Agricultural Policies: Past, Present and Prospective under Doha

Kym Anderson

School of Economics
University of Adelaide
Adelaide, SA 5005, Australia
Phone +61 8 8303 4712
kym.anderson@adelaide.edu.au

September 2009

Paper for the World Trade Institute's book on *The End of Cheap Food and the WTO*, edited by Baris Karapinar and Christian Häberli for publication by Cambridge University Press in 2010. Financial assistance from IIT and World Bank Trust Funds, particularly by the governments of the Netherlands (BNPP) and the United Kingdom (DfID), is gratefully acknowledged, as are the contributions of nearly 100 country case study authors and the Washington- and Adelaide-based teams, and of co-authors of recent papers including Johanna Croser, Peter Lloyd, Ernesto Valenzuela and Dominique van der Mensbrugghe. Views expressed are the author's alone and not necessarily those of the World Bank or its Executive Directors. The World Bank's Research project details, working papers and databases are available at www.worldbank.org/agdistortions.

Agricultural Policies: Past, Present and Prospective under Doha

Kym Anderson

Every decade or two, food becomes newsworthy globally. Mostly it is about an international price spike, either upwards (hurting consumers, as in 1973 and 2008) or downwards (hurting farmers in open economies, as in 1986). And most such price spikes in global food markets are a consequence of major national policy shifts, since local weather-induced supply shocks in a multi-country trading world tend to offset each other. In 1986, for example, it was the food export subsidy war between Western Europe and North America that drove real international food prices to their lowest level since 1930 (Figure 1). The price hikes of 1973 and 2008, by contrast, were partly a consequence of a unilateral policy decisions by a single large player: in 1973, the Soviet Union departed from its policy of self-reliance and entered the international grain market in a significant way to offset a domestic shortfall; and in 2007-08 the United States and European Union decided to subsidize biofuel production and set mandates/targets for its use domestically. In both 1973 and 2008, other governments imposed export restrictions to insulate somewhat their consumers from the price rise, which pushed international prices even higher and drove more exporting countries to follow suit. Policy thus contributes to market volatility. That in turn is bad for growth, since volatility around the long-run trend terms of trade slows economic growth (Williamson 2008). Yet trade policy measures are very blunt instruments for dealing with volatility (especially in the modern era of myriad financial instruments for risk management), and their beggar-thy-neighbor feature diminishes the international public good contribution of trade openness.

What is less newsworthy to the mass media, but probably far more important in its effect on the growth and distribution of global welfare, are gradual policy developments in individual countries and their combined effects on other countries via the trend terms of trade in international markets.[1] The disarray in world agricultural markets increased from the

[1] Some of the more transformational policy developments happen quite promptly, such as the end of colonization around 1960; the creation of the Common Agricultural Policy in Europe in 1962; the floating of

1950s to the mid-1980s, but in the two decades since then there have been reforms in both developing and high-income countries that collectively raised international food and agricultural prices by about one-eighth. The remaining distortions to agricultural incentives nonetheless are still huge: they were responsible for as much as 60 percent of the global welfare cost of all distortions to goods trade in 2004, even though agriculture accounts for only 3 and 6 percent of global GDP and trade, respectively. Those policy-imposed distortions not only affect economic growth but also income inequality and poverty, given that three-quarters of the world's poorest households depend on agriculture for their livelihood.

This paper summarizes some new empirical findings from a World Bank research project that helps to illuminate what is behind the numbers cited above. That evidence shows the extent to which policy interventions in world agricultural markets worsened from the 1950s to the 1980s as well as the gradual progress in reform since then. It also includes some economy-wide modeling results that show how far that reform had progressed by 2004 compared with what was still needed before agricultural markets would be free of distortions. The paper then concludes with an assessment of how WTO could help complete that reform process in the context of the 2008 high world food prices.

Worsening disarray to the 1980s, but then some reforms

Huge progress has been made in reducing manufacturing protection rates in high-income countries since the late 1940s when the GATT came into being. Commitments were made by GATT Contracting Parties to lower tariffs and phase out non-tariff barriers progressively following each GATT round of negotiations, such that by the new millennium the average rate of manufacturing protection was less than 2 percent in OECD countries. By contrast, manufacturing protection was introduced by many newly independent developing countries from around 1960, encouraged by Prebish and Singer in what became known as import-substituting industrialization; and it was accompanied by multiple exchange rates that led to currencies being highly overvalued. Both measures were trade-reducing, and both indirectly harmed the agricultural sectors of developing countries. Farmers in many developing countries were also harmed directly by agricultural export taxes either explicitly or

exchange rates and associated liberalization, deregualtion, privatization and democratization in the mid-1980s; the opening of China from 1979; and the demise of the Soviet Union in 1991 implicitely through state-owned processing/trading enterprises that paid farmers low prices for their primary products.

To measure the impact of those interventions and subsequent policy developments on farmer incentives, a recent World Bank research project (see www.worldbank.org/agdistortions) developed a series of indicators. Before presenting the results, those indicators need to be described briefly.

Key indicators of distortions to agricultural incentives

The most basic measure, the nominal rate of assistance (NRA), is 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 the NRA is negative). Similarly, a consumer tax equivalent (CTE) is calculated, as the percentage by which policies have raised prices paid by consumers of agricultural outputs (with a negative value implying a subsidy to consumers). The NRA and CTE will be identical if the sole source of government intervention is a trade measure and the two are measured at the same point in the value chain. These two measures are similar to the OECD (2008) producer and consumer support estimates (PSE and CSE), but an important difference is that the NRA and CTE are expressed as a percentage of the undistorted (e.g., border) rather than the distorted price.

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 that it is possible to generate for each year the weighted average NRAs for the two different groups of tradables. Those NRAs are used to generate a trade bias index, TBI, defined as:

(1) $$TBI = (1+NRAag_x/100)/(1+NRAag_m/100) - 1$$

where $NRAag_m$ and $NRAag_x$ are the average percentage NRAs for the import-competing and exportables parts of the agricultural sector. The TBI indicates in a single number the extent to which the typically anti-trade bias (negative TBI) in agricultural policies changes over time.

Farmers are affected not just by prices of their own outputs but also (albeit indirectly via changes to factor market prices and the exchange rate) by the incentives nonagricultural producers face. That is, it is *relative* prices and hence *relative* rates of government assistance that affect producer incentives. By generating estimates also of the average NRA for non-agricultural tradables, it is possible to calculate a Relative Rate of Assistance, RRA, defined in percentage terms as:

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

where $NRAag^t$ and $NRAnonag^t$ are the weighted average percentage NRAs for the tradable parts of the agricultural and non-agricultural sectors, respectively. Since the NRA cannot be less than -100 percent if producers are to earn anything, neither can the RRA (assuming $NRAnonag^t$ is positive). 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 policy regime has an anti- (pro-) agricultural bias.

Exchange rate distortions generated by dual or multiple exchange-rate regimes also are considered when calculating NRAs and CTEs, following the methodology outlined in Anderson et al. (2008). These have been important in many developing countries, particularly during the 1970s and 1980s, making the absolute magnitude of their estimated (typically) positive NRAs for importables and (typically) negative NRAs for exportables larger than they otherwise would have been.

To provide single indicators of distortions imposed by each country's border and domestic agricultural policies on its economic welfare and its trade volume, Lloyd, Croser and Anderson (2008) define a Welfare Reduction Index (WRI) and a Trade Reduction Index (TRI) and estimate them for the 75 countries in the World Bank study, taking into account that the NRA differs from the CTE for some products (while ignoring indirect effects of sectoral and trade policy measures directed at non-agricultural sectors). The WRI measure reflects the true welfare cost of agricultural price-distorting policies better than the NRA and CTE because it takes into account the dispersion in distortions. That is, it captures the disproportionately higher welfare costs of peak levels of assistance or taxation.

Summary of estimates of distortions since the 1950s

The study launched by the World Bank in 2006 involved 75 countries (including 20 high-income countries) that together account for 92 percent of agricultural GDP. The global summary of those new results is provided in Figure 2. It reveals that the nominal rate of assistance to farmers in high-income countries rose steadily over the post-World War II period through to the end of the 1980s, apart from a small dip when international food prices spiked around 1973-74. After peaking at more than 50 percent in the mid-1980s, that average NRA for high-income countries has fallen a little, depending on the extent to which one believes 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 percent during the period from the mid-1950s to the early 1980s to a level of nearly 10 percent in the first half of the present decade. The global summary of those new results is provided in Figure 2. It reveals that the nominal rate of assistance (NRA) to farmers in high-income countries rose steadily over the pos-World War II period through to the end of the 1980s, apart from a small dip when international food prices spiked around 1973-74. After peaking at more than 50 percent in the mid-1980s, that average NRA for high-income countries has fallen a little, depending on the extent to which one believes 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 percent during the period from the mid-1950s to the early 1980s to a level of nearly 10 percent in the first half of the present decade. Thus the global gross subsidy equivalent of those rates of assistance have risen very substantially in constant (2000) US dollar terms, from close to zero up to the mid-1970s to more than $200 billion per year at the farm-gate since the mid-1990s (Figure 3).

When expressed on a per farmer basis, the gross subsidy equivalent (GSE) varies enormously as between high-income and developing countries. In 1980-84 the GSE in high-income countries was already around $8,000 and by 2000-04 it had risen to $10,000 on average (and $25,000 in Norway, Switzerland and Japan), or $13,500 when 'decoupled' payments are included. By contrast, the GSE in developing economies was -$140 per farmer in the first half of the 1980s, which is a non-trivial tax when one recalls that at that time the majority of these people's households were surviving on less than $1 a day per capita. By 2000-04 they received on average around $50 per farmer (Anderson 2009, Ch. 1). While this represents a major improvement, it is less than one percent of the support received by the average farmer in high-income countries.

The developing country average NRA conceals the fact that the exporting and import-competing sub-sectors of agriculture have very different NRAs. Figure 4 reveals that while the average NRA for exporters has been negative throughout (going from -20 percent to -30 percent 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 percent (and even reached 40 percent in the low-priced years in the mid-1980s). Having increased in the 1960s and 1970s, the anti-trade bias within agriculture for developing countries has diminished considerably since the mid-1980s, but the NRA gap between the two sub-sectors still averages around 20 percentage points.

Figure 4 also reveals that the NRA for import-competing farmers has increased at virtually the same pace as in high-income countries. This suggests that agricultural protection growth is something that tends to begin at low levels of per capita income rather than being just a high-income phenomenon.

The improvement in farmers' incentives in developing countries is understated by the above NRAag 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 5, 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 both sectors' NRAs have contributed almost equally to the improvement in farmer incentives. The Relative Rate of Assistance, captured in equation (2) above, provides a useful indicator of relative price change: the RRA for developing countries as a group went from -46 percent in the second half of the 1970s to 1 percent 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 even for Latin America that relative price hike is one-half, while for Africa that indicator improves by only one-eighth. As for high-income countries, assistance to manufacturing was on average much smaller 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 5).[2]

While the RRA captures the extent of anti- or pro-agricultural bias in policies across sectors, the trade bias index (TBI) defined in equation (1) above is able to capture the extent to which the exporting and import-competing sub-sectors of agriculture have very different NRAs. Figure 6 shows agriculture's TBI on the horizontal axis and the RRA on the vertical axis. An economy with no anti- or pro-agricultural bias (RRA = 0) and no anti- or pro-trade bias within the farm sector (TBI = 0) would be located at the intersection of the two axes in

[2] Australia and New Zealand were clear exceptions, where manufacturing protection had been very high and its decline was several decades later than in other high-income countries (Anderson, Lloyd and MacLaren 2007).

Figure 6. Africa, Asia and Latin America (shown there as LAC) were all well to the southwest of that neutral point as of 1980-84, but by 2000-04 all had moved to become much closer to the vertical axis (meaning they had reduced their anti-trade bias in agriculture), and all but Africa had become closer to the horizontal axis. Asia is now above rather than below that axis, which means those developing countries are assisting farmers relative to producers of other tradable products. While that can lead to just as much waste of resources as the earlier anti-agricultural policy bias, it is only in Korea and Taiwan that the 2000-04 RRA is well above zero (being just 1 percent for China and 4 percent for Southeast Asia).

Turning to the single indicators of the impact of agricultural distortions on national economic welfare and trade volume, Lloyd, Croser and Anderson (2008) estimate their Welfare Reduction Index (WRI) and Trade Reduction Index (TRI) for the 75 countries in the above-mentioned World Bank study. The WRI results in Figure 7 indicate a steadily rising tendency from the 1960s to the 1980s for agricultural policies to reduce welfare, but some decline in the 1990s. This reflects the fact that NRAs for high-income and developing countries diverged (in opposite ways) 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 their weighted average NRA traces out a fairly flat trend whereas the WRI traces out a hill-shaped path and thus provides a less misleading indicator of resource misallocation in world agricultural markets. The TRI indicates that the trade restrictiveness of agricultural policy for developing countries as a group was roughly constant until the early 1990s and thereafter it declined, especially for Asia and Latin America, while for high-income countries the TRI decline began a few years later. The TRI for developing countries is driven by the exportables sub-sector which was being taxed until recently and the import-competing sub-sector which was and is increasingly being protected (albeit by less than in high-income countries). For high-income countries, policies have supported both exporting and import-competing agricultural products and, even though they favor the latter much more heavily, the assistance to exporters has offset somewhat the anti-trade bias from the protection of import-competing producers.

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

It is clear from the above that there has been a great deal of reform over the past quarter of a century in policy distortions to agricultural incentives throughout the world: the anti-agricultural and anti-trade biases of policies of many developing countries have been reduced, export subsidies of high-income countries have been cut, and some re-instrumentation toward less inefficient and less trade-distorting forms of support, particularly in Western Europe, has begun. However, protection from agricultural import competition has continued to be on 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 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 seeks to assess how far the world has come, and how far it still has to go, in removing the disarray in world agriculture. It quantifies 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. While international food prices in mid-2008 were well above those of 2004 (Figure 1), the slump in them over the second half of 2008 suggests 2009 prices may not be so different from those of 2004, and in any case the Doha round negotiations have been using such an historical period against which to attach reform proposals.

Several key findings from that economy-wide modeling study are worth emphasizing. First, the policy reforms from the early 1980s to the mid-2000s improved global economic welfare by $233 billion per year, and removing the distortions remaining as of 2004 would add another $168 billion per year (in 2004 US dollars). This suggests that in a global welfare sense the world had 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 percent compared with 0.7 percent 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 percent compared with 0.5 percent for high-income countries). Of those prospective welfare gains from global liberalization, 60 percent 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 percent, respectively. The contribution of farm and food policy reform to the prospective welfare gain for just developing countries is even greater, at 83 percent.

Third, the share of global farm production exported (excluding intra-EU trade) in 2004 was slightly smaller as a result of those reforms since 1980-84, because of less farm export subsidies. Agriculture's 8 percent share in 2004 contrasts with the 31 percent share for other primary products and the 25 percent 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 percent, thereby reducing instability of prices and quantities of those products traded.

Fourth, the developing countries' share of the world's primary agricultural exports rose from 43 to 55 percent, and its farm output share from 58 to 62 percent, because of the reforms since the early 1980s, with rises in nearly all agricultural industries except rice and sugar. Removing remaining goods market distortions would boost their export and output shares even further, to 64 and 65 percent, respectively.

Fifth, the average real price in international markets for agricultural and food products would have been 13 percent lower had policies not changed over the past quarter century. Evidently the impact of the RRA fall 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 remaining distortions as of 2004 is projected to raise the international price of agricultural and food products by less than 1 percent on average. This is contrary to earlier modeling results based on the GTAP protection database. (For example, Anderson, Martin and van der Mensbrugghe (2006) estimated they would rise by 3.1 percent or, for just primary agriculture, by 5.5 percent). The lesser impact 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 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 percent higher than it would have been without the reforms of the past quarter century, which is more than ten times the proportional gain for non-agriculture. If policies remaining in 2004 were removed, net farm incomes in developing countries would rise a further 5.6 percent, compared with just 1.9 percent for non-agricultural value added. As well, unskilled workers in developing countries – the majority of whom work on farms – would see their returns rise more than returns to other productive factors from that liberalization. Together, these findings suggest 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).

Any Doha round agreement would not involve a move all the way to free trade of course, and its partial reforms would only involve cuts to tariffs and agricultural subsidies. In particular, the WTO is likely to continue to leave export taxes to the discretion of each national government. Had such a model simulation been run, it would have resulted in international food prices rising by more than the 1 percent quoted in the fifth point above – but recall that refers to 2004 prices, which may well be low relative to the prices operating when any Doha agreement is signed.

Prospects for agricultural reform under Doha

The reasons as to 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 have continued the process, even if somewhat intermittently. India is one example, but there are numerous examples also 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 also for otherwise-costly preferential trade agreements, including its expansions eastwards in 2004 and 2007).

The EU reforms suggest agricultural protection growth 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.[3] But in the developing countries where rates of agricultural protection are generally below high-income rates, 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 developing country governments want to keep open their options to raise agricultural NRAs in the future, particularly via import restrictions. One indicator is the high tariff bindings developing countries committed themselves to 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 percent, and less than one-sixth in the case of least-developed countries (Anderson and Martin 2006, Table 1.2).

Another indicator of agricultural trade reform reluctance is the demand by many developing countries to be allowed to maintain their rates of agricultural protection for food security, livelihood security and rural development reasons. This view has succeeded in bringing “Special Products” and a “Special Safeguard Mechanism” into the multilateral trading system’s agricultural negotiations, despite the fact that such policies, which would raise domestic food prices in developing countries, may worsen poverty and the food security of the poor, and would exacerbate instability in international markets for farm products.

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 Rates of Assistance (RRA). The first wave of Asian industrializers (Japan, and then Korea and Taiwan) chose to slow the growth of food import dependence by raising their NRA for agriculture even as they were bringing down their NRA for non-farm tradables, such that their RRA became increasingly above the neutral zero level.

[3] 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).

A key question is: will later industrializers copy advanced economies, given the past close association of RRAs with rising per capita income and falling agricultural comparative advantage? Figures 4 and 5 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 industrializing economies may well follow suit.

One new force is disciplines on farm subsidies and protection policies of WTO member countries following the Uruguay Round. Earlier industrializers were not bound under GATT to keep down 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 percent (Anderson 2009, Figure 1.12). At the time of China's accession to WTO in December 2001, its NRA was less than 5 percent according to Huang et al. (2009), or 7.3 percent for just import-competing agriculture. Its average bound import tariff commitment was about twice that (16 percent in 2005), but what matters most is China's out-of-quota bindings on the items whose imports are restricted by tariff rate quotas. The latter tariff bindings as of 2005 were 65 percent for grains, 50 percent for sugar and 40 percent 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. And the legal constraints on developing countries that joined the WTO earlier are even less constraining. For India, Pakistan and Bangladesh, for example, their estimated NRAs for agricultural importables in 2000-04 are 34, 4 and 6 percent, respectively, whereas the average bound tariffs on their agricultural imports are 114, 96 and 189 percent, respectively (WTO, ITC and UNCTAD 2007). Also, like other developing countries, they have high bindings on product-specific domestic supports of 10 percent and another 10 percent for non-product specific assistance, a total of 20 more percentage points of NRA (17 percent in China's case) that legally could come from domestic support measures – compared with currently 10 percent in India and less than 3 percent in the rest of South Asia.

Hopefully developing countries will choose not to make use of the legal wiggle room they have allowed themselves in their WTO bindings to follow Japan, Korea and Taiwan into high agricultural protection. A much more efficient and equitable strategy would be to instead treat agriculture in the same way they have been treating non-farm tradable sectors.

That would involve opening the sector to international competition, and relying on more-efficient domestic policy measures for raising government revenue (e.g., income and consumption or value-added taxes in lieu of trade taxes)[4] and for assisting farm families (e.g., public investment in rural education and health, rural infrastructure, and agricultural research and development). Investments in public agricultural R&D in developing countries as a group is currently equivalent to less than 1 percent of the gross value of farm production (about half the intensity of high-income countries). Given the extremely high rates of return at the margin to such investments (see, e.g., Fan 2008), expenditure on that would be far wiser than providing border or domestic farm price supports as emerging economies develop.

The above distortion estimates show that all high-income countries have lowered the price supports for their farmers since the 1980s, in some countries partly replacing it with assistance that is at least somewhat decoupled from production. If that trend continued at the pace of the past quarter century, and if there was a reversal in the growth of agricultural protection in developing countries, then before the middle of this century most of the disarray in world food markets would have gone. However, if the WTO's Doha Development Agenda collapses, and high-income country governments thereby find it more difficult to ward off agricultural protection lobbies, it is all the more likely that developing countries will follow the same agricultural protection path this century as that taken last century by high-income countries. With the spike in food prices in the first half of 2008 and the subsequent downturn in the global economy, now is an especially crucial time for governments to do what is necessary to bring the Doha round to a successful conclusion so as to restore consumer and investor confidence in the global trading system.

References

Anderson, K. (ed.) (2009), *Distortions to Agricultural Incentives: A Global Perspective, 1955-2007*, London: Palgrave Macmillan and Washington DC: World Bank (forthcoming).

[4] Developing countries are becoming less and less reliant on trade taxes as a source of government revenue, with even very poor countries realizing that a tax imposed at the border, if called a consumption tax rather than a tariff, does not induce protected domestic production and yet can raise the same revenue at the same collection cost as a tariff.

Anderson, K., M. Kurzweil, W. Martin, D. Sandri, and E. Valenzuela (2008), "Measuring Distortions to Agricultural Incentives, Revisited", *World Trade Review* 7(3): 675-704, October.

Anderson, K., P.J. Lloyd and D. MacLaren (2007), 'Distortions to Agricultural Incentives in Australia Since World War II', *The Economic Record* 83(263): 461-82, December.

Anderson, K. and W. Martin (eds.) (2006), *Agricultural Trade Reform and the Doha Development Agenda*, London: Palgrave Macmillan and Washington DC: World Bank.

Anderson, K., W. Martin and E. Valenzuela (2009), 'Long Run Implications of WTO Accession for Agriculture in China', in *China's Agricultural Trade: Issues and Prospects***,** edited by C. Carter and I. Sheldon, London: CABI (forthcoming).

Anderson, K., W. Martin and D. van der Mensbrugghe (2006), 'Distortions to World Trade: Impacts on Agricultural Markets and Farm Incomes', *Review of Agricultural Economics* 28(2): 168-94, Summer.

Anderson, K. and E. Valenzuela (2008), *Global Estimates of Distortions to Agricultural Incentives, 1955-2007*, spreadsheet available at www.worldbank.org/agdistortions, October.

Chen, S. and M. Ravallion (2008), 'The Developing World is Poorer Than We Thought, But No Less Successful in the Fight Against Poverty', Policy Research Working Paper 4703, World Bank, Washington DC, August.

Fan, S. (2008), *Public Expenditures, Growth and Poverty in Developing Countries: Issues, Methods and Findings,* Baltimore: Johns Hopkins University Press.

Fane,G. and P.G. Warr (2009), 'Indonesia', Ch. 4 in *Distortions to Agricultural Incentives in Asia*, edited by K. Anderson and W. Martin , Washington DC: World Bank.

Haberler, G. (1958), *Trends in International Trade: A Report by a Panel of Experts,* Geneva: GATT Secretariat.

Huang, J., S. Rozelle, W. Martin and Y. Liu (2009), 'China', Ch. 3 in *Distortions to Agricultural Incentives in Asia*, edited by K. Anderson and W. Martin , Washington DC: World Bank.

Josling, T. (2009), 'Western Europe', Ch. 3 in in *Distortions to Agricultural Incentives: A Global Perspective, 1955 to 2007,* edited by K. Anderson, London: Palgrave Macmillan and Washington DC: World Bank (forthcoming).

Krueger, A.O., M. Schiff and A. Valdés (1988), "Measuring the Impact of Sector-specific and Economy-wide Policies on Agricultural Incentives in LDCs", *World Bank Economic Review* 2(3): 255-272.

Krueger, A.O., M. Schiff and A. Valdés (1991), *The Political Economy of Agricultural Pricing Policy, Volume 1: Latin America, Volume 2: Asia, and Volume 3: Africa and the Mediterranean*, Baltimore: Johns Hopkins University Press for the World Bank.

Lloyd, P., J. Croser and K. Anderson (2009), 'Welfare- and Trade-reducing Indexes of Distortions to Agricultural Incentives', Ch. 11 in *Distortions to Agricultural Incentives: A Global Perspective, 1955 to 2007,* edited by K. Anderson, London: Palgrave Macmillan and Washington DC: World Bank (forthcoming).

Lopes, M., I. Vidigal Lopes, M. Silva de Oliveira, F. Campos Barcelos, E. Jara and P. Rangel Bogado (2008), 'Brazil', Ch. 3 in *Distortions to Agricultural Incentives in Latin America,* edited by K. Anderson and A. Valdes, Washington DC: World Bank.

OECD (2008), *Producer and Consumer Support Estimates* (online database accessed at www.oecd.org).

Orden, D. and E. Diaz-Bonilla (2006), 'Holograms and Ghosts: New and Old Ideas for Reforming Agricultural Policies', Ch. 11 in *Agricultural Trade Reform and the Doha Development Agenda*, edited by K. Anderson and W. Martin, London: Palgrave Macmillan and Washington DC: World Bank.

Valenzuela, E., D. van der Mensbrugghe and K. Anderson (2009), 'General Equilibrium Effects of Price Distortions on Global Markets, Farm Incomes and Welfare', Ch. 13 in K. Anderson (ed.), *Distortions to Agricultural Incentives: A Global Perspective, 1955 to 2007,* London: Palgrave Macmillan and Washington DC: World Bank (forthcoming).

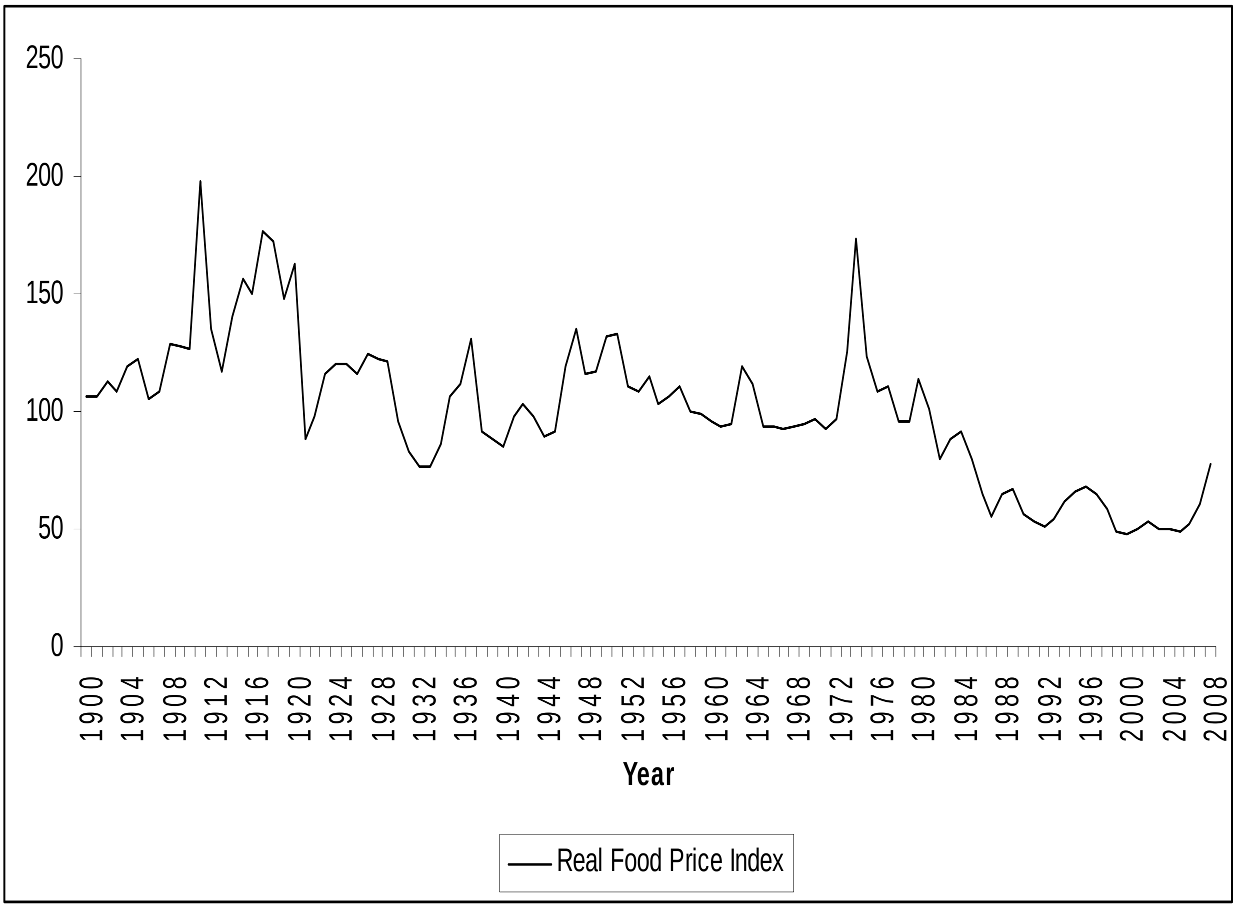
van der Mensbrugghe, D. (2005), 'LINKAGE Technical Reference Document: Version 6.0,' Unpublished, World Bank, Washington DC, January 2005. Accessable at www.worldbank.org/prospects/linkagemodel

Williamson, J. (2008), 'Globalization and the Great Divergence: Terms of Trade Booms and Volatility in the Poor Periphery, 1782 to 1913', NBER Working Paper 13841, Cambridge MA, March.

WTO, ITC and UNCTAD (2007), *Tariff Profiles 2006*, Geneva: World Trade Organization.

Figure 1: Real[a] international food price index, 1900 to 2008

(1977-79 = 100)

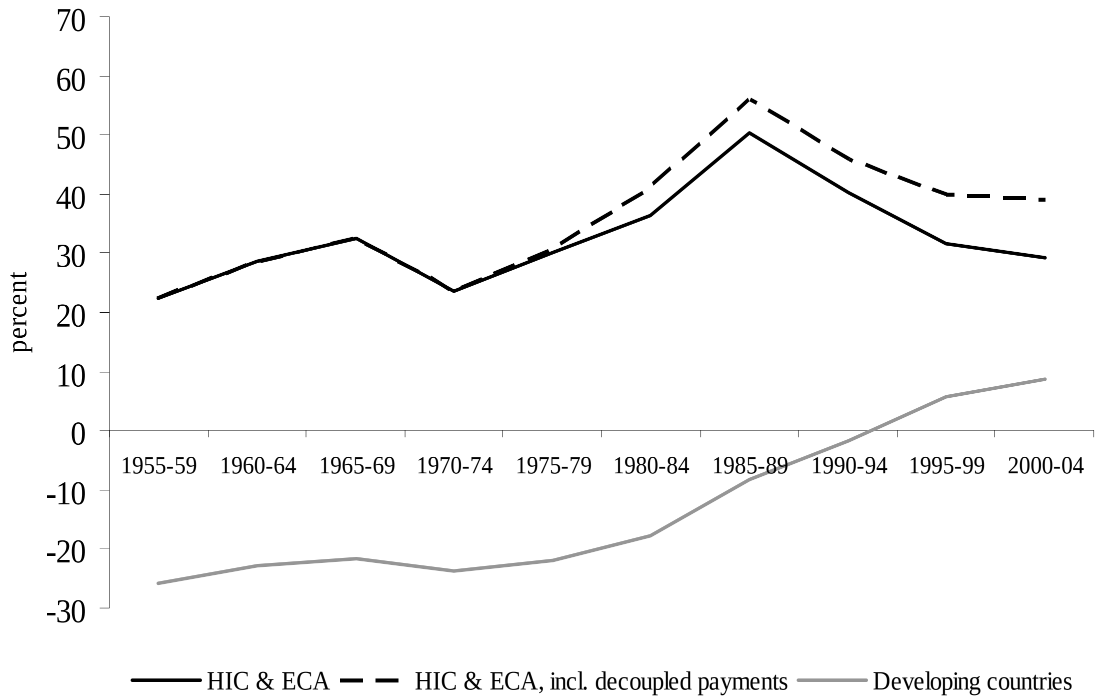


[a] The deflator used is the price of manufactured exports to developing countries from the largest five high-income countries France, Germany, Japan, the United Kingdom and the Unites States).

Source: Author's compilation using data from Pfaffenzeller, Newbolt and Rayner (2007), updated from 2004 with data from www.worldbank.org/prospects

Figure 2: Nominal rates of assistance to agriculture in high-income and European transition economies and in developing countries, 1955 to 2004

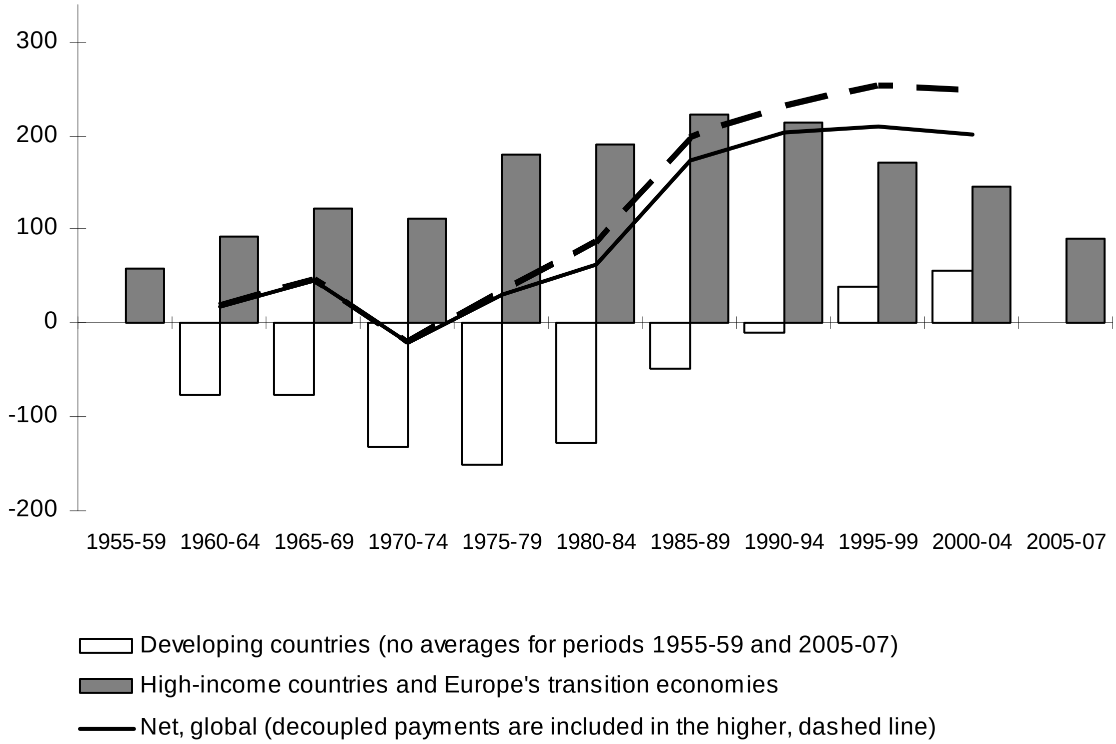
(percent, weighted averages, with 'decoupled' payments included in the dashed HIC line)



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

Figure 3: Gross subsidy equivalent of NRAs in high-income and European transition economies and in developing countries, 1960 to 2007

(constant 2000 US$ billion)

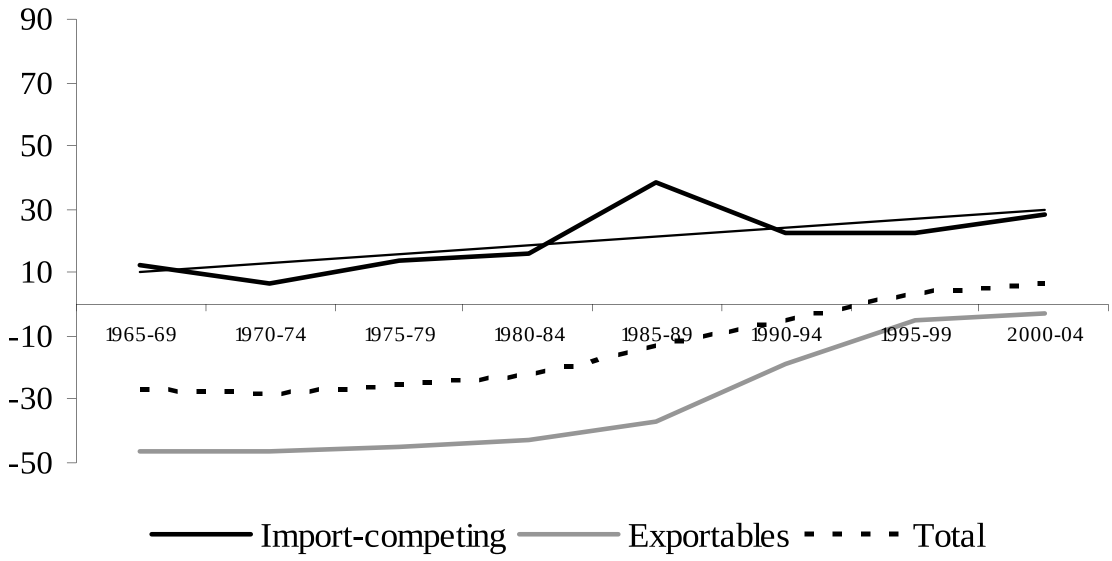


Source: Anderson (2009, Ch. 1), based on estimates in Anderson and Valenzuela (2008).

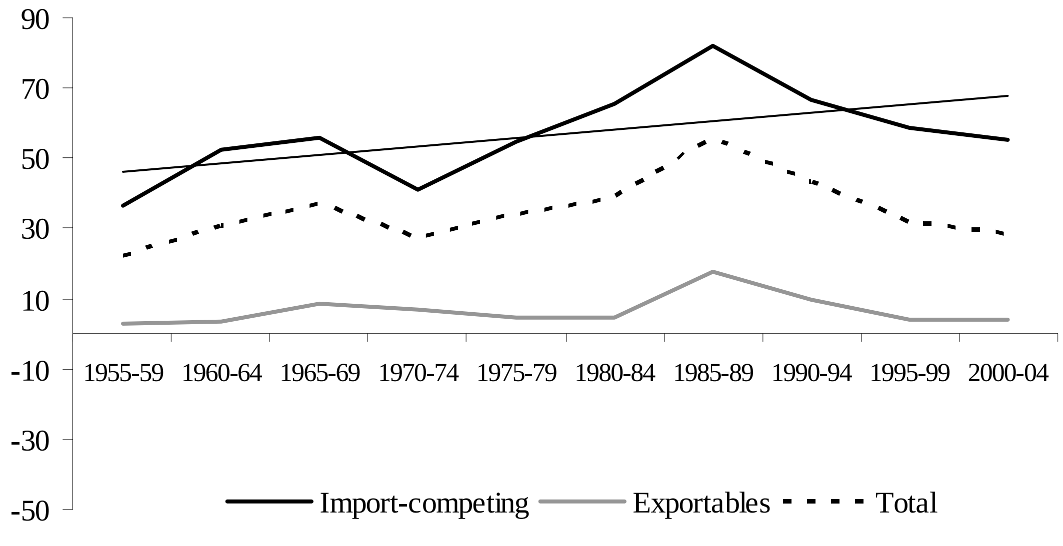
Figure 4: Nominal rates of assistance to exportable, import-competing and all covered agricultural products,[a] high-income and developing countries, 1955 to 2007

(percent)

(a) Developing countries



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



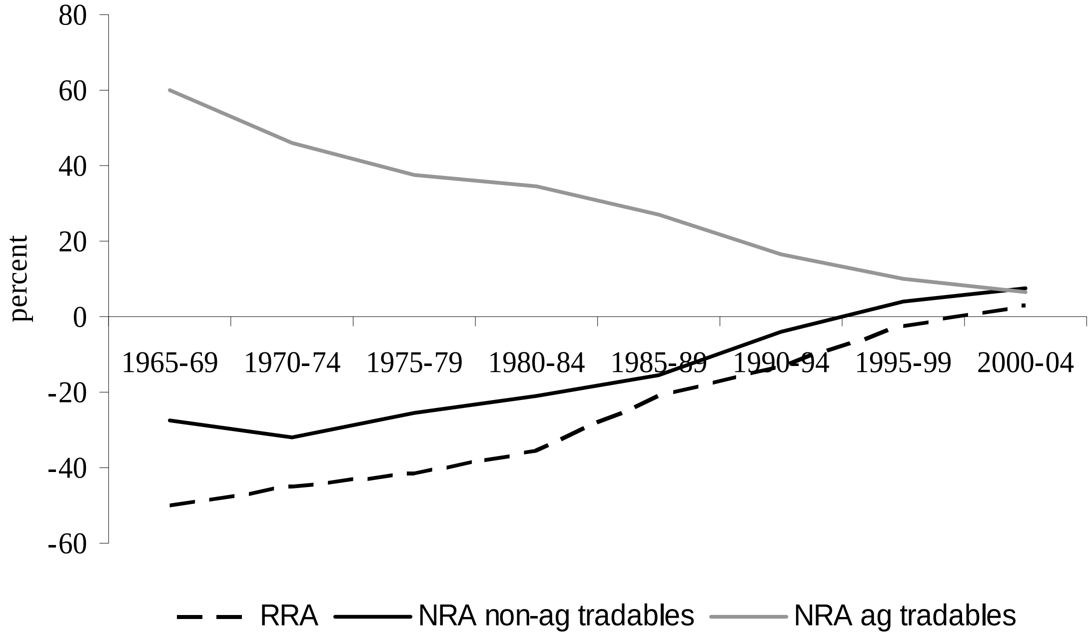
a. Covered products only. The total also includes nontradable.

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

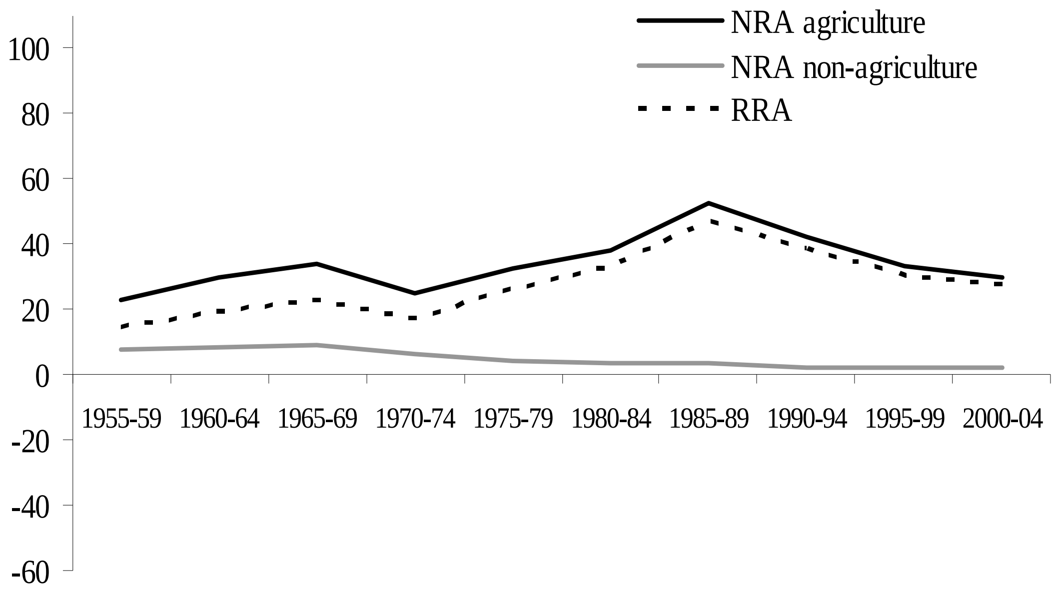
Figure 5: Nominal rates of assistance to agricultural and non-agricultural sectors and relative rate of assistance,[a] developing and high-income countries, 1955 to 2004

(percent, production-weighted averages across countries)

(a) Developing countries



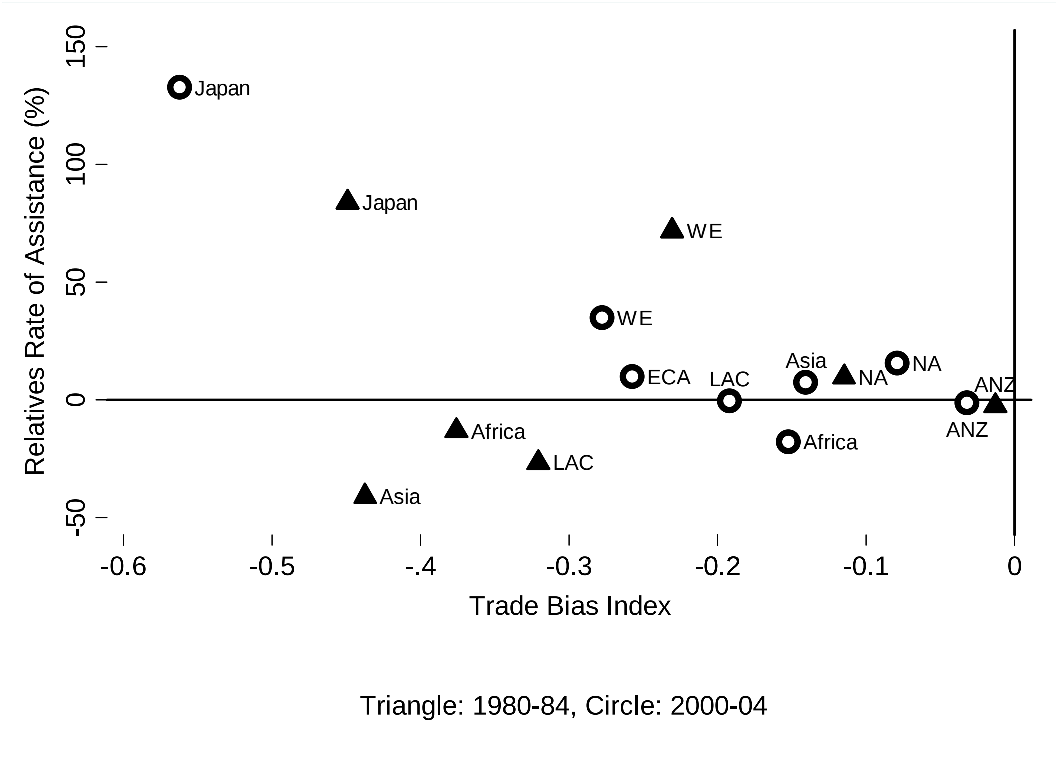
(b) High-income countries



[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).

Figure 6: Relationship between RRA and the trade bias index for agriculture, various regions, 1980-84 and 2000–04

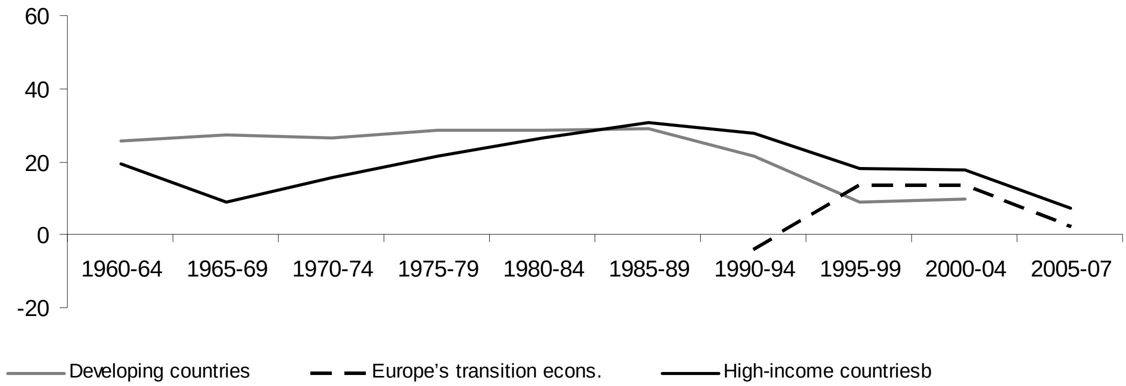


Source: Anderson (2009, Ch. 1), using the formulae in equations (1) and (2) and NRA and RRA estimates in Anderson and Valenzuela (2008).

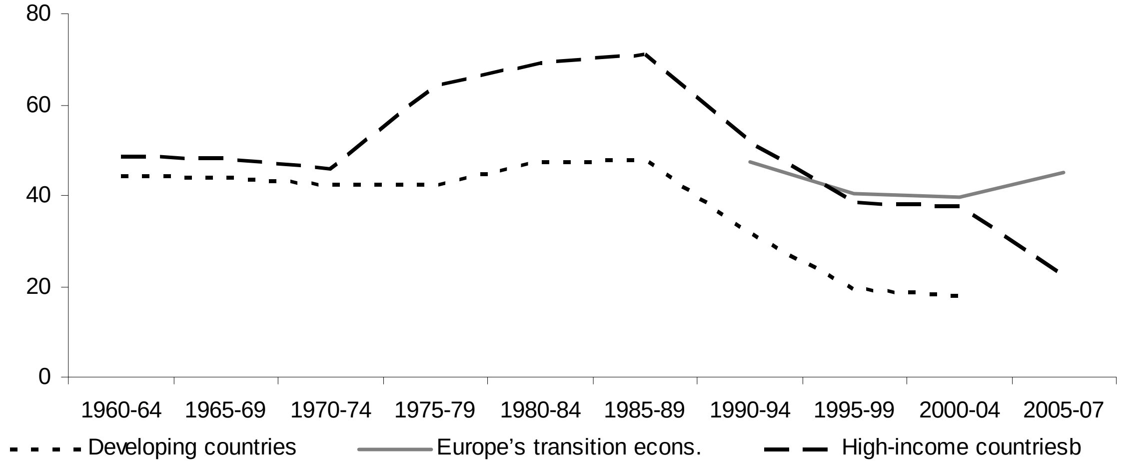
Figure 7: Trade reduction and Welfare Reduction Indexes for tradable farm products, by region, 1960 to 2007

(percent)

(a) Trade Reduction Index



(b) Welfare Reduction Index



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