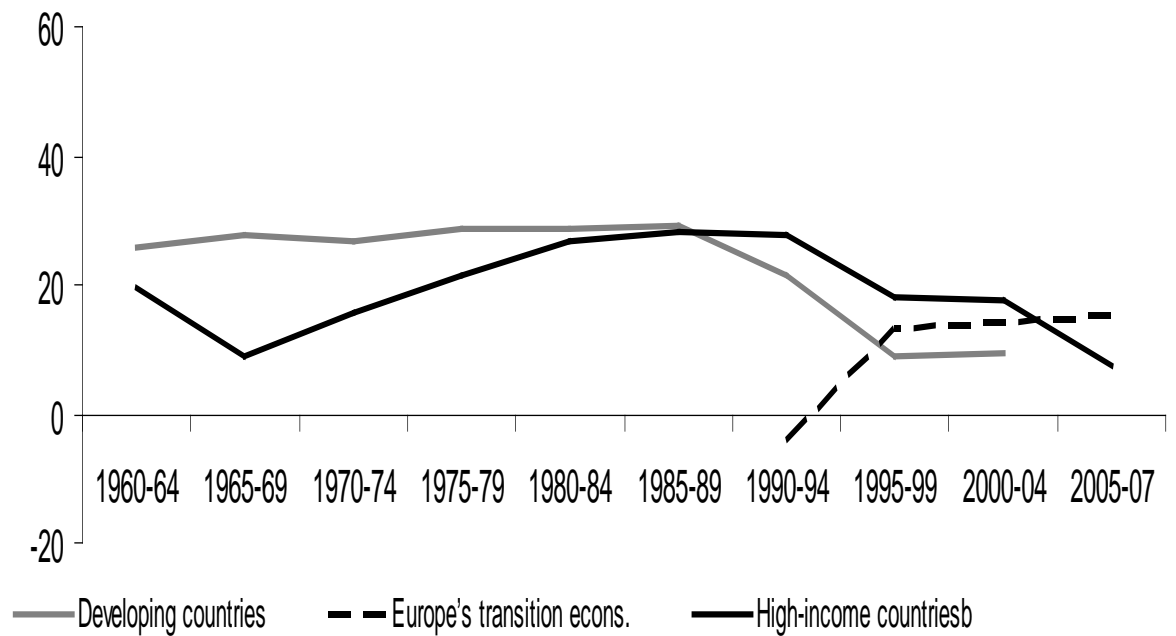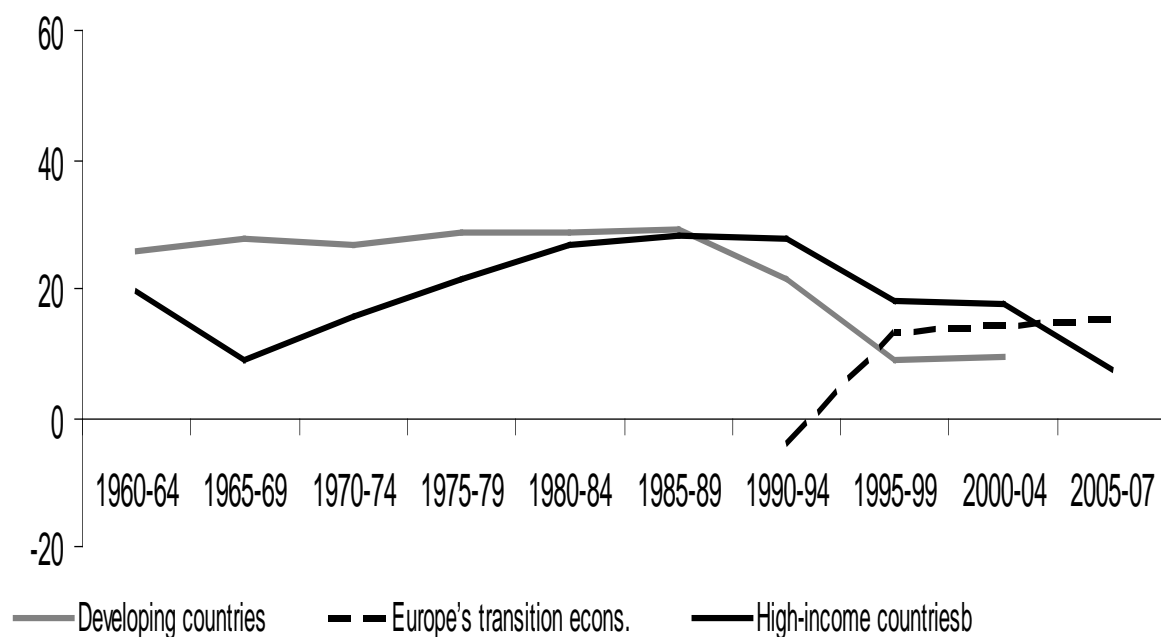
(a) Trade reduction index

Figure 4 (continued): Trade reduction and welfare reduction indexes for tradable farm products, by region, 1960 to 2007

(percent)

(b) Welfare Reduction Index

Source: Lloyd, Croser and Anderson (2009), based on NRAs and CTEs in Anderson and Valenzuela (2008).