

Reducing Distortions to Agricultural Incentives: Progress, Pitfalls and Prospects

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The vast majority of the world's poorest people depend on farming for their livelihood. So 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 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. With increasing recognition that both sets of policies reduce global economic growth and add to inequality and poverty in developing countries,¹ they have come under pressure to reform since the 1980s.

Numerous developing country governments have made considerable progress over the past two decades in reducing their own sectoral and trade policy distortions (World Bank 2001, Ch. 2), and many of them now believe high-income countries should reduce their remaining protectionism that harms developing country exports of farm products. Indeed they have been insisting on such commitments on farm policies in the WTO's current round of multilateral trade negotiations (the Doha Development Agenda) before they will consider offering any further reform commitments of their own.

Recent research from the World Bank (Anderson, Martin and van der Mensbrugge 2006a,b) and OECD (Tangermann 2005) supports earlier findings (e.g. by Anderson et al. 2001) that the agricultural protectionist policies of high-income countries reduce welfare in many developing countries. That World Bank research using the

Linkage Model of the global economy, along with similar research using the GTAP Model (Anderson and Valenzuela 2007), also suggests full global liberalization of merchandise trade would raise value added in agriculture in most developing country regions (except South Asia, where job growth for unskilled rural labor would expand more in labor-intensive manufacturing and service sectors). According to those results, much of the benefit from global reform would come not just from reform in high-income countries but also from liberalization among developing countries, including in many cases own-country reform.

These findings, together with the concerns raised in the AAEA Fellows Address by Per Pinstrup-Andersen in 2002, and by Wally Falcon's in 2005, raise the three key questions that are the subject of this paper: To what extent have the reforms of the past two decades succeeded in reducing distortions to agricultural incentives? Do current policy distortions still discriminate against farmers in low-income countries? And what are the prospects for further reform in the next decade or so? Those questions are addressed in turn, after first reviewing briefly the development of price and trade distortions up to the mid-1980s. The paper concludes by suggesting areas where improvements in economic analysis could facilitate further reform.

Policy developments to the mid-1980s

Historically, countries have tended to gradually change from taxing to subsidizing agriculture increasingly relative to other sectors in the course of their economic development – although less so, and at a later stage of development, the stronger a

country's comparative advantage in agriculture (Anderson, Hayami and others 1986; Lindert 1991). Hence at any point in time farmers in poor countries tended to face depressed terms of trade relative to product prices in international markets,² while the opposite was true for farmers in rich countries. 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 and North Africa). Poor-country farmers also have been disadvantaged by an anti-rural bias in public investments in infrastructure and human capital (education, health, agricultural R&D), and sometimes also by having to effectively finance urban consumer food subsidy programs (Byerlee and Sain 1986; Pinstруп-Andersen 1988). Within the agricultural sector of each country, import-competing industries tended to enjoy more government support than those that were more competitive internationally (Krueger, Schiff and Valdes 1988; Tyers and Anderson 1992; Herrmann et al. 1992; Thiele 2004).

The key results from the Krueger/Schiff/Valdes study, which relates to the period 1960-84, are summarized in Table 1. They strongly support the proposition that distortions to agricultural incentives were more negative for exporters than for those competing with imports and were lower the lower a country's per capita income. That measure takes into account not only direct distortions to agricultural prices through such instruments as export taxes but also – and more importantly – manufacturing protection and overvalued exchange rates, both of which attracted resources away from agricultural industries producing tradable products.

As well as that cross-country evidence, a third illustration of the association between agricultural protection and per capita income is provided by time series estimates for Northeast Asia. As Japan began to industrialize in the first half of the twentieth century, it imposed an ever-higher tariff on rice imports. During its annexing of Korea and Taiwan it adopted an imperial rice self-sufficiency goal and protected all three economies, raising the rate of rice protection from less than 10 percent prior to 1910 to more than 40 percent by the late 1930s (Anderson and Tyers 1992). The protection benefits went more to Japanese landlords than to those colonized, however. Following their independence, Korea and Taiwan – like former colonies elsewhere – initially chose policies that discouraged agriculture; but their rapid industrialization was soon accompanied by less taxation and then increasing protection for farmers, following Japan's example (Figure 1).

An additional feature of past policy interventions is that all countries tended to insulate their domestic food markets from international market fluctuations. The more countries did this the more international food prices varied, and so the more other countries felt the need to do likewise. Even when averaged across all agricultural primary products, Figure 2 shows that instability in that international market has been substantial. It also shows the extent of decline in those prices, which has averaged -0.8 percent per year over the past 105 years.

The anti-trade bias of policies in poor countries was often argued as being necessary so that governments could raise enough government revenue to provide public goods, but that is unconvincing on at least two grounds. First, a uniform export tax (which, by Lerner's (1936) Symmetry Theorem is equivalent to an import tax) would

have been much more efficient than the mixture of unequal import and export taxes plus quantitative trade restrictions that typically was being used along with overvalued and often multiple foreign exchange rates. And second, if tax revenue raising was the motive for sectoral distortions to incentives, how does one explain the subsidies for fertilizer, farm credit and irrigation that numerous democratic developing countries provide their farmers – the benefits of which are typically in proportion to farm size and so highly inequitable (see, e.g., Gulati and Narayanan 2003).

A more convincing explanation for the net taxation of agriculture relative to the industrial sector in poor countries and the opposite bias in rich countries has to do with the differing distributional effects of those interventions and of the relative costs of lobbying the government by the key interest groups (Anderson 1995). Because farmers are mainly subsisting in poor agrarian economies, their real incomes are not greatly affected by increases in farm output prices – whereas the urban population is far smaller and more easily able to organize, and food is an important part of consumer budgets. As economies develop, however, farmers become fewer in number and easier to organize. They also become more commercially oriented such that their real incomes are more strongly influenced by agricultural output prices. Meanwhile, the urban population becomes larger and hence more difficult to organize, and the importance of food in consumer budgets and the setting of wage rates declines. The end result can be a rapid increase in agricultural protection rates in high-growth middle-income economies.

Policy developments – and pitfalls – since the mid-1980s

Had it been left unchecked, one might have expected the anti-agricultural bias in sectoral policies to diminish with economic growth in developing countries, and agricultural protectionism to spread to subsequent generations of newly industrializing countries as their farm sectors came under pressure to shrink in relative terms and, eventually, in terms of absolute numbers of people engaged. That prospect contributed to the resolve of several groups in the 1980s to try to counter those national political forces with international influences. For example, agricultural-exporting countries formed the Cairns Group and succeeded in ensuring that GATT members include an agreement on agricultural trade and subsidy reform in the Uruguay Round outcome. Over the same period, and following two World Development Reports on the topic (World Bank 1982, 1986), international financial institutions made a more concerted effort to encourage developing countries to reduce unilaterally their distortions against agriculture. Accession to preferential trading agreements and to the WTO, and the demise of communism, helped in some cases too.

The net effect of these developments on import tariffs is now evident. Simple average tariffs have fallen considerably over the past two decades in low-, middle- and high-income countries (Table 2). They have fallen less, and still remain higher, for agriculture than non-agriculture, but if there were no other distortions these changes would suggest discrimination against internationally competitive producers in all three groups of countries has declined.

Farmers in developing countries have benefited indirectly from their governments' cuts not only in manufacturing protection but also in distortions to exchange rates (whose overvaluation discourages production of all tradables relative to

nontradable goods and services). An indication of the decline in exchange rate distortions is the huge reduction in black market premia in markets for foreign currency in all developing country regions. For a sample of 69 developing countries for which data are available, Table 3 reports that the trade-weighted average premium has fallen from over 140 percent in the 1960s to around 80 percent in the 1970s and 1980s and to just 9 percent in the early 1990s. Direct taxation of agricultural exports has diminished too, although some still remains, including implicitly via parastatal marketing enterprises.³

In Europe's transition economies, assistance to some (particularly livestock) farmers up to the early 1990s was substantial but so too was assistance to the industrial sector, so more analysis is needed before it is clear whether farmers received more or less government assistance than producers of other tradables prior to the reforms that began there in the early 1990s. For those transition economies that joined the European Union in 2004, in all but one case (Slovenia) their 2001-03 levels of agricultural protection were 30 per cent or more below the EU-15 average (OECD 2006). Those protection levels will thus continue rising over the accession phase-in period of the next decade unless the EU's Common Agricultural Policy is reformed drastically during that time. At the same time, the protection of manufacturing and service sectors will fall as those countries become part of that customs union. The same is likely to be true in at least Bulgaria and Romania and possibly Ukraine as they aspire to accede to the EU in future membership expansions. Even where EU accession is not on the horizon, the net energy exporters of the former Soviet Union, most notably Russia and Kazakhstan, are looking to boost their subsidies to agriculture in response to the real exchange rate appreciations associated

with the rise in international prices of energy raw materials. By contrast, some of the poorer agrarian economies of Central Asia have introduced agricultural export taxes.

While there is still plenty of piecemeal evidence of anti-agricultural policies in many developing countries, including via informal taxes by local and provincial governments as in China and Sub-Saharan Africa (Lin et al. 2002, Townsend 1999), some analysts suggest the bias against agriculture has now disappeared (see, e.g., the national general equilibrium analyses in Jensen, Robinson and Tarp 2002). However, numerous more-advanced developing countries are moving from an anti-agricultural bias to not a neutral policy regime but – as in earlier industrializing countries – to one which is increasingly pro-agricultural, particularly for some import-competing food industries. That bias, which can be just as welfare-reducing as an anti-agricultural bias, is at least partly in response to the rapidly widening gap between farm and non-farm household incomes that often accompanies rapid industrialization – even though farm incomes might be rising in absolute terms (Hayami 2005).

In OECD countries, the average agricultural producer support estimate (PSE) has fallen from 37 percent in 1986-88 (the beginning of the Uruguay Round of trade negotiations) to 30 percent in 2005, but that nonetheless represents more dollars and Euros now than two decades ago. True, the proportion of the PSE that is now at least somewhat decoupled from production has risen from less than one-tenth to more than one-quarter over that period (Figure 3). But not all the re-instrumentation is towards less production- and trade-distorting measures. Of particular note is the growth in non-tariff import barriers ostensibly for food safety or environmental reasons. Two cases that have already been subject to WTO dispute settlement are the EU's restrictions on imports of

beef from cattle that have been fed growth hormones, and of food and feed products containing genetically modified organisms (GMOs). In both cases the EU was found by the WTO's panel and appellate body to be not in conformity with its obligations, yet neither case has been settled to the satisfaction of the complainants.

As for trade between high-income and developing countries, the EU claims leadership in providing non-reciprocal preferential access to its markets for its former colonies in Africa, the Caribbean and the Pacific (ACP) under the Cotonou Agreement. Earlier this decade it also decided to provide duty-free and quota-free access to its markets for 'everything but arms' to UN-designated Least Developed Countries (LDCs), although it also excluded services and it continues to delay the opening of three sensitive food markets (bananas, rice and sugar). These measures *may* help the better-off ACP and LDC farmers with a marketable surplus although, in the case of ACP supplies subject still to quotas, most of the benefits accrue to the holders of EU import quotas (who are more likely to be from a European than an ACP country). But these types of preferential agreements necessarily are at the expense of very many more equally poor exporters in other (non-ACP, non-LDC) developing countries including China, Indonesia, India, Pakistan and Vietnam. Whether they are a net help to preference-receiving and other developing countries is an empirical question that can only be answered with an empirical model that incorporates all those trade preferences in its protection database.

Are current policies still harming farmers in developing countries?

What do the available protection database and model from Purdue University's Global Trade Analysis Project (GTAP) say about recent distortions? They suggest that as of 2001, and consistent with Table 2 above, the import-weighted average nominal ad valorem rates of tariff and subsidy intervention were greater in agriculture than other primary sectors and manufacturing even in developing countries, although less so than in high-income countries. Using the GTAP-AGR variant of the GTAP model developed by Keeney and Hertel (2005), a recent study has translated that structure of nominal rates of distortion into global general equilibrium effective rates of assistance to farmers in various regions of the world. Specifically, Anderson and Valenzuela (2007) report the effects on agricultural value added (real net farm income) of full global liberalization of import tariffs and agricultural subsidies. The results, reported in Table 4, suggest that real net farm income would rise in all key developing countries and regions with a move to free trade. Moreover, that rise is greater than the increase in value added in non-farm sectors except in Sub-Saharan Africa (where the two rise by a similar amount). That is, according to that database and model, developing country farmers as a group are still being discriminated against by the structure of distortions as of 2001.

That estimated positive impact of such reform on farmers in Sub-Saharan Africa is consistent with results using another global CGE model (Linkage – see van der Mensbrugghe 2005). The Linkage model has been used by Anderson, Martin and van der Mensbrugghe (2006c) to explicitly address a question raised by Panagariya (2005), who suggests that such a region would be likely to lose from liberalization of at least OECD agricultural protection. The basis of Panagariya's suggestion has two elements. One is that net food-importing countries of the region would lose because OECD reform would

raise international food prices. The other is that many of the region's countries are LDCs or ACP countries and so get preferential access to the high-priced food markets of OECD countries, liberalization of which would cause preference erosion. But these are only two of the numerous aspects of this issue. Account needs to be taken also of what happens to the non-agricultural terms of trade for regions such as Sub-Saharan Africa (SSA), and to the prices of its agricultural exports that are not sold in preferential markets. Their impact on national economic welfare, and in particular on net farm incomes, also needs to be examined.

Linkage modeling results addressing Panagariya's question are summarized in Table 5. The region's agricultural and food import price index rises, but so too does the export price index for those goods. Evidently the rise in demand for SSA exports enjoying little or no preferential access more than outweighs the reduced earnings from their exports that have been enjoying substantial preferences. But that is only half the story. The other half has to do with changes in prices of non-agricultural products. Table 5(a) shows that while the price of other imported goods rises slightly, because of growth in demand for relative to supply of them in high-income countries as their incomes rise, the price of SSA's exports of non-agricultural goods rises even more. The relative importance of each of these sets of price changes in contributing to the changes in regional economic welfare is summarized in the lower half of Table 5, which reveals two things. First, the negative contribution to SSA welfare from higher import prices is more than offset by the positive contribution from higher export prices (except for farm products in South Africa where they almost cancel out). And second, the contributions on both the export and import side are larger from non-agricultural than from agricultural

price changes. So even though the price changes shown in Table 5(a) for SSA from high-income country agricultural liberalization are smaller for non-farm than farm products, the greater weight of non-farm products means their net positive welfare contribution to SSA via the terms of trade effect is greater.⁴ The overall impact on SSA net farm incomes is a boost of 7 percent, and the real value of the region's agricultural and food exports would rise by more than 80 percent (Anderson, Martin and van der Mensbrugge 2006c, Table 7).

Prospects for policy reform in the next decade

Since the process of reform is far from complete, pressures to open up markets will continue multilaterally, preferentially and unilaterally, while groups with vested interests in current policies will continue to counter-lobby to retain and increase sectoral assistance. How might these net out?

Multilaterally, the WTO membership has had agricultural tariff and subsidy cuts high on its Doha Development Agenda, but as of July 2006 the political willingness to reform varied too much between the key players for an agreement to be in sight. If no agreement is forthcoming by early 2007, and if the US President is unable to secure a renewal of his fast-track authority when it expires in July 2007, it could be several more years before that round of negotiations is concluded. Even then, the extent of reform agreed to could be quite modest, depending on the 'devil' hidden in the details. Three components in particular matter. One is the very large extent of 'binding overhang' in current tariffs and subsidies, which means very large cuts in legally bound rates will be

required if they are to translate into real cuts in applied rates of subsidies and tariffs. Another is the exceptional treatment that will be provided for ‘sensitive’ and ‘special’ farm products in the form of allowing them to be subject to lesser cuts (and possibly to no tariff cap, should one be introduced for other products). And the third is the extent to which developing countries are granted ‘special and differential treatment’ in the form of lesser cuts and longer phase-in periods, with LDCs not required to reform at all. As shown by Martin and Anderson (2006), together those elements could be sufficient to wipe out entirely any immediate gain for low-income countries from agricultural reform under Doha – although the lowering of the ‘binding overhang’ could help agricultural exporters in future years of low international prices (Francois and Martin 2004) and would make it easier for subsequent rounds to make more-effective cuts. The outlawing of export subsidies also would be a gain to the subsidizing countries and to other food-exporting countries, albeit at the expense of food-importing countries currently enjoying lower import prices because of those subsidies.

Additionally, WTO could continue to contribute through the process of negotiating accession of new members. That process managed to extract large cuts in agricultural protection in China, whose tariffs and subsidies are now legally bound at low rates averaging less than 20 percent. If WTO accession can lead to low legal bindings on tariffs and subsidies for other large acceding countries (Russia, Ukraine, Kazakhstan, Vietnam, Iran), that could be a significant achievement if the counterfactual would be rising support for agriculture in those economies. To appreciate this point, imagine what Figure 1 above would have looked like if Japan and Korea, when they joined the GATT

in 1955 and 1967 respectively, had been constrained like China now is: their nominal rates of protection also would be less than 20 percent, instead of ten times that rate.⁵

There are two consequences of the WTO's Doha round going into suspension in late July 2006. One is that some members will begin dispute settlement proceedings against others, particularly in agriculture now the 'peace clause' has expired. That always has the potential to bring about reform, but recent experiences with the WTO's beef hormone, banana, and cotton cases demonstrate that this can be a long process with sometimes little or no liberalization emerging from it. The other consequence of Doha not progressing is that countries will again turn their attention to prospective regional and other preferential trading agreements (PTAs). The record of those arrangements in freeing up agricultural markets is no better than that of the GATT and WTO, however, so this route is unlikely to be a substitute for WTO in terms of negotiating down distortions to agricultural incentives. An example is the forming of new regional PTAs among ACP countries so that they can negotiate new Economic Partnership Agreements (EPAs) with the European Union (EU). On the one hand, that will provide very little extra market access for ACP exporters because they have close to free access to the EU already. On the other hand, there is a risk that an EPA could lead to trade diversion toward EU imports into ACP countries as the latter drop their bilateral trade barriers. Such a prospect reinforces the benefits to ACP countries from reducing their most-favored-nation tariffs via multilateral or unilateral initiatives.

The political economy of trade policy is not often conducive to unilateral reform, but opportunities arise from time to time and the best leaders will capitalize on them. One of them is the current wave of globalization, which is lowering both natural and

governmental barriers to export sales abroad. That raises the benefits from opening one's own economy and simultaneously raises the costs of poor economic governance, since capital flight to better-governed economies is becoming ever cheaper, easier and faster. A second opportunity relates to the biotechnology revolution: it offers potentially high payoffs to early adopters, especially if the Doha round were to cause markets to open, while non-adopters may lose because of the price downturn following adoption by others. This is clearest in the case of cotton (Anderson and Valenzuela 2006), but applies also in the case of rice and other foods (Anderson, Jackson and Nielsen 2005, Anderson and Jackson 2005). This is true even if those new varieties contain GMOs, so long as significant parts of the world do not require GM labeling. And a third phenomenon that is altering the political economy of agricultural distortions is the increasing concentration of firms in various links in the food value chain. As processors and retailers exploit new economies of scale with falls in international transport and communication costs, and become more global in focus, they are becoming ever-stronger lobbyists for openness in markets abroad. Those nations that take up this challenge early will best position their agri-food sectors and consumers to take advantage of this revolution. In practice for developing countries this means increasing contestability in the processing and marketing of their farm products and inputs, and focusing rural public expenditures more on reducing underinvestment in public-good institutions and infrastructures to lubricate that value chain rather than on inequitable and inefficient farm input subsidies.⁶

Where can the economics profession contribute more to the policy reform process?

One way to encourage developing countries to further reform their sectoral and trade policies is to promote transparency of policy measures and their effects (including who benefits). The WTO's Trade Policy Review Mechanism (TPRM) describes policy changes for each developing country every six or so years (or four years for the largest economies). Another way is to offer specific advice based on a diagnostic study. For least developed countries the Diagnostic Trade Integration Study (DTIS) process, an integral activity of the Integrated Framework for Trade Related Technical Assistance to LDCs, builds on the TPRM and related reports to provide such action plans for policy and institutional reform and to list investment and technical assistance needs. Moves are afoot to expand several-fold the budget for the IF process from January 2007.

Both processes (TPRM and IF) could be more effective if they had access to better empirical research findings on the extent, causes and effects of policy evolution in the country in question relative to other comparable countries with more or less successful reform histories.⁷ That immediately suggests three areas where detailed empirical research could be undertaken, considered here in turn.

Estimating the changing extent of distortions

Empirical analysis on the degree of interventions in agricultural markets has been provided in a consistent way for almost 20 years by the Secretariat of the OECD (2006) for developed countries plus Korea, Mexico, some of Europe's transition economies and a handful of large developing countries, in what are now called Producer Support Estimates (PSEs). No such comparable series has been generated for long periods for other developing countries since the Krueger, Schiff and Valdes (1988) study which

covered the 1960-1984 period for 18 developing countries, apart from a nine-year update for the Latin American countries in that sample by the same country authors (Valdes 1996), and a comparable study of 7 central and eastern European countries (Valdes 2000). An exception is a new set of estimates of nominal rates of protection since 1985 for a few key farm products in China, India, Indonesia and Vietnam (Orden et al. 2006).

Better PSE-type estimates of the extent of price distortions facing farmers and other producers would improve policy transparency directly by providing stand-alone indicators that are easily understood by participants in policy debate. If they show the relative contributions of different policy instruments to the aggregate PSE, they can also assist trade negotiators to select their priorities. And if they are provided in the right format they can supplement the GTAP protection database used by most CGE modelers, which currently relies mostly on applied tariff rates to represent distortions to agricultural prices in developing countries (see www.gtap.org).

Even though the latest protection estimates, for 2001, are a vast improvement over earlier estimates provided by GTAP, shortcomings remain. One is that there may be ‘water’ or unused protection in such tariffs, for example due to duty exemptions and drawbacks (Ianchovichina 2004). It is also possible that nontariff import barriers such as quarantine restrictions or food quality standards exist such that the applied tariff understates the actual protection level. Indeed recent measures of the Trade Restrictiveness Index suggest that there is nearly as much import protection from nontariff measures as from tariffs (Kee, Nicita and Olarreaga 2006). Third, production or export taxes or non-tax export restrictions, or exchange rate distortions – all largely ignored in the GTAP protection database – may be still in place. A fourth is that value

added taxes on agricultural products (and excise taxes on alcoholic beverages and tobacco) may be applied at the border on imported products but not – or not as fully – on domestically produced like products.⁸ Informal (often illegal) taxes in cash or kind are often levied on farmers by local governments too (Townsend 1999; Lin et al. 2002). Moreover, few developing country subsidies, including for farm inputs and to food consumers, are captured in the GTAP database.

That these estimates matter is clear from some CGE results by Anderson and Valenzuela (2007) which focus on the effects of current trade and agricultural subsidy policies globally on net farm incomes in various developing countries. If the tariffs in the GTAP database are representative of policies in developing countries, then full global liberalization of goods trade would, according to the GTAP-AGR model, raise farm incomes more than value added in the non-farm sector in Argentina, and in Sub-Saharan Africa it would raise them but only slightly and less than non-farm value added. In India and Bangladesh, by contrast, the results suggest farmers would be worse off from such a reform using GTAP's default tariffs (Table 6). If, however, distortions to agricultural and processed food markets in those countries net out to be effectively zero because of tariff exemptions or offsetting input subsidies and the like, then the benefits of reform to farmers in Sub-Saharan Africa and South Asia would be positive and considerably higher than the benefits to non-agriculture. In the case of Argentina, it re-introduced export taxes in late 2001 that are not included in the GTAP database. When they are included in the base, the gains to Argentinean farmers from global trade reform increase from less than 20 percent to more than 50 percent, and from unilateral reform from 1 to 33 percent (compare upper and lower parts of Table 6).

Estimating the effects of current distortions and reform alternatives

Enormous progress has been made in the past two decades in the use of CGE models to estimate economic effects of past and prospective trade-related policy regimes. Recent examples include the continuing disaggregation of the GTAP database regions to individual countries, and the provision of bound and applied bilateral tariffs at the same (HS6) level of disaggregation so as to know what cut in applied tariffs and subsidies to expect from commitments to cut WTO-bound rates. Planned further disaggregation of the database's products and regions over the next year or so will help, as will the inclusion of newly developed databases on bilateral international flows of labor and capital. With greater firm concentration in the value chain, it is becoming ever-more important to include imperfect competition and scale economies in our CGE models too.

Models also need to include scope for market and product diversification of exports, including for farm goods. In just a few years Peru's share of global exports of asparagus have risen from almost nothing to more than one-third of global exports; and Ethiopia, Kenya and Senegal in even fewer years have emerged as exporters of green beans, accounting already for one-tenth of global exports. Recent theoretical research highlights this role of the "extensive" margin, where export expansion involves increases in the range of products exported and of markets supplied. Hummels and Klenow (2005) find that only about one-third of the export expansion associated with economic growth comes from the "intensive margin" where greater quantities of the same products are exported. Additionally, Evenett and Venables (2002) estimate that about one-third of the expansion of exports from developing countries was obtained by exporting products to

new markets. In GTAP simulations introducing the Hummels-Klenow preference for variety in exports from China and India, Dimaranan, Ianchovichina and Martin (2006) find that the terms of trade for these exporters need not deteriorate significantly, despite very high projected rates of export growth.

CGE models typically are comparative static rather than dynamic and so capture only a small share of the prospective economic gains from trade reform. Recent research on the aggregate links between exports and productivity has more carefully examined the potential endogeneity of that interaction. Firm-level studies report evidence of productivity growth associated with learning-by-doing after firms enter exporting (Blalock and Gertler 2005, Fernandes and Isgut 2006). Van Biesebrock (2004) finds that African exporting firms had higher productivity before entering export markets, and that their productivity levels, and their subsequent rates of productivity growth, grew after entering export markets. Girma, Greenaway and Kneller (2004) find both higher initial levels of productivity and higher productivity growth rates after entry into exporting. There are also potentially important gains from improvements in the quality of exports. Hummels and Klenow (2005) suggest that these improvements in quality are sufficiently rapid that the prices received by countries for the products that they continue to export actually rise – in contrast to traditional Armington models which generate a *reduction* in export prices when economies grow and exports expand. Making these modifications to CGE models will not only provide larger and more realistic projections of production, consumption and trade changes, but also of the overall projected national and global welfare gain from trade reform.

Finally, the incorporation of regulations to foreign trade and investment in services is sorely needed, since there are indications that the costs of barriers to trade in services – including to farmers and agri-business – are very substantial.⁹ But significant funding for a long-term research program will necessarily be required to make progress on this complex front.

Analyzing the political economy forces behind distortionary policies

Improving our understanding of the reasons behind the evolution of trade-related policies as economies grow is necessary partly because, as Stigler (1975, p. ix) says, “Until we understand *why* our society adopts its policies, we will be poorly equipped to give useful advice on how to change those policies.” But it is also necessary so that we can include more-appropriate counterfactuals in our CGE model projections. As mentioned in footnote 5, typically the status quo is adopted as the baseline case by modelers when in fact rising protectionism – and hence higher estimated welfare gains from reform – may well be more realistic.

Surveys of attempts to explain agricultural policies are available in Binswanger and Deininger (1997) and de Gorter and Swinnen (2002), while surveys focusing on explaining trade policy more broadly include Hillman (1989), Rodrik (1995) and Gawande and Krishna (2003). Substantial econometric progress has been made in the past 15 years following the pioneering theoretical work by Grossman and Helpman (2001, 2002) but, as Ethier (2006) warns, that should not be the only approach. It is possible also to use CGE models to back out politicians’ preferences from the estimated impacts of the protection structure on industry value added. Balaoing and Francois (2005)

adopt that approach in analyzing EU trade policy. To use it for developing countries first requires bringing together comparable time series estimates of the structure of distortions in those countries, so as to be able to test hypotheses about trends over time and across industries, about changing choices of policy instruments (including the relative importance of exchange rate measures, indirect border measures such as manufacturing tariffs, and various agricultural price, trade and direct farm income measures), and about fluctuations in distortions around longer-run trends.

Moving forward

To progress this research agenda, a newly launched research project at the World Bank is revisiting the Krueger/Schiff/Valdes study but for a much larger sample of countries. Its first phase is focusing on measuring the extent of direct and indirect distortions to agricultural incentives since the 1950s, and providing a broad-brush analytical narrative explaining the evolution of each nation's policy regime over that period. This will provide a rich springboard for the project's second phase, which involves two streams of work. One will focus on empirical analysis of myriad economic effects¹⁰ of those distortions using national and global CGE models. The other will focus in more detail on understanding the political economy forces behind the patterns of distortion across countries and over time, and behind the evolution in policy instruments used. This stream will draw in part on the distributional results emanating from the CGE analyses.

If this research provides stronger evidence that agricultural protection and subsidies not just abroad but also at home are ineffective in helping small farm

households escape from poverty, it would make it easier to persuade governments and development NGOs that reducing agricultural price distortions in developing countries leads to pro-poor growth. Such an outcome would be all the more likely if reducing distortions were to be accompanied by complementary domestic reforms such as reducing public underinvestment in rural infrastructure and institutions.

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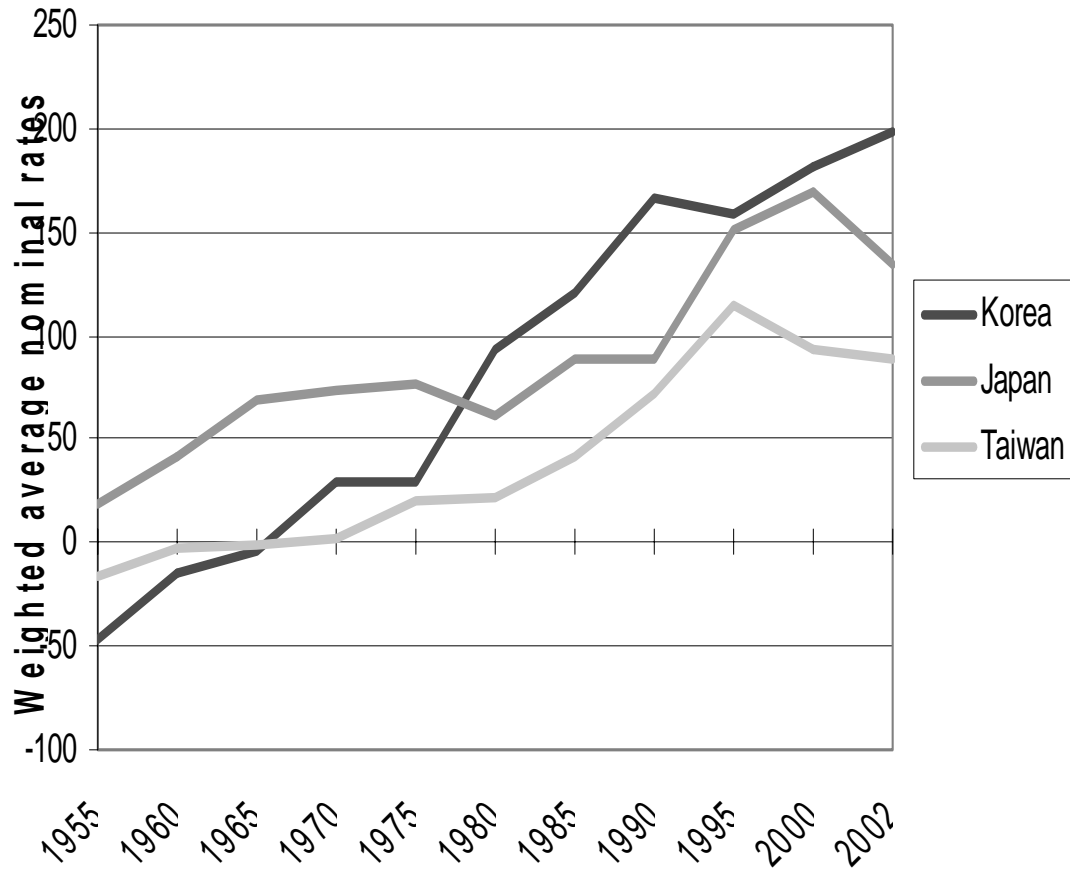
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Figure 1: Nominal agricultural protection growth in Japan, Korea and Taiwan, 1955 to 2002

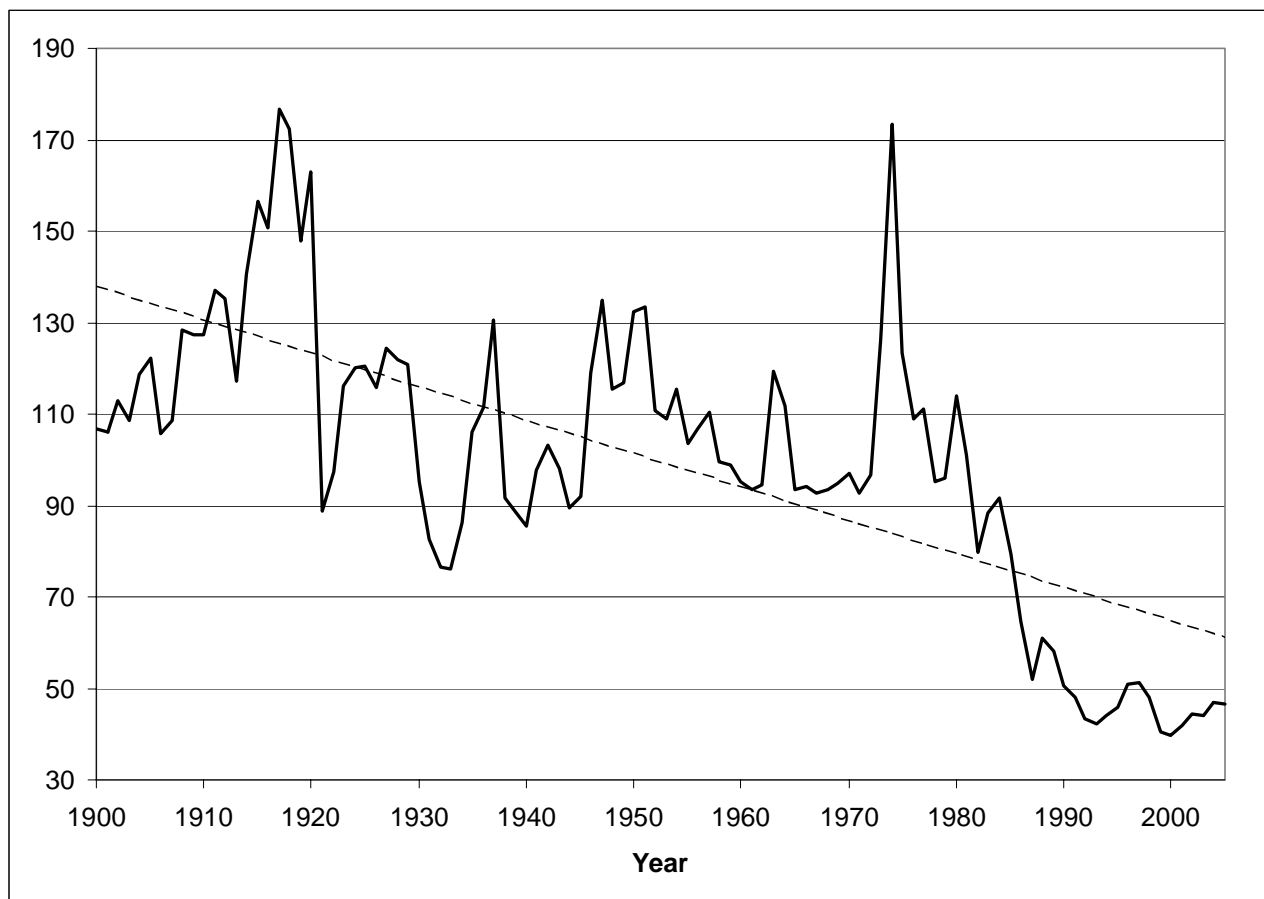
(percent)



Source: Anderson, Hayami and Others (1986, Table 2.5), updated by Hayami and Honma (2006).

Figure 2: Real international food prices,^a 1900 to 2005

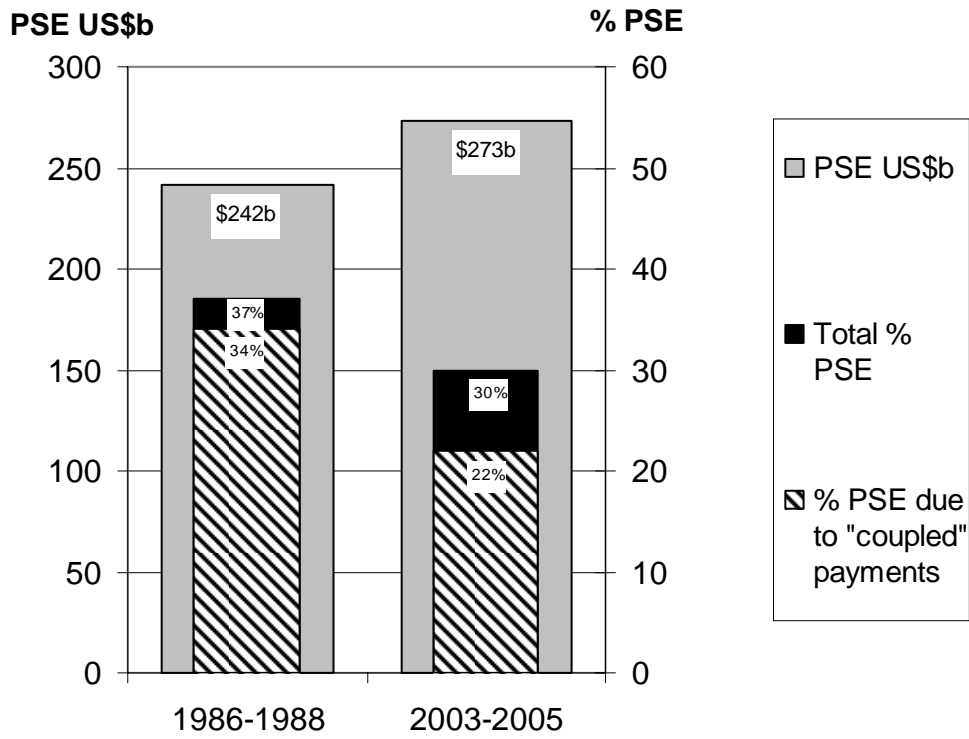
(1977-79 =100)



^a An index of export prices in US dollars for all major traded agricultural products, deflated by the MUV index which is the unit value of manufactures exported from France, Germany, Japan, UK and US, with weights based on those countries' exports to developing countries. The trend rate of decline is 0.8 percent per year of these 105 years, and 3.5 percent over the most recent one-third of that period (since 1970).

Source: Updated from Grilli and Yang (1988) by Betty Dow and Shane Streifel of the World Bank's Development Prospects Group.

Figure 3: Agricultural producer support estimates (PSEs), OECD countries, 1986 to 2005



Source: Constructed from PSEs reported in OECD (2006).

Table 1: Total (direct plus indirect) nominal rate of protection to agriculture, sample of 18 developing countries, 1960-84

<i>Country income group (lowest per capita income first):</i>	Importables		Exportables	
	Direct	Total	Direct	Total
Group I	18	-11	-21	-49
Group II	8	-13	-16	-40
Group III	14	-2	2	-14
Group IV	28	15	1	-1
All 18 developing countries	14	-9	-13	-35

Source: Schiff and Valdes (1992, Table 2-2)

Table 2: Simple average applied tariffs, agriculture and other importables, 1988 to 2003

(percent)

Sector:		1988-90	1995-97	2001-04
Low-income countries	Primary agric	26.9	19.0	13.8
	Processed food	40.6	26.8	20.7
	Non-agr goods	32.9	21.1	13.1
Middle-income countries	Primary agric	21.8	11.7	11.7
	Processed food	31.6	18.8	18.6
	Non-agr goods	25.1	12.6	10.3
High-income countries	Primary agric	3.1	3.8	4.1
	Processed food	7.8	8.1	5.6
	Non-agr goods	5.6	4.7	3.2

Source: UNCTAD TRAINS database, accessed from www.wits.org

Table 3: Black market exchange rate premia, weighted average across 59 developing countries, by region, 1960 to 1993

	(percent)			
	1960s	1970s	1980s	1991-93
North & Sub-Saharan Africa	23	45	75	23
South & East Asia	233	25	15	6
East Europe & Central Asia	277	231	238	5
Latin America & Caribbean	13	34	89	9
All developing countries in sample	144	77	76	9

Source: Estimated using country data compiled by Easterly (2006) using the sum of export and import revenue as weights.

Table 4: Effects on sectoral value added of removing all merchandise import tariffs and agricultural subsidies as of 2001

	(percent)	
	Primary agricultural value added	All non- agricultural value added
Sub-Saharan Africa	2.3	2.7
South Asia	0.3	-0.1
E. Asia (excl. Ja, Ko, Ta)	9.5	5.0
Latin America	11.5	-0.2
ALL DCs	5.6	2.0

Source: Anderson and Valenzuela (2007)

Table 5: Impact of full liberalization of OECD agricultural tariffs and subsidies on Sub-Saharan Africa

(a) Impact on indexes of real^a export and import prices for Sub-Saharan Africa
(percent)

	Export prices		Import prices	
	Agric & food	Other products	Agric & food	Other products
Sub-Saharan Africa (SSA)	2.5	1.2	4.3	0.4
South Africa	1.0	0.7	3.5	0.4
Other Southern Africa ^c	4.1	3.2	2.8	0.5
Rest of Sub-Saharan Africa	2.2	1.1	4.8	0.3

(b) Impact of terms of trade's contribution on real income changes in Sub-Saharan Africa
(\$billion)

	Change in regional welfare due to:		
	Change in export prices	Change in import prices ^b	Sum of export and import price effects
Agric and food products – all SSA	0.94	-0.38	0.56
South Africa	0.05	-0.09	-0.04
Other Southern Africa ^c	0.36	-0.03	0.33
Rest of Sub-Saharan Africa	0.53	-0.25	0.28
Non-agricultural products – all SSA	1.45	-0.53	0.92
South Africa	0.35	-0.15	0.20
Other Southern Africa ^c	0.37	-0.10	0.27
Rest of Sub-Saharan Africa	0.72	-0.29	0.43

^a Relative to the numeraire which in this version of the LINKAGE model is the price of high-income countries' exports of manufactures.

^b The numbers in this column have the opposite sign to the import price indexes in part (a) of this Table because an import price rise reduces real income (whereas numbers in the export columns have the same sign).

^c Botswana, Madagascar, Malawi, Mozambique, Tanzania, Uganda, Zambia, Zimbabwe. These countries accounted for 14 percent of Sub-Saharan African GDP in 2001, while South Africa accounted for 36 percent and the Rest of Sub-Saharan Africa accounted for 50 percent.

Source: Anderson, Martin and van der Mensbrugghe (2006c, Tables 5 and 6)

Table 6: Changes in agricultural (and non-agricultural) value added from own, other countries' and global full goods trade liberalization, selected developing countries

	(percent)			
	Own agric tariff (%)	Own reform	Other countries' reforms	All countries' reforms ^a
<i>With default tariffs</i>		<i>Default</i>		
Argentina	7	1.3	18.0	19.3 (0.7)
Sub-Saharan Africa, ex. South Africa	20	-2.5	4.4	1.9 (3.4)
India	50	-4.3	3.6	-0.7 (-0.2)
Bangladesh	13	-2.9	1.7	-1.2 (1.2)
<i>With alternative tariffs</i>		<i>Alternative</i>		
Argentina ^b	0	32.9	21.1	54.0 (6.8)
Sub-Saharan Africa, ex. South Africa	0	2.3	4.6	6.9 (4.4)
India	0	1.2	3.8	5.0 (0.1)
Bangladesh	0	1.9	1.8	3.7 (1.1)

^a Numbers in parentheses show percentage changes in non-agricultural value added as a consequence of full global trade reform.

^b From 2002 Argentina imposed export taxes (20 percent for cereals, oilseeds and livestock products, 10 percent for other (including non agricultural) primary products, and 5 percent for other processed food products and all other manufacturing), so in Argentina's alternative case those are first introduced as well as zero agricultural import tariffs before the effects of reform are re-estimated.

Source: Anderson and Valenzuela (2007)

¹ Currently less than 15 million relatively wealthy farmers in developed countries, with an average of nearly 80 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 less than 3 hectares per worker (according to FAOSTAT statistics at www.fao.org).

² The most extreme cases in the 20th century of anti-agricultural industrialization have led to not just impoverishment but to massive deaths: 15-20 million in the Soviet Union in the early 1930s (Conquest 1986), 17-30 million in China in 1959-61 (Lin 1990; Li and Yang 2005), and up to 1 million in North Korea during 1995-2000 (Goodkind and West 2001). 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 (3 million) and the Ethiopian famine of 1984-85 (up to 1 million), see Sen (1981) and Ravallion (1997). A comprehensive listing that also includes war deaths is provided by White (2005).

³ Evidence of on-going direct discouragement to agricultural exports in low-income countries is presented in OECD (2003), Piermartini (2004), Thiele (2004) and Kazeki (2005). Argentina re-introduced export taxes in late 2001, ranging from 5 to 20 percent.

⁴ This is almost the same as the result found by the OECD Secretariat using its version of the GTAP model known as GTAPEM (see Tangermann 2005), which is very similar to the GTAP-AGR model referred to above.

⁵ If such growth in protection had been the counterfactual used in CGE analyses assessing the consequences of China's WTO accession, instead of assuming the status quo, the estimated national and global welfare benefits would have been several times larger.

⁶ Evidence of such a bias in public expenditure in Latin American countries has been analysed by Lopez (2005) and Allcott, Lederman and Lopez (2005).

⁷ For recent assessments of the role of economists and economic analysis in trade policy formulation, see Anderson (2005) and Evenett (2006).

⁸ Even though this violates the WTO's national treatment rule, it apparently is not an uncommon practice in poorer countries where it is claimed to be too expensive to collect VAT on farm products. And with more than 100 countries now imposing value added taxes of 10 percent or more (Ebrill et al. 2001), this practice may be adding substantially to delivered rates of agricultural protection in developing countries.

⁹ When services distortions are not included, there is the same problem with interpreting the welfare effects of goods trade reform generated by a CGE model as there is from a partial equilibrium model of a subset of markets in the presence of distortions in other markets of that economy. That is, if services distortions exceed goods protection then decreasing the latter could worsen national economic welfare even though a CGE model which specifies zero distortions for services markets would suggest a welfare gain from a goods protection cut. The only solution to this problem is to continue to build on the pioneering work reported in Findlay and Warren (2000) on measuring the extent of distortions to markets for services and that of Jensen, Rutherford and Tarr (2006) and others in incorporating those measures into CGE models.

¹⁰ This phase will include analyzing the effects on poverty, building on recent frontier work by Hertel and Winters (2006) and Hertel et al. (2006).