Implications for India of the May 2008 Draft Agricultural Modalities

By **Munisamy Gopinath**[1] and **David Laborde**[2]

[1] Professor, Department of Agricultural and Resource Economics, Oregon State University

[2] Postdoctoral Fellow, International Food Policy Research Institute (IFPRI)

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International Environment House 2
7 chemin de Balexert, 1219 Geneva, Switzerland
Tel: +41 22 917 8492 Fax: +41 22 917 8093
E-mail: ictsd@ictsd.ch Internet: www.ictsd.org

Chief Executive: Ricardo Meléndez-Ortiz
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Programme Team: Jonathan Hepburn, Marie Chamay and Ammad Bahalim

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EXECUTIVE SUMMARY

In this study, we examine the implications of the May 2008 WTO draft agricultural modalities for India's market access and domestic support policies. In the case of market access, most of India's agricultural tariffs are of the ad valorem kind, where the simple average of bound tariffs is 115 percent in 2004. Trade weighting increases the average bound tariff to 159 percent. However, the applied tariffs average 59 percent and hence, the binding overhang (the gap between bound and applied tariffs) is high. Our analysis focuses on the tiered tariff-reduction formula and on the special and differential treatment afforded to developing countries. We assume that India will designate 7.5 percent of its HS6 tariff lines as sensitive products, and two categories of special products: about 6.5 percent of the HS6 lines face a tariff cut of 18.5 percent, and an additional 6.5 percent of the HS6 lines with a tariff cut of 11.5 percent. A selection approach based on the estimated cost of agricultural tariffs is used to identify potential special and sensitive products. The tariff-rate quotas to accompany sensitive products may be less attractive to India and hence, it may fully rely on special products.

Applying the formula by bands will result in an overall cut of 38 percent in the average trade-weighted bound tariffs from 159 percent to 99 percent. However, flexibilities increase the bound rates to 126 percent, resulting in a net reduction of 21 percent, well below the maximum cut of 36 percent proposed for developing countries. Although the formula reduces tariff heterogeneity, measured by the standard deviation, flexibilities restore heterogeneity to initial levels in key products sustaining potential distortions in Indian agriculture. The average applied rate would fall to 54 percent from an initial 59 percent after the formula cut, but flexibilities completely eliminate the reduction. In terms of preferences, only duty-free, quota-free access to least developed countries, if granted, would result in significant changes in India's applied protection. In general, the formula cut with flexibilities does not appear to open India's market and may not lead to less heterogeneity in the protection structure. India is a net agricultural exporter, but the modalities offer significant liberalization on only 30 percent of Indian exports; the ones targeting developed economies. India's strong support of special and differential treatment opens few new market opportunities in developing countries.

In the Uruguay Round, India did not have a total AMS commitment, and so, the *de minimis* exemptions served as limits to two types of domestic support: administered prices under product-specific AMS and input subsidies under non-product-specific AMS. Official notifications, available for 1995-1997, show negative product-specific AMS because support prices are lower than external reference prices. Moreover, a reallocation of input subsidies from non-product-specific AMS to special and differential treatment reduces the former to about 1 percent of the value of production. A recent set of shadow notifications shows that

India's product-specific AMS remained negative through 2005. Non-product-specific AMS, computed similar to that in the official notifications, accounts for about 1 percent of the value of agricultural production. With India's general elections expected in early 2009, the immediate future includes popular policies such as credit subsidies and significant MSP growth. Nevertheless, non-product-specific AMS is not likely to exceed the limits proposed in the Doha Round, i.e., 10 percent of value of production, even with popular policies. However, product-specific AMS is on the verge of becoming positive given high growth in support prices and the appreciation of Rupee in recent years. Projections for 2015 suggest that *de minimis* exemptions would be about $16 billion each for product-specific and non-product-specific AMS, giving India ample flexibility in domestic support policies.

1. INTRODUCTION

The objective of this study is to examine the implications of the latest WTO draft agricultural modalities (Falconer text, May 2008) for India. In particular, we analyze the likely impact of proposed modalities on India's market access and domestic support policies. For this purpose, we use information on India's tariffs from MAcMapHS6v2 (Laborde, 2007) and on domestic support measures from official and shadow notifications in Gopinath (2008).

Indian agriculture is unique because it has to meet the needs of over 1 billion people as well as provide liveable wages and income to nearly 600 million of its employees. The former is well reflected in India's share of global commodity production. For example, in 2006 India was the world's second largest producer of rice, sugar, milk and cotton, and third largest producer of wheat. Despite production volumes, food shortages and price inflation can destabilize the political environment and hence, food security and price stability are important policy objectives. Since agriculture is the major source of income to a large share of the Indian population, any structural adjustment arising from external sources is of serious concern to Indian policymakers. Not surprisingly, India has taken offensive and defensive positions in each of the three pillars of agricultural support at the WTO negotiations.

In the case of market access, India has simultaneously argued for larger tariff reductions of advanced economies and significant flexibilities for developing countries. As part of G20 and G33, India has called for substantial reductions in developed countries' peak tariffs and tariff escalation, and for enhancements of tariff-rate-quotas (TRQs) for developing-country products. India hopes that such reductions would eliminate distortions in commodity markets, which could improve developing countries' agricultural terms of trade. The resulting trade growth of developing countries, especially in commercial crops such as sugar and cotton as well as tropical products, appears to benefit India. At the same time, India's position on developing countries' market access includes moderate tariff cuts accompanied by considerable flexibilities and safeguards. The latter includes preserving and possibly expanding Article 5 (special products) of the draft agricultural modalities for developing countries only. This defensive position shows the need to maintain significant security margins in trade policy to minimize the impact of external forces on Indian agriculture.

The Indian approach to domestic support is again part offensive and defensive. On the former, India has called for large reductions in amber and blue box support, *de minimis* limits and certain green box payments, e.g., decoupled income support, of developed countries. Similar to the approach on market-access negotiations, India seems inclined on eliminating distortions in global commodity markets arising from developed countries' domestic-support policies. It also appears that India is not in favour of granting specific exemptions to certain developed countries on how blue box or product-specific AMS limits are computed. India anticipates that reductions in developed countries support would likely improve developing countries' share of global agricultural and food trade. As noted earlier, India may stand to gain in exports of selected commodities such as sugar, cotton and tropical products, and possibly rice and wheat.

India's defensive position on domestic support policies encompasses flexibilities and exemptions. The key component of the Indian stance is maintaining and probably improving Article 6.2, special and differential treatment of developing countries' policies that support low-income or resource-poor farmers. Other suggestions by India include clarifying the applicability of product-specific *de minimis* limits to countries that do not exceed such limits. While calling for limits on some green-box (decoupled) payments, India has expressed interest in relaxing the criteria governing relief to natural disasters.[1]

In the next section, we briefly outline India's market access policies, followed by an analysis of the impact of draft modalities on India's market access. The impact analysis -based on the MAcMAPHS6v2 database (base year 2004) - focuses on bound, applied and preferential tariffs with and without flexibilities (Jean, Laborde and Martin, 2008). Then, we provide an overview of India's domestic support policies and its official notifications followed by a discussion on binding provisions of the WTO draft modalities for India. For this purpose, we draw on Gopinath (2008), who provides a set of shadow domestic support notifications of India for 1998-2005. Finally, we conclude with some insights on the future of Indian agricultural policies.

2. MARKET ACCESS POLICIES OF INDIA

India is one of the most protected markets for agricultural products in the developing world, and ranks among world's top five countries with highest agriculture tariffs: Iceland, Norway, Switzerland and South Korea (Laborde, 2007). Due to the size of its rural inhabitants and their dependence on farming, India's recent trade liberalization agenda does not appear to systematically include the agricultural sector. Since 2004, India's industrial tariffs have sharply declined, while agricultural tariffs have witnessed marginal changes.[2]

To give context, India had maintained a two-tier strategy of protection from imports prior to the Uruguay Round (Pursell, Gulati and Gupta, 2007). The first is the licensing of and quantitative restrictions on imports of most products including non-agricultural goods. Gulati and Pursell (1993) indicate that nearly 96 percent of tariff lines faced quantitative restrictions in India prior to 1990. In addition to the quantitative restrictions, India had maintained high-tariffs in the form of three types of import duties: basic customs, auxiliary and additional duty. Hoda and Gulati (2007) note that the basic customs duty has been as high as 200 percent, while the auxiliary duty ranged between 40 and 50 percent. The list of products with quantitative restrictions significantly overlapped with that of products facing high tariffs, but there were notable exceptions in the latter (e.g., rice, maize, milk products).

Given the balance-of-payments exemption in the Uruguay Round, India agreed to bind tariff rates for commodities, which were not bound in earlier negotiations. The ceiling is set at 100, 150 and 300 percent for commodities, processed products and edible oils, respectively. For those commodities with bound rates from earlier negotiations, pre-1994 tariff levels are retained. Interestingly, the latter group included some key cereals (rice, maize) and milk products at zero tariffs. The improvement in foreign exchange reserves in the late 1990s eliminated the balance-of-payments justification for quantitative restrictions forcing India to renegotiate bound rates in 1999 (Hoda and Gulati, 2007). The renegotiated tariffs for rice, maize, sorghum, milk and milk products, and few other commodities are in the range of 40-80 percent. Moreover, the three layers of tariffs have been simplified to one customs duty, with occasional use of additional duties or surcharges.

A key feature of global agricultural trade policy is the gap between bound and applied tariffs, referred to as the binding overhang. In the Indian case, two different configurations bring about a large binding overhang. The binding overhang is important in our assessment of the impact of WTO draft modalities on applied protection; in particular, whether or not the overhang would absorb most of the formula cut. The first occurs when tariffs have been bound at an average level, but applied rates are low (e.g., leather and hides). The other arises when applied rates are high, but tariffs are bound at the maximum ceiling available (e.g., vegetable oil). The reduction in the binding overhang comes with a political cost: world agricultural prices are high at this time, but the future trend of prices is uncertain, when tariffs may be needed to maintain domestic prices at the politically desired level. Our analysis focuses on applied as well as bound tariffs on agricultural products (WTO definition) using the MacMapHS6v2 database. In most cases, we present aggregated figures using a trade-weighted average and a sectoral breakdown based on two-digit chapters of the Harmonized System (HS).

2.1 Measures of Market Access

Most of India's agricultural tariffs are of the *ad valorem* kind, with minor exceptions (almonds, shelled and in shell) as shown in table 1. The simple average of bound tariffs is very high: 115 percent in 2004. However, the widely used simple average is easy to compute, but fails to reflect the fact that some goods are much more important in trade than others. Often, a trade-weighted average tariff is employed to correct this problem. Such a weighting in the Indian context shows a much higher average tariff (159 percent) than the simple average. This unusual situation is driven by the difference between bound and applied tariffs: the binding overhang.[3] In India, significant trade flows occur in chapters with a high bound tariff, but a smaller applied protection. Table 2 sheds some light on this issue: the average binding overhang is about 100 percent, which means that applied protection is about one-third of bound tariffs on average. In particular, chapter 15 –

animal/vegetable fats and oils- accounts for 47 percent of the imports (US$ 2325 million on average over the period 2002-2004) with an average bound rate of 227 percent, but an applied rate of just 82 percent.[4] This applied protection is based on 2004 data, but the recent surge in global commodity prices has led to several tariff cuts in chapter 15. As of early 2008, the Government of India has waived duty on import of crude edible oils and reduced tariffs to 7.5 percent on all refined edible oil. Our analysis does not include the recent tariff cuts and hence, most aggregated results at the agricultural sector level will be driven by chapter 15.

The trade (third) column of table 2 shows that other important agricultural imports are vegetables (chapter 7), edible fruits and nuts (8) as well as inputs for the textile industry: cotton (52), wool (51), and silk (50). The implied tariff revenues in the fourth column of table 2 show the importance of protection for each chapter. If trade in a chapter is important and tariffs are high, then tariff revenue is also likely to be high (e.g. chapters 7, 8, 15 and 22). Our calculations suggest that these four chapters account for over eighty percent of the incidence of total Indian agricultural protection. Only four chapters have an average bound rate below 75 percent (column 5, table 2): dairy products (4), live trees (6), hides and skins (41) and wool (51). At the opposite end of the protection spectrum, three chapters have an average bound rate equal to or above 150 percent: chapters 15, 22 (beverages and spirits) and 29 (organic chemicals). However, this pattern of bound tariffs has been mainly driven by the binding procedure of the Uruguay Round, and in many cases may not reflect the real protectionist forces in play.[5] The last column of table 2 shows that the binding overhang is unevenly distributed: it is low in dairy products (4), beverage and spirits (22) and cereals (10). For these sectors, applied protection is around four-fifths of that allowed by WTO commitments. On the other side, less than one-fifth of the allowed protection is applied for food residues (23), organic/miscellaneous chemicals (38, 29) and inputs for textile industries (furs, cotton). For hides and skins, the applied protection is zero and so, the binding overhang is equal to 25 percent.

As noted earlier, the binding overhang is very important for both more freedom in negotiations and India's ability to react to decrease in world prices. In the past, India has adapted its trade policy to its consumption and political needs. For instance, between 2001/02 and 2006/07, applied tariffs have increased on 27 HS6 products: tariffs on garlic jumps from 35 percent to 100 percent, on coffee and tea from 70 percent to 100 percent, on pepper from 35 percent to 70 percent. (WTO, 2007). In other cases, special regulations are issued to reduce effective duty rate below the standard rate given in the tariff schedule. On top of tariffs, India applies additional excise duty on sugar (about $7.5 per ton or 4 percent) and tobacco (10 percent). Our analysis does not include the additional protection, upward or downward, noted above. Finally, the tariff on vegetable oil is an *ad valorem* duty, but it is periodically revised using a reference value from the Central Board of Excise and Customs, Government of India.

Despite using quantitative restrictions en masse before the Uruguay Round, India does not make much use of TRQs in its current trade policy. None is notified to the WTO although 4 products are potentially covered by multilateral TRQ: milk powder (10,000 tons), maize (up to 500,000 tons), sunflower seed or safflower oil (150,000 tons) and rapeseed or mustard oil.[6] However, only the TRQs in maize and sunflower have been recently used (WTO, 2007). Since information on the filling rate is unavailable, we do not consider them in the following analysis.

Finally, preference margins are very limited in Indian agricultural tariffs. The most generous ones are granted to Sri Lanka and other least-developed South Asian countries. The average preferential margin is seven-tenths of a percent, but is more important in live animals (chapter 1), sugar and sugar confectionery (17), resins and gums (13) and coffee and tea (8). In particular, the tariff concession to Sri Lanka on tea is the main source of agricultural trade preferences granted by India.

2.2 Impact of draft modalities on India's Market Access

2.2.1 Setting the stage

Since the July 2004 draft WTO modalities, the tiered tariff-reduction formula has become the centrepiece of market-access negotiations. Four bands have been defined for both developed and developing countries. The depth of cuts varies across bands as well as countries as shown in table 3a. The tariff cutting formula seems aggressive relative to the Uruguay Round with provisions for larger proportional cuts on higher

tariffs. In accordance with special and differential treatment (SDT), the developing-country cuts in each band are two-thirds of those for the developed countries. The bands are also wider to possibly accommodate variation in high tariffs in developing countries (table 2). In the case of India, understanding the consequences of the formula on different products requires attention to the mechanism related to the binding overhang. Figure 1 illustrates the situation for two important products: crude palm and soya oils. In the soya case, bound and applied tariffs are initially both equal to 45 percent, and hence, initial binding overhang is equal to zero. The formula will have a direct impact on both rates. In contrast, palm oil has a higher applied rate (100 percent), while the bound rate is set at 300 percent. For this reason, the strongest cut of the formula (45 percent for the last band) will reduce the bound rate to 163 percent but will have no effect on applied protection. The only impact of the formula is to reduce the binding overhang from 200 percent to 63 percent. In this case, the capacity for the government later to raise the tariff is reduced but the margin is still important.

The key elements of our analysis of tariff cuts in the Indian context are presented in table 3b based on the latest - May 2008 - draft modalities (World Trade Organization, 2008). Note that for each band, the mid-point of the cut in table 3a is employed. In order to accommodate domestic political objectives with the strong discipline of the formula, countries are entitled to have a limited number of products that will partially avoid liberalization. The first category of flexibility is covered by the "sensitive" products. They could be used by developed and developing countries but require that deviation from the formula cut will be compensated, to some extent, by TRQ creation or enlargement. However, the May-2008 modalities (paragraph 77) introduce a new option for developing countries: for two-thirds of their sensitive products, TRQ enlargement is not required if the deviation in the tariff cut is small (25 percent). The latter option is really attractive in the Indian case due to the high binding overhang. Applied rates could be protected more easily just with a small deviation in the tariff cut. We assume that India will designate 8 percent of its HS6 lines as sensitive products (5 percent as a basic number plus additional lines for developing countries, plus additional lines for countries with notifications at the HS6-digit level). Within the sensitive products, a first category, SE-I accounting for 5.3 percent of HS6 lines, faces 75 percent of the formula cut. The remaining sensitive products referred to as SE-II (2.7 percent of HS6 lines) are subject to one half of the formula cut and TRQ enlargement. In addition, developing countries benefit from special products (paragraph 118 of May 2008 draft modalities) with significantly more flexibilities than in the case of sensitive products. Negotiations are ongoing on the scope and treatment of special products, but we assume a median solution with 14 percent of tariff lines considered as special in two tiers:

- Special products I (SP-I): About 5.6 percent of the HS6 lines will not be subject to tariff cuts[7]
- Special products II (SP-II): An additional 8.4 percent of the HS6 lines with a tariff cut of 15 percent.

Even if sensitive and special products have different treatments, and to some extent, separate motivations, they both answer the same need: for policy makers, in developed and developing countries, the pure discipline imposed by the formula cut may not be feasible. To be consistent with their domestic agenda (redistribution, rural development, food security, political factors), some products cannot bear the full formula cut envisioned in the WTO draft modalities. Moreover, developing countries have limited resources to deal with structural adjustment of trade liberalization and in accordance with the SDT, have additional flexibilities in the form of special products.

It is not clear how each developing country would choose its set of special and sensitive products. Sharma (2006) suggests that these products will be the ones with the highest bound tariffs. This approach has limited applicability in the Indian case where binding overhang is very high and the binding-by-band approach has been used during the Uruguay Round. Alternatively, one could argue that they will be those with the highest applied tariffs (Vanzetti and Peters, 2008). Jean, Laborde and Martin (2006) propose a third approach which uses a tariff-revenue-loss criterion under which products are selected on the basis of the value of imports times the reduction in the tariff rate. For a discussion of the pros and cons of the three approaches see Jean, Laborde and Martin (2008). The highest bound-tariff approach suggests that sensitive products will have a modest impact on the reduction in average tariffs; the highest-applied tariff criterion suggests a slightly larger impact; and the tariff-revenue-loss criterion suggests that even small numbers of sensitive

products can greatly diminish potential reductions in applied tariffs.

The alternative proposed by Jean, Laborde and Martin (2008) emphasizes the willingness of policy makers to have higher and hence, more costly tariffs on some products. For instance, high protection on an important product such as vegetable oil in India is more costly than high protection on a minor commodity (e.g., organic chemicals). Their approach employs the estimated cost of these tariffs to reveal policy makers' preference for protecting industries. The latter leads to a selection approach, which helps identify potential special and sensitive products.[8] Some countries with offensive interests in the Doha Round have tried to limit the selection of special products by defining indicators related to development needs. Even if guidelines are included in the draft modalities (appendix F, WTO, 2008), their scope is likely to be large (food safety, regional inequalities, lack of competitiveness, tariff revenue losses) that it is difficult to see how a product could not fit in one of them. So, using the Jean, Laborde and Martin (2998) approach is fully compatible with this freedom of choice for Indian policy makers.

Finally, since domestic consumption is large, it seems that any solution including TRQ creation based will be inferior to any other form of flexibility and so, SE-II option is likely avoided for key products. For this reason, we introduce hierarchy in the use of flexibilities: special products with zero tariff cut are chosen first (SP-I), followed by special products with a 15 percent tariff cut (SP-II). Then, sensitive products without TRQ enlargement (SE-I) are identified and finally, the remaining sensitive products (SE-II) are chosen.

Table 4 provides a quick overview of the results from the above selection procedure for sensitive and special products.[9] The most important products are grouped under SP-I, which accounts for 25 percent of total imports (US$ 1229 million, 37 HS6 tariff lines) and includes chapter 15 –animal/vegetable fats and oils (28 percent of the chapter's imports are covered). Other chapters under SP-I are vegetables (7), edible fruits and nuts (8) and beverages and spirits (22). In addition, 64 percent of dairy imports are shielded from tariff cuts by including 3 HS6 lines of chapter 4 in the SP-I category. The remaining important products in the dairy chapter are included in SP-II category along with cereals (10), oil seeds (12) and food preparations (20). Some additional lines of SP-I chapters are also included in the SP-II category (table 4). The latter includes products less traded (3 percent of agricultural imports for 56 HS6 lines) but with high tariffs and low binding overhang. As will be shown in the next section, the above chapters will be significantly affected by the formula tariff cut without the special-product flexibility. Forty percent or more of the imports of seven chapters will be protected by the special products: 4, 9, 10, 12, 16, 17, 21 and 22. The sensitive products without TRQ enlargement appear to be very attractive and may be used to shelter a large share of trade (43 percent of agricultural imports) with high binding overhang for the price of a small cut (products in chapters 4, 6, 7, 8, 15 and 50). The last category, sensitive products with TRQ opening is less interesting and contains products with low applied tariffs and relatively high binding overhang. If the motives to maintain binding overhang on these lines are weak, it will be better to not use the SE-II option, which requires TRQ concessions.

In the following, we use 2004 tariff and the average of 2002-2004 trade data. Our main source of information is India's Uruguay Round schedule for bound tariffs and the MAcMapHS6v2 methodology for the applied tariffs (Bouët *et al.*, 2008). We work at the HS6-digit level to facilitate international comparisons. The percentage of HS6 tariff lines in each band applicable to India is presented in table 5. About 36 percent of India's bound tariff lines are in the last band (above 130 percent) and another 48 percent in the band III. The trade-weighting scheme alters this pattern by increasing the share of band II and IV and decreasing the importance of band III. With about 96 percent of the tariffs in bands II to IV, which face a tariff cut above 38 percent, it is straightforward to see that the goal of capping average cut of developing countries to 36 percent will be binding (table 3b)[10] For this reason, India will be able to reduce the formula cut rate by 17 percent within each band before considering sensitive products and by 13 percent after inclusion of sensitive products.[11] For example, the cut rate on the last band for a normal product will be 40.6 percent instead of 46.7 percent in the case where sensitive products are used.

2.2.2 Impact on bound tariffs

Table 6 displays the consequences of the formula cut first, then of the flexibility on bound tariffs and their distribution (trade-weighted standard deviation). The first five rows of table 6 provide tariff averages for the

products belonging to different categories including sensitive and special products. Applying the formula by bands in table 5 will result in an overall cut of 38 percent in the average trade-weighted bound tariffs from 158.8 percent to 98.8 percent.[12] The bound tariffs of SP-I (SP-II) fall to nearly 44.2 (40.2 percent) from 67.7 percent (62 percent), while that of the SE-I declines to 151 percent from 245.8 percent. Average bound tariffs of SE-II and the remaining products are 75 percent and 71.3 percent, respectively, following the formula cut. The flexibilities in the form of sensitive and special products have strong impacts on India's market access. The overall average bound rate climbs back to 126.2 percent, and the tariff cut is reduced to 21 percent on average. Without flexibility, the overall average cut, about 44 percent noted above, appears relatively homogenous for all chapters, except for chapter 41 (hides) which has low initial bound tariffs and therefore, the lowest cut coefficient (28 percent in average). On the other side, the sectoral concentration of flexibilities leads to strongly differentiated impacts on tariffs. For example, the cut in the average bound rate will not exceed 20 percent for eight chapters: 4, 7, 8, 9, 10, 15, 17, and 22.

Tariff heterogeneity, measured by the standard deviation, is initially pretty high at 105 percent for the overall average and the coefficient of variation is 66 percent (table 6).[13] However, the formula will reduce the standard deviation by 40 percent but the coefficient of variation remains nearly unchanged. The harmonizing objective of a tiered formula appears neutralized: since most of the tariffs are in the last two bands, they face similar cuts and so, the progressivity effect of the formula is quite limited. As expected, the flexibility increases heterogeneity in the protection pattern compared to that after the formula cut, i.e., the standard deviation increases to 83 percent.

2.2.3 Impact on applied MFN tariffs

Impacts on applied protection are the most relevant indicators of new market opportunities for foreign producers and potential gains for domestic consumers. With the formula cut, the liberalization of India's markets will be limited due to the high binding overhang (table 2). Table 7 shows that the average applied (MFN) rate would fall to 54.3 percent from an initial 59 percent (an 8 percent cut). Chapters with an applied tariff cut of above 20 percent include dairy products (4), cereals (10), miscellaneous preparations (21) beverages and spirits (22) and essential oils and perfumery components (33).

The significant effects of flexibilities on applied tariffs are evident from the first 5 rows of table 7. Considering sensitive and special products, the applied level of protection is not affected by current modalities (reduction by 0.02 points). The role of the sensitive products without TRQ expansion, SE-I, is clearly apparent: the deviation in tariff cut (25 percent) combined with the high binding overhang on these products totally neutralize the cut on applied tariffs. The SP-II category is slightly affected by the remaining effects of the formula (2 percent cut in the average). Consequently, just two chapters will have final cut in their average tariffs above 2 percent (live trees and cereals). These results appear in line with India's revealed political preferences in the current negotiations: to have enough flexibility in protecting its agriculture and to restrain from making significant applied tariff reductions.

Since applied tariffs barely change at the aggregate level, the standard deviation of applied tariff and its coefficient of variation remain constant (63 percent for the latter) for initial and final rates with flexibilities (table 7). Without flexibility, we notice an increase in the variance of tariffs due to the uneven distribution of binding overhang, e.g., animal/vegetable fats and oils (15), in the last column of table 7. The story behind this odd result is simple: some products, such as soya-oil, have initial tariffs below the average and very limited binding overhang. The formula cut will have a direct impact on them. Other products within that chapter, such as palm oil, have bigger tariffs but a much larger binding overhang. Even with a higher cut rate on palm oil's bound tariffs, a smaller cut will be delivered on its applied protection. The consequence is that deeper cuts are applied on less protected products, the reverse of the initial goal of the formula.

Comparing tables 6 and 7, note that SP-I products have a very low binding overhang (5.4 percent) because of the high applied MFN rates, followed by SP-II products (23.1 percent). In the case of SE-I, both applied tariffs and binding overhang are relatively large, 81.1 percent and 115.1 percent, respectively. For SE-II and the remaining products, the binding overhang is at least as large as 42.2 percent. The net effect of formula cut and flexibilities appears to be reductions in binding

overhang, but applied tariff levels and distribution remain unchanged.

2.2.4 Impact on applied preferential tariffs

Table 8 presents the effects of the formula on applied preferential tariffs. Since India's preferences are quite limited, the overall picture is unchanged. Developing countries are the most penalized by Indian protection likely due to the former's product specialization: they faced an average tariff of 70 percent instead of 38 percent for exporters from developed economies. Moreover, the formula will bring greater market access opportunities for the latter (7.5 percent reduction) when compared with the former (4.3 percent). In this context, India's use of flexibility is more harmful for developed-country exporters. The latter explains why the issue of special products was a source of conflict between India and OECD agricultural exporters. For developing countries, flexibility still eliminate their market access gains, but their effect was small to begin with.

Looking at bilateral protection, two questions arise: first, to what extent does India's weak liberalization affect existing small preferential margins? Second, if India grants Duty-Free Quota-Free (DFQF) to LDCs, what will be the cost in terms of its average protection? Concerning the first issue, the formula would have induced some preferential erosion, mainly for Sri Lanka, in chapters 9 (tea) and 10 (cereals) but the flexibility, by sheltering MFN tariffs from any cut, may retain existing margins. Since India's initial preferences are low and applied rates do not change much because of flexibilities, DFQF initiative has the potential to have large effects on applied protection. Hence, we simulate a very ambitious DFQF on all agricultural products.[14] This complete DFQF will have a real impact on India's applied protection: the final average rate will drop from 58.3 percent to 54.4 percent and so, could deliver more liberalization than the full draft modalities on agriculture. The most sectors impacted will be vegetables (average protection falls from 36.3 percent to 22.7 percent), edible fruits and nuts (37.7 percent to 23.7 percent), gums and resins (21 percent to 14.9 percent), prepared meat (61.2 percent to 55.2 percent) and cereal preparations (32.5 percent to 26.9 percent).

2.2.5 Ex-post binding overhang and additional flexibilities

We noted earlier (section 2.2.3) that India's applied protection will not be affected by the WTO draft modalities. However, it is important to analyze the evolution of the binding overhang, both for short-term adjustment in trade policy and to have a broad idea of the starting point of the next round of negotiations.

On average, the formula without flexibility will reduce the binding overhang by 55 percent from 99 percent to 44 percent (table 9). The magnitude of this reduction is important, but ex-post binding overhang continues to provide a large security margin. Table 9 also presents chapter-wise results since binding overhang is unevenly distributed across sectors. With just the formula, the binding overhang will be cut by more than half for all sectors except cereals, hides and cotton. For eight chapters, the post formula binding overhang margin will be below 20 percent: dairy products (chapter 4, binding overhang falls from 13.4 percent to 5.6 percent), cereals (chapter 10, from 14.6 percent to 9.4 percent), coffee, tea and spices (chapter 9, from 50 percent to 13.3 percent), beverages and spirit (chapter 22, from 32.5 percent to 14.8 percent), sugar and sugar confectionery (chapter 17, from 60.1 percent to 15.3 percent), wool (chapter 51, from 32.8 percent to 16.3 percent), live trees, plants and flowers (chapter 6, 36.3 percent to 16.3 percent) and hides (25 percent to 18 percent).

Even if our criteria for selecting sensitive and special products do not include a binding-overhang target, we find an impact of flexibilities on binding overhang.[15] It is reasonable to consider that policy makers will shelter priority tariff lines facing serious tariff cut in the Doha Round with the use of sensitive and special products. With flexibilities, the aggregate binding overhang increases to 67.2 percent from 44.5 percent in the case of the pure formula cut (table 9). At the sectoral level, flexibilities increase protection ceiling for coffee and tea, sugar, vegetable oils and cereals.

In addition to flexibilities in the form of sensitive and special products, India has well established anti-dumping laws (Directorate General of Anti-Dumping and Allied Duties, Ministry of Commerce, Government of India). In the past few years, India has extensively used such duties, consistent with Uruguay Round's Article VI (Anti-Dumping Agreement). However, few agricultural

products have been subject to either anti-dumping or countervailing measures (e.g., silk from China). India's anti-dumping strategy is based on a price trigger, whenever the exporter's price falls below the "normal value." The anti-dumping duty is set-equal to the dumping margin: difference between export price and its normal value. Both export price and normal value are defined by India's Customs Tariff Act and have been amended for accordance with the Uruguay Round agreement. The normal value is defined as comparable price for consumption in the exporting country defined under alternative scenarios, while injury is determined by the volume of imports and impact on domestic prices.

2.3 Implications of draft market access modalities for India's exports

India is a net agricultural exporter and agricultural products account for 10 percent of total merchandise exports and hence, we consider offensive interests of Indian exporters in our analysis. The European Union is a key market for India's exports, since it represents 27 percent of duties collected on Indian agricultural products. However, focusing on developed countries will be misleading since the same measure aggregated for Bangladesh, Sri Lanka, Nigeria, South Korea, the United Arab Emirates (tobacco products) and Philippines is 40 percent. Even if India is effective in forthcoming FTA negotiations with the latter countries, agricultural liberalization may be quite limited in these agreements. Hence, liberalization via the Doha Round will be worthwhile, since currently, India does not benefit from any significant preferential access to important markets.[16] Finally, due to some specialization (tea, wheat), India faces a relatively lower level of protection (10.1 percent) compared to other exporters such as the US (15.7 percent) or the EU (18.2 percent) who have a larger share of exports in highly protected products (meat, dairy products, beverages and spirits).

To assess the effects of the draft modalities in creating new market access for Indian exporters, we apply the tariff cutting formula to all WTO members taking into consideration special treatment for recently acceded members (RAM), small and vulnerable economies (SVE), LDCs as well sensitive products for all WTO members and special products for other developing members. Moreover, developed economies are subject to additional cuts on tropical products and products facing tariff escalation (see, Blandford, Laborde and Martin, 2008, for a complete description of these specific treatments).

The pure formula will cut the applied tariffs faced by India by 24 percent bringing it to 7.6 percent from the initial 10.1 percent (table 10). However, flexibilities to developed and developing countries will increase the applied protection to 8.9 percent, a net reduction of only 11 percent. SVE markets, the most protected initially (21.1 percent) will not grant any new market access opportunities to India due the former's special and differential treatment. For the RAM group, whose results are driven by China, applied tariff reduction is very limited- 0.4 percentage points (cut of 3 percent). A similar pattern appears for developing countries (including South Korea), where the initial average protection of 10.4 percent is going to be cut by 1.5 percent. In the latter case, flexibility offered by special and sensitive products eliminates 94 percent of the effects of the formula. That is, applying the tiered formula for developing countries (non SVE, non RAM and non LDC) would have delivered a cut of 22 percent bringing down their tariffs to 8.1 percent.

Finally, significant liberalization will take place only on 30 percent of Indian exports; the ones targeting developed economies (table 10): applied protection will be cut by 34.8 percent from 8.4 percent to 5.5 percent (2.9 percentage point). Looking at the different components of the tariff reduction, we see that tariff escalation has small effects at the aggregated level. The tropical products proposal is more significant since it adds one fifth of the cut in average driven by the pure formula. Finally, the sensitive-products option granted to developed economies has reduced the average cut from 60.2 percent to 34.8 percent.

The sector-level results in table 11 show that chapter 10 (cereals), which represents one fourth of total agricultural exports, receives minimal new market access opportunities because the faced tariff falls from 13.4 percent to 12.6 percent only. Two main reasons explain this result. First, low tariff cut for developing countries (effects of the special and differential treatment and binding overhang) does not allow the formula to achieve real tariff reduction. Then flexibilities take away any meaningful tariff reductions: rice will likely be a sensitive product in developed importers (EU, Japan) and a special product in developing countries. The three next most important

chapters (9 - coffee and tea, 23 - food residues, 8 – edible fruits and nuts) face initially low level of protection (3.5 percent, 2.8 percent and 1.9 percent, respectively) and so, tariff reduction is limited (cut range 3 percent-12 percent).

Finally, five chapters stand to gain significant new market access opportunities with an applied cut of averaging above 25 percent (table 11): meat and offal (2) with a tariff reduction of 6 percentage points from an initial level of 19.1 percent, dairy (reduction of 3.7 percentage points), live trees (2.8 percentage points), animal/vegetable oils and fat (1.6 percentage points) and vegetable preparation (3.2 percentage points).

3. DOMESTIC SUPPORT POLICIES

The two main instruments of domestic support (DS) are the minimum support price (MSP) for major agricultural commodities and input subsidies provided to farmers in general. The former instrument has been used for most crops, e.g., cereals, pulses, oilseeds and commercial crops (sugarcane, cotton, tobacco and jute). To ensure markets operate with MSP as the floor, procurement operations are carried out by public agencies. The Food Corporation of India (FCI) is authorized to procure wheat and paddy from farmers, and rice and sugar from millers. The latter is often referred to as a levy on millers, who part with a share of their production in return for a free hand in setting prices on the rest of their production. The decision on MSP is made by the Ministry of Agriculture with recommendations from the Commission on Agricultural Costs and Prices (CACP). Through MSP, the CAPC aims to cover the cost of production of each of the crops including imputed value of farm labor and to provide a reasonable rate of return to farmers (Hoda and Gulati, 2007; Pursell, Gulati and Gupta, 2007).

Major inputs supplied at subsidized prices include fertilizer, electricity, irrigation, and seeds (Gulati and Narayanan, 2003). Fertilizer subsidy arises from ensuring a statutory retail price for farmers, which is lower than the per-unit domestic cost of production and the import price for nitrogenous and phosphatic fertilizers. The government pays for the difference between the cost of production and the fixed sales price and a profit margin for each manufacturing unit.[17] Wide regional variation exists in the nature and magnitude of electricity subsidies. The electricity tariff on agriculture is either zero or a fraction of the per-unit operating expenses of the individual state electricity boards or departments. Similarly, farmers pay a fraction of the cost of irrigation infrastructure's operating expenses. Moreover, in both electricity and irrigation cases, the source of capital expenditure appears to be central and state government budgets. Through national seed testing labs and certification agencies, the Indian government has been providing poor farmers with seeds free of cost. In addition to input subsidies, credit subsidy, i.e., loan waivers or lower interest rate for farmers on short-, intermediate- and long-term loans, also varies by state.

3.1 Measures of domestic support

Official DS notifications of India for three years, 1995-1996, 1996-1997, and 1997-1998, are presented in table 12, which is taken from Mullen, Orden and Gulati (2005). Note that the DS values in table 12 are reported on a marketing-year (April-March) basis. Henceforth, we use the first calendar year to denote the entire marketing year for ease of reading, e.g., 1995 to denote 1995-1996. Note that India did not have a total aggregate measurement of support (AMS) commitment in the Uruguay Round, and hence, the *de minimis* exemptions, both product- and non-product-specific served as limits to domestic support.

The green box support, DS1 in official notifications, increased from US $2196 to $2873 millions between 1995 and 1997. The primary item in DS1 is central government's budget expenditure related to food storage and warehousing, i.e., public stockholding for food security, arising out of operations of FCI and other public agencies. Other significant components include general services (mostly research) and relief from natural disasters or calamities. Support under special-and-differential-treatment exemptions of the AOA, i.e., DS2, has witnessed a dramatic increase during 1995-1997. Table 12 shows that support increased from $254 million in 1995 to $4855 ($5172) million in 1996 (1997). The latter appears to reflect changes in how fertilizer, electricity and irrigation subsidies are apportioned between DS2 and DS9 notifications. Article 6.2 of AOA

states that "*agricultural input subsidies generally available to low-income or resource-poor producers in developing country Members shall be exempt from domestic support reduction commitments that would otherwise be applicable to such measures…*". Unlike in 1995, India's subsequent DS2 notifications appear to have included 80 percent of input subsidies at least under three categories: fertilizer, electricity and irrigation, under "input subsidies to low-income or resource poor producers" (Hoda and Gulati, 2007).[18] The other major item in DS2 is the investment subsidies generally available to agriculture, which increased from $105 million to $1143 million between 1995 and 1997.

Table 12 also has the product-specific aggregate measurement of support (AMS) for 11 commodities during 1995-1997. In 1995, India notified product-specific AMS in all commodities based on external reference prices (ERP) from 1986-1988. For DS7, the AMS appears to be the product of price difference (administered price minus external price) and total production of the commodity in 1995, when the notified product-specific AMS is -$29619 million. The latter is negative because ERP exceeded MSP in all commodities with the exception of sugar. In the subsequent notifications product-specific AMS is reported for only rice (including paddy), wheat and coarse cereals.[19] Furthermore, the total production in the formula for computing AMS seems to have been replaced by eligible production, where the latter is the amount of commodity procured by public agencies such as the FCI. As a result, the notified product-specific AMS is -$2604 and -$2749 million in 1996 and 1997, respectively.

India's non-product-specific AMS in table 12 has also changed between 1995 and the subsequent notifications. It appears that the entire subsidy for fertilizer, electricity, irrigation, credit and seeds totaling $5772 million in 1995 - accounting for 7.5 percent of the value of agricultural production- is notified as non-product-specific AMS. However, the reported estimates declined to $930 and $1004 million in 1996 and 1997, respectively, accounting for about 1 percent of the value of agricultural production in either year. As noted earlier, the reason for this decline in notified support appears to have been the change in methodology which allocated about 80 percent of the fertilizer, electricity and irrigation subsidies to DS2 (special and differential treatment, Article 6.2 of AOA). Credit subsidies are not notified for 1996 and 1997 and seed subsidies, for DS9 purposes, were negligible.

Shadow DS notifications for 1997-2005 from Gopinath (2008) are presented in table 13, which are based on an understanding of India's 1997 notification methods. For data sources, the underlying methods and potential discrepancies between official and shadow notifications see Gopinath (2008). The first of the four sub-headings of table 13 shows that green-box support likely increased from $2995 to $7689 million between 1997 and 2005, a 160 percent growth relative to the 1997 level. Alternatively, green box support as a share of value of agricultural production appears to have doubled between 1997 (3.5 percent) and 2005 (7 percent). The share of public stockholding in green box support has shown a decline from 74 to 69 percent during 1997-2005 while that of disaster payments has witnessed marginal increases. Although the growth of environmental program payments is dramatic, its share of the green box support remains below 2 percent.

The two major items of DS2, as per the 1997 official notification, are (i) investment subsidies generally available to agriculture and (ii) fertilizer, electricity and irrigation subsidies. Based on the budget of Ministry of Rural Development, support under item (i) is shown to have increased from $643 million in 1997 to nearly $5.3 billion in 2005. Gopinath (2008)'s estimate of the sum of three major input subsidies appearing in item (ii) of DS2 shows a decline from $3956 to $3050 million between 1998 and 2001 before increasing to $4467 million in 2005. The total DS2 support appears to be about 6 percent of the value of production until 2004, with the exception of 2005, which is based on preliminary budgetary expenditures.

Extending the 1997 product-specific AMS methodology to 1998-2005, Gopinath (2008) finds that rice and wheat AMS were negative in all years with mixed trends.[20] With little stockholding, coarse cereals drop out of the product-specific AMS computation. The negative product-specific AMS arising from the negative difference between MSP and ERP has shown a tendency to narrow in recent years.

The notified non-product-specific AMS in 1997 totalled $1004 million, 85 percent of which were fertilizer and electricity subsidies. The fertilizer subsidy has undergone some reforms, where the RPS is applied to nitrogenous manufacturers only. Some of this change seems to be reflected in the decline of fertilizer subsidies until 2002. However, concessions for phosphatic manufacturers have dramatically increased

in recent years causing total fertilizer subsidies to again increase (2003-2005). Electricity subsidies also show a mixed trend, but have increased from $343 to $522 million between 1997 and 2005. Irrigation subsidies have increased from about $80 to $167 million in 2004 before declining to $111 million in 2005 (Ministry of Water Resources). The non-product-specific AMS as a percent of the value of agricultural production remained near 1 percent during 1997-2005 (Gopinath, 2008).

Figure 2 shows the general trend of various measures of domestic support – green box, article 6.2 (special and differential treatment), product-specific AMS, and non-product-specific AMS – and the value of output in Indian agriculture. Support under green box and article 6.2 has shown significant growth, as noted earlier, while non-product-specific AMS remained somewhat constant. Product-specific AMS has remained negative, but with a mixed trend during 1997-2005. The growth in the value of output in figure 2 shows the flexibilities available to India under both *de minimis* provisions (10 percent) in the latest WTO draft modalities.

3.2 Impact of draft agricultural modalities on India's domestic support

Recall that India did not have a total AMS commitment, and so, the *de minimis* exemptions served as limits to domestic support in the Uruguay Round. In the revised WTO draft modalities (May 2008), developing countries without a total AMS commitment are required to compile a base overall trade-distorting support (OTDS), but are exempted from reductions in OTDS and total AMS. It is not clear if product-specific AMS limits in paragraphs 27-29 are applicable to both groups of developing countries: with and without a total AMS commitment. If product-specific AMS limits apply, three options are available to India. With negative product-specific AMS, option (a), to use the average of 1995-2000 or 1995-2004, appears to severely limit administered price support. Option (b), to use two-times the product-specific *de minimis* level of AOA, i.e., 20 percent of the value of production of each commodity, may be the preferred option since option (c) involves the annual bound total AMS, which is zero for India. The following is based on the assumption that India's domestic support is again limited by *de minimis* levels only, and examines whether or not option (b) will be binding.

Table 14, taken from Gopinath (2008), presents preliminary estimates of India's domestic support for 2006-2007, and a projection of major aggregates for 2015. The latter year corresponds to the anticipated conclusion of the Doha implementation period and the possible beginning of another round of trade negotiations. Gopinath's (2008) projection for 2015 is in nominal terms and based on average annual growth rate of support in each category during 1995-2005 with the exception of product-specific AMS. For the latter, three alternative projections are made for 2015.

The green box expenditures may increase to nearly $17.3 billion by 2015 for two reasons (table 14). The first is the projected expenditure on public stockholding, which may increase to about $12 billion by 2015, if current rates of growth were to be sustained. The second reason is spending on relief from natural calamities/disasters, projected to be about $3.9 billion in 2015. The proposed Doha modalities address criteria for both these components for listing in the green box (Annex B of WTO's Revised Draft Modalities, May 2008). In the case of the former, the costs of procurement from resource-poor or low-income farmers and distribution to urban and rural poor can be listed in the green box. Whether or not all (projected) expenditure on public stockholding fits within this definition is unclear and require procurement statistics by type of farmers. For the disaster relief, a floor for production loss as a percent of average production in the preceding five or three years has not been defined for developing countries in Annex B of the latest WTO draft modalities. India is likely to define these components in line with Annex B, and hence, a majority of these two items' expenditure probably remains in the green box.

For DS2, Gopinath (2008) limits projections to input subsidies, which include 80 percent of the fertilizer, irrigation and electricity subsidies. In nominal terms, these subsidies contribute to nearly $5.3 billion of support in DS2 (table 14). Some of DS2 support may be reallocated to DS9 if the amount of land holdings of low-income or resource-poor farmers is used to apportion input subsidies. A reallocation based on the land share would transfer nearly $2 billion into non-product specific AMS, which in turn, may increase to about 3 percent of the value of agricultural production.

Among these projections, the case of product-specific AMS is of serious concern. With price increases in the range of 10-25 percent between 2006 and 2007, and a

one-time bonus for the latter year, the nominal gap between MSP and ERP has become positive for rice in 2007. If prices were to increase by the average annual growth during 1995-2007 until 2015, positive product-specific AMS in rice and wheat are likely to emerge (about $3.9 billion, projection a, table 14). For other commodities, product-specific AMS will likely be zero consistent with zero procurement reported in official notifications. If price growth during 1995-2005 is employed, product-specific AMS becomes lower ($1.2 billion, projection b, table 14). If the alternative support-definition of entire volume of production as opposed to procured quantities were to be used, nominal product-specific AMS may exceed the 10 percent *de minimis* level in 2015. The reason for breaching the *de minimis* level is that India produces nearly 200 million tons of food grains, which is about four to five times of the procured quantities. Moreover, including the product-specific AMS for other commodities for which procurement is considered to be zero can lead to support in excess of the *de minimis* level. The latter changes may lead to product-specific AMS exceeding $16.3 billion, the projected 10 percent of value of production in 2015. In real terms, the 2015 price gap between MSP and ERP is significantly lower than that in nominal terms, if a 3 percent allowance is taken for excessive inflation (projection c, table 14). Moreover, the revision to Article 18.4 of the Agreement on Agriculture in the latest WTO draft modalities considers difficulties faced by developing countries in computing AMS as a result of sudden and extraordinary increases in food prices relative to the fixed external reference price. Finally, if product-specific AMS limits apply, the limit of 20 percent of the value of production of each commodity is not likely to be exceeded in rice or wheat according to the projections for 2015.

Non-product-specific AMS is likely to remain around 1 percent of the value of agricultural production, if India continued to use the concepts of 1997 notification (table 14). Moving some of DS2 support back to DS9 may increase the share to about 3 percent, well under the proposed Doha limits for India. The share may further increase by several percentage points, if the current proposal to provide credit subsidies is fully implemented. The 2008-09 budget has allocated about $15 billion to absorb the cost of waiving farm loans from the last 5 years. Of that, $12.5 billion is proposed for low-income and resource-poor producers (less than 2 hectares), while the rest is allocated to help reschedule loan terms to all farmers. It is also not clear, at this time, how the credit subsidies will be apportioned over the past or next five years for WTO purposes.[21]

In general, the *de minimis* exemptions are expected to provide substantial flexibility to India in its pursuit of domestic support policies. By 2015, the product- and non-product-specific AMS can be as much as $16.3 billion each. Some concerns exists on whether product-specific AMS limits apply and such support may breach the *de minimis* levels, but it is hard to precisely pin it down with uncertainty on the use of eligible versus total production, how applied administered price is reported (as close to the farm gate as possible) and the definition of excessive inflation.

4. SUMMARY AND CONCLUSIONS

In this study, we examined the implications of the latest WTO draft agricultural modalities (Falconer text, May 2008) for India. Our focus has been on the likely impact of proposed agricultural modalities on India's market access and domestic support policies.

India is one of the most protected markets for agricultural products in the developing world. Most of India's agricultural tariffs are of the *ad valorem* kind, where the simple average of bound tariffs is very high: 115 percent in 2004. Trade weighting shows a much higher average bound tariff (159 percent) than the simple average. However, the applied tariffs average 59 percent and hence, the binding overhang - gap between bound and applied tariffs- is high. The uneven distribution of India's binding overhang creates the need for flexibilities, if policy makers desired to shelter some products with low binding overhang from trade liberalization. Vegetable oils account for the largest share of imports followed by vegetables, edible fruits and nuts, and inputs for the textile industry: cotton, wool, and silk. India offers trade preferences to mostly neighbouring developing countries.

Our analysis focused on the tiered tariff-reduction formula and on the special and differential treatment afforded to developing countries in the form of

sensitive and special products. We assumed that India will designate 5.3 percent of its HS6 tariff lines as sensitive products, which face a 25 percent deviation from the formula cut without TRQ concessions. Another 2.7 percent of HS6 lines are designated as sensitive products facing a 50 percent deviation from the formula cut, but with TRQ expansion. In addition, two categories of special products are considered: about 5.6 percent of the HS6 lines will not face tariff reduction, and an additional 8.4 percent of the HS6 lines are subject to a tariff cut of 15 percent. Drawing on a related study, the estimated cost of agricultural tariffs is used to reveal policy makers' preference for protecting industries, especially, their willingness to have higher and more costly tariffs on some products. The latter leads to a selection approach, which helps identify potential special and sensitive products for our analysis. An important difference between sensitive and special products is the former's requirement to open multilateral TRQs to compensate for the reduction in formula tariff cuts, at least for a subcategory. Since the size of these TRQs will be based on a percentage of domestic consumption (between 2.7 percent and 3.3 percent), this requirement implies large quotas in the Indian case. To avoid these imports with low or zero duties, Indian policy makers may fully rely on special products and employ the sensitive products option given by paragraph 77 in the latest modalities.

Applying the formula by bands will result in an overall cut of 38 percent in the average trade-weighted bound tariffs from 159 percent to 99 percent. However, flexibilities increase the bound rates to 126 percent, resulting in a net reduction of 21 percent. The average applied (MFN) rate would fall to 54 percent from an initial 59 percent (an 8 percent cut) after the formula cut, but before applying flexibilities. The latter will completely eliminate reductions in applied tariffs. Commodities facing an applied tariff cut of above 2 percent in the net include only cereals and live trees. In terms of preferences, only duty-free, quota-free access to LDCs, if granted, would result in significant changes in India's applied protection. In general, the formula cut with flexibilities does not appear to open India's market and may not bring more efficiency (less heterogeneity) in the protection structure. The latter is consistent with India's defensive position to have enough flexibility in protecting its agriculture and to restrain from making significant applied tariff reductions.

India is a net agricultural exporter and so, we also consider offensive interests of its exporters. Significant liberalization will take place on only 30 percent of Indian exports; the ones targeting developed economies, where applied protection will be cut by 35 percent. Even there, India may face a disadvantage since it does not qualify for significant preferences in developed economies' tariff regimes. Compounding the problem is India's strong support of special and differential treatment, which opens few new market opportunities in developing countries.

Turning to domestic support, we find two major types of policies impacted by the WTO discipline: minimum support price (MSP) under product-specific AMS and input subsidies under non-product-specific AMS. In the Uruguay Round, India did not have a total AMS commitment, and so, the *de minimis* exemptions served as limits to these two types of domestic support. Official notifications are available for 1995-1997, which show negative product-specific AMS support because MSP is lower than external reference prices (1986-88 average). Moreover, a reallocation of input subsidies from non-product-specific AMS to special and differential treatment – 80 percent of farm holdings are considered resource poor (less than 2 hectares) – reduces the former to about 1 percent of the value of production. Based on official notifications, it appears that the *de minimis* levels (10 percent each) hold considerable slack. A recent set of shadow notifications show that India's product-specific AMS remained negative through 2005 mostly because of the wide gap between external reference prices and MSP. Non-product-specific AMS, with the allocation of 80 percent of input subsidies to special and differential treatment, accounted for about 1 percent of the value of agricultural production. A more modest use of special and differential treatment will likely increase non-product-specific AMS's share of production value to 3 or 4 percent.

With India's general elections expected in early 2009, the immediate future includes popular policies such as credit subsidies and significant growth in MSP. Nevertheless, non-product-specific AMS is not likely to exceed the limits proposed in the Doha Round, i.e., 10 percent of value of production. There is significant slack in the current non-product-specific

de minimis level to absorb the recently announced agricultural credit subsidies of nearly $15 billion over 5 years. However, the announced support prices for 2007, which are 10-25 percent higher than those in 2006, pose a problem for product-specific AMS. Along with the appreciation of the rupee, the gap between external reference and administered prices is beginning to disappear for several commodities. For example, product-specific AMS for rice has become positive in 2007. With projected growth of nearly 3.5 percent, the value of Indian agricultural production is expected to be about $160 billion by 2015. It appears that the projected *de minimis* exemptions would be about $16 billion each for product-specific and non-product-specific AMS, giving India ample flexibility in setting and implementing domestic support policies.

END NOTES

[1] With regard to export competition in the Doha Round, India has supported the elimination of export subsidies within a given time frame. However, it has sought an exemption for developing countries to offset overseas marketing costs and internal transport and freight charges.
[2] Industrial tariffs have been cut by more than half in order to reach ASEAN levels by 2009. Moreover, India appears to have fulfilled its Uruguay Round India's commitments in 2005. Our analysis precludes India's recent agricultural tariff reductions in response to the surge in global commodity prices.
[3] As discussed in Bouet et al. (2008), trade-weighed tariff average is downward biased since trade is endogenous to tariffs and that highly protected products are weakly traded.
[4] Table 7 directly lists the MFN or applied rate by each HS Chapter.
[5] The tariff variation inside chapter 15 is worth noting. For instance, the Uruguay Round commitment on soya-oil (45 percent in 1995) has constrained increases in applied tariffs on other vegetable oils due to substitution effects on the consumption side.
[6] TRQs are also included in the preferential trade agreement concluded with Sri Lanka.
[7] Forty percent of the total number of special products.
[8] The specific criterion proposed by Jean, Laborde and Martin (2008) is $s_i\left[\frac{f_i t_i}{(1+t_i)}\right]^2\left(1-c^2\right)$ where t_i is the initial tariff; s_i is the share of the import at domestic prices in domestic spending; f_i is the tariff cut implied by the formula; and c_i is the reduction in the formula cut permitted for sensitive products.
[9] A complete list of products classified as sensitive and special (HS6-digit) can be obtained from the authors on request.
[10] Computed as the simple average of dutiable lines.
[11] The inclusion of sensitive product in the computation of the average cut is another argument for India to not use sensitive products with TRQ expansion.
[12] The target cut of 36 percent is based on the simple average of tariff cut on dutiable tariff lines, but not on the cut in the trade weighted average discussed here.
[13] The ratio of standard deviation and the average.
[14] The draft modalities do not require any DFQF initiative from developing countries but Hong Kong "developing countries in a position to do so" should make a proposal close to the goal of developed countries, i.e. 97 percent of their tariff schedule free of tariff and quota for products originating in LDCs.
[15] The political criterion used in this study does not consider the binding overhang and hence, we do not take into account of market risk or past volatility in prices and the associated protection pattern.
[16] For instance, India is only entitled to Generalised System of Preferences in OECD markets, but this preferential access is limited in the case of agricultural products.
[17] The phosphatic fertilizers were removed from this scheme, referred to as the Retention Price Scheme (RPS), in late 1990s. However, a new policy offering concessions to these producers was initiated right after the elimination of RPS for phosphatic fertilizer manufacturers (Gulati and Narayanan, 2003; Pursell, Gulati and Gupta, 2007).
[18] The chosen percentage (80) is from a survey by the Government of India which showed that nearly 80 percent of farm holdings are less than 2 hectares in size (*Agricultural Statistics at a Glance*, 2000).
[19] Hoda and Gulati (2007) reasoning for this change is that government agencies generally do not procure other commodities in large scale. Procurement of other commodities (e.g., sugar, cotton, jute, pulses) is mostly carried out by Cotton/Jute Corporation of India and National Agricultural Cooperative Marketing Federation (NAFED). In 1999, procurement of cotton, mustard and oilseeds was about 86,000, 250,000 and 60,000 tons, respectively.
[20] Product- and non-product-specific AMS in real and nominal terms until 1999 can be found in Hoda and Gulati (2007).
[21] Hoda and Gulati (2007) calculate non-product specific support to be nearly 7 percent of the value of agricultural production, which presumably includes some of the alternative support-definition and measurement issues detailed in the previous section.

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Figure 1: Alternative Binding-Overhang Mechanisms

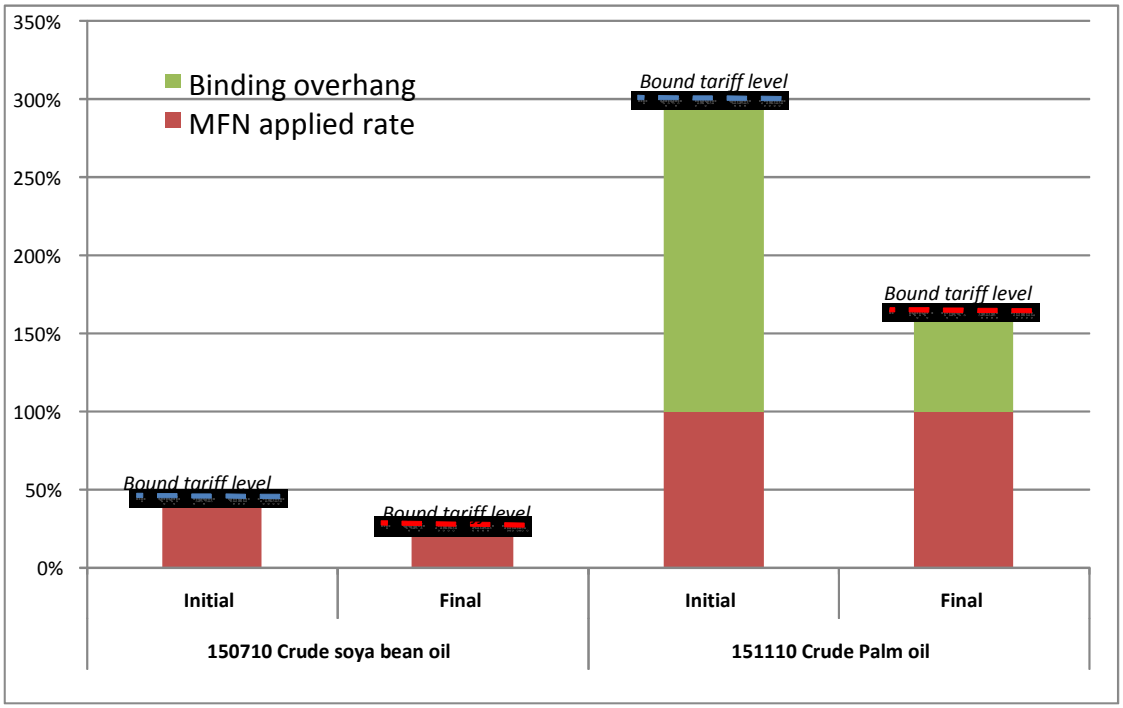

Figure 2: Trends in Domestic Support and Value of Output in Indian Agriculture

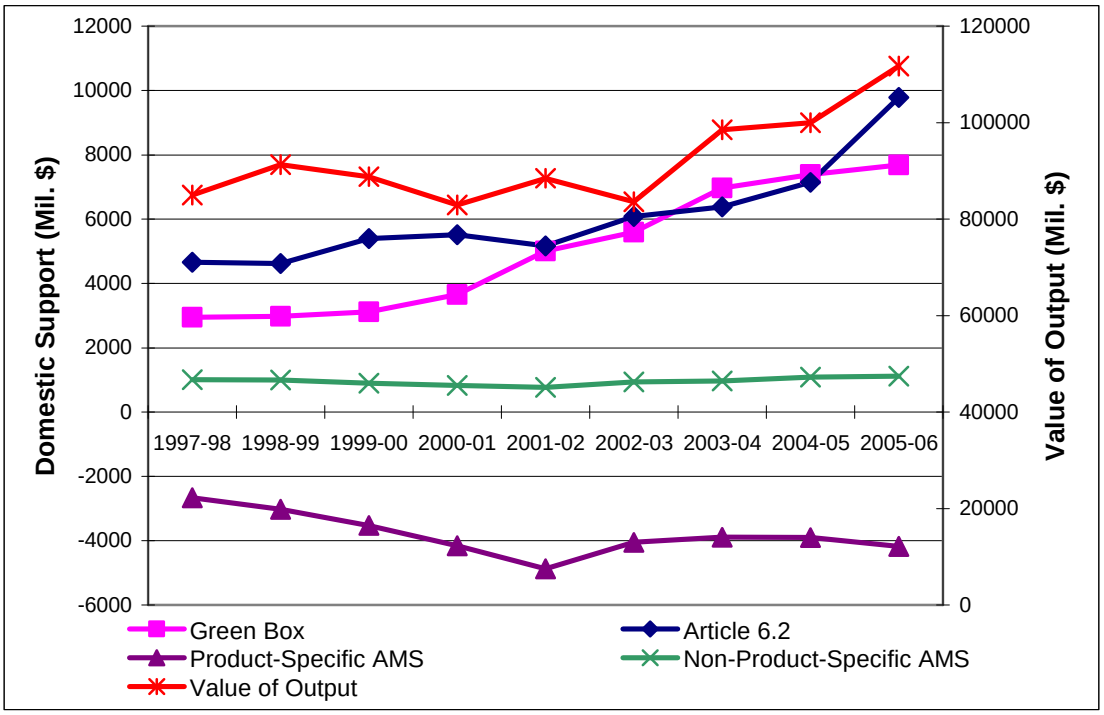

Table 1: Types of Indian Bound Tariffs on Agricultural Products, 2004

	Simple average (%)	Trade-weighted average (%)
Ad Valorem Tariffs	115.0	160.8
Specific Tariffs	59.1	48.8
All	**114.9**	**158.8**

Table 2: Indian Agricultural Imports and Tariffs by HS Chapter

HS2	Chapter Title	Trade Mi. US$	Tariff Revenue	Negotiable Bound Tariffs (%)	*Ad Valorem* Equivalent of Specific Tariffs (%)	Binding Overhang (%)
ALL	ALL	4,918.9	2,901.6	158.8	0.9	99.8
01	Live Animals	3.4	1.0	100.0	0.0	70.0
02	Meat and Offal	3.0	1.3	98.5	0.0	55.4
04	Dairy Products	38.8	16.8	56.8	0.0	13.4
05	Other Animal Products	11.3	3.4	100.0	0.0	70.0
06	Live Trees	3.9	0.8	57.8	0.0	36.3
07	Vegetables	524.6	192.8	85.8	0.0	49.1
08	Edible Fruit and Nuts	494.2	186.9	89.8	8.6	52.0
09	Coffee, Tea and Spices	139.9	92.1	115.8	0.0	50.0
10	Cereals	4.1	2.8	83.0	0.0	14.6
11	Milling Products, Starches	12.8	4.3	122.9	0.0	89.6
12	Oil Seeds	71.1	21.8	80.7	0.0	50.1
13	Gums and Resins	41.9	12.6	103.0	0.0	73.0
14	Vegetable Planting Materials	11.5	3.5	100.0	0.0	70.0
15	Animal/Vegetable Fats/Oils	2,324.5	1,901.4	226.6	0.0	144.8
16	Prepared Meat	1.2	0.7	136.6	0.0	75.3
17	Sugar and Confectionery	135.9	96.7	131.2	0.0	60.1
18	Cocoa and Preparations	19.8	6.0	115.8	0.0	85.8
19	Cereal Preparations	30.2	9.8	93.2	0.0	60.7
20	Vegetable Preparations	21.3	6.6	96.6	0.0	65.6
21	Miscellaneous Preparations	23.8	20.0	143.8	0.0	59.8
22	Beverages and Spirits	98.8	137.7	172.0	0.0	32.5
23	Food Residues	39.5	11.8	130.1	0.0	100.1
24	Tobacco	16.5	5.0	127.5	0.0	97.5
29	Organic Chemicals	4.4	1.2	150.0	0.0	123.7
33	Essential Oils/Perfumery	32.7	16.5	133.6	0.0	83.1
35	Albuminoids	15.5	5.8	124.3	0.0	86.9
38	Miscellaneous Chemicals	108.3	34.0	143.1	0.0	111.8
41	Hides and Skins	66.0	-	25.0	0.0	25.0
43	Furs	0.4	0.1	100.0	0.0	87.7
50	Silk	140.4	41.7	100.0	0.0	70.3
51	Wool	166.5	31.5	51.7	0.0	32.8
52	Cotton	304.5	32.9	101.8	0.0	91.0
53	Other Vegetable Fibers	8.5	2.6	100.0	0.0	70.0

Note: The tariff revenue column does not display actual duty collection, but a proxy computed by multiplying trade value (2002-2004 average) and applied tariffs.

Table 3a: Tiered Formula for Agricultural Tariff Cuts

	Developed Countries		Developing Countries	
Band	**Range**	**Cut**	**Range**	**Cut**
	(%)	**(%)**	**(%)**	**(%)**
I	0–20	50	0–30	33.3
II	20–50	57	30–80	38
II	50–75	64	80–130	42.7
IV	>75	66–73	>130	44–48.6
Average cut	**Min**	**54**	**Max**	**36**

Table 3b: Key elements of the tariff cuts used in the analysis

Bands	0/30/80/130
Proportional cut	33.3/38/42.7/46.7 Average cut limited to 36%
Sensitive products I	5.3% of HS6 tariff lines face 75% of the formula cut. Chosen based on political sensitivity.
Sensitive products II	2.7% of HS6 tariff lines face half of the formula cut. Chosen based on political sensitivity.
Special Products I	5.6% of HS6 tariff lines with no cut. Chosen based on political sensitivity.
Special Products II	8.4% of HS6 tariff lines with a 15% cut. Chosen based on political sensitivity.

Table 4: Distribution of Sensitive and Special Products

HS2	Chapter Title	Number of HS6 products				Imports (US$ Million)			
		SE-I	SE-II	SP-I	SP-II	SE-I	SE-II	SP-I	SP-II
02	Meat and Offal	3		1		0.2		0.6	
04	Dairy Products	6		3	6	1.0		23.6	9.4
06	Live Trees	6			1	1.5			1.0
07	Vegetables	3	5	2	1	156.9	197.8	156.8	1.0
08	Edible Fruit and Nuts	2	2	6	7	277.6	52.4	123.4	13.8
09	Coffee, Tea and Spices	2		5	7	0.2		90.0	9.2
10	Cereals	2		2	6	0.0		1.7	1.8
11	Milling Products, Starches	1			2	0.1			1.0
12	Oil Seeds				4				25.8
13	Gums and Resins		1				20.1		
15	Animal/Vegetable Fats/Oils	4	3	5	6	1551.9	72.3	660.2	3.3
16	Prepared Meat	1			1	0.1			0.5
17	Sugar and Confectionery	1	1	1	3	0.1	29.8	75.3	5.4
19	Cereal Preparations			1	1			2.6	1.6
20	Vegetable Preparations				3				4.3
21	Miscellaneous Preparations			1				9.9	
22	Beverages and Spirits	3		8	5	0.1		67.8	7.1
23	Food Residues		1				22.7		
33	Essential Oils/Perfumery			1				9.6	
35	Albuminoids	1			1	0.6			0.7
38	Miscellaneous Chemicals		2	1			93.2	7.4	
50	Silk	1				137.1			
51	Wool		2		2		95.7		43.3
52	Cotton		1				289.0		
Total		**36**	**18**	**37**	**56**	2127	873	1229	129

Note: The different categories of products are: Sensitive products with no TRQ creation (SE-I), Sensitive products with TRQ creations (SE-II), Special products with no cut (SP-I), Special products with cut (SP-II)

Table 5: Where the Tariff Cuts Fit in the Bands

	Band I	Band II	Band III	Band IV
	(%)	(%)	(%)	(%)
Simple Average (Number of HS6 lines)	4.0	12.2	48.2	35.7
Trade-Weighted Average	3.3	21.2	32.0	43.6

Table 6: Implications of the Tariff-Cut Formula for Bound Tariffs

HS2	Chapter Title/Groups	Average (%)			Standard Deviation (%)		
		Initial	After Formula	Formula + Sensitive & Special Products	Initial	After Formula	Formula Sensitive & Special Products
All	All	158.8	98.8	126.2	105.3	62.9	83.3
All	*Non-Sensitive Non-Special*	113.5	71.3	69.9	59.9	35.5	34.7
All	*Sensitive products with TRQ*	118.6	75.0	83.8	60.3	35.8	40.7
All	*Sensitive products with no TRQ*	245.8	151.0	196.6	89.1	52.9	71.3
All	*Special products with cut*	62.0	40.2	52.7	44.9	27.0	38.2
All	*Special products with no cut*	67.7	44.2	67.7	42.1	24.7	42.1
01	Live Animals	100.0	64.4	63.2	0.0	0.0	0.0
02	Meat and Offal	98.5	63.3	69.3	19.6	11.7	18.1
04	Dairy Products	56.8	37.9	49.4	26.9	16.0	14.9
05	Other Animal Products	100.0	64.4	63.2	0.0	0.0	0.0
06	Live Trees	57.8	36.0	36.0	66.4	40.0	38.6
07	Vegetables	85.8	55.8	68.2	23.0	13.9	12.7
08	Edible Fruit and Nuts	89.8	58.2	72.8	23.3	14.2	15.7
09	Coffee, Tea and Spices	115.8	72.9	100.3	25.8	14.3	25.5
10	Cereals	83.0	55.2	72.4	14.4	8.1	14.1
11	Milling Products, Starches	122.9	76.4	75.5	35.1	20.1	18.3
12	Oil Seeds	80.7	52.0	54.3	39.9	25.1	26.5
13	Gums and Resins	103.0	66.3	69.1	8.1	5.2	5.3
14	Vegetable Planting Materials	100.0	64.4	63.2	0.0	0.0	0.0
15	Animal/Vegetable Fats/Oils	226.6	139.3	182.0	115.2	68.9	87.5
16	Prepared Meat	136.6	84.0	98.7	33.1	18.8	30.4
17	Sugar and Confectionery	131.2	81.4	116.2	25.2	13.8	39.3
18	Cocoa and Preparations	115.8	72.7	71.3	26.6	14.7	14.3
19	Cereal Preparations	93.2	59.2	59.8	47.7	27.3	25.2
20	Vegetable Preparations	96.6	60.9	61.2	44.0	25.5	23.1
21	Miscellaneous Preparations	143.8	88.6	113.4	27.9	15.2	41.2
22	Beverages and Spirits	172.0	105.0	155.8	14.8	9.1	39.8
23	Food Residues	130.1	80.8	87.0	24.5	13.3	19.4
24	Tobacco	127.5	79.4	77.8	24.9	13.5	13.2
29	Organic Chemicals	150.0	91.6	89.7	0.0	0.0	0.0
33	Essential Oils/Perfumery	133.6	82.9	92.0	22.5	12.2	5.8
35	Albuminoids	124.3	76.8	75.8	43.8	25.2	23.6
38	Miscellaneous Chemicals	143.1	87.7	98.7	25.3	14.5	13.7
41	Hides and Skins	25.0	18.0	17.8	0.0	0.0	0.0
43	Furs	100.0	64.4	63.2	0.0	0.0	0.0
50	Silk	100.0	64.4	79.6	0.0	0.0	2.5
51	Wool	51.7	34.5	38.5	32.5	20.1	21.9
52	Cotton	101.8	65.4	72.1	9.3	5.1	3.6
53	Other Vegetable Fibers	100.0	64.4	63.2	0.0	0.0	0.0

Table 7: Implications of the Tariff-Cut Formula for Applied MFN Tariffs

HS2	Chapter Title/Groups	Average (%)			Standard Deviation (%)		
		Initial	After Formula	Formula + Sensitive & Special Products	Initial	After Formula	Formula + Sensitive & Special Products
All	All	59.0	54.3	59.0	37.1	35.3	37.1
All	*Non-Sensitive Non-Special*	27.7	27.7	27.7	15.9	15.9	15.9
All	*Sensitive products with TRQ*	22.6	22.6	22.6	12.9	12.9	12.9
All	*Sensitive products with no TRQ*	81.1	81.1	81.1	31.1	31.1	31.1
All	*Special products with cut*	45.5	40.2	44.6	29.1	27.0	29.3
All	*Special products with no cut*	62.3	44.2	62.3	35.4	24.7	35.4
1	Live Animals	30.0	30.0	30.0	0.0	0.0	0.0
2	Meat and Offal	43.1	36.1	43.0	27.3	13.7	27.4
4	Dairy Products	43.4	32.4	43.2	12.7	6.3	12.9
5	Other Animal Products	30.0	30.0	30.0	0.0	0.0	0.0
6	Live Trees	21.5	19.7	20.3	18.2	19.4	19.0
7	Vegetables	36.8	31.7	36.8	12.0	4.5	12.0
8	Edible Fruit and Nuts	37.8	32.9	37.8	17.4	9.7	17.4
9	Coffee, Tea and Spices	65.8	59.6	65.8	25.6	21.4	25.6
10	Cereals	68.3	45.8	63.1	30.9	20.3	29.5
11	Milling Products, Starches	33.3	32.5	33.0	7.1	7.3	7.0
12	Oil Seeds	30.6	29.2	30.3	17.4	16.6	17.8
13	Gums and Resins	30.0	30.0	30.0	0.3	0.3	0.3
14	Vegetable Planting Materials	30.0	30.0	30.0	0.0	0.0	0.0
15	Animal/Vegetable Fats/Oils	81.8	77.7	81.8	26.6	32.4	26.6
16	Prepared Meat	61.2	57.5	61.2	34.8	30.6	34.8
17	Sugar and Confectionery	71.1	66.1	71.1	34.4	30.3	34.4
18	Cocoa and Preparations	30.0	30.0	30.0	0.0	0.0	0.0
19	Cereal Preparations	32.5	30.4	32.1	6.1	1.9	5.1
20	Vegetable Preparations	31.0	29.5	30.5	2.0	1.9	1.5
21	Miscellaneous Preparations	83.9	58.1	83.9	64.0	33.4	64.0
22	Beverages and Spirits	139.4	90.2	139.4	65.1	34.3	65.1
23	Food Residues	30.0	30.0	30.0	0.0	0.0	0.0
24	Tobacco	30.0	30.0	30.0	0.0	0.0	0.0
29	Organic Chemicals	26.3	26.3	26.3	6.4	6.4	6.4
33	Essential Oils/Perfumery	50.5	40.1	50.5	31.9	15.7	31.9
35	Albuminoids	37.4	37.2	37.4	9.7	9.8	9.7
38	Miscellaneous Chemicals	31.4	30.3	31.4	5.1	1.0	5.1
41	Hides and Skins	0.0	0.0	0.0	0.0	0.0	0.0
43	Furs	12.3	12.3	12.3	5.7	5.7	5.7
50	Silk	29.7	29.7	29.7	2.2	2.2	2.2
51	Wool	18.9	18.2	18.9	6.6	5.4	6.6
52	Cotton	10.8	10.8	10.8	3.8	3.8	3.8
53	Other Vegetable Fibers	30.0	30.0	30.0	0.0	0.0	0.0

Table 8: Implications of the Tariff-Cut Formula for Preferential Applied Tariffs

HS2	Chapter Title/Partner	Initial	After Formula	Formula + Sensitive & Special Products	Formula + Sensitive & Special Products + 100% DFQF-LDC
			(%)		
All	All	58.3	53.7	58.3	54.4
	All Developed	38.1	30.6	38.1	38.1
	All Developing	70.0	65.7	70.0	70.0
	All Least Developed Countries	29.5	27.8	29.4	0.0
01	Live Animals	24.2	24.2	24.2	24.2
02	Meat and Offal	43.1	36.1	43.0	42.5
04	Dairy Products	41.5	30.9	41.3	41.3
05	Other Animal Products	30.0	30.0	30.0	29.5
06	Live Trees	21.5	19.7	20.3	19.9
07	Vegetables	36.3	31.2	36.3	22.7
08	Edible Fruit and Nuts	37.7	32.9	37.7	23.7
09	Coffee, Tea and Spices	53.1	48.0	53.1	48.7
10	Cereals	65.4	43.9	60.3	54.5
11	Milling Products, Starches	32.9	32.1	32.6	30.3
12	Oil Seeds	29.2	27.9	28.9	27.2
13	Gums and Resins	21.0	21.0	21.0	14.9
14	Vegetable Planting Materials	26.2	26.2	26.2	25.6
15	Animal/Vegetable Fats/Oils	81.8	77.7	81.8	81.0
16	Prepared Meat	61.2	57.5	61.2	55.2
17	Sugar and Confectionery	66.9	61.9	66.9	64.7
18	Cocoa and Preparations	30.0	30.0	30.0	29.9
19	Cereal Preparations	32.5	30.4	32.1	26.9
20	Vegetable Preparations	31.0	29.5	30.5	23.3
21	Miscellaneous Preparations	83.9	58.1	83.9	79.2
22	Beverages and Spirits	139.4	90.2	139.4	135.3
23	Food Residues	26.9	26.9	26.9	25.8
24	Tobacco	30.0	30.0	30.0	29.9
29	Organic Chemicals	26.2	26.2	26.2	26.1
33	Essential Oils/Perfumery	50.1	39.7	50.1	49.6
35	Albuminoids	36.9	36.7	36.9	36.9
38	Miscellaneous Chemicals	31.3	30.3	31.3	31.1
41	Hides and Skins	0.0	0.0	0.0	0.0
43	Furs	12.3	12.3	12.3	10.4
50	Silk	29.7	29.7	29.7	29.7
51	Wool	18.9	18.2	18.9	18.9
52	Cotton	10.8	10.8	10.8	7.6
53	Other Vegetable Fibers	29.7	29.7	29.7	29.6

Table 9: Ex-Post Binding Overhang

HS2	Chapter Title	Initial Binding Overhang	Post-Formula Binding Overhang	Post-Sensitive & -Special Products Overhang
			(%)	
All	**All**	99.8	44.5	67.2
01	Live Animals	70.0	34.4	33.2
02	Meat and Offal	55.4	27.2	26.3
04	Dairy Products	13.4	5.6	6.3
05	Other Animal Products	70.0	34.4	33.2
06	Live Trees	36.3	16.3	15.7
07	Vegetables	49.1	24.1	31.5
08	Edible Fruit and Nuts	52.0	25.3	35.1
09	Coffee, Tea and Spices	50.0	13.3	34.5
10	Cereals	14.6	9.4	9.3
11	Milling Products, Starches	89.6	44.0	42.5
12	Oil Seeds	50.1	22.8	24.0
13	Gums and Resins	73.0	36.4	39.1
14	Vegetable Planting Materials	70.0	34.4	33.2
15	Animal/Vegetable Fats/Oils	144.8	61.6	100.2
16	Prepared Meat	75.3	26.5	37.5
17	Sugar and Confectionery	60.1	15.3	45.2
18	Cocoa and Preparations	85.8	42.7	41.3
19	Cereal Preparations	60.7	28.8	27.7
20	Vegetable Preparations	65.6	31.4	30.7
21	Miscellaneous Preparations	59.8	30.5	29.5
22	Beverages and Spirits	32.5	14.8	16.4
23	Food Residues	100.1	50.8	57.0
24	Tobacco	97.5	49.4	47.8
29	Organic Chemicals	123.7	65.3	63.3
33	Essential Oils/Perfumery	83.1	42.8	41.4
35	Albuminoids	86.9	39.7	38.4
38	Miscellaneous Chemicals	111.8	57.4	67.3
41	Hides and Skins	25.0	18.0	17.8
43	Furs	87.7	52.1	50.9
50	Silk	70.3	34.7	49.9
51	Wool	32.8	16.3	19.6
52	Cotton	91.0	54.6	61.3
53	Other Vegetable Fibers	70.0	34.4	33.2

Table 10: Impact of Tariff Cuts Facing India's Exports
(Trade-Weighted Average of Faced Tariffs)

Importer	Exports US$ Mil.	Initial	Tiered Formula (TF)	TF+ Tropical Products (TP) + Tariff Escalation (TE)	TF + TP + TE with Flexibilities
WTO	7038.1	10.1	7.6	7.4	8.9
Developed Countries	2602.9	8.4	4.0	3.3	5.5
Developing Countries (non SVE, non RAM, non LDC)	2244.6	10.4	8.1	8.1	10.2
SVE	530.8	21.1	20.7	20.7	21.1
RAM	897.2	7.8	6.5	6.5	7.4
LDCs	762.6	12.7	12.7	12.7	12.7

Table 11: Impact of Tariff Cuts Facing India's Exports by HS Chapter (Trade-Weighted Average of Faced Tariffs)

HS2	Chapter Title	Exports US$ Mil.	Base (%)	Pure Formula (%)	With Tariff Escalation & Tropical Products Treatment (%)	After Flexibilities (%)
All		7038.1	10.1	7.6	7.4	8.9
01	Live Animals	8.6	7.8	7.5	7.5	7.5
02	Meat and Offal	387.6	19.1	9.9	9.9	13.1
04	Dairy Products	120.1	13.5	9.1	9.1	9.8
05	Other Animal Products	65.0	5.0	4.9	4.9	5.0
06	Live Trees	42.7	6.4	4.2	2.7	3.6
07	Vegetables	334.4	9.0	7.9	7.8	7.9
08	Edible Fruit and Nuts	628.8	1.9	1.7	1.7	1.8
09	Coffee, Tea and Spices	687.0	3.5	3.1	3.1	3.1
10	Cereals	1708.3	13.4	10.4	9.8	12.6
11	Milling Products, Starches	68.3	9.9	8.4	8.3	8.4
12	Oil Seeds	394.8	18.8	11.0	10.8	17.6
13	Gums and Resins	222.8	2.5	2.0	1.9	2.3
14	Vegetable Planting Materials	29.9	12.4	9.1	9.1	12.2
15	Animal/Vegetable Fats/Oils	336.6	6.4	5.2	4.5	4.8
16	Prepared Meat	4.3	10.8	7.8	7.8	8.4
17	Sugar and Confectionery	228.9	19.3	16.7	16.1	18.2
18	Cocoa and Preparations	7.8	16.4	15.7	14.9	15.3
19	Cereal Preparations	64.0	14.1	11.1	11.0	11.7
20	Vegetable Preparations	176.2	11.4	7.9	7.8	8.2
21	Miscellaneous Preparations	107.2	11.6	9.1	9.1	10.1
22	Beverages and Spirits	37.5	53.4	43.2	43.2	51.8
23	Food Residues	677.1	2.8	2.3	2.3	2.4
24	Tobacco	211.4	29.1	25.7	25.7	27.8
29	Organic Chemicals	7.7	5.7	4.6	4.6	5.2
33	Essential Oils/Perfumery	150.3	5.0	3.9	3.9	4.5
35	Albuminoids	72.5	3.6	2.7	2.7	2.8
38	Miscellaneous Chemicals	52.4	2.9	2.3	2.3	2.6
41	Hides and Skins	6.2	0.9	0.9	0.9	0.9
43	Furs	0.3	2.9	2.9	2.9	2.9
50	Silk	7.2	5.3	3.7	3.7	4.3
51	Wool	3.8	2.6	2.5	2.5	2.5
52	Cotton	187.2	1.9	1.8	1.8	1.9
53	Other Vegetable Fibers	1.1	2.3	2.2	2.2	2.2

Table 12: India's Official WTO Domestic Support Notifications, 1995-1997

	1995	1996	1997
		US$ Million	
Green Box Payments			
General Services	397.6	239.3	264.6
Public Stockholding for Food Security	1569.7	1708.7	2018.2
Domestic Food Aid	…	…	…
Decoupled Income Support	…	…	…
Income Insurance and safety-net programs	10.9	…	…
Payments for relief from natural disasters	125.0	444.3	443.8
Structural adjustment through producer retirement programs	…	…	…
Structural adjustment through resource retirement programs	…	…	…
Structural adjustment through investment aids	59.2	36.3	76.1
Environment payments	33.2	73.7	70.2
Payments under regional assistance programs	…	…	…
Other	…	…	…
Total	2195.6	2502.3	2872.9
Special and Differential Treatment			
Investments subsidies generally available to agriculture	104.8	1117.3	1142.5
Input subsideis to low income or resource poor producers	149.5	3737.8	4029.3
Total	254.3	4855.1	5171.8
Product Specific AMS			
Rice	-7,577.0	-1,321.3	-1,479.9
Wheat	-9,625.0	-1,280.8	-1,266.4
Coarse cereals	-4,530.4	-1.5	-2.9
Pulses	-1,705.8	…	…
Groundnut	-1,809.3	…	…
Rapeseed and mustard	-1,688.7	…	…
Cotton	-2,106.4	…	…
Soya bean	-191.7	…	…
Tobacco	-181.4	…	…
Jute	-387.6	…	…
Sugar cane	184.4	…	…
Total	-29,618.9	-2,603.6	-2,749.2
Non-Product Specific AMS			
Fertilizer Subsidy	1,864.1	413.6	515.9
Credit Subsidy	102.0	…	…
Subsidy on electricity	2,436.6	373.6	342.5
Irrigation subsidy	1,345.4	143.1	144.9
Subsidy on average supply of seeds	23.9	0.1	0.1
Total	5,772.1	930.3	1,003.5
as % of Value of Production	7.5%	1.1%	1.2%
Value of agricultural production	76,736.0	85,280.0	84,972.0

Source: Mullen, Orden and Gulati (2005)

Table 13: Summary of India's Shadow Farm Support Notifications

Component	1997-98*	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Green Box Payments (DS1)									
General Services	236.1	270.4	354.5	325.2	308.7	319.1	368.7	402.7	470.2
Public Stockholding for Food Security	2176.0	2214.1	2243.3	2708.7	3741.2	4429.3	5534.3	5817.5	5328.0
Payments for Relief from Natural Disasters	426.0	378.6	412.6	492.2	852.3	708.2	896.8	995.6	1679.8
Structural Adjustment via Investment Aids	73.8	75.4	67.8	70.3	47.1	55.8	64.2	66.8	79.7
Environment Payments	43.0	40.3	45.9	54.4	60.0	77.6	100.0	105.1	131.6
DS1 Total	2955.0	2978.7	3124.0	3650.8	5009.3	5589.9	6964.0	7387.8	7689.3
Special and Differential Treatment (DS2)									
Investments Subsidies Generally Available to Agriculture	643.2	665.1	1809.6	2224.2	2118.9	2328.5	2527.5	2826.2	5321.7**
Input Subsidies to Low Income or Resource Poor Producers	4013.6	3956.1	3584.3	3290.5	3049.8	3754.3	3848.2	4311.6	4466.6**
DS2 Total	4656.8	4621.2	5393.9	5514.7	5168.7	6082.8	6375.7	7137.8	9788.3**
Product Specific AMS (DS4, 5 and 7)									
Rice	-1479.9	-1330.9	-1690.4	-2024.4	-2117.4	-1509.7	-1891.6	-1866.1	-1921.7
Wheat	-1178.8	-1692.5	-1835.0	-2139.6	-2760.3	-2542.9	-2004.9	-2042.1	-1734.2
Coarse cereals	-2.8	-	-	-	-	-	-	-	-
DS4, 5 and 7 Total	-2661.6	-3023.4	-3525.5	-4163.9	-4877.6	-4052.6	-3896.6	-3908.3	-4183.2
Non-Product Specific AMS (DS9)									
Fertilizer Subsidy	515.9	417.5	282.5	388.1	260.5	257.1	319.0	444.1	483.5
Subsidy on Electricity	342.6	492.1	519.9	326.9	364.0	537.0	482.3	466.4	522.3
Irrigation Subsidy	144.9	79.5	93.6	107.6	137.9	144.4	160.7	167.3	110.8
Subsidy on Average Supply of Seeds	0.1	-	-	-	-	-	-	-	-
DS9 Total	1003.5	989.0	896.1	822.6	762.4	938.6	962.1	1077.9	1116.7
Non-Product Specific AMS as % of Value of Production	1.2	1.1	1.0	1.0	0.9	1.1	1.0	1.0	1.0
Value of Agricultural Production (Mil. $)	84973	91329	88799	82905	88502	83561	98568	100006	111701

Source: Gopinath (2008).

*Our replication of the 1997-98 WTO official notification, except for the irrigation subsidy (DS9). **Preliminary estimate.

Table 14: Projections of India's Domestic Support, 2006 and Beyond

	2006-07	2007-08	2015-16* (a)	2015-16* (b)	2015-16* (c)
			Mil. $		
Green Box (DS1)	8340	9046	17327		
Public Stockholding (Food Security)	5771	6251	11839		
Disaster Relief	1828	1990	3916		
Special and Differential Treatment (DS2): Other Input Subsidies**	4540	4616	5262		
Product-Specific AMS (DS4-5-7)	-2038	95	3927	1202	459
Non-Product-Specific AMS (DS9)***	1142	1169	1404		
10% of Value of Agricultural Production (*de minimis*)	11944	12360	16253		

Source: Gopinath (2008)

*(a) Nominal values based on annual average growth rate during 1995-2007; (b) Nominal values based on annual average growth rate during 1995-2005; (c) Real terms after accounting for an excessive inflation rate of 3% per annum.

**Projections for item (i), investment subsidies, of DS2 are not made due to data limitations

***For DS9, growth rate during 1996-2005 is used since notified support classification and measurement changed.