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Agricultural Trade

What Matters in the Doha Round?

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Abstract

This survey concludes that including agriculture in the Doha Agenda negotiations was important both economically and politically, although the political resistance to reform is particularly strong in this sector. While agriculture accounts for less than 10 percent of merchandise trade, high and variable agricultural distortions appear to cause the majority of the cost of distortions to global merchandise trade. Within agriculture, most of the costs appear to arise from trade barriers levied on imports since these barriers tend to be high, variable across time and over products, and are levied by a wide range of countries. The negotiations faced a need for balance between discipline in reducing tariffs and hence creating the market access gains that are central to the negotiations, and flexibility in managing political pressures. While the approach of providing flexibility on a certain percentage of tariff lines is seriously flawed, the proposed Modalities still appear to provide worthwhile market access. Better ways appear to be needed to deal with developing countries' concerns about food price volatility while reducing the collective-action problems resulting from price insulation.

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Agricultural Trade: What Matters in the Doha Round?

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Agricultural Trade: What Matters in the Doha Round?

Agricultural trade reform has played a central role in the Doha Agenda, with negotiations on agriculture proceeding in parallel with those in manufactures. Not only have the negotiations on this small part of world trade in goods received at least as much attention as the remaining 90 percent of merchandise trade, they also appear to have contributed almost as much to the difficulties involved in the negotiations, with disagreements over agriculture being the proximate cause of the failure of two critical Ministerial Meetings in 2008.

The agricultural negotiations began in 2000, along with services, under the "built-in" agenda of the Uruguay Round, and hence are even longer-running that the Doha Agenda itself. At the time, there was a widespread view that negotiations on agriculture and services alone would not provide a sufficient balance of interests, and that other areas of interest would be required if a successful round were to be pursued (Anderson, Hoekman and Strutt 2001). The "built-in" agenda negotiations were therefore merged into a broader Doha Round when this was successfully launched in late 2001. The negotiations began with a negotiating Mandate (WTO 2001) setting out broad objectives; reached a Framework Agreement (WTO 2004) analyzed in Anderson and Martin (2006); and ran aground over draft Modalities setting out fairly specifically what countries need to do if an agreement is reached (WTO 2008a,b).

The negotiations on agricultural and on non-agricultural reforms were undertaken independently, although it is clear that members would, in the final analysis, weigh up perceived benefits in one negotiation against any perceived losses in the other. Of course, in the WTO, nothing is agreed until everything is agreed, so some modifications to the proposals currently on the table would be likely if an overall—or a partial—agreement were to be reached.

From an analytical point of view, an important difference between this round and earlier negotiating rounds has been the availability of much more detailed data on trade and trade barriers, and much greater capability for quantitative analysis, which allowed researchers to keep up with the details of agreements as they evolved and to provide assessments at critical times. By contrast with the Uruguay Round, when data on actual tariffs and trade policies became available only for a limited number of countries, and only far after the event, analysts had access to much more detailed information and analytical tools during the Doha negotiations. Important contributing factors to this difference included detailed tariff from the CEPII-ITC MAcMAPs project (Boumellassa, Laborde and Mitaritonna 2009); data on all agricultural protection from the OECD (2011) and the Anderson (2009) study; and analytical databases and models building on the Global Trade Analysis Project (GTAP) (see Hertel 1997 and www.gtap.org).

Unfortunately, the complexity of the negotiating proposals grew even more quickly than the ability of researchers to analyze them, making it a serious challenge to keep up with the details and to form an assessment of their implications (for some attempts, see Hufbauer, Schott and Wang 2010; Decreux and Fontagne 2009; Laborde, Martin and van der Mensbrugghe 2012; and Martin and Mattoo 2011). Further, communicating the results of research is not necessarily easy. When the estimated economic value of a Round was revised downwards in line with changes in trade and protection data--and with evident reduction in the likely achievement of the round in terms of trade barrier reduction—the reasons for the changes in estimates needed to be very carefully explained (van der Mensbrugghe 2006).

Our focus is primarily on the exchange of concessions on protection and subsidies that is central to the negotiations. As a Development Round, the Doha Agenda also includes elements such as Aid for Trade (Taylor and Wilson 2011); Trade Facilitation (Hoekman 2011) and the

Duty-Free Quota-Free proposals for non-reciprocal expansion of market access to least developed countries (LDCs) (Bouet and Laborde 2011). While these provisions are collectively very important both economically and politically, and are the subject of considerable recent research, they are not specific to agriculture so we do not focus on them in this paper. The proposals for increased market access in cotton are not emphasized for a quite different reason—they are embedded in the proposals for agricultural trade reform that we consider.

In this review, we attempt to identify some of the key reasons why agriculture matters so much in the Doha Round, and to draw some lessons for future negotiations. To do this, we organize the discussion around five contrasts that help to highlight the key objectives and constraints facing negotiators:

(i) Agricultural versus non-agricultural reforms

(ii) The positions of different WTO members

(iii) Market access versus domestic support within agriculture

(iv) Agricultural tariff-cutting formulas versus exceptions, and

(v) Average rates of agricultural protection versus price insulation.

The first of these questions is needed to answer whether these, or future, negotiations should abandon negotiations in this politically-charged and difficult sector. The second is important for understanding the key issues in the negotiations and the researchable questions that they raise. The third question arises from the differences in the emphasis placed on this issue by different countries. The fourth is important because these negotiations made use of exceptions to an extent that may have resulted in pessimism about whether the negotiations would achieve enough market access gains to outweigh the political costs of reducing protection. The final

contrast is particularly pertinent given the widespread use of export restrictions and import tariff reductions to insulate domestic prices in the 2008 surge in commodity prices.

In our discussion, we focus primarily on the economic importance of the choices made, but we are also cognizant of the political-economy factors that have played key roles in determining outcomes, and we discuss the key political-economy influences on the negotiations.

Agricultural vs Non-Agricultural Trade Reform

Trade liberalization, and particularly tariff cutting in manufactures, was the core of the multilateral trade liberalization process until the Uruguay Round. This might have seemed surprising in the initial days of the GATT, given the contemporary focus on the development of the manufacturing sector in many countries, and the strength of many of the protectionist interests in manufacturing. However, the multilateral process of tariff cutting was able to progressively reduce the barriers in manufactures in the participating countries until—by the time of the Uruguay Round—they had reached very low levels in the industrial countries (Martin and Messerlin 2007). Part of the reason for this inclusion appears to have been the potential balance of interests created by the interest of agricultural exporters in increased market access; and part by a desire to use international negotiations to achieve needed domestic reforms in this sector (Rausser 1995). The trenchant criticism of industrial country policies in the media (Anderson, Rausser and Swinnen 2011) and by non-governmental organizations may also have played a role. After repeated—and strenuously-resisted—attempts to include agriculture in the negotiating process, agricultural negotiations were finally introduced in the Uruguay Round, along with trade in services and a wide range of other extensions in the scope of the trading system.

The reform of agricultural trade has much more in common with reform of manufactures trade than with reform of trade in services. At least after the initial process of converting nontariff measures in agriculture to tariff measures—a step undertaken in the Uruguay Round (see Hathaway and Ingco 1996)—the process of reform involves reductions in tariffs. As had been found in negotiations in non-agricultural trade, such negotiations provide a quantitative basis for negotiation which is much more tractable than the yes-no negotiations on trade in services; progressive liberalization since the founding of the GATT had also made clear that the world does not end—and indeed many good things happen—when barriers are lowered; it does not require administrative costs since the country receiving "concessions" gains from improved market access, and the country making "concessions" gains from improved economic efficiency, there is no need to keep careful track of the "balance" of concessions.

The almost-exclusive focus of the earlier GATT negotiations on trade in non-agricultural products was not merely based on an assessment that this was where the largest gains could be achieved. Agriculture was included in the original GATT rules, and numerous attempts were made to re-include agriculture in the negotiations under general GATT rules. The seriousness of agricultural trade distortions was highlighted in the influential Haberler Report (GATT 1958). And agricultural liberalization was one of three agenda items[1] at the meeting which launched the Kennedy Round in 1963 (Preeg 1970, p6). However, the resistance to liberalization was strong for many reasons, including concerns about food self-sufficiency, a concept frequently confused with food security (see Sen 1981 for a clear distinction).

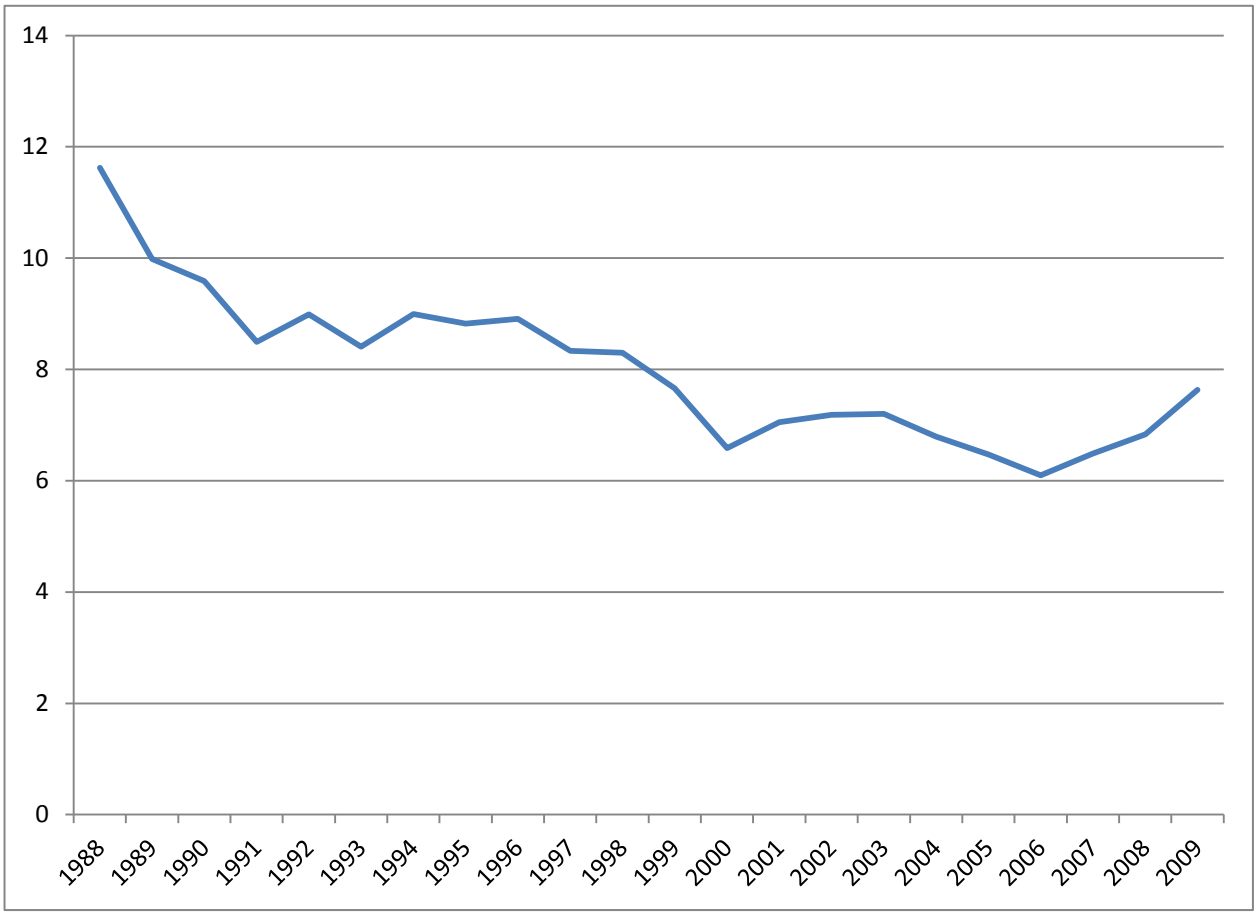
Given the difficulties involved in securing effective liberalization of trade in agriculture, an important question that arises is whether it is worth continuing to attempt liberalization of this sector. As noted in Martin and Messerlin (2007), one key reason for doing so is an attempt to

[1] Along with tariff cutting rules and expanding trade for developing countries.

generate a balance of interests by adding more countries with export interests, many of which are developing countries, to the potential coalition of gainers; and dealing with the fact that the traditional "fuel" for multilateral negotiations—the scope for tariff cutting of non-agricultural products in the industrial countries—is much depleted following eight multilateral rounds focused on this issue. Another important reason was that the remaining barriers to trade in agriculture were much more important than the sector's diminutive share of world trade would suggest. This reflects not only their level and the fact that many are prohibitive, but also the costly variations across sectors and over time (Francois and Martin 2004) in rates of protection.

As shown in Figure 1, trade in the products classified as agricultural by the WTO (WTO 1995) made up only 12 percent of world trade in 1988 (when the Harmonized System data needed for compatibility with the WTO's relatively broad definition of agriculture begin), and declined to just over 6 percent of trade in 2006, before beginning to increase—largely in response to higher agricultural prices—to almost 9 percent in 2009. While not shown in Figure 1, the share of exports from developing countries follows a similar, but sharper, profile to that for the world as a whole, but declining from 17 percent in 1988 to 6 percent in 2006, before increasing to 8 percent in 2009.

Figure 1. The share of agriculture in world merchandise trade, %

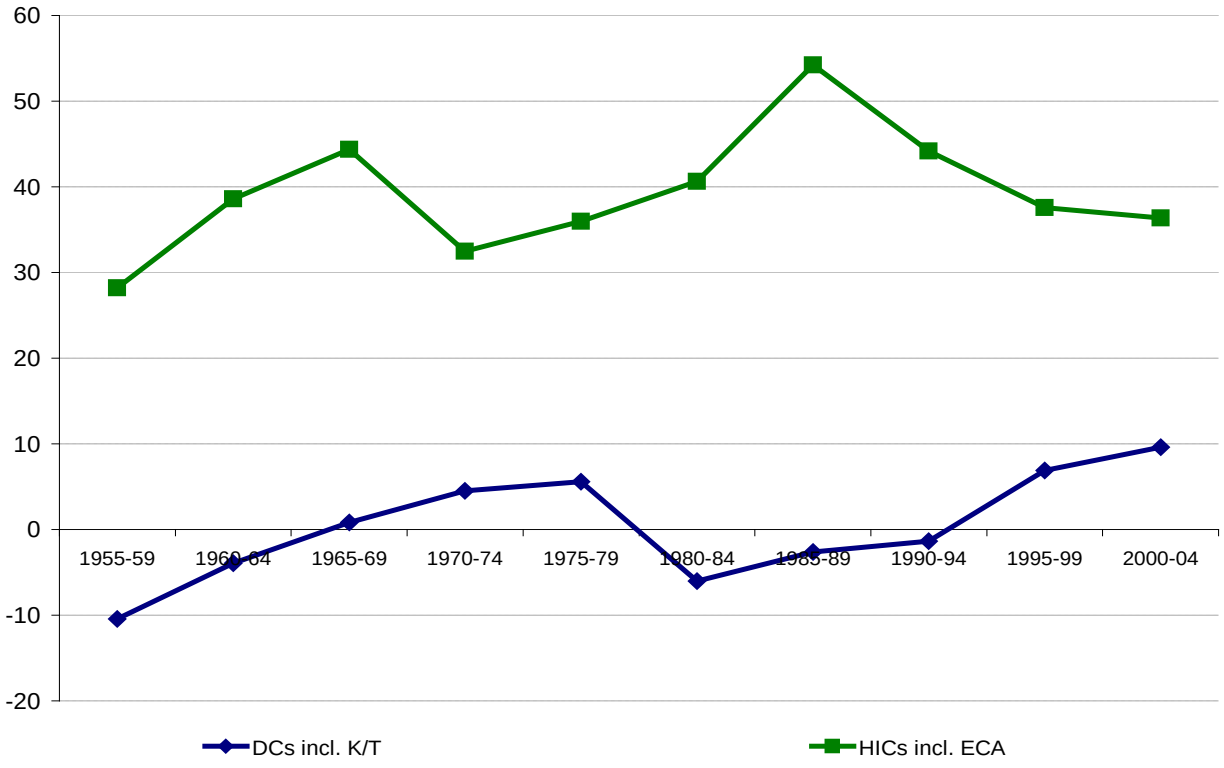


Source: UN COMTRADE downloaded through WITS, January 2011.

With such a small share of world trade, it might seem reasonable for the WTO to pass on this particularly fractious sector. Such a conclusion cannot, however, be reached without careful consideration, including the level and variability of protection in each sector. A widely-held view of agricultural trade policy has been that poor countries typically tax their agricultural sectors. Historically, part of the motivation for this policy has been seen as due to the political weakness of an agricultural sector composed of numerous, widely-dispersed small farmers, many of whom are net buyers of food, and hence not supportive of agricultural protection; and part the need for easy-to-collect revenues from sources such as export taxes.

The World Bank study of agricultural protection over the 1955 to 2005 period led by Kym Anderson (2010) finds that the situation regarding agricultural protection has changed dramatically within the space of a generation. As shown in Figure 2, agricultural protection in the developing countries was, indeed, generally negative in the early years of the sample. By contrast, in the industrial countries, agricultural protection was close to 30 percent and rising.

Figure 2. Average agricultural protection in developed and developing countries, %



Source: Anderson (2009).

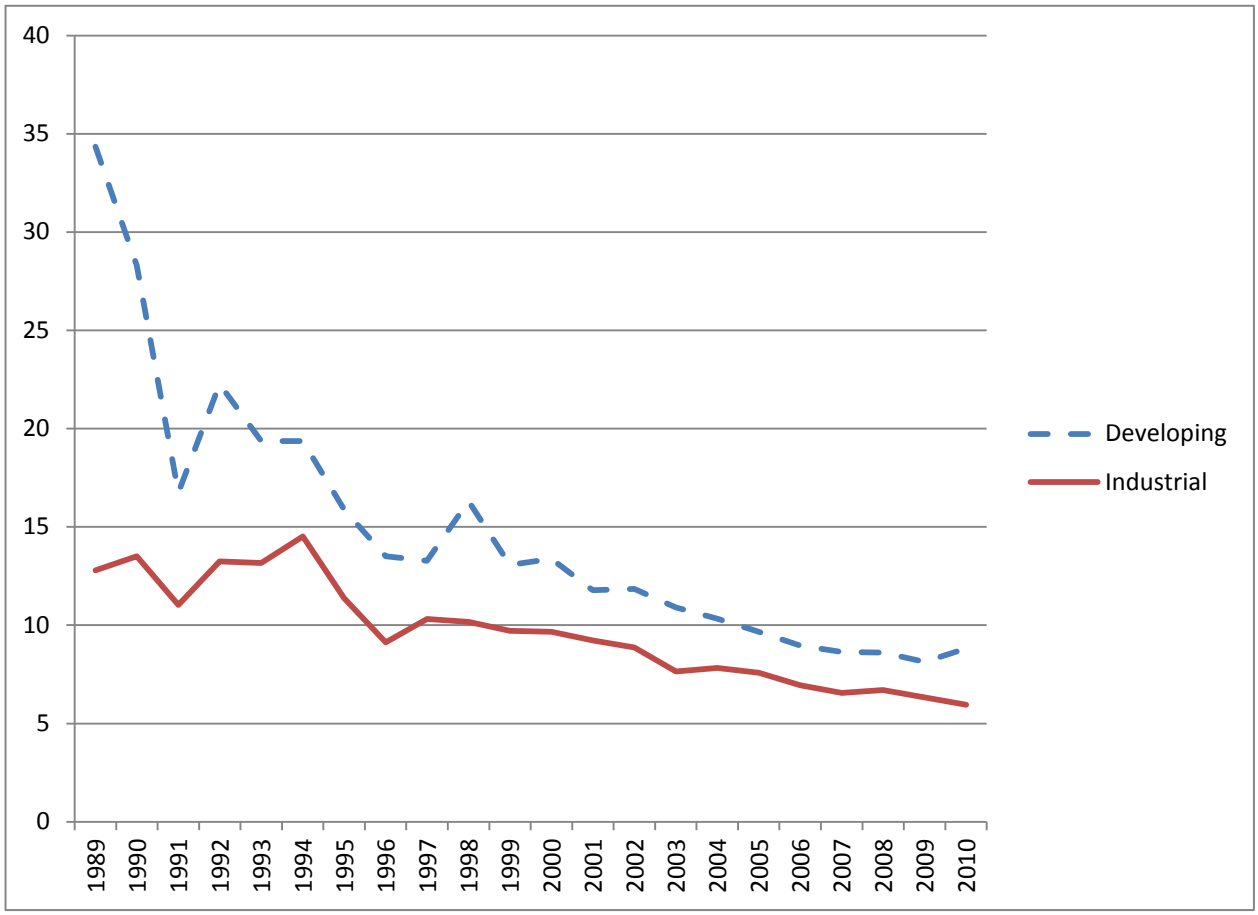
However, the evolution of agricultural protection in developed and developing countries has been quite different. Agricultural protection in developing countries has continued to trend upwards, albeit with some variations over time. But the end of the sample period, agricultural

protection in developing countries averaged around 10 percent. By contrast, in the high-income countries, protection peaked in the late 1980s, and has since fallen by a third. This decline correlates in timing with the prospect, and then the reality, of the Uruguay Round agreement bringing some disciplines to developed-country agriculture. In developing countries, where the disciplines resulting from the Uruguay Round were considerably weaker, the apparent underlying trend of increasing agricultural protection as incomes rise appears to have continued.

The tendency for agricultural protection to rise as countries develop was very strong in the industrial countries historically, and seems likely to be repeated in today's developing countries in the absence of effective WTO disciplines. As discussed in Anderson and Nelgen (2011), it has strong behavioral underpinnings, including the decline in the share of urban expenditures on food; the increasingly-commercial orientation of farmers; and their increasing reliance on purchased inputs. Using the counterfactual protection rates arising from a simple political-economy model sharply increases the average tariff equivalents in developing-country agriculture, and dramatically increases the value of a Doha agreement.

When we examine developments in protection to the non-agricultural sector, we find a quite different situation. Average protection rates in the industrial countries, as measured using a simple average rate of protection, were almost 15 percent in 1989, and declined reasonably steadily to just over 5 percent in 2010. The corresponding average tariff rate in developing countries has a higher level throughout, but also declines quite sharply over time.

Figure 3. Average industrial tariffs in industrial & developing ctries, % Simple Average



Source: TRAINS data accessed 23 January 2011 using WITS. Specific tariffs converted to *ad valorem* using UNCTAD Method 1. Simple average of applied rates, WTO Agricultural Goods and WTO Non-Agricultural Goods.

Ng and Martin (2004) examine the sources of the decline in overall developing-country tariffs and conclude that the overwhelming share of the reduction in these tariffs resulted from countries' own reforms, with liberalization under the auspices of the WTO the second-most important cause, and liberalization under the much-discussed preferential trade agreements coming a poor last. Part of the unilateral liberalization seems likely to be attributable to the lessons learned in the 1970s and 1980s, when countries with restrictive trade regimes found it much more difficult to adjust to major trade and financial shocks than the countries with more

liberal regimes. Another part might be due to the support provided by the international financial institutions, which provided support to countries seeking to reform their trade and foreign exchange regimes.

Since the economic costs of protection rise with the square of the protection rate, even a slightly higher protection rate in agriculture relative to non-agriculture would potentially result in a cost of protection that is magnified substantially relative to the share of the sector in world trade. The fact that agricultural protection varies over time also contributes substantially to the cost of agricultural protection. As shown by Francois and Martin (2004), the cost of a protection regime is proportional to an equally weighted sum of the square of the average tariff rate and the inter-temporal variance of the tariff. Even if we ignore the inter-temporal variance of the tariff, we find that the higher average protection rate in agriculture contributes to a much higher cost of protection in this sector than in the remainder of merchandise trade. Anderson, Martin and Van der Mensbrugghe (2006) concluded that around two-thirds of the costs imposed by protection—and hence of the potential global benefits from global trade reform—arose from distortions in the agricultural sector.

While a striking finding, the conclusion of Anderson, Martin and van der Mensbrugghe remains somewhat tentative since the result of this decomposition are potentially strongly influenced by the degree of disaggregation used in modeling. Laborde, Martin and van der Mensbrugghe (2011) recently revisited this question using optimal aggregation techniques that avoid problems of differences in the degree of aggregation between sectors and concluded that the agricultural share of the potential benefits from global liberalization was nearer 70 percent. An important contributor to this result is the fact that this analysis takes into account the greater degree of variation in protection rates within agricultural sectors than within non-agricultural

sectors. It also provides more robustness of the result, since it reduces the importance of the degree of disaggregation in the agricultural and non-agricultural sectors.

That such a large share of the potential benefits from trade reform accrue from the agricultural sector vindicates the decision of WTO members to include agriculture within the trade reform agenda of both the Doha and the Uruguay Round negotiations. Indeed, it would seem very difficult to exclude agriculture given that the overwhelming majority of the potential benefits of merchandise trade reform would accrue from reforms in this sector.

The Positions of WTO members

The positions taken by individual WTO members towards the negotiations reflected a number of factors, including: their net trade position in agriculture; the importance of agriculture in their exports; their level of economic development; and their perception of the role of the WTO. In general, net exporters tend to be more in favor of liberalization, since this improves their terms of trade; and economies for which agricultural exports are particularly important are more so because a given terms-of-trade improvement translates into a bigger gain in real income. By contrast, countries that are net importers may be concerned about higher world food prices following liberalization, and may be concerned about the reliability of supplies from net exporting countries (Japan and Switzerland 2008).

The positions of developing countries in the Doha Development Agenda were influenced in complex ways by its designation as a development agenda. Because of the tradition of special and differential treatment for developing countries in the WTO—widely interpreted as meaning that developing countries should make smaller, or no, cuts in their own protection—many

developing countries were reluctant to make substantial cuts in their own agricultural protection, even in cases where lower protection would lower poverty rates by lowering the cost of food to their low-income consumers.

In past negotiating rounds, and particularly in GATT rounds before the Uruguay Round, the key to reaching an agreement was for the United States and the major European economies to reach an agreement which would typically then be adopted by other countries. This pattern broke down in the Doha Agenda, with agreement between the United States and Europe being necessary, but far from sufficient, for an agreement. Key proposals were put forward by different countries and groups, including: the United States; the European Union; the Cairns Group of agricultural exporters; the G-20 group of developing countries; the G-10 group of high-income net importers; and the G-33 group of developing countries concerned about excluding some special products from tariff cuts and about safeguard measures (Josling 2007; Hanrahan and Schnepf 2005).

The proposals offered by the United States in 2005 were the most ambitious in many areas, including cuts of 90 percent in the highest tariffs; abolition of export subsidies; cuts in domestic support of 60 percent for the United States and 83 percent for the EU and Japan. The US sought to limit the number of tariffs classified as sensitive and subject to reduced cuts to 1 percent. The EU was much less ambitious on market access, with cuts of 60 percent proposed for the highest tariffs, subject to 8 percent being treated as “sensitive”. By 2005, it was also willing to eliminate export subsidies. On domestic support, the EU agreed to a 70 percent reduction in its domestic support versus a 60 percent cut in US domestic support.

The Cairns Group of agricultural exporters was strongly focused on liberalizing agricultural markets, with a vision statement (Cairns Group 1998) seeking the abolition of export

subsidies; liberalization of market access barriers on the same basis as in non-agriculture (where deep cuts in tariffs were envisaged for the industrial countries); and major reductions in domestic support.

The G-10 group of net-importing developed countries sought much smaller cuts in protection than the exporting groups, with cuts in the bound tariffs agreed at the WTO peaking at 45 percent, and 10 percent of tariff lines treated as sensitive products subject to smaller cuts (Hanrahan and Schnepf 2005). By contrast, importers were much more supportive of proposals—which encountered strong resistance in the negotiations—for disciplines on export restrictions (Jordan 2001; Japan and Switzerland 2008). A key interest of many developing countries was the exclusion of many products from cuts in bound tariffs as "special" products; and the introduction of a special safeguard mechanism that would allow duties to be imposed in response to declines in world prices or increases in imports.

The G-20 group that emerged in the lead-up to the Cancun Ministerial in 2003 brought together an extremely diverse group of developing countries, including Brazil, China, India and Indonesia (Josling 2007). This group offered an important set of proposals that strongly influenced the negotiations (Narlikar and Tussie 2004). In general, it sought relatively more liberalization of industrial country policies, and especially domestic support measures, than was proposed by the EU and the USA. Its emergence, and its policy stance, was partly motivated by an EU-US proposal seen as reducing US ambition on market access in return for EU acceptance of maintaining higher US domestic support (Orden and Diaz-Bonilla 2006).

A diverse group of developing countries that benefit from tariff preferences was concerned about the possibility of the value of these preferences being eroded through reduction in MFN tariffs. The least-developed countries (LDCs) were particularly concerned because they

receive deep preferences in many markets and duty-free quota-free access into the European Union. Other country groups with concerns in this area included the Africa, Caribbean and Pacific (ACP) group of former European colonies (Hoekman, Martin and Braga 2009). The enthusiasm of these countries for MFN liberalization was tempered by concerns about reductions in the prices they receive in protected export markets, and sometimes by concerns about increases in the prices of food they import from world markets.

The positions of the different countries raised many questions, and ignored some important questions. In particular, many proposals—such as those of Europe and many developing countries—focused on reducing domestic support, despite evidence that this is much less important economically than reducing barriers to market access. The widely-different proposals for flexibility to deviate from the proposed tariff-cutting rules raised important questions about the effects of these flexibilities. The virtual absence of proposals to reduce policies that insulate domestic prices from changes in world prices was perhaps important, particularly given the extent to which these policies contributed to the dramatic rise in world prices of food in 2008 (Martin and Anderson 2012). Virtually the only way that the issue arose in the negotiations was through the proposed special safeguards designed to increase the degree of price insulation.

Market Access versus Domestic Support

Within the Doha Agenda negotiations on agriculture there are three pillars: (i) Market access, (ii) Domestic support, and (iii) Export competition. As argued by Martin and Mattoo (2011), the selection of these three pillars reflects the focus of the Doha Agenda on the issues of the 1990s, and particularly the concern in that period about low agricultural prices. Both market access and

domestic support provisions have been analyzed extensively, with the extreme complexity of the provisions on domestic support requiring particular care it they are to be interpreted correctly (see, for example, Blandford and Josling (2011) and Orden, Blandford and Josling (2011) on domestic support). By contrast, export restrictions have barely been addressed except for a brief mention in the 2008 Modalities (WTO 2008a). Although their abolition is systematically important, export subsidies received relatively little negotiating attention because the proposals under discussion—their abolition—were generally quite simple, and the levels of export subsidization were low and declining throughout the negotiations. The critical step on this pillar was the agreement to abolish them—rather than merely to limit them—secured at the Hong Kong Ministerial in 2005.

The relative importance of the three pillars of the negotiations has been hotly debated, partly for economic and partly for political reasons. The economic reason for differences of view turns out to be very simple—estimates of the economic implications of different forms of agricultural support depend very heavily upon whether one measures their impact on the costs of protection, or upon international food prices. The political reason for debate arose from the differences in the ability of different countries to move ahead under the different pillars. Most developing countries had little by way of domestic support or export subsidies, and hence their negotiators felt comfortable when discussion focused on domestic support. The EU had committed to deeply reform its domestic support and likewise felt comfortable when negotiations focused on this pillar. By contrast, the United States had a number of key domestic support programs and had not made sufficient preparations to move ahead with reductions in these subsidies in line with possible WTO agreements.

Most economists (see Hertel and Keeney (2006); Hoekman, Ng and Olarreaga (2004) and Anderson, Martin and Valenzuela (2006)) have concluded that market access barriers contribute around 90 percent of the economic costs of agricultural distortions and have therefore tended to argue that it made sense for the primary focus of attention in the agricultural negotiations to be on this pillar. Given the intense interest in this issue and the frequency with which earlier estimates were challenged or misunderstood, Anderson, Martin and Valenzuela (2006) performed their analysis using both a standard global trade model and using a back-of-the-envelope model that made the sources of economic costs more transparent than when the analysis is done using a more sophisticated model. Both of these approaches concluded that close to 90 percent of the costs of protection arise from market access barriers, partly because of the frequently greater height of these barriers and also because market access barriers are important in both developed and developing countries.

Some have focused instead on the estimate by Diao, Somwaru and Roe (2001, piii) that market access barriers accounted for 52 percent of the total impact on world agricultural prices, and hence on the redistributions of income towards exporters that are a central reason for their participating in negotiations. Part of the controversy arises from differences in perspective. Economists know that the redistributions associated with terms of trade changes must sum to zero for complete liberalization and that the net gains from reform arise from improvements in efficiency. Those focused on the more commercial aspects of the negotiation are, however, undoubtedly right that the distribution of the terms-trade-gains from reform are important from a negotiating point of view.

While domestic support is much less important than market access barriers in determining the overall costs of trade distortions, domestic distortions are particularly important

in some sectors. For the politically-important case of cotton, for instance, market access barriers are generally low because users of cotton in the textile sector are well organized. In this case, domestic support took center stage (Sumner 2006).

Tariff Cutting Formulas versus Exceptions

Reforming protection is a difficult challenge since the defenders of the *status quo* are typically well-organized to defend it, while the potential beneficiaries of change are likely lukewarm in their support either because they cannot readily evaluate the benefits to them or because they are not well-enough organized politically to pursue these gains . This problem is particularly acute in negotiations such as the Doha Agenda involving large numbers of participants, and complex approaches laced with exceptions of mind-numbing complexity.

The early GATT negotiations used a request-and-offer procedure under which principal suppliers sought market access gains from their major markets and extended these gains to all GATT contracting parties. This approach was successful in bringing about substantial reductions in tariffs in the first (Geneva) Round of the GATT, although this achievement was perhaps given excessive credit since tariffs were relatively unimportant, relative to nontariff barriers and exchange rate distortions, at that time. However, the four negotiating rounds following the initial Geneva negotiations had very modest achievements. Each of these used a request-and-offer negotiating procedure under which tariff negotiations were undertaken bilaterally with the agreed tariff cuts extended to all members under the most-favored nation (MFN) principle. As shown by Baldwin and Lage (1971), the bilateral nature of the request-and-offer approach means that many

tariff-reduction packages that would be considered better, *ex post*, by all members will not be achieved.

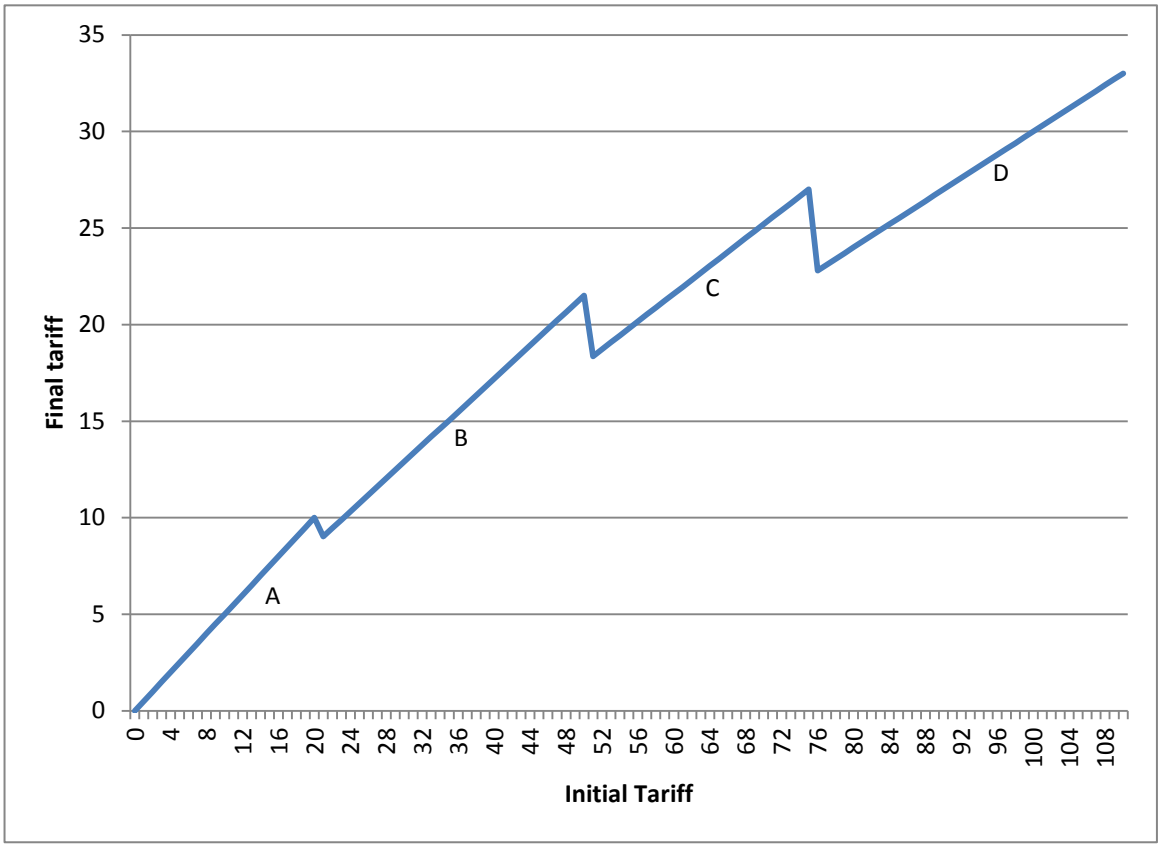
In response to this concern, the GATT turned to a different approach—the use of a tariff-cutting formula. If such a formula can be applied on a line-by-line basis without exceptions, it has the potential to greatly increase the support for a trade negotiation from its key beneficiaries—the exporters who gain from increased market access. With such a formula, the political gains—in terms of improved market access—become almost as visible as the political costs of cutting protection to politically strong industries (Jean, Laborde and Martin 2010). Two critically important rounds of negotiations—the Kennedy Round of 1963-7 and the Tokyo Round of 1974 to 1979—were able to bring about large reductions (37 percent and 33 percent respectively) in tariffs on industrial products using this approach. A key challenge for this approach, however, was managing the exceptions, which tended to snowball, as countries excluded more and more products from the tariff-cutting formula (Baldwin 1986).

Partly because of this problem, and partly because of a greater focus on expanding the coverage of the rules of the trading system, the approach used in the Uruguay Round was much more flexible—permitting members to choose the extent to which they would like to cut the tariff on a particular product, subject to minimum and average cut requirements. A key achievement of these negotiations, however, was the conversion of the nontariff barriers that had previously dominated in agricultural trade into tariffs intended to be equivalent in effect to the previously-applied nontariff measures—even though many of these barriers were inflated prior to application of the tariff-cutting rule (Hathaway and Ingco 1996).

In the Doha Agenda negotiations, a line-by-line tariff-cutting formula has been used in both the negotiations on agriculture and on non-agriculture. In both sectors, higher tariffs face

larger cuts in tariffs. In agriculture, a tiered-formula is used, with four bands and tariff cuts for the industrial countries rising from 50 percent in the lowest band to 70 percent in the highest. Because the bound tariff rates that are the basis of the negotiation are typically higher in developing countries than in the industrial countries, and because of the long-standing policy that developing countries should face smaller cuts, the cuts in bound tariffs are smaller in developing countries, and the bands are wider, resulting in smaller cuts in bound tariffs in the developing countries. A surprising feature of the tiered-formula approach to trade reform is that it results in a saw-toothed relationship between initial and final tariffs. The larger cuts applying to tariffs in the higher bands mean that tariffs just above the boundaries between the bands end up somewhat lower than some tariffs in the lower bands, as is evident in Figure 4.

Figure 4. The pattern of agricultural tariff cuts - developed countries.



The cuts in bound tariffs are to be implemented in equal annual cuts over 5 years in the industrial countries and over 11 years in developing countries. As shown in Table 1, the cuts are smaller for developing countries than for the industrial countries. This table also shows the auxiliary conditions that apply to the tariff cuts. If the cuts, together with any exceptions permitted, result in average-cuts of less than 54 percent in the industrial countries, then all of the cuts must be scaled up proportionately. If the average-cut exceeds 36 percent in a developing country, the cuts may be proportionately reduced in size.

Table 1 Formula coefficients used in the Agricultural Negotiations

	Developed countries		**Developing countries**	
Band	*Range, %*	*% Cut*	*Range, %*	*% Cut*
A	$t_0 \leq 20$	50	$t_0 \leq 30$	33.3
B	$20 < t_0 \leq 50$	57	$30 < t_0 \leq 80$	38
C	$50 < t_0 \leq 75$	64	$80 < t_0 \leq 130$	42.7
D	$t_0 > 75$	70	$t_0 > 130$	46.7
Average cut	**Min**	**54%**	**Max**	**36%**

Source: Laborde and Martin (2011a)

To avoid the problems of snowballing exclusions encountered in the Kennedy and Tokyo Rounds of negotiations, the Doha negotiations have attempted to negotiate a set of rules for managing exceptions. Members would be free to make smaller cuts—subject to agreed constraints—on a certain number of agricultural tariff lines. By focusing attention on the defensive concerns of individual countries, this approach appeared to encourage a strong focus

on exceptions, with sensitive product exceptions available to all countries; special products available only to developing; and a range of exceptions for particular country groups. A major problem with disciplining exceptions by constraints on the share of tariff lines is that most trade under highly-protective tariffs occurs under a very small share of tariff lines, so that exempting a seemingly-small share of tariff lines can result in a very large reduction in the degree of liberalization achieved.

In this situation, it is very difficult for countries to make an informed assessment of the extent of their market access gains, which perhaps explains a strong focus of the negotiations countries own defensive interests, and particularly the "adequacy" of their own exceptions. Another contributing factor to this orientation is perhaps the ambition of the tariff-cutting formula. Jean, Laborde and Martin (2010) conclude that sharply tops-down tariff-cutting formulas such as the tiered formula in agriculture, or the even-more-progressive Swiss formula used in non-agriculture--where all tariffs are reduced below a ceiling rate, potentially implying very large reductions in the highest tariffs (Francois and Martin 2003)—appear to result in political costs that are higher relative to the economic efficiency gains attainable than with a less ambitious rules such as a proportional cut in tariffs. A serious question for future negotiations is whether, as suggested by Falconer (2008), it might be better to aim for a less aggressive tariff formula combined with much tighter disciplines on exceptions.

One widely-used approach to *ex ante* assessment has been to assume that flexibility would be used to shelter the highest bound (Sharma 2006) or applied (WTO 2006) tariffs from cuts. These approaches lead to a sharp conclusion—that the impacts of flexibilities on cuts in average tariffs will be small. The highest-tariff rule has no firm conceptual basis, and suffers from several obvious defects. In particular, it seems unclear why countries would choose goods

with high applied tariffs if the tariff bindings (limits) on those goods are so high that no reduction in applied rates is required when the bound tariff is cut by the tariff formula. Further, many of the highest tariffs are on very minor products.

To deal systematically with these problems, Jean, Laborde and Martin (2011) used the policy-maker's welfare function from the famous Grossman and Helpman (1994) model to predict the products whose treatment as exceptions from tariff cutting rules would minimize the political costs of the tariff-cuts. The selection rules resulting from this approach imply that countries are likely to choose products with high initial trade shares and with applied tariffs that would be cut substantially when the bound rates were cut. With this model, they find that even the seemingly small number of (partial) exceptions proposed have a very substantial impact on the degree of liberalization achieved. Allowing reduced cuts on just 2 percent of tariff lines was found to reduce the cut in weighted-average tariffs by half. The results from the Grossman-Helpman approach were found to be approximated reasonably well by the tariff-revenue-loss rule suggested by Jean, Laborde and Martin (2006).

Another key finding of the Jean, Laborde and Martin (2010) study is that the agricultural flexibilities do much more serious damage to economic efficiency than they do to market access. This is perhaps unsurprising given the mercantilist focus of the negotiations, with its emphasis on expanding export opportunities. It does, however, mean that those seeking to use mercantilist horses to pull a free-trade cart must pay careful attention to the incentives of the horses and their drivers, rather than assuming that they will automatically pull the cart forward as they would with only a single tariff in each country, where efficiency and market access objectives cannot be uncoupled in this way. Another important finding for future negotiations is that the damage done by flexibilities to the effectiveness of the negotiations in cutting tariff can be sharply reduced if

the flexibilities are constrained to cover x percent of imports, rather than merely by x percent of tariff lines. In a key difference from agriculture, the Non-Agricultural negotiations restrict the set of products to receive smaller-than-formula cuts not just by the number of tariffs, but by its share of imports (WTO 2008b). This seemingly minor difference in specification turns out to make a large difference to the results, with the cuts in non-agricultural tariffs being reduced by much less than in the case of agriculture (Laborde and Martin 2011b).

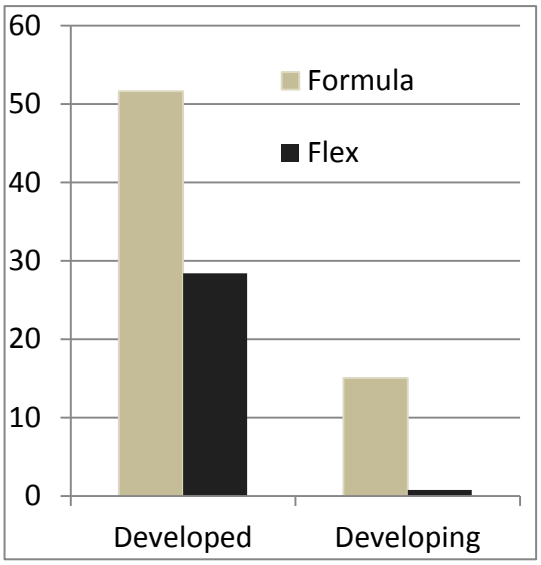
The results of the tariff-cuts plus exceptions are summarized for developed and developing countries in Figure 5. In each panel, the first bar shows the size of the tariff cut resulting from application of the tariff-cutting formula to each tariff line. The second, darker, bar shows the tariff cut resulting from the tariff cuts together with the exceptions for sensitive and special products. From the Figure, it is clear that the formulas would result in cuts of more than 50 percent in applied tariffs in the developed countries. In developing countries, the tariff cuts resulting from the formula are smaller, at around 15 percent because of the smaller cuts in each band, broader tariff-cutting bands, and larger gaps between bound and applied rates ("binding overhang"). Allowing for the flexibilities reduces the cuts in applied rates substantially in the industrial countries, and makes them extremely small in the developing countries.

Turning to the average tariffs faced, the in the second panel, it is clear that the formulas alone would result in very large cuts in these barriers to market access for both developed and developing countries. Even after allowing for these flexibilities, however, the cuts in the tariffs facing each group of countries remain quite worthwhile—at close to 20 percent for both groups of countries. While the details affecting each country presented in Laborde, Martin and van der Mensbrugghe (2011 and 2012) and summarized in Appendix Table 1 are important, these broad

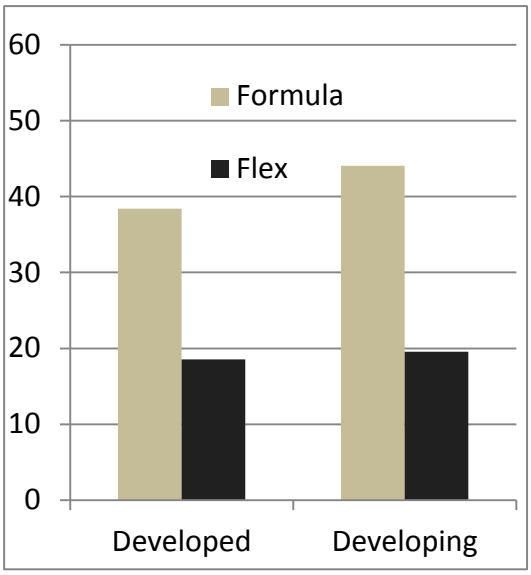
results suggest that there is actually something quite worthwhile in the current draft agreements on agricultural market access.

Figure 5. Percentage cuts in applied agricultural tariffs

(a) *in average tariffs* ***levied***



(b) *in average tariffs* ***faced***



Source: Laborde, Martin and van der Mensbrugghe (2011)

Average Protection versus Price Insulation

The literature on determination of tariffs offers two major explanations for tariff protection. The first is the political-economy approach exemplified by Grossman and Helpman (2004), under which protection is the result of politicians' preference for political contributions over general improvements in economic welfare. The second is the terms-of-trade approach associated with Broda, Limao and Weinstein (2008). These models share of a common feature of explaining protection patterns that involve domestic prices set at a constant markup over international prices—a formulation consistent with an *ad valorem* tariff on imports—unless parameters such

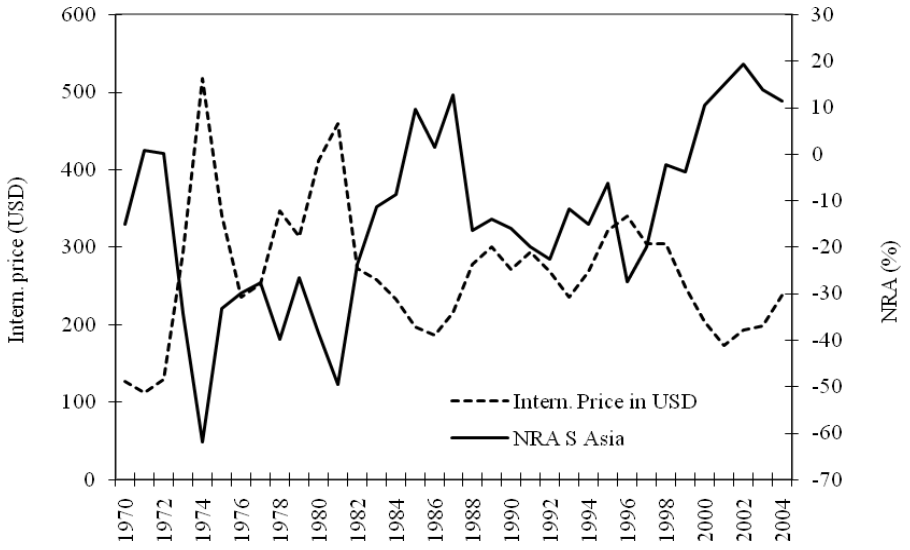
as the import demand elasticity or the export supply elasticity change. The widely accepted Bagwell and Staiger (2011) model of what trade negotiators seek achieve similarly focuses on a situation in which tariffs are constant in the absence of negotiations.

In practice, for a number of staple food commodities, many governments appear to act to reduce the volatility of domestic prices relative to world prices (Johnson 1975; Blandford 1983). When world prices rise rapidly, exporters may introduce export restrictions to reduce their domestic prices relative to world prices, while many importers reduce their rates of protection. The response by exporters potentially improves their terms of trade—although many countries use export bans that ensure they experience no benefit. The response by importers potentially exacerbates the deterioration in their terms-of-trade resulting from the initial shock to world markets. When world prices decline, some exporters have historically used export subsidies, while some importers have increased protection in order to insulate their producers from these declines in price. While policymakers seek such stabilization, it is important to remember that the cost of a tariff increases both with its mean and with its variance (Francois and Martin 2004). For large countries, policies of price insulation are more costly than for small countries because world prices move against their attempts to stabilize—for example, an export restriction by a large country raises the world price, requiring a larger export tax equivalent than for a small country seeking to restrain its domestic price to the same degree.

In poor countries, this reflects the sensitivity of consumers and governments to volatile prices for important staple goods. For an individual small, poor country, such measures can be shown to be a logical response to concerns about the adverse impacts of high prices of staple foods on poor consumers (Gouel and Jean 2011). Historically, such policies have also been extensively used in high-income countries as well in an attempt to stabilize domestic prices. In

Europe, the Variable Import Levies used by the European Union were explicitly designed to stabilize domestic prices in the face of variations in domestic prices.

Figure 6. The relationship between world prices and protection rates, South Asia rice %



Source: Anderson (2009) and www.worldbank.org/agdistortions

These policies are heavily used for key staples such as rice and wheat and result in a strong negative correlation for these commodities between real world prices and the nominal rate of assistance, as shown in Figure 6 for South Asia. While this can certainly help countries reduce the volatility of their domestic prices relative to world prices, there remains a serious collective-action problem. When many countries use this approach to stabilizing their domestic prices relative to world prices, world prices become much more volatile. Price insulation cannot reduce the volatility of domestic prices, but only redistribute it between countries (see Martin and Anderson 2012). It is possible that such a set of interventions would lower the impacts of high prices on poverty by lowering prices in the countries where high prices have the greatest adverse impact on poverty. However, there is no guarantee that this will be the case. When, for instance,

the European Union used variable import levies to stabilize its domestic prices, this resulted in instability being exported to the rest of the world by some of the richest countries in the world. In the presence of this collective-action problem, only a policy that takes into account these interactions can reduce volatility without creating the beggar-thy-neighbor problem inherent in this type of policy response.

In the Uruguay Round, considerable attention was focused on price insulation and some important progress was made on addressing this issue. In particular, Variable Import Levies were ruled out, and domestic support based on administered domestic prices was made subject to additional disciplines. Unfortunately, this issue appears to have received very little attention in the Doha negotiations, and this neglect has perhaps contributed to the problems that have emerged in the agricultural negotiations. In particular, insufficient attention appears to have been focussed on the desire of developing countries to have the flexibility to increase protection in periods of low prices, and to lower it during periods of high prices. The desire for this flexibility appears to have contributed to many developing countries seeking to retain high tariff bindings under provisions for "Special Products" and to vary their protection rates under the Special Safeguard Mechanism (Grant and Meilke 2011; Hertel, Martin and Leister 2010).

While price insulation of this type may be helpful for individual small countries, the fact that it is unable to reduce the volatility of domestic prices overall, and increases the volatility of world prices (Johnson 1975; Martin and Anderson 2012) means that a better solution to this collective action problem would be desirable. Finding such a solution is likely to be challenging given the diversity of interests between countries, but the importance is great given the strongly adverse impacts of high prices on many poor people (Ivanic and Martin 2008).

Conclusions

Agricultural trade liberalization has always been controversial and the sector was only included in the eighth round of multilateral trade negotiations-- the Uruguay Round (1986-94). Given that the agricultural sector has accounted for as little as 6 percent of world trade, an obvious question is whether the inclusion of this sector is warranted. Further examination reveals, however, that this small but highly distorted sector is particularly important as a source of potential gains from trade liberalization. Because of the relatively high levels of protection and the substantial variation in protection rates across sectors, this Lilliputian sector accounts for almost 70 percent of the potential real income gains from trade reform, making it extremely important that it be included in the trade reform process.

Many protagonists in the debate surrounding the negotiations argued that reductions in domestic support were of the greatest importance to a satisfactory outcome. However, economic analysis strongly suggests that the greatest economic costs arise from restrictions on market access such as import tariffs and tariff-rate-quotas. This finding was confirmed by a large number of analyses using a wide range of modeling approaches- including econometric, computable general equilibrium; and back-of-the-envelope models. One cause of the disagreement on this issue arises from a focus on mercantilist considerations, for which domestic support is considerably more important than for economic efficiency costs. Another was the political desire to focus attention on the reluctance of the United States to go further.

The tariff-cutting formula used in the negotiations and the exceptions permitted relative to that formula were another important area of controversy where research can help assess what is most important. The Doha proposals involve a tiered formula which cuts the highest tariffs the most, but allows members to exclude products of its choosing. Much of the analysis used by

members suggests that these exceptions have little impact on the outcome. But examining this issue in a way that takes into account the political-economy of product choice suggests this will likely result in a very serious loss of liberalizing achievement, with countries choosing products that are important and highly protected. Constraining such flexibilities by limiting the volume of imports affected, rather than just by the number of products, appears to diminish this problem. An important question for future negotiations is whether to use ambitious tariff-cutting formulas that risk incurring high political costs relative to their economic gains, and perhaps as a result, to lead to pressure for exceptions that reduce both the transparency of the process and the effectiveness of an agreement.

The final section of the paper focuses on the problems resulting from the use of protection policy to insulate domestic prices from changes in world prices. While this approach may make sense for an individual country, it creates a problem for other countries by increasing the volatility of world prices. In future, it seems desirable to pay more attention to the objectives and needs of countries adopting this type of policy, while seeking a solution to the collective action problems it creates.

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Appendix Table Table 1. Consequences for Agricultural tariffs

Region		*Trade weighted Bound rates on Imports*			*Trade weighted Applied rates on Imports (including preferential regimes)*			*Trade weighted Applied rates on exports (including preferential regimes)*		
		Base rate	**DDA without flexibilities**	**DDA with flexibilities**	**Base rate**	**DDA without flexibilities**	**DDA with flexibilities**	**Base rate**	**DDA without flexibilities**	**DDA with flexibilities**
ALL		40.3	20.7	29.9	14.6	9	11.9	14.6	9	11.9
HIC		30.9	12.1	18.4	15.5	7.5	11.1	15.1	9.3	12.3
LMIC		53	33	45.4	13.3	11.3	13.2	14.3	8.6	11.5
Among which	*Developing WTO, no specific treatment*	66.5	39.8	54.4	15.1	12.3	15	13.9	9	11.3
	RAM WTO	75.5	43.6	62.5	13.4	12.8	13.4	11.8	5.9	9.7
	SVE WTO	19	14.5	22.4	10.7	7.8	10.5	18.5	10.3	15
LDCs		94.1	59.3	93.7	12.5	12.2	12.5	7.4	6.5	7.1
						As a % of the base rate				
ALL			-49%	-26%		-38%	-18%		-38%	-18%
HIC			-61%	-40%		-52%	-28%		-38%	-19%
LMIC			-38%	-14%		-15%	-1%		-40%	-20%
Among which	*Developing WTO, no specific treatment*		-40%	-18%		-19%	-1%		-35%	-19%
	RAM WTO		-42%	-17%		-4%	0%		-50%	-18%
	SVE WTO		-24%	18%		-27%	-2%		-44%	-19%
LDCs			-37%	0%		-2%	0%		-12%	-4%

Note: ALL stands for all WTO countries, HIC stands for High Income WTO countries, LMIC stands for Low and Middle Income, but non LDC, WTO countries. LDC stands for Least Developed WTO countries.