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ABBREVIATIONS AND ACRONYMS

AD	Anti-Dumping	MFN	Most Favored Nation
AIT	Advanced Income Tax	NBR	National Board of Revenue
AV	Assessable Value	NCAER	National Council of Applied Economic Research
BEI	Bangladesh Enterprise Institute	NTB	Non Tariff Barrier
BIDS	Bangladesh Institute of Development Studies	POL	Petroleum, Oil and Lubricants
BIS	Bureau of Indian Standards	PSI	Pre-shipment Inspection
CD	Customs Duty	QR	Quantitative Restriction
CIF	Cost, Insurance and Freight	RD	Regulatory Duty
DEPB	Duty Exemption Pass Book	REER	Real Effective Exchange Rate
DGFT	Director General of Foreign Trade	RMG	Ready Made Garments
EPB	Export Promotion Bureau	ROW	Rest of the World
EU	European Union	SAARC	South Asian Association for Regional Cooperation
FCI	Food Corporation of India	Saad	Special Additional Duty
FDI	Foreign Direct Investment	SAFTA	South Asia Free Trade Agreement
FOB	Free on Board	SAPTA	SAARC Preferential Trading Agreement
FTA	Free Trade Agreement	SD	Supplementary Duty
GDP	Gross Domestic Product	SEDF	South Asia Enterprise Development Facilities
HS	Harmonized Code	SPS	Sanitary and Phyto-sanitary
IDSC	Infrastructure Development Surcharge	STE	State Trading Enterprise
LC	Letter of Credit	T&C	Textile and Clothing
LDC	Least Developed Country	TRQ	Tariff Rate Quota
LF	License Fee	VAT	Value Added Tax
M&B	Men and Boys	WTO	World Trade Organization

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ANALYZING THE ECONOMIC WELFARE CONSEQUENCES OF A FREE TRADE AGREEMENT: PARTIAL EQUILIBRIUM METHODS FOR INDUSTRY LEVEL STUDIES

This paper describes some simple methods which can be used to provide approximations at industry level of the potential economic welfare consequences of a free trade agreement (FTA) between two countries[1]. The methods have been designed with the Indian proposal (under discussion since about 2002) for an FTA with Bangladesh in mind, but they apply general principles and could be used for similar analyses of actual FTAs or FTA proposals between other countries. Because the India-Bangladesh FTA is a proposal and not a realized agreement, the methods discussed refer to *ex ante* simulations of possible future outcomes, but the same principles would be relevant for *ex post* industry level studies of actual FTA agreements. They could also be applied directly with little modification to other bilateral preferential trading agreements between two countries, since a free trade agreement is really just a preferential agreement where the tariff preferences are 100 percent instead of a range of intermediate percentages between zero and 100 percent. However, if more than two countries are parties to a preferential agreement or an FTA (such as the SAFTA in South Asia which involves seven countries) the analysis becomes more complex, because (subject to rules of origin) all the countries in the grouping obtain duty free access to each others' markets, and so the economic welfare consequences for any one of the countries are affected by supply and demand conditions in all the other countries. Consequently, quantifying the potential economic outcomes at industry level will usually require more information and will be more demanding analytically, even though the basic principles remain the same.[2]

The suggested approaches to analyzing the likely economic welfare costs and benefits of an FTA at the level of individual products are quite general in principle, but they mainly have manufactured products in mind. It is recognized that there are many aspects of primary agricultural and livestock product markets-for example their susceptibility to weather related disturbances, generally inelastic demand, the large swings in the world prices of some commodities, and the propensity of many governments, including the South Asian governments, to intervene as regards both the final products and their principal inputs-that require separate treatment. To do this satisfactorily would be a large task and it has not been attempted in this paper.

Even though SAPTA and various bilateral preferential trade agreements have been operating in South Asia for a number of years, there is little no recognition of their potential economic costs and benefits, either in the texts of the agreements or in the general statements and discussions that have accompanied them. The negotiations and the debates have been almost entirely mercantilist, focusing on the extent to which under the agreements national industries do or do not obtain new export opportunities, resisting concessions that might provide serious competition for established local industries, and worrying

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1 Here is a very extensive economics literature on preferential trading arrangements-both theoretical and applied-which deals with most of the topics discussed in this paper. A non-technical summary of the main issues covered by this literature is in World Bank (2000) *Trade Blocs,* which also provides a comprehensive bibliography. A paper by Arvind Panagariya ("South Asia: Does Preferential Trade Liberalization Make Sense"? Mimeo, 2000) provides a succinct summary of the basic theory underlying the economic welfare issues, using South Asia as an example. An account of regional trade initiatives in South Asia up to 2001 is in Garry Pursell and Nihal Pitigala,"Trade Agreements in the South Asian Region", World Bank mimeo, August 2001, and an update with a brief description and analysis of more recent developments in South Asia is in Chapter 5, Volume 1 of World Bank (June 2004), *Trade Polices in South Asia: an Overview.*

2 In the case of SAFTA, India is the only producer of many industrial products, so for those products it is equivalent to a series of bilateral FTAs between India and each of the other SAFTA members, which could be analyzed along the lines of the methods proposed in this paper. However, when more than one SAFTA member produces a product, it would be necessary to take account of and compare the likely competitiveness of the industry in each country.

about losses of Customs duty revenue. Little or no attention has been paid to the potential for trade diversion costs, by which trade may be diverted from low cost suppliers in other parts of the world to higher cost suppliers in South Asia, or to the potential consumer costs and benefits. One purpose of this paper and of the applications of the methodology to some industry case studies of free trade between India and Bangladesh, is to make these basic issues clear, realistic and it is hoped easily understood by non-specialists in these two countries and in South Asia more generally. With this in mind a traditional and highly simplified comparative static framework has been used and applied to bring out the main points, fully recognizing that the simulated results for individual industries would need to be modified if general equilibrium including macro-economic repercussions (e.g. exchange rate effects) were considered. To simplify the presentation and also the empirical estimation of welfare changes, the models use linear demand and supply functions, and except where otherwise indicated, assume competitive behavior on both the supply and demand sides. Market structures in South Asia-especially in manufacturing-are often far from competitive, but as a first approximation it is useful to look at the outcomes on the assumption that firms behave *as though* they are competitive. This provides a benchmark which can be modified to allow for various forms of non-competitive behavior in simulating the likely outcome of an FTA.

The rest of the paper is divided into ten sections which provide a partial but by no means complete taxonomy of the many possible outcomes at the level of individual industries, of a bilateral FTA between India and Bangladesh. It is hoped that the principles illustrated by the somewhat tedious task of working through these examples will be sufficient to guide applied researchers in treating the many cases that will not exactly fit these simplified models. The first section deals with the economic welfare effects in three variants of a basic "trade diversion" case. The second section covers some examples of the possible economic welfare effects when there is "trade creation" as a result of the FTA. Both these sections assume that with the FTA Indian firms export to Bangladesh, but the principles illustrated are equally applicable to Bangladesh exports to India. In order to keep the analysis as simple as possible, the first two sections do not deal with intermediate inputs: how these might affect the welfare outcomes in the importing country is discussed in section three, and in the exporting country in section four. The fifth section deals with the potential consumption repercussions in the exporting country, using an example in which the FTA induces exports by Bangladesh firms to India. The sixth section discusses complications that arise when prior to the FTA there is "bootleg" smuggling over the border that bypasses Customs posts, and which generally avoids domestic taxes in the importing country (especially VAT-style indirect taxes). The seventh section discusses how the economic welfare consequences of an FTA may be affected by the prior existence of "technical" smuggling that comes through Customs posts and which involves corruption of Customs and other officials. Section 8 discusses how the existence of economies of scale in the industry being studied might affect the welfare outcomes, and sections 9 and 10 do the same for productivity changes and the presence of foreign direct investment. The appendix summarize various practical suggestions for researchers on such things as the data they need to collect and shortcuts to use when data is incomplete or not available, or when the resources for field work are limited.

Before proceeding a few points should be made about the some of the assumptions and concepts that are standard for this kind of analysis, but which are sometimes not well understood.

First, changes in "economic welfare" resulting from an FTA are treated as the sum of changes in consumers' surplus, producers' surplus and government revenue from tariffs (customs duties). Consumers' and producers' surpluses are a shorthand way of summarizing economic benefits that may accrue to a variety of economic agents, not just final consumers and producers. For example, governments normally share in producer surpluses through taxes on profits, and some shares may go to foreigners if there is portfolio and/or foreign direct investment (FDI). It may be especially important to take account of the latter if a substantial part of increased exports going to an FTA partner country are from firms fully or partly owned in the importing country. It is also likely that traders (e.g. wholesale distributors and

exporters) may share in producer surpluses, especially exporters who undertake marketing functions. Consumers' surpluses may refer to benefits to buyers of intermediate goods and equipment, not only benefits to final consumers. As discussed in the following examples, changes in consumers' surplus are the result of increases or decreases in the price of a single homogeneous good, but in practice the benefit or loss to consumers is likely to also include increases or decreases in the number of specifications, qualities or brands of a given good that are available to consumers as a result of trade policy changes such as an FTA e.g. consumers may benefit just because of an increase in the number of brands and varieties that are available, even if there is no change in the prices of the existing varieties. How to treat product heterogeneity is discussed in the final section of the paper.

Secondly, the paper only deals with FTAs in the context of tariff protection, not QRs. As of mid 2004, explicit QRs were not being used in India, and with some important exceptions-notably textile fabrics- tariffs and tariff-like import taxes (para-tariffs) were the principal protective instrument in Bangladesh. If the likely effects of an FTA were to be simulated for an industry protected in either of the countries by an explicit or *de facto* QR (e.g. para-statal import monopolies or prohibitively high anti-dumping duties in India) the same basic principles outlined below would be applied but would need to be adapted to the particular case, taking account of whether and to what extent the FTA is a true FTA by exempting bilateral trade from the QRs, even though they remain in place with respect to the imports from the rest of the world.

Thirdly, except when there is smuggling, only protective tariffs have been considered in estimating the fiscal costs of FTAs, not indirect domestic taxes such as the VAT in Bangladesh and the additional (excise) duties and sales taxes in India. The latter are general taxes which are applied to both imports as well as domestic sales, and imports under preferential agreements such as FTAs are not exempt. Therefore, if as a result of an FTA duty free imports into Bangladesh of product x from India replace imports of x from the rest of the world (ROW), the loss of Customs revenue is just the protective tariff (customs duty plus para-tariffs) that would have been paid on the imports from ROW, not the Bangladesh VAT on those imports, since that is also charged on the imports from India. However smuggled goods will usually avoid domestic indirect taxes as well as tariffs, so if there is smuggling this needs be taken into account in simulating the fiscal effects of an FTA.

Fourth, the comparisons of pre and post-FTA situations are of standard comparative static "long run" equilibria which assume that all the short run adjustments have been made on both the supply and demand side. As with any comparative static analysis, in principle it is possible to estimate the likely path to a new equilibrium and to calculate the present value of the change, but the information required to do that with confidence is generally difficult to obtain.

Fifth, for convenience the economic welfare comparisons use a common numeraire which could either be the currency of one of the countries (in the examples below the Taka or the Indian Rupee) or a common foreign exchange numeraire (e.g. the US dollar). This means that changes in consumer surpluses, producer surpluses, and customs revenue are valued equally, both within each country and across countries. These could obviously be valued differently e.g. in Bangladesh a Taka or dollar of customs revenue could be valued more or less than a Taka or dollar of consumer benefits resulting from a reduced price of some commodity, and a dollar of producer surpluses in India could be weighted differently from a dollar of producer surpluses in Bangladesh. This is always possible in any kind of economic welfare analysis, but before this is done, it is useful to calculate a starting point with known weights to provide the direction and provisional size of the welfare changes.

Finally, it should be borne in mind that a free trade agreement is very different from a common market. In particular, whereas a common market will tend equalize prices in the member countries, with an FTA domestic prices for a given commodity in participating countries can differ, perhaps

substantially-in fact that is likely to be the norm rather than the exception. Apart from differing domestic indirect taxes, for internationally traded goods, this is principally because the member countries maintain their own tariff structures, and because duty free access to the markets of the other FTA member or members is always subject to rules of origin requiring minimum levels of national content which have to be verified with documentation presented as part of Customs clearance. Unless there is smuggling, these formal Customs requirements for trade prevent the kind of arbitrage that tends to equalize prices at all stages-ex factory, wholesale and retail-within a common market. Moreover, goods exported to an FTA partner country can normally be sold equally profitably at lower prices than the prices of the same goods sold domestically, because (as is the case with all exports) the tariffs on the imported inputs used in their production are rebated or exempt. For these and other reasons, as discussed in the following sections, how domestic prices are determined following an FTA, and the resulting repercussions on the economic welfare of the various groups that are affected, can be quite complex.

1 SOME BASIC TRADE DIVERSION CASES

Fig 1 illustrates a highly simplified but basic case, where prior to an FTA between India and Bangladesh, there is production of a particular product in India but no production in Bangladesh, and the Bangladesh market is entirely supplied by imports which come from the rest of the world (ROW) but not from India. The diagram shows the pre-and post FTA situation in the Bangladesh market for this product, with the vertical axis representing the price (which could be in Bangladesh taka or in any other currency ...say US dollars) and the horizontal axis representing the quantity of this product supplied and demanded in Bangladesh. For simplicity, this example and the six following examples ignore intermediate inputs. As discussed later, allowing for intermediate internationally tradable inputs, of which some may be purchased domestically and some imported, complicates the exposition and empirical analyses but does not change the basic principles.

Before the FTA the domestic price is OA (also indicated as Pw+t) which is the import price cif (Pw) plus the Bangladesh tariff BA. At this price imports from ROW are distance OH, and customs revenue (in the absence of smuggling) is area ABCD. There are no Indian exports to Bangladesh, because the potential Indian supply curve of this product inclusive of the Bangladesh tariff (indicated by the dotted supply curve S_I+t) lies above the tariff inclusive price from ROW.

Following the FTA, Indian exporters no longer pay the Bangladesh customs duty, and the Indian supply curve to the Bangladesh market is S_I, allowing Indian firms to export profitably quantity OG, diverting this amount from the Bangladesh imports from ROW. There is no welfare change for Bangladesh consumers, since they buy the same quantity of the product at the same pre-FTA price. However, the diverted imports involve reduced Bangladesh customs duties equivalent to area ABFE. This amount is equal to the sum of areas AGE and area GBFE. Area AGE (β) is a producers' surplus benefit for the Indian exporting firms (the excess of the price they receive in the Bangladesh market over the cost of supplying this quantity), and area GBFE (α) is the excess of the production and marketing cost of the quantity supplied from India over the cost at world (cif) prices of the imports (OG) that previously came from the rest of the world. Hence, by excluding exports from India from its general tariff and thereby making the protection of the general tariff available to Indian firms, Bangladesh has incurred an economic loss equivalent to the lost tariff revenue, and this in turn is made up of the higher production cost of the imports from India, plus the producers' surplus of the Indian firms. If these changes in economic welfare are valued equally, it is apparent that in the case of this product, the FTA has involved a net economic welfare loss for Bangladesh, an economic welfare gain for India, and a net economic welfare loss for Bangladesh and India taken together, since the gain to the Indian exporters is less than the loss of Bangladesh Customs revenue. In turn, this net joint loss is equal to the excess cost α of the trade diverted from ROW to India by the FTA tariff preference.

Two other economic welfare repercussions of the FTA have been omitted from the above discussion. First, in some circumstances the Indian exports to Bangladesh may lead to increased prices in India, and consequently to consumer surplus losses for Indian consumers which should be offset against the producer surplus gains for Indian exporters. The factors affecting the welfare effects in the exporting country are discussed separately below: here it is just noted that, because the Indian economy is so much larger than the Bangladesh economy, consumption effects in India are likely to be small and perhaps negligible in the case of preferential Indian exports to Bangladesh, but in some circumstances could be significant in the case of FTA-induced Bangladesh exports to India. A second welfare repercussion is the economic cost (represented by reduced producer surpluses) of the exports from ROW countries that the FTA diverts to India. Depending on the production costs of these exporters and the tax situations they face in their home countries, these producer surplus losses might exceed or might be less than the producer surplus gains to the Indian exporters. In any case they should be recognized in any overall accounting of the net economic welfare effects of an FTA.

Fig 2 illustrates a case which is identical to the case just discussed, except that before the FTA part of the Bangladesh market is supplied by Bangladesh producers. This is indicated by the Bangladesh supply curve S_B, which intersects the duty inclusive import price line at point M, indicating that before the FTA the Bangladesh industry supplies output OH while imports are represented by distance HK. Hence before the FTA customs revenue is area MFCD. Following the FTA, Indian exports to Bangladesh become feasible and this is represented by the Indian export supply curve to Bangladesh S_I. The combined supply from Bangladesh producers and Indian firms to the Bangladesh market can be represented by the aggregate supply curve (S_B+S_I), which is the horizontal summation of the two national supply curves. This supply curve intersects the tariff inclusive price line at K, indicating unchanged production and supply OH from Bangladesh firms and Indian exports to Bangladesh HJ.

As in the previous example, since the Bangladesh price does not change, there is no change in the economic welfare of Bangladesh consumers, and there are also no price or production adjustments for Bangladesh producers, and therefore no welfare losses for them, since their producer surplus (area AGM) remains the same. However, imports from ROW have declined by HJ, resulting in a Customs revenue loss to Bangladesh of area MFGK. The benefit to Indian exporters to Bangladesh is represented by the triangular area between the duty inclusive price line and the Indian supply curve: for convenience this area has been replicated as area MLK by drawing the dotted line LK parallel to the Indian supply curve starting at the supply OH coming from the Bangladesh producers. Hence, the FTA causes an economic welfare loss to Bangladesh equal to its reduced customs revenue, an economic gain to Indian exporters measured by their producers' surplus, and a net joint combined economic welfare loss to India and Bangladesh of area LFGK, which measures the excess cost of the Indian production over the cost to Bangladesh of the displaced imports from ROW. As previously, these economic welfare consequences of the FTA for this industry need to be supplemented by the potential consumption costs in India resulting from the new Indian exports, and the producer surplus losses resulting from the exports diverted from other countries to India.

Fig 3 illustrates the same case as Fig 2, but with the difference that the Indian industry is exporting to Bangladesh prior to the FTA and therefore is able to compete in the Bangladesh market with ROW producers while paying normal tariffs and without the benefit of the FTA. In Fig 3, before the FTA Indian exports to Bangladesh are OS, Bangladesh producers' supply to the domestic market is OT=SU, imports are UX, and Customs revenue is area VKNG=Customs revenue on imports from India= area AHJB+Customs revenue on imports from ROW=area DLNG. Following the FTA, the Indian producers no longer pay the general Customs duty HA, and this is represented by the downward shift in the Indian supply curve from the dotted supply curve S_I+t, to the the duty free supply curve S_I. The new combined supply curve of Bangladesh and Indian producers (obtained by horizontally summing S_B and S_I) now intersects the duty inclusive import price line at F, and imports from ROW go down from UX to VX. This

causes Bangladesh Customs revenues to decline by area CKME, which is the sum of the Customs duties previously collected on the pre-FTA imports from India (area ABHJ=area CKLD) plus the reduction in Customs duties (area DLME) resulting from the expansion of imports from India which have replaced imports from ROW. Once again there is no change in the Bangladesh price and therefore no change in Bangladesh consumer or producer welfare, and so the economic welfare loss to Bangladesh is given by the lost Customs revenue. The economic welfare gain for India is the producer surplus on the increased exports, area HJEA =area KLFC (where the dotted line LF is drawn parallel to the Indian post-FTA supply curve). So the combined net economic loss to Bangladesh and India is area LFM, which as before is the trade diversion cost of the FTA, as measured by the excess of the production cost of the new Indian exports to Bangladesh over the cost at cif prices of the imports from ROW that they have displaced. Once again, these simulations of welfare changes need to be supplemented by considering the potential consumer welfare costs in India, and by the economic losses resulting from the exports to Bangladesh diverted from other countries.

2 SOME BASIC TRADE CREATION CASES

This section illustrates cases where there is "trade creation", meaning that the FTA causes the total volume of international trade in the product to increase, by reducing the price in the importing FTA country. This is first illustrated in Fig 4, where before the FTA there is no domestic production in Bangladesh and the total Bangladesh demand OH at the tariff inclusive price OA is met by imports from ROW, which generate customs revenue represented by area ABCN. As in Fig 1, after paying the Bangladesh tariff Indian producers (represented by the dotted supply curve S_I+t) cannot compete with ROW producers and do not supply the Bangladesh market. However, the Indian supply curve is highly elastic, and following the FTA Indian producers not only displace all the Bangladesh imports from ROW but competing with each other push down the price in Bangladesh from OA to OL, which is lower than the pre-FTA price. Consequently Bangladesh demand expands from OG to OF, and total trade in the product increases by HF. The economic welfare change in Bangladesh now includes a consumer surplus benefit represented by area ALJD which must be balanced against a Customs revenue loss of ABCD. As drawn in this example, it is apparent that if the same weights are assigned to each Taka of consumer surplus benefits as to each Taka of government revenue losses, that there will be a net welfare loss. However, it is also apparent that this is not necessarily the case: with sufficiently elastic demand and a sufficiently large downward shift in the Indian supply curve after the FTA, the consumers' surplus gain in Bangladesh may exceed the customs revenue loss.

As in the previous examples, the economic benefit to India is represented by the producers'surplus on the Indian exports to Bangladesh that are generated by the FTA. In this example this is represented by LGJ, which is the area above the Indian supply curve S_I and below the new price in Bangladesh. The total net economic welfare change for Bangladesh and India combined (ΔW) is the sum of the two welfare effects in Bangladesh and the increased producer surplus in India i.e. ΔW=(-area ABCD+area ALJD+area LGJ), and in the example illustrated in Fig 4 it is negative. However, it could be positive or negative, depending on the demand elasticity in Bangladesh and the size of the price reduction in Bangladesh. As discussed previously, this is before allowing for possible consumer welfare effects in India, and the net economic welfare effect for the world as whole would need to deduct the producer surplus losses of the ROW exporters excluded by the FTA from the Bangladesh market, from the total net effect in India and Bangladesh.

Fig 5 illustrates a variant of the simple trade creation case in Fig 4, the only difference being that the new equilibrium price and demand in Bangladesh following the FTA fall sufficiently to generate a sufficiently large consumer surplus benefit that, when combined with the Indian exporter producer surplus, more then offsets the Customs revenue loss in Bangladesh, thus producing a net welfare gain for Bangladesh and India together. That is, after the FTA, ΔW=(-area ABCD+area AGMD+area GNM)>0.

As noted previously, with a sufficiently low post FTA price in Bangladesh and sufficiently elastic Bangladesh demand, there could also be a net welfare gain in Bangladesh, despite the excess cost of the Indian supply over the displaced imports from ROW.

Fig 6 illustrates a similar case as Fig 5, the main difference being that before the FTA Bangladesh producers (represented by supply curve S_B) supply OM of the Bangladesh demand, with the rest (quantity MH) supplied by imports, on which the tariff revenue collected is area BRCD. In this situation, before the FTA, as indicated by the dotted supply curve S_I+t, Indian producers cannot compete in Bangladesh if they pay the normal Bangladesh tariff BA. After the FTA, however, the Indian suppliers undercut the Bangladesh producers, eliminating Bangladesh production, and supply the entire Bangladesh market at a price OL which is well below the pre-FTA price OA. In Bangladesh, the reduced price and the consequent increased demand generate consumer surplus benefits represented by area ALND, producer surplus losses represented by area AJB resulting from the closure of the Bangladesh producers, and reduced customs duties equivalent to area BRCD. In this example, as drawn there is net economic welfare gain for Bangladesh, equivalent to the excess of areas (JLTB+DVN) over area TRCV. It is apparent that the net welfare effect in Bangladesh is more likely to be positive in this example than in the example given in Fig 6, because trade is created not only by the lower price in Bangladesh and the increased demand, but also because higher cost Bangladesh production is replaced by lower cost Indian production. For India, there is a producer surplus benefit (area LGN) on the Indian exports made possible by the FTA. For Bangladesh and India together, there is a net overall welfare gain equivalent to the net gain in Bangladesh plus the producer surplus benefits in India resulting from the Indian exports, but as before the net joint welfare outcome could be negative with different demand and supply parameters, and could be affected by consumer welfare changes in India resulting from the Indian exports. Also as before, the net global welfare change would be affected by the producer surplus losses of the ROW suppliers that previously supplied Bangladesh.

Fig 7 illustrates the same case as Fig 6, except that only some of the Bangladesh production is eliminated and some of the lower cost Bangladesh producers are able to compete with the Indian suppliers. Consequently the aggregate supply curve S_B+S_I (the horizontal sum of the Bangladesh and Indian exporter supply curves) intersects the Bangladesh demand curve at new equilibrium price OJ (=RV) which is lower than it otherwise would have been, because of the supply and competition from the remaining Bangladesh production. As in the previous example, because following the FTA the tariff on imports from ROW is redundant and the domestic price has declined by distance AJ, there is a consumer surplus benefit in Bangladesh of area AJVD. There is a producer surplus loss for the Bangladesh producers (area AJKF) corresponding to the decline in their production from OM to OW, and there is a loss of tariff revenue (area FRCD) on the imports from ROW (distance MH) which are eliminated by the FTA. Overall, in this example as drawn, there is a net welfare loss for Bangladesh as the consumer surplus benefit is not enough to offset the lost Customs revenue and the decline in the Bangladesh industry's producer surplus. However, as in the previous example, it is apparent that if the reduction price is sufficient, the resulting benefit to Bangladesh consumers will begin to exceed the sum of the Customs revenue and producer surplus losses. For India, there is a producer surplus benefit for the exporters (area LJT), but with the parameters assumed for the diagram the net welfare change for India and Bangladesh taken together is negative. The global welfare outcome is also negative since the consumer welfare effects in India must be negative and the ROW exporters lose producer surpluses. But a sufficiently large price reduction in Bangladesh could outweigh all the other negative welfare repercussions and increase global welfare (assuming as before that common currency unit changes in the welfare of the various actors are valued equally).

3. TREATING TRADABLE INTERMEDIATE INPUTS IN THE IMPORTING COUNTRY

To bring out basic principles more clearly, the cases discussed so far have not dealt with the impact of an FTA on the internationally tradable intermediate materials and/or components used in the industries being studied. Is some of these are imported or are exportables, changes in the production of finished products will have secondary effects on trade and government revenue through changes in the imports or exports of these intermediate inputs. Fig 7 illustrates a case where the intermediate inputs are imported into Bangladesh for the use of the local industry at a border (cif) price (per unit of the finished product) O*b*, and customs duties *ba* are paid, so that before the FTA tariff revenue represented by the shaded area *abfe* is collected. If after the FTA there is no change in the pre-FTA price of the final product (OA) and no change in domestic production there will be no change in the quantity of inputs imported, and therefore no change in the customs revenue on these inputs. In that case the welfare analysis is the same as discussed previously in Fig 2, and there is no need to consider secondary welfare effects via intermediate inputs in the importing country.

However, if Indian exports to Bangladesh following the FTA cause the domestic price in Bangladesh to fall (as for example in the cases illustrated by Figs 6 and 7), Bangladesh production will decline and there will be an accompanying decline in imports of the intermediate inputs and of customs revenue collected on those imports. For example, in Fig 8, if the domestic price were to decline from OA to OG, the production of the Bangladesh industry would be cut from distance OM to OS, with a corresponding decline in imports of intermediate inputs with a value in border prices equal to area *d*SM*f*, and a customs revenue reduction equal to area *cdfe*. From Bangladesh's point of view, this customs revenue loss would need to be added to the loss of customs revenue on finished products no longer imported from ROW (area ERCD) and the loss of producers' surplus in the domestic industry (area AGXE) before balancing these welfare losses against the consumer surplus benefit of the lower domestic price (area AGKD). The reduction in imports of intermediates is also a secondary welfare (producer surplus) loss for the ROW exporters which previously supplied them in addition to the loss of the market for the finished product.

There is a similar outcome if the competition of the Indian suppliers after the FTA cuts the Bangladesh price sufficiently to eliminate Bangladesh production altogether. In Fig 8, if the post-FTA price in Bangladesh falls to OL (an outcome equivalent to the case illustrated in Fig 6) imports of intermediates would also disappear and the government would lose tariff revenue represented by area *abfe*. As in the previous example, this welfare loss would need to be accounted for in quantifying the welfare repercussions in Bangladesh. In addition, the full value of the intermediate inputs imported prior to the FTA would need to be added to the total trade diverted from ROW.

The above examples have considered cases where the intermediate inputs are imported by the domestic industry. If the inputs are produced domestically but are "fully traded" in the sense that any cut in demand-including reduced purchases from local producers- leads to an equivalent cut in imports, in principle the resulting indirect customs revenue loss would need to be calculated even though there were no direct imports by the industry being studied. But another possibility is that if the inputs are being purchased domestically there will be tariff redundancy, with no direct impact on imports or tariff revenue resulting from changes in demand. Taking account of the approximations involved in many aspects of these types of simulation, and bearing in mind that in most cases second order effects are at issue, it is probably better to just treat the intermediates that are directly imported by the industry being studied, and to ignore the potential repercussions via domestically produced inputs.

Similar decisions about the treatment of intermediate inputs need to be made if they are exportables e.g. domestically produced materials or components that would be exported if they were not used as in inputs by the domestic industry being studied. In that case, there will be a fiscal cost if the

contraction of the domestic industry releases intermediate products which are then exported and become eligible for a standard export subsidy, and a fiscal benefit if the exports are taxed. However, in South Asia at present, while there are some export subsidies (e.g. interest subsidies for export finance) most are very small relative to the border values of exports-certainly much lower than typical import duty rates-and very few products are subject to export taxes. The principal export facilitation measures are duty drawback or duty exemption for imported inputs used by exporters, but by definition these are not relevant in the case of exportable intermediates, except possibly at second remove if the exportable intermediates themselves are manufactured in part from imported intermediates. Domestic indirect taxes (such as a VAT or VAT equivalent) are also normally refunded for exports, but as a general principle (see later discussion) it is recommended that these be ignored. For all these reasons, in the kind of partial equilibrium welfare simulations being discussed in this paper, unless there are strong reasons for doing otherwise, not much will generally be lost by disregarding potential welfare repercussions via changes in the purchases of exportable intermediate inputs.

4. TREATING TRADABLE INTERMEDIATE INPUTS IN THE EXPORTING COUNTRY

The South Asian countries all operate drawback or import duty exemption systems for inputs used in the production of exports, including exports to neighboring countries under preferential trading arrangements. These mechanisms would also apply to free trade agreements, and their impact needs to be considered in simulating the likely effects of a bilateral FTA. There are various possibilities.

If the industry which starts exports (or increases its existing exports) to the other country following the FTA, is already exporting to ROW, and if the FTA-induced exports are all incremental and not switched either from exports to ROW or from supplies to its domestic market, then the exports will not directly change either domestic prices or tariff revenue. This is because-if normal export mechanisms are functioning-there is no change in government revenue since any customs duties on imported inputs will be refunded or exempted, and if there is no change in domestic supply there will be no upward effect on domestic prices. In this case the producer surplus of the exporters to the FTA partner country on its own provides a good first approximation of the welfare benefit to the exporting country.

However, if the exporting industry switches production from its domestic market to the market of its FTA partner, the tariff revenue and price effects in the domestic market will need to be considered. If the product is being imported into the domestic market, there will be no change in the domestic price and no consumption effects, but the production switched to the FTA partner market will be replaced by increased imports. On the other hand tariff revenue on the inputs used in the production that is now exported rather than sold locally, will either be exempted or refunded to the exporters under normal duty drawback systems. Hence the FTA will create an additional welfare benefit to the exporting country (in addition to the exporter producers' surplus) equal to the excess of the increased revenue on the finished products that are now imported, over the input tariff revenue that is now refunded or exempted. In effect, by switching production to the FTA partner with the higher protection level, the exporting country reduces some of the deadweight costs of its own protection by importing at world prices from ROW and collecting import duties, rather than supplying this part of its demand at production costs that exceed world prices.

A third possibility (discussed in more detail in the next section) is that the exporting industry, though protected by a tariff and not exporting to ROW, is setting a price in the domestic market that is lower than the duty inclusive import price. When the more highly protected market of a neighboring country is opened by the commencement of an FTA, total demand for the industry's product increases and-to an extent depending on the supply elasticity- the price in the domestic market will rise, with a ceiling at the duty inclusive price from ROW. As noted below, in that case consumption costs (losses of consumer surplus) need to be deducted from the industry's producer surplus benefits resulting from the

FTA, but there will also be tariff revenue losses, since with the higher domestic price domestic sales are lower than they otherwise would be and the corresponding production will be switched to exports going to the FTA partner country, the imported inputs of which are eligible for drawback or duty exemption.

5. CONSUMPTION EFFECTS IN THE EXPORTING COUNTRY

The previous sections have focused on the country (in the examples assumed to be Bangladesh) which, following a bilateral FTA, imports from the other, and apart from the exporter producer surpluses, have not considered the possible internal welfare repercussions in the exporting country. This section discusses the possibility of consumer welfare losses resulting from increases in the domestic price of the exported product, and possible reductions in Customs revenue on imported intermediates used in the production for the domestic market.

If the product is being produced in both countries and imported from ROW in both countries over binding tariffs, after the FTA (assuming transport costs and other logistics costs do not prevent them) there will be exports from the country with the lower tariff to the higher tariff country, since incremental production costs in the lower tariff country must be lower in the low tariff country. This may mean that some production-in an extreme cases all of it-will be switched from the low tariff market to high tariff market. However, there will be no price or consumer welfare effects in the exporting country, since domestic prices will continue to be determined by imports from ROW.

However, if tariffs are not binding in the exporting country, there will be some price and consumer welfare effects when trade is opened up by the FTA. This is because the tariff redundancy means that, before the FTA, there are no competing imports and that domestic prices are lower than the border price plus the tariff i.e. $Pd<(Pw+t)$. Hence if the costs go up with production i.e. the domestic supply is less than infinitely elastic, the increased demand from the importing country will push up the domestic price in the exporting country, with an upper limit at the point at which imports start to come in. The resulting consumer welfare loss in the exporting country then has to be deducted from the producer surplus benefits resulting from the new exports. In addition, because of the decline in domestic demand and production (from production switched from the domestic market to the FTA-induced exports) there will be a fiscal cost if there if there are duty drawback or tariff and other tax exemptions for inputs previously used for production for the domestic market.

This case is illustrated in Fig 9, which illustrates the welfare effects in Bangladesh when, as a result of an FTA, a Bangladesh industry exports to India. In the pre-FTA situation, there is tariff redundancy (distance CE) and the Bangladesh industry supplies the entire domestic market (quantity OM) at a price that is above the world price OB (denoted by Pw which is the cif price at the Bangladesh border), but well below the world price plus the Bangladesh tariff (distance OA). After the FTA the Bangladesh industry has tariff free access to the Indian market, and this is represented by the Indian demand curve for Bangladesh exports Di. There is a fixed per unit cost of tradable inputs used in production (distance OH) which includes tariffs which are rebated or exempted (through drawback, duty free admission etc) when the final product exported. This rebateable duty and tax component is the vertical difference JH between the tradable unit input cost line OH and the dotted line below and parallel to it. This distance is added vertically to the Indian demand curve for the Bangladesh exports to give an effective demand curve which includes the duty drawback per unit of exports as well as the explicit demand price. The Bangladesh domestic demand curve and the drawback - inclusive export demand curve are then summed horizontally to give an aggregate demand curve which incorporates both domestic demand and export demand from India as a result of the FTA. In the new equilibrium in this example, after the FTA total demand and Bangladesh supply expand by a factor of about four and at the new equilibrium supply OF, the price in the domestic market rises from OE to OC and domestic demand

and production drops to OL. As a result of the FTA, the Bangladesh exporters benefit by the increase in their producer surplus, which goes up by area CEKQ, from area ENK before the FTA to area CNQ after the FTA. However this gain is offset by reduced consumer surplus (area CEKJ) and reduced customs revenue on the inputs (distance LM) which were previously subject to customs duties (JH per unit) which with the FTA are now rebated or exempted. Hence the net gain to Bangladesh is the increased producer surplus of the Bangladesh exporters minus the loss of consumers' surplus and the loss of customs revenue.

Because of the massive size disparity between Indian and Bangladesh markets, consumer welfare effects are much more likely to matter for Bangladesh industries exporting to India as a result of an FTA, than for Indian industries exporting to Bangladesh. If a Bangladesh industry succeeds in penetrating the Indian market as a result of FTA preferences, it is plausible to imagine that its market in India could far exceed its total market in Bangladesh. This would bring correspondingly large producer surplus benefits to the exporting Bangladesh industry, but if the Bangladesh tariffs are not binding, domestic prices to final consumers or other buyers in Bangladesh are likely to rise, and the resulting consumer welfare cost, plus fiscal costs on diverted inputs, would need to be deducted from the producer surplus gain in accounting for the total net welfare effects in Bangladesh. By contrast, most markets in Bangladesh are a small fraction of the size-say 5 to 8 percent- of the corresponding markets in India. Hence, even if Indian exporters were to supply half or the entirety of a market in Bangladesh, this would typically still represent only a very small share of the corresponding production and demand in India, and therefore the price and consumer welfare effects in India are likely to be minimal. For this reason, they can probably be ignored in analyzing most cases of FTA-induced exports from India to Bangladesh.

An exception might be when the exports come to Bangladesh from a geographically isolated border region of India where transport and other marketing costs from the rest of India are high, so that the exports cause a substantial increase in prices in that region. *A priori*, the greatest potential for this would appear to be products produced in the eastern Indian states, because of the isolation of these states from the rest of India. But these states are relatively underdeveloped-at least as regards manufacturing-and it is likely that the number of products with export possibilities in Bangladesh with an FTA is limited.

The above discussion assumes that supply in the low tariff country is elastic and that the exporting industry is competitive in both countries. Otherwise, if the exporting country producers have market power in the country to which they export after the FTA, they may collude and set a profit maximizing price there, of which the feasible maximum would be set by the importing country's general tariff on imports from ROW. This presupposes that the exporters have sufficient market power and influence to prevent export sales by traders using products purchased from the exporting country's wholesale and retail markets, where prices are lower than in the other country. Probably the main constraint on the breakdown of discriminating monopoly behavior of this nature are the domestic taxes-the excise duty and sales taxes in India, and the VAT in Bangladesh-imposed at the wholesale and retail levels, and the difficulty of having these taxes refunded at Customs if wholesaler/exporters were to attempt to arbitrage price differences by buying a product from the domestic wholesale and retail markets for export to the other country. To some extent, higher transport, logistics and/or marketing costs when the product is not purchased in bulk from the original producers by industry-recognized distributors, may also limit the extent to which price differences between FTA countries can be equalized by arbitrage.

6. WELFARE EFFECTS WHEN THERE IS "BOOTLEG" BORDER SMUGGLING

Various kinds of smuggling and illegal trade are prevalent in South Asia, especially in Bangladesh. It is useful to distinguish two kinds of illegal trade, traditional smuggling or "bootleg" trade which by-passes Customs posts altogether, and "official" or "technical" smuggling trade which comes through and is processed at Customs posts, but which is misclassified or under invoiced to reduce Customs duties or avoid them altogether. Both types of illegal trade usually involve collusion between, on the one hand exporters, importers, service providers such as shipping agents, Customs agents, bankers and money lenders, and on the other hand Customs, border security, police and various other government officials. "Bootlegging" or traditional smuggling is prevalent along the South Asian land borders, and "technical" smuggling is more important at the principal sea ports and at the major land Customs posts, in the case of India-Bangladesh trade, especially at the Petrapole-Benapole border crossing, which lies on the main roads that link Kolkata and West Bengal with Dhaka and the rest of Bangladesh.

This section discusses "bootleg" smuggling which typically physically avoids Customs posts and uses other border crossings. In principle it could be organized by large and medium scale manufacturers and traders, but the evidence in South Asia is that most of it is organized by relatively small local traders and occurs in border areas with the participation of local people with contacts on both sides of the border. Apart from the obvious difficulty of finding border locations that could unobtrusively handle large volumes of bulky goods, medium and large scale exporters have an interest in using official channels in order to avoid paying domestic indirect taxes, to have import duties on their imported intermediate inputs exempted or refunded, and to receive other export incentives if there are any (such as preferential working capital loans). Consequently, in the case of "bootleg" smuggling (say from India to Bangladesh by the land border) the smuggled exported goods will typically be purchased from or supplied by local wholesalers or retailers, and buying prices will therefore include not only indirect taxes but also domestic wholesale margins and possibly retail margins as well. They will also include any import duties on the inputs used by the local producer, which would otherwise have been refunded if the same goods had been legally exported. To this must be added the transport costs, bribes and other transaction costs of smuggling the goods across the border, and the transaction will only take place if the price received exceeds the sum of all these costs by a margin that is sufficient to compensate for the effort and risk involved. However, if the exports do take place, the sum of the Indian domestic indirect taxes included in the price paid by the Bangladesh informal importer is effectively an export tax. Insofar as the smuggled Indian goods substitute for either imported or locally produced goods that would have been subject to Bangladesh indirect taxes, and assuming that the smuggled goods avoid Bangladesh indirect taxes, one result of the smuggling is therefore the transfer of indirect tax revenue from Bangladesh to India. The reverse would be the case with "bootleg" border smuggling of goods from Bangladesh into India.

"Bootleg" border smuggling carried out by small traders and individuals in border area (the total value of which can nevertheless be substantial if enough people are involved) *is effectively a partial informal free trade arrangement*, and the welfare consequences can be analyzed following the same principals discussed previously. Taking the example of informal border area exports from India to Bangladesh, the potential welfare consequences are the following:

<u>For the importing country (example Bangladesh)</u>
+ consumers' surplus benefit if the smuggling reduces the domestic price of this good (and/or makes more varieties and specifications of the good available)
+ share of Bangladeshis in smuggling rents
- lost tariff revenue from ROW imports displaced by the smuggled Indian goods
- lost indirect taxes (VAT) on the goods displaced by the smuggled goods (assuming the smuggled goods evade Bangladesh indirect taxes)

- reduced producer surplus from any Bangladesh production displaced by the smuggled imports
- reduced tariff revenue from the imported inputs used by displaced domestic production (if any)

For the exporting country (example India)
+ producers' surplus of the Indian producers of the smuggled exports
+ tariffs on imported inputs used to produce the smuggled exports
+ Indian domestic indirect taxes on the goods that are smuggled
+ the Indian share of the smuggling rents
- the producers' surplus component of the Indian share (if any) of the ROW exports to Bangladesh displaced by the smuggled exports[3]
- consumers' surplus loss if the smuggled exports lead to price increases in India

As discussed previously in connection with formal FTAs, assuming a single homogeneous good, the key element in the overall net welfare outcome for the importing country is whether and to what extent the smuggled goods reduce the domestic price level. If the domestic price level does not change, there will be a net economic welfare loss. If the smuggling forces the domestic price down, the net welfare loss continues but becomes smaller, until at some point the price may fall sufficiently to create a consumer welfare benefit sufficient to outweigh the trade diversion costs.

For the exporting country, the first four positive (+) components of the welfare change above will normally outweigh the potential negative components[4]. Compared with a formal FTA, the input tariff and domestic tax components push up the supply price of the smuggled exports and this will tend to reduce the quantity exported. On the other hand smuggled imports avoid paying the importing country's domestic tax at the border (in Bangladesh the VAT) as well as the tariff, whereas under a properly administered formal FTA imports from the partner country are exempt from the tariff but still pay the domestic indirect tax. Hence, for a given product, it is not possible to state *a priori* whether the export supply with bootleg smuggling will be lower or higher than export supply with a formal FTA. But, as noted previously, the exporting country's domestic taxes effectively act as export taxes, the revenue from which should be counted in estimating the net welfare change[5].

Already existing "bootleg" border trade will frequently need to be considered in analyzing the likely welfare effects of an FTA. From the importing country's point of view, the resulting overall reduction in Customs revenue will be offset to the extent that domestic taxes (e.g. the Bangladesh VAT) are now collected on formal imports that displace previously smuggled imports. On the other hand there will be some loss of the Bangladesh share in smuggling rents. If the formal FTA imports displace more ROW imports than were displaced by the smuggled trade but leave domestic prices unchanged, it is likely that there will still be a net loss of revenue and an overall net welfare loss. However, it is conceivable that the FTA-generated imports will displace all or most of the smuggled imports but that the total volume of imports diverted from ROW will decline. In that case, even if domestic prices are unchanged, for this product, the FTA will lead to a net increase in government revenue and a net increase in welfare

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3 It is quite feasible for the same goods –even from the same firms-to be legally exported paying the full tariff and indirect taxes in the importing country, and to be smuggled avoiding both the importing country's tariff and indirect taxes. See discussion below.

4 In South Asia, agricultural and other unprocessed primary goods are typically exempt from indirect taxes. On the one hand this reduces the price to potential smugglers and increases the probability that it will be profitable to smuggle them. On the other hand, once they are smuggled there is less of an "export tax" benefit to the exporting country than would be the case with smuggled manufactured goods.

5 Under the India-Nepal Treaty of Trade, the declared value of Indian excise taxes (but not sales taxes) included in the cost of goods imported by Nepal, are calculated and periodically paid by the Indian government to the Nepalese government. For obvious reasons there is no such arrangement between India and Bangladesh as regards the border "bootleg" trade, which is illegal and undeclared.

compared to the pre-FTA situation, essentially because trade diversion with the formal FTA is less than with the informal *de facto* FTA.

From the viewpoint of the exporting country, if a formal FTA displaces some or all of its own "bootleg" smuggling, economic welfare may increase or decline. There will be welfare benefits (producers' surplus) associated with the new formal exports, but there will be a welfare loss consisting of the domestic indirect taxes and smuggling rents associated with the displaced bootleg smuggled exports. The principal elements in this kind of welfare calculation are illustrated in fig 10, which for simplicity takes the case of a product which is imported from ROW into Bangladesh but which is not produced domestically. In an initial equilibrium (before allowing for "bootleg" smuggling from India) total demand OH is fully met by imports from ROW at a tariff-inclusive price Pw+t, equivalent to distance OA consisting of a cif price OB and a tariff BA. In order to analyze smuggling from India which avoids the Bangladesh VAT as well as the tariff, the diagram shows the VAT-inclusive price Pw+t+v, and the final retail price Pw+t+v+m. In the initial equilibrium before smuggling from India, government revenue from imports is the total tariff revenue (area ABCD) plus the total VAT on imports (area WADJ). In this initial equilibrium S_I is the potential tariff-free Indian supply curve to Bangladesh, but there are no Indian exports because after adding the Bangladesh tariff all Indian supply prices exceed the price tariff inclusive price OA at which the product is imported from ROW.

It is now assumed that "bootleg" smuggling from India to Bangladesh becomes possible, and that the bootleggers avoid both the Bangladesh tariff and the Bangladesh VAT. On the Indian side they buy the product from traders at price OM. This price includes marketing margins in India (distance MW), Indian indirect taxes -excise and sales taxes- (distance WL), and tariffs on imported inputs used to produce the product (distance LG). The smugglers incur transport and various transaction costs including bribes, first in India, then in getting the goods across the border, and finally in distributing the goods in Bangladesh. The total transaction costs are represented by the area between the purchase cost of the goods in India and the smugglers' supply curve S_S. The upward slope of the smugglers' supply curve indicates that the per unit transaction costs rise as the quantity smuggled increases, representing for example increasing costs (including perhaps increasing bribe rates) of distributing the goods to more distant markets inside Bangladesh. In this example the smugglers are assumed to distribute to final consumers and will do so as long as they can undercut the going tax- inclusive retail price OX. Given the smugglers' supply curve, this determines an equilibrium quantity of bootleg smuggling OG, which displaces the same quantity of imports from ROW.

It can be seen that from the Bangladesh perspective, the bootleg smuggling is similar to the FTA trade diversion case discussed previously, except that the revenue loss from the trade which is diverted to India from ROW in this case includes the VAT on the diverted imports (area WAEZ) in addition to the tariff revenue (area ABFE). There will be some offsetting gains, however: the share of Bangladeshis in the smuggling surplus i.e. a share of area XRY, and the Bangladeshi share of bribes and other economic rents (e.g. bribes to border police, tax officials and others) subsumed in the general heading of "transaction costs" (i.e. a share of area R*mr*Y). But there are no consumer welfare benefits- the same goods are being supplied to consumers at the same price-and it is apparent from the diagram that the government revenue loss from tariffs and VAT must exceed the Bangladeshi share of the smuggling rents: hence the smuggling in this example involves an overall net welfare loss for Bangladesh.

By contrast, from the Indian perspective, the bootleg smuggling OG provides a clear net welfare gain. This consists of input tariff revenue (area *lgnp*) which would have been exempted or refunded if the products had been legally exported, domestic indirect taxes (area *wlpq*), the Indian share of the smuggling surplus (area XRY), and the Indian share of bribes and economic rents subsumed in the smuggling transaction costs (R*mr*Y). The fiscal component of this total benefit (area *lgnp* plus area *wlpq*) is effectively an export tax.

Considering India and Bangladesh together, as in the formal FTA case, there must be a net welfare loss since the total revenue loss to Bangladesh (area WBFZ) exceeds the sum of the revenue benefit to India (area *wgrq*), the smugglers' surplus (area XRY) and the combined Indian and Bangladeshi economic rents that may be included in the smuggling transaction costs (their share of area R*mr*Y). This is without counting the producers' surplus loss of the ROW exporters that lose their Bangladesh market due to the smuggling from India to Bangladesh. As with a formal FTA, the only possibility of a joint welfare gain is if the smuggled trade is sufficiently trade creating that the reduction in the domestic price level in Bangladesh is large enough to create consumer surplus benefits that (together with the benefits in India) outweigh the Bangladesh government's revenue losses. Just creating more trade and reducing the price level is not sufficient for a joint welfare gain: depending on the responsiveness of demand in Bangladesh and the initial conditions of demand and supply in the two countries, joint welfare will be lower as a result of the smuggled trade for a range of trade increases and price reductions.

What is the welfare impact if an informal smuggling equilibrium is disturbed by a formal FTA? One possibility is illustrated in Fig 10, where the formal Indian tariff -exempt supply curve to Bangladesh S_I is assumed to cut the tariff inclusive price from ROW at point V, indicating an Indian legal export supply to Bangladesh of quantity OT. Assuming no "technical" smuggling (underinvoicing etc), the formal imports would pay the Bangladesh VAT and normal margins would be added by Bangladesh distributors, giving a supply curve at (say) retail level such as S+v+m. Adding the smugglers supply curve to this horizontally gives shows the combined smuggled and formal supply at different price levels. As constructed in this example, the new supply does not change the domestic price, and therefore smuggled imports continue at the same level as before the FTA. However, the new FTA-induced legal imports from India displace imports from ROW equal to distance GT, and total imports from ROW are cut from distance Gb to ab. For Bangladesh, the fiscal consequence of this is a further loss of tariff revenue (area EFUV) from the increase in the quantity of imports diverted from ROW, which is added to lost tariff and VAT revenue from the smuggling (area ABFE+area RAEZ) which continues. From the Indian perspective, the FTA creates a producers' surplus gain (area AgV) for the formal exporters, and in both India and Bangladesh the economic rents associated with the smuggling are not affected and continue at the same level as before the FTA.

However, it is easy to see from Fig 10 that this outcome depends entirely on the position and slope of the supply curve of legal duty free exports from India. If this supply curve starts at a lower price and/or is more elastic than in this example, the aggregate supply curve (legal supply plus smuggled supply) may intersect the demand curve at points to the right of the initial equilibrium, reducing the price and increasing the Bangladesh demand. As the price declines, the smuggling supply decreases, and with the parameters assumed in this diagram, smuggling disappears entirely after the price goes below distance OR. From the Bangladesh viewpoint, in addition to the welfare benefit to consumers, while there is government revenue loss from the formal tariff-free imports from India, there is a revenue gain from the restoration of VAT receipts and tariffs that were previously avoided by the smugglers. From the Indian viewpoint, the disappearance of the smuggling reduces the tax revenue associated with the smuggled exports (area *lgnp* which is now refunded as duty drawback or exempted, plus domestic indirect taxes indicated by area *wlpq,* As do Bangladeshis, Indians also lose their share of the smugglers' surplus (area XRY) and their share of the rents included in the total smuggling transaction costs (area RmrY). These changes have to be set against the producer surplus gain resulting from the preferential exports: the net welfare outcome for India could be positive or negative, depending mainly on whether the total level of ROW exports diverted to India increases (as in the Fig 10 illustration) and how large this extra trade diversion is.

The principal message from this section is that welfare outcomes are especially complex when an FTA is superimposed on a situation where a product is already being smuggled by the "bootleg" route and avoiding both tariffs and domestic taxes in the importing country. For any individual product, welfare

predictions cannot be easily made without first looking carefully at the main parameters, including especially what can be discovered about the volume and nature of the smuggled trade, including the extent to which the cost of the smuggled goods to the smugglers includes domestic taxes in the exporting country. It is also important to recognize that after an FTA, formal exports and smuggled "bootleg" exports of the same good to the same market may coexist, as illustrated in Fig 10. Both these export sources could be supplied by the same Indian firms, some coming from normal domestic sales of goods including domestic taxes and distribution margins which are purchased by smugglers and sold in Bangladesh, avoiding both the Bangladesh tariff and the Bangladesh VAT, while the same goods could also be exported to Bangladesh while benefiting from drawback of input tariffs and exemption from the Bangladesh tariff, but paying the normal Bangladesh VAT and any other indirect taxes.

7. WELFARE EFFECTS WITH "OFFICIAL" ("TECHNICAL") SMUGGLING (UNDER-INVOICING ETC)

Many techniques are used to avoid or reduce the import duties paid at Customs posts, for example under invoicing, false descriptions of high duty items as low duty items, and understating quantities. A major problem in South Asia are duty exemptions or drawback payments for materials which are supposedly for use to produce exports, but some or all of which in fact are used to produce products sold in the domestic market. In extreme cases entire containers or truck loads may be allowed to pass through Customs without being recorded, in which case "official" or "technical" smuggling really becomes a type of "bootleg" smuggling.

For many years both India and Bangladesh have had programs to improve Customs administration and to cut down on these kinds of illegal activity. These programs include the automation of Customs procedures through the use of computers, in order to reduce the scope for discretion and to facilitate operational controls and audits, and in Bangladesh import shipments have to be certified by pre-shipment inspection (PSI) firms in the exporting country. Combined with the removal of most QRs and reductions in the general level of tariffs since the 1980s, in both countries Customs administration is reported to have improved considerably and the incidence of "technical" smuggling to have declined. Nevertheless, it is still an issue which would need to be considered in product level simulations of the effects of an FTA of the kind being discussed in this paper, especially for products in Bangladesh protected by various kinds of para-tariffs in addition to customs duties. These are especially likely to be susceptible to illegal practices at the border, because of the incentive to do so from the very high total protective import duty rates (many ranging from 40% to over 100%) they frequently create, as well as their complexity.

As with "bootleg" smuggling, for obvious reasons the dimensions and nature of technical smuggling are difficult to ascertain. Nevertheless some feel for it can usually be obtained from interviews with manufacturers, importers, wholesalers, Customs agents and others. One key bit of information that can usually be obtained without too much difficulty, is the relation between the domestic price of an imported product and the cif price plus the official Customs duties (the tariff plus the indirect tax) that is supposed to be paid when it is imported. If (after allowing for port costs and distribution margins) the domestic price is about the same, there are a number of possibilities:

(a) For the particular product being studied, the Customs system is operating as intended without bribes and side payments, and customs duties and indirect taxes (e.g. in India the "additional" duty and in Bangladesh the VAT) are being fully collected. In that case, the revenue and other effects of an FTA could be analyzed as discussed in the previous sections.
(b) Customs duties are being fully collected at the official rates, but "speed money" is being paid i.e. payments to Customs officials for doing without delay and without making difficulties, what they are supposed to be doing as a normal part of their job. This can be interpreted as an additional transaction

cost in the Customs clearance process, and it is likely to be included in the fees to Customs agents and other intermediaries rather than being paid directly by the importer. "Speed money" payments on their own and not involving evasion of Customs duties, in most circumstances are unlikely to be very large. The effect is to increase the protection rate, but probably not by much, and in any case speed money is likely to also be required to process tariff-exempt imports from an FTA partner country. Hence, unless there are special reasons for doing otherwise, in most circumstances they can probably be safely ignored in simulating the likely effects of an FTA.

(c) Some quantities (perhaps at particular Customs posts) of the good are being imported at reduced duties (through under invoicing, for example) with side payments to officials, but others are being legally imported at the full official rates. In that case, in effect part of the Customs duties have been privatized in the form of economic rents going in part to some importers and in part to the officials and intermediaries involved in these transactions. In this case, trade diverted from ROW suppliers by an FTA would subtract from both the government share of the Customs revenue and from the economic rents associated with the technical smuggling.

(d) A going side-payment or bribe rate is established that is about the same for all importers in return for a discount on the legal Customs duty rate, but the sum of the two is about equal to the official legal Customs duty rate. Since there is no financial benefit for importers, this is really a modified form of a "speed money" bribe, make the arrangement more attractive by offering a discount on the Customs duty rate. As in the previous example, in this case trade diverted from ROW suppliers by an FTA eliminates both tariff revenue and the side payments.

The last of these possibilities (d) is illustrated in Fig 11, which is a modified version of Fig 1, assuming that Bangladesh is the importing country and that there is no local production. Before the FTA the price OA is set at the intersection of the Bangladesh demand curve DB and the import supply curve AD, at price P_w+t_o, where to is the official tariff. However importers are actually charged t_a, which is lower than the official tariff by a per unit bribe b. Hence before the FTA the government is collecting tariff revenue equivalent to area JBCL and total bribes equivalent to area AJLD are going to Customs and other officials. Since the per unit bribe plus the actual discounted tariff is equal to the official tariff, the protection rate that is available to domestic producers if there were any, and is potentially available to Indian exporters under an FTA, is the same as the official tariff to.

If the market is now opened to Indian exporters under an FTA, with the supply conditions assumed, they will export quantity OG, diverting this amount from ROW exporters. Because there are no tariffs due on the imports from India, it is assumed here (but see discussion below) that there are no bribes affecting this trade. The consequences for India and Bangladesh are the same as illustrated in Fig 1, except that the Customs revenue loss (area JBFK) is less, the difference being the reduction in bribe money (area AJKE). As previously, the total welfare loss for Bangladesh (area ABFE) consists of the real trade diversion resource cost (area GBFE) plus the producers' surplus of the Indian exporters.

The fixed bribe rate illustrated in Fig 11 is perhaps unusual and a more heterogeneous situation of the type described in example (c) above may be more common i.e. differing bribe rates and Customs duty discounts, perhaps varying by importer and Customs post. In that case all that will be known or that can be inferred is that some share of the total potential tariff revenue (area ABCD) is being absorbed in economic rents and bribes. For obvious reasons it will be very difficult for applied researchers to estimate the latter, unless they were to have access to detailed Customs records. Some estimates might be possible if there were independent estimates of the quantities being imported and the prevailing international prices, by comparing Customs revenue actually collected with what theoretically should have been collected if the full Customs duty rates had been applied. But none of this information is likely to be easily available, certainly not from official trade statistics, given that the Customs duty "discounts" are never explicit: rather they typically involve understating international prices, understating quantities

included in containers, misclassification, and misusing drawback and other export mechanisms.[6] Hence, in simulating the impact of an FTA, in most cases only some general qualitative statements about the possible impact on economic rents and bribe payments will usually be possible, with at best ranges of the possible dimensions based on interviews with people involved in the industry. However, it will usually be possible to say something about the Customs revenue loss, if sufficiently disaggregated official information is available on the amounts actually collected for the product being studied.

As already noted, Fig 11 illustrates the simplest possible trade diversion case when there is technical smuggling. The other possibilities illustrated in Figs 2-10, including trade creation and price reductions in the importing country could be analyzed as described previously, the only change being that the trade diversion effects will involve generally unknown losses of technical smuggling rents in the importing country, in addition to Customs revenue losses.

When there is technical smuggling, another possibility is a "leaky" Customs system which allows imports through at a total per unit cost (actual tariff plus bribe) that is lower than the official tariff. If this happens, domestic prices will turn out to be lower than cif prices plus the official Customs duties. If that is the case and it is known that the imports are in fact coming through Customs (they are not entirely "bootleg" imports, for example) then it is likely that for this product some kind of equilibrium arrangement has been established between Customs and other officials and importers in which the reduced Customs duty plus the bribe rate is lower than the full official Customs duty rate. If that happens, the official tariff is no longer binding and among other things the tariff protection level for local producers is lower than the apparent level as shown in the official tariff schedule. In analyzing the effects of an FTA in this situation, it would be necessary to work with what appears to be the *de facto* tariff (the total of the actual tariff plus the bribe rate) as indicated by the price difference, and as previously to recognize that any trade diverted from ROW removes or reduces the bribes as well as cutting government tariff revenue.

This case is illustrated in Fig 12, where P_w+t_a+b (the actual duty and bribe-inclusive import price) is lower than the official tariff inclusive price P_w+t_o. Consequently the actual protection rate is distance BJ and imports are OQ, more than they would have been with the official tariff or with the actual tariff plus the bribe rate equivalent to the official tariff. There is consumer surplus benefit (area AJLD) which exceeds the net loss of Customs revenue plus bribe payments (area AJYD), giving a standard "welfare triangle" gain (area DYL). Since the starting *de facto* protection rate is lower than the official tariff, following the FTA the trade diverted from ROW (distance OS) is less than it would have been (distance OG) had the official tariff been operative. As a result, the net welfare cost of the FTA to the importing country (area JBTV) is less than it would have been without the existence of the technical smuggling from ROW (area ABFE). This is essentially because the protection extended to the Indian suppliers under the FTA is reduced by the technical smuggling. Of course, the same result could have been achieved by reducing the official tariff: this just illustrates the general point that the potential economic welfare costs of an FTA for importing industries will always be lower, the lower the general protection rate with respect to ROW.

"Technical" smuggling has been discussed so far as though the Customs duty or tariff is the only import tax, but in most countries there is also a domestic indirect tax which in principle is also applied to domestically produced products. In India and Bangladesh these are respectively the "additional" duty (normally 16%) and the VAT (normally 15%) which are value added style taxes imposed on top of

[6] One possibility would be to look at exporter country trade statistics, which in some cases may be more reliable as regards invoiced prices and quantities than the importing country's statistics. However, there are other well known problems with this, including differences due to freight, insurance and the time lag between clearing Customs in the exporting country and in the importing country.

customs duties, and which can be credited against subsequent liabilities for the value added tax when the imported good is used as input in production, or resold in a wholesale and retail distribution chain until it reaches final consumers. A major strength of the VAT indirect tax system is that it is largely self reinforcing, because if it is fully or partially avoided at one stage, the subsequent seller loses the corresponding tax credit and therefore has a motive to ensure either that the seller to him pays the full appropriate tax, or offers him a discount on the selling price to compensate for the higher net tax he will now have to pay. This feature reduces the benefit to an importer if for example the amount of VAT paid on an import shipment is reduced through underinvoicing. If the underinvoicing for the particular product is not universal and is not affecting the going domestic price of the good (the case illustrated by Fig 11 rather than by Fig 12), the subsequent buyer will have to make a larger net VAT payment and this presumably will reduce the price he is willing to pay to the importer. By contrast, reducing the protective customs duty through underinvoicing provides a corresponding gross benefit to the importer.

Of course, this auto-enforcing characteristic of a VAT-style indirect tax will not operate smoothly if-as is likely-there is also corruption in the domestic indirect tax administration. For example, if the quantities of a product shipped (e.g. in containers) are being understated at Customs or described as a different lower-duty product, it is possible that the deception will continue after the Customs stage in the domestic distribution of the good. With an FTA, the normal domestic indirect taxes such as a VAT are payable at Customs, and this means that there may still be incentives for "technical smuggling" even though there are no protective import duties. The FTA will also provide an incentive to make it appear that imports from ROW are coming from the FTA partner country, involving falsification of invoices and other corrupt practices. In addition, an FTA of itself is unlikely to remove the conditions and incentives for the existence of "speed money", and in fact may increase the potential for delays (for example, due to the need to check the compatibility of shipments with rules of origin) and hence also increase the "speed money" leverage of Customs and other officials. Eliminating or reducing speed money will normally require major long term reforms of the Customs and indirect tax administrations, and in some ways these reforms will be made more, not less difficult, by the existence of an FTA together with its origin and other rules, alongside a separate Customs regime for other countries. Another possibility is that without protective tariffs, some products-for example machinery and equipment- will be over invoiced as a way of understating profits, avoiding profit taxes and perhaps accumulating unrecorded foreign exchange[7].

As does "bootleg" border smuggling, "technical smuggling" and the associated corruption of Customs clearance processes can considerably complicate the task of simulating the likely welfare consequences of an FTA. However, the principal determinants of the broad outcome remain the same i.e. whether or not the diversion of trade from ROW that occurs is accompanied by price reductions in the importing country. If there is no change in the domestic price, there will be a welfare loss, the principal difference with the "clean" no smuggling case being that part of the loss is likely to consist of reduced smuggling rents and bribes. At another extreme, if the imports from the FTA partner country eliminate imports from ROW and come in at close to the world price, there will probably be a net positive welfare outcome for the importing country that will also remove that part of the incentive for "technical smuggling" previously provided by the protective tariff on imports from ROW. However, bribes and rent seeking associated with the domestic indirect taxes that will still be collected at Customs, as well as "speed money", are likely to continue, and new opportunities for profit tax evasion through over-invoicing, and the fraudulent redirection of trade through the duty free FTA route may be created. These and similar possibilities should be recognized in welfare simulations of such cases.

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[7] Of course this might happen with any tariff reduction or exemption, not just exemptions that are part of an FTA. In South Asia, the disappearance of substantial black market foreign exchange premia has largely removed this incentive to overinvoice, but overinvoicing to avoid profit taxes-especially of duty free imported machinery- is reported to be a continuing problem.

8. ECONOMIES OF SCALE

The cases discussed so far assume that supply curves of domestic producers in the FTA partner countries slope upwards, indicating that higher prices are needed to elicit increased supplies. This could reflect increasing per unit production costs, but also increasing marketing costs, if an industry in one country begins to supply an FTA partner country for the first time. However, in some industries (especially manufacturing industries) the access to the other country's market provided by an FTA may allow some functions to be performed on a larger scale with resulting cost reductions in production and/or marketing. If that happens, the resulting decline in unit (average) costs is an economic benefit that needs to be considered in evaluating the economic welfare consequences of the FTA.

Fig 13 works through the principal elements of the economic welfare outcome of an FTA for one of many possible cases with economies of scale. The principal general points that this example brings out are the following:

- If an industry is operating with unexhausted economies of scale, *prima facie* its costs at larger-even at "optimal"- scales, are too high for it to compete profitably in world export markets. Otherwise it would expand and export, and perhaps export to its potential partner FTA country without the benefit of the FTA. Consequently there must be some conditions and/or policies in the domestic economy that explain why this has not happened-e.g. high energy costs, lack of skilled manpower, labor market problems, imperfect duty drawback systems at Customs, an inefficient banking system, an unfavorable business environment that discourages investment and risk taking. Hence, unless the FTA removes or reduces some of these constraints, even if, following the agreement, the industry expands and benefits from economies of scale, it will still be uncompetitive by world standards, in the sense that its unit costs will exceed world prices at the country's border.
- On the other hand, if, given its tariff protection in the domestic market, an industry with unexhausted economies of scale is able to compete with imports, in general it will supply the whole domestic market and eliminate imports altogether (at least imports of the particular specifications and brands that it produces). This is because, if the industry is profitable competing with imports at scale S_1, it will be even more profitable competing at a larger scale S_2. This assumption is made in the example illustrated in Fig 13, but it should be recognized that policies and business environment conditions may be such as to deter expansion and competition, even when there would substantial unit cost reductions for the firms undertaking the expansion. However, if this is the case, expansion to take advantage of an FTA is also likely to be deterred, except insofar as the opportunities for extra profit from access to the partner country's market from the FTA, help override the inertia and perceived risks that have hitherto discouraged firms from expanding and taking advantage of economies of scale in the domestic market. If this happens, the resulting impact in the domestic market of the exporting country should be allowed for in analyzing the welfare costs and benefits of the FTA. There will be a welfare gain if less efficient domestic production is replaced, but a welfare loss if the expansion replaces imports subject to tariffs and does not change the domestic price level.
- Economies of scale can be interpreted in a number of ways. Two possibilities are shown in Fig 13, where the line showing unit cost declining with supply is first interpreted as a textbook long run average cost "envelope" curve of a single producer with monopoly power, and secondly as a line indicating the declining unit costs of a number of competitive firms, where one or more cost factors that are common to all (e.g. key industry-specific infrastructures such as specialized labor training, quality and research facilities, and the availability of specialized services) improve as a function of the industry's scale[8]. The economic welfare outcomes of an FTA are worked out under these two assumptions i.e. first assuming a single firm with (discriminating) monopoly in both the markets considered (assumed to be Bangladesh and India), and secondly assuming a competitive industry in which firms just break even at a common price in both markets. However, in practice it is likely that

[8] This is the standard textbook Marshallian "external economies" case

actual cases will include both elements i.e. economies of scale that are internal to individual firms and which provide them with some individual market power, as well as external economies of scale that reduce costs for all firms in the industry, but which, being available to all, are compatible with competition between them. The nature of the welfare outcomes with scale economies will depend on how much weight it seems reasonable to give to these two possibilities in individual cases: it will generally be somewhere in between the two polar possibilities outlined in Fig 13.

- If an FTA permits an industry in one of the partner countries to benefit from scale economies, it does not follow that there will be "trade creation". Instead, if the firm that benefits is a monopoly (or if a group of firms behave as a monopoly), the profit maximizing level of exports to the importing FTA country's market may remain at the same level as the imports from ROW that are displaced. However, especially if there is competition among the FTA member firms, it is more likely (as in the polar competition case illustrated in Fig 13) that there will be "trade creation", because prices will fall in the importing FTA country, leading to a larger volume of exports from the exporting FTA member than the exports displaced from ROW suppliers.
- As in the earlier examples with positively sloped domestic supply curves, when there are economies of scale the overall net welfare outcome, both for the two FTA countries jointly, and globally including ROW, may be positive or negative, As in those cases, the outcome depends crucially on the extent to which the economies of scale pass through to price reductions in the FTA member countries, creating sufficiently large consumer welfare benefits to offset the Customs revenue losses that result from the replacement of lower cost imports from ROW by higher cost production from the exporting FTA country.
- Finally, just because an FTA allows an industry in one of the countries to benefit from scale economies and cut its costs, does not mean that the net joint welfare outcome for the two countries will necessarily be superior to an outcome with increasing costs i.e. with an upward sloping supply curve. On the one hand, provided there is competition, the economies of scale will produce lower prices and consumer benefits: on the other hand they will allow the exports from the FTA partner country to displace a larger volume of imports from ROW (in the homogeneous good case illustrated in Fig 13, all the imports from ROW) with a correspondingly larger loss of tariff revenue for the importing country. If the consumer benefits are small relative to the loss of Customs revenue, the existence of the scale economies that are released by the FTA may worsen rather than improve the net welfare outcome.

Fig 13 illustrates some of these general points. Both the Bangladesh and the Indian markets for a product are shown on a single diagram using a common currency. Before the FTA the Bangladesh market (demand curve D_B) is entirely supplied by the Bangladesh industry at price OA at which quantity OL is supplied and demanded. The domestic industry is protected from imports (cif import price P_w) by tariff KA which gives a tariff inclusive price P_W+t_B. The Indian market is entirely supplied by imports at a lower tariff inclusive price OG (P_w+t_I) than the prevailing price in Bangladesh owing to a lower tariff (tI) in India than in Bangladesh (t_B)[9]. The Indian government collects tariff revenue equivalent to area GKVQ. There are economies of scale in production, indicated by the line passing through point B and declining through points H and E, which can be interpreted alternatively as the long run average cost curve of a single firm which is an "envelope" of short run cost functions at successively increasing plant scales, or as indicating the minimum average cost level of numbers of firms in a competitive industry which go down as various external economies come into play as the industry's total output increases. In this example the line is drawn so that the industry (whether an individual monopoly firm or a competitive

[9] If there were also Indian production, the economies of scale following the FTA might be achieved in various ways; e.g. through a merger of the Indian and Bangladesh producers, or by the relocation of competing producers in one of the countries to take advantage of external ("agglomeration") economies there.

industry) just breaks even in selling in the Bangladesh market, at point B.[10] However, even though there are economies of scale and average costs decline with increasing output, the long run cost curve flattens out at some point beyond point E and remains above the going world price P_W, so that the Bangladesh industry is not competitive internationally even when all the available scale economies are exhausted. Hence, before the FTA when it has to pay the general Indian tariff, the Bangladesh industry cannot compete with ROW suppliers in the Indian market.

After the signing of an FTA between Indian and Bangladesh, the Bangladesh industry has duty free access to the Indian market. First considering the case of a single discriminating monopoly producer, total output expands to OM, of which OY (=WM) is sold in the domestic Bangladesh market, and OW is exported to India. Profit is maximized by equating long run marginal cost with marginal revenue in the two markets. In Fig 13 as drawn, this turns out to require a price reduction and sales expansion in the Bangladesh market, but the price and output supplied to the Indian market remains the same as before the FTA (or strictly speaking lower by a margin small enough for buyers to switch all their purchases from imported supplies to the Bangladesh based producer).[11] From the Bangladesh perspective, these changes increase economic welfare by producer surplus (monopoly profit) area GF*a*Q on sales in the Indian market (the excess of the selling price OG over the cost of production MH (=OF) times the quantity sold), plus producers' surplus on sales in the Bangladesh market equivalent to area UFZP, plus increased consumers'surplus in Bangladesh equivalent to area AUPB. However the Indian government loses all the tariff revenue on the displaced imports from ROW (area GKVQ) and there is no change in Indian consumer welfare. With the demand, supply and cost parameters given in Fig 13, the tariff revenue loss to India exceeds the Bangladesh welfare gains, so that the FTA for this industry results in a net joint welfare loss for India and Bangladesh together, and *ipse facto* a net global welfare loss after accounting for the unknown loss to the ROW exports to India that have been displaced.

Fig 13 next illustrates an alternative scenario in which the Bangladesh industry is competitive in the sense that at all points along the long run economies of scale curve, competition between firms drives prices down so as to just cover their total costs including "normal" profits on their investments. After the FTA the Indian market becomes accessible and industry output expands from OL to ON, and the pre-FTA price OA in Bangladesh drops to OJ (=NE). The new equilibrium point at E is determined by the intersection of the economies of scale supply line and an aggregate demand curve which is the horizontal sum of the demand curves in the Bangladesh and Indian markets. This is represented by the segmented line ABCDE, the flat portions indicating that prices cannot exceed the tariff- inclusive prices from ROW in Bangladesh and India, the first downward sloping segment representing the Bangladesh demand at price below the tariff inclusive price, and the second and final downward sloping segment representing the total demand in both Bangladesh and India at prices below the Indian tariff inclusive price i.e. the horizontal sum of the segments CS and QR of Bangladesh and Indian demand at those prices. In the new

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10 This is an arbitrary starting point to simplify the diagram and the exposition. The same general points could be made with a lower or higher cost curve over this range. In the former case, the base scenario for the monopoly interpretation would involve some profits earned in Bangladesh, and in the base scenario under competition the starting price in Bangladesh would be lower than in Fig 13. In the latter case there would be no initial production in Bangladesh, but production might become feasible once access to the Indian market becomes possible with the FTA.

11 The new total production level and the discriminating monopoly profit maximizing prices are determined by the intersection of the long run marginal cost curve (not shown in this diagram) associated with the long run average cost curve, and the marginal revenue from incremental sales in the two markets (the dashed "total" marginal revenue line). Because of the discontinuity in the Indian market marginal revenue curve resulting from the kink in the demand curve at point Q, it turns out that the profit maximizing price in India is just marginally lower than the pre-FTA price WQ, while the profit maximizing price in the Bangladesh market is somewhat below (by distance AU) the pre-FTA price.

equilibrium, competition between the firms keeps the price in the two markets the same[12]. From the Bangladesh perspective, compared to the pre-FTA situation there are no producer surplus welfare gains, but on the other hand in this example there is a major consumer welfare benefit equivalent to consumer surplus area AJSB, the result of the price cut from OA to OJ, and a consequent demand expansion from quantity OL to quantity OT. From the Indian perspective, tariff revenue equivalent to area GKVQ has been lost, but this is to a large extent compensated by a welfare benefit to Indian consumers equivalent to consumer surplus area GJRQ. Overall, with the parameters assumed in Fig 13, there is joint net welfare gain for Bangladesh and India taken together, with the consumers' surplus benefits in both countries exceeding the Indian Customs revenue loss. Conceivably there would also be a net global welfare improvement, depending on the producer surplus losses of the displaced ROW exporters to India. However, as emphasized previously, it is evident from the diagram that whether or not there is a joint or a global welfare gain from the FTA depends entirely on the parameters. The presence of competition increases the probability that economies of scale will lead to positive joint and global outcomes, but certainly does not guarantee that this will be the case. Conversely, it should be noted that economies of scale accompanied by monopoly power do not necessarily mean that there will be a negative joint welfare outcome, because discriminating monopoly prices may be far enough below the pre-FTA prices as to create consumer welfare gains which, added to monopoly profits, exceed the Customs revenue losses from the diverted ROW trade.

9. ALLOWING FOR PRODUCTIVITY CHANGES

Many factors affecting the costs and productivity of the industries that will be affected by an FTA are occurring continuously. Unless there are good reasons to do otherwise, in most circumstances it will be preferable to work with current or recent observed prices, and costs inferred from these prices after allowing for known indirect taxes. However, if there are well substantiated reasons for believing that the observed prices and the costs inferred from them are influenced by temporary factors (e.g. a drought or a strike may temporarily increase the price of a key raw material), or if already observed trends in important variables are expected to continue, the interest of the FTA simulation may be increased if it is also run with estimated supply functions which assume that the temporary factors have abated or that the trend factors have continued. If they are likely to be substantial, productivity improvements may be of special interest in this regard. For example, in a case study to simulate the likely effects of an India-Bangladesh FTA on the cement industry, it turned out that the Bangladesh industry had been through a very recent expansion in which many small high cost cement grinding plants had been established and considerable excess capacity created. However, at the time of the study a shakeout of small unviable firms was already under way, prices were coming down, and there were good prospects that higher capacity utilization of the remaining firms would substantially further reduce the prices at which they could be viable. Consequently, based on estimates provided by industry executives of break-even prices for medium scale plants at higher capacity utilization levels, two simulations of the likely effects on this industry of an FTA with India were run, one using a Bangladesh supply function based on actual prices and costs, and another using a supply function based on estimated alternative lower costs at higher average capacity utilization levels and with on average larger cement grinding plants.

In terms of the simple diagrams used in this paper, this kind of productivity improvement would be represented by a downward shift in the relevant supply curve, which could occur in either or both of the FTA member countries. Other exogenous changes in costs could similarly be represented by upward

[12] If the industry uses imported inputs that are subject to tariffs, prices will generally be lower in the importing FTA market, because tariffs on the inputs will be exempted or rebated when production is exported, but not when the production is sold domestically. In this case, with competition, the value-added margin in the two markets (between the cost of the imported inputs and the selling prices of the final product) will be equalized, not the selling prices themselves.

or downward shifts in supply curves. Whether it will be worthwhile running alternative economic welfare simulations based on alternative projections of cost and supply conditions is a matter for the individual analyst to decide, based on the objectives of the study and the level of detail of the industry-level data being collected. In this regard, it will be important to bear in mind that the simulated outcomes in any case will be very rough approximations only and subject to large margins of error, for example if difficult-to-quantify "bootleg" or "technical" smuggling muddies the situation in the industry. For this reason, frequently not much will be gained by running alternative simulations if the productivity or other changes are small: only very large potential changes may be worth considering.

10. FOREIGN DIRECT INVESTMENT

Sometimes an FTA may include special provisions to encourage firms already established in one of the countries, to undertake investments in the FTA partner country. Whether not this is the case, an FTA is likely to make such cross-investments more attractive, because firms already operating in a country will have already established marketing networks and knowledge, and experience with their own domestic market that will generally give them an advantage if the FTA opens up profitable sources of supply in the other FTA member country. They may therefore make direct investments in the partner country, perhaps building their own new production facilities or entering into joint ventures with local producers. These possibilities need to be recognized in simulating the likely economic welfare consequences of the FTA. In particular FDI from the other partner country will affect the allocation of the producer surplus benefits from exports that are induced by the FTA, most obviously because foreign firms including especially firms from the FTA partner country will share in them. In some cases multinational firms-perhaps already established in the importing FTA country-will also participate. Hence shares of the producer surplus benefits from exports could go to some or all of the following:

- The government, through its profit or corporate taxes
- In the form of intra-marginal producer surpluses insofar as domestic factors of production are in inelastic supply: for example labor used to produce and ship the new exports.
- The additional after tax profits of domestic entrepreneurs attributable to the new exports
- The share of foreign firms in the after tax profits attributable to the new exports.

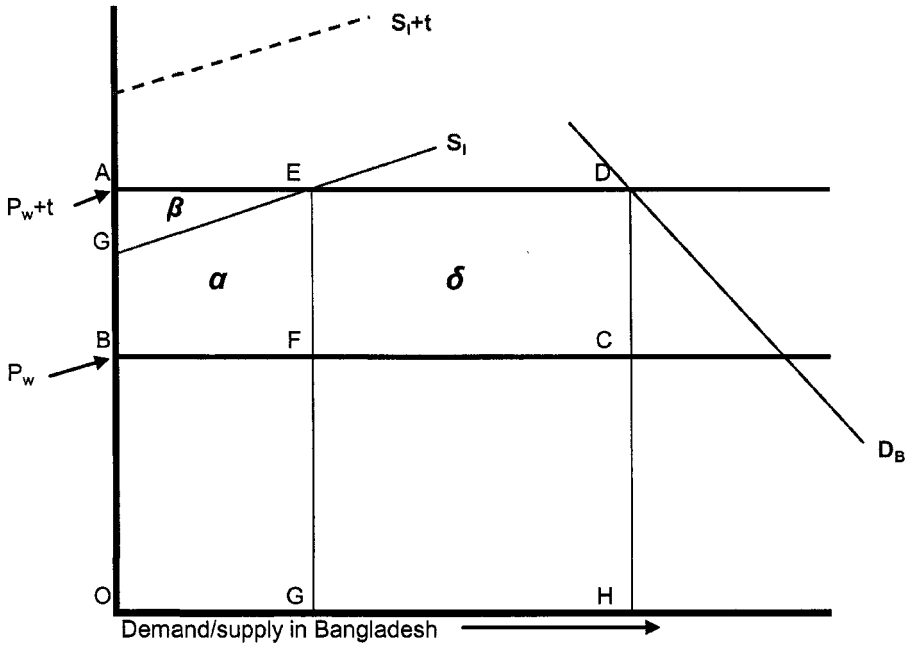
As noted in the earlier discussion of economies of scale, new investment based on potential profits resulting from a new market opening up with an FTA, may unblock a situation of inertia in a domestic market where economies of scale are potentially available, but where the resulting extra profit is perceived to not warrant the risk and disruption that is likely to result if the required investments are made. But if firms from the FTA partner country are involved (e.g. Indian firms investing in Bangladesh for the first time, basically to supply India, or Bangladesh firms investing in India to supply the Bangladesh market) as newcomers they may be less inhibited by the perceived risks of disrupting the domestic situation, and their presence in that case will further increase the probability that there will be economic welfare gains from scale economies which increase productivity in the domestic market, in addition to the economic welfare gains from the producers' surpluses associated with the new exports.

These considerations are separate from, but linked to, other improvements in know-how and productivity that may accompany FDI, both FDI from FTA member countries, and FDI from outside the region. If the FTA, by enlarging regional markets, attracts more FDI of both kinds, the resulting long term productivity benefits may be substantial and may outweigh some of the trade diversion costs of the FTA. However, analyzing and quantifying these possible benefits is especially problematic in the context of the industry level simulations being discussed in this paper: the most that can be suggested is that analysts should be aware of and take these possibilities into account in their evaluations.

Concluding comments

As noted at the beginning, the taxonomy of possible cases presented in this paper is far from complete, but it is hoped that it will nevertheless be useful in dealing with the many variants that are sure to arise in practice. To supplement it, the appendix outlines some practical suggestions that were made in connection with industry level case studies of the likely welfare outcomes of a proposal for an India-Bangladesh FTA, that was periodically discussed by the two governments from about 2002 onwards. Similar practical questions, sometimes involving conceptual issues, would be sure to come up in empirical studies involving either FTAs or preferential trading agreements between other countries.

Fig 1
FTA with no Bangladesh production and no Indian supply before the FTA. Simple trade diversion case, ΔW<0



Assumptions:
- No Bdesh production
- No smuggling
- FTA case: zero preferential tariff (100% preference)
- No price effects in India=no consumer welfare effects in India
- No VAT or other domestic taxes

Pre-FTA:
- Bdesh price=OA=cif price from ROW=OM+tariff=Pw+t
- Demand=Imports from ROW=OH
- Customs revenue=area ABCD=$\alpha+\beta+\delta$
- Indian supply=zero

Post FTA:
- Bdesh price unchanged=OA
- Indian supply=OG
- Imports from ROW=GH
- Reduced Bdesh Customs revenue=area ABFE=$\alpha+\beta$
- Indian exporters' producer surplus=area AGE=β
- Bdesh terms of trade loss=area GBFE=α
- Bdesh economic loss=reduced Customs revenue=$\alpha+\beta$
- Net economic loss (India+Bdesh)=α
- Economic loss for ROW: producer surpluses on displaced exports OG=?

Fig 2
FTA with Bangladesh production and no Indian supply before the FTA: simple trade diversion case, ΔW<0

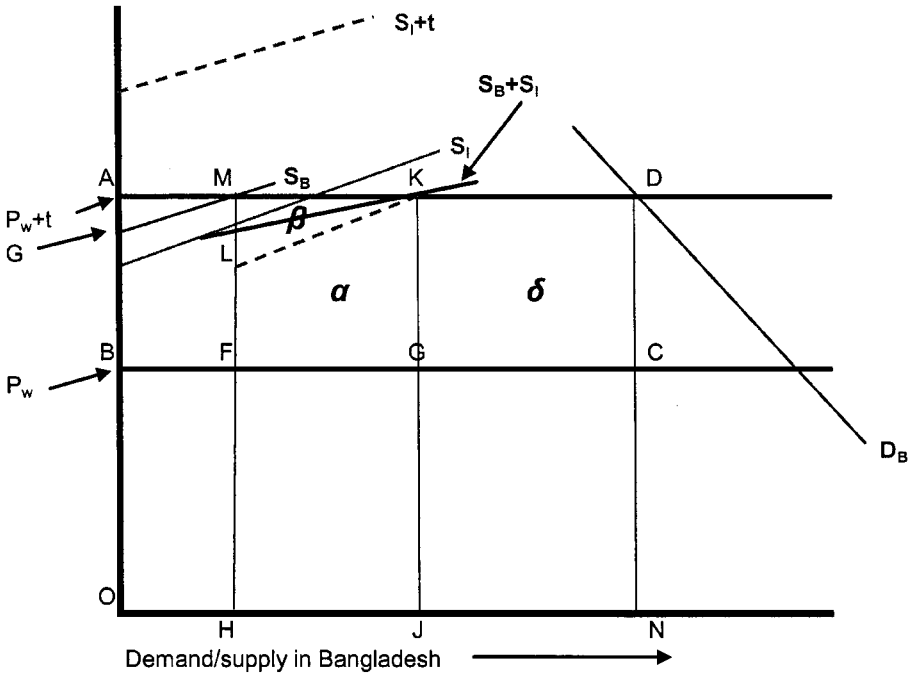


Fig 3
FTA with Bangladesh production and with Indian supply before the FTA: simple trade diversion case, ΔW<0

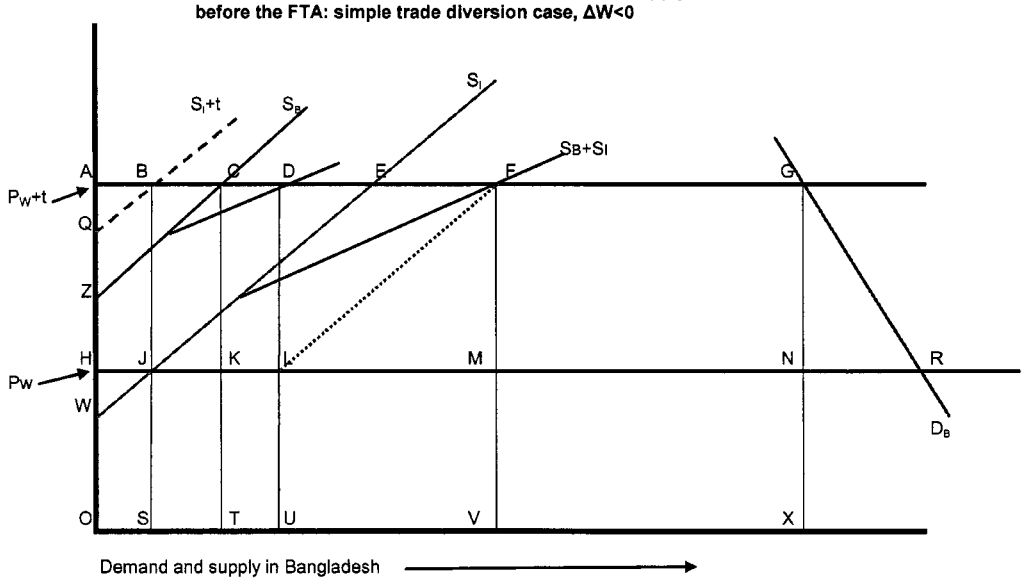


Fig 4
FTA with no Bangladesh production and no Indian supply before the FTA. Simple trade creation case,ΔW<0

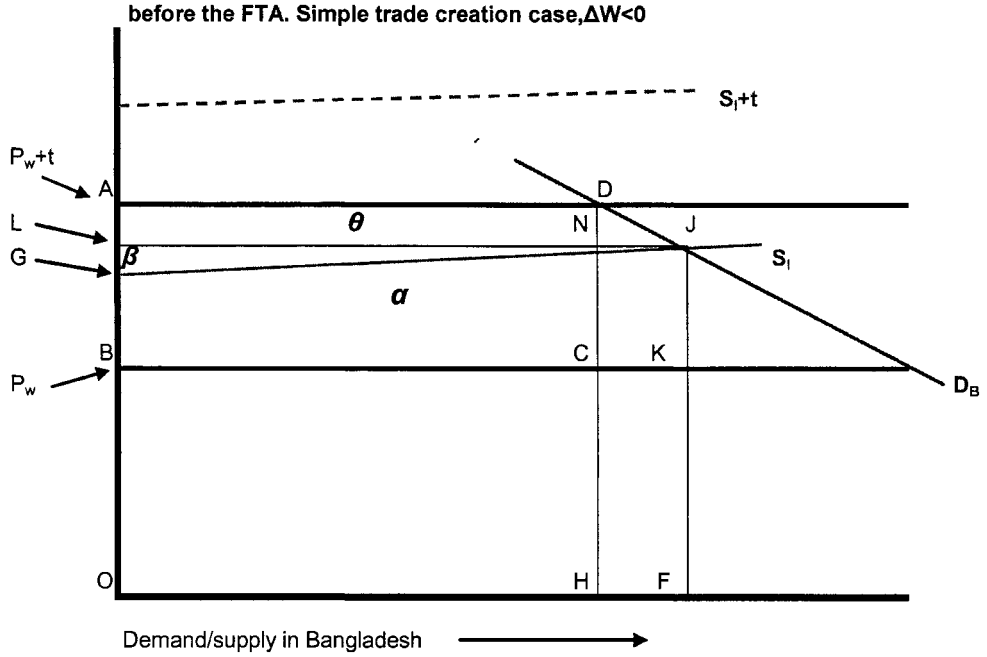


Fig 5
FTA with no Bangladesh production and no Indian supply before the FTA. Simple trade creation case,ΔW>0

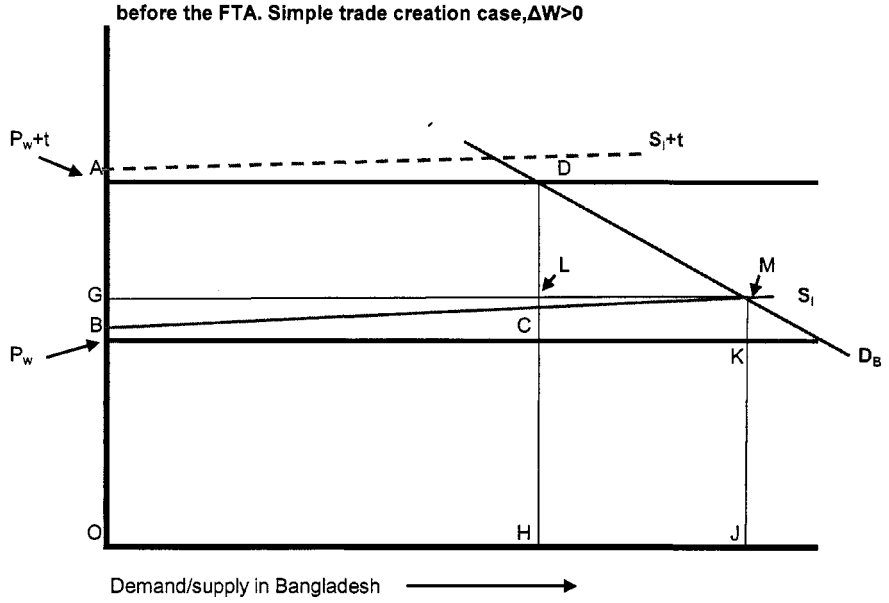


Fig 6
FTA with initial Bangladesh production and no Indian supply before the FTA. Bdesh production eliminated after the FTA. ΔW>0

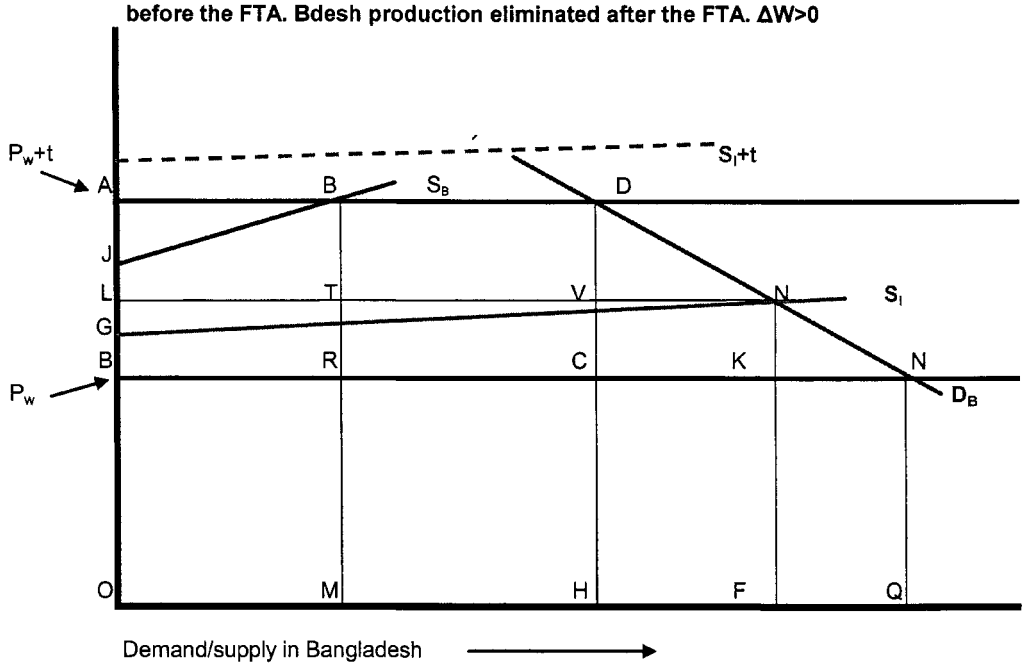


Fig 7
FTA with initial Bangladesh production and no Indian supply before the FTA. Some Bangladesh production remains after the FTA. ΔW<0

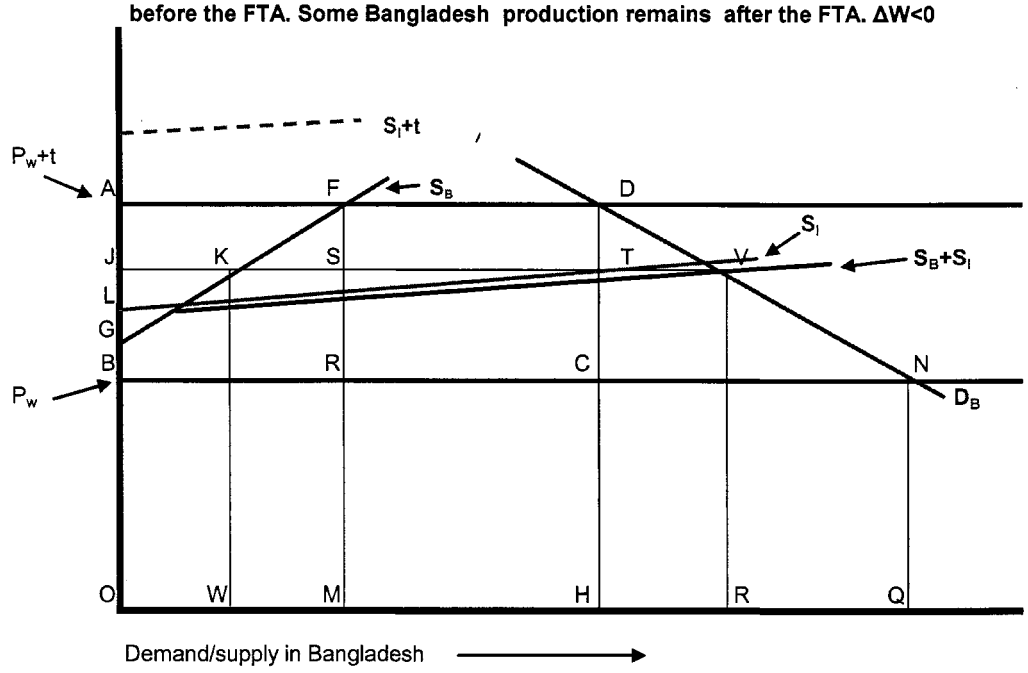


Fig 8
Effects in Bangladesh of FTA with India allowing for imported intermediates

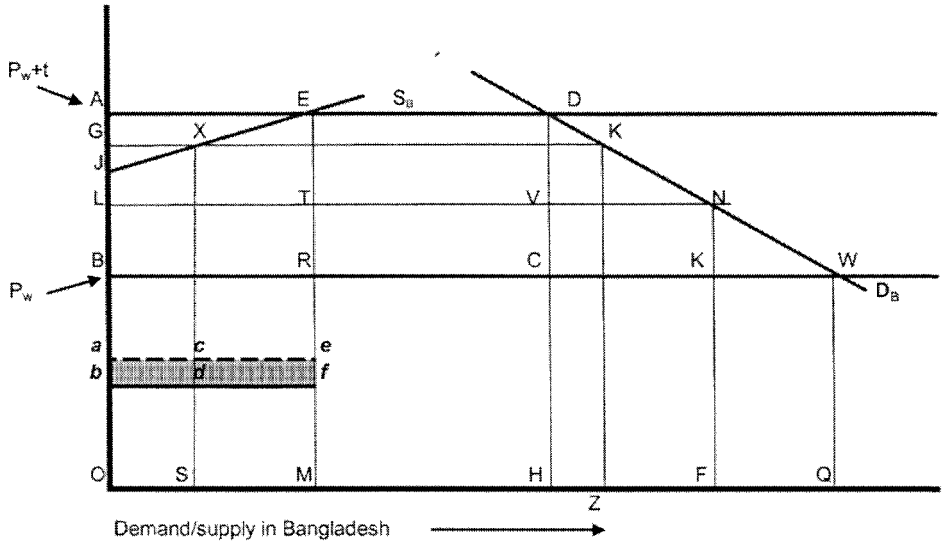


Fig 9
Consumer welfare effects in the exporting country

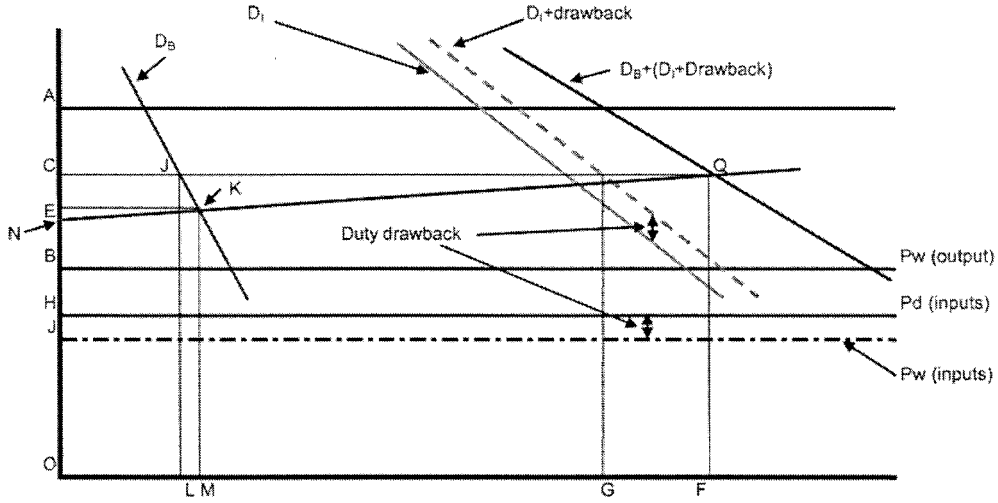


Fig 11
FTA with no Bangladesh production and no Indian supply before the FTA. Simple trade diversion case with bribes. Actual tariff+bribe=official tariff

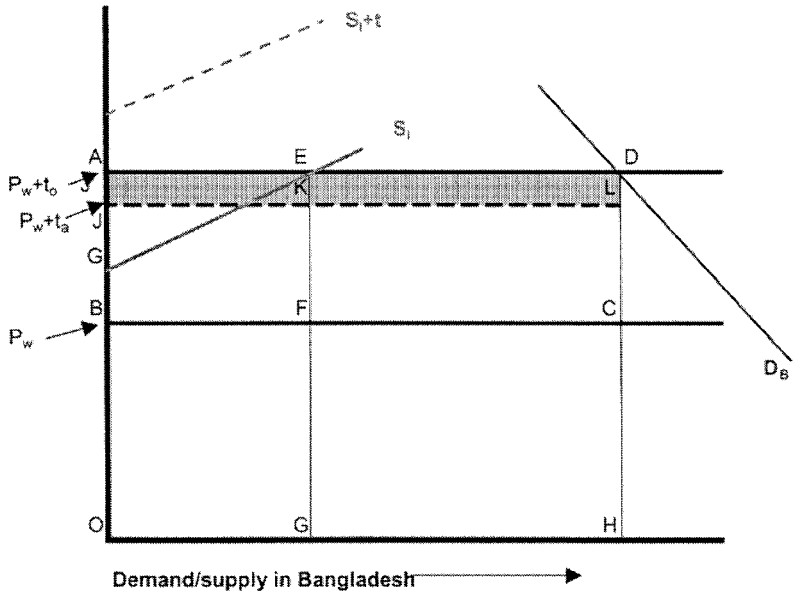


Fig 10
FTA with no Bangladesh production and "bootleg" border smuggling from India before the FTA

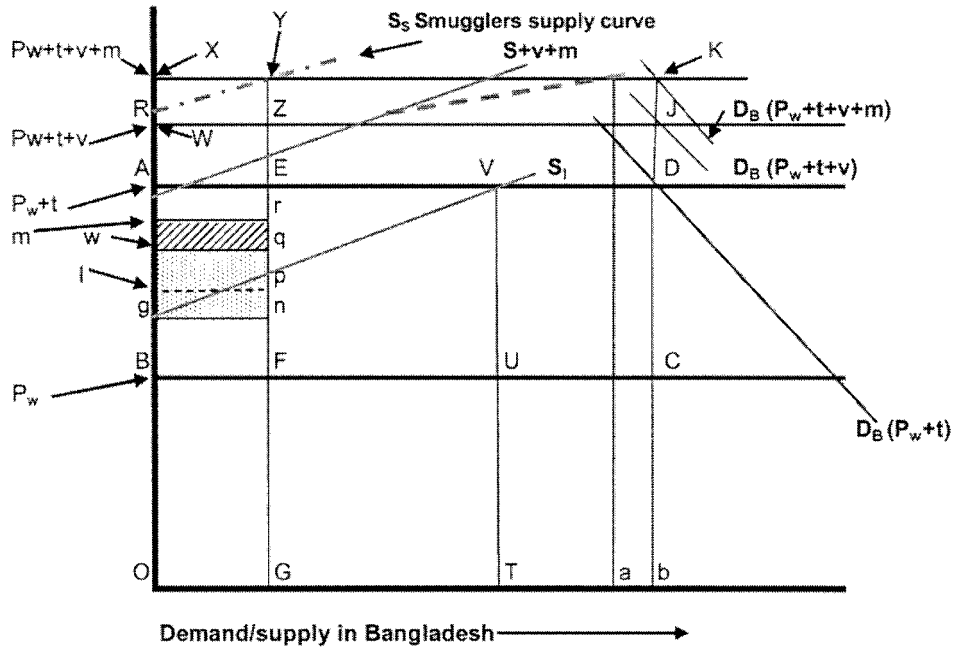
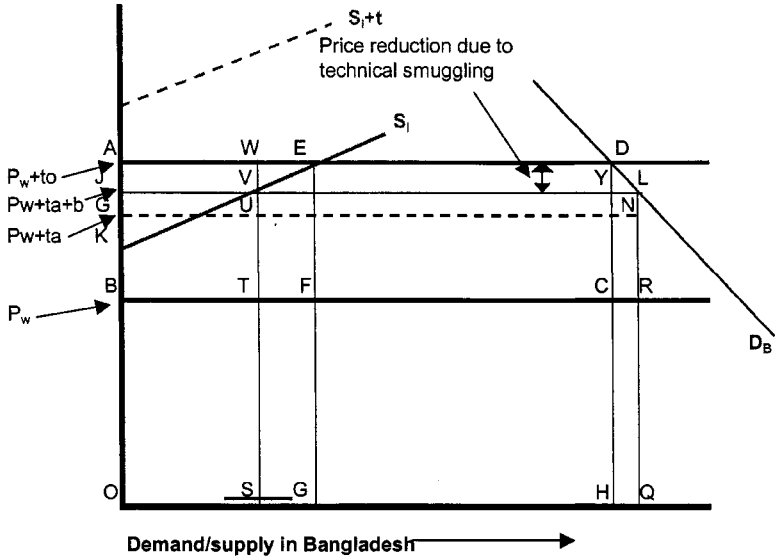
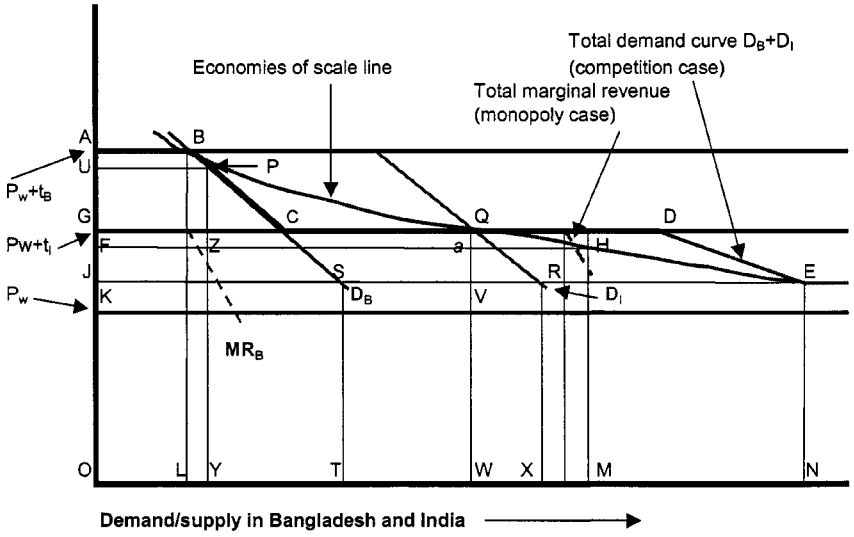


Fig 12
FTA with no Bangladesh production and no Indian supply before the FTA. Simple trade diversion case with bribes. Actual tariff+bribe<official tariff



Pw=world (cif) import price from ROW
Pw+ta=world price + actual tariff
Pw+ta+b=world price + actual tariff + bribe
Pw + to=world price + official tariff

Fig 13
FTA with economies of scale. Bangladesh production, no Indian production, higher tariff in Bangladesh than in India



APPENDIX

NOTES ON OBTAINING AND DEALING WITH SOME OF THE BASIC INFORMATION NEEDED FOR THE ECONOMIC WELFARE CASE STUDY SIMULATIONS

(EXAMPLE: SIMULATING THE WELFARE EFFECTS OF AN INDIA-BANGLADESH FTA)

W=Economic welfare
ROW=Rest of the World
NTB=Non Tariff Barrier
MFN=Most Favored Nation

SOME KEY BITS OF INFORMATION

This summarizes the basic bits of information for each product that are needed to do the economic welfare simulations for manufactured products. The basic principles are the same for agricultural and other primary products, but the sources and treatment will differ in some important ways from what is suggested here.

Some of the suggestions below assume that the product is reasonably homogeneous i.e. that we are dealing with the basically the same product in India and Bangladesh and being imported from or exported to ROW. In practice in many cases there will be a number and perhaps many differentiated versions of a "product" with varying specifications and prices within a given industry. Suggestions on how to deal with this are given separately below.

It will usually be possible to obtain some of the required information from official statistics and publications, but surveys and discussions with people in or associated with the industry will also be needed

1 Estimates of current total imports, exports and production in India and Bangladesh.

Ideally we need estimates for the current year corresponding to the year in which the surveys are being done i.e. for 2002-03. We should assemble what is available from the official trade statistics and production statistics, while recognizing that they will usually be out-of-date. They will often be too aggregated, there will be concordance problems between production and trade statistics, and statistics on informal trade are by definition missing. Producers, traders and trade associations may sometimes have better and more up-to-date information than official sources. But exact accuracy is not needed: the purpose is just to be able to use plausible numbers in the economic welfare simulations.

2. Current (at the time of the surveys) MFN tariff rates and other import barriers (if any) for the finished product in India and Bangladesh

In India this means the Customs duty and the Sadd (before it was abolished in February 2004), anti-dumping duties if any, and NTBs if any. NTBs could include the effects of technical standards or regulations, SPS standards, state trading enterprise monopolies (especially in the case of agricultural products), and the effects of other regulations such as the rules on maximum retail prices in the case of consumer goods.

3. If there are exports, current export mechanisms and incentives. For example, whether or not temporary duty free admission, and/or drawback and (in India) the DEPB (Duty Exemption Pass Book) scheme is being used, and if so the drawback and DEPB rates. Also, whether the exports are coming from EPZs or bonded warehouses. If possible, obtain information on the value of imported inputs included in actual exports. If there are no exports, but preliminary investigation suggests that exports might be feasible with

an FTA, ask people in the industry for an approximation of the import duty component of their inputs which would be refunded or exempt if they were to export.

4. Estimates of the border prices (cif) of the sample finished products being produced in India and estimates of the border prices of the sample finished products being produced in Bangladesh

This means estimates of the actual price difference between the locally produced product and the price of the same product at the border (ideally cif, but c&f will suffice). The relevant domestic price is the ex-factory price before excise duty and sales taxes in India, and before VAT or other taxes in Bangladesh. There will be various cases to deal with.

(a) Producers and/or traders consider that the domestically produced product is competing with the same *or similar* imported products *which are paying normal import duties.* Note that the imported products with which the local product is competing need not be identical; they may have different specs and sell in different price brackets, for example. But if local producers and/or traders consider them to be competing I suggest we assume that the ex-factory price of the domestic product has been raised above its border (cif) price by the tariffs which apply to imports plus prevailing importer/distributor margins.

The importer/distributor margins will include port and transport costs to get the imported products to the place and point in the distribution chain at which they are competing with the domestic product e.g. a trader in Calcutta if we were estimating the border price of a domestic product selling to traders there. In practice we should probably use an approximate percentage distribution margin rather than absolute values. This could be expressed as a percentage of the CIF price e.g. if the relevant margin of an importer/wholesaler is 15% of the cif price, and the protective import duty rate is 25% of the cif price, then the cif price of the domestic product would be derived from the domestic price as follows: Pcif=Pd/(1.40). To summarize, in order to estimate the border (international price) of the sample domestically produced product, we need to know:

- Whether or not the product is competing with imports
- The protective import duty rate being paid by the competing imports
- The point in the distribution chain at which the competition with imports is taking place, and the distribution margins (including port and transport costs) on imported products that are being incurred up to that point by the importers.

(b) Producers and traders consider that the sample local product is not directly competing with imported products and the local product is not exported. This may happen when there are no or few imports, or if imports are of specifications or qualities which are quite different from and have little influence on sales of the domestic product. In this case, if the only protection against imports is from protective tariffs, by definition the tariffs are redundant in the sense that domestic prices exceed border prices by less than the sum of the tariffs and distribution margins. In this case the border (cif) price of the domestic product would ideally be directly estimated by comparing its domestic price with the international prices of the same or close substitutes. It may be possible to get rough estimates of international prices by asking the local producers and traders and by checking industry and trade magazines. However, because of quality and specification differences and many other problems price comparisons of this kind are difficult and unreliable. In that case it may be necessary to make some arbitrary assumptions e.g. that the excess of the domestic price over its border price is equivalent to say half the mfn protective tariff plus an estimate of the import distribution margins on different but similar products. Guesses of this kind, that the realized nominal protection is somewhere between zero and the applicable tariff, are plausible since some exports would be expected if the realized nominal protection were below zero i.e. the domestic price were lower than the international price, and imports would be expected if the domestic product were priced up to fully take advantage of the tariff. (Note however that

this is not so simple if there are big gaps between cif and fob prices due to international transport costs that are high relative to the values of the goods being shipped. These gaps are very large in the case of major primary agricultural commodities such as wheat, rice and coarse grains in South Asia).

(c) Producers and traders consider that the local product is principally competing with smuggled imports. In this case nominal protection is determined by the expenses and margins of the smugglers which are presumably less than the tariff protection plus trading margins of legal imports (or what these would be if smuggling has driven out formal importing). If the smuggling expenses and margins cannot be estimated directly, as in the redundant protection case it may be necessary to guess levels that are somewhere in between zero and the formal tariffs plus formal margins. Note that this case covers both conventional smuggling which physically bypasses Customs posts, and "technical smuggling" in which there is misclassification, under invoicing etc and associated bribes at the Customs posts. When either form of smuggling is important, it will generally be useful to ask traders and affected businesses about the approximate order of magnitude of price differences resulting from smuggling. For example, manufacturers and traders could be asked by approximately what percentage domestic prices are lower than they otherwise would be if there were no smuggling. Bear in mind, however, that import prices may fully reflect the official tariffs even if there is substantial smuggling, if at the margin there are some fully legal imports that pay the legal tariff, or more likely, if most of the difference between the official tariff and actual tariffs paid consists of bribes.

(d) There are no competing imports but the product is being exported. In this case the export price is by definition the world price, except that it is fob rather than cif and hence can be used directly in the economic welfare simulations of preferential exports without the need to first estimate fob prices corresponding to cif prices. However, even if the product is an exportable we still need an estimation of the nominal protection of the product in the domestic market i.e. by how much domestic prices exceed world prices (in order to estimate whether with an FTA there would be exports from Bangladesh to India or vice versa). If the exported products and the domestically sold products are identical, we would just need the domestic and the export prices. However, frequently there is quality, specification, and other (shipment quantities, credit terms, packaging etc) differences between apparently otherwise identical domestically sold and exported products which invalidate direct price comparisons even in this case. If so, as a first cut, I suggest assuming that the domestic prices exceed export prices by tradable input nominal protection i.e. by the extent to which the cost of tradable inputs is increased by tariffs and other forms of protection above their cost when the final product is exported i.e. when the producers benefit from drawback, duty free admission and other benefits received when the product is exported. This would approximate a competitive equilibrium in which domestic prices of the finished products exceed export prices owing to the generally tariff free conditions for tradable inputs, but where value added margins of domestically sold products would equal value added margins of exported products. However, if there is reliable information that the industry is not competitive, the value added margins on domestic sales could exceed the export value added margins, in which case the domestic would fall somewhere between the competitive equilibrium price and the cif price plus protective tariffs plus importer margins.

(5) Estimates of the tradeable input and import duty component in the prices of the finished products.
Some information on this is basic: it is needed to (1) if there are no actual exports, estimate potential export prices after allowing for likely duty drawback or tariff exemption for inputs used in exports (2) discuss the compatibility of FTA exports with rules of origin ratios being proposed for the FTA (3) estimate the indirect fiscal costs if a domestic industry using imported inputs contracts as a result of competition following an FTA

However, extremely detailed information (e.g. a detailed breakdown of the cost of all the inputs used to make each product) is not essential and it is not recommended that firms be asked to provide it. Instead, I suggest just asking them for the total cost of imported inputs and the customs duty and the

indirect tax (e.g. VAT in Bangladesh, additional duty in India) components of that, if possible for individual products, but failing that in relation to their total sales. Equivalent information on domestically produced inputs would be useful but is not essential and I suggest not asking for it unless the firms indicate that they would switch to sourcing a substantial share of their inputs if they were to export.

Strictly speaking, if local inputs are "fully tradable" the indirect fiscal tariff revenue effects should be allowed for, but I suggest ignoring this complication initially and just following it up later if it would make enough of a difference to the final outcome.

This means provisionally treating local intermediate inputs as non-tradables, and not worrying about the tariff revenue effects if the simulations suggest that the industry would contract with an FTA. In that case the revenue effect would occur through domestic indirect taxes, to which imports of final goods that substitute for the displaced domestic production are also subject. Specifically, if with an FTA production of x in Bangladesh declines and is substituted by imports from India, VAT on the increased imports from India substitutes for VAT lost on the local production. It doesn't matter if local tradeable inputs subject to VAT are used to produce x, because the total loss of VAT resulting from the decline in production is unaffected owing to the VAT credit available to the producers of x. There would be some net revenue changes from indirect tax repercussions if the price of x goes down after the FTA, but this effect will generally not be big enough to worry about given the other approximations being made.

As a practical matter, manufacturing industries in India are mostly much more integrated with local suppliers of intermediates than manufacturing industries in Bangladesh. Consequently it will be more important to obtain at least rough estimates of the role of imported intermediates for a Bangladesh industry than for the same industry in India. If information on intermediates is difficult to obtain in India, I suggest we deal with that in two phases (1) by pretending that the Indian firms don't use any imported tradeable inputs and just calculating the welfare changes in India on that assumption (2) having a look at the likely indirect impact in India through tradeable inputs on the basis of whatever evidence on their likely role can be obtained, and reporting some upper and lower bound adjustments to the welfare changes based on that.

SUMMARY OF PROCEDURES

(1) Find or estimate ex-factory prices
Preferably directly from manufacturers or indirectly by working back from wholesaler prices (need in that case to know/estimate/guess typical wholesaler margins). For primary agricultural products domestic wholesale prices are good enough. No need to go back to farm gate prices. But to work out trade direction potential need to remove domestic taxes, if any (as for manufactured products discussed below).

(2) Remove domestic indirect taxes from ex-factory prices (if included)
India: excise tax (=VAT) and sales taxes (state or central)
Bangladesh: VAT
Price (2) in India is the price with which Bangladesh exporters would have to compete.
Price (2) in Bangladesh is the price with which Indian exporters would have to compete
Need to have a clear understanding of how these taxes operate, especially the bases for the taxes and how they relate to each other.

(3) If the product is not being exported anywhere: estimate potential export supply price
Find or estimate drawback amount and other incentives the product would receive if it were exported and deduct them from the tax-free ex-factory domestic price.

In India and Bangladesh: estimate the import duty component of tradeable inputs (raw materials) and the VAT on inputs if included in the costs of raw materials. Add any other export incentives if significant (usually they won't be estimates are very rough anyway).

In India, if the firm providing the price information (e.g. a wholesaler) is not itself exporting, but other firms are exporting the product, could use the standard published drawback or DEPB (Duty Exemption Passbook) rates for that product

(4) If the product is actually being exported: obtain or estimate actual export prices.
Beware of unit values however!! Use them as a cross check, but recognize that they can be very misleading.
The export prices are to any non-preferential markets.

(5) Check if the product is already being exported from India to Bangladesh or vice versa and the prices in this trade.
Is this trade legal or illegal or both?

(6) If the Bangladesh actual export price or potential export supply price <the Indian tax –free ex-factory price, the product could potentially be exported to India with an FTA.
Note: need to allow for port costs to fob stage and transport costs to India.
If the exports would be feasible with an FTA, the W simulations should be done

(7) If the Bangladesh export supply price> the Indian domestic ex-factory price go no further. Then no W simulation is needed of Bangladesh exports to India under an FTA

(8) If the Indian export or potential export supply price< the Bangladesh ex-factory tax free price, with an FTA exports will increase or there will be exports of products that were potential exports prior to the FTA
W simulations needed of effects in both India and Bangladesh

(9) If the Indian export price to ROW or the potential export supply price > Bdesh domestic ex-factory price, no exports will occur. No W simulation needed.

(10) For some products there will be no trade either way with an FTA (unlikely however)

(11) For other products, with an FTA it is possible that Bangladesh exports could go to India and that the same products would be exported by the same Indian firms to Bangladesh.

If this happens it is probably because of high duty drawback rates in one or both countries. When selling domestically the firms pay the normal duties on their inputs and could be at a disadvantage in competing with an exporter in the other country which receive drawback. But the same thing could happen in reverse i.e. firms in country X can compete in country Y using drawback, and the firms with which they compete in country Y can compete in country X's domestic market, also through access to drawback.

In that case the exports might be excluded by rules of origin under the FTA. Discuss when doing the simulations.

This is obviously a perverse case with negative welfare consequences in both countries.

(12) Estimates of the international price of the product are needed for the W analysis.

Obtain directly, OR

Infer by deflating domestic tax-free prices by the protective tariff rate to get an estimate of border (cif) prices. May also need to deduct port costs if they are important for low value products (e.g. cement and primary products).

Cross check with unit values (import and/or export) if available)

Note: if tariffs are high and redundant deflating by the tariff will underestimate cif prices. Prima facie check: if imports < say 5% of domestic sales of closely similar or the same products, the tariff is likely to be redundant.

IMPORTANT NOTE

For most manufactured products there will be large price differences depending on specification and quality differences. In these cases when comparing prices in India and Bangladesh, it is **absolutely essential** to be sure that the same or closely similar specifications of the product are being compared. Ideally, if there are a number of specs, comparisons of two or three specs would be made and the average of these price differences could be used as a basis for the W simulations. Same warning for estimation of international prices.

If one country (say India) is exporting product X to ROW and the other country (Bangladesh) is importing product X from ROW over a tariff, it is highly unlikely that, with an FTA, there will be export potential for the importing country (Bangladesh) in the exporting country (India). If the comparison of prices in the two countries suggests otherwise, it is probably a misleading comparison and needs to be revisited.

NOTES ON ESTIMATING SUPPLY FUNCTIONS

In most case studies, just one "long run" supply curve should be used in the simulations i.e. a supply curve showing prices that cover total costs and give a reasonable (i.e. Marshallian "normal") profit. In exceptional cases the results with alternative estimated supply curves could be used e.g. if (as appeared to be the case in the Bangladesh cement industry) fixed costs are important, capacity utilization is very low, and costs and prices were probably temporarily abnormally high. In such cases the simulations could be run with an alternative supply curve, providing knowledgeable people in the industry are able to provide reliable estimates of costs and prices in more normal circumstances. This is of course relevant for the supply situation in both the importing and exporting FTA member country.

Most of the time, in investigating an industry, it will be found that individual firms are operating at below the capacity utilization they would prefer, while others may be close to full capacity. That is quite normal, and special adjustments should not be made on that account Of course, there are also a lot of other factors that affect costs, as well as capacity utilization e.g. power supply problems, input shortages, strikes etc. In the basic runs of the simulations it is suggested that all these factors should be taken as givens. If some of them appear to have a really large overall affect on prices and costs, and someone knowledgeable is willing to estimate or guess how much difference they make, as a second stage run some alternative simulations could be run using different assumptions about supply functions (in principle these could include simulations with upward shifts of supply curves, of course e.g. there may be some temporary factors operating which are depressing prices).

In addition to the positions of the supply curves (how high or low the costs are), the slopes are also a major issue. Usually it will not be possible to obtain detailed estimates, but industry experts may

be able to provide estimates or guesstimates of approximately how much lower are the costs of the most efficient intra-marginal plants or firms, than the costs of firms or plants that are just breaking even (or perhaps struggling) at prevailing price levels. A way to probe this in interviewing people in an industry,is to ask them to estimate how much lower the price level could fall below the prevailing price level before their own unit and other units become unviable. With an estimate of the approximate break even price of the most efficient intra-marginal plant, one way to proceed is to just draw a straight line supply curve between this price and the going level of prices which are presumably viable for marginal plants. Obviously, with better information on the costs of different plants, especially the least cost intra-marginal plants, both the slope and also the shape of the supply curve will change e.g. it could be much steeper, in which case quite different outcomes might be possible under an FTA : for example, rather than going out of business, some of the of the lower cost plants in the importing country might continue operating if the FTA exporters were to collude with them rather than undercutting them. If a steeper supply curve is used, that also obviously affects the producer surplus changes resulting from the FTA. With better information it would also be possible to use more complex supply curves e.g. a step function with say three steps representing the lowest cost and most profitable firms, middle of the road firms, and finally marginal firms (perhaps but not necessarily small...they may be starting up) just breaking even. But this obviously requires more resources to obtain the information, and also complicates the subsequent computations.

In estimating the high end point of the supply curve in the simplified procedure suggested above, the prevailing prices needed are actual ex-factory domestic prices (free of all domestic taxes). It should be possible to get these prices directly from manufacturing firms, or derive them from retail or wholesale prices by taking out distribution margins and taxes (for example in Bangladesh the VAT, and in India mainly central excise taxes and sales taxes). For the lowest prices at which the lowest cost/most efficient plants (or firms) would be able to make "normal" profits, the best procedure might be to ask knowledgeable people in the industry e.g. how much lower do they think the lowest cost intra-marginal efficient firm X's production costs are, than the production costs of firms that are just breaking even at prevailing prices (5%, 10%, 15% lower??). But in asking this question, it is important to make it clear that the prices should be sufficient to make a profit in relation to total costs, not just variable costs.

Still on supply functions, a distinction needs to be made between supplying the domestic market and supplying exports. For export supply, after allowing for drawback and other export incentives it is suggested that the starting assumption should be that the industry (in the long run, at least) is competitive (not necessarily in structure, but that as a first approximation its behavior approximates competitive behavior) and that firms won't export unless the gross profit margins from exporting are at least as great as gross margins selling domestically, and that these margins will tend to be equalized by competition. This means that they won't export with an FTA if the prevailing ex-factory price in the other country is lower than their export supply price (e.g. for cement the Bangladesh estimated export supply price was much higher than apparently prevailing ex-factory prices in India, and so it was plausible to assume that with an FTA there would be no cement exports from Bangladesh to India). The intra-marginal export supply price (i.e. the starting point of the export supply curve) is then the prevailing domestic (ex-factory) price level minus drawback and other export incentives. Plausible estimates or guesstimates of the likely slope of the export supply curve beyond that point would ideally need to be obtained from people knowledgeable about the industry. For many manufactured products, especially when branding and specification are important, if there is any upward slope in export supply curves (say from India to Bangladesh or vice versa) it will probably reflect increasing advertising and other marketing costs more than increasing production costs. Unit manufacturing production costs for products like these are more likely to go down rather than to increase at higher production levels resulting from exports.

STUDY OF INDIA-BANGLADESH TRADE AND TRADE POLICIES: SIMULATIONS OF ECONOMIC WELFARE EFFECTS OF A FREE TRADE AGREEMENT

A CASE STUDY OF LIGHT BULBS

1. INTRODUCTION

Demand for light bulbs is growing rapidly in both India and Bangladesh along with the spread of electricity to rural areas and increasing incomes. There is a correspondingly large and growing light bulb production industry in India, producing a wide variety of lights for different uses and with different specifications. Beginning in the early 1990s, both trade and industrial policies affecting the Indian industry have been steadily liberalized, and, by comparison with its past history, it is now much more open to imports, foreign direct investment, and technological developments in the rest of the world. The Bangladesh industry is much less developed on all these fronts. Although it is self sufficient in basic simple filament light bulbs, this is behind very high import tariffs which have increased during the past eight years and have resulted in correspondingly high ex-factory and consumer prices, which have constricted domestic demand. Similar disparities between India and Bangladesh are typical of many other manufacturing industries, and so it was felt that a case study of the likely economic welfare consequences of an India-Bangladesh FTA for the light bulb industry would be of some general interest beyond this specific case. As with other similar industries, the main impacts of an India-Bangladesh FTA in the light bulb industry would occur in Bangladesh, and there would be relatively few effects in the much larger Indian market. Consequently, the main focus of this study is on the likely economic welfare impacts in Bangladesh, where for good reasons the bilateral FTA proposal and also SAFTA are much more urgent preoccupations in policy discussions than they are in India.

In preparing the study, it was decided to focus on the case of simple 40-60 watt filament light bulbs, which are reported to be the specification with the largest demand in both India and Bangladesh. Obviously, there are many other types of filament globes –small globes for torches and other uses, standard higher watt globes of various kinds, and various types of specialized globes for vehicles, ovens, industrial uses etc -and a problem with this very limited study is that demand and production statistics and company sales data typically lump a large variety of these together. However there is enough information to treat fluorescent tube lights separately, and this has been done in another case study[13].

This study has been done using available statistics in both India and Bangladesh, but principally relies on some limited field work in India by the NCAER team responsible for the overall study and summarized in case study no 8 of their report[14], and by some limited field work in Bangladesh by the Bangladesh team. The information these two teams were able to obtain was preliminary and incomplete[15], and so the economic welfare simulations reported later in this paper are especially tentative and rely on some hopeful plausible guesses of some key parameters. However, we are reasonably confident as to the general nature and direction of the findings, while recognizing that there is considerable room for improvement in the quantitative estimates.

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[13] Trade statistics separate out specialized lights such as sealed beam vehicle headlights, ultra-violet lights, infra red lights and others, but company reports often do not.

[14] Samantak Das, Somnath Mukherjee, Sanjib Pohit and Sowmya Srinivasan (October 2003). *Economic Welfare Consequences of Tariff Preferences.* NCAER, New Delhi (mimeo).

[15] Some of the missing or uncertain empirical information could be obtained with a more extensive field work. However this may not help with some key bits of information (such as pricing, cost and input data) which firms interviewed regarded as confidential and were not willing to provide.

2. LIGHT BULBS IN BANGLADESH

2.1 Production, consumption and imports

Electricity is the major source of lighting in urban areas of Bangladesh. Most growth centres in rural areas now have electric lighting as well. The high density of population coupled with high growth rate of urbanization explain the rapidly growing demand for electric bulbs and fluorescent tube lights. According to BBS (2003), 31% of the households in Bangladesh have access to electricity. While 80% of urban households have that access, the share is only 18% for rural households[16]. However, with increased emphasis on roads and telecommunications and also with a rise in per capita income, an accelerated demand for electric light bulbs and fluorescent lamps can be predicted for the near future. The lighting industry currently estimates a growth rate of roughly 8 percent per annum for the demand of light bulbs.

Managers in a leading light bulb manufacturing firm were interviewed to elicit information on domestic production, consumption and imports as well as to get some ideas on market structure and size. According to the surveyed firm (company X) and other sources of information, import of standard light bulbs (40-60W) is minimal and practically the whole of domestic demand is met from domestic production. In the past, some attempts to import small quantities of light bulbs from abroad did not succeed in stimulating import demand. Smuggling of light bulbs from India is practically absent[17]. Knowledgeable sources argue that there are some important factors behind the absence of or low level of imports of light bulbs. First, light bulbs are extremely fragile items requiring extra care during transportation and distribution. There are not many agents who could cater to this need. Second, light bulbs are low-priced products but claim more space in transshipment. Third, light bulbs need an organized marketing and distribution network, not in evidence by many firms. In Bangladesh, for example, the interviewed firm had 100 distributors across the country to serve 27000 outlets. On that score alone, company X has a comparative advantage in distribution which explains the fact that it continues to hold 50-60% market share of light bulbs. Finally, being a low-priced commodity with relatively high transportation costs per unit, and high protective duty, volume import of light bulbs is pretty much excluded.

For example, the landed cost (66% protective duty inclusive) of a 60W light bulb imported from India would be around Tk.9/unit. Adding transport cost from Benapole to Dhaka and 15% margin each, of importers, wholesalers and retailers, the price would easily be in the range of Tk. 14-15. Poor infrastructure and transport problems result in market segmentation, at least between rural and urban markets. In consequence, local company X is able to exercise price discrimination in selling light bulbs at rural and urban markets. For example, a 60 watt bulb may cost Tk.11-12/unit in a rural market, while the same might be sold at Tk. 20 in an urban supermarket. There is thus some market segmentation by rural-urban or high and low-income characteristics, allowing for the company to practice price discrimination. Given that the ex-factory price of the local bulb is Tk. 8.7 before VAT (equivalent to a border price of 8.7/1.66 = 5.2), it is easy to see why, at Tk. 9/unit, Indian bulbs might not be imported. Add VAT (more evasion on domestic than on imports), transportation and customs clearance costs, and the fact that the local company X has a strong distribution network all over the country, it becomes clear why imports from India, and even from ROW, are hard to come by. About Tk. 6.45 million worth of imports (5% from India) did come in FY04, but these were of various types (such as energy savers, etc) other than the standard 40-60W bulbs.

In consequence, domestic production meets practically all requirements of local consumption of the standard 60W bulb, yet leaving substantial excess capacity in the local production units. To describe

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16 BBS (2003), Monthly Statistical Bulletin.

17 Confirmed by recent 2002 World Bank survey and another survey by Data International for Maxwell Stamp.

demand supply balance, we need to assume that domestic demand equals domestic supply plus stocks held. In Table 1, we present information on production and consumption of light bulbs of all watts. Valued at an average international border price (cif) of Tk 5.4/bulb, the 32 million or so bulbs sold in 2003/04 were worth about $3 million, at an average ex-factory price of Tk 10.5/bulb about $5.7 million, and at average retail prices about $7.6 million. Reportedly, 60-watt bulbs constitute the lion share of the total bulb supply. Therefore, our analysis will focus on this item.

Table 1: Production and consumption of light bulbs (all watts) in Bangladesh

Year	Domestic Prodn/consumption(million units)
1999/2000	23.6
2000/01	25.6
2001/02	27.7
2002/03	29.9
2003/04*	32.3

Note: Figures for 1999/2000 from Statistical Pocket Book Bangladesh, BBS (2000). The rest comes from an extrapolation by assuming a growth rate of 8% per annum. The manufacturers and the traders have confirmed this growth rate of light bulbs in recent years.
* According to the surveyed firm, the total consumption would be around 46 million units. However, for the sake of simplicity, we shall assume a domestic demand and supply of 32 million units as provided by official sources (BBS).

2.2 Market structure

There are many firms that produce light bulbs. According to our survey information, there are some 50 manufacturing plants producing light bulbs in Bangladesh. But only one firm, company X, producing the Phillips and two other brands, claims 50-60% of the market share (Table 2). Production of light bulbs is very capital intensive where a line that produces two bulbs per second would need an investment of $5 million. Not many firms can muster that kind of resource, but some firms are allegedly producing low quality bulbs by investing in poor quality lines.

Table 2: Distribution of market shares of light bulbs

Name of firm	Market share (%)
Transcom (TEL)	60
Super Star	10
Crown	7
HRC	1
Hero	1
Tiger	1
Others	19
Total: 50	100

Source: Surveyed firm and informed retailers.

2.3 Cost structure

Raw materials typically constitute 55% of the total cost. Labor accounts for 15%, on average for all firms (but 25% for firm X). Business overheads are around 30% (with interest payments claiming 7% and utility charges 8% of total costs)

2.4 Duties and taxes

The total protection rate of import duties on conventional filament light bulbs increased from 54.3% in 1997/1998 to 66% in 2003/04. This was done by introducing and then increasing a supplementary duty which is applied to imports but not to domestic production, as the basic customs duty came down over this period.

Table 3: Import duties on filament light bulbs (HS 8539.22.90: <=200W-other) 1997/98-2004/05

	CD	*SD*	*IDSC*	*LF*	*AIT*	*VAT*	*Total*	*TPR*
2004/05	25.0		4			15		
2003/04	30.0	25	4		3	15	90.9	66.0
2002/03	32.5	20	3.5		3	15		62.0
1997/98	42.5				3	15		54.3

CD=Customs duty, SD=Supplementary Duty,IDSC=Infrastructure Development Surcharge, LF=License fee, AIT=Advance Income Tax, VAT=Value Added Tax, Total=Total rate incl VAT and AIT, TPR=Total protective rate. For a description of how these different import taxes are applied see World Bank (2003) Trade Policies in South Asia: an Overview.

According to NBR, and shown in Table 4, in 2003/04 customs duty (CD) on the principal raw materials of light bulbs varied from 7.5% to 30%. There are no supplementary or regulatory duties. For simplicity, in the economic welfare simulations we assume the weighted average protective input duties (including the CD and IDSC) to be 30%. This would need to varied (probably downwards) with more complete information on the importance of the various inputs.

Table 4: Duties on raw materials of light bulbs, 2003/04

Raw material	HS Code	CD Rate	VAT	IDSC	AIT	Total protective rate
Lampshell	7011.10.10	15.0	15.00	4.00	3.00	18.5
Aluminum Cap	8539.90.10	30.0	15.00	4.00	3.00	33.5
Filament wire	8101.96.10	7.5	15.00	4.00	3.00	11.0
Leading wire	7803.00.90	22.5	15.00	4.00	3.00	26.0
Flange tube	7002.31.20	15.0	15.00	4.00	3.00	18.5
Packing materials	4819.20.00	30.0	15.00	4.00	3.00	33.5

Source: NBR Data Base

Bulk of the above raw materials is imported, including some from India. For instance, practically all filament wire is imported from India. With the protective duty rate on light bulbs at 66% in FY04, and a local value addition of 45%, these raw material and component tariffs are likely to yield a hefty rate of effective protection to the local light bulb industry.

2.5 Prices

Table 5 presents information on retail prices of light bulbs. To compare, we have also presented information on the prices at which comparable Indian bulbs would probably sell if they were imported.

Table 5: Price per unit of a 60-watt light bulb (Tk/unit)

Origin	Ex-factory/ landed cost (excl VAT)	Retail price in Bangladesh (incl VAT)
Bangladeshi	8.7-9.0 (estimated)	12-20; 16 (avg)
Indian	9 (estimated)	15 (estimated)

Source: Surveyed firm and informed retailers

Information on prices in Table 5 could give the impression that Indian light bulbs should be trading in the Bangladesh market given the closeness of the two retail prices, even after the 66% protective duty. But, as noted earlier, in Bangladesh, the dominant firm pursues a policy of price discrimination where, for example, for a 60-watt bulb it offers three price levels: a brand ("Transtec") which retails at about Tk 12 for remote rural consumers and low income urban consumers, a brand ("Transtec super") which retails at Tk.15-17 for middle income buyers in urban and semi-urban areas, and a brand ("Phillips") which retails for about Tk. 20 in urban supermarkets and other retail outlets in high income areas. The three brands are reported to be essentially the same product with only minor variations in inputs. There are corresponding differences in the ex-factory prices, but these prices were not provided. This unusual price discrimination is apparently practiced with the cooperation of the network of 100 or so wholesale distributors which supply a large network of about 27,000 outlets. It is likely that there are quality differences between the dominant firm X's bulbs and bulbs produced by the small producers and sold in rural versus urban centers. Higher wattage bulbs and energy saver bulbs are also now becoming popular and are sold at higher prices. As for the standard 40-60W bulb, the basic message is that without the 66% protective duty, local bulbs could face stiff competition from Indian suppliers in an FTA situation.

Assuming an FTA situation, for example, Indian 60W light bulbs could land at the border at Tk.5.4 (export supply price), and, with transport cost up to Dhaka @5%, would yield a notional ex-factory price at Dhaka of Tk.5.7. This would then easily beat the ex-factory price of the principal Bangladeshi manufacturer in the low income segment of the market (probably about Tk 8.7-9.0).

2.6 Elasticity of demand

The NCAER study reports industry views that the demand elasticity of light bulbs is between about -1.3 to -2, which is a plausible assumption for Bangladesh demand as well. The economic welfare simulations below have first been done conservatively assuming considerably lower demand elasticities than this, and then with higher elasticities at about this level.

2.7 Capacity utilization

Bangladesh has the capacity to produce 90 million light bulbs annually. But at the moment the country is producing 30-40 million units implying a capacity utilization of roughly 40%, on average. The firm we surveyed is the largest producer controlling 50-60% of sales. It has the capacity to produce 36 million using double shift and 50 million using triple shift. In 2004/05 the surveyed firm was producing at an annual rate of 25 million- implying 50% capacity for 3 shifts and 70% for double shifts. In the 2003/04 base scenario for the economic welfare simulations its production is taken to be 19 million.

2.8 Export potentials?

The surveyed firm, company X, would like to argue that Bangladeshi light bulbs could compete in India in the event of an FTA. In fact, the same firm says that it has been negotiating deals to export light bulbs to China. Its argument is that Bangladesh could have a distinct edge over Indian counterparts

in the NE Indian markets since transport cost of bulb from other parts of India to NE India is very high. Taking advantage of the geographic proximity, Bangladesh could capture a sizeable part of the Indian market. Second, Phillips India could subcontract production to local Phillips in Bangladesh to cater to the needs of a wider market following an FTA. And finally, according to the surveyed firm, if the duties on raw materials and interest rate on working capital were lower, there would be immense potentials of Bangladesh to emerge as a competitive supplier of light bulbs in the region. No mention, however, was made of the high protective duties on light bulb imports.

To check out the validity of the above argument, we need only modify our earlier estimate of the ex-factory price of Indian bulbs in Delhi/Kolkata by adding transportation costs which admittedly is substantial if trucks have to move over the chicken's neck to NE India. Transportation cost would easily double to, say, 10% instead of the 5% we have assumed for transportation to Dhaka. Even then, landed cost of Indian bulbs in NEI would amount to Tk. 6.6/unit, compared to the landed cost of a Bangladeshi bulb at ex-factory price, after duty drawback, plus 2% transportation charges of about Tk. 8.0 to 8.3 per unit (low income segment ex-factory price (Tk 8.7 to 9.0) minus duty drawback (Tk 0.9) plus 2% transport cost). Unless the local distribution network can leverage other formal/informal contacts, it seems unlikely that export potential will be high, unless, of course, greater capacity utilization (Bangladesh manufacturers have 60% excess capacity) leads to substantial reductions in per unit ex-factory cost. On the other hand, if Phillips India were to contract firm X to cater to the NEI market, that could result provide a distribution network for this particular supplier to export to the NEI market segment in India.
Note however that Bangladesh light globes would appear to satisfy current SAPTA rules of origin requirements for Bangladesh, which are that national value added defined as the fob price minus the cost of imported inputs at cif prices should exceed 35% of the fob price. It is unlikely that rules of origin for Bangladesh that would be agreed under a bilateral FTA or under SAFTA would be more demanding than this. The per bulb cost of imported inputs at cif prices at present appears to be about Taka 2.9, so if a Bangladesh producer could successfully export to the north and eastern Indian states for say Taka 6.4 fob, its value added ratio would be about 55%, well in excess of the likely minimum rule of origin requirement.

3. LIGHT BULBS IN INDIA

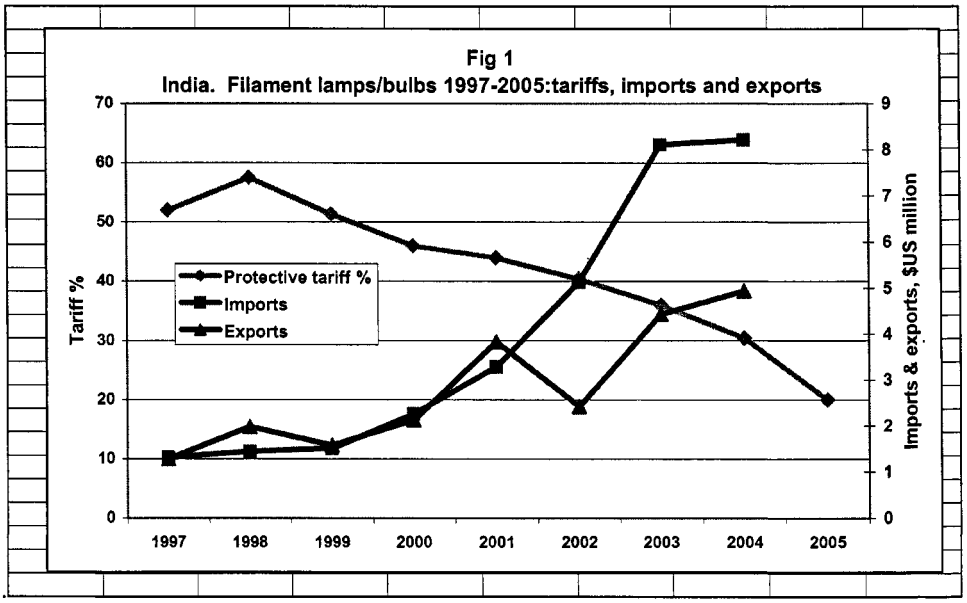
3.1 Production

In its case study NCAER was not able to separate obtain separate production data for electric bulbs and fluorescent tube lights. According to CMIE data, in 2001/02 Indian production of both was about 690 million units sold for about 13.9 billion Rupees. At the average past rate of growth of sales estimated by CMIE (10.4%) the industry's sales in 2003/04 of globes and lights of all kinds would have been about $367 million in 2003/04. However the volume and value of the production of simple 40-60 watt electric bulbs in these totals are unknown. Allowing for India's much larger population, greater access to electricity, higher per capita income and the fact that retail light globe prices are far lower than in Bangladesh, it is quite possible that Indian demand and production could be 15 to 20 times larger than in Bangladesh. In that case annual demand could be of the order of $45 to $60 million when valued at border prices, and say $55 to $75 million at ex-factory prices.

3.2 Trade

The Indian trade statistics lump imports and exports of the 40-60 watt light bulbs together with a large variety of other types of filament lamps and bulbs. Both imports and exports of these broader categories were very small during most of the 1990s-only just over $US one million during 1997-99- but

both have expanded rapidly since then (Fig 1 and Appendix Tables 1 and 2). The rapid growth of imports was associated with a steady decline in tariff protection from very high levels (57.5% in FY 1998) to 20% since January 2004, and the removal of import licensing in April 2001. During the same period, filament light bulb exports also expanded quite rapidly, albeit with a setback in FY 2002.



In FY 2004 imports may have been about 15-20 percent of domestic production, and exports about 8 to 10 percent of domestic production. However, most of this trade appears to be in specifications other than the 40-60 watt bulbs, since in 2003/04 imports and exports of the HS category (HS 8539.29.10- "Filament lamps of a retail sale price not exceeding rupees 20 per bulb") in which these bulbs are most likely included, were respectively only $0.38 million and $0.24 million (Appendix Tables 1 and 2).

A possible reason for the low level of imports, is that at about the same time that import licensing was dropped in April 2001, these inexpensive bulbs were included in a list of products which have to meet technical standards administered by the Bureau of Indian Standards (BIS). Although both domestic and imported products have to comply with these standards, and the standards are supposed to be administered in a neutral way that does not discriminate against imports, in the case of various other products it seems clear that protection of domestic producers has been the dominant motive e.g. many steel products were included in the list when world steel prices were low and local producers were complaining about import competition, and later removed from the BIS list when world steel prices boomed and domestic steel users were complaining about steel shortages and high prices. In view of this it is possible that the BIS requirements are acting as a non-tariff barrier to imports of low value light bulbs. On the other hand, domestic prices of 60 watt bulbs are quite low, not far above international prices, and low value light bulbs are being exported to both preferential and non-preferential markets. This suggests that there would not be many imports, with or without the BIS regulations.

3.3 Trade with Bangladesh

In 2003/04 about 16% of India's filament bulb exports went to SAARC countries (mainly to Sri Lanka) with which it has preferential trade agreements (SAPTA and bilateral agreements), but practically none went to Bangladesh (only $40,000 worth). However, it was supplying some light bulb components

to Bangladesh, principally tungsten filament wire, and glass tubing and packaging materials, some types of which could have been used in light bulb manufacture. There were no recorded Indian imports of light bulbs or light bulb components from Bangladesh.

3.4 Market structure and conduct

According to the NCAER study, a typical bulb manufacturer in India earns a return of 15% on sales and the market is perceived by traders and producers to consist of a large number of competitors. Exporters said they face "medium" levels of competition in export markets.

3.5 Import policies and tariffs

As noted above, since April 2001-together with other consumer goods- imports of light bulbs have been free of import licensing, but globes retailing for less than Rs 20 each are subject to BIS controls on technical standards. In January 2004 the protective tariff was reduced from 30.4% (the combined effect of a 30% Customs duty and the Special Additional Duty) to 20%. The steady decline in tariffs in India since 1998 contrasts with light bulb tariffs in Bangladesh, where tariffs have increased very substantially during the same period.

Under SAPTA, India provides a 50% tariff preference for Bangladesh. This means that since January 2004 the Indian tariff on imports of light bulbs from Bangladesh has been just 10%. Bangladesh does not provide any tariff preferences to India for either finished light bulbs or light bulb components.

Indian imports of raw materials and light bulb components have been free of non-tariff controls since 1991. Tariffs on light bulb material inputs in the past were always lower than tariffs on the finished products, but since the January 2004 reforms, tariffs on most light bulb inputs have also been 20%. During 2003/04 imports of four intermediate products which probably include light bulb inputs were $9.4 million. However, not all of these were necessarily used in lamp and light bulb production (e.g. HS 70023100"Tubes of fused quartz") They could have been used for non-lighting products and many varieties of lighting products (including fluorescent lights) and in case only represent a very small fraction of the lighting industry's total sales –probably only a few percent. This suggests that Indian light bulb production is quite integrated and probably easily meets SAPTA rules of origin and rules of origin that would be agreed under a bilateral FTA with Bangladesh or under SAFTA.

4. ECONOMIC WELFARE ANALYSIS

4.1 Introduction and base scenario

The information obtained on production, trade, prices and costs in the light bulb industry in India and Bangladesh makes it clear that under an FTA there would be substantial exports from India to Bangladesh, that major adjustments would be likely to occur in the Bangladesh market, but that the effects and welfare consequences would probably be quite minor in India. Therefore this section focuses on the likely changes and welfare effects in Bangladesh, using the apparent situation during 2003/04 as a basis. However, this task is especially problematic owing to very limited data and major gaps and deficiencies in the information obtained on the Bangladesh market and industry. In particular:

- The market is dominated by one major firm (Firm X) which has a 60% market share and considerable market power, reportedly based on control of or influence over wholesale distribution. The remaining 40% of the market is reportedly supplied by a fringe of very small and apparently high cost/low quality producers. However, there is no further information on the basis for X's market power, and in

particular why there are no competing imports, even though domestic light bulbs seemed to be fully priced at, and in some segments far above, cif prices plus the 66% protective tariff.

- The dominant firm is reported to sell essentially the same 60 watt light bulb in three different market segments at different prices, and is apparently able to prevent arbitrage between these markets and competition from imports by a the use of separate brand names and its influence over the distributors. In the following analysis (see Fig 2) it is assumed that the ex-factory prices (before VAT) of the light bulb in these markets are (1) Taka 15/bulb in the high income segment (2) Taka 12/bulb in the medium income segment (3) Taka 9/bulb in the low income segment. It is assumed that the small fringe producers were also selling at Taka 9/bulb ex-factory (or the equivalent after adjusting for quality differences) in the low income segment. These ex-factory prices were not supplied by the industry and are rough estimates only derived from apparent retail prices after deducting VAT and guessed retail and wholesale margins.
- There is no information on the quantities sold in the three segmented markets. In the analysis below it is arbitrarily assumed that sales are divided as indicated in Table 6. Arbitrary assumptions are also made as to the demand elasticities in the three markets and the consequent increases in demand at lower prices. The average (arc) elasticities of the three demand curves over the price range from 9 Taka/bulb to 5.4 Taka/bulb are shown in the last column of Table 6. A rather low elasticity has been assumed in the high income segment, somewhat higher in the middle income segment, and higher again in the low income segment.

Table 6: Assumed demand parameters: ex-factory price Taka/bulb: Qty million bulbs

	Base scenario		Market power eliminated			FTA with India : first simulation			Average demand elasticity (ή)	
Income segment	**Price**	**Qty**	**Price**	**Qty low ή**	**Qty high ή**	**Price**	**Qty low ή**	**Qty high ή**	**Low ή**	**High ή**
High	15	4	9	5.5	7	5.4	6.4	9.8	-0.25	-0.80
Middle	12	8	9	11	14	5.4	14.6	21.2	-0.45	-1.64
Low	9	20	9	20	30	5.4	40	60	-1.08	-1.60
Aggregate demand		32		36.5	51		61	91		
Supplied by										
Dominant firm		19		23.5	38		0	0		
Peripheral firms		13		13	13		0	0		
Imports		0		0	0		61	91		

Notes: *The demand elasticities (ή) are the averages of the linear demand curves shown in Fig 1 over the price range from Taka 9/bulb to Taka 5.4/bulb. For simplicity it is assumed that there would be no imports if the dominant firm's market power were eliminated but the tariff were maintained at 66% i.e. if the price were to remain at Taka 9/bulb.*

- There is just a little information on the production costs of the dominant producer and no information on its financial results. There is also no information on the production costs and supply conditions of the fringe of small and very small producers. Starting with the information from firm X, a first run at the economic welfare simulations uses the parameters given in Table 7 and illustrated in Fig 1.

Using this partial information and many guesses, in the base 2003/04 scenario the 66% protective tariff plus X's apparent market power over distribution kept out all competing imports. Of the total market demand of about 32 million globes, X supplied 19 million and the small fringe producers 13 million. 20 million globes were sold at ex-factory prices approximately equal to the cif import prices of equivalent imported globes, plus the tariff plus port costs. Of these 20 million globes, 7 million were sold by X and 13 million by the fringe producers. Of the remaining 12 million globes, 4 million and 8 million were sold using separate brand names by X at Taka 15 and Taka 12 per bulb respectively. As indicated

previously, the basis for X's apparent ability to sell these bulbs using different brand names, at two thirds and one third more than the tariff inclusive price of equivalent imported bulbs, is not known: one possibility is that it was using its dominant market position (perhaps in other products as well as light bulbs) to discourage wholesale distributors from carrying imported bulbs. It is also possible that the combination of X's market power in distribution in addition to entry barriers related to scale economies, could have proved insuperable barriers to new domestic entrants expanding and competing with X's high priced brands, or to undercutting its low priced brand.

Table 7: Firm X and the market for light bulbs

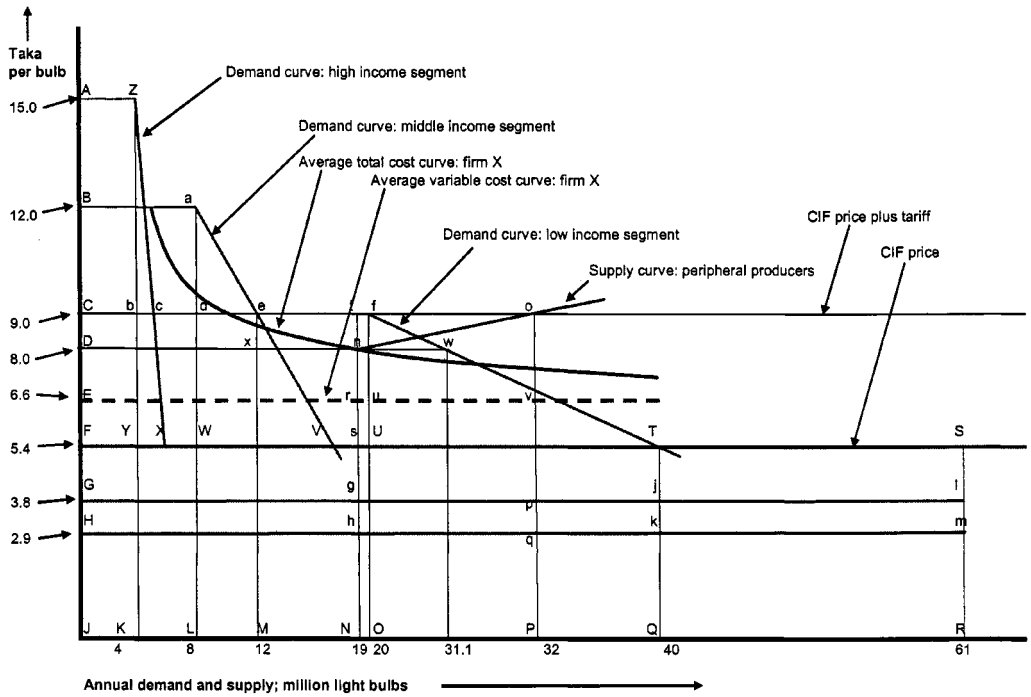
Production (million globes	**In 2003/04**	**Capacity**	
Firm X	19	38	Reportedly operating at about half capacity
Small fringe producers	13	?	Market share 40% approximately (Table 2)
Total production	32	?	As projected from official statistics (Table 1)
Firm X's approximate average cost per bulb in 2003/04	**Taka/bulb**	**In Fig 2**	
Imported inputs cif	2.9	JH	
Tariffs on imported inputs	0.9	HG	Estimated from Table 3
Imported inputs: cif + tariffs	3.8	JG	
Other variable costs	2.8	GE	Includes labor, utilities and domestic materials and components
All variable costs	6.6	JE	
Fixed cost incl minimum required return on equity	1.4	ED	Depreciation, interest, and minimum required return on equity (latter assumed to be Taka 0.5/bulb)
Average total cost	8.0	JD	Including minimum required return on equity
Average ex-factory price	11.5		Weighted average price in three markets
Excess of pre-tax profit over minimum required profit	3.5		Weighted average ex-factory price minus average total cost
Small fringe producers			
Average total cost	From 8.0 to 9.0	Supply curve *no*	Costs and supply conditions guessed: no direct information. In Fig 1 total production is distance JP

During 2003/04, firm X was reported to be producing at about half its capacity. This is indicated schematically in Fig 2 by its short run average total cost curve which reflects average fixed costs (including an arbitrary required minimum return on equity) which decline as production increases out to about 40 million bulbs, and are asymptotic to an average variable cost curve (the dotted line in Fig 2) which for simplicity is assumed to be horizontal. At output JN (19 million bulbs) both its average variable cost (Taka 6.6/bulb) and average total cost (Taka 8.0/bulb) are well below the tariff- inclusive price of imported bulbs, so it is more profitable for X to produce the bulbs in Bangladesh rather than to import them. In the short run, with these parameters, the tariff -inclusive price of imported bulbs would have to fall below the variable production cost i.e. below Taka 6.6/bulb, implying a tariff of less than 22%, before it would pay firm X to import rather than produce locally.

Comparing X's average total cost curve with the arbitrary supply curve of the peripheral producers, it is apparent that by cutting its prices and increasing its output along its declining average total cost curve, X would have been able to drive the peripheral producers out of business and to dominate the Bangladesh market even more completely. With the assumed parameters illustrated in Fig 2, however, it is plausible the resulting new equilibrium with larger demand but lower prices would have been less profitable than the equilibrium under the base scenario, in which it was apparently able to earn good profits by exercising its apparent discriminating market power while deterring serious competition from

the fringe producers and supporting the low income segment price at approximately the duty inclusive import price.

Fig 2
Light bulbs: Analysis of economic welfare effects of an FTA in Bangladesh



Because there were no competing imports of 40-60 watt bulbs in the base scenario, there is no government revenue from protective import duties on finished products. However, tariff revenue was collected from the imported inputs. Assuming an average protective input tariff of 30%, equivalent to Take 0.9/bulb, this revenue was Taka 28.8 million =$US 0.49 million (area GH*qp* in Fig 2). This assumes that the per bulb cif cost of imported inputs used by the fringe producers and the average tariff rate on them (giving revenue equivalent to area *ghqp*) were the same as the averages estimated for X.

4.2 Free trade with India: first simulation

For the light bulb industry, in Bangladesh an India-Bangladesh FTA would mean that the bulbs could be imported duty-free from India but that (starting from the 2003/04 base scenario) light bulbs imported from the rest of the world (ROW) would still be subject to a 66% protective tariff. Likewise, light bulb inputs could be imported duty free from India but would remain subject to the general MFN tariffs, averaging about 30%, if imported from ROW. Other prices-including the prices of machinery and equipment-would also be affected, but this section focuses on the likely principal direct effects, which would be on the prices of the finished products and the raw materials and components used in production.

It is apparent that the economic welfare outcome for Bangladesh will depend principally on (a) the competitiveness of the Indian light bulb exporters and the prices they would charge for sales to Bangladesh, and (b) the competitiveness and prices of Indian supplies of light bulb inputs. In both cases, the FTA in effect extends Bangladesh's tariff protection to Indian producers, and so their export prices to

Bangladesh could in principle exceed world prices to this extent without attracting competition from ROW. However, how Indian exporters would actually price would depend on their production costs, the value to them of Indian DEPB, duty drawback etc, the opportunity cost of supplying Bangladesh rather than the domestic market or other export markets, and the intensity of the competition both among themselves and between them and Bangladesh producers. For this case study the information on the Indian light bulb industry is sparse, but what is available indicates (a) a highly competitive industry with a large number of producers and domestic prices nation-wide not far above international prices (b) only minor imports of the principal light-bulb raw materials and components, indicating that nearly all are supplied domestically, either in integrated production facilities or by independent specialized suppliers (c) the presence in the domestic market of a number of the major multinational firms in the lighting business (including Phillips, the owner of the principal brand supplied in Bangladesh), suggesting that the industry has the capability or at least the potential to keep up with international technical standards.

Based on this characterization of the Indian industry, one of a number of possible outcomes is that the Indian industry would supply both finished light bulbs and intermediate inputs of competitive international qualities at about going international prices. In that case, with the largely guessed Bangladesh base scenario parameters (supply curve *no*), the small peripheral Bangladesh producers would be drastically undercut and would cease production. How about the dominant Bangladesh producer? Much would depend on whether it would be able to maintain its apparent discriminatory market power and restrict the access of the Indian exporters to the Bangladesh market and continue its discriminatory pricing practices. In that case it is possible that it would remain profitable, with lower profits or losses its low-income segment sales offset by lower input prices and the maintenance of higher prices and profits on its middle income and high income sales. However, experience in many other countries suggests that high tariff protection is often the major source of this kind of market power, because (a) high prices restrict the size of the market and increase entry barriers when there are economies of scale (b) make it difficult and expensive for importers to import in sufficient volume to break into to established marketing networks. If so, a plausible outcome of the FTA is that the dominant firm's market power would be destroyed and it would be forced to compete with imports at world prices in all three market segments. If that were the case, with the base scenario parameters, the dominant firm would also cease production, since even if were able to obtain all its inputs from Indian suppliers at world prices, its per bulb variable costs (distance JE minus HG=Taka 6.6-0.9=Taka 5.7) would slightly exceed the cif import price (distance JF=Taka 5.4/bulb). In a more likely scenario in which it would still import some inputs from ROW and pay tariffs on them, its average variable costs would exceed the price of light bulbs imported from India by a larger margin. If this happened and the entire Bangladesh market were supplied by imports, two possible welfare outcomes in Bangladesh are summarized in Table 8, the first using the demand elasticities assumed in Table 6 and Fig 2, and the second arbitrarily doubling the demand expansion that would occur in each of the market segments with imports from India at world prices.

Not surprisingly, the very large price reductions in this simulation produce substantial consumer surplus benefits, with total annual demand almost doubling from 32 million globes to 61 million globes using the lower demand elasticities, and almost trebling to 90 million globes using the higher demand elasticities. Even though these basic light globes are a low value item in consumer budgets, the resulting consumer surplus benefits are substantial, respectively $3.94 million and $5.06 million annually, and with the assumed parameters, most of the benefit occurs in the low income market segment.

Table 8: Changes in Economic Welfare in Bangladesh: first simulation

		Simulation with low demand elasticities				Simulation with high demand elasticities		
Change in	Consumer income segment	Average demand elasticity assumed	Welfare area in Fig 2	Million Taka	Million $US	Average demand elasticity assumed	Million Taka	Million $US
CS	High	-0.25	AFXZ	49.9	0.85	-0.80	61.4	1.04
	Middle	-0.45	BFVa	74.6	1.26	-1.64	93.1	1.58
	Low	-1.08	CFTf	108.0	1.83	-1.60	144.0	2.44
	Total			232.5	3.94		298.5	5.06
PS	Short run		(AJKZ+BJLa+CJNt) +fOPo -EJNr	-122.4	-2.07		-122.4	-2.07
PS	Long run		(AJKZ+BJLa+CJNt) +fOPo–DJNn-nNPo	-73.0	-1.24		-73.0	-1.24
CR			GHqp	-28.8	-0.49		-28.8	-0.49
Net W	Short run			81.2	1.38		147.3	2.50
Net W	Long run			130.7	2.22		196.7	3.33

Notes: CS= Consumers' surplus; PS=Producers' surplus; CR=Customs (protective tariff) revenue; W=Economic welfare. In the simulations indirect tax rates (VAT) are assumed to remain the same as in the base scenario. VAT would continue to be collected on imports from India and paid by Bangladesh producers and consumers. Exchange rate Taka 59=$US1.

Part of the consumer welfare benefit of the FTA in this simulation is a result of the elimination of the dominant firm's market power. This can be thought of as the first stage of the price reduction in the high income segment market, from Taka 15/bulb to Taka 9/bulb, and in the middle income market segment from Taka 12 to Taka 9 a bulb. It is conceptually equivalent to the effect of a successful anti-monopoly policy which annuls the dominant firm's discriminating market power and brings its prices down to the import price plus the tariff, with consumer welfare benefits equal to the increased consumer's surpluses in the high income and middle income segment markets totalling $0.97 million, represented respectively in Fig 2 by the areas AcCZ and BCea. The second stage of the consumer welfare benefit results from the further reduction of the consumer price from Taka 9/bulb to Taka 5.4/bulb as a result of the FTA. Hence-taking the low demand elasticity case-the total consumer welfare benefit of $3.94 million consists of two components, $0.97 million worth of anti-monopoly effects, and $2.97 million worth of import competition effects. In the high demand elasticity case, the total consumer benefit of $5.06 million consists of $1.12 million of anti-monopoly effects, and $ 3.94 million of import competition effects.

In this simulation the Bangladesh producers cease operating, and consequently there are producer surplus losses and losses of Customs revenue on imported inputs. The producer surplus reductions have been estimated in two ways: on a short run basis in which the net reduction is the decline in industry revenue minus the short run variable production costs that are no longer incurred, and on a long run basis in which the net producer surplus reduction is the decline in industry revenue minus long run production costs i.e. minus both variable and costs that are fixed in the short run but which must be incurred to maintain production in the long run. The former represents the immediate loss of gross operating surpluses, and the second represents the disappearance of the opportunity to earn economic rents in the long run, defined as the excess of gross revenue over total costs, where total costs include depreciation, interest and a "normal" rate of return on the equity invested in fixed assets. As shown schematically in Fig 2, the short run producer surplus is the total revenue of the dominant firm minus its total variable

costs. In the absence cost information on the smaller peripheral firms, their variable costs have provisionally been assumed to be the same as for the dominant firm, so their short run producer surplus is simply their total revenue at a selling price of Taka 9, minus their total variable costs i.e. area *trvo* in Fig 2. In the long run case, the producer surplus of the dominant firm is its gross revenue in the three segmented markets, minus its total production cost (area DJNn in Fig 2). The long run producers' surplus of the small peripheral firms is the area between the guessed long run supply curve *no* and the price in the low income market segment that they are assumed to supply i.e. area *tno* in Fig 2. Finally, there is a government revenue loss equal to the protective tariff revenue that was previously collected on the inputs used to produce the light bulbs i.e. equivalent to area *ghqp*. As indicated in Table 8, if the money values of these losses are weighted equally with the money value of the consumer surplus benefits, there are substantial net benefits for Bangladesh from the FTA. The net benefit is somewhat larger in the long run case, and is of course larger with higher demand elasticities which produce bigger consumer benefits from the very substantial price cuts resulting from the FTA.

4.3 Free trade with India: second simulation

The scenario just discussed assumes that, following an FTA, even though they would be protected in the Bangladesh market by the 66% tariff, the Indian light bulb producers would export to Bangladesh at the going world price at the Bangladesh border. In view of the competition and low prices in the Indian domestic market and the fact that there are Indian exports to ROW markets, this seems the most likely outcome. However, the possibility cannot be excluded that the preferential Indian exports could be sold to Bangladesh at prices in excess of prevailing world prices, for example if world prices were to decline, if costs and prices in India were to go up, or as a result of some kind of collusive arrangement between Indian producers, perhaps together with one or more of the Bangladesh producers. Without more information it is impossible to even attach probabilities to the many possible outcomes of this kind, but to illustrate the general nature of the consequent economic welfare effects in Bangladesh, this section discusses one highly simplified simulation. In this scenario, the Indian exporters supply the Bangladesh market at a price just marginally below the dominant Bangladesh producer's average total cost (distance JD in Fig 1=Taka 8.0/bulb) but agree not to compete with it in its high income and middle income segment markets. In return firm X agrees to keep its sales in the low income segment at the pre-FTA level. As a result, the small peripheral Bangladesh producers go out of business and their sales in the low income segment, plus the increased demand resulting from the price reduction from 9.0 Taka/bulb to 8.0 Taka/bulb, are replaced by imports from India.

Starting from the base 2003/04 scenario, the economic welfare consequences of these arrangements in Bangladesh are shown in Table 9. There is no benefit for high and middle income buyers, but some benefit for low income segment buyers, measured by a consumer surplus gain of $0.39 million in the low demand elasticity case, and $0.43 million in the higher demand elasticity case. However, these consumer gains are more than offset by the combination of the reduction in the profitability of the dominant Bangladesh firm, the producer surplus losses of the small Bangladesh firms which leave the business, and the reduction in Customs revenue on imported inputs previously imported by the small firms.

On the other hand there are substantial benefits for the Indian exporters. If their costs are the same as in the first simulation i.e. Taka 5.4/bulb (distance JF) but, in agreement with the dominant Bangladesh producers, they sell at the agreed price of Taka 8.0/bulb (distance JD), there is a producer surplus benefit to them of $0.82 million in the low demand elasticity case, and $1.06 million in the high demand elasticity case.[18] Overall, if the money value of all components of these welfare changes are weighted

[18] Assuming the Indian exporters replace the bulbs previously supplied by the small Bangladesh producers plus all of the increment in demand resulting from the price cut in the low income segment, the producer surplus benefits to them are:

equally, there is a net welfare improvement for Bangladesh and India actors taken together. Some benefits go to low income Bangladesh buyers, but the principal beneficiaries are the Indian suppliers as a result of their low production costs and the arrangements which essentially result in their appropriating producer surpluses that previously went to the Bangladesh producers, plus Customs revenue which was previously collected by the Bangladesh government.

Table 9: Changes in Economic Welfare in Bangladesh: second simulation

		Simulation with low demand elasticities				Simulation with high demand elasticities		
Change in	Consumer income segment	Average demand elasticity assumed	Welfare area in Fig 1	Million Taka	Million $US	Average demand elasticity assumed	Million Taka	Million $US
CS	High	-0.25		0	0	-0.80	0	0
	Middle	-0.45		0	0	-1.64	0	0
	Low	-1.08	CDwf	22.8	0.39	-1.60	25.6	0.43
	Total			22.8	0.39		25.6	0.43
PS	Short run		exnt+trvo	-38.2	-0.65		-38.2	-0.65
PS	Long run		exnt+tno	-13.5	-0.23		-13.5	-0.23
CR			ghqp	-11.7	-0.20		-11.7	-0.20
Net W	Short run			-27.1	-0.46		-24.3	-0.41
Net W	Long run			-2.4	-0.04		0.4	0.01

Notes: CS= Consumers' surplus; PS=Producers' surplus; CR=Customs (protective tariff) revenue; W=Economic welfare. In the simulations indirect tax rates (VAT) are assumed to remain the same as in the base scenario. VAT would continue to be collected on imports from India and paid by Bangladesh producers and consumers. Exchange rate Taka 59=$US 1.

As emphasized above, many other variants of the above are possible, including lower export prices from India which could pressure the dominant Bangladesh producer but still exceed international prices, and so provide substantial producer surplus benefits for the Indian suppliers. It would be easy to estimate the resulting distributions of costs and benefits between the various actors, but much more would need to be known about the base scenario and the plausibility of alternative situations before these calculations would be worth doing.

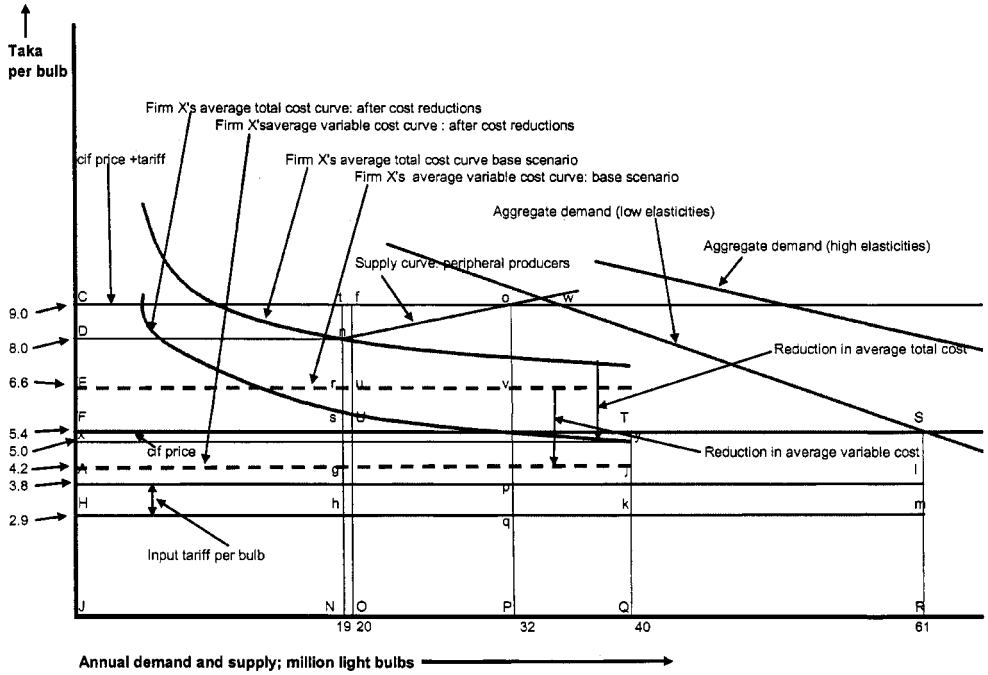
4.4 Free trade with India: third simulation

In the first simulation in which Indian suppliers export to Bangladesh at the going world price, both the small Bangladesh producers and the dominant Bangladesh firm are unable to compete and cease production. However, with the cost parameters used in that simulation, the decision of firm X to cease production in the short run is a close call, since by importing Indian inputs duty free at world prices brings its variable costs down by Taka 0.9/bulb, and as a result its variable costs exceed import prices by only Taka 0.3/bulb. Moreover, at full capacity (annual production of 40 million bulbs) its per unit fixed costs are also lower, so that its average total costs exceed import prices by about 1 Taka per bulb,

(1) Low demand elasticity case: Taka million (13+5.6)(8.0-5.4)=48.4=$0.82 million
(2) High demand elasticity case: Taka million (13+11.1)(8.0-5.4)=62.7=$1.06 million
Note however, that this does no allow for producer surplus changes resulting from changes in intermediate inputs supplied from India. This could be positive or negative. On the one hand the FTA gives Indian firms an advantage in supplying intermediates to the dominant Bangladesh producer. On the other hand, direct supply of finished light bulbs from India has replaced the intermediates previously imported by the small Bangladesh producers, some of which probably came from India.

approximately 20% above the international price. This suggests that a combination of access to inputs at world prices, efficiency improvements and higher scale production on the part of the dominant firm could have the potential to bring its costs down to or below world prices.

Fig 3
Light bulbs: Analysis of economic welfare effects of an FTA in Bangladesh with cost reductions by the dominant Bangladesh firm



This possibility is illustrated in Fig 3 by the vertical downward shifts of the dominant firm's average variable cost and average total cost curves, which have been drawn so as to bring them below the world price at the Bangladesh border (JF=Taka 5.4/globe). If this were to happen in conjunction with, or perhaps as a result of an FTA with India, in Bangladesh there would be the same large consumer surplus benefit as in the first simulation, but there would be a lower net producer surplus loss owing to the improved efficiency and continued viability of the dominant firm, and overall a larger net economic welfare benefit (Table 10). In addition, this would certainly be a much more acceptable outcome politically, since even though the small peripheral firms cease producing, their market share is taken by the dominant Bangladesh firm rather than by imports from India. In addition, the dominant firm expands its output up to the full capacity of its existing plant, and only the difference between that output level (40 million globes in Fig 2) and total demand is supplied by the imports from India. Since the dominant firm's plant can compete profitably with imports, it can be envisaged that new Bangladesh capacity would soon be built to replace the imports and that the industry would also begin to consider export markets, starting perhaps with exports to the north and east Indian states where Bangladesh producers are reported to have a transport cost advantage.

Table 10: Changes in Economic Welfare in Bangladesh: third simulation

		Simulation with low demand elasticities				Simulation with high demand elasticities		
Change in	Consumer income segment	Average demand elasticity assumed	Welfare area in Fig 1	Million Taka	Million $US	Average demand elasticity assumed	Million Taka	Million $US
CS	High	-0.25	AFXZ	49.9	0.85	-0.80	61.4	1.04
	Middle	-0.45	BFVa	74.6	1.26	-1.64	93.1	1.58
	Low	-1.08	CFTf	108.0	1.83	-1.60	144.0	2.44
	Total			232.5	3.94		298.5	5.06
PS	Short run		As in Table 8+ FAjT	-74.4	-1.26		-74.4	-2.07
PS	Long run		As in Table 8 +FxyT	-57.0	-0.97		-57.0	-1.24
CR			GHqp	-28.8	-0.49		-28.8	-0.49
Net W	Short run			129.3	2.19		195.3	3.31
Net W	Long run			146.7	2.49		212.7	3.61

Notes: CS= Consumers' surplus; PS=Producers' surplus; CR=Customs (protective tariff) revenue; W=Economic welfare. In the simulations indirect tax rates (VAT) are assumed to remain the same as in the base scenario. VAT would continue to be collected on imports from India and paid by Bangladesh producers and consumers. Exchange rate Taka 59=$US 1.

There is no information on the realism of these hypothesized cost reductions, but in a number of respects they and other aspects of the framework outlined above, are consistent with a number of suggestions made during informal discussions with industry representatives. In particular:

- For the industry to be able to compete with imports without protection, it would probably need to obtain all or most of its intermediate inputs at world prices, either by importing them over zero or low tariffs, buying them from Bangladesh producers, or from in-house production.
- Consequently, following an FTA with India, if the Indian industry were to export finished light bulbs to Bangladesh at world prices, a necessary condition for the Bangladesh industry to remain viable would be that Indian light bulb materials and components would also be supplied to Bangladesh at about world prices.
- However, with the hypothesized costs illustrated in Fig 2, this would not be a sufficient condition for the survival of the Bangladesh industry. In addition, it would need to reduce its other variable costs-labor, utilities etc-in order for it to be worthwhile to continue production even in the short run, and to reduce its per unit overhead costs so that its total average costs would be low enough to compete with imports, in order to be viable in the long run.
- This last point is consistent with the fact that the Bangladesh industry has not been exporting to the northern and eastern Indian states, even though it is reported to have considerable excess capacity, there is a substantial transport cost advantage for Bangladesh producers over light bulb producers in the principal Indian industrial states, the Indian light bulb tariff with the SAPTA preference has been at a moderate 10% since January 2004, and such exports would benefit from duty drawback on their imported inputs.

4.4 Overall welfare effects: Bangladesh, India and the rest of the world

The discussion so far has focused on the likely consequences of an FTA in Bangladesh where-because of very high protection of the domestic industry-the impact would be greatest. However, an India-Bangladesh FTA would also have repercussions in India and in the rest of the world, mainly on

exporters of light bulbs and light bulb inputs to Bangladesh. Because changes in Indian supplies to Bangladesh (whether of light bulbs or inputs for light bulbs) would be extremely small relative to the size of the Indian market, it is plausible that there would be very little if any impact on domestic Indian prices, and so it has been assumed that there would be no economic welfare changes in India by this route. As regards exporters, more information on these supply sources than was collected for this study would be needed to quantify these welfare impacts, but their direction is clear i.e. whether economic welfare for the actors concerned increases or decreases, and it is also possible to speculate about their likely magnitude. These are noted in Table 11, which also summarizes the net economic welfare changes in Bangladesh of the three simulations discussed above.

Table 11: Comparisons of net welfare effects in Bangladesh, India and ROW ($US million)

Change in economic welfare in	First simulation		Second simulation		Third simulation	
	SR	**LR**	**SR**	**LR**	**SR**	**LR**
Bangladesh (net)	+2.22	+3.33	-0.04	+0.01	2.49	3.61
India	$+PS_I$	$+PS_I$	+0.82	+1.06	$+PS_I$	$+PS_I$
Bangladesh + India	$2.22+PS_I$	$3.33+ PS_I$	+0.78	+1.05	2.49+	3.61+
ROW	$-PS_R$	$-PS_R$	$-PS_R$	$-PS_R$	$-PS_R$	$-PS_R$
Probable global effect (net)	Positive and large	Positive and large	Positive and moderate	Positive and moderate	Positive and large	Positive and large

Notes: *SR=Short Run; LR=Long Run;* PS_I *=Producer Surplus change in India; ROW=Rest of World;* PS_R *=Producer surplus change in ROW.*

In the first simulation, in which exports from India replace Bangladesh production, the substantial net benefits would be supplemented by increased producer surpluses of the Indian exporters of finished bulbs, minus the producer surpluses of Indian exporters of intermediate inputs that were previously used by the Bangladesh industry. Unless some of the latter were previously making very large profits, the resulting net change in Indian exporter producer surpluses is likely to be positive. However it is also likely to be quite small, given the assumption in this simulation that these exporters supply the Bangladesh market at the going world price, implying that they are competing with each other and would divert exports from ROW or production from the domestic market to Bangladesh, if the profitability of Bangladesh exports were to exceed profit rates in these two markets. On the other hand the intermediate input market in Bangladesh disappears for the ROW exporters that previously supplied it, so these producers incur producer surplus losses. But given the very small size of the Bangladesh market and the potential of the world industry to supply these inputs, the consequent producer surplus losses of the ROW suppliers is likely to be very small in relation to the net welfare changes in Bangladesh. Therefore the global net welfare outcome of this simulation is likely to be strongly positive, with the net welfare benefits in Bangladesh (mainly driven by the consumer surplus benefits of Bangladesh consumers plus probably small net benefits to Indian exporters) easily outweighing welfare losses of the excluded ROW suppliers. So in this simulation, although some trade is diverted from ROW, and Bangladesh producers go out of business with substantial producer surplus losses, there is a net increase in international trade and an increase in global welfare, essentially resulting from the replacement of high cost Bangladesh production by low cost exports from India.

In the second simulation, in which the Indian exporters agree with the dominant Bangladesh producer to share the Bangladesh market at an agreed price which is lower than the initial protected price,

but much higher than going world prices, modest consumer surplus benefits in Bangladesh are approximately offset by producer surplus losses (mainly of the small Bangladesh producers) and reduced government tariff revenue, so if the money values of these changes are valued equally, the net welfare effect for Bangladesh is about zero. However, the replacement of the high cost production of the small Bangladesh producers by low costs exports from India, gives large producer surplus benefits to the Indian suppliers of finished light bulbs. Under the hypothesized arrangement, and taking advantage of the Bangladesh external tariff, these are sold in Bangladesh at prices far in excess of their production costs. These producer surpluses are likely to outweigh whatever producer surpluses (not noted in Table 11) would be lost by Indian suppliers of intermediates to the displaced small Bangladesh producers. There are also producer surplus losses for displaced ROW suppliers of intermediates, but these again are likely to be small relative to the economic welfare changes in Bangladesh in India. The net welfare outcomes, both for Bangladesh and India taken together, and globally (i.e. India, Bangladesh and ROW), although smaller than in the first simulation are positive despite the hypothesized collusion between the Indian suppliers and the dominant Bangladesh producer. The basic reason once again is that the some (but not all) of the high cost production in Bangladesh is replaced by low cost Indian exports, and this gain in production efficiency leads to lower prices and some consumer benefits in Bangladesh and large producer surplus gains for the Indian exporters. As noted previously, the lower the negotiated price in Bangladesh, the greater the total economic welfare benefit and the greater the share of that benefit going to Bangladesh consumers. With the given demand and supply parameters, the total benefit overall and the total net benefit to Bangladesh, is maximized when the negotiated price from India is the same as the free market international price, with the welfare consequences discussed in the first simulation.

The third simulation, in which Indian firms export both finished globes and intermediate inputs to Bangladesh at world prices, and the dominant Bangladesh firm cuts its production costs to below the duty free import price, gives the largest net welfare benefit in Bangladesh. In this case there are also producer surplus benefits to Indian suppliers (not quantified in Fig 11) of globes and of intermediates, both of which increase their exports substantially over the base scenario, because of the much larger demand for globes at the lower price, and the increase in Bangladesh production for which the Indian firms supply the intermediate inputs. Finally, the ROW intermediate input suppliers lose their market, but for the reasons discussed previously, their producer surplus loss will be small relative to the large price changes and the resulting large welfare changes in Bangladesh. Hence this simulation gives the largest overall net global welfare increase, not surprisingly because in addition to the production efficiency improvement resulting from the closing of the small scale Bangladesh producers, there is also a major autonomous increase in production efficiency on the part of the dominant Bangladesh firm.

5 IMPLICATIONS FOR TRADE AND OTHER POLICIES

The absolute values of the net economic welfare changes in Bangladesh that come out of these light bulb simulations only amount to a a few million dollars, but it should be borne in mind that in the initial base scenario, at world prices the total demand and output of this part of the Bangladesh light bulb industry is probably only about $3 million. Therefore the welfare changes-especially potential consumer welfare benefits which could be as high as $5 million annually- are very large relative to the size of the industry, and reflect the massive compression of demand that is a direct result of the very high prices the industry is able to charge behind the protection of very high tariffs. This case is probably also representative of many other Bangladesh consumer good manufacturing industries with high protection (usually through the use of supplementary duties or VAT exemptions for domestic producers) where the individual economic welfare impact might also be relatively small, but where the cumulative total impact of all taken together is likely to be very large. In the case of inexpensive light bulbs and also for many other consumer products, low income consumers would be major beneficiaries of lower prices.

It is apparent from the welfare simulations in this example, that the overall level of the net welfare change from an India-Bangladesh FTA, and how the total net change is distributed depends crucially on how competitive the Indian industry would be in supplying the Bangladesh market, both with the finished light bulbs, and with intermediate inputs needed in light bulb production. At one extreme, if the Indian industry were to supply the Bangladesh at world prices, there would be a very large net economic welfare benefit in Bangladesh, and at another extreme, if the Indian industry were to supply the Bangladesh market at the much higher prices that would be feasible given the Bangladesh external tariff, the net benefit to Bangladesh could be negative or quite low, but there could be large economic benefits to the Indian suppliers.

Because the main impact of an FTA on this industry would be in Bangladesh, the principal questions and issues for trade and other policies affecting the industry also concern Bangladesh. Some issues which come out of this case study and which might deserve Bangladesh policy makers' attention, include the following:

- The simulated economic welfare outcomes are affected by the apparent market power of the dominant Bangladesh producer and its ability to discriminate in pricing between different consumer segments. This market power could well be associated with the very high tariff protection which benefits the industry, and it would possibly not survive more open import competition, whether from India under an FTA or directly induced by reductions in the general external tariff.
- If the government were to decide to not include this industry in a negative list under a bilateral FTA with India, the obvious way to limit the pricing power of the Indian industry in exporting to Bangladesh would be to cut the general external tariff. General tariff cuts prior to implementing an FTA (or SAFTA) would be even better, as they would reduce the likelihood of welfare reducing outcomes for Bangladesh when the preferential arrangements become effective
- Informal discussions and the welfare simulations (even though based on admittedly imperfect data) suggest that there is probably some potential for the dominant Bangladesh firm to improve its performance, both as regards pricing in the Bangladesh domestic market, and perhaps by exporting to the Indian northern and eastern states. This could be one eventual outcome of an FTA with India, but pressure from general tariff cuts might also work.
- To better inform policy, much more detailed data and information would be needed than has been available for this study. While the general direction and nature of the simulation results seem quite plausible, the welfare numbers could change considerably with better data.
- If an India-Bangladesh FTA does not eventuate, or if SAFTA is not implemented, major economic benefits in Bangladesh similar to those discussed in the first and third simulations would result from unilateral cuts in the MFN tariffs on light bulbs and their inputs. The principal missing benefit that would be provided by an FTA would be preferential access for Bangladesh light bulb exports to the Indian market, but without cost reductions and productivity improvements on the part of the Bangladesh industry, the prospects for such exports at present do not appear promising. Pressure on the industry from lower tariffs and import competition could be a way to bring such productivity improvements about.

Appendix Table 1

India FY 1997-2005 (first quarter): Imports of filament lamps/bulbs, tariffs and QR status

	Total imports ($US million)			Of which ($us million)		Import policies	
	Other filament <=200 Watts	Other filament lamps-other	Total filament lamps	Filament bulbs retail price <=Rs20/bulb	Filament -- Other (nei)	Tariff (protective rate %)	Import licensing?
HS code	8539.22	8539.29		8539.29.10	8539.29.90		
2005 first qtr	0.06	1.85	1.91	0.08	1.06	20.0	No: but BIS
2004	0.38	7.73	8.11	0.38	3.79	30.4	No: but BIS
2003	0.55	7.67	8.22	n.a.	n.a.	36.0	No: but BIS
2002	0.24	4.89	5.13	n.a.	n.a.	40.4	No: but BIS
2001	0.27	3.01	3.28	n.a.	n.a.	44.0	Yes
2000	0.11	2.15	2.26	n.a.	n.a.	46.0	Yes
1999	0.03	1.28	1.31	n.a.	n.a.	51.3	Yes
1998	0.15	1.36	1.51	n.a.	n.a.	57.5	Yes
1997	0.03	1.41	1.44	n.a.	n.a.	52.0	Yes

Notes: The HS categories in this Table do not include ultra-violet and infra-red lamps, halogen lamps, and auto sealed beam lamps. However HS 8539.29 includes bulbs for torches, other miniature bulbs, and other auto bulbs. N.e.i. =not elsewhere included. Import statistics at 8 digit level are not available on the DGFT website before FY 2004. The protective tariff rates are for low prices light bulbs: until January 2004 these rates were marginally lower than the protective tariffs on other types of light bulb. Before import licensing was lifted in 2001, some imports were allowed under special export-related import licences (SILs). However, when licensing was removed low priced (<=Rs 20/bulb retail) light bulbs were included in the list of products which have to meet compulsory technical standards. These rules are administered by the Indian Bureau of Industrial Standards (BIS) and satisfying them might act as a serious non-tariff barrier to imports.

Appendix Table 2

India FY 1997-2005 (first quarter): Exports of filament lamps/bulbs

	Total exports ($US million)			Of which ($us million)	
	Other filament <=200 Watts	Other filament lamps-other	Total filament lamps	Filament bulbs retail price <=Rs20/bulb	Filament -- Other (nei)
HS code	8539.22	8539.29		8539.29.10	8539.29.90
2005 first qtr	0.66	0.48	1.14	0.04	0.31
2004	2.57	2.37	4.94	0.24	1.00
2003	2.63	1.8	4.43	n.a.	n.a.
2002	1.39	1.03	2.42	n.a.	n.a.
2001	0.98	2.85	3.83	n.a.	n.a.
2000	0.79	1.34	2.13	n.a.	n.a.
1999	0.79	0.79	1.58	n.a.	n.a.
1998	0.93	1.05	1.98	n.a.	n.a.
1997	0.54	0.74	1.28	n.a.	n.a.

FREE TRADE BETWEEN INDIA AND BANGLADESH? ANALYSING AND QUANTIFYING POTENTIAL ECONOMIC COSTS AND BENEFITS:

A CASE STUDY OF THE CEMENT INDUSTRY

Industry structure and trade policies

The economic welfare simulations use industry and trade data assembled from published sources and a few interviews by researchers in India and Bangladesh. The based year for the simulations was Bangladesh's fiscal year (July 1 at June 30) 2002/03, which corresponds most closely to India's (April 1 to March 31) 2002/03 fiscal year. More detail on the data and how it has been interpreted is in the Annex. Some key features for interpreting the economic welfare simulations are the following:

- (Portland) cement is made by grinding clinker. Clinker is produced from limestone in capital intensive plants generating heat from various sources e.g. coal, fuel oil, natural gas. Bangladesh does not produce clinker. All the clinker used in cement production is imported, mostly from Indonesia, Thailand, and Malaysia.
- India has its own limestone deposits and cement is produced in fully integrated clinker/cement plants
- Most of the Bangladesh cement plants are situated on rivers so as directly unload the clinker into their plants. The barges carrying clinked go as far as Sylhet in the far north eastern corner of Bangladesh. There are no clinker imports into Bangladesh through the land borders with India, either in the west or in the north or east. However, the NE Indian states (specifically Meghalaya) have good limestone deposits which could be used for clinker production.
- Bangladesh sharply increased its Portland cement tariffs between 1999 and 2001, from around 36% to 70% in the case of grey cement (Fig 6) and to almost 88% in the case of white cement. As intended, this attracted investment into cement production and replaced imports. Prior to this imports – including imports from India-were substantial, but by 2001/02 it was reported that they had been entirely eliminated[19], and in the base year (2002/03) for the economic welfare simulations reported below, it is assumed that domestic production was fully meeting domestic demand of 6 million tons.
- The tariff on Bangladesh's clinker imports during 2002/03 was 26%. Both the clinker imports and cement sales are subject to Bangladesh's 15% VAT.
- According to published data and a survey of cement firms, wholesale cement prices in Bangladesh in 2002/03 were about equivalent to international prices plus tariffs (including para-tariffs as well as Customs duties) plus transport costs plus the 15% VAT. Hence, in contrast to other products, smuggling (either conventional or "official"-involving bribery of Customs and other officials) did not appear to be creating tariff redundancy.
- Cement prices in Bangladesh were about the same country-wide. Based on interviews with cement producers, the relative uniformity of prices in widely scattered regions was probably due to fairly minor differences in delivered prices of imported clinker at riverside plant locations, combined with some freight absorption by firms selling to distant markets to meet the competition of plants in those markets.
- In 2003 there were about 60 cement grinding plants in Bangladesh and approximately the same number of cement companies. Total grinding capacity was about 12 million tons, but production only about 6 million tons. The number of firms and capacity had expanded very rapidly since about 1998/99. About 30 small firms (mostly recently established) were reported to be on the point of closing or "sick". Most of these were too small, with capacities of only 50-100 tpd (tons per day). With low capacities overhead costs are too high, it's not possible to maintain quality, and bagging and

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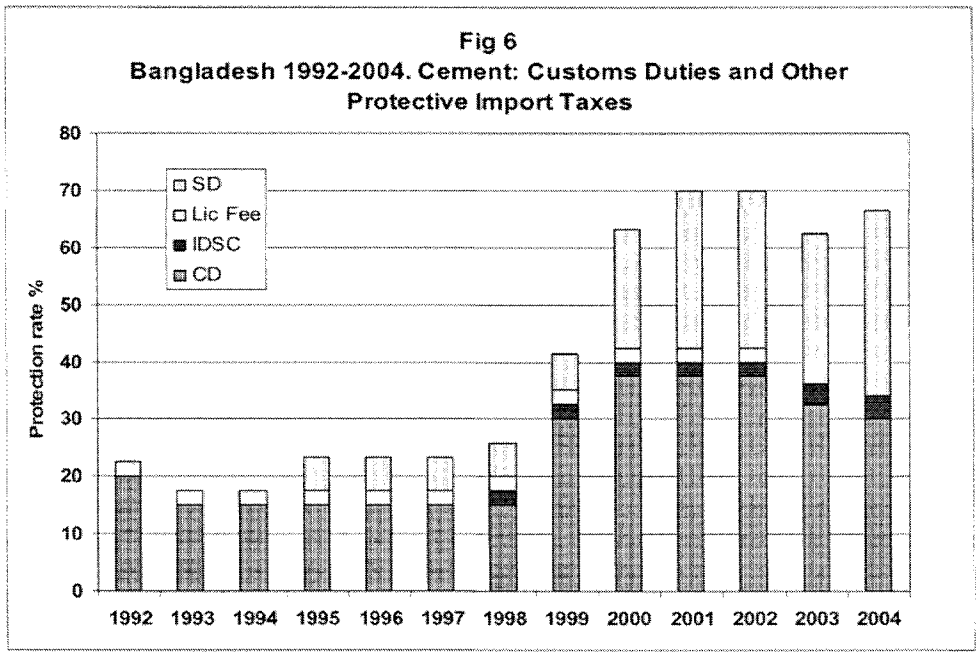
[19] We were unable to find reliable statistics of Bangladesh's Portland cement and clinker imports. The statement that they had been fully replaced by 2002/03 is from interviews with cement firms.

storage facilities are too small to be efficient. The medium size plants have capacities of about 1000 tpd, and there are some large internationally scaled plants of 2500 tpd capacity.

- India appears to be a low cost cement producer by world standards. It is exporting about 3 million tons annually, mainly to Sri Lanka, Dubai and Nigeria. This is less than 3 percent of its total production (over 100 million tons), but about half Bangladesh's total production. There are no clinker imports and cement imports are negligible.
- Indian protective tariffs on both cement and clinker during 2002/03 and 2003/04 were approximately 26%[20]. However, actual ex-factory prices appeared to be about equivalent to equal to fob export prices, suggesting that competition between cement firms was operating in a textbook manner to equalize domestic and export prices, making the import tariffs redundant.



Economic welfare simulations: assumptions

An FTA would involve zero tariffs and no QRs on all trade between India and Bangladesh, including cement and its inputs, of which the principal input is clinker. However, the present external MFN tariffs would not change. Based on data and analysis of the industry in Bangladesh and India:

(1) India cement prices and costs are about equal to prices in international markets. Consequently, with an FTA Indian exports of cement to Bangladesh would displace Rest of the World (ROW) exports to Bangladesh (if any). Since India is already exporting about 3 million tons of cement to competitive markets such as Sri Lanka, Dubai and Nigeria, other exporters to Bangladesh could not possibly compete with Indian exporters if they had to pay the present (2003/04) protective Bangladesh import taxes of of 93.8% (white cements and "others") and 71.4% ("grey" cement). The same was true in

[20] These tariffs were reduced to 20% in 2004/05. However, imported cement is subject to Bureau of Indian Standards specification and quality rules, and imports of white cement from Iran are subject to anti-dumping duties

2002/03 (the base year for the estimates) when these protective import taxes in Bangladesh were 66.7% and 87.7% respectively.

(2) With an FTA Indian exports of clinker would also probably displace Bangladesh's present clinker imports from Indonesia, Thailand and Malaysia. The Bangladesh protective MFN tariff on clinker imported by cement manufacturers is presently 26%. However, whether clinker would be imported by Bangladesh would depend on how much Bangladesh cement production capacity would remain after an FTA.

(3) Estimated Bangladesh export supply prices fob considerably exceed domestic ex-factory cement prices in India. Therefore at current marginal long run costs, there is no potential for Bangladesh cement exports to the principal Indian markets with an FTA, except for the possibility of some exports to the NE Indian states[21]

(4) The total Bangladesh market is only about 6 percent of Indian total cement production. Unless there are resource constraints in India (e.g. increasing costs in limestone production) it is unlikely that substantial Indian exports to Bangladesh would have much affect on production costs or prices in India i.e. the long run Indian supply curve to the Bangladesh market is probably highly elastic: plausibly (leaving aside transport costs inside Bangladesh) about horizontal. There would be transport constraints at the land borders but most of the cement could come by sea from Indian ports to Chittagong and Mongla.

(5) Since Indian production is integrated back to limestone and other minerals, there would be no rules of origin constraints on Indian exports to Bangladesh under an FTA. However, if some Bangladesh plants were to export cement to the Indian NE states using Indian clinker imported from there, there would be some rules of origin issues, unless the FTA were to recognize the use of materials supplied from the other country as qualifying under the rules of origin.

(6) In Bangladesh imported clinker is presently being unloaded from ships directly on to barges which deliver it with relatively low transshipment, barge transport and unloading costs to riverside cement plants. For simplicity, in the welfare simulations below it is assumed that imported cement from India would be handled in the same manner and that the delivered prices with which local cement plants would have to compete are identical at all locations, including the most distant inland locations. For example, in the first simulation in which the Indian exporters sell to Bangladesh at the going world price (see below) this price is $36/MT or Tk 2066/MT. The actual price to cement consumers would exceed this by the 15% VAT, road transport costs from the riverside locations and distributor margins. Therefore, the demand curve used in the simulations is a derived curve showing bulk demand at the riverside locations in relation to a price from which the VAT and these costs and margins have been deducted. More comprehensive and detailed cost- benefit analyses would allow for differences in barge transport costs according to location and distance from the ports, and for differences in local road transport delivery and marketing costs. However, unless there are very large

[21] This potential might be larger in the future if Bangladesh firms were to establish clinker plants near the border of the Indian NE states, say at Sylhet. These might be viable if based on limestone & dolomite etc imports from the Indian NE states. It would also need low cost energy supplies (natural gas?). This production might also be able to compete with Indian cement in the Bangladesh domestic market under an FTA. However, this scenario assumes the establishment of internationally competitive large scale clinker and cement plants in that region of Bangladesh.

differences in transport costs between regions, it is unlikely that doing so would greatly alter the outcome of the economic welfare simulations.

(7) There are about 60-64 Bangladesh cement plants owned by approximately the same number of firms. There was no information on plant level costs except incomplete information for two plants. It was assumed that the marginal plant was making normal profits at an ex-factory price excluding VAT of Tk 4200/MT. This price is assumed to include about TK 300/MT cement transport costs, so the marginal production cost is Tk 3900/MT= $68/ MT approx. According to a firm interview, about 30 small plants with about 50-100 tpd capacity were barely breaking even or making losses, medium size plants of 1000 tpd capacity were profitable, and there were also some large plants with about 2500 tpd capacity which presumably were profitable.

(8) The effects of increased import competition from Indian suppliers with an FTA would probably (1) cause high cost producers –mainly small capacity plants-to close (2) cause the remaining Bangladesh producers to cut prices and reduce costs by operating at higher capacity utilization levels. (1) can be envisaged as a move down a short run supply curve with all remaining producers continuing to operate at below full capacity. (2) can be envisaged as a downward shift of the supply curve resulting from the remaining plants operating at normal competitive capacity i.e. as a kind of long run supply curve where temporary excess capacity has been eliminated. The welfare simulations were done using both of these in turn.

There was no data from the survey on capacity utilization by plant, or plant level costs, so some arbitrary assumptions were needed.

For the short run case (1), it was assumed that –with below capacity operations continuing- the marginal plant breaks even at Tk 3900/MT and that the least cost plant could break even at an ex-plant price about 10% lower (say at Tk 3500/MT). It was then assumed that there was a linear supply curve between between these two points over total production of 6 million tons This corresponds to an average supply elasticity with respect to the ex-factory price over this range of (6/3)/(400/3700) = 18 approx. If all these plants were to close, the producer surplus loss would be Taka 0.5*400*6 million=Tk 1200 million equiv approx $1200/57.4=$20.9 million. In addition there would be some producer surplus losses resulting from unemployed labor and other resources previously employed in cement production I.e. resources employed in inelastic supply. The size of this producer surplus loss depends on the slope of the supply curve & the production costs of the most efficient plant relative to the marginal plant. There could be further induced economic losses through the effects of unrepayable recent bank loans which reportedly financed a very large expansion of cement capacity and the entry of new firms since about 1997/98. In October 2003 there were already reports of "sick" cement plants resulting from overcapacity of about 50% relative to demand and some domestic competition.

For the long run case (2), the elimination of excess capacity was represented by a downward vertical shift in the linear supply curve equivalent to 25% of total costs in the short run case with excess capacity. This arbitrary assumption was based on an interview statement in which a medium scale firm stated that it could be profitable at a price about 25% lower than its current price if it could operate at full capacity instead of at half capacity at the time of the interview. Even with import competition prevented by prohibitive tariffs, clearing out of non-viable plants was reported to be already underway during 2002 and 2003, and it is plausible that this would enable the remaining plants to operate at closer to full capacity and reduce costs, thereby enabling them to operate profitably at lower prices than the current average domestic prices. Keeping the linear supply curve assumption, with a 25% downward shift the lowest cost intra-marginal plant would break even at Tk 2800/MT and the new marginal plant (at the 6 million ton production point) would break even at Taka 3900/1.25 =Tk 3120/MT. However, if the

industry is competitive, as estimated in the simulations, the new equilibrium is at a higher production level at the intersection of the demand curve and the "long run" full capacity supply curve.

Economic welfare simulations: results

The results of five simulations are summarized in Table 1. The first two simulations consider an FTA with India starting from the current cement supply curve in Bangladesh with excess capacity. The third simulation illustrates the welfare gains from the elimination of excess capacity in Bangladesh but no FTA and no other trade policy changes. The final two simulations deal with the welfare effects of an FTA starting from this latter situation i.e. with the productivity improvements in Bangladesh resulting from the removal of excess capacity. The supply and demand parameters used for the simulations are illustrated in Fig 1. The equilibrium points were obtained by solving the linear demand and supply equations.

An FTA with the current (short run) Bangladesh supply curve with excess capacity. The first two simulations start from the Bangladesh supply curve with excess capacity and a domestic ex-factory cement price of Tk 3900/MT ($67.90/MT). At this price it assumed that marginal cement grinding plants are just breaking even but that larger lower cost plants are profitable, illustrated by the gap between this price and the supply curve which is assumed to cut the Y axis at Tk 3500/MT. The domestic price of Tk 3900 exceeds the international price cif Bangladesh (estimated at $36/MT or Tk 2066/MT) by about 89%, approximately by the same percentage as protective import duties. With this tariff there are no cement imports, but all the clinker required by the Bangladesh plants is imported.

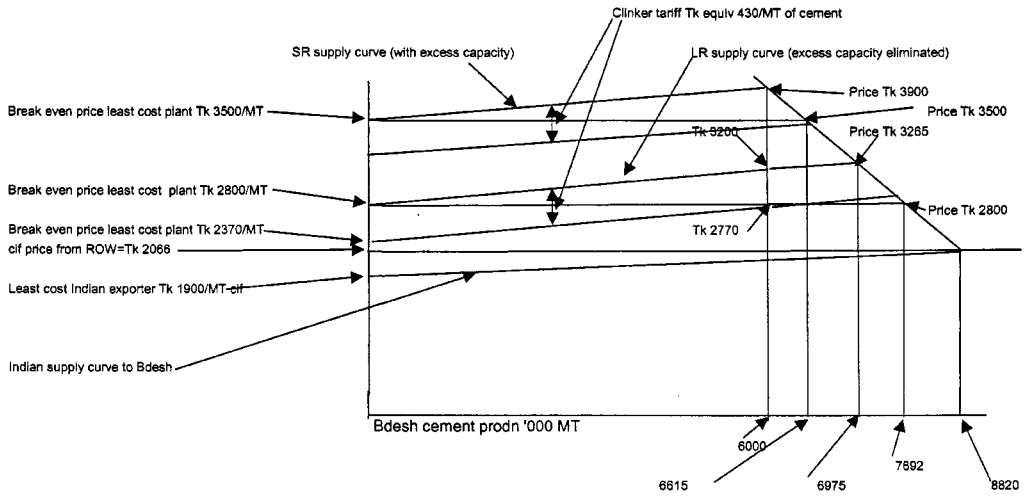
In the first simulation, following the FTA Indian cement firms export to India at the prevailing border price. It is assumed that the Indian exporters have a transport cost advantage in supplying Bangladesh equivalent to Tk 166/MT (about $2.90/MT), so that the Indian supply to Bangladesh is incremental i.e. it is not switched from India's cement exports to ROW destinations such as Sri Lanka and Africa. However the costs of the Indian exports go up slightly as exports to Bangladesh expand: this is illustrated by the slight upward slope of the Indian export supply curve to Bangladesh with its Y intercept at Tk 1900/MT (about $33/MT cif Bangladesh). The Indian export price does not go above the international price owing to competition between the Indian cement exporters. At an Indian export price of Tk 2066/MT cif Bangladesh, demand expands from 6 million MT to 8.82 million MT and all the Bangladesh production is replaced by imports from India. This produces a large net annual economic welfare benefit for Bangladesh of $171 million, consisting of a consumers' surplus benefit of $237 million, a producers' surplus loss (the area above the Bangladesh short run suppy curve and the pre-FTA price) of $21 million, and a Customs revenue loss of $45 million. The Customs revenue loss results from the cessation of clinker imports (subject to a protective import tax rate of 26%) previously used in the domestic cement industry. This cement-equivalent of the clinker tariff is estimated at Tk 430/MT and is illustrated in Fig 1.

TABLE 1
RESULTS OF ECONOMIC WELFARE SIMULATIONS:
CHANGES IN ANNUAL ECONOMIC WELFARE IN $US MILLION

Change in	Bdesh	India	Bdesh + India	ROW SR	ROW LR
Using current (short run) Bangladesh supply curve with excess capacity					
Sim 1: Indian firms export cement to Bangladesh at international (ROW) price					
CS	237	0	237	0	0
PS	-21	13	-8	-19	0
CR	-45	0	-45	0	0
Net W	171	13	184	-19	0
Sim 2: Indian firms export cement to Bangladesh at profit maximizing price					
CS	44	0	44	0	0
PS	-21	178	157	-19	0
CR	-45	0	-45	0	0
Net W	-22	178	156	-19	0
Sim 3: No FTA: Welfare changes from incr productivity in Bdesh (shift from to LR long run supply curve)					
CS	72	0	72	0	0
PS	7	0	7	0	0
CR	7	0	7	0	0
Net W	86	0	86	0	0
Using long run Bangladesh supply curve (excess capacity eliminated)					
Sim 4: Indian firms export cement to Bangladesh at international (ROW) price					
CS	165	0	165	0	0
PS	-28	13	-15	-22	0
CR	-52	0	-52	0	0
Net W	85	13	98	-22	0
Sim 5: Indian firms export cement to Bangladesh at profit maximizing price					
CS	62	0	62	0	0
PS	-28	114	86	-22	0
CR	-52	0	-52	0	0
Net W	-18	114	96	-22	0

For details of estimates see <cement case study R1.xls>.
CS=Consumers' surplus
PS=Producers' surplus
CR=Customs revenue
Net W=Net Welfare

FIG 1: CEMENT CASE STUDY: SIMULATION OF WELFARE EFFECTS OF INDIA-BANGLADESH FTA



In this simulation there is also a welfare gain of $13 million for India, equivalent to the producers' surplus of the Indian cement exporters i.e. in Fig 1, the area between the border price (Tk 2066/MT) and the Indian export supply curve. Because the exports to Bangladesh are small relative to total Indian production, no allowance has been made for price effects and potential consumer welfare losses in India.

Because of the cessation of cement production in Bangladesh, the present ROW clinker suppliers to Bangladesh (mainly Indonesia and Thailand) lose their markets there. There is no additional export market for them in India, as the Indian industry is fully integrated and all the clinker for the incremental production and exports comes from Indian producers. Information on the structure of the ROW, industries including costs and alternative export markets would be needed to quantify the welfare consequences of the lost export market in Bangladesh. In this simulation an assumed short run ROW clinker supply function gives a simulated producers' surplus loss of $19 million, but after an adjustment period (in the "long run") the ROW clinker producers find alternative export markets at the prevailing world price and the previous producers' surpluses are restored.

This simulation is an example of welfare- increasing trade creation resulting from an FTA. The key reasons for this result is the replacement of high cost Bangladesh production by imports from lower cost producers in India. The other important element in the simulation is the competition between Indian exporters which prevents the Indian export price to Bangladesh from exceeding the prevailing world price. That is, it is assumed that if incremental exports to Bangladesh were to be more profitable than incremental domestic sales in India or incremental exports to non-preferential markets, production would be switched from these markets to Bangladesh, driving down the export price to Bangladesh, until the profitability of incremental sales in all three markets is equalized.

On these assumptions the welfare outcome of the FTA is almost identical to the unilateral adoption of zero cement tariffs by Bangladesh. The principal difference is that with uniilateral multilateral liberalizion by Bangladesh, the producer surplus benefits of the increased cement exports to Bangladesh would be shared among all cement exporters (including perhaps the displaced clinker exporters in Indonesia, Malaysia and Thailand), and would not just be confined to Indian cement

exporters. A potential benefit to Bangladesh of multilateral (mfn) import liberalization rather than liberalization achieved through an FTA with India, is that the key price benefit to cement consumers would be more secure owing to the competition from actual or potential exporters from suppliers in a number of countries.

The parameters of **the second simulation** are the same as those used in the first simulation, with the key difference that the Indian exporters are assumed to be able to collude effectively and set an export price which maximizes their joint profits from exporting to Bangladesh. The profit maximizing price for them is the price that marginally undercuts the lowest cost Bangladesh producer i.e. marginally below Tk 3500/Mt. As indicated in Table 1, this produces a much smaller consumer surplus benefit ($ 44 million) in Bangladesh than with the first simulation. However, all Bangladesh production is still eliminated, which involves the same producer surplus and Customs revenue losses as in the first simulation. The total of these welfare losses exceeds the benefit to cement consumers, resulting in a net economic welfare loss for Bangladesh estimated at $22 million.

By setting a profit maximizing price in exporting to Bangladesh behind the protection of the continuing very high Bangladesh mfn tariff, the Indian exporters in this simulation extract very large producer surpluses ($178 million) from the 6.615 million tons of cement they supply, equivalent in Fig 1 to the area between the new Bangladesh price line at Tk 3500/MT and the Indian export supply curve. Hence in this scenario, the FTA causes a net welfare loss for Bangladesh and a substantial welfare gain for India.

Despite the welfare loss for Bangladesh, however, the joint outcome is trade creating and strongly welfare improving (by $156 million annually) because of the replacement of very high cost Bangladesh production by much lower cost Indian production. There is a net fiscal cost ($ 45 million less Customs revenue in Bangladesh) but the joint fiscal cost to both countries could be less than this to the extent that there are Indian profit and other taxes on the producer surpluses earned by the Indian cement exporters.

As in the first simulation, ROW loses the clinker export market in Bangladesh. The possible welfare consequences of this loss are as discussed previously.

Increased productivity in Bangladesh, but no FTA and no other trade policy changes. The third simulation illustrates the economic welfare effects of productivity improvements, which are assumed to occur endogenously without the stimulus of any trade policy changes. These involve substantial welfare gains for Bangladesh, and it is useful to look at how they manifest themselves in the simplified model illustrated in Fig 1. This is assumed to occur through competition which has weeded out many small scale high cost grinding plants and caused the remaining plants to operate at or near full capacity. In October 2003, this process was reported to have been under way for several years, with cement prices declining and many smaller companies making losses and finding survival difficult. The end result of the process is represented in Fig 1 by a vertical downward shift in the supply curve of Tk 700/MT, with the new "long run" supply curve intersecting the Y axis at Tk 2800/MT rather than at Tk 3500/MT, and with a new equilibrium competitive price of Tk 3265/MT. As indicated in Table 1 (bottom four rows) if allowed to work itself out, with the given parameters, this process involves substantial welfare gains for Bangladesh, principally cement consumer surplus benefits ($ 72 million) but also some producer surplus and Customs revenue benefits, the latter from tariffs on increased clinker imports for use in the expanded production of cement. Since there is now considerable "water" in the Bangladesh cement tariff i.e domestic Bangladesh cement prices are well below international prices plus the tariff, there are still no Bangladesh cement imports and no resulting welfare changes in India or ROW from increased cement exports. However as a result of the increased clinker exports needed to support the increased Bangladesh cement production, there could be some (producer surplus) welfare gains in ROW clinker-exporting countries, and also in India if its clinker producers increase their exports.

An FTA following increased cement productivity in Bangladesh. The next two simulations start from the scenario just discussed i.e. lower cement production costs represented by a downward shift in the Bangladesh supply curve.

In the fourth simulation, following the FTA , as in the first simulation, it is assumed the the Indian cement exporters are competitive and sell to Bangladesh at the world price. Even though its costs have declined, the Bangladesh industry cannot compete at this price and cement production ceases, which in turn eliminates clinker imports. Once again there is a substantial consumer benefit ($ 165 million annually), only partially offset by producer surplus and Customs revenue losses of $28 million and $52 million respectively), and a net welfare gain in Bangladesh of $84 million. The Indian cement exporters sell the same quantity of cement to Bangladesh as in the first simulation and there is a producer surplus benefit to India of $13 million, but the ROW clinker exporters to Bangladesh lose their market, leading to a short run welfare (producer surplus) loss in these countries of $22 million. Aggregating these economic welfare changes, the FTA is welfare enhancing for both Bangladesh and India, and welfare enhancing in the aggregate even after allowing for the clinker exports diverted from the ROW exporters to Bangladesh. As in the first two simulations, this outcome is entirely the result of the cement consumer benefit resulting from the replacement of the higher cost Bangladesh cement production by lower cost exports from India.

In the fifth simulation, following the FTA it is assumed that the Indian cement exporters collude and set a price for their exports to Bangladesh which maximizes their joint profits from these sales. As in the second simulation, with the given initial price in Bangladesh and the supply and demand parameters which have been assumed, this profit maximizing price turns out to be marginally below the production costs of the most efficient Bangladesh plant (Tk 2800/MT), so that once again all the Bangladesh production is displaced by exports from India. The new price in Bangladesh is lower than the pre-FTA price and there are still substantial consumer surplus benefits ($63 million per annum) to cement buyers, but these benefits are offset by lower producer surpluses ($28 million) and reduced Customs revenues from clinker imports ($52 million), giving a net welfare loss to Bangladesh of $18 million. But there is a substantial welfare benefit to India resulting from the exports at the profit maximizing price of Tk 2800/MT, equivalent to $48.8/MT cif, compared to the international price of $36/MT. Most of the total benefit to India ($114 million per year) is economic rent which results from the ability of the Indian cement exporters to price collusively as a result of the FTA, which essentially transfers the protection provided by the Bangladesh protective import duties (assumed to continue at the initial rate of 71.4%) to them. Overall, there is still a net welfare benefit (to India and Bangladesh taken together), and once again the key reason is the trade creating and welfare increasing effect of the replacement of the higher cost Bangladesh production by lower cost production in India.

Economic welfare simulations: comments on parameters and other assumptions

The results of the five simulations discussed above depend on a number of supply and demand and parameters which seem plausible, but most are guesses based on very limited information. An obvious follow-up to these preliminary welfare simulations would be to have a more careful look at some of these parameters and to adjust the estimates accordingly. Some of the key parameters to look at in a more detailed cost-benefit analysis are the following:

- The slope of the cement demand function in Bangladesh. Over the very wide price range considered in the simulations, the average price elasticity is –0.619. A flatter or steeper demand curve would change the welfare numbers but would not change the principal results.
- The slope of the Bangladesh supply curve, and in particular the costs of intra-marginal cement grinding plants. If some of these are more efficient and have lower costs than assumed here, the producer surplus losses in Bangladesh resulting from an FTA would be greater than in the above simulations.

- The level and slope of the Indian cement export supply curve to Bangladesh. In the present simulations, this is assumed to be highly elastic (average price elasticity 23.9) and that transport cost advantages in relation to potential ROW cement suppliers would allow the most efficient Indian export plants to deliver cement to Bangladesh at Tk 1900 (=$33.10) cif per MT, or about $3 below the going international price. These two parameters are the principal determinants of the estimated potential producer surplus gains to India resulting from an FTA.
- The assumption that the Bangladesh government would leave the general clinker tariff unchanged after the commencement of the FTA, and that the Bangladesh cement firms would have to pay this tariff on clinker imports from ROW countries while attempting to compete with cement imports over a zero tariff from India. More plausibly, the cement firms would lobby for and probably obtain lower or zero clinker tariffs, thereby reducing their costs and increasing their ability to compete with the Indian cement firms. This could be modeled as a downward shift in the Bangladesh cement supply curve, equivalent to the cement equivalent of the clinker tariff.
- The assumption that under an FTA Indian exporters would supply Bangladesh with cement and not clinker. This in turn assumes that the Indian cement producers are integrated enterprises producing their own clinker. If there are independent Indian clinker producers, under an FTA with Bangladesh they could conceivably use the FTA preference to supply Bangladesh grinding firms at lower prices than the duty-inclusive prices of clinker presently imported from Indonesia, Thailand and Malaysia. It would be necessary to investigate the structure of the Indian clinker-cement industry to assess the plausibility of this or similar outcomes.
- The assumption (which follows from the supply and demand parameters used) that the profit maximizing price for Indian cement exporters were they to collude under an FTA, would undercut and drive all the domestic Bangladesh cement producers out of business. With a steeper Bangladesh supply curve (implying lower cost intra-marginal producers than assumed in the simulations) it is possible that the profit maximizing price for the Indian cement exporters would keep some of the lower cost Bangladesh producers in business i.e. the Indian suppliers would do better by setting higher prices that would enable some of the more efficient Bangladesh producers to stay in business and share in the economic rents made possible by the combination of the very high Bangladesh cement tariffs and the FTA.
- The production costs, market structure, export supply conditions and other factors affecting the likely reaction and welfare consequences in the countries (mainly Indonesia, Thailand and Malaysia) presently exporting clinker to Bangladesh. All that can be said without further information is that an India-Bangladesh FTA would produce welfare losses for these countries, but how great these losses would be requires further investigation.
- The assumption that the delivered price of imported cement would be the same at all inland riverside locations. Dropping this assumption and allowing for higher delivered prices at more distant up-river locations would provide some transport-cost protection to cement grinding plants in these places, although probably not much on balance since the delivered prices of imported clinker would also be higher.
- Allowing for differences in final consumer prices as a result of differences in local road transport and local marketing costs and in the incidence of VAT, in assessing the effects of an FTA on final cement demand. Doing this would greatly complicate the analysis, but again would probably not greatly change either the direction or the values of the welfare simulations.

In interpreting the economic welfare estimates, it should be remembered that governments normally share in producer surpluses through taxes on profits. Hence, for Bangladesh the tax share of the cement companies' profits would need to be added to the Customs revenue loss to obtain the total fiscal loss from the FTA simulations, and in the case of India there would be a fiscal gain from profit taxes applied to the cement companies' producer surpluses resulting from their cement exports to Bangladesh. There would also be fiscal effects through the effects on indirect tax receipts, notably through the VAT in Bangladesh and excise (countervailing) taxes in India. Hence the changes in Customs revenues given in

the simulations are only very crude and preliminary estimates of the total fiscal effects of the FTA in relation to the cement sector.

To simplify the estimation of welfare changes, this model has used linear demand and supply functions, and with more information this could be modified by using more realistic non-linear functions. However, before doing this, it would be important to be sure that the resulting gains in understanding and accuracy as regards welfare changes are likely to offset the considerable extra computational complexity normally involved. The advantages of using straight line demand and supply curves is that the welfare changes can be easily seen graphically, and easily calculated. At the same time there are inevitably large margins of error in many of the parameters, and by comparison the errors from assuming straight line supply and demand functions are likely to be small.

All the quantities in the model (quantities demand and produced, value of production, consumer surpluses, producer surpluses, and Customs revenues) are annual, and in particular the estimated welfare changes are annual changes. It would be easy and useful to calculate the present value of these welfare changes using plausible discount rates and assumptions about future changes in parameters such as demand.

For convenience all the welfare simulations have used a common foreign exchange ($US) numeraire, under which the $US value of consumer surpluses, producer surpluses, and Customs revenue changes are valued equally, both within each country and across countries. These could obviously be valued differently e.g. in Bangladesh Customs revenue losses could be weighted differently from consumer benefits resulting from lower cement prices, and changes in producer surpluses in India could be weighted differently from changes in producer surpluses in Bangladesh. This is always possible in any kind of economic welfare analysis, but before this can be done a starting point with some known weights is first needed to provide the direction and provisional size of the changes.

Finally, it should be borne in mind that the welfare simulations are partial equilibrium and do not allow for general equilibrium effects either on the consumption side or on the production side. In this example, in Bangladesh the changes considered in the simulations are very large and general equilibrium effects are likely to be quite important: for example, the effects of a 47% reduction in the wholesale price of a commodity as important as cement, on other expenditures. These would also need to be considered in a more detailed assessment of the likely consequences of an FTA for this sector.

ANNEX

NOTES ON THE CEMENT INDUSTRIES IN BANGLADESH AND INDIA
BANGLADESH

General notes

(Portland) cement is made by grinding clinker. Clinker is produced from limestone in capital intensive plants generating heat from various sources e.g. coal, fuel oil, natural gas. Bangladesh does not produce clinker. All the clinker used in cement production is imported, mostly from Indonesia, Thailand, and Malaysia. Most of the imported clinker goes to Chittagong and another part to Mongla. At both ports it is transferred to barges which carry it up the Bangladesh rivers. Most of the Bangladesh cement plants are situated on rivers so as directly unload the clinker into their plants. The barges carrying clinked go as far as Sylhet in the far north eastern corner of Bangladesh. There are no clinker imports into Bangladesh through the land borders with India, either in the west or in the north or east. However, the NE Indian states (specifically Meghalaya) have good limestone deposits which could be used for clinker production.

There are about (October 03) about 60 cement grinding plants and approximately the same number of companies. Total grinding capacity is about 12 million tons, but production only about 6 million tons. The number of firms and capacity has expanded very rapidly since about 1998/99. Currently about 30 small firms (mostly recently established) have closed and are "sick". Most of these are too small, with capacity of only 50-100 tpd (tons per day). With low capacities overhead costs are too high, it's not possible to maintain quality, and bagging and storage facilities are too small to be efficient. The medium size plants have capacities of about 1000 tpd, and there are some large internationally scaled plants of 2500 tpd capacity.

At full capacity in a grinding plant, clinker is about 80-90 percent of total costs. Labor costs are only about 2%. The rest are some minor raw material costs, energy costs and overhead costs. The principal overhead costs are plant and equipment costs (depreciation, interest and return on capital). If a plant is operating below full capacity the unit plant costs go up quite steeply. If there is excess capacity this explains the willingness of cement firms in India and other countries (but not in Bangladesh) to sell in export markets as long as export prices cover their variable costs. They are generally less willing to cut prices in domestic markets owing to the likely reactions of competitors. At present prices in Bangladesh are very high by international standards (see below), apparently allowing the larger firms to be profitable even though they are operating at well below full capacity. One of the firms interviewed had 1000 tpd capacity but was operating at only about 500 tpd capacity. However, prices were reported to be coming down e.g. retail prices in the Dhaka area had declined from Tk 230/240 per 50 kg bag in in 1998 to about Tk 215 per bag in October 2003. In addition firms are competing by extending credit to buyers, whereas four or five years ago they sold for cash.

Domestic transport costs

Transport costs for both clinker and cement are high relative to production costs and typical ex factory prices. However, Bangladesh has an advantage over most other countries owing to the possibility over most of the country of bulk transport using river barges to riverside locations.

All imported clinker is shipped to the riverside cement plants by barge. The clinker is transferred to the barges at the ports and is not landed at the ports. Customs clearance is done while the clinker is on the ships. In October 2003 the clinker transport cost from Chittagong to a cement plant on the riverside near Dhaka was Tk 310/MT=$5.30/MT approx. This includes transfer from the ship to a river barge.

Both clinker and cement are shipped in bulk on river barges. Both have to be protected from rain and moisture.

Cement has a short shelf life after it is bagged. Quality starts deteriorating after about 15 days. Hence there is some trade-off between speed and higher transport costs by truck than by barge.

In addition there must be additional truck transport for cement from riverside destinations, so the transport costs to non-riverside customers or distribution points must consist of both barge and truck transport, plus transhipment costs.

Tariffs

During 2002/03 the protective import tax rate was 88.7 % on white Portland cement and 66.7% on grey Portland cement. These rates were increased to 93.8% and 71.4% % respectively in the 2003/04 budget, mainly by increasing the supplementary duty, the effect of which more than offset the reduction in the Customs duty from 32.5% to 30%). The principal bulk imports in the past were probably grey cement (according to an interview in October 2003, however, there had been no cement imports for at least a year). The extra protection for cement is provided by supplementary duties. The percentage rates by type of import tax are:

HS code	Year	Product	CD	VAT	SD	IDSC	Total Protection rate
252310.10	2002/03	Clinker	22.5	15	0	3.5	26
252321.00	2002/03	White cement	32.5	15	30	3.5	87.7
252321.00	2003/04	White cement	30	15	40	4	93.8
252329.10	2002/03	Grey cement	32.5	15	20	3.5	66.7
252329.10	2003/04	Grey cement	30	15	25	4	71.4

CD=Customs duty, VAT=Value Added Tax, SD=Supplementary Duty, IDSC=Infrastucture Development Surcharge

Portland cement tariffs were increased to their present very high levels between 1999 and 2001 (Fig 6) in order to attract investment in cement production and replace imports. Prior to this imports – including imports from India-were substantial, but by 2001/02 it was reported that they had been entirely eliminated[22], and in the base year for the economic welfare simulations reported below, it is assumed that domestic production was fully meeting domestic demand of 6 million tons. However, all the clinker needed by the local grinding plants was being imported, mainly from Thailand, Indonesia and Malaysia.

Domestic Cement Prices

According to published data and a survey of cement firms, wholesale cement prices in Bangladesh in 2002/03 were about equivalent to international prices plus tariffs plus transport costs plus the 15% VAT. They were about the same country-wide. Based on interviews with cement producers, the relative uniformity of prices in widely scattered regions was probably due to fairly minor differences in delivered prices of imported clinker at riverside plant locations, combined with some freight absorption by firms selling to distant markets to meet the competition of plants in those markets.

[22] We were unable to find reliable statistics of Bangladesh's Portland cement and clinker imports. The statement that they had been fully replaced by 2002/03 is from interviews with cement firms.

Border prices of cement		Taka/MT
Dhaka wholesale price Tk/MT (assume includes all taxes)		4665
Less est cement transport cost ship to Dhaka		-700
Price excl transport cost to Dhaka		3965
Less wholesaler margin 10%		-397
Landed cost incl import duties		3569
Approx cif price: Deflate by protective import duty+VAT 112.8%		1689
Equiv to cif $ price ($1=Taka 57.4)		29.4
Cross check: unit values of Indian exports (HS 252329 other Portland cement):		$/MT
To Sri Lanka 2001-02 fob	(large volumes)	26.8
To Sri Lanka 2002-03 fob	large volumes	25.7
To Nigeria 2001-02	Large volumes	25.4
To Nigeria 2002-03	Large volumes	22.8

Border prices of clinker and cement

According to a firm interview clinker transport costs from Indonesia in during 2002 until April 03 were about $8-$10/MT and cif prices of clinker were about $30/MT. International cement prices were reported to normally be very close to international clinker prices i.e. margins are narrow. Based on fob unit values of Indian cement exports to Sri Lanka in 2002/03, and adding freight and estimated river barge transport costs gave an estimated delivered price of cement to riverside grinding plant locations of $36/MT which it was decided to use in the in the economic welfare simulations.

When Indian cement was imported in the past, it mainly came by sea going barges from Kolkata which went directly up the Bangladesh rivers. Higher fob unit values of Indian cement exported to Bangladesh during that period compared with fob unit values of Indian exports to other markets (e.g. Africa) suggested that Indian exporters had lower overall shipping costs than exporters from Indonesia, Thailand etc and were able to absorb some of that saving in higher fob prices. Based on this a freight advantage for Indian exports to Bangladesh was incorporated in the welfare simulations.

Bangladesh export supply price

Using data from a Chittagong grinding factory, and allowing for the approximate duty drawback on imported clinker, it was estimated that to be equally profitable exporting as selling domestically, Bangladesh firms would have to sell their exports for about $US 60 =Taka 3469/MT

This is far above prevailing international cement prices ...about double, and also well above Indian domestic ex-factory prices. Therefore using imported clinker and the present cement plants it would not be possible to export cement from Bangladesh profitably. Therefore with an India-Bangladesh FTA there would be no Bangladesh exports to India, at least not by sea from existing plants. Even if the Bangladesh industry were to restructure with capacity utilization increasing and processing costs coming down considerably, profitable exports to India by sea would be unlikely because of the cost disadvantage resulting from reliance on imported clinker. Even with internationally competitive grinding plants in Bangladesh, these additional port and transport costs (say Tk 600-700/MT = $10-$12/MT) exceed the tariff advantage that an FTA would give the Bangladesh firms in exporting to India. This is approximately 25.6 percent of the estimated cif price (see India discussion) =$36*0.256=$9.20 approximately.

An exception to this could be Bangladesh exports to the Indian NE states, especially from grinding plants near Sylhet in the north east (e.g a new plant being built by the French multinational Lafarge), especially if clinker were produced based on limestone imports from these states. Cement prices in these states are reportedly high owing to the very high trucking transport costs from the rest of India via the "Chicken's Neck" route in northern India.

INDIA

General notes

India appears to be a low cost cement producer by world standards. It is exporting about 3 million tons annually. This is less than 3 percent of its total production (over 100 million tons), but about half Bangladesh's total production. Cement production in India is fully integrated, using domestic limestone deposits and fuels (mainly coal and fuel oil) to produce clinker and then cement. Imports are negligible.

Domestic transport costs

As in Bangladesh and throughout the world, these are undoubtedly high relative to production costs and wholesale prices. Cement and clinker plants are probably located so as to mimimise total costs including transport costs taking account of local demand densities, scale economies and other factors affecting costs. No information on transport costs is provided in the NCAER study. These would be needed to estimate the welfare consequences if under an FTA Bangladesh would export cement to India, but exports to the principal Indian markets from Bangladesh seem to be ruled out by the much higher costs and prices in Bangladesh.

However, some Bangladesh exports to the NE Indian states may occur with an FTA and some has apparently taken place recently after paying normal tariffs. This is because transit across Bangladesh by Indian trucks is not permitted, and so Indian cement is carried by truck across the "chickens neck" area of northern India, leading to high cement prices in these states. On the other hand it seems there are ample limestone deposits in these states with proposals that the limestone could be processed if clinker plants were established nearby across the border in Bangladesh. The clinker could be processed in Bangladesh and the cement sold in Bangladesh and exported back to India. There was not enough information to deal with this possibility in the present study, however.

Domestic prices

According to the NCAER survey, these were (Sept -October 2002 in Kolkata) Rs 2288/MT wholesale and Rs 2675/MT retail. Cement prices in other regions are not provided.

Ex-factory prices

Indian domestic ex-factory prices are needed to judge whether Bangladesh exporters are likely to be competitive in India with an FTA or a PTA. The assumption here is that they include only long run "normal" profit, so that there wouldn't be much scope for cutting prices in the face of import competition from Bangladesh, at least in the long run (efficiency and cost reduction changes might occur, however). Domestic ex-factory prices are also a first step towards the estimation of long run export supply prices i.e. the prices at which Indian exporters would be willing to supply export markets profitably on a long run basis. The main differences between domestic ex-factory prices and export supply prices are export incentives (e.g. drawback etc) that are paid on exports (deducted from the domestic ex-factory price) and costs that are or would be incurred in exporting but not when selling domestically e.g. port and Customs clearance costs. The purpose is to arrive at an fob price that would be profitable on a long run basis for Indian producers. In the case of cement, India is a large exporter, and unit values of exported cement provide an indication of actual export prices fob which are a cross check on inferred export prices. In interpreting differences between inferred long run export supply prices and actual export prices, it should be recognized that it may be quite rational for firms to export at prices exceeding average variable costs but lower than average total costs, especially in capital intensive industries with excess capacity. Cutting

prices domestically to use excess capacity may invite retaliation, whereas prices in international markets often reflect excess capacity in other countries which have to be met in order to export at all.

For cement, assuming the wholesale price of Rs 2288/MT does not include transport and other distribution costs and is from the cement factory (I.e. assuming no independent cement wholesalers...wholesaling is done by the cement producers) the inferred ex-factory price is: wholesale price-sales tax-excise tax= Rs 2288-298=1990-274=1716/MT=1716/47.7=$36/MT approx.This is well below the estimated supply price from Bangladesh, suggesting that there is no possibility of exports of cement from Bangladesh to India with an FTA. As noted above, a possible exception to this would be Bangladesh exports to the Indian NE states from plants near the border, using limestone imported to Bangladesh from these states.

As noted previously it is not known to what extent and where (at the manufacturing, wholesale, retail levels??) domestic transport costs affect Indian cement prices. In Bangladesh average domestic transport costs included in Bangladesh ex-factory prices was estimated at about $13/MT. Given the large scale of the Indian industry and the large firms involved, it is plausible that distribution is considerably more efficient and involves lower costs on average. Assuming freight absorption with say $10/MT (Rs 477/MT) added to ex-factory prices, ex-factory prices excluding distribution costs would be about $26/MT. This is close to apparent Indian export prices fob, suggesting that the Indian industry is pricing domestically at close to world export prices This in turn suggests that Indian tariffs (in 2003/04 30.8%..see below) are probably redundant I.e. domestic prices are well below cif prices plus tariffs, suggesting that there would be no or few cement imports with much lower or even zero tariffs.

Border prices

World prices during 2001-02 appeared to have been around $22-$27/MT. Some relevant observations:
Inferred cif price Dhaka of imported cement (see Bdesh notes) $24.60
Indian export unit values fob 2001/02 $22.8 to $26.8
Inferred cif price assuming domestic producers use all available tariff protection. Assuming Indian ex-factory prices near a port are $36/MT Deflating this by protective tariff in 2002/03 (CD+SAD) of 36% gives $26.50/MT

Further allowing for port costs (say $10/MT vs $13/MT in Bdesh) would take the implied cif price far below the observed unit values for exports. Using an Indian ex-factory price of $26/MT (on the assumption that ex-factory prices include averaged domestic transport costs) already brings the Indian price to about the world price level. Conclusion: Indian domestic ex-factory prices are about equal to world prices. Hence Indian tariffs are redundant.

FREE TRADE BETWEEN INDIA AND BANGLADESH?
A CASE STUDY OF THE SUGAR INDUSTRY

1. INTRODUCTION

India is by far the world's leading producer of sugar, although in sugar cane production it is second to Brazil, which uses most of its cane to produce ethanol. Sugar cane growing and sugar production in Bangladesh are tiny by comparison, only about two percent and one percent respectively of India's production, and in 2002/03 there were 15 operating sugar mills versus 453 mills in India (Table 1). Most of India's demand is met by domestic production, but in surplus or deficit years it periodically exports or imports sugar in quantities which are usually small relative to its total internal market, but which can sometimes be large in relation to world trade in sugar. There are no reliable estimates of total sugar consumption in Bangladesh, but production has consistently been well below total demand and the difference has been made up by imports, principally from India.

Table 1: The Sugar Industry in India and Bangladesh: Some Comparisons in 2002/03

	India	*Bangladesh*
Sugar cane production (million MT)	285.0	6.8
Sugar production (million MT)	20.1	0.2
Gur production (million MT)	6.3	0.4
Sugar consumption (million MT)	18.2	1.0-1.3 ??
Number of operating sugar mills	453	15

Notes: The Indian data is for "sugar years" running from October 1, 2002 to September 20, 2003. The Bangladesh data is for the Bangladesh fiscal year July 1, 2002 to June 30 2003.

World wide, there is very extensive government intervention in national sugar industries, and of all the major agricultural industries it is probably the most distorted. Symptomatic of the extent of the international distortions are wholesale domestic prices in the EU and the US, which in 2003 were respectively four and three times the level of international prices. Attempts to introduce more economically rational sugar policies, at the international level through the WTO, or nationally in individual countries, have often faced intractable political opposition, in large part because the interventions in sugar markets have generated powerful groups with entrenched interests in maintaining large economic rents. Both India and Bangladesh conform to this world-wide pattern, which in India involves detailed controls over the industry by both the central government and state governments, and in Bangladesh where sugar production is dominated by a central government enterprise.

The sugar industries in India and Bangladesh are based on sugar cane farming-production of sugar from sugar beets is negligible. Most of the sugar cane in India is used by sugar mills for sugar production and the two principal by-products of sugar milling and refining, molasses and bagasse. In most years about a fifth to a quarter of Indian the cane harvest is used in small artisanal or semi-artisanal operations to produce gur, which is a sweetner made from cane juice incorporating the molasses separated out in sugar refining. Gur substitutes to some extent for sugar in traditional diets, especially in rural areas, but in other respects it is not a substitute e.g. as an input for food processing industries. By contrast with India, in Bangladesh during recent years two thirds to three quarters of the cane harvest has been used to produce gur. In both countries, one of a number of elements in the politicisation of the sugar industry, is that molasses-which can also be extracted from gur- is a major input for alcohol production and for many legal and illegal distilleries.

Depending on relative prices, sugar normally accounts for about 90 to 95 percent of the sales of a typical sugar mill and molasses and bagasse for about 5 to 10 percent only. Gur sells at a fairly consistent discount from sugar –in both India and Bangladesh about 10-20 percent, and sugar and gur prices are quite highly correlated. In addition to mill sugar, smaller scale unregulated mills in India produce "khandsari" using similar techniques, and some kinds of khandsari sugar are reported to achieve quality levels that make it difficult to distinguish from good quality mill sugar. However, reliable statistics on Indian khandsari production are lacking (khandsari and gur production statistics are often lumped together), and it seems that khandsari or its equivalent is not produced in Bangladesh.

The abundance of very low wage labour in India and Bangladesh-both in farming and processing-give them a marked cost advantage over the sugar industries in other sugar producing countries. But other elements are also important for efficiency and international competitiveness, in particular the quantity of sucrose that is extracted from the cane. At present average extraction rates in India are around 10.5 percent, but in Australia and Brazil they are approximately 14 percent. The determinants of extraction rates include the nature and quality of the cane that is planted, farming techniques, scheduling of cane cutting and delivery to mills[23], and milling processes. Processing costs are also heavily influenced by the length of the crushing season, since for given total production, unit costs will be lower in a smaller capacity mill that works for more of the year than in a larger capacity mill that would be needed to crush the cane during a shorter crushing season. Since cane growing is very water intensive, the vital importance of a reliable supply of cane and reliable and predictable delivery times to mills, means that weather conditions and the quality and cost of irrigation are key determinants of production costs. Most Indian cane production is irrigated, but the water is priced far below its opportunity cost, and this is a major issue in thinking about the long term future of the industry.

This paper discusses the Indian and Bangladesh sugar industries in the context of a possible free trade agreement (FTA) between the two countries. The next section (section 2) summarizes some principal features of the Indian industry and Indian economic policies-especially trade policies-which have affected it in recent years, and this is followed in section 3 by an account of the situation in the Bangladesh industry. Section 4 discusses Bangladesh's sugar imports from India, in particular the large scale trade in smuggled sugar. Sections 5 outlines the state of the industry during Bangladesh's FY 03, which is the base scenario for subsequent simulations of the likely impact of various policy changes. During this year, India was subsidizing its sugar exports and in Bangladesh sugar imports had been opened up to private importers for part of the year, but BISFC still retained its monopoly over sugar milling. Starting from this, sections 6 and 7 discuss some possible economic welfare consequences for the industry, of an FTA between India and Bangladesh based on some simplified, stylized partial equilibrium models. Using the same 2002/03 base scenario, section 8 compares the gains and losses to the various affected groups under an FTA, with unilateral cuts (including a cut to zero) in Bangladesh's sugar tariffs. Section 9 discusses, and provides some speculative numbers, on how an FTA is likely to affect smuggling, and how the prior existence of smuggling is likely to affect the economic welfare outcomes of an FTA. Finally, section 10 summarizes some of the implications of this analysis for ongoing discussions on potential free trade arrangements, both bilateral and under SAFTA.

[23] The sucrose content of sugar cane starts to decline after 24 hours of its being cut. Therefore detailed planning of both planting and harvesting times is required.

2. THE INDIAN INDUSTRY: STRUCTURE, POLICIES AND RECENT DEVELOPMENTS

There is a very extensive literature on most aspects of the Indian sugar cane and sugar processing industries. This section summarizes a few principal features of the industry which seem to be relevant in considering the possibility of free trade in sugar and sugar products between India and Bangladesh. More detail can be found in studies of the economics of the industry and in various official and other reports. [24]

Structure At present there are about 507 officially recognized sugar mills, of which 174 are private, 33 public sector, and 300 cooperatives with farmer participation. The cooperatives are mostly in the Maharashtra. According to the Indian Sugar Mills Association (ISMA) in mid 2004 only 461 of the 507 mills were operating. Most of the non-operating mills are in Indian terminology "sick" i.e. bankrupt and not producing, but kept open with payments to their workforces through working capital infusions from government banks and/or state government subsidies. About 16 of the sick mills are owned by a UP government state enterprise.

Most licensing controls over expansion and the establishment of new mills were removed during the 1990s (see below) and there have been a number of takeovers and mergers in recent years. A number of sugar producers are public companies listed on Indian stock exchanges, but a large number –notably in Maharashtra- are grower owned cooperatives. Industrial concentration is very low: for example, the market share of the company with the largest sales among 126 sugar companies analyzed by CMIE in 2002/03 was only 2.48%.[25] It seems highly unlikely that-absent government intervention- any individual company or group of companies would have any market power in selling sugar, although individual mills may have considerable market power with respect to the sugar cane farmers in their allotted areas.

During the mid 1980s approximately half of the sugar cane harvest was purchased and crushed by the regulated sugar mill sector, and half used by the unregulated gur and khandsari producers. According to ISMA, the regulated mills are now consuming about two thirds of the cane and the share of the gur and khandsari producers is about one-third. This partly reflects increased demand for sugar relative to gur as living standards have risen. Per capita sugar consumption (which includes industrial use in the food processing and other industries[26]) has increased from about 11 kg /person in the mid 1980s to about 15.5 kg/person in 2004, whereas combined gur and khandsari consumption has declined from about 11 kg/person to 9.8 kg/person in 2004.[27]

About 60 percent of India's mill sugar is produced in Maharashtra and UP, and nearly all the rest in Tamil Nadu, Karnataka, Gujarat and Andhra Pradesh, none of which have borders with Bangladesh. There is not much sugar production in West Bengal, Bihar or the Indian eastern and north-eastern states. However both sugar and gur are traded nation-wide and road transport costs are low relative to their value, so that distance from India's sugar producing areas is unlikely to be a deterrent to cross border trade when there are substantial price differences.

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24 For the period up to 1994 see in particular Goldar and Gulati (1991), Kalra and Gulati (1992), Borell (1991), Pursell and Gupta (1998), Mahajan Committee Report (1998), and Ahluwalia and Gulati (1999) Some more recent studies and reports are Gulati, Pursell and Mullen (2003), USDA (2003), Directorate of Sugar (2004), and Indian Sugar Mills Association (2004).

25 CMIE (2004, July)

26 According to one study (India Infoline (2004)) about 75% of open market sugar is consumed by bulk buyers such as bakeries, candy and sweet makers, and soft drink manufacturers.

27 Available statistics do not distinguish gur and khandsari production and consumption. As khandsari is a slightly lower quality sugar and substitutes closely for regulated mill sugar, it is plausible that the total shift away from gur has been greater than this.

Government controls and policies. In the past the operations of Indian sugar mill sector was subject to very detailed government regulation and controls. During the past 15 years or so these controls have been gradually relaxed, and the industry-although still constrained in important respects-is freer than it was in the past. Some of the principal government interventions and policies are the following:

Industrial licensing and other industrial policies. During the 1980s and before, like all other large scale industries, sugar mills were subject to the industrial licensing regime which regulated new entry, set maximum production capacities, and controlled expansion investments. There were also rules which reserved specified cane growing "catchment areas" for individual mills, obliged the sugar mills to buy all the cane delivered to them by farmers in their designated area at prices no lower than annually announced minima, and prevented competition in cane purchasing in these areas from other sugar mills. In 1990 the licensing controls over capacity expansion by existing mills was removed, and in August 1998 licenses were no longer required from new sugar mills. However, the "catchment area" regulations have been retained, and new mills, although they can be established without first obtaining a license, must establish themselves at least 15 km from existing mills.

After 1975, the establishment of new sugar cane mills was subsidized, principally by allowing them a higher "free sale" sugar quota (see below), which effectively meant that they could sell their sugar at a higher average price than established mills. This practice was discontinued during the 1990s.

Minimum sugar cane prices The central government sets Statutory Minimum Prices (SMPs) for cane that must be paid by the mills[28], but the principal cane producing states set minimum "State Advised Prices" (SAPs) which are much higher (in most years by 30 to 50 percent) than the SMPs. In 2002/03 the sugar mills were squeezed between the SAPs and falling free market sugar prices, resulting in severe financial difficulties for many mills and very large payments arrears for cane farmers. The central government came to the rescue of the industry and state governments with large subsidies, but on condition that the states abandon the SAPs in the future. This condition was challenged in the High Court which found against the central government, so it seems that the highly political SAPs will be continued in some form. As discussed later, this is a fundamental issue for the industry which affects all other policies, including especially trade policies, because it is the single most important component in the cost or producing sugar, and therefore affects the ability of the sugar mills to compete with sugar imports and to export.

Price and selling controls for mill sugar. For many years sugar mills have been obliged to supply specified proportions of their sugar output (known as "levy sugar") to the Ministry of Food and Civil Supplies, at a controlled low price for resale at low prices in the PDS (Public Distribution System). Starting in 2000, the "levy sugar" percentage (which had been 65% in the early 1980s and 40% for most of the 1990s), was reduced and since March 2002 has been 10%. In February 2001 the quantities needed for the PDS fair price shops were drastically reduced by confining PDS sugar sales to so called BPL (Below Poverty Level) families[29]. The balance of their output (known as "free sale" sugar) can be sold for whatever it will fetch in the private market, but the quantity and timing of each mill's sales in this market is regulated by the government (by the Sugar Controllers' office). The purpose of these "release order" controls is to stabilize the free market price: in periods when production exceeds demand, this essentially means holding back sugar releases in order to support open market prices. Evasion of these controls by understating production and making unrecorded free market sales is one of the well recognized classic sources of "black money" in India.

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[28] The SMP is based on a sucrose recovery rate of 8.5% with a scale of premia for higher extraction rates.

[29] A 1998 Committee on sugar industry policies recommended that sugar should be removed from the PDS system altogether, but that recommendation has not been followed.

Sugar trading Sugar is an "essential commodity" and all aspects of the industry can potentially be regulated under the Essential Commodities Act (ECA). Until July 2000 ECA was applied to regulate the stocks and turnover of sugar traders, but these controls were lifted in July 2000 and August 2001. However in June 2003 (see below) ECA was invoked as a *de facto* import restriction by obliging importers to obtain permission to resell imported sugar, on the grounds that they compete with Indian mills and therefore should be subject to the same "release order" restrictions. By contrast, in 2001 the government allowed futures trading in sugar (previously banned) and as of May 2004 two private exchanges were dealing in sugar futures.

Indirect taxes. Both domestic sugar sales and sugar imports are subject to an excise tax of Rs 71/quintal and there is a "sugar development levy" of Rs 14/quintal. In principal these two taxes (during 2004 together equivalent to about US 1.8 cents/kg) are neutral as between imports and domestic production. They are about 7-9 percent of cif import prices of 20-25 US cents/kg, and far lower than the Bangladesh 15% VAT, which is applied on top of Customs duties and at these border prices would be approximately equivalent to 5 to 6 cents/kg. Sugar cane, gur and khandsari are exempt from these or any other indirect taxes, and (together with sugar) are exempt from central and state sales taxes[30]. However there are heavy indirect taxes on molasses which is indirectly a major source of state government revenue when it is legally used to produce potable alcohol.

Import policies During the 1980s and before sugar Indian sugar imports were "canalised" by a government controlled import monopoly. Later private sector firms were allowed to import, but subject to import licensing. In March 1994, at a time of high world sugar prices, import licensing was dropped and the tariff reduced to zero (Table 2), and these open import policies remained in place for the next four years[31]. In response to declining world prices these policies were reversed in 1998. Between April 1998 and February 2000 tariffs were increased in steps from zero to 60 percent, and in January 1999 discretionary non-tariff restrictions on imports were indirectly introduced through the application of the Essential Commodities Act to sugar importers. Since September 1998 it has also been required that sugar imports be notified to APEDA[32], which monitors them to evaluate their impact on the domestic industry. During the Uruguay Round, India bound its sugar tariffs at 150 percent, so there is no effective GATT constraint on tariff levels. Gur tariffs are the same as sugar tariffs, and sugar cane and molasses tariffs are currently 15 percent. As already noted, sugar imports are subject to the same domestic indirect taxes as domestically produced sugar, so these do not provide extra protection over and above the tariff. Molasses is subject to a domestic excise tax when it used for alcohol production.

Export policies

Before India's trade policy reforms during 1991 and 1992, sugar exports were "canalised" i.e. they were a legal monopoly of the government trading company, STC[33]. The 1991/92 reforms "decanalised" sugar exports by allowing sugar to be exported by ISGIEIC[34], a company owned by the

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30 The sugar excise tax is Rs 34/quintal and there is an "Additional Duty of Excise" of Rs 37/quintal which substitutes for the central sales tax.

31 During this period India reserved the right to reintroduce QRs on sugar under its general policy of applying non-tariff restrictions to all consumer good imports. This general policy –which India justified under the GATT balance of payments clause (Article 18 (b))- was dropped for the SAPTA countries in 1998, and finally in April 2001 for the rest of the world, after India lost a WTO case on its use of this provision.

32 APEDA is the Agricultural and Processed Food Products Export Development Authority. It is under the authority of the Ministry of Commerce.

33 State Trading Corporation

34 The Indian Sugar and General Export Import Corporation. Its name was later changed to the Indian Sugar Exim Corporation (ISEC)

sugar mills, but, as previously, the quantities exported were controlled by the Ministry of Food and Civil Supplies. During

Table 2: Indian Sugar Tariffs and QR Status 1991-2005

	Tariffs (raw) %	Tariffs(refined) %	Domestic taxes Rs/Qtl	QR status
1991	40	60	64	Restricted
1992	40	60	85	Restricted
1993	40	60	85	Restricted
1994	0	0	85	Restricted
1995	0	0	85	Free
1996	0	0	85	Free
1997	0	0	85	Free
1998	0	0	85	Free
Apl 98-Jan 99	5	5	85	Free
Jan 99-Apl 99	20	20	85	ECA
Apl 99-Dec 99	35	35	85	ECA
Dec 99-Feb 00	40	40	85	ECA
Feb 00-Mch 00	60	40	85	ECA
2001	40	40	85	ECA
2002	60	60	85	ECA
2003	60	60	85	ECA
2004	60	60	85	ECA
2005	60	60	85	ECA

Notes: For Indian fiscal years. Protective import duties other than Customs duties have not been applied to sugar, except between January and April 1999 when a general 10% surcharge was also applied to sugar. The domestic taxes are also applied to domestic sugar production and do not provide extra protection against imports to the Indian industry. ECA refers to regulations under the Essential Commodities Act which have been applicable to sugar importers since 1999-see text for an explanation. Since April 1998 sugar imports have also been subject to surveillance by APEDA

the period of the STC export monopoly and while this scheme was operating, when the Ministry judged that there were excess supplies in the domestic market, if necessary sugar was exported at a loss, and the sugar export quotas and losses were allocated between the sugar mills. In January 1997 individual sugar mills and private traders were allowed to export sugar, but the overall level of exports was still controlled by the government, and export quotas were allocated by APEDA. In 1999 and 2000, under the stimulus of the state government mandated minimum prices for sugar cane and favourable growing seasons, very large stocks of sugar-far in excess of normal requirements- accumulated, and policy was reversed to actively encourage rather than limit sugar exports as a way of reducing excess stocks and assisting sugar mills which faced severe financial difficulties. This was done in April 2001 by first removing the APEDA- administered export controls, and by introducing and gradually increasing export subsidies for sugar. The export subsidies are:

- DEPB[35] at 4% of the fob value of the exported sugar
- Since June 2002, Rs 1000/MT for internal transport and freight charges
- Since February 2003, Rs 350/MT for ocean freight
- Since October 2003, Rs 500/MT for handling and marketing charges

[35] Duty Exemption Pass Book. This is meant to compensate exporters for import duties on inputs which are used to produce exported products, and increase their cost. The DEPB rate for sugar is principally on account of ....

Table 3: Indian sugar products: import taxes and import restrictions 2004/05

	Tariff %	*Domestic taxes*	*NTBs*
Raw sugar HS 170111	60	Rs 85/Q	ECA plus APEDA surveillance
Refined sugar HS 170199	60	Rs 85/Q	ECA plus APEDA surveillance
Gur & khandsari HS 170111	60	-----	----------
Sugar cane HS 12129990	15	----	Agriculture permit required
Cane molasses HS 170310	15	Zero or 50/Q	----------

Notes: Domestic taxes are Rs per quintal (100 kg). See text for explanation of ECA and APEDA surveillance. The agricultural permits that are required for sugar cane imports are standard sanitary and phyto-sanitary controls, but are reported to be applied quite restrictively to plant and animal imports.

In addition there is a small extra subsidy for exporting sugar mills, because the quantities exported reduce the base used for calculating the quantities they are required to sell domestically at the low "levy" price for use in the public distribution system. By exporting, the mills also reduce the interest cost of any excess sugar stocks they are obliged to hold by the government's "release order" controls over free market sugar sales. These controls have been employed to fend off the downward pressure that the sale of excess stocks would otherwise exert on domestic sugar prices.

During 2003 and the first 9 months of fiscal 2004, India was exporting refined sugar at about US $220/MT fob. At the average 2004 US dollar exchange rate (about Rs 46/$US) the combined value of these export subsidies was $49/MT, equivalent to 22.2 percent of fob prices. This almost exactly accounted for the difference between prevailing domestic "free sale" mill prices at the time (in FY04 approximately $274/ MT) and export prices.

Under the stimulus of these export promotional measures, substantial sugar exports began in FY 2001 and were continuing during FY 2004. In the 2003/04 sugar season[36], there was sharp drop (principally weather related) in sugar cane production, and as a result a large cut in sugar production (estimated at around 28% less than the record production in the 2002/03 season...see discussion below), and this combined with exports to substantially reduce Indian sugar stocks. At the same time it left many sugar mills with unused capacity, even during their normal crushing season. In response, in September 2004, the government arranged for ISEC[37] to import Brazilian raw sugar at zero (instead of the normal 60 percent) import duties, and this raw sugar was allocated to mills for processing into white refined sugar[38]. The Brazilian raw sugar was formally imported under India's "advance licensing" scheme, which permits duty-free imports of inputs which are used to produce exported products. However, in this case it is reported that the government is permitting mills to sell the refined sugar in the domestic market, provided they export an equivalent quantity of refined sugar within 24 months. As the raw sugar is duty free, and the domestic market is protected by a 60 percent tariff, under this arrangement the potentially available effective protection to the processing of the Brazilian raw sugar is extremely high. However, as discussed below, actual prices for refined sugar in the domestic market in recent years have been far below import prices plus tariffs, and the actual realized effective protection rates resulting from this arrangement would depend on the extent to which domestic prices diverge from cif import prices. If raw sugar imports are open without any restrictions, the equilibrium effective protection rate would settle around the effective subsidy rate for exported refined sugar i.e. a rate determined by the duty free condition for the imported

[36] In both India and Bangladesh industry production and some other data are reported for "sugar seasons" which run from September to October in the following year. The 2003/04 sugar season is from the beginning of September 2003 to beginning October 2004.

[37] Indian Sugar Exim Corporation (the successor to ISGEIC)

[38] Details of these arrangements are in *Hindu Business Line,* September 30, 2004. Available at www.hindubusinessline.com

raw sugar, and the approximate export subsidy rate for refined sugar, estimated above to average about 22 percent during FY04.

Subsidies. For many years the sugar industry has been the recipient of an array of government subsidies, some very large. These can be broadly classified as follows:

- Input subsidies for sugar cane farming
- Subsidies for "sick" sugar mills
- Export subsidies
- Ad hoc subsidies to deal with financial crises

The principal input subsidies for sugar cane farming are for fertilizer, canal irrigation, electricity for pumpsets, and credit. Because sugar cane cultivation is very water intensive, by far the largest is the subsidy resulting from the under pricing of canal irrigation water. None of the input subsidies are targeted to sugar cane growing, however: they are generally available to India's agricultural sector. They are a major issue in economic policy, not just for the agricultural sector, but, because of their size, for central government fiscal policies. They have been analyzed in an extensive literature[39] and are not discussed in this paper. In considering the likely consequences of an FTA between India and Bangladesh, it is more realistic to treat them as givens, while recognizing that it would be important to work through the likely consequences for India-Bangladesh trade (not just in sugar but in agricultural products generally) if major changes were to be made in any of them at some time in the future.

As noted previously, in mid-2004 46 sugar mills were not operating, and many of these are being prevented from closing and are subsidized under India's "industrial sickness" laws[40]. Although these policies detract from the efficiency and performance of the sugar milling industry, the subsidies involved are not large relative to the size of the industry, and like the sugar cane input subsidies, have been taken as a given in discussing India-Bangladesh trade in sugar.

By contrast, as already discussed, India's export subsidy policies are highly relevant for India-Bangladesh trade, since they are in principle paid on Indian exports to Bangladesh, as well as on Indian exports to other countries. These policies are not new, although the current subsidies are more explicit than past subsidies, and their scope and scale are much greater than previously. A major question is whether they would continue to be paid on Indian exports to Bangladesh, if some kind of free (or preferential) trading arrangement between India and Bangladesh were to include the sugar industry.

Finally, reflecting very strong political pressures on both state governments (especially the Maharashtra and UP governments) and the central government, large *ad hoc* subsidies have been periodically paid to the industry in a variety of forms. The usual trigger is a combination of widespread insolvency of sugar mills and large consequent arrears in the mills' payments for cane delivered by farmers. In turn, this situation-which has a long history-is the result of high minimum sugar cane prices mandated by the states, which result in large harvests and high sugar production, which in favourable seasons runs ahead of demand, causing free market sugar prices to decline and unsold sugar stocks to build up. This squeezes the margins and reduces the liquidity of sugar mills, which react by delaying

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39 For a comprehensive recent discussion, see Gulati and Narayanan (2003).

40 SICA (The Sick Industrial Companies (Special Provisions) Act of 1985) is the principal relevant central government law. The sugar industry is one of a number of industries with bankrupt mills being kept alive by "industrial sickness" subsidies. As of 31 December 2003, 51 bankrupt sugar companies with a combined negative net worth of Rs 332 Crores (approximately $72 million) and 36, 400 employees were registered with the central government's Board for Financial Reconstruction and Development (BIFR). More information is on the BIFR website at http://bifr.nic.in

payments for farmers' cane. In the most recent episode, which started with the 1999/2000 season, sugar stocks built up to 11.6 million MT at the end of the 2002/03 season, far in excess of what is needed to meet normal consumption during the off-season period. In April 2004, the financial pressure on sugar mills was such that arrears in payments to cane farmers for the 2003/04 season (valued at the central government's minimum SMP price, not at state governments' much higher SAP prices) were Rs 1987 Crores (about $US 430 million), equivalent to 22 percent of the total payments due to them[41]. In reaction to this situation, in addition to the export subsidies already mentioned, the central government:

- Established a buffer stock policy, under which sugar mills were paid approximately $170 million in calendar 2003, and will be paid another $170 million approximately in calendar 2004, provided they use the money to pay off cane farmer arrears.
- Announced that it would pay off sugar cane arrears of private sector mills in UP and four other states, covering the difference between the state SAP prices and the lower central government SMP prices. The subsidy is in the form of a soft loan of about $150 million.
- Permitted state governments to undertake
- additional market borrowing which would finance soft loans to sugar mills at 4%, with the difference between this rate and the coupon rate on the state government bonds covered by a central government subsidy.

Although these subsidies seem large in absolute terms, they are modest in relation to the scale of the Indian sugar industry. For example, for the 2003/04 seasons, the first two subsidies together amount to about $320 million: this is around 10 % of the approximate value of sugar production valued at world prices (about $3.2 billion) and about 16% of the value of sugar cane production valued at the central government's statutory minimum price (roughly $2 billion). As in the past, modest increases in sugar prices in the domestic market which are unconstrained by world sugar prices given the present 60% tariff, would at least temporarily eliminate the pressures for the continuation of the subsidies. However, in the longer run, unless the minimum SAP prices for cane mandated by the states are either abandoned or moderated, it is likely that the recent episode will be repeated in the future.

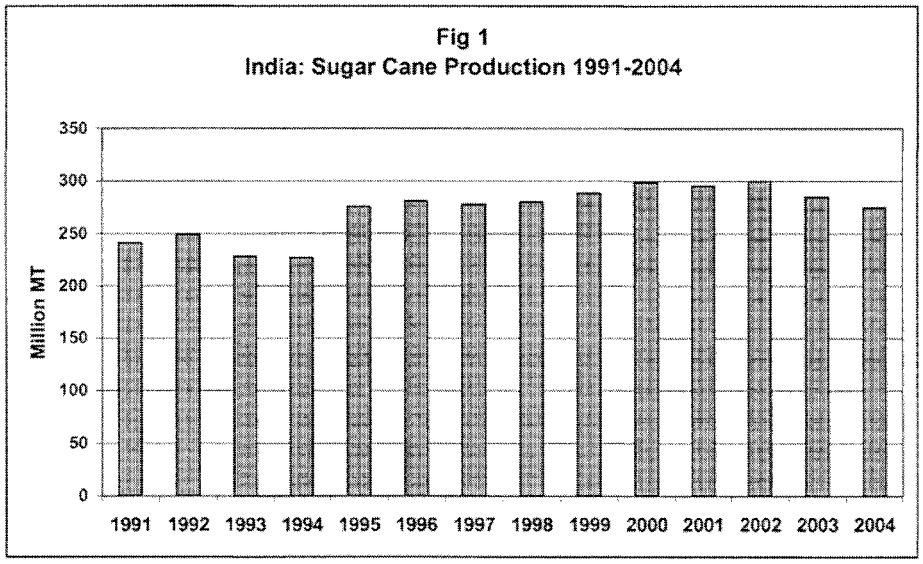
Production and trade. Since the early 1990s Indian sugar cane production has fluctuated between about 220 and 300 million tons, with a very slight upward trend (Fig 1). However, mill sugar production has grown rapidly, from around 10-12 million tons in the early 1990s to 17-20 million tons since 2000 (Fig 2). This change reflects the shift of consumption away from gur to refined sugar already mentioned, which has meant that the share of the sugar cane harvest used to produce refined mill sugar has increased. Most of the increase in total sugar consumption has occurred since 1994 and is associated with a steady and substantial decline in domestic sugar prices during this period. In US dollar terms, average wholesale prices (including indirect taxes) came down by about a third, from around 42 cents/kg in 1994 to approximately 27 cents/kg in 2003 (Fig 3). In constant Rupees, the decline was even greater, about 39 percent between 1994 and 2004[42]. Fig 3 also tracks an estimate of average mill "free sale" prices, which are lower than wholesale prices by indirect taxes and an estimated 3% wholesale margin. These prices came down at almost the same rate as wholesale prices, indicating that falling indirect taxes (which during this period remained fixed in nominal terms at Rs 85/quintal-see Table 2- and which therefore fell in real terms) were only a negligible reason for the decline in wholesale prices.

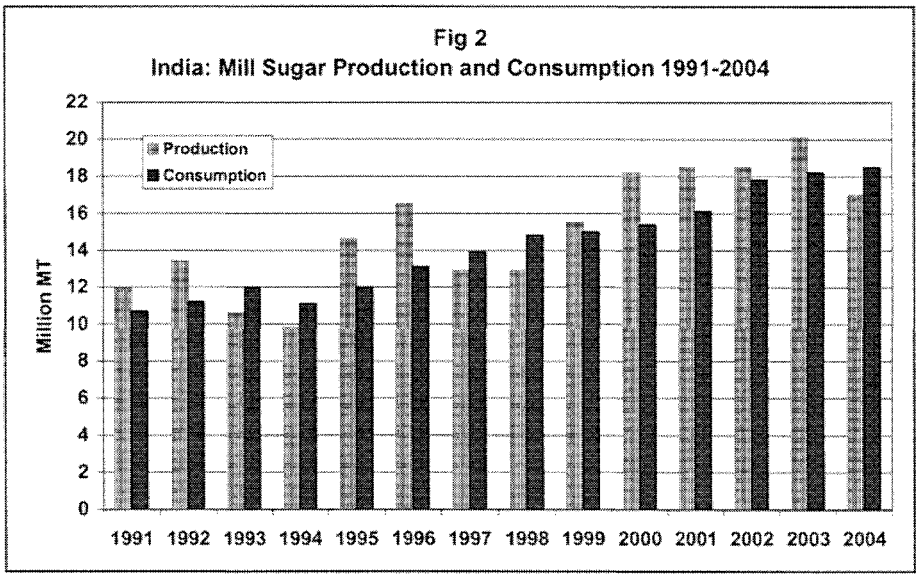
Although sugar production has been on a marked upward trend for the past 15 years, it has also been strongly cyclical, with three periods (1991-94, 1995-1998, and 1999-2004) in each of which expansion was followed by contraction. As discussed previously, the expansionary phases of these

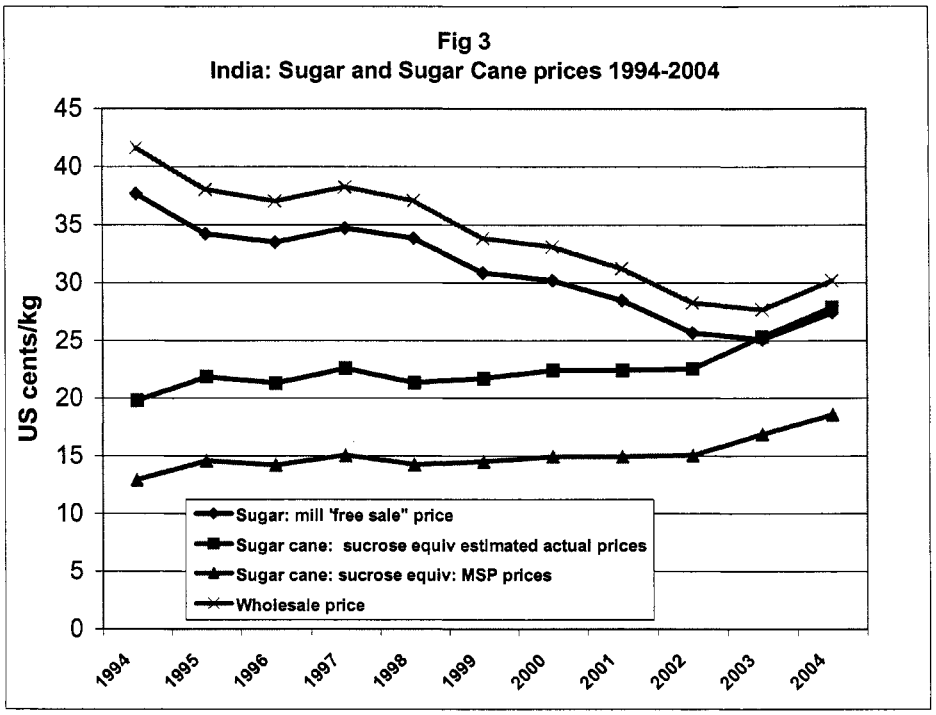
[41] These and the following information on subsidies are from Directorate of Sugar (2004)

[42] The average nominal Rupee price declined slightly between 2003 and 2004. The increase in the US dollar price shown in Fig 3 is due to appreciation of the Indian Rupee/dollar exchange rate in this year.

episodes were associated with high mandated cane prices which led to increased cane and sugar production, with the expansion of sugar production overtaking demand growth. The resulting decline in sugar prices typically leads to financial stringency in the mills and payment arrears for farmers' cane, in response to which farmers divert cane to gur and khandsari producers and cut back cane production. This is followed by reduced sugar production, increases in sugar prices, more liquidity in the mills, reimbursement of cane farmer arrears, increased cane deliveries to the mills, and eventually the commencement of the expansionary phase of a new cycle.







During the expansionary phase of these cycles, when sugar production exceeds demand, stocks build up, and the government has typically removed controls preventing exports, and if needed has provided export subsidies to boost exports and help diminish excess sugar stocks. On the other hand, at some point during the down periods of production cycles when consumption has been running ahead of production, it has typically relaxed import controls or reduced tariffs in order to facilitate sugar imports and in this way take some of the pressure off domestic sugar prices. These patterns are apparent from a comparison of Fig 2 and Table 4. Consumption exceeded production during 1997 and 1998, and with a lag this was followed by a period of imports (around 2 million tons altogether) beginning in 1998 and continuing during 1999 and 2000. However, starting in 1999 production consistently exceeded consumption for five years in a row, leading with a lag to substantial exports beginning in 2001, the cumulative amount of which reached just over 4 million tons by December 2003. As already discussed, exports during this recent episode have been stimulated by export subsidies that were increased to keep exports profitable as world prices declined.

			Table 4				
		India: Sugar Exports and Imports FY 1997 to FY 2004					
	Exports "000 MT			Imports '000 MT			Net
	Raw	Refined	Total	Raw	Refined	Total	exports
	HS 170111	HS 170199		HS 170111	HS 170199		Total
1997	197	391	588	1	1	2	586
1998	83	87	170	218	128	346	-176
1999	10	3	13	354	547	901	-888
2000	9	3	12	482	699	1181	-1169
2001	208	129	337	28	3	31	306
2002	364	1064	1428	0	27	27	1401
2003	189	1448	1637	5	37	42	1595
2004	267	588	855	24	0	24	831
Sources: DGFT website: trade data bank. 2003/04 first three quarters to Dec 31 03 only							

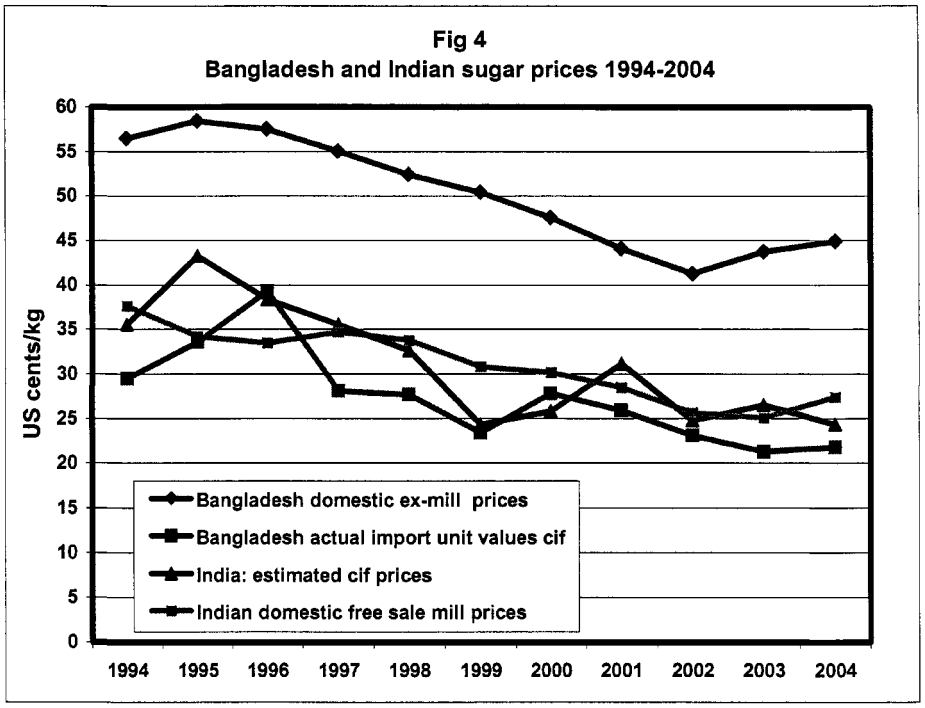
From the mid 1970s until 1994 in real terms average mill selling prices for sugar (i.e. the weighted average of the sugar sold at the controlled low levy price and the "free sale" sugar sold in the open market) in India remained about the same with only minor year to year fluctuations[43]. During this period import and export controls insulated the domestic market from large swings in world sugar prices, especially in the mid 1970s' and early 1980s when there were big spikes in world prices, and from 1982 to about 1988 when world prices were well below domestic prices. Starting in about 1994, however, there was a major break with the past, and for the past 10 years domestic free market prices in India have closely tracked international prices, which have steadily declined over this period. In 2004, in constant Rupees, the mill "free sale" price was about 40 percent lower than it had been in 1994, corresponding to an almost exactly equivalent decline in cif import prices expressed in real Rupees. Because of Rupee appreciation after 2003, the decline expressed in US cents/kg is somewhat less-about 30%-but still very substantial.

For comparability with Bangladesh, Fig 4 shows these trends with prices expressed in nominal US cents/kg, and with the Indian free sale mill prices compared to (a) a constructed series of cif import prices for "plantation white" refined sugar[44], and (b) Bangladesh import unit values for refined sugar, which include a sometimes large component of sugar imports from India. During 1997 and after the Bangladesh unit values (which are the averages of actual transactions recorded at Customs) were lower than the prices in the estimated border price series, and also consistently lower –usually by about 20%- than domestic free sale prices. This suggests that the constructed border price series may be somewhat overstating relevant border prices in the South Asian region, and that India's policies have been providing some modest protection to domestic free market prices. However, as noted previously, Indian mills are taxed by low prices paid for compulsory delivery of "levy sugar", and allowing for this, actual average prices realized by the mills –especially before 2000 when the levy percentage was 40%-have been considerably below the free market prices, and probably as low as, or below, the Bangladesh import unit values during the 1990s. This is important, because it suggests that Indian mills that were profitable during these years were internationally competitive at cif import prices of around US 25 cents/kg and perhaps less, even though they were being squeezed by sugar cane prices that were inflexible downwards owing to the state governments' minimum prices for cane.

[43] Pursell and Gupta (1998)

[44] This series is an estimated price for "plantation white": sugar, which is the principle variety of refined sugar produced in India: for details see Goldar and Gulati (1991) and Pursell and Gupta (1998). The series is based on Caribbean raw sugar prices cif Europe plus a refining margin and estimated freight to India. It was needed to compare Indian domestic prices with international prices, because in many years there were no imports.

In striking contrast to India, Fig 4 shows that at least since 1994 Bangladesh ex-mill (pre-VAT) sugar prices have consistently been far higher than cif import prices (by about 80% on average) and Indian domestic free market prices (by about 60% on average). Between 1994 and 2002 these prices also declined, but by proportionately much less than international prices and Indian free market prices, and since 2002 they have gone up, from US 41.6 cents/kg to US 46.6 cents/kg for the 2004/05 sugar season. The increase in 2002/03 was the result of a decision to exempt domestically produced sugar from VAT while retaining VAT on sugar imports, thus employing the VAT as an additional protective import tax.



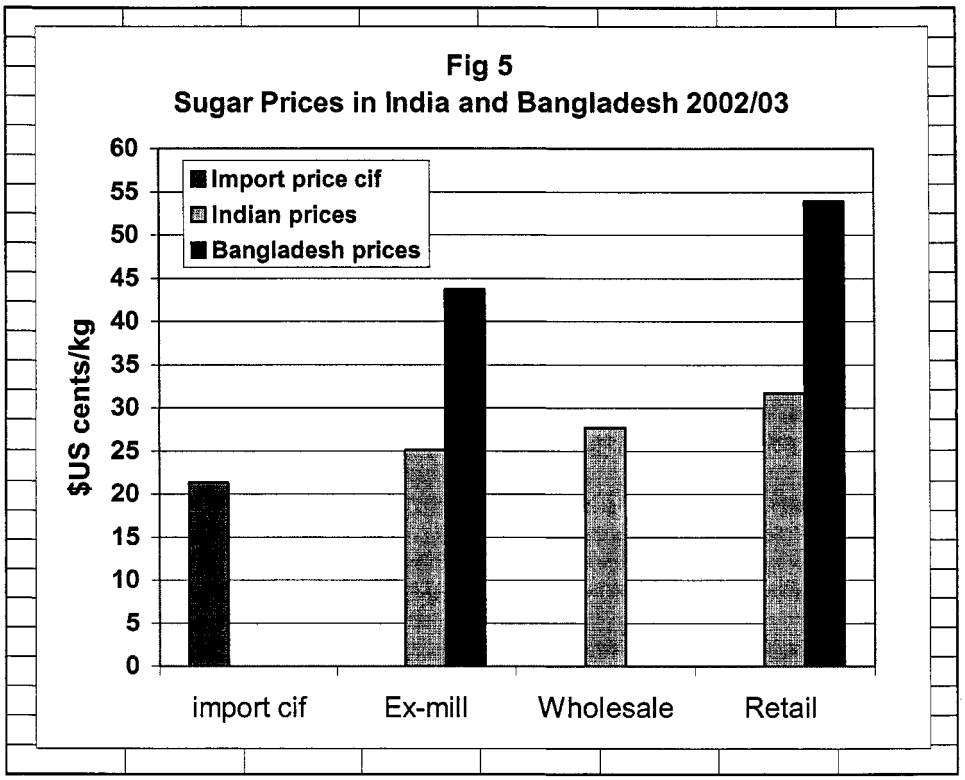
It is argued in the next section of this paper on Bangladesh, that for a number of years sugar has been smuggled into Bangladesh on a large scale, and that all or most of this smuggled sugar has come from India. The consistent and very large excess of Bangladesh ex-mill prices over free market ex-mill prices in India illustrated in Fig 4. provides an obvious motivation for smuggling. Sugar smuggling could take a number of forms, for example (a) small head loads of sugar purchased in retail markets in India and carried on foot across the border (b) somewhat larger quantities bought from traders at wholesale prices including Indian indirect taxes and transported by truck (c) large unrecorded quantities purchased direct from sugar mills at "free sale" prices and carried to Bangladesh by truck or even by ship. Combinations of these methods have also been reported e.g. direct purchase from sugar mills in bulk or from wholesale traders, transport to the border by truck, and then crossing the border in many different ways, from head loads, bicycles and bicycle rickshaws, small vehicles, trucks and by boat[45]. That large potential profits from illegal trade exist at all these levels is apparent from Table 5 and Fig 5, which show (using 2002/03 and 2003/04 as examples) that not only international prices but also domestic ex-mill, wholesale and retail prices in India were much lower than the corresponding prices in Bangladesh. For example, during 2002/03 average retail prices in Dhaka and Rajshahi were respectively about 70% and 68% percent above average retail prices in India.

[45] For a fascinating account of how this border trade operates in practice see NCAER (1995), Chapter 4.

Table 5		
India and Bangladesh:Domestic and Border Prices for Refined Sugar		
	2002/03	**2003/04**
Indian domestic prices		
Retail price	31.7	34.6
Wholesale price (including indirect taxes)	27.7	30.2
Mill free sale price (before indirect taxes)	25.1	27.4
Bangladesh domestic prices		
Retail price Dhaka	53.9	n.a.
Retail price Rajshahi	53.5	n.a.
Average ex.mill price	43.7	44.9
Border prices		
Estimated import reference price cif	26.5	24.3
Indian export unit value (total exports) fob	22.2	21.9
Indian export unit value (exports to Bangladesh) fob	21.5	21.3
Bangladesh import unit value (total imports) cif	21.3	21.8
Bangladesh import unit value (from India) cif	21.3	21.7
Notes: Rupee and Taka prices converted at average exchange rates for		
FY 03 and FY 04. Prices are estimated annual averages. Unit values for		
imports and exports calculated from official trade statistics. The Bangladesh ex-mill		
prices are for sugar years estimated by dividing the value of sugar		
production by the quantity produced. In Bangladesh domestically produced sugar		
(but not imports) was exempt from VAT in 2002/03 and afterwards.		

Smuggling at all these levels requires connivance and illegal payments or benefits to officials, not only at the border but in state and local regulatory and tax jurisdictions as well. The hypothesis that a substantial part of the smuggling to Bangladesh may start with illegal sales at sugar mills is plausible in view of the well documented role of the sugar sector in the generation of black money in India.[46] The literature on this topic points out that in order to minimize the amount of "levy" sugar they are required to sell at low prices for use in the public distribution system, mills have a strong motive to understate their production and sell the difference on the free market without recording the production or the sale in their accounts. As well as reducing the levy "tax" on sugar, these sales avoid both indirect taxes and profit taxes, and facilitate illegal production and sale of molasses, or extra unrecorded production of alcohol in on-site distilleries. These practices have been reported to be especially prevalent in UP, and it is plausible that some of this unreported sugar may find its way through Bihar and West Bengal to Bangladesh. However, the motivation for these black money activities will presumably have declined with the reduction in the compulsory levy percentages (reduced to 10 percent in March 2002), and liberalization of the molasses market during the early 1990s.

[46] See for example Acharya and Associates (1985) and Goldar and Gulati (1991).



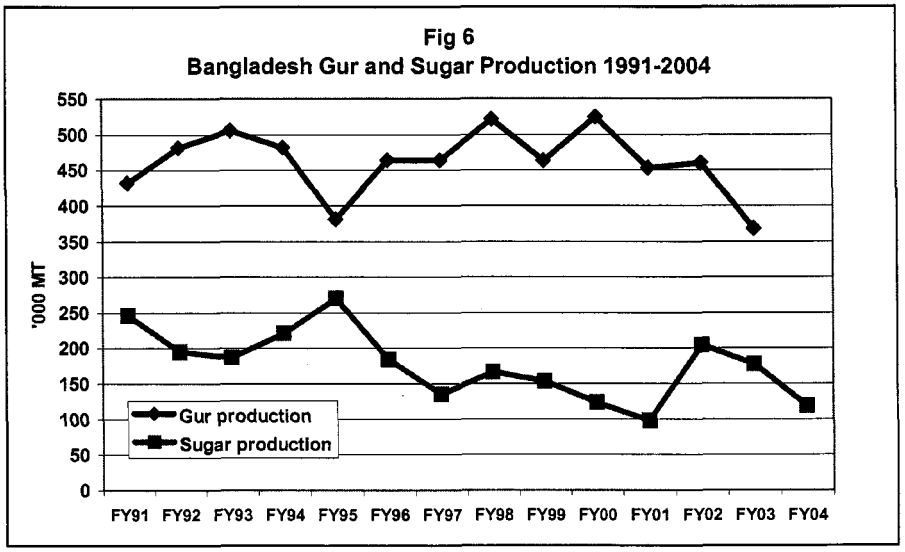
3. The Bangladesh industry: structure, policies and recent developments

The Bangladesh sugar industry is much smaller the Indian industry, and is not well documented. This section summarizes some of the principal features that are relevant for thinking about free or preferential trade in sugar with India.

Structure. The sugar industry in Bangladesh is dominated by the Bangladesh Sugar and Food Industries Corporation (BSFIC), a public sector monopoly, which until June 2002 also had a public sector monopoly of imports which it shared with the Trading Corporation of Bangladesh. Until 2004 BSFIC controlled 15 sugar mills: in March 2004 one mill was privatized and is now owned by a private Bangladesh group with a 20% participation of a Thai company. It has been announced that two other mills are in the process of being privatized. Despite very high protection against imports BSFIC has consistently been unprofitable: for example, its sugar production operations ran at a loss for 10 of the 13 years between FY91 and FY2003. In some of these years it made a small overall net profit after including profits from its monopoly of imported sugar, but in FY03 following the removal of its import monopoly its loss increased to Taka 1.3 billion, about one third of its sales. Its poor financial performance has been attributed to overmanning (it employs about 19000 people), poor management, obsolete equipment, and very low capacity utilization in many years. Its capacity utilization problem is related to fixed, government mandated prices for cane which prevents its mills from freely competing for cane supplies with gur producers[47]. As a result, in any given season some of its mills are not operating at all (for

[47] World Bank (2003), Annex 1.

example, the Kaliachapra mill which was privatized in 2004 had been closed since 1994[48]) and in some seasons others operate far below their capacity.



Various reports state that the combined sugar production capacity of BSFIC's mills (defined for a October-September sugar year) is about 210, 000 MT, but its actual production in favourable years has been more e.g. it was 270,000 MT in 1994/95. However, it fluctuates very widely (Fig 6) and has been in a marked downward trend since the early 1990s. By contrast with India, gur production-entirely in the informal small scale sector- is consistently much greater (about three times) than BSFIC's sugar production.

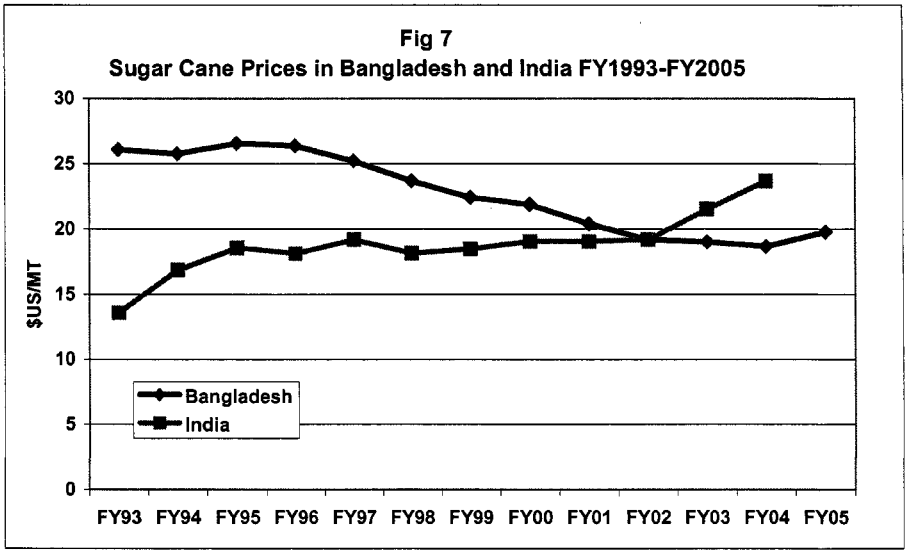
There are no reliable statistics either of the level of sugar and gur consumption in Bangladesh or of trends in consumption. Dividing apparent availability (production plus recorded imports) by population in 2000, apparent sugar consumption was unbelievably low at 1.8 kg/head, and apparent gur consumption was 4.0 kg/head. This compares with Indian consumption in the same year estimated at 15.5 kg/head for sugar and 10 kg/head for gur and khandsari. These huge discrepancies and other evidence suggest that very large unrecorded quantities of sugar, and possibly also of gur, are being smuggled into Bangladesh, all or most probably from India. Since this is highly relevant for the likely economic consequences if an FTA between India and Bangladesh were to include the sugar industry, it is discussed separately below.

Government controls and policies In addition to its ownership of BSFIC, the government has a number of other key controls which have so far been only slightly relaxed. Many are of doubtful efficacy.

Reserved sugar cane areas. As in India, each sugar mill has a designated area within which by law any cane that is cultivated has to be supplied to the mill. In return the mills are supposed to guarantee a market by buying all the acceptable quality cane that is delivered to them, and provide input credits, extension and advisory services to the farmers. Cane farmers in these zones are subject to the Gur Movement Control Ordinance of 1956, which states that farmers can produce gur only to meet their own consumption requirements and cannot transport gur out of the mill zones, However, when gur prices are attractive or for other reasons such as needs for cash, in practice it has not been possible to prevent

[48] *Daily Star,* August 12,2004 <www.thedailystar,net>

farmers from crushing their own cane to make gur, or from selling the cane to small scale gur producers who use crushing equipment driven by bullocks or by small machines such as tube well engines[49]. An unknown quantity of the gur is reported to be used in illegal distilleries, especially in the Chittagong hill areas and in border areas in Myanmar.



Controlled sugar cane prices. The cane prices is fixed by the government and since the early 1990s there have been only small, infrequent increases, so it has declined in real terms. Some studies attribute the problems of the mills in procuring sufficient cane to low cane prices, but until 2002 Bangladesh's cane prices were much higher than Indian prices (Fig 7)[50]. The difference is even greater than shown here, because the Indian prices are for recovery rates of 8.5% whereas the Bangladesh prices are for recovery rates of 8%.[51] As pointed out in discussing the Indian industry, there was a serious crisis beginning around 2002 when cane prices were just below $20/MT and sugar prices came down to around $250/MT. $20/MT is the approximate current level of Bangladesh cane prices, and with border prices for sugar at $250/MT or below, the experience in India suggests that very high sugar tariffs would be needed for financial viability of the Bangladesh mills, even if there were major improvements in management and milling efficiency.

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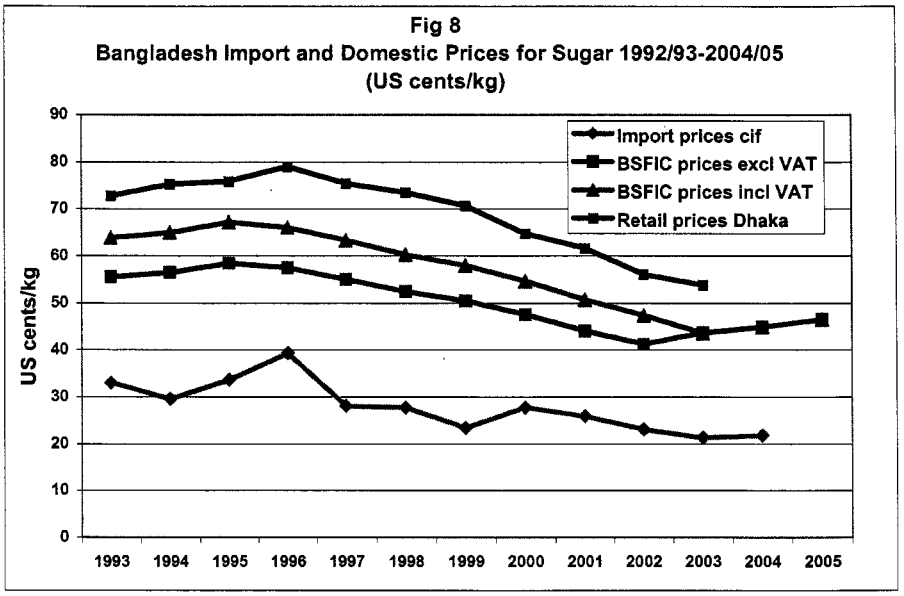
49 See for example, an article in *The Independent* September 24, 2004: "Farmers selling their crops to molasses producers". According to the article, sources at Rajshahi Sugar Mills said that because of a shortage of "manpower, magistrates and police" it was not possible to take action against the illegal power crushers

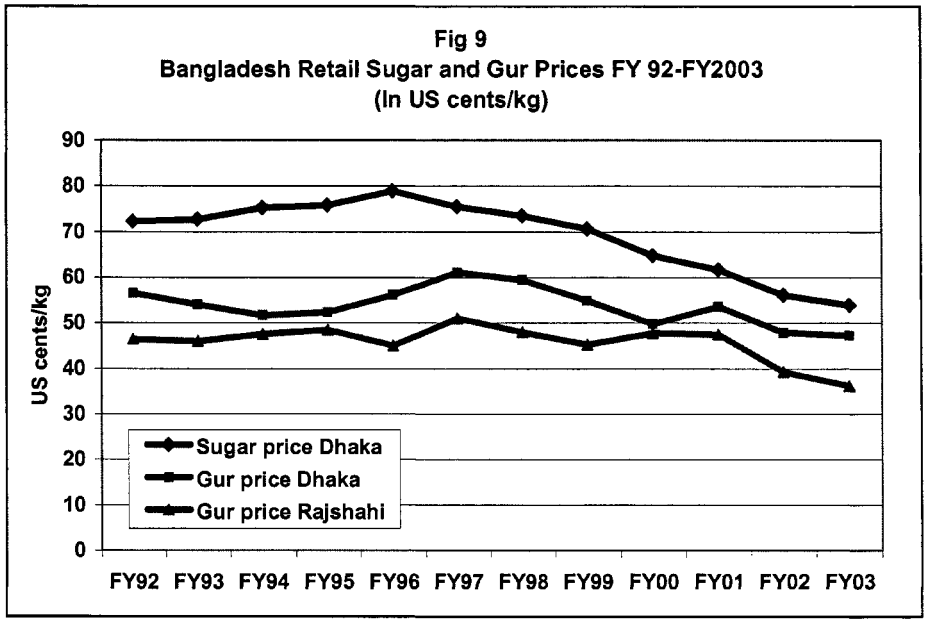
50 The Indian cane prices are estimated actual prices which are influenced by state government announced minimum prices (SAP prices).They do not allow for payment arrears which at times have been very substantial. Taking account of these would reduce the average effective Indian prices, especially during 2002/03 and 2003/04.

51 Until the 2002/03 season, BSFIC based its cane purchase price on an 8% sucrose content, but there are reports that in practice BSFIC mills paid this price regardless of the quality of the cane, owing to insufficient testing facilities. If correct, this would have undermined the motivation of farmers to deliver good quality cane to the mills and could be an important part of the explanation for their poor financial record. Beginning in 2002/03, the cane price goes up by a fixed amount for each 0.1 point increase over 8 percent. Before 2002/03, the apparent absence of quality control could mean that, by comparison with India, purchase prices were even higher than shown in Fig 7 if average sucrose content were lower than 8%, and lower if average sucrose content were higher than 8%.



Sugar prices BSFIC's sugar prices are set in advance for each sugar season by the government at Cabinet level. After increasing somewhat in the early 1990s, they remained approximately the same in nominal terms from 1995 until a slight reduction in 2002/03 followed by increases in 2003/04 and 2004/05. From 2002/03 domestically produced sugar (but not imported sugar) was exempted from the VAT, and after allowing for this, the nominal pre-VAT price received by BSFIC increased by about 16% between 2001/02 and 2004/05. This reversed the decline in real sugar prices (whether expressed in $US or constant Taka) that had been under way for the previous 10 years (Fig 8). Since at least the early 1990s, before adding the 15% VAT, BSFIC's prices have consistently exceeded cif import prices (indicated by unit values of recorded imports in Fig 8) by US 20-25 cents/kg. Retail prices are not controlled but have followed these trends, continuing to decline in real terms after 2001/02 owing to the abolition of the VAT on domestic production. However because of BSFIC's high prices, they have been far above retail sugar prices in India.

Gur prices. As in India gur prices are neither controlled nor subject to indirect taxes, but even though most gur is produced in rural areas by small scale business including many illegal operators, there is a market which seems to function effectively with prices that are systematically collected and reported by the Bangladesh Bureau of Statistics. From FY 1992 to FY 2003 retail gur prices increased at about the same rate as the general rate of inflation as measured by the CPI and also by the devaluation rate of Taka/US dollar exchange rate (Fig 9). As retail sugar prices came down after 1995, the margin between retail sugar and gur prices narrowed considerably, with gur selling at prices only slightly below the price of refined sugar, especially in the Dhaka area. Consistent with this, gur prices in Bangladesh appear to be far higher than gur prices in India (Fig 10): about double during the early 1990s and about 50% higher in 2000. As with sugar, these very large price differences suggest that gur smuggling from India to Bangladesh would be highly profitable, but also raise the question why prices have not tended to equalize if smuggling in fact takes place on a large scale.



Indirect taxes The principal general indirect tax in Bangladesh is the standard 15% VAT. Until 2001/02 it was applied to both imported and domestically produced sugar, but, starting in 2002/03, domestically produced sugar was exempted. Before it was abolished for domestically produced sugar, expressed in US dollars, the Bangladesh VAT (about US 5-6 cents/kg) was higher than indirect taxes on sugar in India (about US 1.8 cents/kg), but accounted for only about a fifth of the total excess of Bangladesh retail prices over Indian retail prices. Both sugar cane and gur are exempt from VAT.

Import policies Prior to FY93, the private sector participated in the import of sugar, but imports were subject to licensing (Table 6). Then, from FY93 to FY02, BSFIC in conjunction with the Trading Corporation of Bangladesh (TCB) ran a public sector import monopoly. A hesitant, complex and erratic series of reforms started in June 2002. Private sector imports were allowed from then until March 2003, prohibited once again between March and August 2003, after which they have been allowed. In July 2002, the liberalization was partially curtailed as the government directed that sugar imports could only be brought in by ship and not through land stations. This is quite restrictive as India is a major source of sugar imports and transport over land is the obvious means. Furthermore, a supplementary duty of 20% was introduced, which was increased to 40% in the FY04 budget, but later revised to 30%. During the early 1990s when private sector imports were allowed (albeit subject to licensing) the protective tariff was 62.5%. During the 9 years of BSFIC's import monopoly, this tariff was reduced by about half and the difference between the tariff inclusive price and BSFIC's selling price was used to cross subsidize its domestic sugar operations. After the BSFIC import monopoly was removed, mainly through supplementary duties and the use of the VAT for protection, the total protective rate on raw sugar almost tripled, to 86.4% in FY 03. The refined sugar tariff was lower during FY 03, but it seems that refined sugar imports were nevertheless subject to the higher 86.4% percent rate[52]. The protective rate was further increased to 98.4% in FY 04, and then reduced to the still extremely high level of 69.3% in the FY 05 budget. As is the case with other agricultural tariffs, there is no effective external WTO constraint on these tariff changes, as Bangladesh bound its sugar tariffs at 300% in signing on to the Agreement on Agriculture.

[52] Information from Ziaul Ahsan

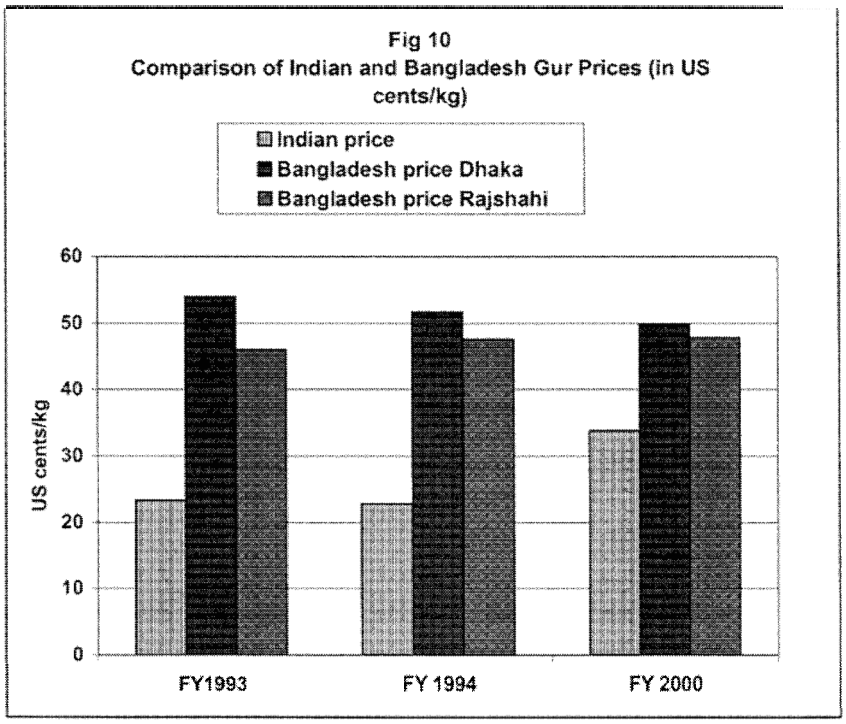


Table 6

Bangladesh: Sugar Import Policies and Protective Tariffs

Fiscal year	Protective Import Duty Rate % Raw HS 170111	Refined HS 170199	Total import duty rate: raw & refined %	QR?
1992	62.5	62.5	89	Licensing
1993	62.5	62.5	89	Licensing
1994	62.5	62.5	89	BSFIC
1995	32.5	32.5	54.5	BSFIC
1996	32.5	32.5	54.5	BSFIC
1997	32.5	32.5	54.5	BSFIC
1998	34.7	34.7	57	BSFIC
1999	34.7	34.7	57	BSFIC
2000	29.7	29.7	51.8	BSFIC
2001	29.7	29.7	51.8	BSFIC
2002	29.7	29.7	51.8	BSFIC
Jly 02-Mch 03	86.4	44.3	89.4 47.4	Free but S*
Mch 03-June 03	86.4	44.3	89.4 47.5	BSFIC & S*
Jly 03-Aug 03	98.4	98.4	101.4	BSFIC & S*
Aug 03-June 04	98.4	98.4	101.4	Free but S*
2005	69.3	69.3	72.3	Free but S*

Notes: After July 2002 the VAT on imports was protective as domestic production was exempted from VAT. The advance income tax has been treated as non-protective. BSFIC=BSFICimport monopoly; S*=imports by sea only.

Bangladesh's gur tariffs are the same as sugar tariffs, but there is practically no international trade in gur, with the important exception of trade in border areas of contiguous countries which produce sugar cane. Bangladesh's gur tariffs and import policies would therefore be highly relevant for trade with India, if it were not for the fact that gur imports are a monopoly of BSFIC which it seems does not trade in gur at all, since no gur imports or exports appear as separate items in either the import or the export statistics. The rationale for this apparent import ban seems to be equivalent treatment for imported and domestic gur, given the policy which makes it illegal to transport gur out of the mill zones.

In 2003/04 Bangladesh's protective tariffs for sugar cane and cane molasses were respectively 19% and 33.5%. For all practical purposes sugar cane is non-tradable owing to its low value, bulk, and the need to process it soon after cutting.

4. Sugar imports from India: how much smuggling?

It is generally recognized that large quantities of sugar are regularly smuggled from India into Bangladesh. This is a consistent finding of all the studies of informal trade, both in India and Bangladesh[53], that have reported the results of field surveys of informal trade in border areas, and is mentioned as a matter of course in press and other reports on the Bangladesh sugar industry[54]. A major unsettled question is the scale and value of the smuggled sugar, and an obvious way to estimate this is to take the difference between total sugar consumption and recorded production plus recorded imports. However, it appears that there are no reliable estimates of per capita consumption. According to the 2000 HIES (Household Income and Expenditure Survey) per capita sugar consumption was 0.13 kg/month or 1.56 kg/year, but this is for direct household consumption only and does not take account of what is normally the largest use of sugar as an intermediate input for the food and drink industries.

In the absence of better information Fig 11 shows estimated total consumption based on a conservative guess that per capita annual consumption in each year during FY92 to FY 2004 was 7.5 kg per capita. This compares with current average per capita consumption in rural areas of three low income Indian states (UP, Rajasthan and Madhya Pradesh) of between 9.9 kg and 10.6 kg, and with an all-India per capita consumption of 14.3 kg.[55] Estimated this way, total national consumption went up from just above 800,000 MT in FY 1992 to just above a million MT in FY 2004. This is consistent with press reports (presumably derived from sugar industry sources), that total Bangladesh consumption in 2004 was about 900,000 to one million tons[56]. These consumption guesstimates have then been compared with official statistics of available sugar, i.e. BSFIC's production, imports recorded in the Bangladesh trade statistics, and the unexplained difference is inferred to consist of smuggled sugar[57]. Since about 1996 production has trended down, but this has been offset by increasing officially recorded imports, with a very sharp increase in 2003 and 2004. As indicated in Figs 11 and 12, this has meant that unexplained consumption, presumably sugar smuggled from India, was running at about 600,000 MT for a number of

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53 For example Chaudhari S.K and others (1995); Pohit, Sanjib and Taneja (2002); Bakht, Z. (1996); Rahman, A and A. Razzaque (1998);Bayes , Abdul (2003)

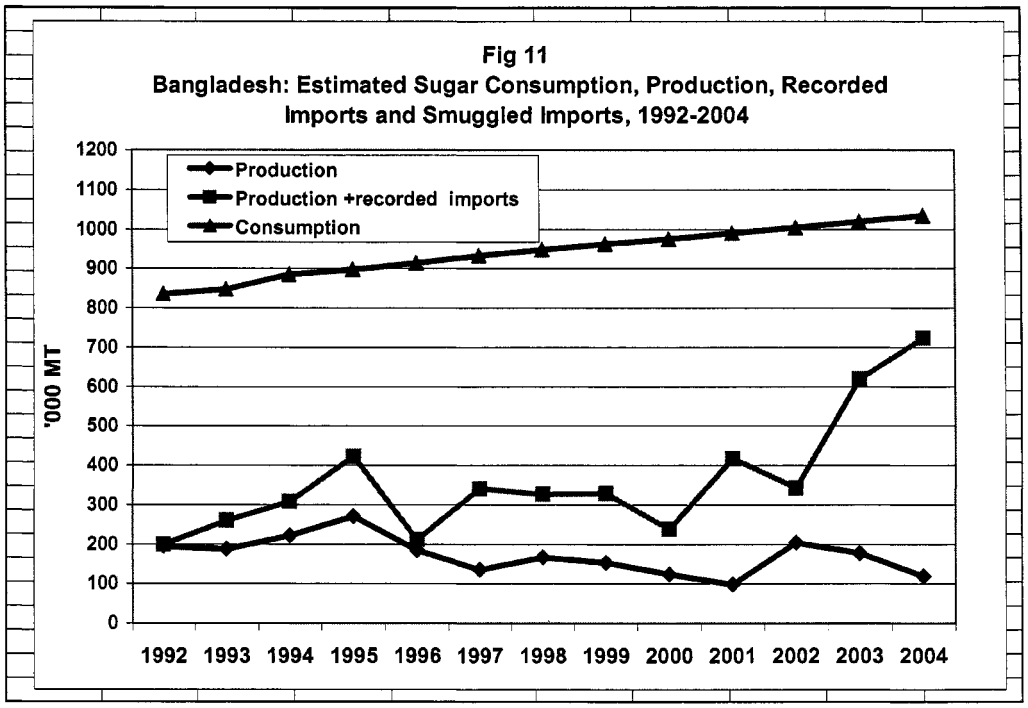
54 For example the article headed "BSFIC dealers urge govt to check sugar smuggling." *The Daily Star*, May 25, 2004.

55 ISMA (2004). The year of these per capita consumption estimates is not indicated in the ISMA report. It appears to be 2002/03 or 2003/04

56 *Daily Star* May 25, 2004 : "more than nine lakh metric tons"; August 12 2004 : "10 lakh tones" *News from Bangladesh*, October 03, 2004: " 7 to 8 lakh tonne";

57 These estimates are obviously very rough approximations even assuming that the assumption of 7.5 kg/per captita consumption is about correct (it presumably would have changed-probably increased –over the period). Among other things, the sugar availability estimates have not allowed for changes in stocks. In particular, if part of the increased recorded imports during FY 03 and FY 04 went to build up stocks, the apparent smuggling level during these years would not have declined as sharply as indicated in Fig 12.

years, increased further to between 600,000 and 700,000 MT per year after 1998, and then dropped to about 400, 000 MT in FY 2003 and to 300,000 MT in FY 2004 ,approximately by the same amount as the sharp increase in official recorded imports during these years.[58]



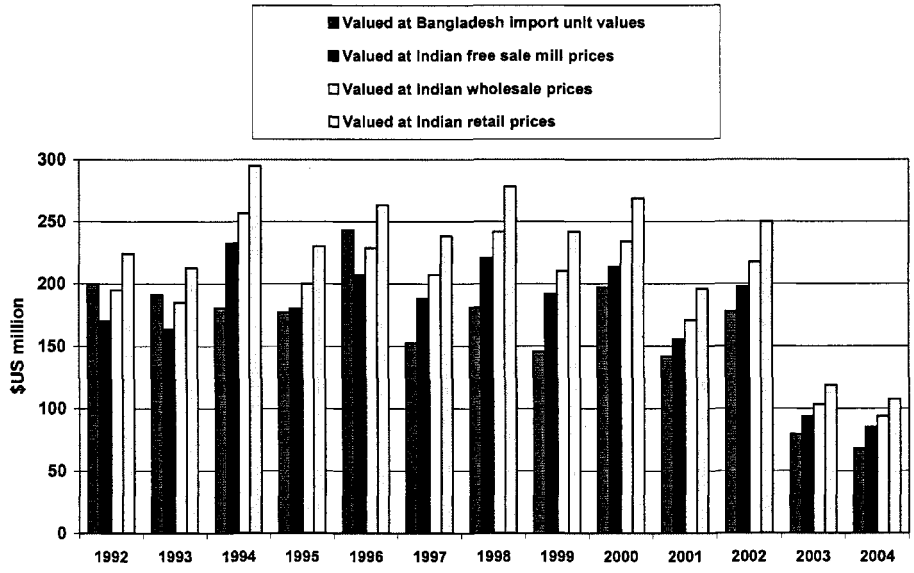
It is possible that some of the unrecorded supplies of sugar to Bangladesh may come from outside the region (e.g. from Brazil or Thailand) involving large scale "technical smuggling" e.g. underinvoicing or similar practices at Customs. However, the predominant view is that the smuggled sugar comes from India over the land border, and assuming this to be the case alternative US dollar values of the total quantities apparently smuggled have been estimated, based on alternative prices the smuggling networks may have paid for the sugar in India (see Appendix Table 1 for details). These estimates (all derived from total quantities inferred from Bangladesh per capita consumption of 7.5 kg) are illustrated in Fig 13. They indicate annual US dollar smuggling of sugar during the 1990s up to 2002 which was generally in the region of between $150 million and about $250 million, but then a very sharp drop in 2003 and 2004 to a range of $70 to $100 million.

The first of these alternative estimates assumes that the smuggled sugar is purchased at Bangladesh's going cif import price as indicated by import unit values calculated from the official trade statistics. This gives the lowest estimate of the value of the smuggled sugar (valuing it at world prices at the Bangladesh border), but is implausible except in years when free market prices in India are below international prices, which was the case in 1992 and 1993, or in years when Indian sugar exports have been subsidized, as has been the case since April 2001. However Indian sugar exports that receive subsidies are recorded in Indian Customs records and therefore in the official Indian export trade

[58] Apparent availability (production plus recorded imports) more than doubled in two years, but it is quite implausible that there would have been a corresponding increase in consumption. Even allowing for stock increases, the only way to explain such a large proportionate change in apparent availability is the presence of unrecorded sugar supplies in the Bangladesh market.

statistics, and it seems highly unlikely (see later discussion) that they would not also pass through Bangladesh Customs and also be recorded there. For these reasons, this valuation of the foreign exchange cost to Bangladesh of the smuggled sugar seems to be a lower bound. Nevertheless, these values are of considerable interest, because comparing them with the alternative values of the sugar at Indian domestic prices, provides an indication of the orders of magnitude of the terms of trade effects of the smuggling for Bangladesh, a substantial loss in each of the 11 years 1994 to 2004, and a very small potential gain in 1992 and 1993, when Indian domestic sugar prices were lower than border prices.

Fig 13
Alternate Estimates of Sugar Smuggled to Bangladesh from India, 1992-2004 in $US million. Assuming consumption 7.5kg/person



The second alternative estimate of the value of the smuggled sugar assumes that it is purchased in India at the Indian "free sale" mill price excluding indirect taxes, either direct from sugar mills or from the general market in Indian "black economy" sugar generated by the levy system and the more general motivation to avoid indirect taxes. This price is a protected domestic price which in most years has exceeded border prices. However, as pointed out previously, the levy percentage was cut to 10% in March 2002, and together with other liberalizing reforms, the opportunities for obtaining sugar for smuggling to Bangladesh in this way may have diminished since then.

The third alternative estimate assumes that the smuggled sugar is purchased at the going Indian wholesale price, which includes Indian indirect taxes and both the margins of the sugar mills and domestic wholesale trader margins. As noted previously, the Indian domestic indirect taxes on sugar purchased at this point and smuggled to Bangladesh in effect constitute an export tax, currently equivalent to about $19/MT i.e. the smuggling activity transfers this amount from buyers of the sugar in Bangladesh to the Indian government.

The fourth and highest alternative estimate assumes that the sugar is purchased in India at the retail price, which reflects protection of the domestic market and includes all domestic distribution margins as well as domestic indirect taxes. If the sugar is carried over the border in relatively small head

loads, it is very likely purchased in local retail markets and in border areas this may be the most plausible way to value it.

These four alternative ways of valuing the smuggled sugar do not include transport and transaction costs and margins of various kinds involved in getting the sugar to the Bangladesh border. These will increase the price paid for the smuggled sugar by the importers involved in the smuggling network in Bangladesh, perhaps considerably.

If it had been possible for sugar to be freely and legally imported into Bangladesh subject only to Customs duties, insofar as smuggled sugar were to divert Bangladesh demand from legal imports, there would be a trade diversion cost equivalent to the Customs revenue (including in this case the Bangladesh VAT) that would have been collected on those imports. On the other hand, there would be some benefit to Bangladesh consumers if the smuggling were to bring down the prevailing level of sugar prices. In other words, the sugar smuggling would act as a *de facto* free or preferential trade arrangement with potential economic welfare costs and benefits which are similar to the economic costs and benefits of formal preferential trading arrangements. However, until June 2002, when the BSFIC import monopoly was partially lifted, this standard trade diversion interpretation does not fit the Bangladesh case, because the level of legal sugar imports was entirely at the discretion of BSFIC. Even though it made very high profits on the sugar it imported, it appears to have used its monopsony power very cautiously by importing much less than was needed to meet total demand, and giving first priority to supporting the domestic price in the interests of its sugar milling operations and of sugar cane farmers. At this price, there was very substantial excess demand, so that in effect BSFIC's price support operations also benefited the smuggling networks. The excess demand was met by smuggled imports from India, but it seems that the transport and other transaction costs of smuggling the sugar-or some other unknown constraints-were such that the quantities smuggled never greatly diminished the excess of sugar prices in Bangladesh over sugar prices in India.

This interpretation of the massive scale of sugar smuggling before 2002/03, when it accounted for 60 to 70 percent of probable total Bangladesh demand, is consistent with the dramatic jump in legal sugar imports during 2002/03 and the corresponding decline in apparent smuggled imports. The two key policy changes in Bangladesh that were made in June and July 2002-first allowing private traders to import, and then a month later banning imports across the land border, suggest that large quantities of sugar were being smuggled through or in the vicinity of the land Customs posts, perhaps under the cover of legal shipments, and that the sea ports were less permeable. This change, together with the new export subsidy policy in India-suggest that large scale "wholesale" smuggling networks operating in both India and Bangladesh, may have switched some of their exports to the legal trade by sea. The continued decline in apparent smuggling to around 300,000 tons in FY 04, despite somewhat higher tariffs on legally imported sugar, suggests that "wholesale" smuggling from India was still being constrained, even though in principle, with the new high tariffs, it would have been much more profitable than importing by the legal route. In turn it may be surmised that the "wholesale" large scale component of the smuggled sugar –of the order of 300,000 to 400, 000 tons annually-was probably occurring at land Customs stations under the cover of legal trade, a high proportion perhaps at the Benapole-Petrapole crossing. If so, while it continues, the prohibition of imports by land routes-though a very blunt and economically inefficient instrument-may in future confine sugar smuggling to smaller scale and probably higher cost operations in more remote border areas.

The next section of this paper analyzes the likely effects of a formal FTA between India and Bangladesh which would include sugar, given the prior existence of large scale smuggling. The results are tentative, especially in view of the necessarily uncertain information on the scale and nature of the smuggling.

5. Simulating the effects of free trade between India and Bangladesh in sugar: The base scenario in 2002/03.

These questions are first explored by considering what might have happened, based on what is known or has been estimated in the previous sections, about production, trade and prices during Bangladesh's FY 2003 (Appendix Table 2). As pointed out previously, sugar prices at all levels (ex-mill, wholesale and retail) have been much lower in India than in Bangladesh for many years, so an FTA would involve an expansion of Indian exports to Bangladesh, and the important adjustments and repercussions on economic welfare would occur in Bangladesh. This is discussed below with reference to Table 7 and Fig 14. Table 7 is a matrix showing the starting point of this analysis i.e. how the value of total estimated sugar supply and demand in FY03 was divided between BSFIC's sugar production, recorded imports from the rest of the world (ROW), recorded imports from India, and estimated smuggled imports from India, and the principal components of each of these sources of supply. Using these numbers and the corresponding prices, Fig 14 provides a simplified schematic interpretation of the Bangladesh sugar market as it was during FY03, and with that starting point, a simulation and rough quantification of what would happen following an FTA with India. At the outset it should be emphasized that this basic scenario has been constructed without the benefit of data on sugar stock levels and changes in stocks. If this data were available it could change some of the key numbers (especially the estimated quantities smuggled) but would not change the general nature of the findings.

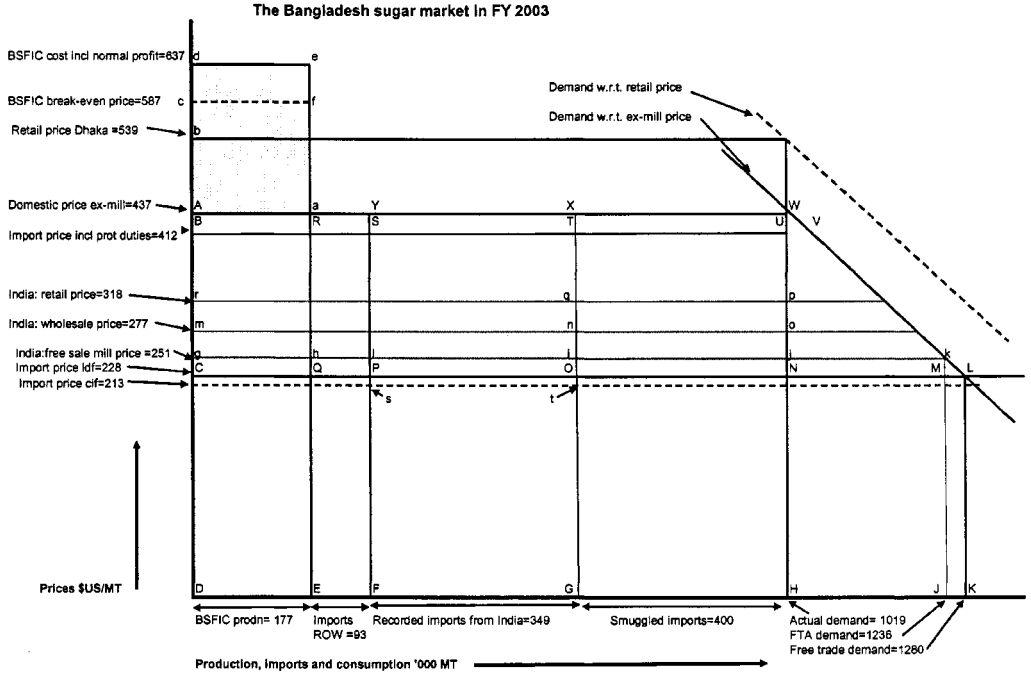
Table 7

The Bangladesh sugar market in FY03: decomposition into principlal components

	BSFIC production	Recorded imports from ROW	Recorded imports from India	Smuggled imports from India	Total market demand & supply
Quantities '000 MT	177	93	349	400	1019
Valuation in $US million					
(1) At ex-mill domestic prices	77.4	40.6	152.5	174.7	445.3
(2) At import ldf prices	40.4	21.2	79.6	91.2	232.3
(3) Excess of (1) over (2)	37.0	19.4	72.9	83.6	213.0
(4) Excess BSFIC production cost over (2)	72.5				72.5
(5) BSFIC subsidy	-35.4				-35.4
(6) Protective import tax revenue		8.8	33.2		42.0
(7) Importer rents		10.6	39.8		50.4
(8) Excess of smuggling pchs price over (2)				9.2	9.2
(9) Smuggling transaction costs and rents				74.4	74.4

If the assumption that per capita sugar consumption in Bangladesh is about 7.5 kg/head, in FY03 BSFIC only supplied about 17% of total demand of just over a million tons: the rest was supplied by imports, about 40% by smuggled imports from India. BSFIC's average selling price to wholesalers is taken to be the representative prevailing domestic price, since it is the price with which imports, whether legal or smuggled, have to compete, and because BSFIC's production would presumably not be sold if its price were significantly higher than the prevailing bulk price for imported sugar. Retail prices are higher, but they are for sales to households which probably account for a small proportion of total sales: most sugar is probably sold in much larger quantities to food processors at considerably lower prices i.e. at prices somewhere between BSFIC's bulk selling prices and retail prices.

Fig 14
The Bangladesh sugar market in FY 2003



Valued at BSFIC's price ($437/MT) total national sugar sales in FY03 were approximately $445 million, indicated in Fig 14 by the area DHWA i.e. the quantity sold DH times the price DA. This consisted of sales of BSFIC ($77 million), recorded imports from ROW ($41 million), recorded imports from India ($153 million) and apparently smuggled imports ($175 million). These four supply sources and the total supply have been alternatively valued at an estimate of the prevailing "landed duty free" (ldf) import price during FY03, which is taken to be the average unit value (cif) of actual sugar imports during the year, plus an estimate ($15/ton) of port handling and other expenses incurred to get the sugar off the ships, through Customs and into storage at or near the port. This alternative valuation shows how much the sugar would have cost at roughly the same point in the domestic distribution system if all of it had been imported at world prices without paying any of the protective import duties that were actually operative during FY 03 i.e. Customs duty, supplementary duty, the IDSC tax, and also VAT (which acted as a protective duty since it was applied to imports but not to domestically produced sugar), and without being subject to any other import restrictions. At ldf prices, the sugar was worth $232 million (area CDHN in Fig 14), $213 million (area ACNW in Fig 14) less than its estimated value at domestic prices. This difference between the value of the sugar at border prices and its value at protected domestic prices affected the domestically produced sugar, the legally imported sugar, and the smuggled sugar in different ways.

BSFIC's domestically produced sugar. During the year, BSFIC's production was 177,000 tons and its average selling price $437/MT, 91.7% over the landed duty free price of imported sugar. However, as had consistently been the case in the past, even at this price BSFIC incurred very large losses. Based on its past financial performance, a very conservative approximate estimate is that to break even in FY03 BSFIC would have needed to sell its sugar for an additional $150/MT (distance bc in Fig 14) i.e. for $587/MT, and to earn a 5% return on its total assets, for another $50/MT (distance cd in Fig 14)[59]. On this

[59] See Appendix Table 3 for estimates of BSFIC's losses over the four years FY99 to FY02. During these four years, to eliminate its operating losses and to earn a 5% return on its assets, on average BSFIC's sugar price would have to have been increased by $US 278 /MT. A required increase of only (sic!!) $200/MT has been

calculation, to operate with normal profits it would have required a selling price of $637/MT, 2.79 times the import ldf price. The required subsidy to break even was $26.6 million (area cAaf in Fig 14), another $8.9 million to earn 5% on its total assets (area dcfe), making a total subsidy of $35.4 million in that year. It is possible that some part of this subsidy might have come from profits on sugar imported during the year[60], although most of the very large subsidy which BSFIC regularly received in the past in this way disappeared The rest had to be covered by the government in some other way, probably in the form of unserviced loans and government-financed assets earning no return.

Legal sugar imports. During FY03, the total protective import duty rate was 86.4%, equivalent to $184/MT (distance CB in Fig 14). Adding this to average cif prices and estimated port costs gives a landed duty paid sugar price of $412/MT, $25/MT below BSFIC's average selling price. With unimpeded private sector import competition it would be expected that domestic prices at the same or similar distribution levels would approximate cif prices plus tariffs plus the port and other costs of the imported sugar. As these statistics suggest that this was not the case in during FY03, the $25/MT has been treated as an economic rent which was shared in unknown proportions between BSFIC and the private importers.[61] Leaving this aside, most of the gap between import prices and BSFIC's selling price is explained by the protective import duties, which were $17.1 million on the 93,000 tons of sugar imported from countries other than India (area RQPS), and $64.2 million on the 349,000 tons imported from India (area TONU).

During FY03 free market ("free sale") sugar prices in India averaged about $251/MT, well above Bangladesh's apparent average import price for sugar imported from India ($213/MT). Despite this considerably lower price, Indian traders found it worthwhile to export to Bangladesh because of the export subsidies and other incentives to export that were available to them (see previous discussion). The explicit subsidies on their exports to Bangladesh were worth about $32/MT, and the remaining difference between the prevailing free market domestic prices (about $6/MT) is easily explained by other advantages of exporting, especially the consequent reduction in the "levy" obligation, and the reduction in the cost of financing sugar inventories. In Fig 14, the approximate total export subsidy (explicit $11million, and implicit $2.3 million) is indicated by area lsti, approximately $13.3 million. This is an important consideration for both countries in thinking about the costs and benefits of an FTA, because as long as Bangladesh retains high or even moderate tariffs on imports from ROW, in most circumstances the existence of an FTA would mean that Indian sugar exports to Bangladesh would be profitable without any form of export subsidy.

Smuggled sugar. In Fig 14 it is first assumed that all of the smuggled sugar would have been purchased illegally in India (without paying the Indian excise tax and cess) at the mill "free-sale" price of

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assumed for FY03 to allow for the fact that BSFIC's production in that year was higher than it had been on average during the previous four years. This estimate will need to be modified when BSFIC's FY03 data becomes available.

60 Starting with an average cif price for imported sugar of $213/MT and adding port charges ($15/MT) and protective import duties ($184/MT) gives a landed duty paid cost of $412/MT, $25/MT below BSFIC's selling price (distance AB in Fig 14). Whether is an accurate estimate for BSFIC and private importers, of the profit margin from importing sugar, depends on the accuracy of the price and cost estimates.Errors in these could easily explain all or most of this apparent $25/MT margin. On the other hand, the government's reinstatement of BSFIC's import monopoly between March and August 03 suggests that it still saw these imports as a way of cross-subsidizing BSFIC's sugar production operations, even though it kept import duties much higher than in the past.

61 The $25/MT difference may have been due to estimation errors and unaccounted domestic transport and marketing costs rather than representing economic rents of the importers. On the other hand, the erratic policy changes during the year (notably the ban on land border imports and the reinstatement of BSFIC's import monopoly from March 2003) suggest that some kind of rent seeking may have occurred.

$251/MT, indicated by distance Dg i.e at $23/MT more than the Bangladesh ldf import price. The area iONj (=$9.2 million)-the excess cost of buying the sugar at this price rather than at the prevailing international price- is therefore a kind of "trade diversion" cost to Bangladesh resulting from the ability of the smugglers to charge a higher price than the international price, by evading the normal import duties applied to legally imported sugar. The difference between this price and the price with which this sugar would have to compete in Bangladesh (area XijW=$74.4 million) is an estimate of the total smuggling transaction costs and economic rents involved in moving the sugar from the purchase points at the mills in India, to and across the border with Bangladesh, and to wholesale locations inside Bangladesh.

As discussed previously, smuggling of sugar that starts with purchases at Indian free sale prices is likely to be on a relatively large scale. Also possible is smuggling on a smaller scale that starts in India with purchases at wholesale tax-inclusive prices (distance DM in Fig 14) or at retail prices (distance Dr). As these prices are higher than free sale prices, the price paid by the recipient of the sugar in Bangladesh is also likely to be higher, in addition to which unit transaction costs (transport, payments to couriers, payments to officials etc) are likely to be higher with smaller shipments. The three possibilities for the starting points of the smuggling are compared in Table 8, which also shows the corresponding possible levels of total transaction costs and margins of the smuggling networks under each scenario, if all the smuggled sugar were to go from just one of these starting points. If the starting point were purchase at the Indian wholesale price, before taking into account subsequent costs to get the sugar into the hands of Bangladesh importers, the cost to Bangladesh of this *de facto* trade diversion in FY03 would have amounted to $18.3 million (area nONp in Fig 14), and if all the smuggled sugar had been purchased in India at retail prices, the trade diversion cost would have been $33.6 million (area qONp in Fig 14).

Table 8: Smuggled sugar FY03: Costs according to purchase source in India: $US million

Source and price in India	Mill free sale	Wholesale	Retail
Value in ldf prices	91.2	91.2	91.2
Value at source in India	100.4	110.8	127.2
Trade diversion cost#	9.2	19.6	36
Of which Indian indirect taxes*	0	7	7
Transaction costs and margins**	74.3	63.9	47.5

Value at source in India minus value at ldf prices
* Excise & cess Rs 850/MT
**Value at ex-mill prices in Bangladesh minus value at source in India

By contrast with purchase of Indian black market sugar at mill "free sale" prices, in principle the prices charged by legitimate wholesalers or retailers will include the Indian indirect taxes on sugar (excise plus cess). On the entire quantity apparently smuggled in FY03, these taxes would amount to $6.6 million. They would increase the cost of the sugar to the smuggling network by this amount, and in all probability this increase would be passed through to buyers of the sugar in Bangladesh[62]. In this way, the Indian indirect taxes act as *de facto* export taxes paid by Bangladeshis to the Indian government. In addition, the smuggling also creates private benefits in India which are ultimately paid for in Bangladesh, in the form of trading margins and payoffs to officials and others before the sugar crosses the Bangladesh border.

[62] It is possible that the taxes would squeeze the margins and economic rents of some of the Indian participants in the smuggling networks, rather than being passed on to final buyers of the sugar in Bangladesh.

A careful reading of the research studies based on field surveys which deal with informal India-Bangladesh trade, indicate that all three of the smuggling models mentioned above exist, but the studies do not provide any indication of the relative importance of each, certainly not at the level of individual smuggled commodities such as sugar. Therefore, in the discussion below of the likely effects of an India-Bangladesh FTA including sugar, it is possible to say something about the likely effects on smuggling in the aggregate, but not about the effects on the different smuggling channels.

6. Free trade between India and Bangladesh in sugar: who gains, who loses, and by how much? First simulation.

This is first considered by asking: what would have happened if an FTA had been in place for sugar during FY03? In order to roughly quantify the likely outcome it is assumed that:

- Indian exports to Bangladesh would be exempt from all of Bangladesh's protective import duties during FY03 i.e. Customs duties, supplementary duties, IDSC, and the VAT. All of these duties would continue to be applied at the total protective rate of 86.4% to imports from ROW.
- Bangladesh's ban on sugar imports by the land border would be lifted
- India would remove its export subsidies from sugar exported to Bangladesh (but would keep them for exports to ROW)
- Like all exports, legal Indian sugar exports to Bangladesh would be exempt from Indian domestic taxes
- Indian sugar is exported to Bangladesh at the Indian domestic bulk "free sale" price, and competition between Indian sugar exporters keeps the export price to Bangladesh at that level.
- Demand for sugar in Bangladesh with respect to bulk prices is as shown in Fig 14, with an average elasticity of -0.36 over the straight line demand curve range WL[63].

A key assumption in this first simulation is that the Indian sugar is sold in Bangladesh at the domestic Indian free sale price: in effect the Indian and Bangladesh and markets are integrated and effectively become one market, so that sugar is sold in bulk at the same pre-tax price in both countries. This assumption is varied in two further simulations reported later.

Under these conditions, the outcome of the FTA in Bangladesh is illustrated in Fig 14, where the new equilibrium price is the Indian "free sale" price (distance Dg =$251/MT) and demand expands to distance DJ (1,236,000 tons). Legal imports from India under the FTA replace all of domestic production, all of the previously legal imports from ROW, and all of the previously smuggled imports from India. The corresponding changes in economic welfare for the principal affected groups in Bangladesh, India and in ROW are shown in Table 9 and discussed in turn.

<u>Economic welfare effects in Bangladesh.</u>

- There is a very large welfare benefit to Bangladesh sugar consumers of $209.7 million, resulting from a 42.5% percent cut in the bulk sugar price, from $437/MT to $251/MT (from Taka 25.3/kg to Taka 14.5/kg). Most of this benefit is the reduced cost ($189.5 million) of the sugar that was already being purchased at the original higher price, and part ($20.2 million) is the estimated value to consumers of the 217,000 tons of additional sugar they now buy at the lower price. The proportionate reduction in the retail prices and prices to industrial consumers would be less than 42.5%, but the combined

[63] This is a conservative guess based on an estimate of -0.64 for India quoted in an article on the Indian sugar industry in *India Infoline* (2004). The point elasticity along the relevant range of the straight line demand curve in Fig 14 (from a price of $437/MT to $228/MT varies from -0.54 to -0.224 at the lower price. The simulations in this paper could be run with alternative demand elasticities but alternative plausible values of the elasticities would not greatly change the estimated changes in welfare.

welfare benefit to them would be the same if wholesale and retail margins did not change, and would be somewhat greater than $209.7 million if these margins were to fall in absolute terms e.g. if they did not change as a percentage of bulk prices. The consumer surplus benefit to sugar buyers comes from five major sources:

- Replacing BSFIC's high priced sugar with the less expensive imported sugar from India : i.e. BSFIC's sugar sales minus the cost of the equivalent quantity of imported Indian sugar= $32.9 million
- Lost Customs revenue ($17.1 million) and importer economic rents ($2.3 million) from replaced imports from ROW, minus a trade diversion cost ($2.1 million) due to the higher border price of the Indian sugar relative to the ROW sugar.
- Lost Customs revenue ($64.2 million) and importer economic rents ($2.3 million) from replaced imports from India, minus a trade diversion cost ($8.0 million) due to the higher price of the Indian sugar relative to the ROW sugar.
- Transaction costs ($74.4 million) of all kinds (including costs of transport and storage) incurred, and economic rents (including bribes) earned, in the sugar smuggling networks that are replaced. Some of these costs and economic rents are in India, and some in Bangladesh.
- Consumers' surplus ($20.2 million) on the increased consumption of sugar resulting from the lowered price

Table 9			
CHANGES IN ECONOMIC WELFARE FROM FTA: FIRST SIMULATION			
	Area in	$US million	
	Fig 14		
IN BANGLADESH			
Change in W from change in			
Consumer surplus	AgkW		209.7
Customs revenue	RgjT		-81.3
Importer economic rents	aRTX		-11.1
BSFIC subsidy	dAae		35.4
Net quantifiable change			152.7
Loss of cane grower & sugar mill economic rents			-?
Loss of smuggler economic rents in Bangladesh			-?
Sources of increase in consumer surplus			
Excess cost of BSFIC's production replaced	Bghr		32.9
Imports from ROW			
Lost Customs revenue	RQPS	17.1	
Lost importer economic rents	aRSY	2.3	
Minus trade diversion cost	IPOi	-2.1	17.3
Imports from India			
Lost Customs revenue	SIiT	64.2	
Lost importer economic rents	YSTX	8.7	
Minus trade diversion cost	IPOi	-8.0	64.9
Smuggled imports			
Transaction costs and economic rents eliminated	XijW		74.4
Consumers' surplus from increased consumption	Wjk		20.2
IN INDIA			
Subsidy on exports to Bangladesh removed	Isti		13.3
Loss of indirect domestic taxes on smuggled exports to Bdesh			-?
Loss of smuggler economic rents in India			- ?
Export producer surpluses			negligible
Change in consumer surpluses in India			negligible
IN ROW			
Loss of producer surpluses on displaced exports to Bangladesh			?
NET CHANGE IN BANGLADESH AND INDIA			166.0-?
NET GLOBAL CHANGE INCLUDING ROW			166.0-?

- A large decline ($81.3 million) in government receipts from the protective import taxes previously received on imports from ROW and legal imports from India.
- The disappearance of apparent economic rents (worth $11.1 million) that may have gone to importers of Indian and ROW sugar during FY03. As BSFIC was importing along with private traders and was the only legal importer for some of the year, the FTA causes it to lose this last cross- subsidy of its sugar production activities. However, as discussed previously, these

estimates of importer economic rents during FY 03 are especially problematic and would need checking against more detailed price and cost data than was available for this simulation.

- Because of the demise of BSFIC, the disappearance of the government's large annual subsidy to keep it alive, in FY03 estimated at $35.4 million.
- Overall, a quantifiable net economic welfare gain for Bangladesh of $152.7 million, after deducting the loss of Customs revenue and the loss of importer economic rents, from consumer benefits and the cessation of subsidies for BSFIC.
- However, this very substantial net quantifiable gain for Bangladesh has to be qualified by potential welfare losses among participants in the two major activities that do not survive, BSFIC's sugar production and sugar smuggling from India. As regards sugar production, there are likely to be welfare losses for BSFIC executives and employees, for owners, mangers and employees of ancillary operations, and for sugar cane farmers. This simulation does not take account of the possibility that with restructuring some mills might be able to survive, but without that all sugar production ceases.
- While sugar cane farmers would lose their sales to the sugar mills, in FY03 that accounted for only about a third of the cane: most of the rest was used to produce gur. The consequences of an FTA for Bangladesh's gur production would require much better information than is currently available on demand and supply conditions for gur in both India and Bangladesh, and on gur smuggling and its connection with trade in molasses and illegal alcohol production.
- The disappearance of sugar smuggling would involve substantial adjustments and losses of economic rents by the Bangladeshis involved in, or otherwise benefiting from, the smuggling networks. Some guesses as to the possible orders of magnitude of these economic rents (both in Bangladesh and India) are provided in a later section of this paper, but for obvious reasons these numbers are likely to remain highly speculative even if it were possible to undertake field research focussing on the economic rents and side payments involved.
- To quantify the likely effects of an India-Bangladesh FTA on sugar and sugar cane production in Bangladesh and the likely effects on sugar smuggling, much more detailed information than has been available for this paper would be needed, taking account of how the relevant product, service and labor markets are likely to adjust, and distinguishing short term welfare losses of producer surpluses and economic rents, from longer term effects. The consequences for sugar mill employees and sugar cane farmers are certain to be highly sensitive politically, and political connections with the smuggling networks cannot be excluded. Some brief comments are made on these points in the concluding section of the paper.

Economic welfare effects in India

In order to compete with Brazil and other countries that were exporting to Bangladesh, the Indian government paid export subsidies estimated at $13.3 million on the 400,000 tons it exported to Bangladesh in 2002/03, and these subsidies would no longer be needed with an FTA. Apart from this clear benefit of the FTA to the Indian central government, other economic welfare effects through the sugar price would most likely be very small. Even though as a result of the simulated FTA India supplies the entire expanded Bangladesh market of 1,284,000 tons, it was already supplying more than half this amount through legal exports (349,000 tons) and smuggled exports (400,000 tons). The new exports to Bangladesh that result from the FTA (487,000 tons) represent only a very small shares (2.4% and 2.7% respectively) of total Indian sugar production (20.1 million tons) and consumption (18.2 million tons) in sugar year 2002/03. In view of this it seems unlikely that the new sugar demand from Bangladesh would increase Indian sugar prices by much or have much effect on the welfare of Indian sugar producers and consumers. As the market structure and behaviour of the sugar Indian sugar industry seem to be highly competitive, with a large number of competing sugar producers and traders, it is also plausible that the export trade to Bangladesh would be competitive and best represented-as in Fig 14-by a horizontal or

almost horizontal export supply curve, with exports under an FTA generating at most only minor producer surplus benefits to the exporters.

However, it is likely that there would be some more significant welfare losses in India due to the disappearance of the smuggling networks in sugar i.e. the shares of Indians in the producer surpluses, bribes and other side-payments involved in getting the sugar to and over the border with Bangladesh. In this simulation, the total estimated transaction costs and economic rents of smuggling are large ($74.4 million) and some part of this sum consists of producer surpluses and economic rents in India, the latter broadly defined to include super-normal profits of the various smuggling network participants and side payments to officials. The basis for this is the hypothesis that in 2002/03, the smuggled sugar was being purchased illegally in India at the mill free sale price, and the assumption that this same price would be the export price at the land border under the FTA. As argued earlier, it is plausible that smuggled sugar would also be purchased at wholesale prices inclusive of Indian indirect taxes, or at Indian retail prices. In both these cases, the disappearance of the smuggling following the FTA involves a larger welfare benefit for Bangladesh, because the smuggled sugar purchased at Indian wholesale or retail prices that is replaced is more expensive and includes Indian indirect taxes and domestic distribution margins. Conversely, the benefits of the FTA in India are lower, because the legally exported sugar does not include the Indian indirect taxes and distribution margins which are ultimately recovered from Bangladesh buyers when sugar is smuggled.

Economic welfare effects in the rest of the world (ROW)

Based on the situation in FY 03, as a result of the FTA 93,000 tons of sugar valued at $19.8 million at cif prices, and previously imported by Bangladesh from Brazil and other countries, would be diverted to imports from India. There are clearly non-negligible welfare effects (most likely losses) in these sugar exporting countries, but more information on supply conditions in each country and alternative destinations for the sugar would be needed to quantify them.

Aggregate net economic welfare effects

The quantifiable joint aggregate net welfare improvement in Bangladesh and India is substantial ($166 million) and it seems highly unlikely that the potential negative welfare effects of the FTA (both in India and Bangladesh and in the rest of the world) that it has not been possible to quantify with available information, would go close to outweighing this aggregate benefit, unless they were to be allocated much higher welfare weights.

7. Free trade between India and Bangladesh in sugar: who gains, who loses, and by how much? Second and third simulations

The simulation discussed above assumes that after the FTA Indian sugar is legally exported to Bangladesh and sold in bulk there at the same tax-free price (the Indian free sale mill price) as in India. The results of a second and third simulation using higher Bangladesh ldf import prices from India are shown in Table 10.

Table 10			
Quantifiable changes in economic welfare after an FTA with simulations using alternative Bangladesh ldf import prices from India			
	Bangladesh ldf import price from India equal to		
	$251	**$307**	**$354**
IN BANGLADESH			
Total sugar demand '000 MT	1236	1192	1123
Change in W from change in			
Consumer surplus	209.7	143.7	88.9
Customs revenue	-81.3	-81.3	-81.3
Importer economic rents	-11.1	-11.1	-11.1
BSFIC subsidy	35.4	35.4	35.4
Net quantifiable change	152.7	86.7	31.9
IN INDIA			
Subsidy on exports to Bangladesh removed	13.3	13.3	13.3
NET CHANGE IN BANGLADESH AND INDIA	166.0	100.0	45.2

$251is the same as the mill free sale price in India
$307 is the mill free sale price in India plus estimated transport costs and transaction costs of trade through the Petrapole-Benapole land route (see Annex 2, Table 1)
$354 assumes a mill price in India 40% above cif import prices plus transport and transaction cost to Bangladesh by the Petrapole-Benapole land route

The second simulation takes account of transport and other transaction costs of getting the sugar to and across the Bangladesh border, and in particular the fact that the transport, storage and other infrastructure is already highly inadequate[64] and would presumably come under even much greater strain if there were an FTA between the two countries. In order to provide a rough quantification of the likely effects of these factors, the simulation assumes that the sugar would be exported from India by the land route, but that the ldf price in Bangladesh would be $307, higher than the Indian free sale price by $56/MT. On the Indian side this probably more realistic price allows for estimates (based on a September 2002 exporter survey in Kolkata[65]) of transport costs to the border at Petrapole, "speed money", delays in clearing Customs, and exporter margins. On the Bangladesh side it allows for "speed money" and handling charges assumed to be about the same as the equivalent expenses in India. The detailed breakdown of these estimated expenses are given in Appendix Table 4.

The third simulation allows for variations in the relation between free sale mill prices in India and international prices (Fig 4). Over the 11 years 1994-2004, Indian free sale prices varied from being 15% below cif import prices (as measured by Bangladesh annual average import unit values) to being 32% above cif import prices, and on average exceeded import prices by 15%. To evaluate the effects of an FTA with Indian prices at approximately the upper level of this range of variation, this simulation assumes that the Indian free sale domestic price is 30% above world prices (cif India and Bangladesh in FY03), and adds to this the same transport and transaction costs used in the second simulation. This gives an ldf price of sugar exported from India to Bangladesh by the land border of $298+$56=$354/MT.

[64] Das and Pohit (2004)
[65] Das, Mishra and Pohit (2003)

Table 10 compares the quantifiable welfare consequences of the three simulations. Because of the smaller decline in the Bangladesh price level and the smaller expansion of total demand, the second and third simulations give consumer surplus benefits in Bangladesh which are still considerable but much less than in the first simulation. In both cases the total Bangladesh market is still supplied by India, so the welfare losses from reduced Customs revenue and reduced importer economic rents are the same, as is the welfare gain from the closure of BSFIC and the disappearance of the government subsidy to its operations. Consequently, whereas the first simulation estimates a net welfare benefit to Bangladesh of $152.7 million, the net benefit with the second simulation is $86.7 million and with the third simulation much less again ($31.9 million). This is essentially happening because the FTA is diverting imports previously obtained in Bangladesh at international prices (including imports from India) to imports from India which are purchased at much higher prices. This is possible because, with the FTA, the Indian suppliers no longer have to compete with ROW suppliers and are no longer assisted to do so by Indian export subsidies. Hence they are able to charge Bangladesh buyers the going free market price in India before indirect taxes, plus whatever transport and transaction costs are involved in getting the sugar to and over the border. It is apparent that at some higher export price the consumer surplus benefits of the FTA in Bangladesh will be insufficient to outweigh the combined net cost of the other three welfare effects, and the net welfare effect for Bangladesh will be negative. However, past experience in India is that the government is under strong pressures to keep sugar prices reasonably stable and to avoid abrupt increases, and will if necessary use import, export and subsidy policies to do so. This includes in some periods allowing imports over low or zero tariffs in order to increase domestic supplies, as was the case during 1994-1998. This past experience suggests that, compared with Bangladesh's present policies, an FTA with India would in most circumstances be strongly welfare improving for Bangladesh, and moderately welfare improving for India to the extent that the resulting exports to Bangladesh reduce export subsidies that would otherwise be paid to reduce excessive sugar inventories.

8. Unilateral cuts in sugar tariffs by Bangladesh instead of an FTA with India: how do the gains and losses compare?

The simulations so far discussed have considered what might happen is sugar were included in an India-Bangladesh FTA, and it turns out that nearly all the large economic welfare changes would occur in Bangladesh. It is therefore interesting to consider the likely economic welfare changes, if instead of maintaining the same MFN tariff while including its sugar sector in an FTA with India, Bangladesh were to unilaterally liberalize its sugar import policy by removing any remaining QRs and reducing its general MFN import tariff. It is also assumed that the present explicit and implicit budgetary subsidies to BSFIC would be discontinued. Using the same 2002/03 base scenario, Table 15 reports the results of four experiments with different reductions from the starting tariff.

In the first experiment, the welfare outcomes of which are summarized in column (a), the protective tariff is cut to zero, the domestic bulk price falls by 48% (in Fig 14 from distance DA to DC), and demand expands by 26% (from distance DH to DK). Legal imports (which could include imports from India) expand and replace all of domestic production and all the smuggled production from India, with a consequent very large consumer surplus benefit ($240.2 million) for Bangladesh consumers. Since the tariff is zero, there is a large loss ($81.3 million) of Customs revenue, and the apparent importer economic rents ($11.1 million) in the base scenario disappear. However, as in the FTA simulations, almost half the reduction in Customs revenue is offset by discontinuing the BSFIC subsidy. Combining all these changes, there is very large net quantifiable welfare gain ($183.3 million) for Bangladesh, which substantially exceeds the net Bangladesh welfare gains in the FTA simulations already reported. For example, compared to the FTA simulation which gives the biggest quantifiable net gain to Bangladesh ($ 152.7 million) the net welfare gain with this unilateral free trade simulation is $30.6 million greater. The reason is simply that the sugar is imported at a lower price than under the FTA with India, and so the consumer surplus benefit is larger (by area gCLk in Fig 14) while the other welfare changes-resulting

from the disappearance of importer rents, the replacement of BSFIC production, and the disappearance of sugar smuggling-are the same as they are in the FTA simulation (see Table 9). It is plausible that there would be no smuggling since the bulk price in Bangladesh in this simulation is $23/MT lower than the lowest bulk price (the mill free sale price) at which the smugglers could buy the sugar in India. The non-quantifiable welfare changes (losses of smuggler rents and bribes in Bangladesh, and welfare losses of sugar and cane producers) are also the same as in the FTA simulation, so as a policy alternative for Bangladesh, this seems unambiguously superior. However, from India's viewpoint it is inferior to an FTA, since if the Indian government were to continue promoting sugar exports, it would have to continue paying export subsidies, while at the same time the unilateral liberalization in Bangladesh removes the incentive for smuggling and the shares of Indians in the economic rents and side payments that go with it. But ROW i.e. sugar exporters in other countries, are better off than under an FTA, because they continue to have access to the Bangladesh market and the total market is larger owing to the cut in Bangladesh's tariff.

In the second simulation of unilateral liberalization (column (b) of Table 15), instead of cutting the MFN tariff to zero, it is cut so that the landed duty paid price of imported sugar, is the same as the ldf price of sugar imported from India in the first FTA simulation (Table 9 and Table 10, first column). In Fig 14, the new tariff is distance gc, so the new domestic price in Bangladesh is DG, and there is a consumer surplus benefit equal to area AgkW. This benefit is identical to the consumer surplus benefit in the first FTA simulation, but with unilateral liberalization Bangladesh collects tariff revenue equal to area gCMk, which is the trade diversion cost with the FTA. This assumes that the tariff cut in Bangladesh reduces smuggling from India to zero, and this is plausible because the bulk price in Bangladesh is the same as the lowest price at which the smugglers could purchase sugar in India. Once again, the three other costs and benefits are the same as with the FTA, so the net welfare benefit to Bangladesh is greater than under an FTA resulting in the same domestic sugar prices. As in all the simulations of unilateral liberalization by Bangladesh, India is worse of than it would be under an FTA, and rest- of- the- world sugar exporters are better off as a result of the larger export market in Bangladesh.

In the third simulation (column (c) of Table 15, Bangladesh cuts it MFN tariff to 37.1%, which has been selected for this experiment to give the same ldf duty-inclusive sugar price as the ldf price of sugar imported from India in the second FTA simulation (Tables 9 and Table 10, second column). In the FTA simulation, this ldf price was estimated on the basis of evidence on substantial delays, "speed money" and other transaction costs of legal exports from India by the land border. Even so, this price is still far below actual domestic prices in Bangladesh in the base scenario, so there is a very large benefit to sugar consumers in Bangladesh estimated at $143.7 million. Even though this consumer benefit is much less than in the first two simulations, compared with the base scenario there is now a slight increase ($3.3 million) in Customs revenue, since the 37.1% protective tariff is now applied to imports which supply the entire domestic market, including the that part previously supplied by BSFIC and most of the supply previously coming from smuggled imports. Regarding the smuggled sugar, it seems plausible that a 37.1% tariff would open up some opportunities for smuggling, since the Bangladesh bulk domestic price goes up to $307/MT, $56/MT more than the bulk price ($251/MT) at which smugglers could obtain the sugar in India. To provide a purely illustrative indication of the difference this might make in the economic welfare calculations, it has been assumed that the supply of smuggled sugar is a linear function of the excess of the Bangladesh over the Indian bulk price, starting at zero when the price in both India and Bangladesh is $251/MT and reaching the estimated base scenario level of 400,000 tons when the Bangladesh price is $437/MT i.e. when the maximum gross smuggling margin for smuggled sugar purchased at Indian free sale prices is $186/MT. As indicated in Table 15, on this assumption, with a 37.1% tariff, 120, 000 tons of sugar is smuggled, and consequently the Bangladesh government tariff revenue is lower than it would otherwise be. However, as before, government expenditure drops substantially with the cessation of the BSFIC subsidies, and overall there is a net fiscal gain ($3.3+$35.4=$38.7 million) compared to the base scenario. As in the simulations (a) and (b), compared

with the base scenario, in this simulation smugglers and bribe recipients in Bangladesh lose unknown amounts, but their losses are somewhat less since some smuggling continues. There are negative but unknown impacts on Bangladesh sugar producers (BSFIC and its employees and ancillary suppliers) and likewise for cane growers, subject to the qualification that it is possible that higher domestic sugar than in the first two simulations might favourably impact (from their viewpoint) the price of gur, which is the principal market for their cane. The simulation results are unchanged for India, and are favourable to ROW sugar exporters, but somewhat less than in simulations (a) and (b), since Bangladesh imports are lower with the higher tariff.

Table 15

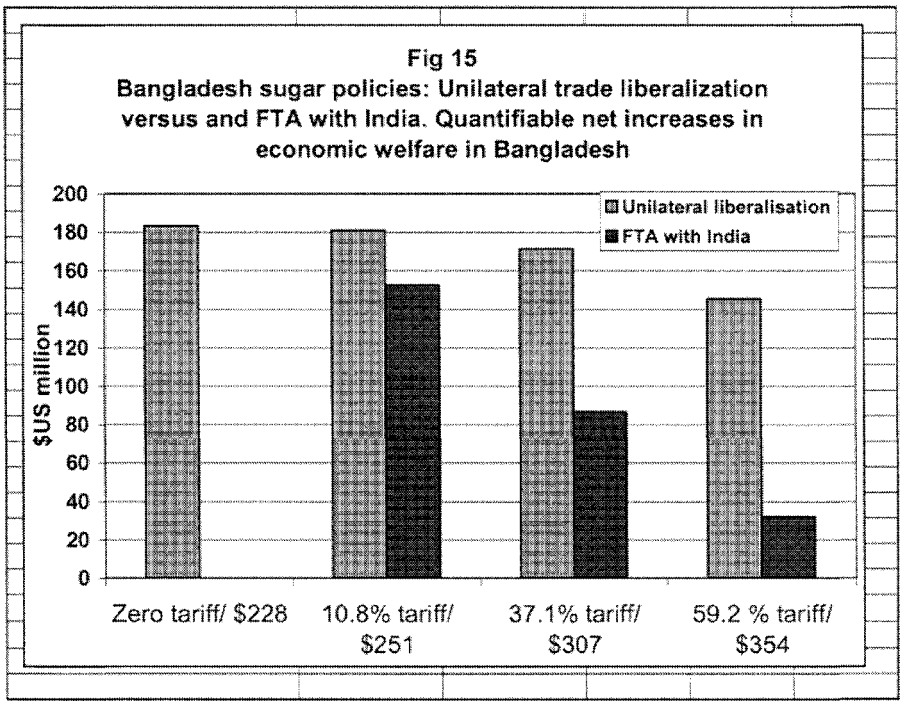
Unilateral reductions of sugar tariffs by Bangladesh instead of an FTA with India: simulated changes in economic welfare compared with base scenario in 2002/03

	(a)	(b)	(c)	(d)
IN BANGLADESH				
Protective import duty rate %	0.0	10.8	37.1	59.2
Import price cif $US/MT	213	213	213	213
Protective import duty $US/MT	0	23	79	126
Port handling and Customs clearance charges $US/MT	15	15	15	15
Landed duty inclusive price $US/MT	228	251	307	354
Total sugar demand '000 MT	1280	1236	1192	1123
Sugar smuggled from India: guesstimate '000 MT	0	0	120	221
Change in W from:				
Benefit to consumers: increased consumer surplus	240.2	209.7	143.7	88.9
Change in Customs revenue	-81.3	-52.9	3.3	32.3
Decrease in importer economic rents	-11.1	-11.1	-11.1	-11.1
BSFIC subsidy no longer paid	35.4	35.4	35.4	35.4
Net quantifiable change	**183.3**	**181.2**	**171.4**	**145.5**
Loss of smuggler rents and bribes in Bangladesh	minus ?	minus ?	minus ?	minus ?
Sugar producers and cane farmers: lost economic rents & adjustment costs	minus ?	minus ?	minus ?	minus ?
IN INDIA: Change in W				
Loss of smuggler rents and bribes in India	minus?	minus?	minus?	minus?
NET CHANGE IN BANGLADESH AND INDIA				
Quantifiable change	**183.3**	**181.2**	**171.4**	**145.5**
Loss of smuggler rents and bribes in Bangladesh	minus ?	minus ?	minus ?	minus ?
Sugar producers and cane farmers: lost economic rents & adjustment costs	minus ?	minus ?	minus ?	minus ?
Loss of smuggler rents and bribes in India	minus?	minus?	minus?	minus?
Change in W in ROW	Plus ?	Plus ?	Plus ?	Plus ?

Notes: This Table shows the simulated changes in W (economic welfare) of the following policy changes in Bangladesh policies (a) zero MFN sugar tariffs (b) MFN sugar tariff 10.8% (c) mfn sugar tariff 37.1% (d) MFN sugar tariff 59.2%, In all the simulations it is assumed that sugar production in Bangladesh ceases and subsidies to BSFIC also cease. smuggling of sugar from India is zero with (a) and (b), but is guessed to increase with higher tariffs. The tariffs are set at the level required for the landed duty- inclusive price of imported sugar to be the same as the alternative estimated ldf prices of sugar imported from India under an FTA , as shown in Table 10. "Minus ?" means that W has declined, but by an unknown amount. "Plus ?" indicates increased W, but by an unknown amount.

In the fourth simulation of unilateral liberalization by Bangladesh (Table 15 column (d)), the tariff cut by Bangladesh is much smaller than in the other simulations (from the base scenario tariff of 86.4% to 59.2%). This tariff is chosen to replicate the previously reported FTA simulation (Table 9, column (c)) in which the economic welfare effects of an India-Bangladesh FTA are tested, under conditions in which the domestic Indian bulk price is around the upper limit (relative to cif import prices) reached during the past 13 years. As indicated previously, adding estimated land border transport, transaction and other costs to this price gives an ldf price in Bangladesh of $354/MT, and a 59.2% MFN tariff applied to cif import prices in the base scenario would gives the same ldf bulk price under this

simulation of unilateral import liberalization. Overall, aggregate welfare in Bangladesh increases substantially (by $145.5 million) relative to the base scenario, but by much less than the increase in W in the other three simulations of unilateral liberalization involving larger tariff cuts. The economic welfare benefits are also distributed very differently: because domestic sugar prices come down by less, the benefit to sugar consumers is much smaller, and a large part of this is explained by increased Customs revenue. However, because of the much wider gross smuggling margin ($103/MT) sugar smuggling from India is considerably higher, on the arbitrary assumptions outlined above, running at more than half (221,000 tons) the base scenario level of 400,000 tons. Hence, compared with the base scenario, the economic welfare of smuggling beneficiaries in Bangladesh would decline by considerably less with this policy, compared to alternative lower tariff policies. Once again, this simulation assumes that all domestic sugar production disappears, but this assumption needs to be tested by a closer look at cost differences between different BSFIC mills to see whether there are some mills that could be financially viable at this price, even without the benefit of the direct budgetary and other subsidies. Otherwise, the welfare effects for India and ROW exporters are similar to the effects in the other simulations, except for smaller benefits for the latter due to the higher Bangladesh tariff.



It will be apparent from the discussion above that the net welfare increase for Bangladesh in each of the four unilateral trade liberalization scenarios, is larger than the welfare increase from the equivalent price reduction in the domestic market obtained through an FTA in sugar with India. These comparisons are shown in Table 16 and illustrated in Fig 15. As would be expected, the largest net welfare gain occurs in the simulation in which Bangladesh unilaterally goes to free trade in sugar. An FTA would produce the equivalent outcome for Bangladesh, but only if the Indian domestic free sale price were to fall below cif import prices in Bangladesh, so that Indian sugar would be sold at the international price cif Bangladesh after allowing for transport costs. This possibility has not been considered in the FTA simulations since Indian free sale prices have always exceeded the international prevailing in 2002/03. In the other comparisons, the quantifiable increases in Bangladesh welfare with unilateral liberalization are clearly larger than the increases under an FTA, the difference becoming greater the smaller are the unilateral

tariff reductions. This is essentially because, with unilateral tariff reductions, the smaller consumer benefits resulting from smaller tariff cuts, are partly offset by the resulting increases in Customs revenue. By contrast, if prices in Bangladesh go up in tandem with increases in free market prices in India, there is no offsetting increase in Customs revenue from the imports from India which come in duty free under the FTA.

Table 16: Bangladesh sugar policies: Unilateral liberalisation versus an FTA with India. Comparisons of net increases in quantifiable economic welfare (in $US million)

MFN tariff/ldf price $/MT	Unilateral liberalisation	FTA with India
Zero tariff/ $228	183.3	
10.8% tariff/ $251	181.2	152.7
37.1% tariff/ $307	171.4	86.7
59.2 % tariff/ $354	145.5	31.9

Note: there is no FTA equivalent to the unilateral adoption of zero protective tariffs by Bangladesh. The other tariffs under unilataral liberalisation are those required to give the indicated ldf prices of sugar imported from India given in the FTA welfare simulations reported in Table 10

9. An FTA and sugar smuggling: some speculations

The simulations described above have taken account of the large trade in smuggled sugar, but because of lack of information, have not discussed it in detail. Using some survey information on the transport and other transaction costs of sugar legally exported to Bangladesh by the Petrapole-Benapole land route, and guesses about the level and distribution of smuggling bribes and economic rents, this section first of all considers whether, and to what extent, legal trade stimulated by an FTA would replace the smuggled trade. Secondly, it discusses the terms of trade effects of the three alternative modalities that have been discussed previously i.e. smuggling which starts with Indian free sale prices, Indian wholesale prices, and Indian retail prices. Thirdly, it deals with the losses of economic rents of participants in the smuggling networks ("above normal" profits, bribes and other side payments) that would occur in both India and Bangladesh if, following an FTA, legal sugar exports from India to Bangladesh were to replace smuggled exports. Although they are earned illegally and may not receive a high weight in policy decisions, these economic rents should in principal be counted as part of the change in national economic welfare resulting from policy changes such as the introduction of an FTA. This section provides some indication of the possible orders of magnitude of these economic rents based on guesstimates about the breakdown of costs, payoffs and profits in the smuggling networks.

Table 11
Incentives to smuggle sugar from India to Bangladesh: $US/MT

	Base pre – FTA scenario	*First post FTA simulation*	*Second post FTA simulation*	*Third post FTA simulation*
Price in Bangladesh	437	251	307	354
Price in India	251	251	251	298
Difference: incentive to smuggle	186	nil	56	56

Would some sugar smuggling continue? In the simulations discussed above, it is assumed that legal exports of sugar from India replace the all the previously smuggled exports. In the first simulation, that an FTA would probably lead to the disappearance of smuggling follows from the equalization of bulk

sugar prices in the two countries. In the second and third simulations, it is plausible that there would be very substantial reduction as a result of the reduction of the price difference by more than two thirds. As already noted, in view of the congestion that already exists at the principal land border Customs posts, full equalization of prices as hypothesized in the first simulation would be unlikely to occur except with a long time lag and after major improvements to transport links and border infrastructure. The continuing price difference estimated at about $56/MT in the second and third simulations seems more realistic. It has been estimated (see Annex Table...) by assuming that averages of expense items in relation to shipment values of unspecified products, can be applied to sugar shipments. $14 of the $56/MT consists of estimated transport costs by truck from sugar producing areas to the Petrapole-Benapole border crossing, and it is possible that smugglers would have no special advantage over legal exports in this regard. However, most of the rest ($30/MT) consists of what the Indian exporters surveyed considered to be excessive costs in clearing Customs, including time lost through excessive delays, "speed money" and bribes, and unnecessary delays in receiving export remittances. Equivalent information on the costs of Bangladesh importers on the Benapole side is not available: based on the information provided by the Indian exporters (which includes the cost to them of Bangladesh as well as Indian Customs procedures) it has been arbitrarily assumed that additional handling and "speed money" costs are incurred totalling $12/MT, adding up to a total transaction cost of handling and Customs clearance of $42/MT.

With an FTA, even though there would be no Bangladesh import duties to pay, exports from India would still require Customs clearance both on the Indian side and in Bangladesh, and if the physical infrastructure and Customs processing capacity remain as limited as they are at present, passing through Customs could be just as expensive[66]. Previous studies of Indian informal trade have found that a major attraction of trading informally rather than formally-especially for small and medium sized businesses-is the absence of complicated procedures, red tape, "speed money" payments, and delays. Hence it is quite possible that some smuggling would continue-in this case of sugar-even if all Customs duties were to be removed following an FTA. However, the feasibility of continued smuggling might be confined to operators able to obtain the sugar illegally in bulk from sugar mills at the mill free sale price, since this is the price that would be paid by traders in the legal export trade. In 2002/03, buying the sugar to be smuggled at the wholesale price-which includes excise taxes and cess-would have cost $26/MT more, offsetting most of whatever cost advantage there might be of avoiding the formal route to Bangladesh through the Customs posts. Beyond this, based on these estimates of transaction costs at Customs, exports starting with purchases at Indian retail prices would not appear to be feasible, since the smugglers would be paying $67/MT more than legal exporters before incurring any of the transport and other costs of smuggling the sugar into Bangladesh.

Terms of trade effects of sugar smuggling In order to get some feel for the likely magnitudes Table 12 compares estimates and guesstimates of the ldf prices in Bangladesh of six different delivery routes: i.e. of actual imports during FY03 which came by the main sea ports; of legal imports by the land border Petrapole-Benapole Customs post with India; of smuggled sugar starting with free sale, wholesale, and retail initial purchase; and of legal land border imports under an India-Bangladesh FTA. Details of the four supply chains which start with purchase of sugar at Indian free sale prices are given in Appendix Table 4. This shows some principal components of the likely supply chain between the purchase of sugar in India at "free sale" mill prices and its delivery via the Petrapole-Benapole land crossing to a bulk handling location in Bangladesh, where it competes with BSFIC's bulk sugar sales. In addition Appendix Table 5 gives one set of highly speculative numbers on the breakdown of expenses, bribes and smuggler rents for supply chains starting with Indian wholesale and retail prices. The alternative landed duty free

[66] It is probable, however, that congestion at Customs goes up with the level of Customs duties on the importing side, since high duties induce greater avoidance efforts and correspondingly more detailed documentation and more time consuming checks and inspections. Hence, if an India-Bangladesh FTA, a new survey of delays, "speed money" etc might find that the time and cost of Customs clearance would be considerably lower.

prices of these six different ways of delivering the sugar to Bangladesh are illustrated in Fig 16. Using these estimated ldf prices, and assuming that smuggled sugar originates in equal proportions from purchases at Indian free-sale, wholesale and retail prices, Table 13 provides an estimate of the aggregate terms of trade effect of an FTA for Bangladesh.

Table 12: Bangladesh FY03: Estimates of ldf prices of sugar according to source before and after an FTA with India

	$US/MT
Legal ocean imports pre-FTA	228
Legal border imports pre-FTA	234
Smuggled : free sale prices	361
Smuggled :wholesale prices	382
Smuggled: retail prices	388
Legal border imports with FTA	307

Table 13: Illustration of possible terms of trade effect for Bangladesh of FTA with India: Change in cost of pre-FTA imports $US million

Replacement of pre-FTA legal imports from India	27.6
Replacement of pre-FTA legal imports from ROW	7.3
Replacement of pre-FTA smuggled imports from India	-28.0
Net terms of trade effect	6.9

Notes: Calculated as the difference between the cost of the imports at ldf prices before the FTA and the cost after the FTA when it is assumed all Bangladesh imports would come from India by the land border. A positive number means that the terms of trade for Bangladesh worsens and a negative number means that it improves i.e. depending on whether the imports more of less with the FTA. It is assumed that smuggled imports pre-FTA are equally divided between the three modes i.e. purchase in India at the mill free sale price, purchase at the wholesale price, and purchase at the retail price

These simulations illustrate the possibility that much of the negative terms of trade effect for Bangladesh resulting from the replacement of legal sugar imports from ROW and from India, may be offset by a positive terms of trade effect resulting from the replacement of illegal imports from India. In this example, the latter is principally due to the assumption that a substantial portion of the economic rents in the smuggling activities would be captured in India by Indians, thus increasing the cost of the sugar to the Bangladesh importers. Smuggled sugar purchased at Indian free sale prices is assumed to pass through Indian and Bangladesh Customs and to incur the same transport and transaction costs as legal traded sugar, but that large bribes are paid (presumably to Customs and other officials) and above normal profits earned on the Indian side (see Appendix Table 5) before the sugar reaches the Bangladesh participants in the smuggling networks, where further transaction costs are incurred, profits earned and bribes paid. For smuggled sugar purchased in India at wholesale or retail prices, the purchase prices exceed the cost of legally exported sugar, transport and transaction costs are incurred, and in addition it is again plausible that some of the economic rents will be earned and bribes paid on the Indian side. In all three cases the smuggling profits and bribes paid in India increase the cost of the smuggled sugar in Bangladesh and, depending on how large they are and the other transport and transaction costs, may create substantial terms of trade benefits to Bangladesh if legally traded sugar replaces the smuggled sugar following an FTA.

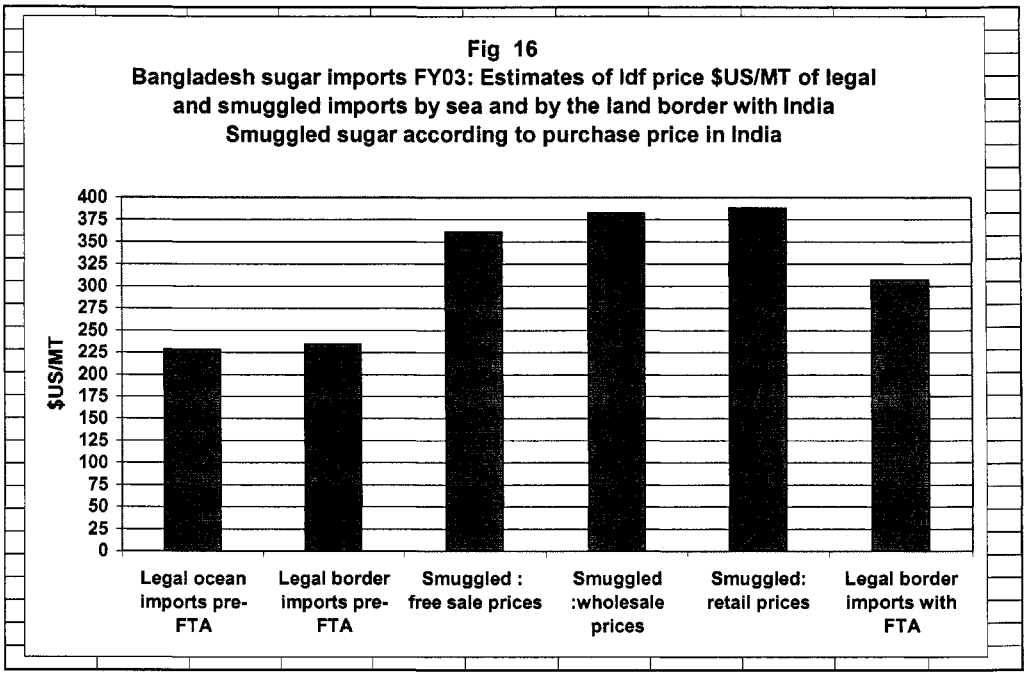
Table 14: Welfare changes after an FTA: Two examples of how the disappearance of Indian excise taxes and cess and economic rents included in the cost of smuggled sugar could affect the aggregate welfare outcome ($US million)

	Bangladesh	*India*	*Bangladesh + India*
Pre-FTA smuggling rents: Bangladesh 80%, India 20%			
Increase in W before adjustment (from Table 10, col 2)	86.7	13.3	100.0
Adjustment for loss of Indian excise tax and cess included in smuggled sugar		-4.8	-4.8
Adjustment for loss of smuggling rents	-31.5	-7.9	-39.4
Change in W after adjustments	55.2	0.6	55.8
Pre-FTA smuggling rents: Bangladesh 60%, India 40%			
Increase in W before adjustment (from Table 10, col 2)	86.7	13.3	100.0
Adjustment for loss of Indian excise tax and cess included in smuggled sugar		-4.8	-4.8
Adjustment for loss of smuggling rents	-23.6	-15.7	-39.4
Total adjusted change in W	63.1	-7.2	55.8

Notes: Based on estimates of smuggling supply chain components in Appendix Table 5. Smuggling rents include bribes and smuggling profits. In Bangladesh they may include sales at discounted prices to some buyers e.g. industrial buyers.

Economic rents in sugar smuggling: where and how large? As noted above, the economic rents from smuggling–bribes and excess profits of the smugglers-would disappear if legal border trade were to replace smuggling. In addition, if the purchase price in India of the smuggled sugar includes the Indian excise tax and cess, this benefit to the Indian central government also disappears. In Table 14 the total economic rent from the smuggling is estimated as the unexplained difference between purchase prices in India, plus estimated transport and transaction costs, and the prevailing bulk price in Bangladesh. How much of this rent goes to Indians and how much to Bangladeshis is unknown, but it seems likely that the higher share would go to Bangladeshis, since the major barrier the smugglers bypass is the Bangladesh Customs duties. Indian Customs and other border officials (including the police and border security forces) have less interest in holding up illegal exports since there are no export or other taxes to be collected on them. However, if smuggling is a well established activity, Customs and other officials on the Indian side will have a good idea of the payoffs involved and may have considerable leverage resulting from their ability to hold up smuggled consignments-for example by insisting on standard export formalities, or by the explicit or implied threat of alerting officials on the Bangladesh side. Table 14 illustrates the magnitudes of the economic rents for two of many possible splits between India and Bangladesh (20/80 and 40/60), to which is added a benefit to India from the sugar excise tax and cess, when the smuggled sugar is purchased at wholesale or retail prices. With equal use of the three smuggling modalities, when 20% of the economic rents go to Indians and 80% to Bangladeshis, the total economic welfare benefit of the smuggling in India is $12.7 million (excise tax and cess $4.8 million plus economic rents $7.9 million) and the economic welfare benefit in Bangladesh (entirely smuggling rents) is $31.5 million. With a 40/60 percent split of the economic rents, these two totals are $20.5 million for India and $23.6 million for Bangladesh. If legal sugar trade were to replace this smuggled trade following an FTA, these benefits to the people involved with the smuggling would disappear, and if valued equally with the other costs and benefits of the sugar trade, the aggregate joint welfare increase for India and Bangladesh resulting from the FTA is reduced very substantially. Using the simulation that recognizes road and other infrastructure constraints to border trade (Table 10 above, second column) the joint aggregate welfare

outcome is reduced by almost half (by 44 percent) and there are also large changes in the welfare outcome for the individual countries (Table 14).



10. Implications for trade and other policies

The money values of the simulated effects of an FTA discussed above depend in turn on the values of a number of parameters, some of which are highly uncertain, in particular everything to do with sugar smuggling, including the volume in the base scenario, the likely volume following an FTA, and even more so the size of the economic rents and payoffs in the smuggling supply chains. In addition, a number of the other parameters are subject to change, including the quantities of sugar produced and imported by Bangladesh, and the supply situation and price levels in India. Consequently the money values of the likely costs and benefits for the governments, consumers and other affected groups of an India-Bangladesh FTA covering sugar would change with more accurate estimates of the various parameters in the base 2002/03 scenario, and will obviously vary if other bases are used for similar simulations. Despite these uncertainities, the directions and the orders of magnitude of the likely effects of an FTA suggested by the simulations are probably broadly correct as long as some of the major general characteristics of the policy, price and production situation in the two countries remain as they are and have been for at least 13 years. These general characteristics include in particular very high protection levels for the Bangladesh sugar industry, much lower protection levels and prices in India, and consequent large scale smuggling across the land border.

For Bangladesh, while these conditions continue, as the simulations bring out, an FTA with India would create very large economic welfare benefits for consumers, both in their direct household consumption and in indirect consumption through purchases of foods and drinks for which sugar is an important input. These gains would far outweigh losses of government import duty revenue as a result of the diversion of sugar imports (both from third countries and from India) which previously paid import duties, to duty free imports from India. In addition these revenue losses would be largely offset by the

cessation of the annual large subsidies paid to keep BSFIC functioning. The other principal losers would be people involved in the Bangladesh side of the sugar smuggling networks, either as direct participants or as recipients of probably substantial bribes and other side payments, and the managers and employees of the sugar mills, and sugar cane farmers. In preparing this study, only scraps of information were available on the sugar industry and why the BSFIC mills and indirectly the farmers apparently require both extremely high protection against imports and high subsidies to remain viable, and one major recommendation for Bangladesh-whether or not an FTA for sugar is pursued-if for a study which would identify the sources of the persistent problems and suggest reforms and adjustments that would be compatible with less protectionist and more economically efficient policies[67]. One key aspect of such a study would be an assessment of the gur economy, which normally uses two thirds or more of sugar cane production. It should also be recognized that privatization of BCFIC's mills on its own is unlikely to be a solution, if the new owners expect present policies-especially import policies- to continue.

For India, as long as Bangladesh maintains its very high protective import duties on imports from the rest of the world, an FTA would make Bangladesh a captive export market and the Indian government would no longer need to pay export subsidies to enable its exporters to compete there with Brazil and other suppliers. As the Indian industry is highly competitive with a large number of producers, unless the Indian government were to intervene, there is no reason to think that export prices to Bangladesh would diverge much from prevailing free market bulk prices in India i.e. they would probably be the same as Indian "free sale" mill prices (excluding the excise and cess) plus transport and Customs clearance costs by the most direct land routes to Bangladesh. During the past 13 years, on average free sale mill prices have exceeded cif import prices in South Asia by about 15%, and by no more than about 30% in individual years, and trade and other policies have been managed to prevent large fluctuations in nominal prices. In particular, the Indian government has been willing (as during 1994-98) to allow imports over low tariffs during periods of high world prices when imports have been used to contain upward pressures on domestic prices. Recently, starting in about July 2004, in order to increase domestic supplies following a sharp partly drought- induced reduction in sugar cane production during the 2003/04 sugar season, the government has been allowing duty free imports of raw sugar for refining. Episodes such as these reflect the strong compulsions to keep sugar mills viable while at the same time keeping domestic sugar prices relatively low and stable.

The simulations suggest that export prices to Bangladesh under an FTA at price levels that are likely to prevail in India would probably displace two of the other major sources of supply i.e. Bangladesh production and imports from the rest of the world. Legal exports under the FTA would also probably displace most smuggled imports from India, since the incentive to smuggle would be reduced by the narrowing of the present very large gap between Bangladesh prices and Indian prices. At best, the

[67] A study on comparative advantage in Bangladesh crop production (Shahabuddin and Dorosh (2002), Table 3) estimates low DRC (Domestic Resource Cost) ratios for sugarcane, implying that sugarcane is an economically efficient crop, but very high DRC ratios for sugarcane used in gur production, implying that growing cane for gur is very inefficient economically. These estimates and the associated discussion (p 17) –which recognizes the inefficiency of sugar milling-are misleading because they assume that cane nominal protection rates are the same as the sugar and gur nominal protection rates. But cane is not traded internationally, and protection and cost-benefit estimates should therefore consider cane growing and processing (whether into sugar or gur) as one integrated activity. However, in estimating the DRCs, the Shahabuddin and Dorosh paper only takes account of cane growing costs. Another problem is that there is practically no international trade in gur, so the significance of the extremely high estimate for gur protection (a conversion factor of 0.38 estimated in a 1994 study, equivalent to a nominal protection rate of 163%) is unclear. It is quite possible the production in Bangladesh of sugar cane is low cost and efficient by international standards, but for it to be worthwhile producing, the processing and marketing of the finished products also has to be efficient. Sugar cane production for gur may also be economically efficient, but only if the total costs from cane growing to gur production are comparable to the equivalent costs in India, which is effectively the only alternative source for gur.

smugglers would be able to obtain Indian sugar for smuggling at the same free sale price as the legal exporters, and would then have to fit whatever transport and other costs including bribes they need to incur, within narrower gross margins than is the case at present. Consequently, from the Indian viewpoint, the welfare gain resulting from the absence of export subsidies on legal exports would need to be balanced by the loss of whatever economic rents and side payments are presently received by Indians participating in or benefiting from the smuggling trade. On the other hand the net increase in Indian sugar exports to Bangladesh (after allowing for already existing legal and smuggled trade) would be quite small (only two or three percent) in relation total Indian supply and demand, and would be unlikely to have much impact on domestic Indian prices, and hence would only involve small consumer surplus losses for Indian sugar consumers. Because of the relatively limited likely impact of an FTA with Bangladesh on the sugar industry in India, there are no special implications for the trade and other policies which affect India's sugar industry.[68] There is an extensive literature on this topic [69]and it is not dealt with in this paper.

The economic welfare simulations and the above discussion have proceeded on the key assumption that Bangladesh would retain very high sugar tariffs following an FTA, but there would be little point in doing so if, as suggested by the simulations, production would cease in all or most of the BSFIC sugar mills and the sugar cane farmers which supply them, and all imports from the rest of the world would be replaced by duty free imports from India. In that case it would be rational for the Bangladesh government to rethink its tariff and tax policies: for example, it could withdraw the supplementary duty and cease using the VAT as an additional protective tariff by withdrawing the VAT exemption of domestic sugar production, and could set a moderate or low general MFN protective sugar tariff as a way of setting a competitive constraint and upper limit on the price of sugar imported from India under the FTA. As part of the FTA it would also be in Bangladesh's interests to negotiate an agreement under which India would agree not to impose quantitative restrictions on sugar exports to Bangladesh, even though-as in the past-India might restrict exports to other countries in order to contain upward pressures on its own domestic prices. During periods of shortages in India, Bangladesh could also allow imports from other countries over low or zero tariffs. Otherwise, it is quite conceivable that sugar supplies in India might be augmented by low or zero tariff imports, while locally produced Indian sugar might be simultaneously exported at higher prices under the FTA to Bangladesh. If that were to happen, even though likely FTA rules of origin would prevent the imported sugar itself from being re-exported to Bangladesh, Indian producers and traders as a group would nevertheless make an arbitrage profit at the expense of Bangladesh consumers.

The above reforms of Bangladesh sugar policies that would make sense if sugar were to be included in an India-Bangladesh FTA or in SAFTA, underline the major general conclusion of the simulation discussion that from Bangladesh's viewpoint, unilateral tariff cuts that are large enough would have an even bigger net economic welfare payoff than the likely economic welfare net gains from an FTA. As noted in that discussion, under all plausible scenarios, sugar imported duty free from India under an FTA will involve a terms of trade loss to Bangladesh, because it will generally cost more and will never cost less than the prevailing world price at the Bangladesh border. With a zero MFN tariff, the gain to Bangladesh consumers will be bigger than the gain with an FTA, and if, in the absence of an FTA, Bangladesh were to fix an import duty equal to the excess of the domestic sugar price in India over cif import prices, net economic welfare in the country would be higher than it would be under an FTA by the amount of the import duties collected. A zero or low MFN tariff would also eliminate or drastically reduce the incentive to smuggle by eliminating or cutting the excess of Bangladesh over Indian domestic prices. However, if Bangladesh were to follow these policies, India would be worse off than it would be

[68] If the sugar industry were included under SAFTA the impact in India would be greater owing to the inclusion of Pakistan's sugar industry as well as the Bangladesh industry.

[69] See Gulati, Pursell and Mullen (2003) and references given there.

with an FTA, first because Bangladesh would not be a captive market for Indian sugar exports, and exports would need to be subsidized if it was decided to promote them to help get rid of excess stocks created once again by defective domestic policies, and secondly because of the loss of the economic rents from the smuggling trade. On the other hand, exporters in Brazil, Thailand, Australia and other sugar exporting countries would not be shut out of the Bangladesh market and would benefit from the larger volume of exports to Bangladesh resulting from the reduced tariffs and prices.

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APPENDIXES

				Appendix Table 1					
	Alternative estimates of value of sugar smuggled from India to Bangladesh 1992-2004								
	Smuggled	Sugar prices in US cents/kg				Estimated value of smuggled sugar, $US million			
	sugar	Bdesh	Indian mill	Indian	Indian	Bangladesh	Indian	Indian	Indian
	estimate	import unit	free sale	wholesale	retail price	Import unit	free sale	wholesale	retail
	000 MT	values	prices	prices		values	prices	prices	prices
1992	637	34.0	29.0	33.3	38.3	216	185	212	244
1993	587	33.0	28.2	31.9	36.7	194	166	187	215
1994	578	29.5	37.9	41.9	48.2	171	219	242	279
1995	476	33.6	34.2	38.0	43.7	160	163	181	208
1996	704	39.3	33.5	37.0	42.5	277	236	260	299
1997	592	28.1	34.7	38.2	43.9	166	205	226	260
1998	621	27.7	33.8	37.0	42.6	172	210	230	265
1999	633	23.4	30.8	33.8	38.9	148	195	214	246
2000	737	27.8	30.1	33.1	38.0	205	222	244	280
2001	572	25.9	28.4	31.2	35.9	148	163	178	205
2002	662	23.1	25.7	28.3	32.5	153	170	187	215
2003	400	21.3	25.1	27.7	31.8	85	100	111	127
2004	310	21.8	27.4	30.2	34.7	68	85	94	108

Appendix Table 2	
Production and price parameters for	
economic welfare analysis FY03	
Bangladesh	
Production, imports, consumption '000 MT	
Production	177
Recordered imports from ROW	93
Recordered imports from India	349
Smuggled imports from India	400
Consumption	1019
Average exchange rate Taka/$US	57.9
Protective import tax rate	86.4%
Total import tax rate	86.4%
Average demand elasticity	-0.36
Domestic prices $US/MT	
Ex-mill	437
Retail Dhaka	539
Import prices $US/MT	
Import unit value	213
Protective import taxes	95
AIT	6
Port costs	15
Landed cost at port	329
Landed duty free (ldf) price	228
India	
Avg exch rate Rupees/$US	48.4
Prices $US/MT	
Export unit value to Bangladesh fob	215
Explicit export subsidies	21
Balance incl other export subidies	15
Free sale mill price excl taxes	251
Wholesale margin	8
Indirect taxes	18
Wholesale price incl indirect taxes	277
Distribution costs and retail margins	41
Retail price	318

Appendix Table 3

BSFIC: Sugar production and operating and financial losses FY99 to FY 02

	FY99	FY00	FY01	FY02	Avg 4 yrs
Net profit or loss (Taka billion)	-0.60	0.63	-0.47	-0.20	-0.16
Non-operating income (Taka billion)	0.82	1.83	1.06	0.92	1.16
Net loss before non-operating income (Taka billion)	-1.42	-1.20	-1.53	-1.12	-1.32
Sugar production '000 MT	153	123	98	204	145
Net loss before non-operating income Taka/MT	-9281	-9724	-15644	-5493	-10036
Average exchange rate Taka/$US	48.06	50.31	53.96	57.43	52.44
Net loss before non-operating income $ million	-29.5	-23.9	-28.4	-19.5	-25.3
Net loss $US/MT of sugar produced	-193	-193	-290	-96	-193.0
Total assets Taka billion	12.73	12.73	11.04	11.29	11.9
Total assets $US million	265	253	205	197	229.8
5% return on assets $US million	13.2	12.7	10.2	9.8	11.5
5% return on assets $US /MT	86.6	102.5	104.6	48.2	85.5
Price increase required for 5% return on assets, $US/MT	280	296	395	144	278

Source for financial results: World Bank, *Bangladesh Public Expenditure Review*, May 25, 2003

Annex 1: The Public Sugar Sector, and Table 14: Operations of BSFIC

In estimating the required price increase, it has been assumed that non-operating income is from BSFIC's profits on imported sugar, not from its sugar processing operations

Appendix Table 4

Indian legal and smuggled sugar exports to Bangladesh by the land border in 2002/03: estimates and guesstimates of principal transport and transaction costs , taxes, subsidies,bribes and economic rents (Petrapole-Benapole route)

		$US/ MT					
		Legal exports		Smuggled exports		Legal exports	
		pre-FTA		pre-FTA		post-FTA	
1	"Free sale" price in India		251		251		251
2	Transport cost to Kolkata	11		11		11	
3	Tpt cost Kolkata-Petrapole	3		3		3	
4	Delay in Customs	13		13		13	
5	Speed money	6		6		6	
6	Bribes	0		30		0	
7	Delay in export remittances	5	38	5	68	5	38
8			289		319		289
9	Exporter margin		6		30		6
10			295		349		295
11	Explicit export subsidies	21		0		0	
12	Other expt subsidies & balance	52		0		0	
13	fob price Petrapole		222		349		295
14	Bdesh handling etc		6		6		6
15	Bdesh speed money		6		6		6
16	ldf Bdesh		234		361		307
17	Bangladesh protective duties		192		0		0
18	Bdesh bribes		0		50		0
19	Importer rents		11		26		0
20	Bangladesh price		437		437		307

Notes

(1) From Appendix Table 3
(2) Guesstimate of average distance 300 km at Rs 18/km on a 10 ton truck. Freight rate estimate from Das, Mishra & Pohit (2003)
(3),(4),(5), (7), (9) calculated from survey data in Das, Mishra and Pohit (2003). Have used averages of shipment values.
(6) is arbitrary: assumed only paid when legal import duties are avoided. For legal exports speed money only.
(11) Calculated from export subsidy rates given in this paper
(12) Excess of (13) over (10)+(11). Includes estimation errors
13) From Das, Mishra and Pohit (2003)
(14) Guesstimate
(15) Assumed equal to speed money on Indian side of Customs
(16)= (13)+(14)+(15) ldf means "landed duty free" i.e. cif+handling and Customs clearance expenses
(17) 86.4% of (13)
(18) Assumed speed money only when legal import duties are paid. Bribes only when duties are not paid. Bribe amount arbitrary. No bribes assumed with FTA, since there are no import duties: speed money only.
(19)=(20)-(16)-(17)-(18).
(20) is average selling price of BSFIC during FY 03 in first two columns and estimated ldf price with FTA

In Appendix Table 4, the first set of estimates is for legal exports by the Petrapole-Benapole land route. It is based on actual prices, Indian export subsidy rates and Bangladesh import duties during 2002/03, estimates of average costs and exporter margins on the Indian side from an exporter survey in September 2002, and the arbitrary assumptions that "speed money" payments and handling costs would have been the same in the Bangladesh part of the Customs and transfer process as in the Indian part. This gives an estimated "landed duty free" (ldf) price of sugar in Bangladesh of $234/MT: it slightly exceeds the estimated ldf price ($228/MT) at Bangladesh sea ports (principally Chittagong) because of the assumption that delays and "speed money" payments are greater on both the Indian and Bangladesh sides, more than offsetting the other obvious cost advantages of trade by the land border.

The second set of estimates is for sugar smuggled in bulk by the Petrapole-Benapole route, presumably involving complicity by on the part of Customs and other officials on both sides. The cost components of this logistics chain are assumed to be the same as for legally traded sugar, with the key differences that India's export subsidies and Bangladesh's very high protective import duties are not paid, the difference (Bangladesh import duties minus Indian export subsidies) being absorbed by bribes on the Indian side, exporter margins on the Indian side, bribes on the Bangladesh side, and importer margins on

the Bangladesh side. There is no information on these last four items, but it is plausible that the largest bribes would be paid in Bangladesh in order to avoid Bangladesh Customs duties. In this example, it is arbitrarily assumed that bribes in India are equivalent to $30/MT, bribes in Bangladesh are $50/MT, and that smuggler profits are split roughly evenly between the Indian and the Bangladesh sides. Using these numbers and assuming that smuggled sugar is subject to the same "speed money" and delay expenses as legally traded sugar, the ldf price in Bangladesh ($361/MT) turns out to be much higher (by 54%) than the ldf price of legally imported sugar by the same route. The reason for this large difference is the assumption that a substantial portion of the total available economic rent (i.e. the Bangladesh Customs duties that are not paid) is assumed to be collected in India, or put another way, the privatized import duties collected in Bangladesh (bribes plus smuggler rents) are less than the public revenue that they displace, the difference being collected in the form of privatized export taxes in India. How these economic rents are split between Indian and Bangladesh participants and beneficiaries of the smuggling is the principal determinant of the terms on which the smuggled sugar is traded between the two countries.

The third set of estimates in Appendix Table 4 is for legally exported sugar by the Petrapole-Benapole land route on the assumption of an FTA, the removal of India's export subsidies and of Bangladesh's protective import duties. It is also assumed (as is the case with actual legal exports) that the exported sugar is purchased legally at the mill free-sale price in India, that the same transport and transaction (including "speed money") expenses are incurred as estimated for actual exports in 2002/03, and that competition between Indian exporters keeps the bulk domestic price down to an ldf supply price of $307/MT, which is equal to the sum of the purchase prices and these expenses and margins. At this competitive price there is no room for smuggling, unless the smugglers were to able to substantially cut their transport and transaction expenses below the expenses of the legal exporters.

Appendix Table 6

Indian export subsidies on sugar exported to Bangladesh during Bangladesh FY 03

	In force since	$US/MT at $1=Rs 48.4	On exports to Bangladesh in Bangladesh FY 03	
			$/MT	$ million
DEPB 4% of fob price	01-Apr-04	8.5	8.5	3.0
Internal transport costs Rs 1000/MT	22-Jun-02	20.7	20.7	7.2
Ocean freight Rs 350/MT	14-Feb-03	7.2	2.4	0.8
Handling and marketing charges Rs 500/MT	03-Oct-03	10.3	0.0	0.0
Total export subsidy		**46.7**	**31.6**	**11.0**

Source for export subsidy rates: Directorate of Sugar (2004). DEPB is Duty Exemption Pass Book, which is paid as an alternative to duty drawback at different rates on many exported products, to compensate for import duties that increase the cost of their inputs.The DEPB amount here is based on an export price fob of $213/MT. The handling and marketing subsidy was only in force during 4 months of Bangladesh's FY 04: have assumed the average per ton subsidy during the year is 4/12 of the full subsidy.

FREE TRADE BETWEEN INDIA AND BANGLADESH?
A CASE STUDY OF THE READY MADE GARMENT INDUSTRY

1. INTRODUCTION

India and Bangladesh are two of the world's leading exporters of ready made garments. Bangladesh's exports started from a much lower level than India's in the late 1980s and grew very rapidly until they slowed down after 2001(Table 1 and Fig 1). Currently they are only about 15 percent less than India's, and a much higher share of Bangladesh's total exports (approximately 75 percent, versus only 10 percent in India). In both India and Bangladesh, most of the slowing of export growth has been in garments sewn from woven fabrics: exports of knitted garments have continued to expand rapidly. The overall slowing of growth has been caused by the slow growth of MFA quotas in the US and the EU, and increasing competition, especially from China. How these two countries' garment exports are faring following the end of the MFA on December 31, 2004, is still an open question.

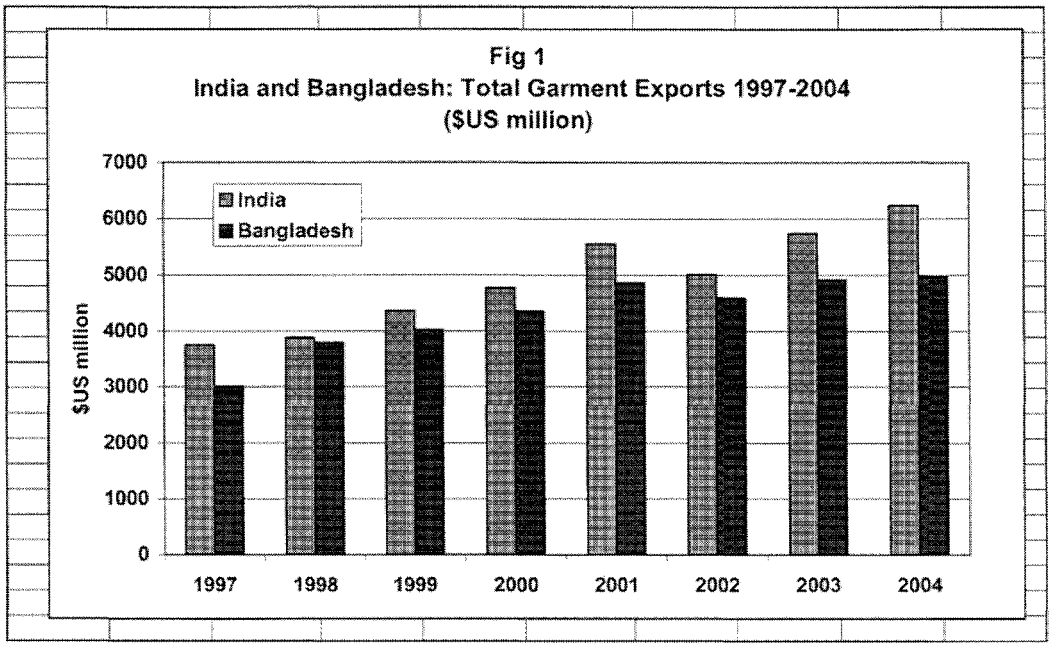
Table 1

India and Bangladesh: Total Garment Exports 1997-2004

	India			Bangladesh		
Fiscal Year	Knitted HS 61	Not knitted HS 62	Total	Knitted HS 61	Not knitted HS 62	Total
1997	1034	2719	3753	763	2238	3001
1998	1023	2855	3878	940	2843	3783
1999	1258	3107	4365	1035	2985	4020
2000	1588	3177	4765	1270	3083	4353
2001	1769	3790	5559	1496	3364	4860
2002	1864	3143	5007	1459	3125	4584
2003	2387	3352	5739	1652	3255	4907
2004	2701	3541	6242	1859	3116	4975

Sources: India: Department of Commerce, Export Import Data Bank. Bangladesh:Bangladesh Bank and Export Promotion Bureau. Exports for Bangladesh FY04 are up to May 2004 only. The Indian fiscal year is from April 1 to March 30. The Bangladesh fiscal year is from July 1 to June 30

The Indian garment industry purchases nearly all its fabrics and other inputs-including inputs for exported textiles- from its very large textile industry, which is also a major exporter. By contrast, Bangladesh's exported garments mostly use imported fabrics and other inputs, including fabrics and yarns imported from India. This has begun to change somewhat in recent years with the expansion of knitwear exporters which produce their own knitted fabrics from imported yarns. The Bangladesh spinning and weaving industry has long been heavily protected against import competition, especially competition for the domestic producers of textile fabrics. Most fabrics are still produced on handlooms or by small power loom operators: the large scale sector accounts for only a very small share of total production (possibly only 5-10%), and is dominated by high cost and poorly performing state enterprises which have had difficulty in competing with duty-free imports in supplying garment exporters, despite large government subsidies to these sales. However, in recent years there have been some substantial private sector investments in spinning mills, and to a lesser extent in weaving and finishing plants.



The purpose of this paper is to explore the potential for trade in readymade garments between India and Bangladesh, starting with the present situation in which Bangladesh RMG products receive tariff preferences in India under SAPTA, and then more speculatively, considering the likely consequences of either a bilateral FTA between India and Bangladesh for this industry, or its inclusion (rather than exclusion on negative lists) under SAFTA. These questions are discussed at a general level, and then in more detail, with some highly speculative quantifications of the possible economic welfare outcomes, for the case of woven men and boys' (M&B) cotton shirts (HS 6205.20).

Mens' and boys' cotton shirts were chosen for this case study for a number of reasons.

First, they are representative of other garments sewn from woven fabrics which are also very important in both India's and Bangladesh's garment export baskets, notably men's and boy's shirts assembled from synthetic and other non-cotton fabrics, men's and boys' cotton and non-cotton trousers, and the equivalent cotton and non-cotton garments for women and girls.

Secondly, in 2003/04 M&B cotton shirts were the first Bangladesh RMG products to obtain a non-negligible foothold in the Indian garment market, and as this was over known Indian (preferential) tariff levels, there is at least some empirical basis for simulating the likely effects of free trade. By contrast, at the preferential Indian tariff levels in 2003/04 and before, imports of other types of Bangladesh garments were either negligible or zero. In the absence of exporter and importer surveys, there is therefore no basis for even highly speculative projections of the likely effects of free trade on exports of these products to India. That substantial garment exports to India would not be an automatic response to free trade is apparent from Sri Lanka's experience with ILFTA, which is that garment exports to India are about zero despite the absence of QRs and preferential tariffs which are only one quarter of the MFN rates.

Thirdly, M&B woven cotton shirts account for large shares of India's and Bangladesh's garment exports, about 10 percent of in both countries, and 17 percent and 16 percent respectively of non-knitted (HS 62) garment exports. If there is potential for India-Bangladesh bilateral trade in woven shirts, it would seem plausible to suppose that there would be a similar potential for bilateral trade in other similar

woven garments. To illustrate this point, Table 2 shows the available data on India's and Bangladesh's exports of woven cotton trousers and shirts. Bangladesh exports of cotton trousers have been more than three times India's, whereas Indian exports of cotton shirts are considerably greater than Bangladesh's. A priori, this suggests that the prospects for Bangladesh cotton trouser exports to India would be better than the prospects for cotton shirts, but as noted in the next section in recent years there have been some non-negligible cotton shirt exports but practically no exports of cotton trousers.

Table 2

India and Bangladesh: Exports of mens/ and boys cotton woven trousers and shirts FY 1997-2004 ($US million)

	India			Bangladesh		
Fiscal	Trousers	Shirts	Total	Trousers	Shirts	Total
Year	6203.42	6205.20		6203.42	6205.20	
1997	78	749	827	195	286	481
1998	81	720	801	227	420	647
1999	126	644	770	348	427	775
2000	144	587	730	363	379	743
2001	167	750	917	410	406	816
2002	170	564	734	433	441	874
2003	169	607	776	468	438	906
2004	201	617	817	667	491	1158

Sources: India: Department of Commerce, Export Import Data Bank. Bangladesh:Bangladesh Bank and Export Promotion Bureau. The Indian fiscal year is from April 1 to March 30. The Bangladesh fiscal year is from July 1 to June 30. Bangldesh exports classified by these HS codes are not available after 2001

Fourth, although hard data is missing (see later discussion) it is obvious that there are very large domestic markets for cheap cotton shirts in both countries, and large markets for similar inexpensive garments.

Fifth, cotton shirts are representative of low value mass- consumption garments in which many Bangladeshis believe they have a competitive advantage viz-a-viz India, and which are commonly considered to be one of the few Bangladesh manufactured products with major potential markets in India if tariffs were to be removed.

Sixth, cotton shirts and similar garments provide an especially clear illustration of the complex and difficult political economy issues in India and Bangladesh that complicate discussions of more open trade relations between them. In both countries there are long histories of government intervention, not only in the garment sectors *per se,* but even more in the two countries' textile sectors, which inevitably would have to be included in discussions about more open trade in garments.

The next section of this paper summarises some key features of the structure of, and recent developments in the Indian industry, focusing especially on import and other policies that are relevant for Bangladesh RMG exports to India. The third section of the paper briefly outlines some of the principal features of the Bangladesh RMG industry and the trade and other policies which affect it. The fourth section discusses the likely economic welfare consequences of a bilateral FTA between India and Bangladesh (or free trade under SAFTA) on the assumption that readymade garments would be included in the agreements, and includes some simulations of the possible economic welfare effects of Bangladesh exports of cotton shirts to India. No attempt is made to simulate the likely consequences of garment

exports from India to Bangladesh, which is also a likely consequence of an FTA, because a prerequisite for doing with any plausibility would involve require much more information than is currently available on Bangladesh's domestic garment and textile markets, both of which are largely *terrae incognitae.* The fifth and final section summarizes some of the implications of the paper for the trade and other policies in India and Bangladesh which affect their readymade garment industries. It brings out in particular the key issue of Bangladesh's textile protection policies, which for Bangladesh are central to any domestic, bilateral (e.g. with India) or regional (e.g. in SAFTA) discussions of trade policies affecting garments or textiles

2. THE INDIAN INDUSTRY: STRUCTURE, POLICIES AND RECENT DEVELOPMENTS

Size and nature of the domestic market. A major problem for studying the potential for trade in ready made garments between India and Bangladesh is that, in both countries, although extensive trade and other data, and numbers of detailed studies are available for garment exports, there is practically no information on the domestic markets for garments. To remedy this gap, extensive field and market surveys would be needed, and doubtless this would be done by private firms and business associations and perhaps the two governments, if a substantial trade in garments were to develop between the two countries as part of either a bilateral FTA or under SAFTA. For India, in the absence of this information, for this desk study, it has been possible to put together only highly aggregated rough orders of magnitude from the national income statistics and the official trade data (Table 3). According to these rough estimates, in FY 2003 the total production of garments and other textile products (presumably mainly ready made garments but also including textile "made-ups" such as blankets, bed-linen, curtains etc) was about $US 14 billion, of which about half was exported, implying a total domestic market of approximately $US 7 billion. However, the total domestic garment market is probably much larger than this, since traditional clothing-saris, dhotis, lunghis etc-are classified in the national accounts (and also in the trade statistics) as textiles, not garments. The extent to which (and where) the activities of small retail tailors are covered by the national account statistics is also not clear, and home sewing of fabrics purchased in retail stores is almost certainly not included. While these garments are not "ready made" for sale in retail stores, they are obviously very close substitutes for many RMGs-especially those sewn from woven fabrics- and have a major influence on domestic RMG demand. In the simulations below of the of the likely effects of exports of Bangladeshi woven cotton approximately $US 7 billion. However, the total domestic garment market is probably much larger than this, since traditional clothing-saris, dhotis, etc-are classified in the national accounts (and also in the trade statistics) as textiles, not garments. The extent to which (and where) the activities of small retail tailors are covered by the national account statistics is also not clear, and home sewing of fabrics purchased in retail stores is almost certainly not included. While these garments are not "ready made" for sale in retail stores, they are obviously very close substitutes for many RMGs-especially those sewn from woven fabrics- and have a major influence on domestic RMG demand. In the simulations below of the of the likely effects of exports of Bangladeshi woven cotton shirts to India following an FTA, it is assumed that prior to the FTA about half of Indian ready made shirt production is exported and about half is sold domestically. However, this assumption is quite arbitrary, and if anything the domestic market share may constitute more than half of total production.[70]

Industry structure and domestic policies Although there are a number of garment firms (including public companies) which operate large scale factories, most garment production comes from millions of very small operations. To a large extent this reflects India's basic comparative advantage in flexible, labour intensive manufacturing, but this structure has also been actively encouraged by a number of past and some continuing policies, including the reservation of garment production for small scale

[70] According to a compilation of the FY03 balance sheet data of 47 RMG public companies by CMIE, exports were only about 26% of total sales. CMIE: *Industry Financial Aggregates and Ratios* May 2004.

firms, excise tax exemptions for small scale firms, labour laws which strongly advantage small firms over medium and larger firms, and similar policies in the textile industry which have advantaged small scale fabric producers ("power looms") over larger textile mills, making it difficult (or at least increasing the expense) for industrial garment producers to obtain large lengths of uniform quality fabrics.[71] Because of this structure, most garment exporters and many of the larger domestic suppliers are basically trading companies which subcontract labour intensive operations such as sewing to independent fabricators. From the perspective of potential garment exporters to India in Bangladesh or other countries, there are a number of advantages and disadvantages associated with this structure and the associated policies.

Table 3

India FY 2003: Estimates of textile and clothing production, exports and imports ($US million)

National accounts sector (NAS)	Cotton textiles 23	Synthetic, wool, silk etc textiles 24	Jute textiles 25	Textile products incl garments 26	Textiles & clothing Total
Value of production	21819	8484	1192	14169	45665
Exports	2192	2510	119	7009	11830
Production for domestic market	19627	5974	1073	7160	33835
Imports	88	1151	66	81	1386
Total domestic market	19715	7125	1139	7241	35221
Exports as % of production	10.0	29.6	10.0	49.5	25.9
Imports as % of domestic market	0.4	16.2	5.8	1.1	3.9

Notes: Value of production of "unregistered" producers not given in NAS. Have assumed same ratios of value added to value of production as for registered manufacturing. The production estimates involve some double counting e.g. yarn into fabrics, fabrics into garments. "Textile products" in the NAS probably includes made-ups and miscellaneous products which are included in HS 63 in the the trade statistics. The trade statistics are from the DGFT trade database and cover HS 51-63
The NAS Rupee values were converted at Rs 48.4=$US 1

a. Either directly or through subcontracting of labour intensive functions, much of the Indian RMG industry operates in a *de facto* free labour market, with no or very few constraints as regards wages or hiring and firing that would make it difficult for the industry to compete with exporting firms in other developing countries, including Bangladesh. Hence unregulated labour market conditions in export oriented garment industries in countries such as Bangladesh would not of themselves provide much of an advantage in competing in India.

b. Until 2000, garments were included in India's list of products reserved for small scale industry (its SSI reservation list). Woven garments were removed from the list in 2000, but knitted garments were still reserved until they were finally removed in March 2005. During that period SSI reservation would have provided an advantage for Bangladesh and other exporters over Indian producers, but for various reasons the advantage was quite minor[72]. As for all other industries probably the most important remaining constraint for Indian garment firms is that if they expand to larger scale more capital intensive operations with large labour forces, they become subject to stringent labour laws and higher labour costs, as well as intrusive "inspector raj" controls over their employment and other aspects of their operations.

[71] For more discussion of these issues see Kathuria, Martin and Bhardwaj (2001)

[72] To qualify as an SSI firm, the gross value of plant and machinery employed cannot exceed Rs 20 million (currently about $US 460,000). For some types of knitted garments, this constraint on more capital intensive and larger scale production in India may have advantaged Bangladesh and other exporters to India. However, Indian firms could bypass the constraint if they exported enough (50% or more) of their output.

c. Indian small scale firms benefit from excise tax exemptions[73], whereas larger Indian firms and all imports are subject to normal excise tax rates. In the past, as intended, this considerably improved the position of small scale firms competing against medium and larger Indian firms, and increased the protection rate of small firms against import competition. However, for a number of reasons the extent of the extra protection provided in this way to small firms at present appears to be minimal, especially in the garment industry. At present the general rules are that firms with annual sales of Rs 4 Crores or less (approximately $900,000 or less)[74] can choose between[75]:

- excise duty exemption on the first 1 crore ($225,000) of sales but no CENVAT credit, plus normal excise duty on the next 3 crores ($690,000) of sales, but subject to CENVAT credit; and
- 60% of the normal excise duty on the first Crore of sales but subject to CENVAT credit, and normal excise duty on the next 3 crores) of sales, but subject to CENVAT credit.

The CENVAT credit refers to VAT style credit for excise taxes on inputs, so that when a full exemption for the first slab of sales is claimed under option (a) above, the net resulting benefit is very small owing to the loss of this credit. The subsidy to small garment firms is even less, because the excise tax rate on pure cotton garments and fabrics is only 4%, and non-cotton garments and fabrics 8%, compared to the general normal excise tax rate of 16%. For a small firm with Rs 1 Crore sales of cotton woven garments, the subsidy relative to non-SSI producers and to imports is equivalent to only about 1.2% of sales, and for an SSI firm with cotton garment sales of 4 Crores, the subsidy is equivalent to only 0.3% of sales. The SSI excise tax benefit for hosiery firms using synthetic filament yarns and polyester yarns is even less, since whereas the garment excise tax rate is 8% the excise tax rates on these two yarns are 16%.

Non-tariff barriers to imports. For about 40 years clothing and also textiles were included in India's import licensing system for consumer goods, which, with only a few exceptions, amounted to an import ban. Import licensing of consumer goods was lifted for SAPTA countries in 1998. Starting about then, for the rest of the world it was removed in stages for different groups of products: textiles and clothing were included in the final stage of the process which became effective on April 1, 2001. During the long import licensing period, the principal exception to the *de facto* general import ban, was for textiles used as inputs into exported products. These could be imported duty free using special ("advance") import licenses, or imported under other arrangements for exporters. During the late 1990s, some very limited imports of textiles for use in the domestic market were also possible using "special" import licenses (SILs), which were issued to exporters as a special incentive and allowed them to import products which were otherwise restricted.

Two months after the removal of general import licensing by the central government, in June 2001, West Bengal extended its luxury tax to include a list of products "not manufactured or made in India". The list included readymade garments on which the tax rate was set at 20%. A 5% luxury tax was also imposed on a few domestically made garments selling at "luxury" prices e.g. shirts and T-shirts selling for more than Rs 500, but otherwise Indian garments were exempt. The West Bengal finance minister referred to the tax as "a desperate bid to protect ...domestic industry".[76] Later on, in response to objections from the Bangladesh government, the Indian side was reported as saying that "the tax was not

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[73] The excise concessions for small scale firms (based on sales and applying to all firms) are quite separate from the SSI reservation rules, which reserve certain products for production by small scale firms, where "small scale" is defined by gross assets.

[74] This limit was increased from 3 Crores to 4 Crores in the 2005/06 budget.

[75] The excise tax rules in relation to small scale industries are at <www.laghu-udyog.com/policies/central/t-ed.htm>

[76] *The Hindu Business Line,* July 22, 2001. At www.thehindubusinessline.com

exclusively aimed at Bangladesh products"[77], but it undoubtedly would have had this effect, as the main land border crossings for trade with Bangladesh are in West Bengal, and Haldia is the closest and most convenient seaport. In any case it was a clear breach of the WTO national treatment principle[78], and seems to have been dropped in about August, 2002[79]. But it would have been a major impediment to Bangladesh readymade garment exports to India, and probably slowed down their growth during the 14 months that it was in force. At the time West Bengal imposed the tax, a number of other Indian states were reported to be examining the possibility of imitating it, but as of February 2004 none appeared to have done so[80]. Consequently, since August 2002, it appears that garment imports in India have been free of non-tariff barriers and that tariffs have been the sole protective instrument.

Tariffs Before the final removal of the textile and clothing import ban, with the support of the Ministry of Textiles, the T&C industry lobbied the government to impose specific duties on a large number of textile fabrics and garments. This was done in 2000. In 2002/03, the proportions of HS 6-digit tariff lines subject to specific duties were: cotton fabrics, 49%; man-made filament fabrics 88%; man-made staple fibre fabrics 69%; special woven fabrics (including tyre cord fabrics) 51%; knitted apparel 30%; apparel, not knitted 62%. The tariffs are compound i.e. the higher of an amount calculated using an ad valorem rate or the specific amount. The specific component is in Rupees per square metre or per kilo in the case of fabrics, and per item (e.g. per shirt) in the case of garments. The basis for choosing the products protected by specific duties is not known: it could be that they were considered to be more vulnerable to import competition than others, but given the long standing *de facto* import ban, whether or not this was the case could not have been well known at the time. For the products subject to specific duties, the objective and effect is to target and keep out imports of specifications and qualities that sell for low prices for which there is the largest demand in the Indian domestic market, and of which other developing countries are the most competitive foreign suppliers. The specific tariffs were initially set at very high levels during FY 2001: they were reduced somewhat in FY 2002 and have remained at that level since.[81]

Both the normal *ad valorem* and the specific tariffs are subject to India's normal preferences under SAPTA and under its bilateral trade agreements. Under SAPTA there were no preferences for garments until they were introduced in FY01–but for "less developed" SAPTA countries only- following the third SAPTA negotiating round. Subject to meeting rules of origin, the preference for Bangladesh and the other SAPTA LDCs (Nepal, Bhutan and Maldives) on most garments is 50%, so the basic Customs duty would be the greater of an amount calculated by applying half the ad valorem rate to the cif price, and half the specific amount[82]. There are no garment tariff preferences for the other "developed" SAPTA members i.e. Pakistan and Sri Lanka. However, under the bilateral agreement with Sri Lanka (ILFTA) the

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77 Joint Press Statement Bangladesh-India Commerce Secretary Level Trade Talks 08-10 April, 2002. At http://meaindia.nic.in/declarestatement/2003/04/10jsl.htm

78 GATT article III.1 says that internal taxes "should not be applied to imported or domestic products so as to afford protection to domestic production".

79 *The Hindu Business Line,* August 11, 2002.

80 Only a few possible cases (involving sugar) were seen in a look through the Indian state sales tax schedules. The schedules are published in *Commercial's All India Sales Tax Manual* (Volume III). Commercial Law Publishers(India) Pvt. Ltd, 2004 (February)

81 The FY 2003/04 Customs tariff schedule extended the HS classification system from 6 to 8 digits, and in doing this the specific duty for any given 6-digit product was also used for its 8 digit subproducts.

82 The preferences did not apply to India's "Special additional duty" (Sadd). In most circumstances the Sadd provided significant extra protection, so the preferential protection rate was greater than implied by the apparent preference. For example, in 2002/03 the MFN ad valorem protective rate on garments (including the effect of the Sadd) was 35.8% and the preferential protective rate on imports from Bangladesh was 20%. The Sadd was abolished in January 2004.

preference for garment imports from Sri Lanka is 75%, and garment imports from Nepal (like imports of nearly all other products) are duty free.

In order to qualify for the SAPTA preferences, garments imported from Bangladesh would have to satisfy the SAPTA origin rules. For the SAPTA LDCs the principal requirement is that the cif value of non-SAPTA imported inputs included in the exported product should not exceed 70% of the fob price, or put another way, that national value added should be no less than 30% of the fob price. In this respect Bangladesh and the other LDCs have an advantage over the "developed" SAPTA members (India, Pakistan and Sri Lanka) for which the minimum value-added ratio is 40%. Both were increased (from 40% and 50% respectively) in November 2000, mainly in response to complaints from the SAPTA members other than India, that the rules were too stringent for them to take advantage of the SAPTA tariff preferences in exporting to India. However, there was already some built-in flexibility from a provision that excludes inputs obtained in other SAPTA members in calculating the imported input ratios i.e. by in effect treating such inputs as part of the value-added. This provision is extremely important for firms in Bangladesh and other SAPTA countries wishing to export woven garments to India, because value-added margins in cutting, sewing and assembling garments from imported fabrics are typically around 30% of fob prices, and may be less. If these firms use fabrics imported from China or other non-SAPTA countries, this limits their ability to compete in exporting to India, because if they cut their export prices they may breach the rule of origin conditions and find that these shipments are subject to the higher MFN tariffs in India, rather than the lower SAPTA preferential tariffs. To get around this constraint, they can use imported Indian fabrics, even though they might not have done so if they had a free choice unconstrained by this consideration[83]. In this way the origin rules therefore provide some indirect protection to Indian exporters of fabrics and other inputs. However, most exported Bangladesh knitted garments are reported to easily meet the SAPTA origin requirements, so that there would be no constraints on yarn purchases and imports by Bangladesh firms interested in exporting to India.

Most of Bangladesh's high volume garment exports to developed countries are subject to specific tariffs in India e.g. knitted shirts, woven shirts, trousers, T-shirts, and sweaters. However, a number of products which Bangladesh exports –mostly in smaller volumes-to other countries are not. Among knitted products (HS 61) these include suits and jackets, woollen trousers, pyjamas, babies' garments, track suits and swimwear, panty hose, stockings etc, gloves and mittens, and shawls, scarves and ties. Among non-knitted products (HS 62) they include nightshirts and pyjamas, babies' garments, swimwear, handkerchiefs, and gloves and mittens.

After 2001/02, the first year without general import licensing of garment imports, the MFN *ad valorem* tariff on most garments (including the protective effects of other import taxes in addition to the basic Customs duty) was reduced from 40.8% to 35.8%, a drastically cut to 20% in 2004/05, and then again to 15% in 2005/06 (Table 4). There were corresponding reductions in the SAPTA preferential rate that would be applied to imports from Bangladesh provided they satisfy the SAPTA rule of origin: these came down from 20% in 2003/04, to 10% in 2004/05, to 7.5% in 2005/06. For Bangladeshi exporters of these products, this represents a very considerable liberalisation of the Indian import regime and gives them a substantial advantage over non-preferential suppliers who must pay the MFN tariff. However (also subject to rules of origin) the preferential ad valorem garment tariff for Sri Lanka under ILFTA is lower (just 3.75%), and Nepal can export garments to India duty free.

As noted above, the garments with the largest export volumes in Bangladesh are mostly subject to specific duties in India. Some of the past and current effects of the specific tariffs are illustrated in Table 4

[83] In principle it would seem that Bangladesh woven garment exporters could also satisfy the origin rule by importing fabrics from Pakistan. India and Pakistan are the only SAPTA members with substantial export-oriented textile industries.

and Figs 2, 3, and 4, using the example of mens' and boys' woven cotton shirts (HS 6205.20). One major effect has been to exclude shirts (and *ipse facto* other garments and also fabrics subject to specific tariffs) from the major reductions in the general level of ad valorem tariffs that have occurred since 1999/2000. For cotton shirts, the MFN ad valorem rate in 2005/06 (15%) is about one –third of its level in 1999/2000 (45.7%), but the MFN specific duty on a $4 shirt in 2005/06 (47.3%) is higher than the tariff that would have been applied in 1999/2000 (45.7%). The ad valorem tariff applicable to shirt imports from Bangladesh fell sharply between 1999/2000 and 2000/01 with the introduction of the 50% SAPTA preference, but as a result of the introduction of specific tariffs the preferential rate on low value shirts went up or declined only very slightly. After 2001/02 the *ad valorem* preferential rate come down by more than half (from 22.6% to 7.5% in 2005/06) but because of the specific duties, ad valorem equivalent rates were only very slightly lower in 2005/06 than they had been in 2001/02: for example 23.7% on a $4 shirt, versus 27.6% in 2001/02[84].

Table 4

India. Mens' or boys' woven cotton shirts : MFN tariffs and SAPTA preferential tariffs on imports from Bangaladesh. Comparisons of ad valorem and ad valorem equivalents of specific tariffs, 1999/2000-2005/06

	Ad valorem rates		Specific tariff ad valorem equivalents					
			$3 shirt		$4 shirt		$5 shirt	
	MFN	Pref	MFN	Pref	MFN	Pref	MFN	Pref
1999/00	45.7	45.7	45.7	45.7	45.7	45.7	45.7	45.7
2000/01	44.0	24.0	106.5	55.2	80.8	42.4	65.5	34.7
2001/02	40.8	22.6	66.3	35.3	50.8	27.6	41.5	22.9
2002/03	35.8	20.0	65.4	34.9	50.1	27.2	41.0	22.6
2003/04	35.8	20.0	68.6	36.5	52.6	28.4	42.9	23.6
2004/05	20.0	10.0	63.1	31.6	47.3	23.7	37.9	18.9
2005/06	15.0	7.5	63.1	31.6	47.3	23.7	37.9	18.9

Notes: There were no SAPTA preferences for garments in 1999/2000 and before, and no specific duties. From 2000/01 the Bangladesh SAPTA preference has been 50%, but that only applies to the Indian "Basic" Customs duty. Consequently,until 2004/05 the preferential tariffs were more than 50% of the MFN tariffs owing to the application of other protective import duties The last of these other duties (the Special Additional Duty or Sadd) was removed in January 2004. A small "education cess" (2% of all import duties) introduced in 2004 has not been allowed for.

A second major effect of specific tariffs is that the *ad valorem* equivalent of the tariffs is much higher for low priced products than for higher priced products. In the case of men's cotton shirts, in 2004/05 the MFN tariff is the higher of 20% or Rs 85 per shirt, and the preferential tariff for SAPTA LDCs including Bangladesh is half this i.e. the higher of 10% or Rs 47.5 per shirt. At the average exchange rate during the first quarter of FY05 these specific tariffs were equivalent to $US 1.89 per shirt and $US 0.95 per shirt respectively. For a shirt imported for $3.00 cif, the ad valorem equivalent of this specific tariff is 63.1% for imports from countries without preferences, and 31.6% for imports from Bangladesh. As illustrated in Fig 4, the ad valorem equivalents of the specific tariffs are lower for more expensive shirts, but only at a cif price between $12 and $13 do the general ad valorem rates (15% MFN and 7.5 % preferential) take over from the specific tariffs.

[84] Because the specific duties are expressed in Rupees per unit (per shirt), they declined slightly relative to international prices (e.g. in US dollars per shirt) during 2000/01 to 2002/03 owing to Rupee devaluation, but have increased along with the Rupee appreciation since then

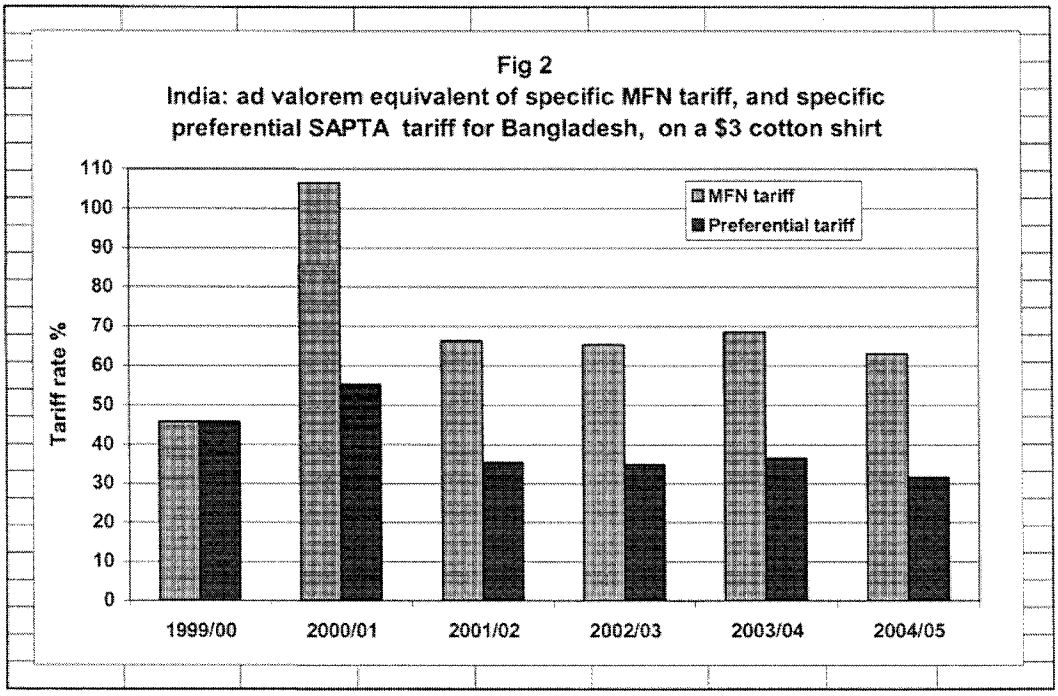


Fig 2
India: ad valorem equivalent of specific MFN tariff, and specific preferential SAPTA tariff for Bangladesh, on a $3 cotton shirt
Tariff rate %
110
100
90
80
70
60
50
40
30
20
10
0
MFN tariff
Preferential tariff
1999/00
2000/01
2001/02
2002/03
2003/04
2004/05

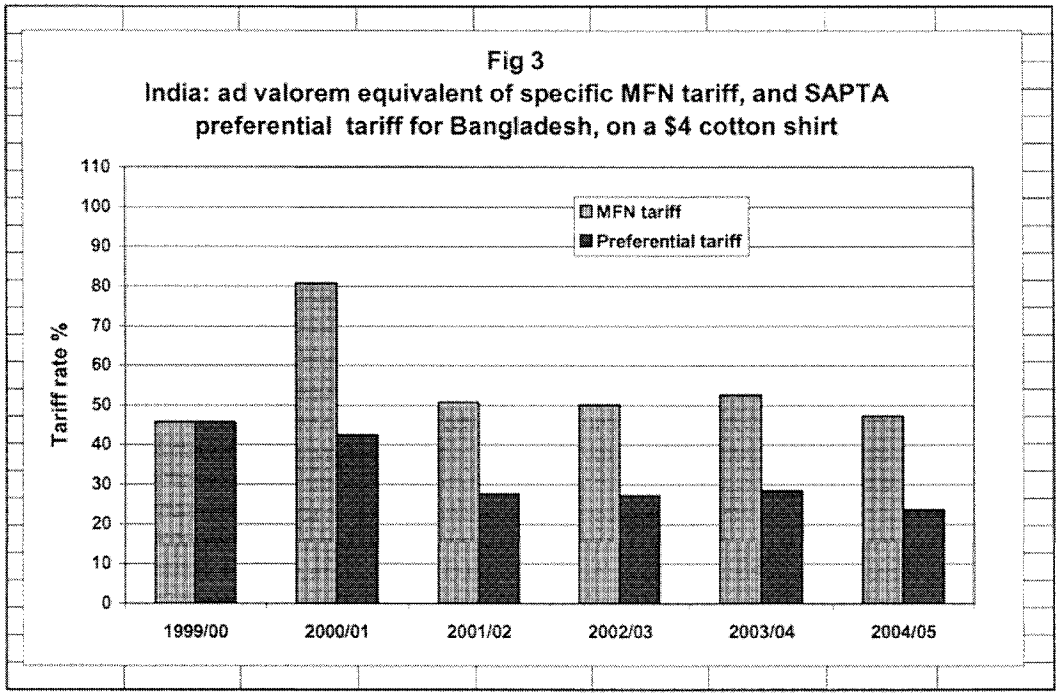
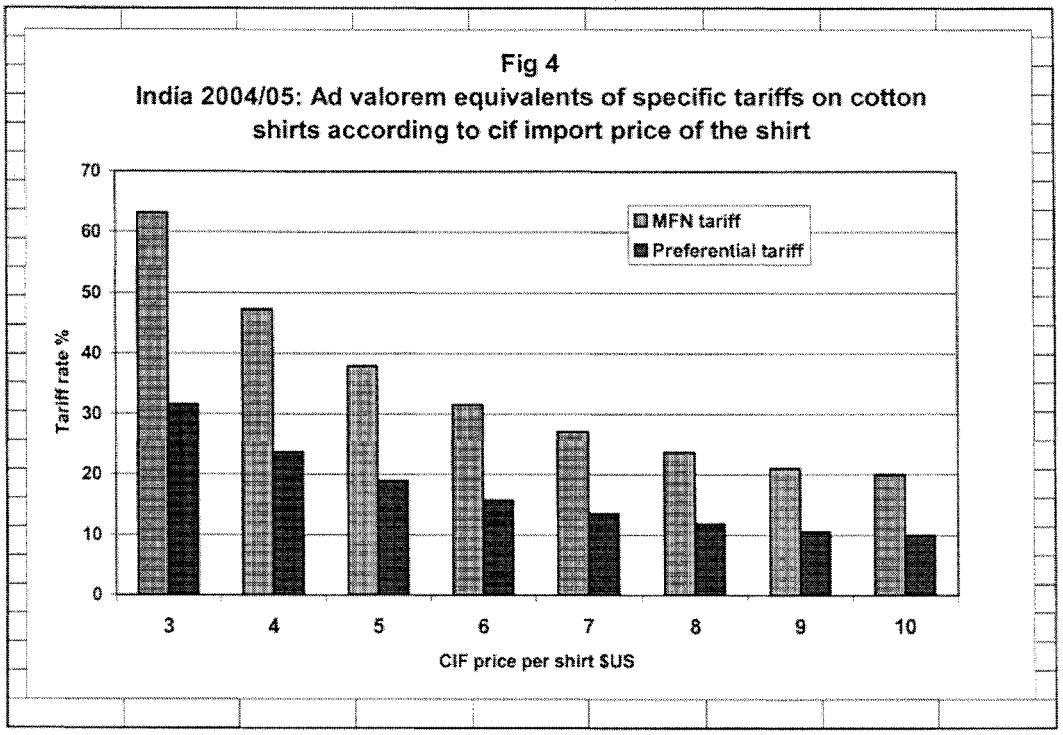


Fig 3
India: ad valorem equivalent of specific MFN tariff, and SAPTA preferential tariff for Bangladesh, on a $4 cotton shirt
Tariff rate %
110
100
90
80
70
60
50
40
30
20
10
0
MFN tariff
Preferential tariff
1999/00
2000/01
2001/02
2002/03
2003/04
2004/05



The available trade statistics do not provide information on the distribution of import and export prices, only average unit values, and there is also no published data on the distribution of ex-factory selling prices in the domestic markets in India or Bangladesh. However, average unit values of internationally traded woven cotton shirts exported and imported by Bangladesh and India suggest that prevailing prices are within a range of from $3 to $5 per shirt. For example:

Bangladesh exports: average export unit value 2001/01 (later data n.a.)	$3.26
US imports from Bangladesh : average fas[85] unit value Sept 2003-Sept 2004[86]	$4.17
Indian imports from Bangladesh: average cif unit value FY 2004[87]	$4.25
Indian total exports: average fob unit value 2003/04	$4.79
Indian exports to Bangladesh: average fob export unit value 2003/04	$4.05
Indian exports to Malaysia: average fob export unit value 2003/04	$4.07
Indian exports to Mexico: average fob export unit value 2003/04	$4.27
Indian exports to Nepal: average fob export unit value 2003/04	$2.82
Indian exports to Philippines: average fob export unit value 2003/04	$3.06

The average unit values of India's and Bangladesh's total exports during these periods would have been pushed up by binding MFA quotas and quota premia on exports to the US, the EU and other developed country markets. Hence prices in a range of say $3 to $4 per shirt may be more indicative of prevailing prices in developing country domestic markets, as indicated by the unit values of India's exports to Bangladesh, Mexico, Nepal and the Philippines. Taking account of domestic competition (see

85 fas=free aboard ship (i.e. in Bangladesh). This is the basis for US tariffs. In most other countries tariffs are based on cif prices.

86 Source : OTEXA

87 Source: DGTD Export-Import Data Bank

below), at cif prices over this range, India's current specific tariff would appear to be almost prohibitively high (between about 63% and 47%) for imports from MFN sources aimed at its domestic low and middle income mass market. Only expensive relatively high quality shirts from MFN sources (selling for say $6 each or more) with probably relatively restricted domestic sales potential, would appear to have much of chance.

This is even more the case for products with higher specific duties than shirts. For example, the specific tariff on M&B woven cotton trousers is Rs 135, in 2004/05 equivalent to an MFN tariff of $3.01 and a preferential tariff for Bangladesh of $1.50. Prevailing low end cotton trouser prices are between $3 and $4, so these tariffs are equivalent to ad valorem MFN tariffs of between 75% and 100%, and SAPTA preferential tariffs that would be applied to imports from Bangladesh of between 37.5% and 50%. Since, judging from DEPB rates (see below) domestic Indian trouser prices are close to or below cif prices, these specific tariffs are probably even more effective than the shirt tariffs at keeping out import competition from the low and middle income mass markets, including in this case import competition from preferential suppliers such as Bangladesh.

These examples suggest that a third consequence of the Indian specific tariffs might be to provide potentially important export opportunities for low value exports to India from Bangladesh and the other South Asian countries benefiting from tariff preferences, since the MFN specific tariffs are presumably keeping out imports from other low cost Asian garment exporters, especially China but also Indonesia, Vietnam and others. Using the example of cotton shirts and cotton trousers, within a $3-$4 price range, the SAPTA preferences are substantial. However, such exports still have to surmount preferential tariffs of ranging from 31.6% (for a $3 shirt) to 23.7% (for a $4 shirt) and from 50% (for a $3 pair of trousers) to 37.5% (for a $4 pair of trousers) and compete in the Indian domestic market with Indian shirts and trousers. Their ability to do so is affected by the export and other policies that affect the domestic prices of Indian exportable garments, discussed in the following section.

Export policies and domestic prices. India operates a number of schemes to refund or offset the cost to exporters of import duties on their imported inputs. The principal duty neutralization scheme for most exported Indian garments is the DEPB (Duty Exemption Pass Book). In principle, the DEPB offsets the average Customs duty on imported inputs used by garment exporters[88]. DEPB rates are expressed as percentages of fob export prices. They are calculated and announced by the Directorate General of Foreign Trade in the Ministry of Commerce, and are supposed to only allow for import duties on materials which are actually imported: thus no allowance would be made for domestic material inputs, the presumption being that if an exporter uses them instead of imported materials, their prices (after allowing for quality, delivery times and other factors) must be lower than their cif import prices. Once a DEPB rate is established, the exporter is automatically credited with the DEPB amount on the basis of the FOB invoice value of the exports, without the need to document the inputs actually used. These credits can be used against liabilities for import duties, and can be sold if the exporter does not wish to use them.

DEPB is popular with exporters because of its simplicity and speed and the absence of various constraints that go with other export facilitation schemes.

The principal other schemes are duty drawback, the use of special duty free import licenses for imported inputs ("advance licenses"), bonded warehouse status ("100% EOUs"), operation in an export processing zone (EPZ) and most recently operation in a Special Economic Zone (SEZ). With drawback, the input import duties are refunded to the exporter by the Customs department, and under the other schemes they are obtained duty free. Under all these schemes, firms wishing to sell in the domestic

[88] "Additional" duties on imported inputs and the equivalent excise duties on domestic inputs going into exports are refunded separately.

market have to pay normal import duties on their imported inputs, and for bonded warehouse firms and firms operating in EPZs or SEZs the administrative arrangements for ensuring that they do so are complex and involve relatively onerous transaction costs.[89]

Garment DEPB rates have come down substantially during the last three years, from 16% for most garments during FY 03, to 4.4% -8.5% since December 2004 (Table 5). For exporters of woven garments for which the total cost of material inputs (mainly fabrics) are say 70% of export prices, this implies that average import duties on inputs declined from about 23% of material input costs in 2002/03 to a range of 6-12% of input costs after December 2004.

	Table 5						
	India: DEPB rates for selected garments, 2002-2005						
	2002/03	2003/04	Feb 9 04	Sept 23 04	Since Dec 30 04		
					Cotton	Blended	Man-made
Blouses	16	15	11	6.1	4.4	7.7	8.5
Children's sweat shirts	16	15	11	6.1	4.4	7.7	8.5
Cotton knitted night gowns <85% cotton	14	12	8	4.4	3.2	n.a.	n.a.
Cotton track suit (knitted)	16	15	11	6.1	3.2	n.a.	n.a.
Gents' bermudas/mens' shorts	16	15	11	6.1	4.4	7.7	8.5
Gents full/half sleeve shirts	16	15	11	6.1	4.4	7.7	8.5
Jeans	16	15	11	6.1	4.4	7.7	8.5
Sweat shirts (standard sizes)	16	15	11	6.1	4.4	7.7	8.5
Trousers	16	15	11	6.1	4.4	7.7	8.5
T-shirt not containing silk or wool	16	14	9	5	3.6	6.3	7.0
Publications, *Duty*		*Book Scheme*					
<http://dgft.com.nic.in>; and *World Trade Scanner*, various issues							

Indian DEPB rates for garments (and also for other products) are highly significant for exporters in other countries interested in exporting to India. Firstly, they indicate that the general level of domestic garment prices is now very low relative to fob export prices. Secondly, they indicate that Indian domestic prices of garment inputs –mainly textile yarns and fabrics- are also not far above cif import prices. Hence input tariffs paid by Indian garment producers selling in the domestic market would not be much of a disadvantage for them in competing with imported garments, even though exporters of these garments in say Bangladesh would obtain their inputs duty free under normal arrangements for exporters.

As regards Indian domestic garment prices-for example exportable woven cotton shirts- the current DEPB rate of 4.4% says that domestic prices in India are likely to be about 4.4% above fob export prices. This is because, if the DEPB credit is about equal to the tariffs on material inputs, selling domestically at the fob price plus the DEPB credit will approximately equalize the export and domestic value-added margins i.e. the margins between selling prices and the cost of material inputs. If a product is being exported, firms have no motive to sell at domestic prices which produce a lower value-added margin than the margin on export sales, and if there is competition and domestic margins exceed export margins, production will be switched from exporting to the domestic market and force domestic prices down until domestic margins are about equal to export margins.[90] If the DEPB credit exceeds the actual

[89] For a discussion of India's export incentive schemes see World Bank (2004), Chapter 4

[90] This doesn't mean that there may not be substantial short run deviations between export and domestic margins, for example if export orders are cancelled and unwanted stocks are sold on the domestic market, or–as is normal in this business-there are temporary shortages and surpluses of particular brands or styles. In addition, during the period of the MFA regime up to December 31 2004, export prices and margins would have been higher in quota constrained markets with positive quota premia: the relevant export margin for domestic pricing in that case would be the margins and prices in non-quota export markets. After January 1, 2005, as already noted, the removal of MFA quotas will mean that fob export prices and margins will tend to equalize across different

cost of input tariffs, the difference is an export subsidy[91], but for the same reasons domestic prices will still tend to align with fob prices plus the DEPB. If the DEPB credit is less than the actual cost of input tariffs, the difference is an export tax, but domestic prices will still tend to align with fob prices plus DEPB[92].

In the case of woven cotton shirts, if in 2004/05 Indian domestic prices are only about 4.4% above fob prices, they will be about equal to or even lower than cif import prices. Based on US data on shirt imports from China, consignment costs (freight and insurance) were about US 44 cents per shirt[93]. Assuming the same consignment cost from China to India and a consignment cost of half this between Bangladesh and India, we get the following comparisons for an Indian cotton shirt exported at $4.00 fob[94]:

Indian shirt: export price fob	$4.00
DEPB credit per shirt (4.4% of fob price)	$0.18
Domestic price of Indian shirt[95]	$4.18
Cif price of equivalent Bangladesh shirt	$4.22
Specific duty per Bangladesh shirt	$0.95
Duty paid price per Bangladesh shirt[96]	$5.17
Cif price of equivalent Chinese shirt	$4.44
Specific duty of equivalent Chinese shirt	$1.89
Duty paid price of equivalent Chinese shirt	$6.33

These comparisons show that the current Indian domestic prices of exportable shirts are likely to be lower than cif import prices, even cif prices of shirts imported from neighbouring countries such as Bangladesh. Adding the MFN specific tariffs raises the price of a Chinese shirt about 51% above the domestic price of an equivalent Indian shirt, and adding the SAPTA preferential tariff raises the price of a Bangladesh shirt about 24% above the price of an Indian equivalent. If "equivalent" it understood to mean that the shirts are made from fabrics and other inputs of about the same quality and costing about the same at international prices, the Indian tariffs are much higher than this in relation to the value-added margins of potential exports. For example, if the cost of fabrics and other inputs is 70% of the fob price of exported Bangladesh shirts, the processing margin on a shirt exported for $4.00 fob is just $1.20. Even if wages and other processing costs are lower in Bangladesh than in India, there is no way they could be compressed to offset the per-shirt specific import duty in India of $0.95. In this circumstance the best a Bangladesh exporter can do is to use whatever processing cost and other advantages he has to differentiate his product from Indian shirts in terms of quality and style, and hope that this will be enough

export markets, at price levels somewhat above the levels prevailing in non-quota export markets under the MFA regime.

91 The reductions and differentiation by fibre type of the garment DEPB rates in 2004 were in part due to complaints by the EU at the WTO that India's DEPB rates constituted export subsidies under the WTO Agreement on Subsidies and Countervailing Measures

92 In these last two cases, fob export prices will adjust downwards in the case of an export subsidy and upwards in the case of an export tax until the DEPB credit equals the input tariffs.

93 World Bank (2004), Vol III, Table A.16

94 The following comparisons assume that identical Indian, Chinese and Bangladesh shirts would be exported to markets such as the EU or the US at the same fob price i.e. $4.00. This obviously simplifies reality, but is intended to illustrate the general point that Indian domestic prices (as well as domestic prices in the other countries) will reflect fob prices which of necessity are lower than cif prices owing to international transport, insurance and other consignment costs.

95 This is the estimated ex-factory price before excise duties, sales taxes and domestic distribution margins

96 Before the Indian domestic ("additional") tax on imports

to generate some sales, even though his prices will be considerably higher than the prices of competing Indian-made shirts.

However, this scenario would change with an FTA between India and Bangladesh. In the above example, following an FTA the Bangladesh cif import price would only slightly exceed the domestic price of the Indian shirt, and if the Bangladesh export firm pays lower wages and has other processing cost advantages over Indian producers, it could use these advantages to either export better quality or more attractively designed shirts at the same or similar prices, or shirts with about the same quality and design attributes as Indian shirts, at lower prices. Alternatively it could pay higher marketing fees or allow higher distribution margins to Indian importers handling its products. Either way it would be largely insulated from competition in the Indian domestic market from China and other actual or potential ROW exporters to India.

Trends in total imports. During the 1990s and before Indian garment imports were tiny: in 1996/97 just over $4 million, less than 0.1 percent of the domestic market. Starting in about 1997/98 they have grown very rapidly (Table 6 and Figs 5 and 6) and in 2003/04-including imports of used clothing-total imports reached $98 million. From the perspective of actual and potential garment exporters to India, a number of points are worth noting about these developments:

- Although much larger than previously, total garment imports of $98 million in 2003/04 were still only about 1.4% of the total Indian domestic market for garments and other fabricated textile products. Even a small increase in this percentage share would represent a fairly substantial total export opportunity from the perspective of small and medium size developing economies such as Bangladesh.
- Most imports in 2003/04 (about $60 million) consisted of used clothing (HS 6309) imported from developed countries (nearly all from the US, Canada, Korea and Japan). The used clothing trade (actually mainly seasonal unsold stocks of new clothes from developed countries) was kept out of India for many years by import licensing, but expanded very rapidly (Fig 6) after licensing was dropped on April 1, 2001[97]. Specific tariffs were not set for used clothing, so the import expansion has also been facilitated by the steady decline in used clothing *ad valorem* tariffs, from almost 60% in 1999, to 20% in 2004/05 and 15% in 2005/06. This new openness of the Indian market to used clothing imports, increases the competition that Bangladeshi and other clothing exporters face in India.
- Imports of new clothing (HS 61 and HS 62) in 2003/04 were about $39 million. Of these, just under $5 million were parts and accessories (Appendix Table A.1) which very likely were imported duty free and used as inputs by Indian garment exporters. So the probable total of imports for the Indian domestic garment market may have been only about $34 million. Even so, this represents a substantial expansion from the late 1990s. Most of this expansion occurred, however, between 1996/97 and 2001/02, after which is seems to have levelled off (Fig 5). During the first five of these six years, imports of garments were subject to the import licensing system, and very high specific duties were introduced and in force during 2000/01. The fact that imports expanded so rapidly may have been due to the use of SILs (issued as an incentive to exporters) to import garments. The subsequent levelling off of import growth (and decline in 2002/03) is possibly a lagged response to the introduction of the specific duties. As discussed previously, the *ad valorem* equivalent rates of these duties (as illustrated for cotton shirts in Figs 2 and 3) have remained about the same since 2001/02, and combined with low domestic prices for exportable

[97] It is unlikely that import licenses would have been issued for used clothing before import licensing was abolished. It is possible that the imports that occurred before then may have been with the use of the special import licenses (SILs) issued to exporters during this period. During this period and before, a major preoccupation of the import licensing authorities and the Customs department, was to prevent the surreptitious import of used clothes in containers supposedly containing only rags (HS 6310).

Indian garments, this suggests that they may be sufficiently high to keep total garment imports at about their 2003/04 level in the future, or at least to slow down future import growth.

Table 6

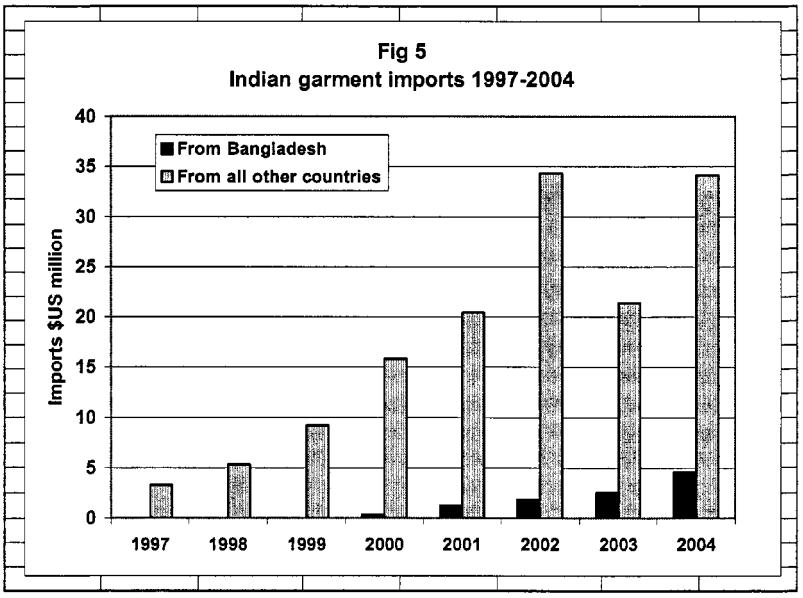
Indian garment imports in $US million

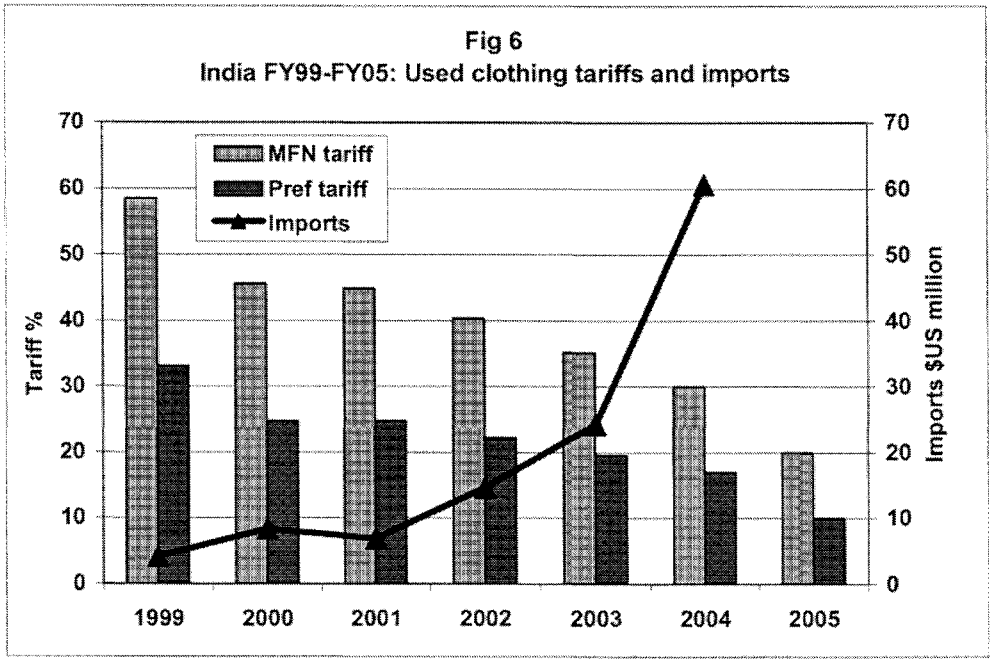
	From Bangladesh			From all countries			Bdesh share of total %		
Fiscal year	Knitted HS 61	Not knitted HS 62	Total	Knitted HS 61	Not knitted HS 62	Total	Knitted HS 61	Not knitted HS 62	Total
1997	0.00	0.00	0.00	1.61	1.66	3.27	0.0	0.0	0.0
1998	0.00	0.00	0.00	2.10	3.21	5.31	0.0	0.0	0.0
1999	0.01	0.00	0.01	2.41	6.78	9.19	0.4	0.0	0.1
2000	0.02	0.31	0.33	3.79	12.35	16.14	0.5	2.5	2.0
2001	0.00	1.24	1.24	6.73	14.92	21.65	0.0	8.3	5.7
2002	0.17	1.68	1.85	11.15	25.03	36.18	1.5	6.7	5.1
2003	0.56	2.00	2.56	8.16	15.80	23.96	6.9	12.7	10.7
2004	0.01	4.57	4.58	10.92	27.78	38.70	0.1	16.5	11.8
2005	0.11	0.02	0.13	1.49	4.30	5.79	7.4	0.5	2.2

Note: 2005 first quarter only

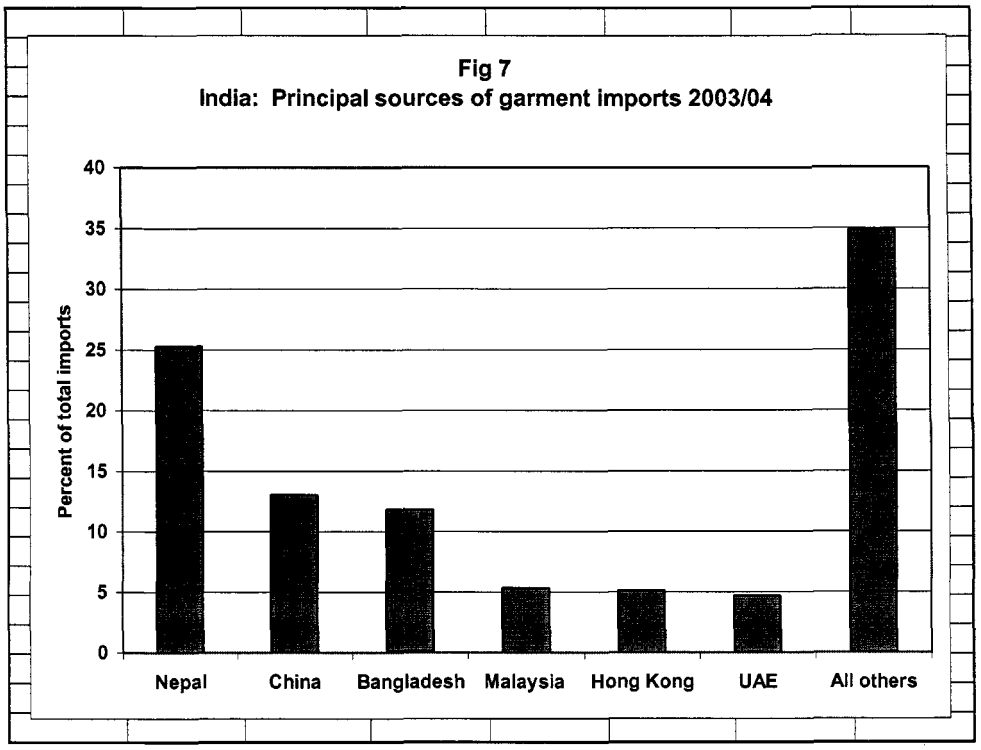
Source: Ministry of Commerce, DGTD website

- There were practically no imports from other South Asian countries during the expansion phase after 1996/97 up to 2000/01. This was despite the fact that from 1998 imports from SAPTA countries were no longer subject to import licensing, whereas imports from all other countries came under the licensing system. The probable explanation for this apparent paradox is that SILs were available and vitiated the ostensible QR preference for SAPTA countries, and that their users preferred to import from China and other East and South East Asian countries, especially because, up to and including 1999/2000, there was were no SAPTA tariff preferences for garments imported from the SAPTA LDC members. This implies that the SAPTA countries might have trouble in competing with other countries in exporting to India in the absence of tariff preferences.





- The expansion of SAPTA garment exports to Indian occurred in 2001/02 and after, and has been confined to exports from Nepal and Bangladesh. In 2003/04 Nepal accounted for about a quarter of India's total imports of new garments (HS 61 and HS 62) and Bangladesh for about 12%. The other principal source countries were China, Malaysia, Hong Kong, and UAE. The remaining imports (about 35% of the total) were spread over approximately 59 other source countries (see Fig 7 and Appendix Table A.1). The fact that 65% of the total imports in this year came from countries without tariff preferences, and that most of these imports were subject to high specific tariffs, suggests that Indian garment importers would probably switch to them and away from exporters in Nepal and Bangladesh if there were no SAPTA preferences. Consequently, the preferences probably involve a trade diversion cost for India, albeit a small one because of the small volume of preferential imports.
- Despite the fact that Sri Lanka's principal exports are garments, it is striking that *Indian garment imports from Sri Lanka have been and remain negligible.* During 2003/04 they were only $460,000 (far below the ILFTA tariff rate quotas) despite the ILFTA tariff preferences for garments, which are mostly 75%. This means that during 2003/04, 2004/05, and 2005/06 Indian ad valorem tariffs (for cotton garments) from Sri Lanka have successively been 12%, 5% and 3.75 %, and that the corresponding specific tariffs are only about one quarter of the MFN specific tariffs. Two plausible inferences from this may be relevant for Bangladeshi and other garment exporters to India: (1) Even though garments are Sri Lanka's principal export, the Indian market is so competitive that even relatively low tariffs make it unprofitable for Sri Lankan firms to compete there; (2) Sri Lankan garment exporters have a comparative advantage in supplying specialized niches in developed country markets, and do not find it worthwhile to diversify into a developing country market such as India.



Imports from Bangladesh As noted above, garment imports from Bangladesh were very small in the early stages of the general import expansion, but increased more rapidly during the three years 2001/02 to 2003/04 (Fig 5 and Table 6). As regards the potential for bigger volumes of imports from Bangladesh in the future, the following points are worth noting (see also Table A.2):

- Almost all the imports from Bangladesh (96%) during 2003/04 were shirts, mostly M&B cotton shirts (91% of the total).
- There have been no Indian imports of M&B cotton trousers, which, with cotton shirts, are one of Bangladesh's high volume exports to developed countries, selling there at about the same average price as Bangladeshi cotton shirts, and in terms of the value of exports, outcompeting cotton trouser exports from India (Table 2). A likely reason is that India's specific duty on cotton trousers (Rs 135 per unit) is considerably higher than the specific duty on cotton shirts (Rs 85 per unit). After allowing for the 50% SAPTA preference, the resulting equivalent *ad valorem* protective tariff rates on imports of Bangladeshi shirts and trousers selling for $4.00 cif are[98]:

	Shirts	Trousers
2003/04	28.4%	42.7%
2004/05	23.7%	36.8%

Bearing in mind that the equivalent ad valorem tariffs on cheaper imports (say $3.00 to $3.50 per unit) would be considerably higher than these, it is possible that the present specific tariffs on

[98] At an exchange rate of Rs 45.95=$1, the preferential specific duties are $US 0.92 per shirt and $US 1.47 per pair of trousers. The protection rates are lower in 2004/05 because of the abolition of India's "Special additional" (Sadd) import tax, to which the SAPTA preference was not applied.

trousers are high enough to preclude imports altogether, whereas some (if limited) imports have been possible at tariffs around the levels applied to Bangladeshi shirts.

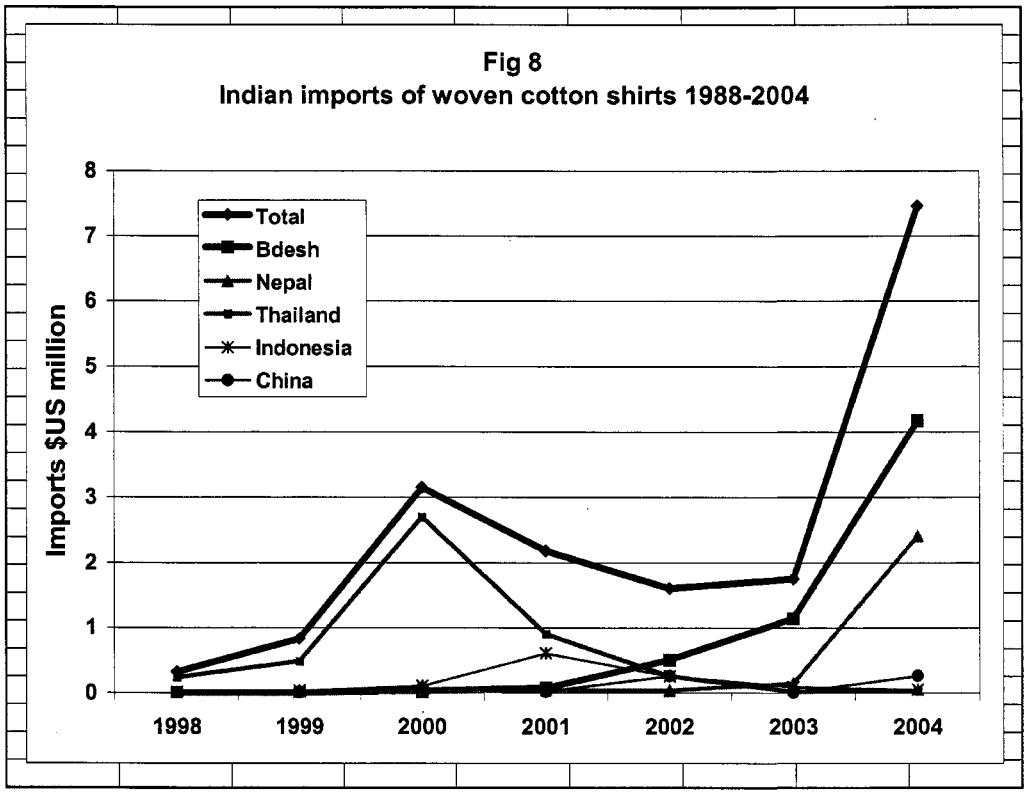
- There have been practically no imports of knitted garments from Bangladesh, even though Bangladesh's exports to other markets (about $1.9 billion in 2003/04) are highly competitive and have been growing rapidly (see Table 1). Indian specific duties may be the principal deterrent for some of these products (e.g. knitted T-shirts and knitted cotton sweat shirts) but a number of knitted products of which there are some Bangladesh exports to other countries, are not subject to specific duties in India. These include the following knitted garments: suits and jackets, woollen trousers, pyjamas, babies' garments, track suits and swimwear, panty hose, stockings etc, gloves and mittens, and shawls, scarves and ties. During 2003/04 the SAPTA preferential tariff on these was 17.4% or 17.5%[99], during 2004/05 it was reduced to a flat 10%, and then in 2005/06 to 7.5%. The absence of any imports of these products from Bangladesh during 2003/04 suggests that after allowing for the tariff and additional transaction costs, Indian traders had nothing to gain by importing them. The response of imports, if any, following the tariff reduction to 10% in 2004/05 and 7.5% in 2005/06 will provide a better indication of the likely response to a further tariff reduction to zero, if that were to occur as part of a bilateral FTA or under SAFTA
- With the exception of cotton shirts, the composition of Indian imports of Bangladeshi garments from year to year has been quite erratic: for example 11 products imported in 2002/03 disappeared from the import portfolio in 2003/04, and 7 products imported during 2003/04 were not imported during the previous year (Table A.2). This and the very small import volumes of most products, suggests that, despite the gradual overall increase that has been occurring, for Indian traders, importing garments from Bangladesh is still an opportunistic business without decisive advantages that would warrant negotiating longer term and high volume arrangements with Bangladesh exporters.

Cotton shirts appear to be an exception to this last point, in view of the steady increase in imports from Bangladesh during 2001/02 and 2002/03 and the jump in 2003/04 (Fig 8 and Table A.3). The fact that there was also a sharp increase in cotton shirt imports from Nepal during 2003/04 also suggests that the Indian market for cotton shirts was becoming more open to imports. The increased imports from Bangladesh were very likely triggered earlier by the cut in the preferential specific tariff in March 2001, the response being delayed by the West Bengal luxury tax which was in place between June 2001 and August 2002.

In order to interpret what may have been happening to Indian shirt imports, Fig 9 provides a simplified schematic outline of the main features of the Indian domestic market for garments over the past eight years, using as an example a shirt that could be imported at a cif price of $4.00. It is assumed that the same shirt is exported from India at an fob export price shown by the bottom horizontal line. The fob price is assumed to be $3.56, equal to the $4.00 cif price in an export market outside South Asia minus consignment costs of 44 US cents. An Indian exporter would receive this price plus the DEPB credit for exports. Because the DEPB rate went down after 2002/03, this is indicated by the line which starts in 2002/03 slightly above the cif price line, and dips below it in 2003/04. DEPB rates prior to 2002 could not be found for this study, but they were probably slightly higher than in 2002/03, reflecting higher fabric import duties. As discussed previously, domestic prices of exportable garments will tend to equal fob prices plus the DEPB credits, so this line also represents the equilibrium domestic price of the Indian shirt. This is compared with a line showing the duty inclusive price of a Bangladeshi shirt imported at a cif price of $4.00, and a line (at the top of the diagram) showing the duty inclusive price of a shirt imported from a non-preferential source and paying the general MFN tariff. Before 2000/01 there were

[99] The slight difference is due to a higher additional duty on synthetic shirts (10%) than on cotton shirts, (8%) which slightly raisedthe protective effect of the SAdd tax in this year.

no SAPTA preferences for garments, and so the duty inclusive price of a Bangladeshi and (say) a Thai shirt would have been the same (around $6.00), as both would have paid the same ad valorem tariff. In 2000/01 very high specific duties were introduced, which would have pushed the duty inclusive price of a Thai shirt to above $7.00. However, Bangladeshi shirts for the first time benefited from the 50% SAPTA preference, and despite the high specific duty, the duty inclusive price would have declined slightly. Then in 2001/02 the specific duties were cut, and so, as the diagram shows, the duty inclusive prices of both Thai and other MFN sources shirts and Bangladeshi shirts would have fallen quite sharply. Since then the specific duties (fixed in Rupees per shirt) have remained the same, and so there have been only slight changes (due to changes in the Rupee/dollar exchange rate and the abolition of the Sadd import tax in January 2004) in the estimated duty inclusive prices of Bangladeshi and MFN sourced shirts.



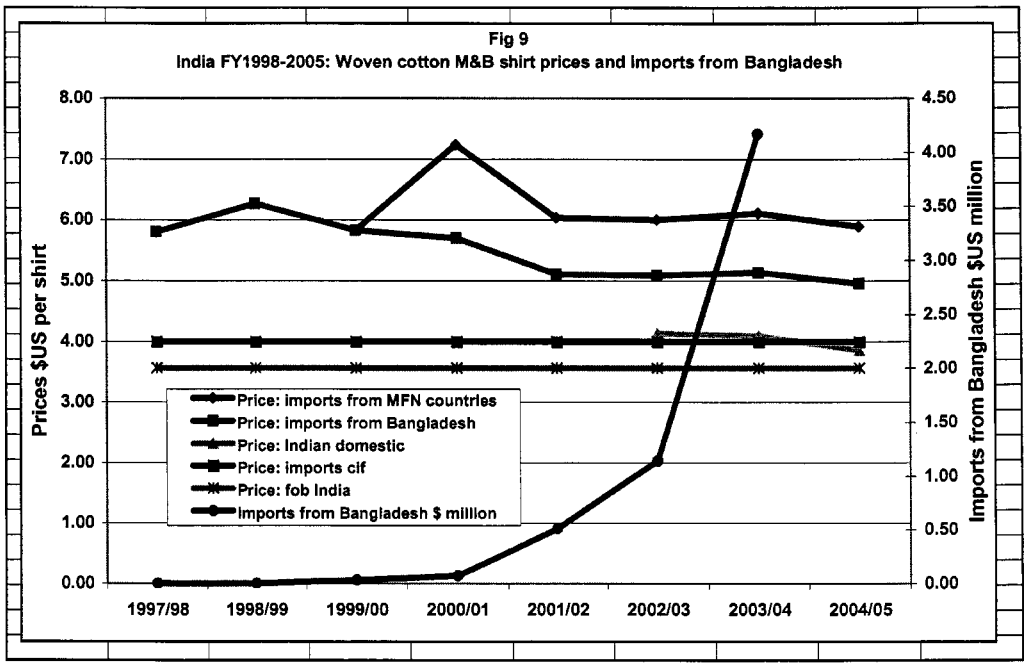


Fig 9 and Fig 8 together help piece together a plausible story of what has been happening in the Indian market for imported shirts. Until 1999/2000 there were no specific duties and no SAPTA preferences, no QRs on SAPTA sourced imports (they were removed in 1998), and the general consumer good import ban on imports from other countries could be bypassed with the use of India's "special" import licenses (SILs) issued as an incentive for exporters. This provided a small import niche for imported shirts, especially after ad valorem tariffs were reduced from 56.6% to 45.6% in 1999/2000. The niche was mainly occupied by shirts imported from Thailand, which presumably were marketed and differentiated from Indian shirts so as to find domestic buyers, even though-due to the very high tariffs-they would have sold at considerably higher prices. There is also the possibility that Customs duties were avoided through underinvoicing. During this period Bangladesh shirts faced the same tariffs as Thai, Chinese and other shirts, but imports were zero. In 2000/01 very high specific duties were introduced (Rs 135 per shirt), but at the same time a 50% tariff preference was introduced for Bangladesh shirts under SAPTA. The specific duties sharply raised the ad valorem equivalent of the MFN tariffs, and would have also removed most of the payoff from underinvoicing. As intended, this reversed the rising trend in shirt imports from MFN sources, especially from Thailand. However, the much lower preferential SAPTA specific duty began to generate some shirt imports from Bangladesh. In 2001/02 general import licensing of consumer goods including shirts was removed, but for garments these were already largely defunct due to the availability of SILs. More important, the initial specific duties were cut (from Rs 135 to Rs 85 per shirt), and this reduced the duty-paid price of both MFN sourced shirts and shirts from Bangladesh. At these lower specific duties, Bangladesh shirts became somewhat more competitive viz-a-viz Indian shirts, and the 50% SAPTA preference provided an apparently decisive advantage for them over imports from China, Thailand and other MFN countries. This is apparent from the high average unit import unit values and low import market shares of imports from these countries in 2003/04, suggesting that their exporters were finding only very small market niches in India for relatively expensive shirts[100].

[100] Except in the case of Singapore

M&B woven cotton shirt imports in 2003/04 from:	*Share of total imports %*	*Average unit value $US/shirt*
Bangladesh	55.9	4.25
Nepal	32.3	4.64
China	3.5	14.07
Singapore	1.2	1.78 (??)
Turkey	0.6	10.85
Indonesia	0.6	11.36
Sri Lanka	0.5	6.09
Thailand	0.4	6.46
23 other countries	5.0	various

Following these developments, imports from Bangladesh began a rapid expansion which seems to have rung alarm bells in West Bengal. As a result, the expansion was probably slowed down by West Bengal's luxury tax on non-Indian garments (discussed earlier) which was in place between June 2001 and August 2002. Once the luxury tax was lifted, however, the import expansion accelerated during 2003/04. In this year, for the first time shirt imports from Nepal also appeared on the scene on a substantial scale. As noted previously, provided they meet rules of origin conditions, these imports are duty free under the Indian-Nepal Treaty of Trade, and therefore would appear to have an important advantage-about equivalent to the advantage of Indian produced shirts-over imports from Bangladesh. Why they did not appear earlier is not known, but in any event from the Bangladesh perspective, they are effectively just one (very small) part of the total Indian domestic shirt market in which Bangladesh exporters are competing with domestic suppliers.

3. THE BANGLADESH INDUSTRY: STRUCTURE, POLICIES AND RECENT DEVELOPMENTS

Size and nature of the domestic market The ready made garment industry is Bangladesh's largest single manufacturing activity. It accounts for about three quarters of Bangladesh's exports, about 5% of GDP, and about 25% of manufacturing value added. There are about 4000 RMG factories and direct employment is approximately 2 million. It is much larger than the textile industry, which accounts for about 1.4% of GDP, roughly 10% of manufacturing value added, and employs far fewer workers.

In Bangladesh, trade statistics, other data and many studies are available on RMG exports, but there is even less information on domestic garment markets than in India[101]. For example, the published statistics on ready made garment, only record information on exports, not on domestic sales[102]. As this is the data that is used in the national account statistics, it seems that the RMG industry shares of GDP and of manufacturing value added would be higher than the reported shares, if domestic sales were included.[103]

A rough idea of the possible dimensions of the domestic market for garments can be obtained indirectly from estimates of total fabric (both woven and knitted) availability and utilisation. During 2001/02 the "export-oriented" RMG industry accounted for about 60% of the total fabric demand, and

[101] Of 47 RMG companies surveyed in a study by Maxwell Stamp, during 2001/02 only 7 had domestic sales. Of these seven, 5 sold only in the domestic market, and only two both exported and sold domestically.

[102] The RMG production statistics (Bangladesh Bulletin of Statistics, *Statistical Bulletin*) are obtained from the Export Promotion Bureau

[103] They are perhaps included as a miscellaneous component of textile industry value added?

domestic demand for about 40%[104]. As in India, this 40% (estimated at 1654 million metres) was presumably shared between household sewing of garments from fabrics purchased in retail stores, sewing of garments by artisan tailors, production of textile articles other than clothing (drapes, curtains etc), and industrial ready made garment production. Guesses that domestic RMG production might have taken 20, 30, or 40 percent of the available domestic fabrics, correspond to domestic market shares in total RMG sales of 11.8%, 16.6% and 21%. These percentages seem plausible, even though they are much lower than probable domestic market shares in India, because of the far higher share in Bangladesh of RMGs in total exports and in GDP. In the absence of better information, in the economic welfare simulations reported below, it is assumed that domestic sales are 15% of total RMG sales.

Industry structure and domestic policies The dominant export side of the Bangladesh RMG industry is quite well documented[105]. Aspects that are relevant for the possibility of trade with India under an FTA include the following:

- There are no restrictions or policies equivalent to the Indian small scale industry (SSI) rules which aim to protect and promote small scale firms and which are still in force in India for knitted apparel. Most RMG firms in Bangladesh are small and family owned, but if a firm wishes to expand there is no formal government restriction preventing it from doing so.
- Employment policies are more flexible than in India, where medium and large firms face extreme difficulties in firing workers once they are hired.
- Nearly all RMG exports are arranged though foreign buying agents in Bangladesh. Until recently, in most cases the buying agents also arranged for the supply of fabrics and other inputs, and many exports were negotiated on a CMT basis i.e. the RMG firm just charges for the cost of manufacturing and transport (excluding the material input cost). This pattern is still important, but increasingly garment manufacturers are taking fob orders where they themselves arrange to procure fabrics and other inputs, though according to buyers' specifications. However, only a few firms are directly involved in marketing their exports.
- Most exports are of inexpensive, low end products. However, a 2002 survey reported that some upgrading into higher value fashion knitwear was beginning[106].
- Most fabrics used in exported garments are imported, about 60% from China, Hong Kong and South Korea, and about 15% from India. Most yarns are also imported, but the domestic spinning industry is growing rapidly to meet the rising demand of knitwear exporters.
- The domestic textile industry is heavily protected and exports very little directly. A subsidy program intended to make it worthwhile for garment exporters to buy domestic textiles has encountered many problems and is to be finally phased out in June 2005. However, the domestic side of the Bangladesh RMG industry would face difficulties if it were included in an India-Bangladesh FTA or under SAFTA, unless the textile industry was also included. Otherwise Bangladesh garment producers would face import competition from Indian exporters buying their textile inputs at world prices, while paying high protected prices for their own textile inputs.

Non-tariff barriers to imports Like many other products, garments were subject to import licensing during the 1980s and before, but were freed in 1991. Imports of used clothing are allowed, but

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104 From Gherzi report, Appendix 8, Table 6

105 See for example: Gherzi Textil Orgnisation (2002, August). *Post- MFA Development Strategy and Technical Assistance for the RMG Sector.* Report submitted to the Bangladesh Ministry of Commerce. Debapriya Bhattacharya (2000, Novermber). *Seeking Fair Market Accessfor Bangladesh Apparels in the USA: a Strategic View.* CPD Occasional Paper no 11. Salma Chaudhuri Zohir (2003, January). *Emerging Issues in the RMG Sector of Bangladesh: Insights from an enterprise survey.* BIDS and Oxfam Bangladesh Programme. World Bank (2004, September): *Trade Policies in South Asia: an Overview.* Volume III, Chapter 3:"Textiles, Garments and the MFA Phaseout" and other references given there.

106 Gherzi report, Ch 4, p.61.

restricted by licenses issued to approve importers. How this works in practice is not clear: presumably there is some control over the total quantities imported. Textile fibres and yarns are free of QRs, but until January 2005 the import of all textile fabrics was either banned or subject to licensing, unless the fabrics were imported for use as inputs into exports. The non-tariff protection of fabric production was extended under IPO 2003-06 (Import Policy Order) issued in March 2004, but then removed in January 2005. The earlier policy protected large numbers of handloom and small power loom fabric producers, as well as some government owned textile mills which were and are still in precarious financial condition.[107]

Garment tariffs Garment tariffs were reduced from very high levels in 1992/93 (when they were 102.5%) and before, to 47.5% in 1995/96. They came down gradually during the rest of the 1990s and up to FY 02, were cut fairly sharply in FY 03 and again to 33.5% in FY04, but were then abruptly pushed up to 47.2% in FY05 (Fig 10 and Table A.4), about the same level as they had been 10 years previously.

Practically all garment tariffs, both knitted (HS 61) and non-knitted (HS 62) have been and remain identical. Important apparent exceptions are traditional garments (dhotis, lunghis, saris etc) on which the protective rate is much lower (18 % in 2003/04 and 18.5% 2004/05). However, both imports and domestic production are subject to VAT, and in practice VAT is not collected from artisan and other small scale producers of these garments. Allowing for this, their protection rate against imports is 36.3%.[108] Other exceptions are worn clothing on which tariffs have been reduced since FY 2002, lower tariffs on swimwear, and sharp increases to very high levels of tariffs on cotton trousers and shirts (both knitted and woven) during FY 2003 and FY 2004, most of which were retracted in FY 2005. Bangladesh does not give any tariff preferences for garment imports under SAPTA or other bilateral arrangements, and none of its garment tariffs are bound at the WTO.

Textile tariffs The cost of textiles and other inputs to RMG firms, artisan tailors and households producing garments for domestic use, is affected by tariffs and other import policies, especially the ban on the import of textile fabrics. The cost raising effect of tariffs is complicated by the use of the VAT as a way of giving extra protection, by charging the normal 15% VAT on imports but exempting domestic producers of the same products[109]. For a number of years this technique was used for both yarns and fabrics: in 2004/05 it was discontinued for yarns but was continued for fabrics. Whether or not extra protection is provided to the domestic producers which increases the costs of users, depends on whether the users are themselves subject to the VAT. In principle, industrial RMG producers have to pay the VAT on their domestic sales, so (assuming fabric imports were allowed) in choosing between imported fabrics inclusive of VAT and domestically produced fabrics with no VAT, they would take account of the fact that if they buy the domestic fabrics there would be no VAT credit to set off against the VAT liabilities on their sales. Hence they would pay a lower price for the domestic fabrics by the amount of the VAT included in the cost of imports, so that in this case the VAT exemption for the fabric producers would not increase their protection in the domestic market, nor would it add to the fabric cost for the RMG producers. However, if the fabric is used by artisan tailors who are *de iure* or *de facto* exempt from VAT, whether or not they use imported or local fabrics would not matter, and so in this case extra protection is

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[107] Subsidiary mills of the Bangladesh Textile Mills Corporation (BTMC). For a discussion of BTMC's performance and the subsidies it has received, see World Bank (2002). *Bangladesh: A Review of Public Enterprise Performance and Strategy: Key Issues and Policy Implications*

[108] Because of the de facto VAT exemption, artisan and small producers of traditional garments are also protected against competition from larger domestic producers. There is also no VAT included in the price if they use domestic fabrics to produce these garments. Evasion of VAT as well as Customs duties is a motive for the fairly substantial smuggling of traditional garments from India.

[109] In Bangladesh this practice is used to give extra protection to many products, not just textiles. It clearly breaches the basic WTO national treatment principle, which says that WTO members should not use domestic taxes as a means of protection.

provided to the fabric producers which- depending on how much competition there is in this market-could be passed through, thereby increasing the input costs of the tailors.[110]

Fig 10
Bangladesh garment tariffs and imports

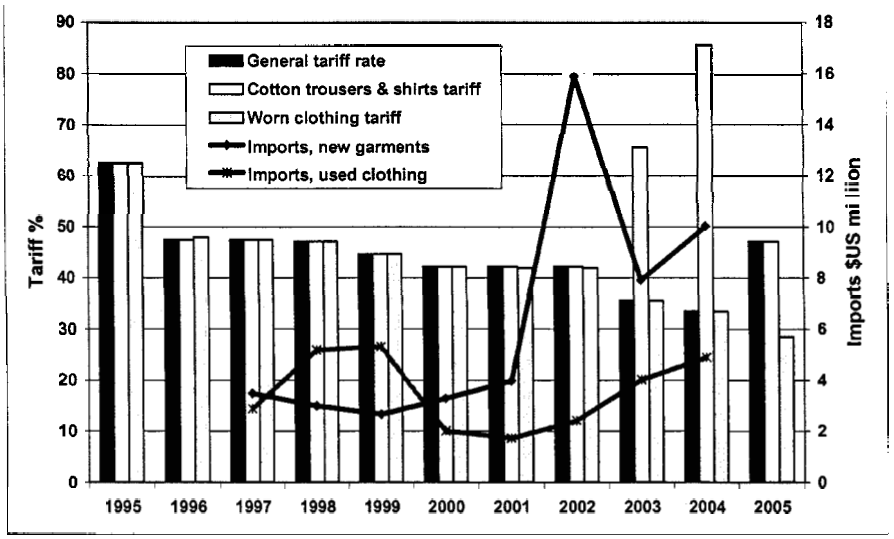

Table 8
Bangladesh 2003/04 and 2004/05:Protection rates (%) for textiles from Customs duties and para-tariffs

HS code		2003/04			2004/05		
		CD. SD & IDSC	VAT	Total	CD. SD & IDSC	VAT	Total
52	Cotton textiles						
5201	Raw cotton	0.0	n.a.	n.a.	0.0	n.a	n.a
5204	Sewing thread	19.0	13.9	32.9	18.5	n.a	n.a
5205	Yarn> 85% cotton	19.0	13.9	32.9	18.5	n.a	n.a
5206	Yarn < 85% cotton	11.5	13.0	24.5	11.0	n.a	n.a
5208-52011	Fabrics	53.5	18.1	71.6	47.7	21.6	69.3
54 & 55	Polyester textiles						
5503, 5506	PSF	4.0	n.a.	n.a.	4.0	n.a	n.a
5509, 5511	Polyester yarn	19.0	13.9	32.9	18.5	n.a	n.a
5512-5515	Polyester fabrics	53.5	18.1	71.6	47.7	21.6	69.3

Notes: CD=Customs duty: SD=Supplementary duty; IDSC=Infrastructure development surcharge. From NBR tariff database. The VAT exemption for domestic producers does not provide extra protection if they sell to other producers which would otherwise be able to credit the input VAT against the VAT owed on their sales (see text discussion)

Table 8 shows the textile tariff protection rates for cotton and polyester textiles during 2003/04 and 2004/05. The protection rates for other types of textile (other synthetics such as acrylic, wool etc) were mostly identical to these. For an industrial garment producer subject to VAT on its domestic sales,

[110] In this case the tailors and the industrial garment firms are still competing on equal terms, since the tailors pay no VAT on their sales whereas the RMG firms do. In effect the consequence of this arrangement is that the VAT-exempt fabric producers are collecting VAT which would otherwise go to the government.

the relevant protection rate is the percentage by which the price of an imported product would have been raised above the import price, by the combined effects of the Customs duty (CD) and the two para-tariffs, supplementary duties (SD) and the infrastructure development surcharge (IDSC). For artisan or other small scale garment producers not in practice subject to VAT, the cost of imports would also include the VAT on imports, and the resulting total protection rates include the VAT as well as the other three import taxes.

For garment producers, the textile protection rates are very high, especially the fabric protection rates-47.7% for industrial producers, 69.3% for artisan and small scale producers-and it seems unlikely that (even without the fabric import ban) garment producers or intermediaries supplying them would find it worthwhile to import fabrics, unless they were able to avoid the import duties altogether through smuggling, or to reduce them through under invoicing or other corrupt practices at Customs. However, this does not mean that domestic textile prices necessarily exceed the international prices of the equivalent textiles by as much as these tariffs. Most likely-certainly for fabrics- competition between domestic producers keeps domestic prices below cif prices plus tariffs. Data on the actual price differences i.e. the implicit protection rates, would be essential for understanding the likely consequences of any kind of free trade arrangement between India and Bangladesh, even if it were to only cover garments and omit textiles. Much more information than is presently available would also be needed on many other aspects of the Bangladesh textile industry, including especially the roles of the power loom and handloom sectors. For these reasons in this paper the likely effects of an India-Bangladesh FTA on these industries are discussed at a very general level, without any attempt at quantification.

Textile tariffs and domestic garment prices Textile protection raises the material input cost of firms selling garments on the domestic market, and in Bangladesh as in other countries, this increases pressures to protect the domestic garment industry with tariffs on imported garments. However, as discussed previously, when there is a large export-oriented RMG industry, gross margins between input and ex-factory prices on domestic sales and gross margins on export sales will tend to be about the same. This means that if RMG exporters obtain their materials duty free at world prices[111], that domestic prices will equilibrate at around fob prices plus the tariffs on the material used when the garments are sold domestically, or if the inputs are produced domestically, the excess of their cost to the garment producer over their value at cif prices[112]. Because of import licensing and high tariffs on fabrics, this suggests that domestic prices in Bangladesh of exportable RMGs made from woven fabrics could be higher than cif prices-perhaps substantially higher- while domestic prices of knitted exportable RMGs may not greatly differ from cif import prices in view of the fact that there are no QRs on yarn and because of the lower yarn tariffs.[113]

Data on the actual differences between domestic and international textile prices would be needed to estimate the likely impact in Bangladesh of alternative trade policy arrangements such as an FTA with India, but some idea of the order of magnitude of the relevant price differences can be seen from the following examples. In both examples a garment (say a shirt) is exported to say the EU or the US at $4.00 fob, and that all its textile inputs are imported and cost $2.80 cif per shirt i.e. the value added or gross

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111 Bangladesh garment exporters do not receive any credits equivalent to the Indian DEPB on their export prices. Instead, they either obtain their inputs duty free or the input tariffs are refunded using the Customs duty drawback mechanism.

112 Suppose a shirt is exported for $4.25 fob, that the cost of imported fabrics and other materials at cif prices is $3.00 per shirt, so that the gross margin per shirt is $1.25. If the shirt is sold domestically and the import duties on the materials in that case are $1.00 per shirt, then the domestic selling price will tend to be $4.25+$1.00=$5.25, giving the same gross margin per shirt as the export margin.

113 These generalisation take account of the excess of cif over fob prices i.e. a domestic price of an exportable may exceed its fob price, but may be less than or not greatly exceed the cif price of the same product.

margin is 30% of the fob price, or $1.20 per shirt. The first example considers the case of a knitted shirt and assumes that the average material input tariff is 18.5%. The dollar amount of these tariffs is added to the fob price to give an estimate of the price of the shirt when it is sold domestically. The second example considers the case of a shirt made from woven fabrics, also being exported at $4.00 fob, and also with an imported raw material content per shirt of $2.80 per shirt. However, in this case, when the shirt is sold domestically, its cost is raised by an average tariff of 47.7% on the imported materials. Alternatively, it could be assumed that the materials are purchased domestically, and that the total cost (before VAT) is 47.7% above their cost valued at world (cif) prices. As in the first example, the resulting material input tariff (explicit or implicit) is added to the fob price to give an estimate of an equilibrium competitive domestic price of the shirt.

Prices and costs in $US per shirt	***Knitted shirt***	***Woven shirt***
Bangladesh shirt: fob price	4.00	4.00
Material input cost per shirt at world (cif) prices	2.80	2.80
Gross margin per shirt when exported	1.20	1.20
Domestic sales		
Material input tariff per shirt: knitted 18.5%; woven 47.7%	0.37	1.34
Total material input cost per shirt including tariffs	3.17	4.14
Domestic price	4.37	5.34
Gross margin per shirt when sold domestically	1.20	1.20
Chinese shirt (same specs and quality) cif Chittagong	4.44	4.44
Bangladesh tariff 47.2%	2.10	2.10
Duty inclusive price of Chinese shirt	6.54	6.54
Indian shirt (same specs and quality) cif Petrapole	4.22	4.22
Bangladesh tariff 47.2%	1.99	1.99
Duty inclusive price of Indian shirt	6.21	6.21

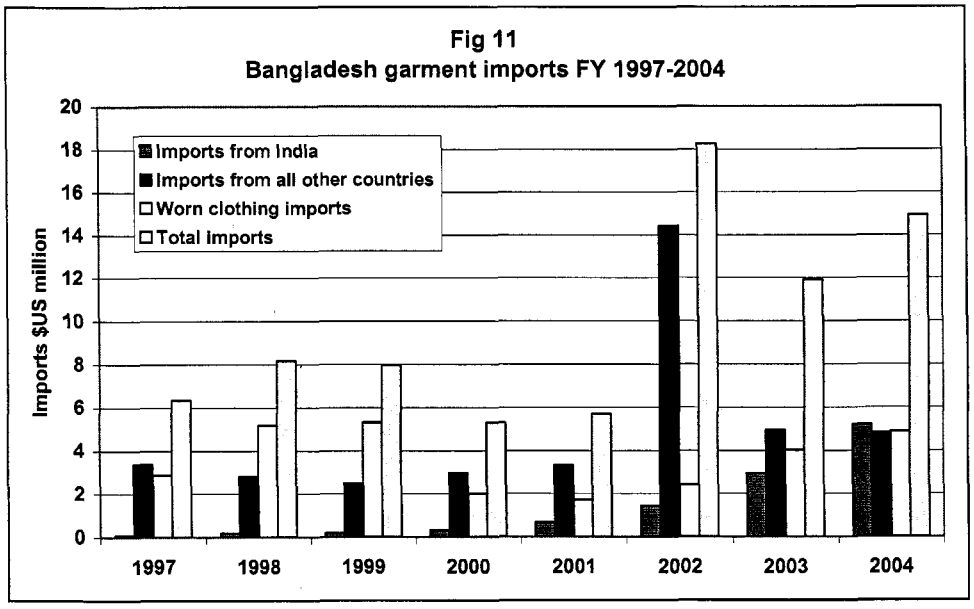
These estimated domestic prices are then compared with Chinese and Indian shirts which it is assumed have the same specifications and qualities as the exported Bangladesh shirts, and are also being exported to the US, Europe or other markets. It is additionally assumed that the consignment cost of both the Chinese and Indian shirts to these markets is US 44 cents per shirt, the consignment cost of Chinese shirts to Bangladesh is also 44 cents, but that the consignment cost (freight, insurance etc) of Indian shirts to Bangladesh is lower (US 22 cents per shirt) due to its proximity. Supposing that the Chinese and Indian exporters will not export this shirt to Bangladesh for lower prices than the prices they can obtain in their other export markets, cif prices in Bangladesh will be $4.44 for Chinese shirts, and $4.22 for Indian shirts. Adding the Bangladesh tariff in 2004/05, duty inclusive prices are $6.54 per Chinese shirt and $6.21 per Indian shirt. This gives the following comparisons with the estimated domestic prices of the Bangladeshi shirts:

	Chinese shirt	Indian shirt
Knitted shirt	+49.7%	+42.1%
Woven shirt	+22.5%	+16.3%

As is the case with the Indian specific tariffs, price differences of these magnitudes are probably highly restrictive in the case of knitted shirts, but perhaps might open some limited possibilities of import competition in the case of woven shirts. In fact (see below) officially recorded shirt and other garment imports into Bangladesh have been extremely small. Although, consistent with this argument most of the imports (about 70%) have been woven garments, the very low level of imports (probably only about 1%

of the total domestic RMG market) suggests that actual prices of domestic woven shirts and other garments made from woven fabrics may be lower relative to import prices than indicated in this example. This in turn suggests that the actual average implicit protection of Bangladesh fabrics might be well below the current fabric tariffs. This possibility deserves investigation, because is obviously relevant for the potential viability of both the domestic garment and textile industries under more open trade policies.

Imports Bangladesh's total recorded garment imports (including imports of worn clothing) were running at about $US 6-8 million annually until there was an abrupt increase to about $18 million in 2002 (Table A.7 and Fig 11). However, as in India, imports are still a tiny share of the probable total domestic RMG market, probably around 1% or less.



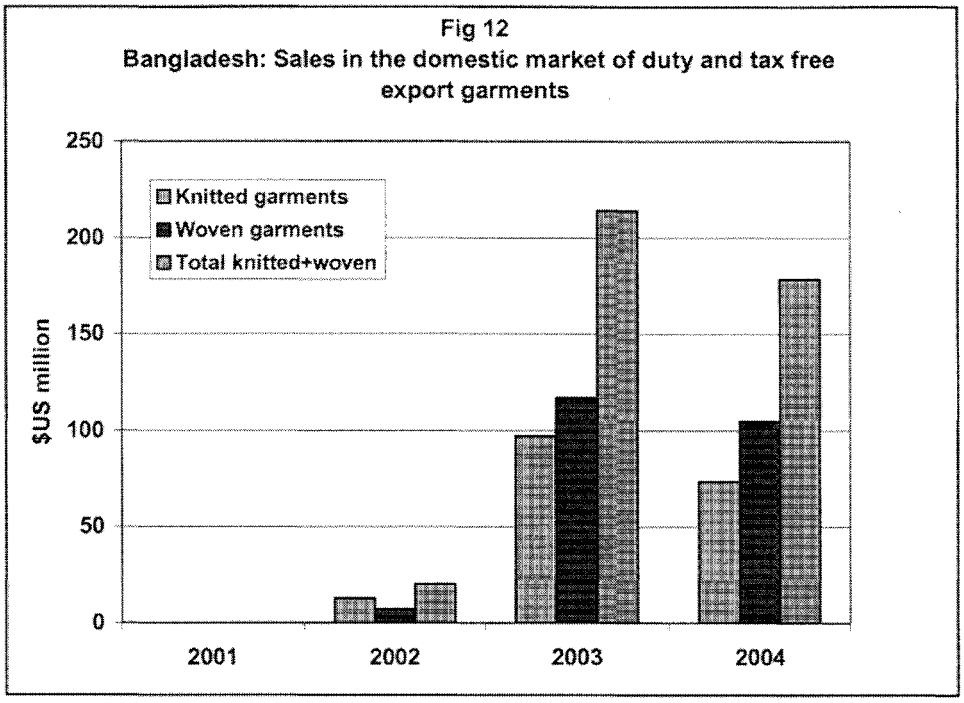
The initial jump in imports in FY 2002 was mainly from traditional garment exporting countries (Hong Kong and Korea) but in FY 2003 and FY 2004 India became the single largest source, exporting about $US 5.2 million in 2003/04. As in India, worn clothing imports (in 2003/04 about a third of total garment imports) are mostly from developed countries, in Bangladesh's case almost entirely from Japan.

The determinants of Bangladesh's garment imports are complex. As previously discussed, Bangladesh's tariffs are very high, and until FY 02, they seem to have kept total imports of new garments down to about $4 million or less. However, the increase in imports in FY 02-mainly woven cotton shirts and trousers-came over a 42.2% tariff. In an apparent effort to keep this import surge under control, the government increased the supplementary duty and increased the total protective rate on cotton shirts and trousers to 65.5% in 2002/03 and 85.5% in 2003/04, but did this while at the same time cutting the general level of tariffs for other garments (Fig 10). Then in FY 2005 it abruptly cut the new shirt/trouser tariff and unified it with a sharply increased general garment tariff at 47.2%, the same level as seven years previously, in FY 98.

How these gyrations in garment tariffs have affected garment imports depends to a large extent on the pricing of exportable RMGs in the domestic market. In this regard one relevant factor in Bangladesh is the size of leakages from the bonded warehouse garment operations, both of duty exempt

fabrics, yarns and other inputs which can be used to fabricate garments sold domestically, and more importantly leakages of duty and VAT exempt export garments. Periodic press reports suggest that leakages have existed for many years, but there is no published information on their size and the extent to which they may have affected the domestic RMG price level.

Starting in FY 2002, some perspective on this is provided by the official import statistics, which include Bangladesh as one of the countries from which Bangladesh is "importing" (*sic!!*) These "imports" (described as "stock lot sales") suddenly surged to very high levels in FY 2003 ($214 million) and FY 2004 ($179 million) (see Fig 12 and Table A.7). In the statistics, they are recorded as paying neither Customs duties nor any of the other import taxes (IDSC, AIT, supplementary duties, and VAT) which are applied to normal garment imports from India and other countries. This raises a number of questions which would need to be investigated before generalizing with any confidence about the likely consequences of free trade with India in ready made garments:



- Reportedly, these "stock lot" sales are export garments which have not been sold for various reasons (including rejection by foreign buyers on quality and other grounds) and would normally be disposed of in other export markets at discounted prices. If this is the case, it would be relevant to know whether diversion of these sales to the domestic market is a new policy, or whether it is just a continuation of past policies which became explicit for the first time in FY02
- If there is a policy on these sales, is it a general policy which is applied to all RMG exporters on certain conditions, or is (was?) it a policy which is limited to particular products, exporters or periods?
- To what extent do these sales affect domestic RMG prices? Since some RMG imports which paid all the regular Customs duties including the VAT continued during FY 2003 an FY 2004 and presumably were profitable for the importers, it seems that domestic prices of these garments were not affected by the "stock lot" sales, at least sufficiently to deter the imports.

- On the other hand, the total "stock lot" sales seem to be large in relation to the likely total domestic Bangladesh RMG market (perhaps 15-30% in FY 03 and FY 04), and this volume of sales would be expected to have some effect on the general level of domestic RMG prices. But the stock lot sales are a much smaller proportion of total RMG sales if exports ($US 4.58 billion in FY 2002) are included. In FY 2003 they were only about 4.3% of total RMG exports. If, as argued in this paper, Bangladesh RMG prices are determined by total world demand for Bangladesh garments relative to the supply of Bangladesh garments, with a premium in the internal Bangladesh market equal to the protection of garment inputs, then the stock lot sales may have had only a minor impact on domestic prices. Nevertheless, given that the stock lot sales are exempt from all taxes whereas RMG producers selling domestically, retail tailors using domestic fabrics and other inputs, and importers of RMGs from other countries are all subject to substantial taxes (about 70% on imports with VAT included), there is a possibility that substantial economic rents could be associated with these sales.
- In this regard, it is relevant to note that in India domestic sales of export rejects or surplus stocks from bonded warehouse or EPZ operations must pay the normal import duties on their inputs, and the sales are also subject to normal domestic taxes including the central government excise tax and sales taxes.
- All these questions and issues would need to be clarified and clear policies agreed on if an FTA with India (including SAFTA) were to cover the RMG sector.

Smuggling Studies of informal trade over the India-Bangladesh border have consistently found "textiles" (defined broadly to include garments) to be one of the largest single product groups smuggled from India to Bangladesh. By contrast, there appears to be practically no smuggling in the other direction, except for gold as one of the means by which Bangladesh traders pay for the smuggled Indian goods. In three separate studies[114] based on surveys in 1984, 1998, and 2002, textiles were respectively 15%, 25%, and 15% of the total estimated amounts smuggled into Bangladesh. Very roughly adjusting for differences in the coverage of the surveys, the total value of the smuggling estimated in these studies was (in $US million):

1994	56
1998	77
2002	38

As the three studies emphasize, given the nature of the subject and the field methods used (interviews with traders and "knowledgeable persons" in border area trading and smuggling centres) these estimates are very approximate, and using them to infer trends in the total level of smuggling would be especially hazardous. In particular, they do not deal with "technical" smuggling (i.e. goods that are imported through Customs posts but with false documentation by which they avoid or reduce import duties). There is presumably some substitution between this and informal "bootleg" smuggling of the kind covered in the informal trade surveys, in the sense that if organized smuggling through the Customs were to become easier and less expensive, there would be less incentive to smuggle by "bootleg" routes.

Most of the textile products identified in the smuggling surveys are finished traditional consumer textile products, not ready made garments. In the 2002 survey, four products accounted for 99% of the estimated total value of the seven textile goods smuggled. They were:

Cotton sarees	47.5%
Silk sarees	25.4%
Shawls/cardigans	18.2%
Thaan cloth	7.9%

[114] S.K. Chaudhari (1995); Rahman and Razzaque (1998); Bayes (2004).

The same four products also account for practically all the smuggled textile imports to Bangladesh in 1998, and in the 1994 survey 88% are sarees and 12% Thaan cloth. Except for cardigans (for which the surveys do not provide separate estimates) all of these are traditional textile products, and their production costs, prices and the direction of informal trade is most likely related to relative costs and prices in the Indian and Bangladesh textile industries rather than in their RMG industries. In a 1999 survey in which Indian and Bangladeshi traders in border areas of West Bengal were asked which products were being exported informally from India to Bangladesh, saris were once again the most frequently mentioned textile product. 20% of the textile products mentioned were ready made garments, [115] but this study did not attempt to estimate the total values of the products being smuggled.

The apparent predominance of textile products rather than RMGs in smuggling from India to Bangladesh is consistent with Bangladesh's tariffs and other import policies discussed above, especially the longstanding ban on imports of textile fabrics and the high textile fabric prices. This also comes out in Chaudhari's classic 1994 smuggling study, in which the survey teams compared prices in the Indian and adjoining Bangladesh border areas, and found that prices in Bangladesh exceeded prices in India by the following percentages[116]:

Cloth fabrics	*West Bengal border region*	*+37%*
Cotton sarees	West Bengal border region	+65%
"Costly" sarees (embroidered silk, handloom etc)	West Bengal border region	+61%
Cotton sarees	Assam border region	+47%
Cotton sarees	Tripura border region	+73%

Perhaps not coincidentally, these price differences are in the general region of Bangladesh's textile fabric tariffs. High fabric prices would also push up the domestic prices of garments made from woven fabrics as well as the prices of traditional garments such as sarees, so this suggests that if there is RMG smuggling, it is most likely of woven rather than knitted garments, since Bangladesh fabric tariffs are much higher than yarn tariffs, in addition to which there has been no import ban on yarns.

As well as the evidence on smuggling in these informal trade studies, there are many other scattered indications of the existence of illegal textile imports from India. For example, in order to curb illegal imports of yarn-presumably mainly "technical smuggling" involving Bangladesh Customs connivance, especially at Benapole-from July 2002 Bangladesh has banned yarn imports from India by the land border. Since then all Indian yarn exports have to go to Bangladesh by sea. This measure has the support of Bangladesh textile firms because it not only reduces the extent of competition they face from smuggled yarn, but also increases the cost of legally imported yarn, including duty free yarn from India used in exported RMGs. However, for the converse reasons it is strongly opposed by the RMG industry[117]. There are also frequent allegations of fabric smuggling from India e.g. in March 2005 by the power loom association alleging a "flood" of smuggled cloth during FY04[118]. However, as with most other aspects of the Bangladesh textile industry, there are no systematic studies which would test the

[115] Pohit, Sanjib and Nisha Taneja (2000).

[116] Chaudhari (1995), Table 3.7A. The 1998 and 2002 informal trade studies do not report on price differences.

[117] See for example objections to the policy by the Bangladesh Garment Exporters Association (BGMEA) in their June 2004 newsletter, which refers to the "excuse" of checking yarn smuggling through Benapole. At www.bangladeshgarments.info/home/newsletter.

[118] "Smuggled cloth worth Tk 2500 crore flood markets: Local textile mills under threat". Report of statement by president of the BSTMPIA (Bangladesh Specialised Textile Mills and Power Loom Industries Association) in *The New Nation* , March 6, 2005. At http://nation.ittefaq.com

realism of these claims and put them in the context of the structure and performance of the industry and its impact on the RMG sector.

Prospects for Bangladesh garment exports to India Three important factors which affect the ability of Bangladesh garment firms to export to India with the present SAPTA preferences or hypothetically in the future with a free trade agreement, are: (1) production costs in Bangladesh relative to production costs in India; (b) India's tariffs in relation to the Bangladesh cost advantage, if any; and (3) whether and how the Bangladesh firms satisfy rules of origin.

a. *Production costs: Bangladesh vs India.* Studies of export firms in major garment exporting countries consistently indicate the Bangladesh has the lowest wages, and that the advantage this should give Bangladesh garment firms over firms in other developing countries (including India) is not offset by lower labour productivity.

Table 9
Comparisons of labour costs and productivity in the RMG industry

	Labour cost $US/hour	*Minutes per woven dress shirt*	*Implied labor cost $US/shirt*	*Minutes per pair of jeans*	*Implied labour cost $US /pair of jeans*
Bangladesh	0.23	61	0.23	62	0.24
India	0.41	63	0.43	65	0.44
Pakistan	0.37	65	0.40	70	0.43
Sri Lanka	0.35	50	0.29	55	0.32
China	0.77	60	0.77	60	0.77
Indonesia	0.41	n.a.	n.a.	70	0.48
Vietnam	0.30	65	0.33	65	0.33
Italy	14.71	35	8.59	35	8.59

Notes: Labour costs and productivity estimates from Gherzi report (2002). Implied labour costs calculated from these numbers. The productivity comparisons are for the same technology levels except in the case of Italy.

Table 9 shows some comparisons taken from a recent (2002) report on the RMGindustry in Bangladesh. The implied direct labour costs derived from these comparisons suggest that for dress shirts and jeans Bangladesh has a labour cost advantage of about US 20 cents per unit over India. Generally lower wage levels in Bangladesh also presumably mean that-provided productivity is similar or better-clerical and other overhead labour costs are also lower in Bangladesh than in India, and this would also apply to transport and other expenses if (a big if) these services were equally or more efficient. Even so, relative to typical selling prices, the likely cost differences are minor and could easily be offset, or more than offset, by differences in other costs, or in quality, design, delivery times and other non-price factors. Certainly, they do not provide a decisive cost advantage comparable to the cost advantage that Bangladesh and other developing countries have over garment producers in developed countries, as illustrated by the direct labour cost per shirt in Italy ($8.59) versus US 23 cents per shirt in Bangladesh. Relative to prices, the 20 cents production cost advantage over India is only 6.6% of the price of a shirt selling for $3, and 4% of the price of a shirt selling for $5. Relative to margins (fob prices over input costs), the difference is greater: about 20% of typical woven shirt margins of about $1/shirt[119], but even if there were an FTA this difference still appears to be too small to be a major influence on sourcing decisions.

[119] Gherzi report Table 4.3

This point is supported by aggregated financial data on 47 RMG firms in India (Table 10), principally oriented to the Indian domestic market. Note that (1) wages and salaries are only 5.1% of total sales (2) advertising and selling expenses are more than double total wage and salary costs. It is likely that most of these firms are basically trading firms and that "raw materials" are mostly finished or partly finished garments that have been subcontracted to small producers. Even so, it is apparent that wage costs in manufacturing are only a small part of the total cost of getting garments to Indian retailers.

Table 10: Percentages of net sales: 47 Indian RMG firms 2002/03

Raw materials	*56.5*
Wages and salaries	5.1
Power and fuel	2.6
Advertising	4.8
Other selling expenses	6.7
Administration	8.8
Operating profit	3.6
Exports to sales	26.3

Notes: Aggregated financial reports of 47 readymade garment firms, 2002/03. Source: CMIE. *Industry: Financial Aggregates and Ratios*

Cost advantages and Indian tariffs It is also instructive to compare the apparent labour cost advantage of garment production in Bangladesh with India's tariffs, especially the specific tariffs. For woven shirts, for which the apparent labour cost advantage is about 20 cents, in 2004/05 the Indian specific tariff on a shirt imported from Bangladesh was 92 cents, and on a man made fibre shirt it was about $1.31. These tariffs far outweigh the Bangladesh labour cost advantage, and unless the Bangladesh shirts had some special style, brand, marketing or other advantage, would appear to preclude imports of low value shirts, at least on a substantial scale.

As discussed previously, most of the garments which Bangladesh exports to developed countries in large quantities are subject to specific duties in India, and even though India's SAPTA preferences for Bangladesh cut most of these duties by 50% (and a few by 60%). the preferential duty in most cases is still much too high to allow substantial exports from Bangladesh to India. Examples of Indian specific tariffs on various garments exported by Bangladesh are given in Tables A.2 and A.6. Table A.2 lists garments which-except for mens' woven cotton shirts-were exported to India in very small quantities during 2002/03 or 2003/04. Table A.6 lists some of the higher volume Bangladesh garments exported to the EU in 2003. It can be seen that there are specific duties on nearly all of these in India, and that in every instance the specific tariffs are far higher than the likely labour cost advantage of Bangladesh over Indian RMG producers. However, a few of Bangladesh's exported RMGs would only be subject to *ad valorem* tariffs in India, and these tariffs have declined considerably over the past three years: from 20% in 2002/03 and 2003/04, to 10% in 2004/05, and 7.5% in 2004/05.

Table 11 shows current Indian 2005/06 tariffs in relation to typical export prices of a few Bangladesh RMGs. The specific duties on knitted polo shirts and T-shirts, which are two of Bangladesh's high volume exports, are higher than typical CMT prices i.e. the prices quoted to cut, manufacture and transport from fabrics provided by the buyers, so it is unlikely in the extreme that an Indian trader would ever source these garments in Bangladesh if comparable prices could be obtained from suppliers in India (and even less likely to source from China or some other MFN supplier for which the specific tariffs are double the rates applied to Bangladesh e.g. $1.04 for a T-shirt selling for $1.45 fob and with a CMT price of US 38 cents). The products just subject to the preferential 7.5% *ad valorem* tariff would appear to have a better chance of competing in India, but for low value products even these duties would probably

make life difficult for Bangladesh suppliers. For example, if India were to remove the specific duty on Bangladesh T-shirts, the *ad valorem* duty for Bangladesh suppliers would still be around 30% of the CMT price. For these reasons, as emphasized elsewhere, given the highly competitive Indian RMG industry, Bangladesh garment exporters would probably need duty free access to India to have much hope of winning substantial market shares in high volume products. If India abolishes the specific duties, even at the current reduced *ad valorem* tariffs and with a substantial advantage over MFN suppliers, export prospects would be modest, and if the present specific duties are maintained, Bangladesh suppliers would probably be confined to small, mostly specialised or opportunistic fringes of the Indian RMG market.

	Table 11			
Prices of some Bangladesh exported RMGs and preferential tariffs for Bangladesh imports in India.				
	Prices & tariffs in $US/garment			
	Export price	CMT price	Specific duty	Ad valorem duty 7.5%
Polo shirts	2.53	0.96	0.98	0.19
T-shirts	1.45	0.38	0.52	0.11
Sweaters	3.58	n.a.	0.98	0.27
Jogging suits	9.79	n.a.	none	0.73
Nightwear	3.50	n.a.	none	0.26
Pyjamas	2.33	n.a.	none	0.18
Notes: prices from Gherzi report. Ch 4, p.64. HS classifications are not given, so the Indian tariffs may vary from these e.g. depending on the predominant material used				

Rules of origin. For the SAPTA LDCs (Bangladesh, Nepal, Bhutan and the Maldives) to obtain tariff preferences in exporting to India, the maximum material input content (valued at cif prices) that can be imported from non-SAPTA countries, is 70% of the fob price. This was increased from 60% in November 2000, following complaints from Bangladesh and the other SAPTA LDCs that the previous origin rule was too demanding. In this respect, Bangladesh has an advantage over Pakistan and Sri Lanka, for which the maximum imported content is still 60%. As is usual in preferential trading areas, the minimum local content requirement can be met by importing materials from other SAPTA members, but subject to the additional constraint that if this is done, the content requirement increases to 40% of the fob price. For Bangladesh firms exporting to India, this means that if they use imported materials from India to help satisfy the SAPTA origin rule, they have to buy sufficient of these materials to raise the regional content (i.e. processing costs and Bangladesh materials, plus the materials imported from India) to at least 40% of the fob price.

As India is in any case supplying a substantial share of the imported inputs of Bangladesh's exported RMGs, satisfying the SAPTA rules of origin is probably not at present a serious problem for most Bangladesh RMG exports to India. Moreover, backward integration into knitting already reportedly allows most Bangladesh knitted garment producers to easily satisfy this requirement. Therefore the application of the same or similar origin rules in a bilateral India-Bangladesh FTA, or in SAFTA, would constrain Bangladesh exporters to some extent, but not seriously. Nevertheless, if Indian materials that would otherwise not be used, are used to satisfy the origin rules, by definition the Bangladesh exporters to India are disadvantaged relative to a situation without the rules of origin. In this regard, the Bangladesh ban on yarn imports from India by the land route(in force since 2002) obviously disadvantages Bangladesh RMG firms (especially knitware firms, it seems) exporting to the rest of the world and actually exporting (or interested in exporting) to India.

4. ECONOMIC WELFARE ANALYSIS

This case study was done without the benefit of field surveys, is based on published data only, and uses guesses about key parameters, especially parameters relating to the Indian domestic RMG markets. Because of an almost complete absence of relevant published data and information on Bangladesh domestic garment markets, the economic welfare simulations are confined to alternative estimates of the effects of Bangladesh RMG exports to India following an FTA: no attempt is made to quantify the likely economic welfare consequences of RMG trade in the reverse direction, from India to Bangladesh. Consequently the case study welfare simulations are provisional and incomplete, indicating possible orders of magnitude of some key likely effects, but ignoring others.

In thinking about these potential economic welfare changes, two approaches are possible. If the relevant garment markets in India are taken to include home sewing of fabrics and tailor made clothes as well as factory produced ready made garments, aggregate clothing demand is probably relative inelastic, but on the other hand even substantial imports from Bangladesh are unlikely to account for more than a very small fraction of this huge total market. Consequently, despite the inelastic demand (e.g. an index of aggregate clothing demand relative to a general index of clothing prices) the induced decline in the general level of clothing prices will be very small, so that the consumer and producer welfare effects would consist of very small-almost imperceptible- changes in prices, but spread over very large demand and output ranges. Alternatively, if only ready made garments are taken to be the relevant markets, the impact of RMG imports from Bangladesh could be greater relative to total demand and production, but on the other hand demand for ready made garments in the aggregate is likely to be highly elastic, because of substitution with home and tailor made garments. Hence the changes in CS and PS in the RMG markets are likely to reflect non-negligible changes in the supply and demand for RMGs, but small changes in average prices. Which of these approaches would be best to use depends on data availability and research resources. In the following sections how these estimates might turn out is illustrated using some alternative guessed parameters for ready made garments.

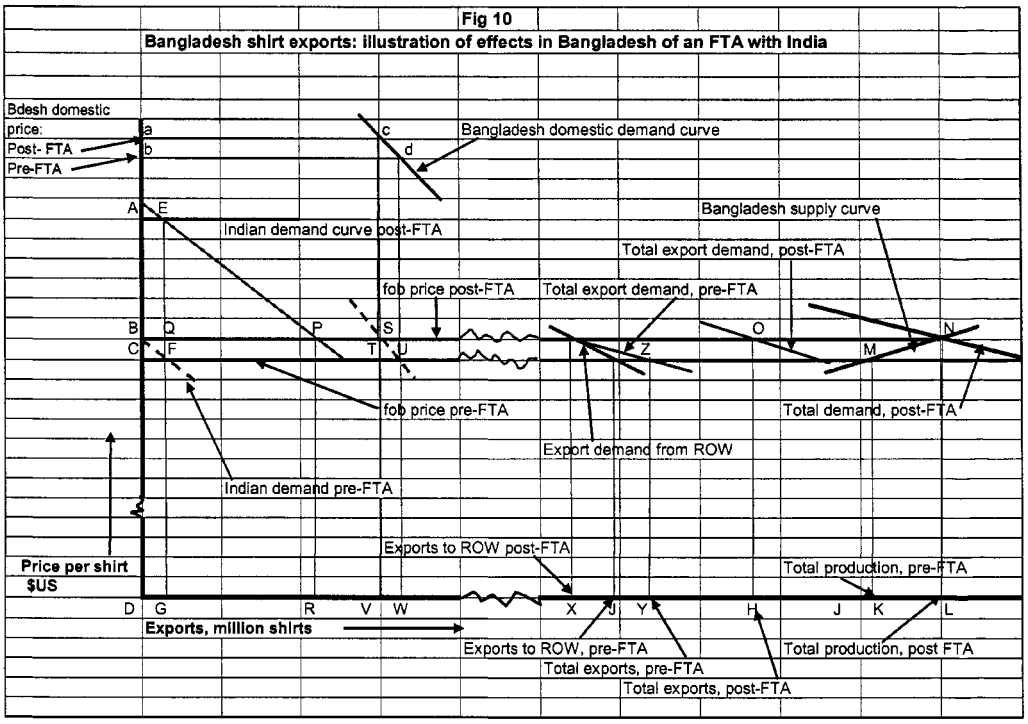
For the reasons discussed previously, this section focuses on the potential for and likely effects of Bangladesh garment exports to India under an FTA: some brief comments on the reverse flow of Indian garments to Bangladesh that would probably also occur are made later. Even though the latest available detailed trade data is for India's FY 2004, the discussion also recognizes that the MFA expired on December 31, 2004 and assumes that a bilateral FTA would be implemented in a much less complex global scenario for the T&C industries. In particular, in this scenario, in both India and Bangladesh market-specific quota premia will no longer exist, and for given garment types and qualities, fob prices and margins will tend to equalize across export markets.

Effects in Bangladesh. As discussed previously, in Bangladesh the combination of prohibitively high tariffs and a large, very low cost export-oriented RMG industry for all practical purposes shuts out legal imports that would compete on any significant scale in domestic garment markets. Presumably because of the highly competitive domestic garment industry and low domestic prices, smuggling of garments is also quite minor. This would undoubtedly change if an FTA with India were to include garments, but owing to inadequate data on Bangladesh domestic garment markets it is not discussed in this paper.

If the Bangladesh garments going to India are international brands and styles that are the same or very similar to the garments that Bangladesh exports on a large scale to the rest of the world, it is likely that an initial effect of the opening of the Indian market under an FTA will be to divert some of the exports that would have otherwise gone to ROW, thus reducing the net increase in Bangladesh exports. For a while, because of Bangladesh's freight advantage in supplying India, it is likely that Bangladesh exporters supplying India will receive somewhat higher fob prices than prevailing fob prices to ROW, but

the premium will induce more exporters to divert supplies to India until fob prices in supplying India and ROW are about equal. The extent of economic welfare benefit in Bangladesh-in the form of increased exporter producer surpluses-will depend, however, on the extent to which the general level of export prices-both to ROW and to India-increases. This in turn will depend on (a) the size of the new or enlarged market in India relative to Bangladesh's total exports of the products in question (b) the extent to which Bangladesh's prices can go up without diverting demand to other ROW suppliers, and (c) the responsiveness of Bangladesh exporters to increased export prices. At one extreme, if ROW demand is highly sensitive to increases in Bangladesh's export prices, export prices might rise only very slightly and the main impact of the FTA might be to divert exports away from ROW markets to India, with little or no increase in export prices or in the total volume of exports. In that case the economic welfare improvement in Bangladesh could be small or negligible. There could be larger producer surplus benefits in Bangladesh, if the contraction of the Bangladesh supply to the world market of these particular products causes its export prices to go up. This would be more likely to happen if the quantities diverted to the Indian market were large relative Bangladesh's exports to ROW, and if garment exporters in other countries were not able to easily substitute for the Bangladesh garments. However, higher export prices would mean higher domestic prices in Bangladesh, and the resulting consumer surplus reductions would need to be deducted from the producer surplus increases. As discussed previously, there is no comprehensive data on Bangladesh domestic RMG sales, but they are probably a quite low relative to RMG exports, so for any given price increase, the resulting consumer surplus adjustment would be small relative the producer surplus benefits from exports. An FTA would also very likely stimulate garment exports from India to Bangladesh. This is discussed separately later and will somewhat modify the economic welfare outcome for Bangladesh.

Some effects on exports and domestic sales are illustrated in Fig 1 using the example of cotton woven shirts. There are many varieties and qualities of cotton shirts which sell at different prices. To bring out the principal points without dealing with these complications, prices refer to the average prices of a large number of shirt-types bundled in fixed proportions. In the pre-FTA scenario, Bangladesh is producing a total of DK shirts, of which DJ are exported to ROW, DG are going to India, and DW are being sold domestically. The break in the X axis (the wavy lines) is intended to indicate that exports to ROW and total production are far greater than domestic sales or exports to India. For example, in FY 04 about 110 million shirts were exported, but only about one million of these went to India. Exports to India are restricted by a tariff (CA per shirt) which reduces the net price received by Bangladesh exporters. The contractionary effect of the Indian tariff from the perspective of Bangladesh shirt exporters is represented by the dotted pre-FTA demand curve. The domestic price is Db, determined by competition between exporters in the domestic market, is equal to the export price (DC) plus the per shirt cost of input tariffs (distance cb). At this price domestic demand is DW. The total demand curve is the horizontal sum of aggregate demand from ROW plus the constricted demand from India, plus domestic demand. The intersection of this with the Bangladesh export supply curve gives an equilibrium fob price DC and total output and sales DK. As noted above, in a world without the MFA, competition between Bangladesh exporters is assumed to equalize the prices for given types and qualities of shirts across different ROW markets, and between ROW markets and India.



Following an FTA with India, Indian demand for Bangladesh shirts in no longer constricted by an India tariff, and the new post-FTA Indian demand curve us added horizontally to the ROW and domestic demand curves to give a new post-FTA total demand curve. This gives a higher equilibrium fob export price (DB)[120] and higher total output and exports (DL). Because of the higher price, however, exports to ROW have contracted (by distance XJ), and domestic demand has contracted by distance UT. Hence the net increase in total exports is less than the increased exports to India by distance XJ, and the net increase in total production and sales is less than the increased exports to India by (XJ+UT). Also, exports to India are less than they would have been if the pre-FTA fob price had not changed. The total foreign exchange ($US) value of Bangladesh's shirt exports after the FTA increases, from area CDYZ before the FTA to area BDHO after the FTA. It goes up because both the average export price and the quantity exported have increased.

How about Bangladesh economic welfare? How this has changed depends on the net benefits in Bangladesh's export sector, and on the impact on the domestic market for shirts.

As regards the impact in the export sector, as noted in previous discussion, most of Bangladesh's garment exports, including shirts, come from firms operating duty free under bonded warehouse conditions which are exempt from tariffs and other import taxes on their imported fabrics and other inputs used to produce garments, and which receive no substantial other subsidies. Hence in estimating economic welfare changes, there is no need to allow for changes in subsidies and taxes. In this example economic welfare has gone up by the amount of the increase in the Bangladesh garment exporters' producer surpluses (area BCMN), which depends on the extent of the increase in the general level of shirt

[120] Realistically (see later discussion) the increase in the price might only be of the order of a few US cents per shirt of shirts selling for say $US 4. The break in the Y axis (indicated by the wavy line) is intended to indicate that the price change illustrated in the diagram is likely to be small relative to shirt prices

export prices. As pointed out above, this depends on how responsive Bangladesh exporters are to price increases (the elasticity of their supplies) and on how elastic the demand for Bangladesh shirts is in its export markets. The export demand elasticity in turn depends on how well the shirts are marketed and differentiated from the shirts supplied by other exporters and by domestic producers in the countries to which the exports are going. If there is little differentiation, there may be little of no producer surplus benefits from even a large increase in exports to India following an FTA, because export prices will not have changed much and most of the increased exports to India will very likely have been switched from ROW markets. On the other hand the economic benefit from the FTA may be quite large if there are even very modest increases in the general level of export prices, because the increases would be spread over total shirt exports to all countries, not just exports under the FTA to India. As illustrated later, an increase in average export shirt prices of US 5 cents, from $4.05 to $4.10 per shirt, represents a substantial producer surplus benefit when spread over 110 million exported shirts plus another 20 million shirts sold domestically.

As regards the impact on the domestic market for shirts, garment firms which supply the domestic market as well as exporting will increase their domestic selling prices if export prices rise, so there will be consumer surplus losses partially offsetting the producer surplus gains on exports (area *abdc*=area BCUS in Fig 1). However, as already discussed, in Bangladesh domestic RMG markets seem to be quite small relative to export markets (much smaller than in India), and so there will be a smaller impact on the overall economic welfare outcome. For example, if domestic sales were 15% of total sales, the economic cost to Bangladesh consumers would offset about 15% of the producer surplus gain to Bangladesh exporters.

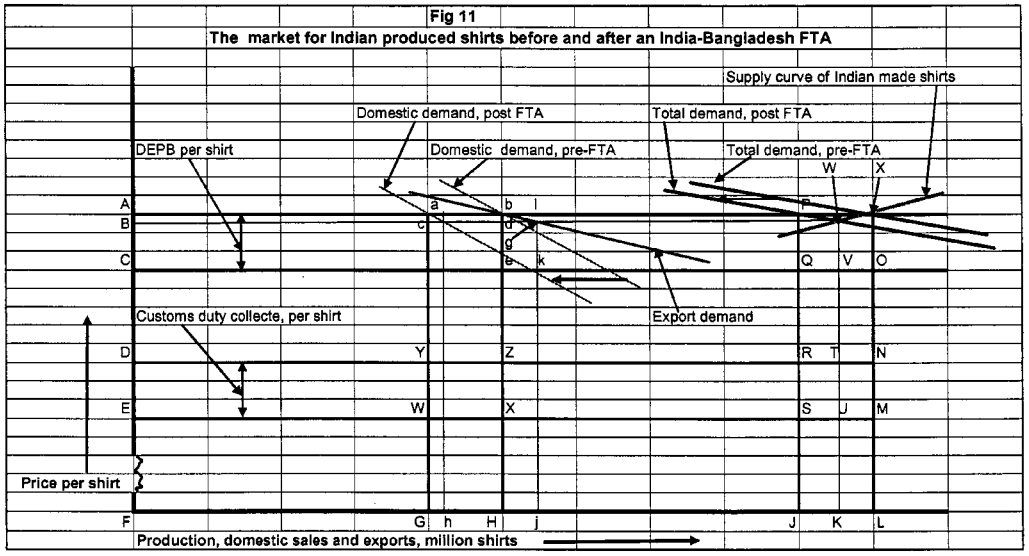
Effects in India. If the Bangladesh exports are competing with domestic sales of Indian exportable garments, they may cut into the domestic sales of the Indian garments but the long run long run effects on their prices may be very small, since those prices are determined by supply conditions including input tariffs, total demand for the garments (which consists of the total export demand plus total domestic demand) and export incentives. This is because even an FTA-induced increase in Bangladesh exports to India which is fairly large from a Bangladesh perspective, is likely to be quite small relative to the total demand for the Indian garments. For example, during 2003/04 India was exporting about 130 million woven cotton shirts, and if the domestic market were about the same size as the export market, total annual demand would have been about 260 million shirts. If Bangladesh exports under an FTA were to expand from about 1 million shirts annually to say 10 million shirts and displace an equivalent number of shirts previously supplied by Indian producers, this would only amount to a demand reduction for Indian shirts of about 4%, and with elastic demand (especially in export markets) and elastic supply, any downward adjustment in Indian shirt prices is likely to be proportionately much less than this. Nevertheless, even if the average price reduction is very small, the economic welfare impact may be considerable, because it would affect a very large volume of sales i.e. reduced prices on domestic sales that benefit domestic consumers, and price reductions spread over total production including exports that would hurt domestic producers.

In addition to these consumer and producer surplus changes, the economic welfare effects in India would also need to take account of government revenue effects, since DEPB payments will now be paid on the production that is switched from the domestic to the export markets. Hence, in analyzing the welfare consequences in India of FTA-induced imports for this case, the main components can be summarized as follows:

- Increase in CS on garments imported from Bangladesh due to reduced prices and increased imports
- Increased CS on domestic sales of Indian exportable garments, to the extent that their prices fall as a result of the increased imports from Bangladesh

- Reduced PS in the Indian export garment industry due to lower prices in the domestic and the export markets
- Reduced Indian government revenue from imports from Bangladesh which were previously subject to the Indian preferential SAPTA tariff, and which are now tariff free under the FTA
- Increased Indian government expenditure equal to DEPB payments on increased exports of the exportable garments, and reduced input tariff collections to the extent that production is switched from the domestic market to exports using duty drawback or duty free export facilities (e.g. advance licenses, bonded warehouses, EPZs or SEZs) rather than DEPB
- Since by assumption the MFN tariffs are prohibitive and there are no imports from MFN countries prior to or after the FTA, there is no impact on tariff revenue from changes in MFN imports. However, if there were some imports over MFN tariffs before the FTA, it is possible that the increased competition and price reductions in the domestic market following the FTA would lead to cuts in demand for these imports. In that case allowance would need to be made for the associated reduction in tariff revenue.

These effects are illustrated in Fig 2, which is drawn to represent the situation of Indian produced shirts before and after an FTA. Before the FTA it is assumed that demand is equally split between exports and domestic sales (both FH million shirts) with a total of FL million shirts produced and sold at price FA. This equilibrium is established at the intersection of a total demand curve which is the horizontal sum of the domestic demand curve and the export demand curve. The export demand curve is flatter than the domestic demand curve, representing the hypothesis that demand for Indian shirts in export markets is more responsive to price changes, mainly because of the actual and potential competition of exporters from other countries which are for the most part excluded from the Indian domestic market by high tariffs. However, domestic demand for Indian RMG shirts is probably also quite elastic, because of the competition from fabrics which are sewn by the vast number of small scale retail tailors and by consuming households.



The export demand curve shows demand as a function of the fob price (FC) plus the DEPB payment on exported shirts (CA). For exporters, the DEPB payment is assumed to offset the per- shirt cost of input tariffs (ED), so that value added per exported shirt is EC=DA. The input tariffs on shirts sold domestically are the same as on input tariffs on exported shirts (ED per shirt), but as discussed in the

previous section, with competition the domestic selling price will tend to the same level as export prices plus the DEPB payment i.e. to price FA. Otherwise, value added and profits in the shirts sold domestically will differ from value added in exported shirts, and under competition production would be shifted from one market to the other until the value added and profitability in the two markets are equalized. Hence, for the domestic market the DEPB export payment serves as a kind of quasi tariff determining the domestic price level. Consequently, in the initial pre-FTA situation, if FH is taken to represent domestic sales, input tariffs equivalent to area DEXZ are collected, but the firms fully pass this cost forward to consumers by pricing up to the average fob price plus the DEPB rate per shirt. The input tariffs combined with the effects of the DEPB therefore amount to a consumption tax, with net government receipts equivalent to area DEXZ. For export sales (represented by FH=HL) input import duties equivalent to area ZXMN are collected, but this extra cost to exporters which cannot be recovered from their foreign buyers, is refunded to them by total DEPB payments equivalent to area beOX. Hence for the exported production the fiscal effect is neutral, with the exporters first paying input tariffs of XZ per shirt, but then receiving an exactly offsetting DEPB payment of eb per shirt.

The expansion of Bangladesh shirt exports to India following an FTA, is represented in this diagram by a backward shift in the domestic demand curve for Indian made shirts. How big this shift would be would depend on the size of the reduction in the prices of imported Bangladesh shirts, discussed later. The backward shift in domestic demand corresponds to an equivalent backward shift in total demand, and in Fig 2 this leads to a lower new equilibrium price FB and reduced total output and demand FK. The price reduction leads to slight increases in export demand (Hj) and in domestic demand (Gh), the latter along the post-FTA domestic demand curve. These two effects partly offset the first impact of the expanded imports from Bangladesh on demand for Indian shirts (GH=JL), and the net decline in demand and production (KL) is less.

- The economic welfare effects of these adjustments in India can be seen in Fig 1 and Fig 2. They are:
- Increased CS (area ABPEA) from the cheaper Bangladesh imports (Fig 1)
- CS benefits from the reduced prices of Indian produced shirts measured by area ABfa (Fig 2) [121]
- PS losses to Indian shirt producers equivalent to area ABWX (Fig 2)
- Reduced Indian government revenue from tariffs previously collected on the pre-FTA imports from Bangladesh (area ABQE in Fig 1)
- Increased DEPB payments (a net revenue loss for the government) on the increase in Indian exports equivalent to area bekl[122] (in Fig 2)
- Reduced input tariff revenue (area TJMN) resulting from the decline in total production (Fig 2)

Welfare simulations for M&B cotton shirts: base scenario Table A.5 summarizes the results of a few simulations which start from a scenario in which some parameters are close to those reported in 2003/04 and others are guesses which seem plausible but which would have to be revised with better information. The simulations have been done using a simple spread sheet in which it is easy to vary the parameters. The prices and quantities refer to bundles of shirts of different specifications and qualities which are sold in fixed proportions, and the price is the weighted average price of the shirts in this bundle and is therefore the same as the average unit value of the shirts calculated from the trade statistics. The

[121] The CS change is measured with respect to the post-FTA demand curve. The CS effects of the consumption that has switched to the Bangldeshi imported shirts is already accounted for separately. In a general equilibrium model of these adjustments one would estimate the compensating income variation from the changed consumption and prices of both the Indian and the Bangladesh shirts.

[122] Most DEPB rates are percentages of fob prices, so the increased payment would be slightly less than this. However, in principle they are meant to represent actual input tariff payments, so they should rise as a percentage of fob prices if fob prices decline.

assumption of a fixed bundle of shirt-types is a drastic oversimplification, especially considering that India's specific tariffs are designed to constrain low value garments more than higher value garments, so the composition of imports from Bangladesh would shift towards lower value garments with an FTA. These effects could be allowed for if there were some information on the composition of imports by price and specification, but would require some modifications of the spread sheet model.

The base parameters are given in Table 12. To understand the simulations note the following:

- As discussed earlier, it is assumed that both in India and Bangladesh competition equalizes gross margins across all markets, export and domestic
- The average price of the Indian shirt bundle is higher than the price of the Bangladesh bundle. This reflects export unit value statistics and observations in various studies that Bangladesh garment exports are concentrated in the bottom quartile of world garment trade in terms of quality and price.
- It is arbitrarily assumed that domestic fabrics and other inputs in Bangladesh cost a dollar more per shirt than their cost at cif prices. This is equivalent to weighted average input protection of 35.7%, lower than the present Bangladesh fabric tariff of 47.7% (implying some tariff redundancy) but much higher than the average input protection rate of 6.1% in India, which is implied by the Indian DEPB rate of 4.4%. This reflects the key issue of textile protection in Bangladesh and the contrast with the apparent situation in India, where implicit protection on fabrics and other garment inputs appears to be well below the current tariffs (especially the specific tariffs on fabrics).
- The material input shares in fob prices in both Bangladesh and India are assumed to be approximately 70%.
- The Indian tariff of US 95 cents per shirt raises the duty inclusive price of the imports from Bangladesh to $5.20 per shirt. At this price there is only enough substitution away from domestic Indian shirts to generate imports of 1 million shirts (slightly above actual imports in 2003/04). The simulations summarized in Table A.5 work through the consequences of five different assumptions on the reaction of Indian demand for Bangladesh shirts under an FTA, which it is assumed would reduce the average price of the Bangladesh shirt bundle by $US 95 cents i.e. by 18.3%, from $5.20 per shirt to $4.25 per shirt. The resulting increase in Bangladesh shirt sales would principally result from substitution for the production of competing Indian producers, but to some extent from increased aggregate Indian demand for RMG shirts through substitution for tailor made and domestically sewn shirts. Given the possibility of substitution for Indian production, outcomes reflecting high import demand elasticities would seem to be plausible.

Discussion of simulation results The five simulations reported in Table A.5 alternatively assume that following the FTA and the 18.3% reduction in the Bangladesh duty-inclusive import price, that Indian demand for Bangladesh shirts initially expands from the base scenario quantity of 1 million shirts, to 2, 4, 6, 8, or 10 million shirts. However, this increase in the aggregate demand for the Bangladesh shirts slightly increases the average price, by 1,2, 3, 4 and 5 cents a shirt in the five simulations. As discussed previously, the size of the increase will depend on (1) how well competing shirt suppliers can substitute for Bangladesh shirts in the markets which the Bangladesh producers supply, including the new expanded Indian market, the domestic market, and especially the ROW markets which in the aggregate are by far the largest, and (2) how responsive the supply of Bangladesh shirts is in response to price increases. In an extreme case in which Bangladesh shirts are perfectly substitutable by other suppliers' shirts, the price would not change and the only result of the FTA with India would be to divert exports from other markets to India, but with no or negligible net change in total Bangladesh exports and no or negligible economic welfare benefits (producer surpluses) for the Bangladesh suppliers. In these simulations it is assumed that the increase in demand from India increases the average price as indicated, but that this increase slightly reduces the initial increase in Indian demand and in total demand.

For example, in simulation #3 Indian demand initially increases from 1 million to 6 million shirts, but the price adjustment cuts this increase back by 158,000 shirts to 5.842 million. The net increase in Indian demand has to be accommodated somehow, and it is assumed that 60% comes from increased Bangladesh supply, 35% % from reduced supply to ROW, and 5% from reduced demand in the domestic Bangladesh market. As indicated in Table A.5 this corresponds to a net change in Bangladesh shirt exports consisting of the increased exports to India minus the reduced exports to ROW e.g. in simulation #3, 4.84-1.69=3.15 million shirts.

	Table 12			
Cotton shirts: base scenario for economic welfare simulations				
Bangladesh shirts	**Export to ROW**	**Exports to India**	**Domestic**	**Total**
Shirts sold (million)	109	1	20	130
Value of sales ($ million)	441.5	4.1	101.0	546.5
Prices $US/shirt (export prices fob)	4.05	4.05	5.05	
Ft & insurance	0.44	0.20	n.a.	
Prices cif	4.49	4.25	n.a.	
Cost of inputs at cif prices	2.80	2.80	2.80	
Input tariffs (explicit or implicit)	0.00	0.00	1.00	
Input cost per shirt	2.80	2.80	3.80	
Gross margin per shirt	1.25	1.25	1.25	
Indian shirts	**Exports to ROW**	**Exports to Bdesh**	**Domestic**	**Total**
Shirts sold (million)	130		130	260
Value of sales ($ million)	624		651	1275
Prices $US/shirt (export prices fob)	4.80		5.01	
DEPB per shirt 4.4% of fob	0.21		0.00	
Fob price + DEPB (=domestic price)	5.01		5.01	
Cost of inputs at cif prices	3.36		3.36	
Input tariffs (explicit or implicit)	0.21		0.21	
Input cost per shirt	3.57		3.57	
Gross margin per shirt	1.44		1.44	
Bangladesh shirts in India	**Imports**			
Shirts imported (million)	1			
Value of imports at cif price ($ million)	4.25			
Import duty collected ($ million)	0.95			
Sales at duty inclusive prices ($ million)	5.20			
cif price $US/shirt	4.25			
Import duty $ per shirt	0.95			
Domestic price $ per shirt	5.20			

The combination of increased production and the slightly higher average price creates an economic welfare benefit measured by the producer surplus (PS) of the Bangladesh shirt producers. In

simulation #3 this is $3.94 million and corresponds to area BCMN in Fig 10. However, domestic prices go up, and there is a welfare (consumer surplus) loss for Bangladesh consumers of $0.6 million. Since shirt exporters obtain all their inputs duty free, and domestic shirt producers use only domestic textile inputs, there is no directly induced change in government revenue from tariffs. Hence at this point the net welfare change in Bangladesh is just the sum of the producer surplus and consumer surplus (CS) changes e.g. for simulation #3 it is $US million +3.94-0.6=+3.35. This corresponds to a net increase in export receipts of $16.8 million, of which $3.4 million is due to the price increase, and the rest is attributable to the net increase in exports valued at the pre-FTA price ($13.4 million). This in turn consists of $20.6 million of new exports to India and reduced exports to ROW of $7.2 million (both valued at the pre-FTA price). As noted previously, these effects in Bangladesh take no account of the repercussions of increases in Bangladesh shirt imports from India that would undoubtedly occur under an FTA, in effect assuming that the agreement for garments and textiles consists entirely of concessions by India, with India still subject to Bangladesh's normal MFN trade regime.

How about the economic effects in India? In the spread sheet this has been handled by arbitrarily assuming that the domestic demand curve for Indian shirts shifts back by the increased imports of Bangladesh shirts e.g. in simulation #3 imports of Bangladesh shirts increase by 4.84 million, and so at all prices domestic Indian demand for Indian made shirts is 4.84 million less than it was before the FTA. The demand for the Indian shirts comes from exports and domestic sales, and this decline in demand causes a small reduction in the average price e.g. in simulation #3, a price reduction of US 2 cents per shirt in the fob price, and the same reduction in the domestic price. The domestic price in India is the fob price plus DEPB, but as the DEPB is intended to offset the cost to exporters of input tariffs, and the input prices and tariffs do not change, this assumes that the DEPB percentage would be adjusted upwards to keep the Rupee (or dollar) value of the DEPB payment unchanged.

These effects lead to adjustments in the Indian shirt market. The initial decline in domestic demand is partially offset by increased export demand and increased domestic demand due to the reduction in average prices. Hence in simulation #3, the initial cut in domestic demand for Indian shirts of 4.84 million becomes a net decline of 4.29 million, export demand expands by 2.01 million, so the cut in production is 2.27 million. Combining this production cut and the price decline gives a producer surplus reduction ($5.18 million), and the consumer surplus benefit to Indian consumers is $2.51 million. But Indian consumers also benefit from the lower prices and increased sales of the imported Bangladesh shirts, measured by a consumer surplus gain of $3.13 million, so there is a total CS gain in India of 2.51+3.13=$ 5.64 million. Allowance also has to be made for changes in government revenue and expenditure. These consist of DEPB payments on the increased exports of Indian shirts ($0.43 million), the loss of the tariff revenue on the pre-FTA imports of Bangladesh shirts ($0.95 million), and the reduction in tariff revenue on imported inputs corresponding to the net reduction in shirt output ($0.48 million). Adding all these changes gives a net economic welfare loss in India of $1.96 million.

Table 13 summarizes the changes in Bangladesh's shirt exports and the welfare changes resulting from the five simulations. Many of the key parameters which give these results are guesses which even some minimal field investigations could greatly improve. The most important are summarised below under the headings given in the table, together with some general comments on the results.

Bangladesh shirt exports

- The initial change in this system to which everything else adjusts is the increased Indian demand for Bangladesh shirts following an FTA. The import demand elasticities corresponding to the assumed demand increases are between -5.00 (simulation #1) and -8.54 (simulation #5)[123]. These fairly high elasticities seem plausible *a priori* considering that the starting base for the imports is very low (just one

[123] These are the arc elasticities with respect to the average of the beginning and ending prices and quantities

million shirts) compared to total Indian domestic demand (assumed to be 120 million shirts) and that the main source of the demand increase is substitution for Indian production. But this needs to be investigated: one key question would be the extent to which the Indian specific tariff is constricting or even blocking altogether imports of low priced shirts from Bangladesh. If that were so it is possible the demand response in the aggregate could be considerably higher than the maximum assumed response in these five simulations. Much would depend on the nature of the Indian demand for shirts (types, styles, fashions, etc) and the potential of Bangladesh suppliers for meeting it

- The simulations assume that 35% of the increased exports to Bangladesh are accommodated by a reduction in exports to ROW. For the reasons given previously, some diversion from ROW will occur, but field surveys among exporters should provide a better feel for the likely extent.

		Table 13			
M&B cotton shirts: summary of economic welfare simulations					
(All numbers are $US million)					
	Simulations				
	#1	#2	#3	#4	#5
Bangladesh shirt exports					
Δ exports to India	4.21	12.54	20.72	28.76	36.66
Δ exports to ROW	-1.48	-4.39	-7.25	-10.07	-12.83
Δ total exports	2.74	8.15	13.47	18.69	23.83
Δ W in Bangladesh (partial)					
Δ PS	1.30	2.62	3.94	5.28	6.63
Δ CS	-0.20	-0.40	-0.60	-0.79	-0.99
Δ GF (net)	0.00	0.00	0.00	0.00	0.00
Δ W (net)	1.10	2.22	3.35	4.49	5.64
Δ W in India					
Δ PS	-2.60	-3.89	-5.18	-6.46	-7.74
Δ CS: Bdesh shirts	1.40	2.29	3.14	3.95	4.72
Δ CS: Indian shirts	1.29	1.91	2.51	3.10	3.67
Δ GF: Bdesh shirt tariff	-0.95	-0.95	-0.95	-0.95	-0.95
Δ GF: DEPB	-0.21	-0.32	-0.43	-0.53	-0.64
Δ GF: input tariffs	-0.10	-0.29	-0.48	-0.66	-0.84
Δ W (net)	-1.17	-1.26	-1.39	-1.57	-1.79
Δ W Bdesh+India	-0.07	0.96	1.96	2.92	3.85
Δ W ROW	minimal ?	minimal ?	minimal ?	minimal ?	minimal ?
Notes: W=economic welfare; CS=consumers' surplus; PS=producers' surplus;					
GF=government fiscal effect; ROW=Rest of the world					

- The Bangladesh exporters would probably have to use at least some Indian fabrics and other inputs in order to meet the likely FTA origin rules (assumed to be the same as under SAPTA i.e. Bangladesh+Indian content of at least 30% of the fob price). Since Bangladesh garment exporters are in any case importing Indian fabrics and yarns for some of their exports to ROW and to India under SAPTA, this should not be a problem for them, but should still be checked.

- In the simulations the consignment cost from Bangladesh to India is assumed to be US 20 cents/shirt. This should also be checked: even small savings on expenses such as these (e.g. with transport by the land route) could make a big difference in this highly competitive business.

Welfare changes in Bangladesh

- As noted previously, the simulations on this are partial and do not deal with the impact of an FTA via increased shirt exports from India to Bangladesh. Filling in the missing information to enable this to be done would be a high priority for field work in Bangladesh
- The key economic welfare benefit for Bangladesh comes from the producer surpluses generated by increased shirt exports and production, and the increase in the average level of shirt prices resulting from the new Indian demand. Both of these parameters should be investigated
- The corresponding welfare cost is to Bangladesh consumers, and the size of this depends on the size of the domestic market for RMG shirts as well as the price increases.
- The simulations assume no government fiscal effects in Bangladesh. This in turn assumes that there is free trade status for exported shirts (use of bonded warehouses, operation in free trade zones etc) and that by contrast there are no imported inputs used by shirts sold domestically. Both are oversimplifications and would need to be modified following appropriate field surveys
- Price changes of exportable Bangladesh shirts in the domestic market would affect shirt imports and therefore tariff revenue from those imports. These effects would need to be dealt with in a more complete study even if does not take account of likely FTA-induced imports from India.

Welfare changes in India

- At least a rough estimate is needed of the actual size of the Indian domestic market to replace the 50/50 export/domestic assumption.
- Some investigation is also needed on the actual connections between export markets and domestic markets, and also on the assumption in the simulations that they are closely linked through competition so that gross margins will tend to equalize
- The plausibility of the assumptions on the impact of the demand increases for Bangladesh shirts following an FTA, on domestic demand for Indian shirts, and the impact on the price level of Indian shirts, should both be checked[124].
- That there would be increased government DEPB payments if firms using DEPB switch some production previously sold domestically to export markets is straightforward. In principle the fiscal cost would be the same if firms switch from domestic sales to exports using advance licenses, bonded warehouse ("100% EOU") arrangements, or drawback, since the government would no longer collect tariffs on the imported inputs, or in the case of drawback would refund the import duties. But whether these different export mechanisms would in practice give approximately the same fiscal results needs investigation.
- As in Bangladesh, no account is taken of possible effects of the FTA with Bangladesh on shirt imports from other countries. This seems reasonable, as the Indian MFN specific tariffs seem to be excluding practically all shirt imports from ROW, except for very small quantities of high priced shirts.
- The simulations estimate a tariff revenue reduction from the contraction of domestic sales of Indian shirts based on the assumption that the tariff component of the cost of imported inputs is the same on domestic sales as on exports, and therefore can be estimated by applying the DEPB rate to the domestic sales reduction. Whether this is roughly correct should be checked.

Combined welfare change in Bangladesh and India

- In all the simulations net welfare increases in Bangladesh because the PS generated by the preferential access to the Indian market outweighs the costs to Bangladesh consumers. Net welfare declines in India despite the CS benefit to Indian consumers from the lower price and expanded imports from Bangladesh. One reason for this outcome is that the Indian garment industry is forced by the FTA to compete in the Indian domestic market on unequal terms with the Bangladesh industry. In producing for the domestic market, the Indian garment producers pay normal tariffs on their inputs (or buy local fabrics and other inputs the prices of which reflect the tariffs) and this is reflected in their domestic shirt prices,

[124] The elasticity of substitution implied by the assumptions in the simulations is -6.7

whereas the Bangladesh shirt exporters obtain their inputs duty free. The contraction of the Indian industry resulting from the Bangladesh competition is therefore greater than it otherwise would be, and this in turn increases the price reduction and the producer surplus loss, and also the decline in revenue from input tariffs.

- Except in the first simulation, the combined joint economic welfare in Bangladesh and in India increases following the FTA. This happens even though both countries' garment industries have been modelled as economically efficient and operating with zero implicit effective protection, both in exporting and in their domestic markets. The result that opening regional trade with a discriminatory FTA could increase their joint welfare in these circumstances is essentially due to domestic consumers' unsatisfied demand for differentiated products, quality and variety. In the base scenario, which is intended to approximate the actual situation in 2003/04, high tariffs –and especially the specific tariffs in India-are keeping out imports from ROW that would meet this suppressed potential demand. The national garment industries are pricing what they sell domestically at low prices approximately equivalent to their export prices plus input tariffs, but do not find it worthwhile and are not forced by import competition to meet the full domestic demand for variety. In the simulations, this demand is partially met when the Indian market is opened under the FTA to imports from Bangladesh, creating consumer welfare benefits in India which help offset the government revenue and producer surplus losses

Welfare changes in the rest of the world (ROW)

- In the simulations for cotton shirts, on the supply side welfare changes in ROW are negligible because in 2003/04 and in the base scenario imports into India from ROW were blocked by prohibitively high MFN specific duties. This does not change with the FTA, and therefore there is no or very little diversion of imports from ROW.
- This situation was also broadly the case for most other garments, for which imports into from MFN countries into India were increasing but were still very small during 2003/04, relative to the size of the Indian market (see Table A.1). Some garments (especially some knitted garments) are not subject to specific tariffs, but these appear to be products for which there is not much demand in India, or in which the domestic industry is especially competitive. That either or both of these possibilities is the case is suggested by the absence of substantial imports despite moderate *ad valorem* MFN tariffs and lower *ad valorem* tariffs for Bangladesh under SAPTA and for Sri Lanka under ILFTA.
- Used garments (actually mostly developed country seasonal unsold stocks) are an exception, with rapidly expanding imports over relatively low MFN *ad valorem* tariffs. The composition of these imports is unknown: it is likely that they include inexpensive garments including shirts that would be substitutes for the garments that Bangladesh would export to India with an FTA. If that were the case, in principle some allowance would need to be made for the resulting diversion of demand from these imports that the FTA would create.
- Another exception is Nepal, which during 2003/04 was the second largest supplier of cotton shirts to India after Bangladesh. If Bangladesh shirts could be imported duty free under an FTA, they would substitute to some extent for Nepalese shirts and divert some imports from Nepal. However, because the Nepalese market share in India is tiny (probably less than 0.2 percent of the market), unless the characteristics of Bangladesh shirts were especially close to the characteristics of Nepalese shirts, the likely diversion is very small. For example, if Bangladesh shirts were equally good substitutes for Indian and Nepalese shirts, and with an FTA were to take 5% of the Indian market, Nepalese imports would only be cut by 5% of 0.2%= 0.01% percent of Indian demand.
- On the demand side, however, there would be some be some welfare impacts (consumer surplus changes) in the rest of the world due to the increase in the prices of exported Bangladesh shirts, and the decline in the prices of exported Indian shirts. The net effect of these offsetting changes in ROW would possibly be very small: to say more than this would require information on the relevant demand and supply parameters in world markets, and would be best dealt with in the context of a world T&C model embedded in a system such as GTAP.

5. IMPLICATIONS FOR INDIA'S AND BANGLADESH'S TRADE AND OTHER POLICIES

The RMG industries in both India and Bangladesh are very large, low cost, internationally competitive and economically efficient export industries. Therefore, the likely economic consequences of their inclusion in a free trade agreement –whether bilateral or under SAFTA-are of special interest. This is especially the case in Bangladesh, where the RMG industry's shares of exports, GDP and employment are much greater than in India, and because many Bangladeshis hope that RMG exports might help reduce Bangladesh's large bilateral trade deficit with India.

But, as discussed in this paper, the effects-including the economic welfare effects- of opening up RMG trade between the two countries in the context of an FTA are complicated by:

- India's prohibitively high specific duties on most garments
- Bangladesh's very high and recently increased RMG tariffs
- Bangladesh's very high textile fabric tariffs
- Bangladesh's ambiguous policies on domestic sales by exporting RMG firms

Bangladesh's policies. An FTA with India, with both countries maintaining there present tariff and other policies with respect to the rest of the world, would provide export opportunities in India for RMG products. This has been explored in the paper using the example of mens' and boys'cotton shirts, which is one of Bangladesh's principal exports to developed countries and which are being exported to India in small volumes over India's specific tariff, but with the assistance of a 50% SAPTA preference. This is done on the assumption that initially there would be just a one-way agreement, in which India would grant duty free access to Bangladesh RMGs, but Bangladesh would for the time being not provide any preferences for RMG imports from India.

With this as a starting point, the economic welfare consequences of an FTA are worked through, based on plausible guesses of export increases for shirts ranging from approximately $4 million to $ 37 million. As most of Bangladesh's principal RMG products are either not exported to India at all, or in negligible volumes, there is no similar starting point for even making plausible guesses about the export prospects for them under an FTA. A better feel for this could be obtained with some field work and interviews with RMG producers and traders in both countries, and it is possible that the export prospects for other products-for example mens' & boys' cotton trousers-would turn out to be similar or better than the export prospects of cotton shirts. However, a number of cautionary points need to be made in this regard:

- India's RMG industry is highly competitive in its domestic market. Domestic prices of exported garments are probably close to or below cif import prices. Therefore, even with the advantages of tariff exempt access and proximity, Bangladesh garment exporters would have to mainly compete for market niches based on styles, design, marketing, quality etc. For this they would need to work with Indian traders and distributors, and the Indian traders would have to find some clear advantage in sourcing from Bangladesh rather than from Indian suppliers
- A number of RMGs which Bangladesh exports to other countries are not subject to specific duties in India, but until FY 04 none were being exported to India. For most RMGs India's preferential *ad valorem* tariff for Bangladesh in 2003/04 was 20%, and after that it was reduced to 10% in FY 05 and in FY 06 to 7.5%. Unless some Bangladesh exports have developed since FY 04, this suggests that even relatively low *ad valorem* tariffs are sufficient to deter exports of these products to India. If that is the case it is not obvious that a further reduction to zero with an FTA would generate many –or even any-exports.
- Sri Lanka is a major RMG exporter and under ILFTA it has more generous RMG tariff preferences (mostly 75%) in India than Bangladesh's SAPTA preferences (mostly 50%, some 60%). In 2005/06

its preferential ad valorem tariff for RMG products was 3.75%. Despite this, its RMG exports to India are practically nil.

- Garment industry direct labour costs are much lower in Bangladesh than in India, but these differences are minor relative to typical garment selling prices in world markets, and in selling to India could easily be offset, or more than offset, by differences in other costs (especially fabric and yarn costs), quality, design, delivery times and other non-price factors
- If Bangladesh garment exporters were to develop substantial exports of some RMGs to India, for reasons discussed in the paper, part of the new exports are likely to have been diverted from other export markets. Hence, the net increase in exports resulting from the preferential opening of the Indian market will be less than the increase in exports to India. Some field interviews would be needed to obtain a better feel for the likely extent of this diversion.

The principal economic welfare benefits for Bangladesh from a one-way FTA with India would come from the effects of new Indian demand adding to ROW export demand and domestic Bangladesh demand, thereby increasing the general price level of Bangladesh RMGs and increasing production. The price increases would also cause some consumer surplus losses in Bangladesh, but on the assumption that the domestic RMG market in Bangladesh is small relative to exports, the producer surplus benefits would be considerably larger (in Taka or $US terms) than the consumer surplus losses. In the simulations` there are no direct fiscal effects in Bangladesh, on the assumption that all the Bangladesh exports are from bonded warehouses where exporters have duty free access to inputs, and that all the domestic RMG sales use domestically produced yarns, fabrics and other inputs. But the validity of this assumption needs to be checked.

By definition an FTA would involve some reciprocal concessions and eventually duty free access for Indian RMGs to the Bangladesh domestic market. This was not treated in the study, owing to lack of information on the domestic side of the Bangladesh RMG industry, and also lack of information relevant for these questions about the Bangladesh textile industry. However, some general remarks can be made:

- In recent years there have been small imports of RMGs coming over a very high Bangladesh tariff (47.2% in 2004/05), mainly from India but also from other countries. As was assumed in the case of Bangladesh garment exports to India, if this tariff were removed for India it is plausible that (a) imports from India would expand (b) they would replace imports from other countries (c) domestic garment prices in Bangladesh would fall (d) production of RMGs for the domestic market would be cut (e) production of domestic textiles used by RMG producers would fall
- Very high tariffs protecting Bangladesh fabric producers (48% and 69% in 2004/05) suggest that the impact could be particularly severe for Bangladeshi producers of woven RMGs supplying the domestic market, if these tariffs are an indication of the actual excess of domestic fabric prices over world prices. Some information on actual domestic fabric prices and the extent of tariff redundancy would be needed to get a better feel for these likely impacts, including the indirect impacts on textile fabric producers.
- This assumes that textile fabrics imported into Bangladesh from India would be excluded from the FTA. If they were included, the Bangladesh producers of woven garments could use imported Indian fabrics, and depending on how these were priced, this could greatly improve the competitiveness of the woven RMG industry in the Bangladesh market. But this might have drastic consequences for the Bangladesh fabric producers, depending on how well they would be able to adjust to duty free competition from India.
- The same considerations as the above are also relevant for knitted garments sold domestically, but Bangladesh yarn tariffs (in 2004/05 11% and 18.5%) are much lower than fabric tariffs, suggesting that Bangladesh domestic knitted garment prices are probably lower relative to border prices than is the case with woven garments. If this is correct, they might be in a stronger position to compete with Indian knitted garments following an FTA, even if yarn could not be imported duty free from India.

- To better understand the likely impacts of an FTA in the Bangladesh domestic RMG market, it would be important to have a clearer appreciation of Bangladesh government policies on sales of export garments in the domestic market. During 2002/03 and 2003/04 RMG exporters were allowed to sell large quantities (valued at $214 million and $178.5 million respectively) of "stock loss" export garments in the domestic market without paying Customs duties or any other of the normal import taxes and VAT. Continuing large scale sales of this kind, even supposing they are all in fact rejected substandard export garments, would completely change the configuration of the domestic RMG market and would also impact the domestic textile industry.

There are potentially substantial economic welfare benefits for Bangladesh from a one sided FTA agreement with India in which India would keep its present MFN tariffs while granting duty free access to Bangladesh RMGs, but in which no preferences would be granted by Bangladesh. However, just considering the direct welfare consequences for the RMG sector and leaving aside possible trade-offs with other sectors, it is apparent from the shirt example worked through in this paper, that such an arrangement is not in India's interest. Therefore it would make sense for Bangladesh to begin a unilateral reform process aimed above all at improving the international competitiveness of its textile industry. One key component of such a program could be pre-announced reductions in MFN textile tariffs, starting with fabrics. This could be done in advance of entering into FTA commitments with India covering the T&C sectors, or it could be part of a phased reform package in which (for example) India would grant increasing levels of preference to imports of RMGs from Bangladesh while benefiting in a first stage from Bangladesh's MFN textile tariff reductions, and in a second stage from reciprocal preferential reductions in Bangladesh's RMG tariffs.

India's policies Although the Indian and the Bangladesh RMG industries are both highly competitive in export markets, a major difference between them is that the Indian RMG industry is also very competitive in its domestic market because it has in the background India's very large, diverse and for the most part export oriented textile industry. The export orientation of the Indian textile industry-especially of cotton yarns and fabrics-means that domestic textile prices are closely linked to export prices, and like garment prices, are often not far above fob prices and may actually be lower than cif prices. The ability to buy a wide variety of Indian yarns and fabrics at low prices keeps down the costs of RMG producers supplying the domestic market, and also means that many and perhaps most of the very high specific garment tariffs are redundant i.e. they could be drastically reduced or removed without attracting many imports.

Nevertheless because of the importance of various kinds and levels of product differentiation in the garment industry, it is probable that the prohibitively high specific tariffs are keeping out some imports of garments that would meet these diverse consumer preferences. As worked out in the shirt example in this paper, disturbing this situation with a one-sided FTA with Bangladesh, leads to a small net welfare loss for India, with producer surplus losses of garment producers plus net government fiscal losses offsetting benefits to Indian consumers. The reason for this outcome for India is that despite the fact that its RMG industry-both in exporting and producing for the domestic market-is economically efficient, it is forced by the FTA to compete on unequal terms with the Bangladesh industry. That is, when Bangladesh firms export to India they obtain their inputs duty free (e.g. through duty exemption by operating as bonded warehouses), whereas the Indian producers either pay import duties on their imported inputs or buy inputs locally at protected prices. This is an inherent problem with all FTAs, and in the shirt example it leads to a larger contraction of Indian production and larger losses of producer surpluses and government revenue than would have been the case if the two industries had been competing on equal terms. As worked through in the example, these welfare losses exceed the consumer surplus benefits of Indian consumers and produce a negative net welfare outcome for India from the one-way FTA in this product. This net loss would be larger if the FTA were to generate imports of other RMG products from Bangladesh.

For this reason it would not be in India's overall interest to agree to a one-sided FTA arrangement for RMGs, and as a normal part of the bargaining it could ask for reciprocal preferential access –and eventually duty free access-to the Bangladesh RMG market. However, as discussed above, this would cause serious problems in Bangladesh unless it were to follow, or to be negotiated as an integral part of, a general reform program for the Bangladesh textile industry. Whether or not such a general reform program were adopted, it would make sense to have a careful look at India's specific tariffs on T&C products. Eliminating these would have immediate welfare benefits for Indian consumers, and would make trade and trading relations in the T&C sector much simpler and more transparent. On the other hand it would reduce the potential economic benefits of an FTA for Bangladesh RMG exporters, since, like domestic Indian RMG producers, in supplying the Indian market they would now only have the protection of the Indian *ad valorem* tariff. But this would be a much more efficient outcome than one in which part of the benefit to Bangladesh RMG manufacturers from exporting to India would be a consequence of highly distortionary specific tariffs which effectively exclude other developing country RMG exporters from the Indian market.

	Table A.1			
	Indian garment imports in 2003/04			
Principal products imported		$ million	Specific	
			duty?	
HS code	**Knitted garments (HS 61)**			
6109	T-shirts etc	3.28	Yes	
6110	Jerseys, pullovers etc	1.22	Yes	
611790	Parts of garments	0.65	No	
	Others	5.77		
HS 61	**Total**	**10.92**		
	Woven garments (HS 62)			
6205	M&B shirts	9.60	Yes	
6203	Suits, jackets, trousers etc	4.64	Yes	
6217	Accessories and parts	4.22	No	
6212	Womens' underwear	2.13	Yes	
6204	Womens'/girls' suits etc	1.19	Yes (except of silk)	
	Others	6.00		
HS 62	**Total**	**27.78**		
Principal countries supplying		$US	% of total	
	Knitted garments (HS 61)			
	China	2.64	24.2	
	Nepal	1.89	17.3	
	Malaysia	1.63	14.9	
	UAE	0.44	4.0	
	Germany	0.37	3.4	
	58 others	3.95	36.2	
HS 61	**Total**	**10.92**	**100.0**	
	Woven garments (HS 62)			
	Nepal	7.89	28.4	
	Bangladesh	4.57	16.5	
	China	2.40	8.6	
	Hong Kong	1.63	5.9	
	UAE	1.36	4.9	
	South Africa	1.27	4.6	
	Philippines	1.17	4.2	
	59 others	7.49	27.0	
HS 62	**Total**	**27.78**	**100.0**	
	Woven +knitted garments			
	Nepal	9.78	25.3	
	China	5.04	13.0	
	Bangladesh	4.58	11.8	
	Malaysia	2.06	5.3	
	Hong Kong	1.97	5.1	
	UAE	1.80	4.7	
	All others	13.47	34.8	
HS 61+ 62	**Total**	**38.7**	**100.0**	
Source: DGFT trade database				

			Table A.2					
	India: Garment imports from Bangladesh 2002/03 and 2003/04 and tariffs in 2002/03, 2003/04 and 2004/05							
HS code		Imports $US million		Preferential ad valorem tariffs %			Specific duty	
		2002/03	2003/04	2002/03	2003/04	2004/05	Preferential	MFN
							$US/garment	Rs/garment
							at Rs 45.95=$1	
61033300	M&B Jackets & blazers of synth fibres	0.03		20.3	17.5	10	none	none
61051090	Cotton shirts & sweat shirts, other	0.52	0.01	20.3	17.4	10	0.90	83
	All other knitted garments	0.01	0.00	20.3	17.4 or 17.5	10	Various	Various
61	**Total knitted garments**	**0.56**	**0.01**					
62019990	M&B coats, jackets etc, other		0.01	20.3	17.5	10	none	none
62031929	M&B cotton suits	0.06		20.3	17.4	10	11.97	1100
62046109	W&G wool trousers	0.02		20.3	17.5	10	3.10	285
62046300	W&G synthetic trousers		0.04	20.3	17.5	10	none	none
62046919	W&G silk trousers		0.01	20.3	17.5	10	1.47	135
62051000	M&B wool shirts		0.11	20.3	17.5	10	2.18	200
62052000	M&B cotton shirts		4.17	20.3	17.4	10	0.92	85
62052001	M&B cotton dress shirts, handloom	1.14		20.3	17.4	10	0.92	85
62053000	M&B man made fibre shirts		0.03	20.3	17.5	10	1.31	120
62053001	M&B man made fibre shirts, hand printed	0.07		20.3	17.5	10	1.31	120
62053002	M&B man made fibre shirts	0.02		20.3	17.5	10	1.31	120
62059019	M&B shirts, silk	0.18		20.3	17.5	10	1.31	120
62059090	M&B shirts, other textile materials		0.10	20.3	17.5	10	1.31	120
62072190	M$B night shirts and pyjamas, other		0.01	20.3	17.5	10	none	none
62079929	M$B singlets,underpants etc of wool	0.04		20.3	17.5	10	0.76	70
62082102	W&G nightdresses & pyjamas, of cotton	0.02		20.3	17.4	10	0.87	80
62089105	W&G singlets, slips, briefs etc, of cotton	0.10		20.3	17.4	10	1.03	95
62102001	Rubberised outer garments	0.01		20.3	17.5	10	3.97	365
62113900	M&B track suits etc, other textile materials	0.33		20.3	17.5	10	none	none
62179090	Clothing parts & accessories	0.07		20.3	17.5	10	none	none
	All other woven garments	0.00	0.09	20.3	17.4 or 17.5	10	Various	Various
62	**Total woven garments**	**2.00**	**4.57**					
61 and 62	**Total all garments**	**2.56**	**4.58**					

Notes: Imports from DGTD trade database. Tariffs from Arun Goyal, *Easy Reference Customs Tariff*, various years. M&B=Mens'& boys' W&G=women & girls'. The 2002/03 and 2003/04 allow for the protective effect of the Sadd tax, which was abolished in 2004/05

			Table A.3				
	India: Imports of woven cotton M&B shirts FY 1998-2004 ($US million)						
FY	Total	Bdesh	Nepal	Thailand	Indonesia	China	Other
1998	0.32	0.00	0.00	0.24	0.01	0.00	0.08
1999	0.83	0.00	0.00	0.48	0.03	0.01	0.31
2000	3.15	0.03	0.01	2.70	0.11	0.08	0.23
2001	2.18	0.07	0.04	0.91	0.61	0.03	0.53
2002	1.60	0.51	0.04	0.26	0.26	0.26	0.28
2003	1.75	1.14	0.15	0.02	0.09	0.01	0.34
2004	7.46	4.17	2.41	0.03	0.05	0.26	0.54
Source: Ministry of Commerce, DGTD trade database							

Table A.4
Bangladesh: Garment tariffs FY 1995-2005

FY	General rate all knitted & woven %	Cotton trousers & shirts %	Worn clothing %
2005	47.2	47.2	28.5
2004	33.5	85.5	33.5
2003	35.5	65.5	35.5
2002	42.2	42.2	42.0
2001	42.2	42.2	42.0
2000	42.2	42.2	42.2
1999	44.7	44.7	44.7
1998	47.2	47.2	47.2
1997	47.5	47.5	47.5
1996	47.5	47.5	48.0
1995	62.5	62.5	62.5

Notes: these are the total protective rates including the protective effects of para-tariffs (including supplementary duties) All the tariffs are ad valorem. Bangladesh does not give tariff preferences on garments under SAPTA

Table A.5

Welfare and other effects with alternative assumptions on Bangladesh shirt exports to India following an FTA

	Simulations				
	#1	#2	#3	#4	#5
Base scenario shirt exports to India ('000 shirts)	1000	1000	1000	1000	1000
Initial Bdesh shirt exports with FTA ('000 shirts)	2000	4000	6000	8000	10000
New price ($US/shirt)	4.26	4.27	4.28	4.29	4.30
dq/dp	-1056	-3169	-5282	-7395	-9508
ΔQ ('000 shirts)	-11	-63	-158	-296	-475
New Indian demand from Bangladesh (Q) '000 shirts	1989	3937	5842	7704	9525
Value of Indian imports from Bangladesh cif ($ million)	8.47	16.81	25.00	33.05	40.96
ΔCS in India ($US million)	1.40	2.29	3.14	3.95	4.72
Effect in Bangladesh					
Freight & ins Bdesh to India $/shirt	0.20	0.20	0.20	0.20	0.20
fob price to India & ROW pre FTA	4.05	4.05	4.05	4.05	4.05
Total exports pre-FTA ('million shirts)	110	110	110	110	110
Exports to ROW pre-FTA (million shirts)	109	109	109	109	109
Exports to India pre-FTA (million shirts)	1	1	1	1	1
Domestic demand pre-FTA (million shirts)	20	20	20	20	20
Total demand and production pre-FTA (million shirts)	130	130	130	130	130
Incr demand from india (million shirts)	0.99	2.94	4.84	6.70	8.52
Acommodated by incr Bdesh supply: 60%	0.6	1.8	2.9	4.0	5.1
Accomodated by decr ROW demand: 35%	0.35	1.03	1.69	2.35	2.98
Accommodated by decr domestic demand 5%	0.05	0.15	0.24	0.34	0.43
Supply post-FTA (million shirts)	130.59	131.76	132.90	134.02	135.11
Incr in Bdesh PS ($million)	1.30	2.62	3.94	5.28	6.63
Decr in Bdesh CS ($million)	-0.20	-0.40	-0.60	-0.79	-0.99
Net change in Bdesh W ($million)	1.10	2.22	3.35	4.49	5.64
Total exports post-FTA (million shirts)	110.64	111.91	113.15	114.36	115.54
Total exports post-FTA ($US million)	471.3	477.9	484.3	490.6	496.8
Total exports pre-FTA ($US million)	467.5	467.5	467.5	467.5	467.5
Net increase in exports post FTA ($US million)	3.8	10.4	16.8	23.1	29.3
Of which attributable to incr fob price ($US million)	1.1	2.2	3.4	4.6	5.8
Effects in India					
Pre-FTA: Total M&B RMG domestic cotton fabric shirt sales (million shirt	260	260	260	260	260
Of which exports 50% (million shirts)	130	130	130	130	130
Average price fob $/shirt	4.80	4.80	4.80	4.80	4.80
DEPB 4.4% of fob price $/shirt	0.21	0.21	0.21	0.21	0.21
Fob price +DEPB (equals domestic price) $/shirt	5.01	5.01	5.01	5.01	5.01
Backward shift in domestic demand due to Bdesh imports (million shirts)	0.99	2.94	4.84	6.70	8.52
Resulting decline in fob and domestic price ($US/shirt)	0.01	0.02	0.02	0.03	0.03
Decline in Indian production (million shirts)	0.46	1.38	2.27	3.15	4.00
Net decline in Indian demand (million shirts)	1.47	2.89	4.29	5.66	7.02
Increase in export demand (million shirts)	1.01	1.51	2.01	2.52	3.02
Incr in Indian CS ($ million)	1.29	1.91	2.51	3.10	3.67
Decr in India PS ($ million)	2.60	3.89	5.18	6.46	7.74
Incr in DEPB payments ($ million)	0.21	0.32	0.43	0.53	0.64
Decr tariff revenue from inputs due to decr production ($ million)	0.10	0.29	0.48	0.66	0.84
Incr in CS from imports from Bangladesh ($ million)	1.40	2.29	3.14	3.95	4.72
Decr Customs revenue from imports from Bangladesh ($ million)	0.95	0.95	0.95	0.95	0.95
Net welfare change in India ($ million)	-1.17	-1.26	-1.39	-1.57	-1.79
Value of total exports pre-FTA ($US million)	624.0	624.0	624.0	624.0	624.0
Value of total exports post -FTA ($US million)	627.5	629.3	631.0	632.8	634.5
Incr in total exports ($US million)	3.5	5.3	7.0	8.8	10.5

Table A.6

Indian tariffs in 2005/06 on some Bangladesh garments which are exported to the EU

HS code		Exports to EU 2003 million ECU	MFN tariff 2005/06 Ad val	MFN tariff 2005/06 Rs/piece	MFN tariff 2005/06 $US/piece	SAPTA tariff for Bangladesh Ad val	SAPTA tariff for Bangladesh Rs/piece	SAPTA tariff for Bangladesh $US/piece
Garments subject to specific tariffs								
61	**Knitted**							
610130 & 610230	Anoraks	31	15% or	530	12.18	7.5% or	265.0	6.09
610462 & 610463	W&G trousers	133	15% or	98	2.25	7.5% or	49.0	1.13
6105	M&B shirts	110	15% or	83	1.91	7.5% or	41.5	0.95
610610	W&G shirts/blouses-cotton	18	15% or	90	2.07	7.5% or	45.0	1.03
610620	W&G shirts/blouses-MMF	3	15% or	25	0.57	7.5% or	12.5	0.29
6108	W&G briefs/panties	13	15% or	25	0.57	7.5% or	12.5	0.29
610910	T-shirts -cotton	632	15% or	45	1.03	7.5% or	22.5	0.52
610911	T-shirts -MMF	2	15% or	50	1.15	7.5% or	25.0	0.57
611011	Jerseys, sweaters -wool	33	15% or	275	6.32	7.5% or	137.5	3.16
611020	Polo, jumpers etc-cotton	250	15% or	85	1.95	7.5% or	42.5	0.98
61103099	W&G jerseys/pullovers MMF	406	15% or	110	2.53	7.5% or	55.0	1.26
62	**Woven**							
620192	M&B anoraks-cotton	8	15% or	210	4.83	7.5% or	105.0	2.41
620193	M&B anoraks-MMF	20	15% or	180	4.14	7.5% or	90.0	2.07
620292	W&G anoraks-cotton	8	15% or	160	3.68	7.5% or	80.0	1.84
620293	W&G anoraks-MMF	8	15% or	220	5.06	7.5% or	110.0	2.53
620342	M&B trousers/shorts-cotton	285	15% or	135	3.10	6% or	54.0	1.24
620462	W&G trousers/shorts-cotton	252	15% or	135	3.10	6% or	54.0	1.24
620520	M&B cotton shirts	204	15% or	85	1.95	7.5% or	42.5	0.98
620530	M&B MMF shirts	126	15% or	120	2.76	7.5% or	60.0	1.38
620640	W&G cotton shirts/blouses	31	15% or	95	2.18	7.5% or	47.5	1.09
620640	W&G MMF shirts/blouses	27	15% or	120	2.76	7.5% or	60.0	1.38
Garments not subject to specific tariffs								
61043210	M&B knitted trousers-cotton	3	15%	none	none	7.5%	none	none
61044290	W&G knitted dresses-cotton	4	15%	none	none	7.5%	none	none
61083110	W&G knitted night dresses	2	15%	none	none	7.5%	none	none
61083190	W&G pyjamas	6	15%	none	none	7.5%	none	none
62045200	W&G cotton skirts	17	15%	none	none	7.5%	none	none

Notes: M&B=Mens & boys; W&G=women and g r s; compound tariffs are the higher of the ad valorem rate & the dpecific amount
The SAPTA preference s generally 50% except for some products, for which it is 60%. EU imports from EEC data set compiled at the World Bank

			Table A.7					
	Bangladesh garment imports FY 1997-F7 2004 ($US million)							
	1997	1998	1999	2000	2001	2002	2003	2004
From India								
HS 61-knitted	0.0	0.0	0.1	0.2	0.5	0.2	0.6	0.4
HS 62-woven	0.0	0.2	0.1	0.2	0.2	1.2	2.4	4.8
Total	0.1	0.2	0.2	0.3	0.7	1.4	3.0	5.2
All other countries								
HS 61-knitted	1.5	1.8	1.8	2.3	2.3	3.3	2.6	2.4
HS 62-woven	1.9	1.0	0.7	0.7	1.0	11.1	2.3	2.4
Total	3.4	2.8	2.5	3.0	3.3	14.4	5.0	4.8
Total-all countries								
HS 61-knitted	1.5	1.8	1.9	2.5	2.8	3.5	3.2	2.8
HS 62-woven	1.9	1.2	0.8	0.8	1.1	12.3	4.7	7.2
Total	3.5	3.0	2.7	3.3	4.0	15.8	7.9	10.0
Worn clothing	2.9	5.2	5.3	2.0	1.7	2.4	4.0	4.9
Total: new & worn	**6.3**	**8.2**	**8.0**	**5.3**	**5.7**	**18.3**	**11.9**	**14.9**
Bangladesh export garments sold duty free in Bangladesh ("stock lot" sales)								
	1997	1998	1999	2000	2001	2002	2003	2004
HS 61-knitted	0.0	0.0	0.0	0.0	0.0	13.0	97.1	73.6
HS 62-woven	0.0	0.0	0.0	0.0	0.0	7.2	116.9	104.9
Total	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**20.2**	**214.0**	**178.5**

STUDY OF INDIA-BANGLADESH TRADE AND TRADE POLICIES: SIMULATIONS OF ECONOMIC WELFARE EFFECTS OF A FREE TRADE AGREEMENT

A CASE STUDY OF TYRES

1. BANGLADESH CASE

1.1 General notes

Two types of tyres are in use in Bangladesh: light and heavy. The former is generally used for bicycles and rickshaws (a three wheeler manually driven or peddled) while the latter is used for aeroplanes, buses, trucks, motorbikes etc. Bangladesh does not produce heavy tyres. Light tyres are both produced and imported.

Information on value and quantity of tyres is sketchy. Information on total value of imports exists but not total quantity. While BBS records domestic production figures of key manufacturing products, it does not do so for tyres. Production figures therefore have to be deduced from figures on existing number of rickshaws and cycles based on some idea of annual consumption rates. BBS (2000) reports that non-mechanized transport accounts for 47% of the value-added in the Transport, Communication and Storage sector. And rickshaws and cycles account for more than four-fifths of the modes in non-mechanized transport. In 1985/86, for example, rickshaws alone contributed to 34% of the value-added by the transport sector in Bangladesh or roughly Tk.984 crores. This was more than double the contribution of all motorized road transport, 12 times the contribution of Bangladesh Railways, and 12.5 times the contribution of Bangladesh Biman.

During the last 15 years or so, the number of rickshaws and the associated linkages grew faster. The development of rural road net works, the growth of peri-urban areas and commercialization of agricultural sector paved the ways for a robust growth of roads and rickshaws. In consequence, the growth of the demand for tyres also increased during the same period of time.

1.2 Demand for tyres

1.2.1 Rickshaw tyres

The demand for rickshaw tyres is a derived demand based on the total number of rickshaws in use countrywide. However, there is some difficulty in precisely estimating the number of rickshaws in use. Although there are statistics available on the number of registered rickshaws in Dhaka and other areas, it is common knowledge that the actual number of rickshaws plying the streets far exceed the number registered. For example, one study (Gallagher, 1988) observed that in 1987 there were 88 thousand rickshaws officially registered with the Dhaka Municipal Corporation but news paper reports and numbers cited by officials and ministers put the true number around 150 to 200 thousand. With such a big difference in the number of rickshaws, it is quite obvious that the variations in the estimated demand for tyres could be substantial.

However, for the sake of the present study, we attempted to arrive at a crude estimate based on official statistics as well as on our information about the operation of the industry. In Table 1, we present

the number of 'registered' rickshaws as documented by the Statistical Year Book, Bangladesh (BBS 2000).[125]

Table 1: Number of rickshaws and demand for tyres

Year	*Rickshaws ('000)*	*Growth rate*	*Tyres ('000')*	*Tyres (million)*
1995/96	1181	-	3543	3.54
1996/97	1249	5.6	3747	3.75
1997/98	1323	5.9	3969	3.97
1998/99	1407	6.0	4221	4.22
1999/00	1497	6.4	4491	4.49
2000/01	1594	6.5	4782	4.78
2001/02	1696	6.4	5088	5.09
2002/03	1805	6.4	5415	5.42
2002/03[126]	2256		6768	6.77

Source: Statistical Pocket Book, Bangladesh-2000, Bangladesh Bureau of Statistics (BBS).

Discussions with rickshaw pullers, traders and mechanics reveal that the replacement of tyre tends to take place after, on average, every 4 months. What we have done is to multiply the number of rickshaws by a factor of 3 to arrive at a crude estimate of the annual demand for tyres. On the basis of this assumption, it appears that the demand for rickshaw tyres in 2002/03 stood at 5.4 million. On average, the growth rates of both tyres and rickshaws stood at over 6% per annum over the last three years.

However, if we conservatively assume that 25% of the operating rickshaws are 'unregistered', the total number of rickshaws in Bangladesh then stands at 2,256 thousands and the total demand for tyres would be 6.8 million during 2002/03[127].

1.2.2 Total demand for tyres

According to our survey, apart from the demand for rickshaw tyres, there is also an additional demand for bicycle tyres to the tune of 600 thousand pieces annually.

Table 2: Production of tyres in Bangladesh, 2003

Name of company	Yearly production (million)	% of sales
Gazi	2.9	60
Rupsha	0.7	15
Meghna	0.7	15
Other	0.5	10
Total	4.8	100

Source: Discussions with traders and users

That brings the total demand for rickshaw and bicycle tyres in Bangladesh to approximately 7368 thousand or 7.4 million every year. Our survey also revealed that the bulk of tyres (roughly 91%) produced and demanded are rickshaw tyres. Therefore, we will limit our analyses to this category of tyres.

[125] At the national level, the gap between official statistics and reality is wider. It is assumed conservatively that there are 20-30% more 'unregistered' rickshaws all over the country.
Notes: (a) Figures for 1999/2000 onwards have been estimated on the basis of the growth rate of past three years. (b) Number of tyres has been arrived at by multiplying the number rickshaws by a factor of 3.

[126] Assumed 25% additional 'unregistered ricksahws'.

[127] In fact, 6. 8 million is the bench mark demand figures that we shall use in subsequent sections.

1.3 Domestic production

1.3.1 Rickshaw tyres

Table 2 presents information on the domestic production of tyres. Data have been generated through field survey and admittedly and interviews with selected firms. It turns out that there are 8 tyre-manufacturing units in Bangladesh. Only three firms capture 90% of the sales and one firm controls 60% of the market (Gazi Rubber Industries).

1.3.2 Bicycle tyres

Our survey firm 'X" produced 230 thousand pieces of bicycle tyres (28") during 2002/03, or roughly one half of the total production of around 500 thousand tyres produced that year. Table 3 percents information on production of cycle tyres and its sources.

Table 3 Production of cycle tyres

Name of firm	Production ('000'pieces)	Share (%)
Meghna	200	40
Sanu	200	40
Kohinoor	50	10
Alam	50	10
Total	500	100

Source: Survey

1.3.3 Total tyre production in Bangladesh

Total tyre production in Bangladesh is estimated at 5.3 million pieces (4.8 million rickshaw tyres +0.5 million bicycle tyres). The share of rickshaw tyres to total tyre production stands at 91% while that of cycle tyre accounts for 9%. However, the total production of Bangladesh is estimated to be 38% of the estimated 13.8 million Indian production of both cycle and rickshaw tyres.

1.4 Legal imports and exports of tyres

1.4.1 Rickshaw tyres

Bangladesh does not export tyres. Table 4 presents information on the import of rickshaw tyres by Bangladesh for three years. It can be observed that total import value of the tyre of kind used in bicycle (HS Code: 40115009) has been hovering around Tk. 30 million in 2000/01, 2001/02 and 2002/03. There has been marginal decline in the value of imports over the years as the import value fell from Tk.33.4 million in 2000/01 to Tk.33.20 in 2002/03. [128]

Table 4 further shows that in 2000/01, more than two-thirds of the total tyre used to come from China followed by 27% from India. Thailand and Taiwan also had marginal share in imports. But by

[128] According to the Indian Department of Commerce Stats http://dgft.delhi.nic.in, India exported 333000=3.33 lakh=.033 million bicycle tyres to Bangladesh worth US$0.69 million = Rs.32.9 million. Our figures seem close to that supplied by the Indian source. The value differs possibly due to different positions of assessment of the import value. The Indian figures also show that Bangladesh absorbs 7% of Indian exports of tyres.

2002/03, India emerged as the largest source of supply for Bangladesh. For example, China accounted for 47% while India's share jumped to 45% over the same period of time.

To arrive at the number of tyres imported, we have approximated the cif value at Tk.96 ($1.6) /per piece and determined the total number of tyres imported into the country. As presented in Table 4, in 2002/03 and assuming that the cif price of tyre was Tk. 96, a total of 0.33 million tyres were imported into the country. India accounted for about 47% of the total imports and China claimed 45%.

Table 4: Estimated imports of tyres, 2002/03

Country of origin	Import value (Tk/million)	Quantity (million)	Share in imports (%)
India	14.9	0.16	46.72
China	14.4	0.15	45.14
Thailand	1.3	0.01	4.07
Indonesia	1.3	0.01	4.07
Total	31.9	0.33	100.00

Source: NBR Trade database. Quantity estimated on the basis of cif price of Tk.93 /tyre.

1.4.2 Bicycle tyres

Official import statistics do not distinguish between imports of cycle and rickshaw tyres; both categories are subsumed under the same HS code. Our survey, however, revealed that total imports of cycle tyres is approximately 100 thousand units every year. This means, one-third of the total tyre imported into the country are cycle tyres.

1.5 Illegal imports

1.5.1 Rickshaw tyres

As shown in Tables 1 and 2, the total demand for rickshaw tyres is estimated at 6.8 million while domestic production is estimated at 4.8 million. That yields an import figure of 2 million units. However, legal imports appearing in official statistics, show a figure of 0.33 million pieces (Table 4). The difference of 1.7 million pieces can be attributed to illegal imports, not revealed in official statistics.

Illegal imports take place through two routes. First, there is misdeclaration of items- called 'technical smuggling- whereby importers declare say 100 pieces while they actually import 150 pieces. We do not have information on how much of tyres come through technical smuggling. But a recent survey by the World Bank in the context of the Study on South Asian Regional Trade, shows that the share of technical smuggling ranges between 25-40%, depending on the type of commodity imported.

For the present exercise, we will assume that 30% of the official imports are misdeclared in the case of tyres. A further assumption is that informal imports come from India only. In other words, out of 0.16 million pieces imported legally from India (Table 4), 30% more have been imported through misdeclaration. This gives the amount of illegal imports of tyres to be 48,000 or 0.05 million pieces per year . Out of this, rickshaw tyres accounts for 70% or 0.04 million pieces and bicycle tyres, 30% or 0.01 million pieces). The rest 1.6 million pieces of tyres (1.7-0.05) supposedly enter through cross-border channels- called bootlegging smuggling.

Out of this, 70% apply for rickshaw tyres. That is 1.12 million pieces of rickshaw tyres are imported through bootlegging imports and 23% or 48 thousand of bicycle tyres come through the same

route. The value of the total illegal imports of tyres of 1.6 million is estimated to be Tk.156 million (rickshaw tyres: 1.12 million: bicycle tyres:0. 48 million).[129]

Table 5: Legal and illegal imports of tyres (Million/pieces)

Sources of imports	Rickshaw	Bicycle	Total
Legal imports	0.23	0.10	0.33
Illegal imports			
(a) Technical Smuggling	0.04	0.01	0.05
(b) Bootlegging	1.12	0.48	1.60
Total inflow:	1.39	0.59	1.98

Source: Table 4 and perceptions of survey firm 'X'
Note: There could be small deviations due to rounding of figures.

1.5 Tariffs on tyres: Bangladesh

Imports of tyres into Bangladesh are subjected to various types of duties. Table 6 presents information on the rates of these various duties for four years.

Table 6: Tariff rates (%) on imported tyres in Bangladesh

Year	CD	SD	VAT	IDSC	AIT	LF	TD	Total protective (CD+DS+LF)	Import policy
2000-01	25.0	5	15	2.5	3.0	2.5	57.5	30.0	Free
2001-02	25.0	5	15	2.5	3.0	2.5	57.5	30.0	Free
2002-03	32.5	0	15	3.5	3.0	-	58.9	36.0	Free
2003-04	30.0	0	15	4.0	3.0	-	56.5	34.0	Free

Source: NBR trade database

1.6 Tariff revenue from tyres

Total revenue collected by customs and as provided by NBR are as follows for 2002/03.

Table 7: Revenue collections from tyre imports (Taka/Crores)

Country	Import value	CD	VAT	SD	AIT	IDSC	Total Revenue
China	2.25	0.56	0.44	0.14	0.07	0.06	1.27
India	0.91	0.23	0.18	0.04	0.03	0.02	0.50
Thailand	0.12	0.03	0.02	0.01	0.00	0.00	0.07
Taiwan	0.06	0.01	0.01	0.00	0.00	0.00	0.03
Total	3.34	0.83	0.66	0.19	0.10	0.08	1.87

Source: NBR CIS database.

[129] In a study on cross border trade by Atiur Rahman and Abdur Razzaque, it was observed that illegal import of tyres from Indian was worth Tk. 40 million in 1998.

1.7 Raw materials for tyre

Tyres are made mainly from rubber of the following types: natural, synthetic, and reclaimed. Table 6 presents information on main raw materials used for tyres. Rubber accounts for about half of the raw materials required for tyres.

Table 8: Raw materials used for tyres

Raw materials	Amount (gm)	%
Natural rubber	400	33
Synthetic rubber	100	8
Reclaimed rubber	100	8
Carbon Black	200	17
Bead wire	150	13
Nylon	100	8
Rubber chemicals	150	13
Total	1200	100

Source: Firm Survey

1.8 Sources of rubber imports

Bangladesh imported rubber worth Tk.361 million in 2002/03. Thailand and Malaysia are the main sources of rubber imports. Government statistics provide data on values but not on quantities. Our survey firm (firm 'X') indicated that the current international price of rubber is $1380/MT (Tk.82, 800/MT). At this price, the quantity of rubber imported stands at 4,360 MT. Roughly two-thirds of the imported rubber are used for rickshaw tyres. The rest goes to auto rickshaw, slippers, shoes and other uses.[130] That means, 2,747 MT of imported rubber are being used for rickshaws. [131]

1.9 Import Taxes on rubber

Imports of rubber and other raw materials used for tyres are subjected to various types of duties shown in Table 9. If tyres were to be exported, exporters could lay claim to duty drawback on these taxes. For calculating the duty drawback amount, we have assumed that import duties on rubber are 20% (simple average of CD and IDSC of three rubber items).

Table 9 Duty rates of rubber (%)

Items	CD	VAT	IDSC	AIT
Natural rubber	15	0	4	3
Reclaimed rubber	22.5	15	4	3
Synthetic rubber	7.5	15	4	3
Carbon Black	7.5	15	4	3
Chemicals	7.5	15	4	3

Source: Survey firm

[130] According to Firm 'X', few factories also tend to make rickshaw tyres using mostly local rubber. But those tyres are of very inferior quality and fail to fetch good price.

[131] This stands close to our estimated 4.8 million tyre produced. Note that each tyre requires roughly 0.6 kg of rubber. Therfore 4.8 million should require 2,880 Mt of rubber.

1.10 Duty Drawback

A tyre uses 600 gm of rubber. At the going international price of rubber, it costs about Tk.50 /600 gm. Duty amount on this comes to Tk. 10. That means, if a producer decides to export tyres, she would get back Tk. 10 for every tyre exported. . For simplicity's sake, duty drawback on all raw materials (rubber plus chemicals, etc.) are subsumed under this rate.

1.11 Domestic taxes on tyres

Besides import duties, sales of tyres in the domestic market are also being subjected to various types of taxes. For example, sales of tyres are subjected to VAT at 15% and SD at 5%, for a total tax of 20%.

Table 10: Domestic taxes on tyres in Bangladesh

Taxes	2000-01	2001-02	20002-03	2003-04
VAT	15	15	15	15
SD	5	5	5	5

Source: NBR

1.12 Ex - factory Price of tyres

The ex factory price of Bangladeshi tyre is shown in Table 11. We talked with several manufacturer and traders in the markets to tell us about prices. Here we have noted ex-factory prices of the highest cost producer and the lowest cost producer.

Table 11: Ex-factory price of tyres.2004 (Tk/piece)

Serial	Source of costs	Rate	Total cost
1	Factory-gate price		129.00 ($2.15)
2	VAT/Taxes	20%	25.8
3	Transport/Handling		1.00
4	Supplier's basic cost		155.8
5	Owner's margin	3%	4.67
6	Whole seller's procurement cost (4+5)		160.47
7	Whole seller's margin	2%	3.2
8.	Whole sale price at Bansal whole sale market		163.67

Source: Survey Firm 'X' and market information from visits

From the wholesale price, we have taken out (a) wholesale margin (b) transport cost (c) owners' margin and (d) VAT/taxes to arrive at the ex-factory prices of Bangladeshi tyres. As can be seen from Table 11, the ex-factory tax free price of Bangladeshi tyre is estimated to be Tk.129 ($2.15).

1.13 Cif and fob prices of tyres

Table 12 presents information on the estimated prices of imported tyers. We have considered Indian and Chinese tyers for the sake of comparison. Again, the sources of information are traders, importers and manufacturers.

According to importers, the cif price of Indian Ralson tyre is reported to be Tk. 91 ($1.52)/piece and that of Chinese punda tyre is Tk.94 ($1.57)/piece. From this information, the average price works out to Tk.93 ($1.55)/piece. Adjusting slightly for quality or brand allegiance, we used an average cif price of Tk. 96 for simulation. Taking into consideration all other costs, the wholesale price of a piece of Indian (Ralson) tyre in "Bansal wholesale market" in Dhaka comes Tk.150/piece ($2.50) compared to Tk. 155/piece ($2.58) for the Chinese (Panda) tyres.

Table 12: Estimated cif/fob prices of tyres (Tk/piece)

Cost Calculation for Imported Tyres (Per Piece)

Serial	Details		Ralson India	Panda China
1	CIF Benapole/ Ctg Price offered by the Exporter*		91.00	94.00
2	Customs Duty	30%	27.30	28.20
3	Total		118.30	122.20
4	VAT (applicable on serial 3)	15%	17.75	18.33
5	AIT (applicable on serial 1)	3%	2.73	2.82
6	IDSC (applicable on serial 1)	4%	3.64	3.76
7	Total Cost of Procurement at Benapole/Ctg (3+4+5+6)		142.42	147.11
8	Transpotation from Benapole/ Ctg to Bansal Dhaka		1.75	1.50
9	Total Cost of Procurement by Importer (7+8)		144.17	148.61
10	Importer's Margin on Investment (Serial 9)	4%	5.77	5.94
11	Wholesale Price at Bangsal Dhaka (9+10)		149.93	154.55
	Wholesale Price at Bangsal Dhaka		150.00	155.00

1.14 Bangladesh export supply price

We use data from factories in the Dhaka area. Its domestic price is a delivered price country wide. If it were to export, it would have to incur domestic transport costs up to Benapole or Chittagong. If it exported its entire production and sold fob, it would have to add transport cost, on average, @ Tk.1.63/piece or Tk.1440/MT (Table 10). Reportedly, the transport cost of a 5 ton truck from Benapole to Dhaka is around Tk. 6000-7000. So, the firm would like to export if it would get Tk.130 (ex-factory price of Tk.129 plus Tk.1/piece).

However, the firm would also obtain its inputs duty free or obtain duty drawback of input import duties. Applying the earlier calculation of import duties on raw materials of approximately 20%, we estimates the duty drawback amount would be Tk.10/piece.[132]

Adjusting for drawback, the ex-factory price of the Dhaka plant for export would be Tk.129-10 = Tk.119 for the domestic producer. Allowing transport cost of Tk.1.6/piece fro Dhaka to Benapole/Chittagong, the estimated fob price for the local producer stands at roughly Tk. 121. That is, the plants need to get this price to be equally profitable at selling in the domestic market or for exports. This is the fob price for Bangladeshi exporters. Compared to the calculated fob price for Indian tyres at Tk.92/piece (cif price – 1%), the prices of the local producers are estimated to be higher by 32% .

Therefore, with an India-Bangladesh FTA, there is unlikely to be any Bangladeshi exports to India.

[132] There are other raw materials used for which duty drawback could be due. But for a rough approximation and to avoid complexities, we shelve them for future.

1.15 Bangladesh domestic supply curve

As mentioned earlier, there are 8 tyre-manufacturing plants. We assume that the marginal unit is making normal profit at ex-factory price excluding VAT of Tk. 129/piece($2.15), and that all other units are operating profitably (since there was no report of a shut down over the years). For example, the Report of the Census on Manufacturing Industries (CMI) for 1997-98 reported that there were 6 plants producing tyres and tubes in Bangladesh. It appears that during the last six years or so, there was no plant closure; we can a priori assume that the tyre producing plants are running profitably. For the purpose of drawing the Bangladesh supply curve, we assumed an intra-marginal supplier costing at 7% below that of the marginal supplier (see Figure 1).

The effects of increased import competition from Indian suppliers with FTA would probably (1) cause high cost producers to close or (2) cause the Bangladesh producers to cut prices and reduce costs by operating at higher capacity utilization levels. Situation (1) could be envisaged as a move down a short run supply curve with all remaining producers continuing to operate at below full capacity.

For the short run case, we suggest assuming that-with below capacity operation continuing-the marginal plant breaks even at Tk.129/piece and that the least-cost plant could break even at an ex-factory price about 7% lower (say Tk. 121)[133]. We will assume a linear supply domestic supply curve these two points over the total production of 4.8 million or approximately 5 million pieces. This corresponds to an average supply elasticity[134] w.r.t. the ex-factory price over this range of (4.8/2.4)/(8/125) = 31.25. If all the plants were to close, the producer surplus loss would be Tk.0.5*8*4.8 million = Tk.19.2 million =$0.32 million (at Tk.60=$1). [Figure 1]

In addition, there would be some producer surplus losses resulting from unemployed labor and other resources previously employed in tyre production i.e. resources employed in inelastic supply. The size of the producer surplus loss depends on the slope of the supply curve and the production costs of the most efficient plant relative to the marginal plant. There could also be induced economic losses through the effects of any unrepayble bank loans which might have financed them.

2. INDIAN CASE

2.1 Domestic production

We do not have up-to-date data on production of tyres in India. However, we find from Samantak and Pohit (2003) study that, in 2001/02 (the recent year shown in their paper), India produced 12700 thousand pieces of tyres. They also assumed a compound growth rate of 4.22% per annum. Applying the assumed growth rate to the benchmark period, we find that the total tyre production stands at 13.8 million pieces in. Taking that figure into consideration, the total tyre production in Bangladesh accounts for about 38% of the Indian production.

2.2 Tariffs on tyres: India

Table 13 presents information on the duty rates prevailing in India..

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133 In fact, firm 'X 'informed us that the in the available situation, the dominating firm-or the most efficient firm-can supply at 8-10% lower than the mid-efficient ones which again, supplies at 4-5% lower than the most inefficient ones. We have assumed an average of 10% in between.

134 Using the arc elasticity principle, ((Q1-Q2)/0.5(Q1+Q2))/((P1-P2)/0.5(P1+P2)

Table 13: Import duties in India

Year	Basic	Tariff concession (% 0n basic)	Addle.	Sadd.	Total duty	Import policy
2002-03	30	50	4	4	24.38	Free
2003-04	30	50	16	4	38.74	Free

Source: Smantak and Pohit (2003) Case study 4: Bicycles and Parts.

2.3 Domestic taxes: India

The study by Samantak and Pohit (2003) also provide information on the level of taxes and duties on tyres in India and Bangladesh. According to them, Indian tyres tend to face 16% excise duties and 4% sales tax domestically. Domestic tax rates seem to be same in both countries.

2.4 Domestic transport costs

Information obtained from tyre traders in Kolkata suggest that a truck of 10 tons costs Rs. 15000 (or Tk.18000) to transport tyres from Ludhiana to Kolkata. The cost of transport per tyre is then Rs. 1.9 or Tk.2.30. Added to this is the transport costs from Kolkata to Benapole @ Tk.0.50/piece. Thus the total transport cost from factory to the port is Tk.2.80/piece.

2.5 Ex-factory price

Indian domestic ex-factory prices are needed to ascertain whether Bangladesh exporters are likely to be competitive in India with an FTA or PTA. The assumption here is that they include only long run "normal" profits, so that there would not be much scope for cutting prices in the face of import competition from Bangladesh, at least in the long run. Of course there could be a parametric change in efficiency and cost reductions. Domestic ex-factory prices are also a first step towards the estimation of long run export supply prices i.e. the price at which Indian exporters would be able to supply export markets profitably on a long run basis. The main differences between domestic ex-factory price and export supply price are export incentives (e.g. drawback) that are paid on exports (deducted from the domestic ex-factory price) and costs that are or would be incurred in exporting but not in selling in domestic markets. The purpose is to arrive at fob price that would be

Given the information from importer about cif price, we have calculated the ex-factory prices by netting out some of the costs associated with exports. To repeat, the cif price of a piece of Indian Ralson tyre was shown to be Tk.91 ($1.52) (Table 10). Deducting 1% from this, we arrive at Tk.Tk.90 ($1.5) as fob price. The transport cost from factory to port is estimated to be Tk. 2.8/piece. The ex-factory price thus stands at Tk.87 ($1.45)/piece, assuming no domestic taxes are imposed.

3.0 Economic Welfare Analysis

The following economic welfare analysis relates to rickshaw tyres, not tyres as a whole. Since rickshaw tyres account for 91% of domestic tyre production and 77% of the total imports-as argued earlier- we have considered only rickshaw tyres. Besides, we faced a serious dearth of data pertaining to bicycle industry and its correlates.

3.1 Assumptions

An FTA would involve zero tariffs and no QRs on all trade between India and Bangladesh. However, the present external MFN tariffs would not change.

a. Indian tyre prices and costs are about equal and on some case, lower than others. Consequently, with FTA, Indian supplies would replace ROW. The protective tariff to the tune of 30 or so would make ROW uncompetitive.
b. With FTA and assuming all tyres come from India, imports of arw materials like rubber would stop. At persent, 70% of the total rubber imported is reported to be destined for tyre Industries. The protective MFN tariff on natural rubber is 19%. However, whether rubber would be imported would depend on how much production capacity in tyre industries are increased after FTA.
c. Estimated Bangladesh export supply price fob considerably exceed domestic ex-factory tyre prices in India. Therefore at current marginal long run costs, there is no potential for Bangladesh exporting to India.
d. The total Bangladesh production is estimated to be 38% of total tyre production in India. Given that India produces heavy tyres (for cars, trucks, motorcycles, etc.) this increase in demand for rickshaw/bicycle tyres is unlikely to put a resource constraint on supplies to Bangladesh. Therefore the assumption is that Indian supply curve is horizontal or perfectly elastic.

3.2 Results

The results are shown in Figure 1. Though average cif price was found to be Tk. 93, we adjusted the price upwards to reflect the fact that some Bangladeshi brands were selling at a wholesale rate higher than the imported brands. This perhaps reflects brand loyalty or better quality. Thus, we assumed cif price to be Tk. 96/piece and, adjusting for 34% protective tariff, arrived at Cif+ tariff price of Tk. 129/piece. Elasticity of demand for tyre was assumed to be -1.5. Following a reduction in the prices of tyres (poet-FTA) by 34%, we have estimated that the total demand for tyres in Bangladesh would increase to 9.8 million. Of course, higher elasticity assumptions would yield higher demand figures.

Existing situation (pre-FTA, Figure 1)

At the market equilibrium price Tk. 129 (tariff inclusive), current demand for tyres is 6.8 million (N), of which 4.8 million (M) is supplied from domestic sources and the balance 2 million pieces are imported. Of the two million, official imports account for 0.33 million (CD), while 1.67 million comprise of smuggled tyres (DQ, mostly boot-legged). Equilibrium is at P. Government revenue is GFDC while FPDQ reflects absence of revenue but comprises smuggling transaction costs and rents. Due to the substantial quantity smuggled, it is likely that equilibrium price may not fully reflect the incidence of tariff.

First Simulation:
(Post-FTA) India exports to Bangladesh at international (ROW) prices

Using short run Bangladesh supply curve

<u>Implications For Bangladesh</u>
Equilibrium price falls to the pre-tariff cif price of Tk. 96. Indian exporters supply at this price eliminating any imports from ROW.
1. **Gain**: Increase CS = area ABEP =33*6.8 + 0.5*(33x3) million pieces= Tk. 224.4 + 49.5 = Tk.273.9 million=$ 4.56 million
2. **Loss**: Decrease PS = area AHG= Tk.0.5(8x4.8)= Tk.90.2 = $0.32 million
3. **Saving excess resource costs** =Area HBCG - area JKLR. This is clearly positive and reflects trade creation. However, HBCG is part of CS already taken note of. So only JKLR = 10*4.8 (=48) need to be subtracted from CS, to obtain net gain.
4. **Loss**: Decrease in customs revenue from tyre imports=area GCDF= Tk.(129-96)* .33 million = Tk.10.89 million=$ 0.18 million. However, at the new demand of 9.8 million tyres, if 5% valued addition

occurs in retail trade on imported tyres, and domestic VAT is 15%, that could yield post-FTA revenues of 0.15*0.49= Tk.0.07 million. In this event, net revenue loss for govt would be Tk. 10.89 – Tk. 0.07 = Tk. 10.82 million = $0.18 million

5. Decrease in customs revenue from rubber imports=area JKLR has already been covered in item 3 above.

6. **Net economic welfare**=(1-3 – 2 – 4) = Tk. 273.9 – Tk. 48 – Tk. 90.2 – Tk. 10.82 = Tk. 124.88 million = $ 2.08 million

Thus, in the case of rickshaw/cycle tyres, we find that there is positive gain in economic welfare to Bangladesh.

However, this would change if we allow for "technical" and "bootleg" smuggling, discussed earlier, which will affect the Customs revenue loss on tyre imports. If most of the goods are smuggled with low transaction costs, one could either count the loss of the rents from smuggling as a welfare loss and treat that similarly to the Customs revenue reduction, or one could argue that the loss of these economic rents should not be counted in the overall welfare calculation, in which case they would not be deducted in estimating the net welfare effect. If the FTA eliminates the smuggling it will also eliminate the transaction costs of the smuggling, which should count as an additional benefit of the FTA. As mentioned before, it is likely that imports from India diverted back to legal official channels will pay VAT and other domestic taxes that were previously avoided, and that could be counted as an additional benefit, depending on how you want to treat the economic rents from the evasion of these taxes. On the other hand, our analysis of informal trade shows that part of the reason for smuggling is that the transaction costs are actually lower than the transaction costs of formal trade, the implication being that the smuggling would continue even under free trade. The point is that an FTA while substantially reducing smuggling is unlikely to eliminate such transactions due to the significant transaction costs involved in formal trade.

Implications For India

We assumed earlier that Bangladesh demand for tyres even after FTA would not result in resource constraints in India so as to allow India to export along a horizontal supply curve. Thus, following an FTA, Indian exporters would price their exports to Bangladesh at the world price, on a horizontal supply curve, or close to horizontal, so that the post-FTA equilibrium price is the same as the world price, or exceeds it by a very small to negligible margin. This means in turn that the producer surplus for the Indian exporters (and indirectly for India, since the exporters' profits are taxed) will also be very small to negligible. However, with Indian exports falling to 8.6 million tyres, there is likely to be reduction in employment and incomes in India as a result.

Gain: Increased PS =area above Indian supply curve =negligible.

Net economic welfare: Bangladesh and India

Tk. 124.88 million = $ 2.08 million +negligible gain of India

Net ROW

ROW would lose from the displacement of rubber imports into Bangladesh; but this could well be compensated by rubber imports into India following FTA.

Second Simulation

(Post-FTA) India exports to Bangladesh at above international (ROW) price but at below cif+tariff prices

In this case, we assume that the equilibrium price lies between ROW and ROW+tariff (between Tk.96 and 129) at say Tk.108, point S. The total post-FTA demand for tyres would rise from 6.8 million to 8.6 million, assuming an elasticity of demand of 1.5.

Using short run Bangladesh supply curve

Implications For Bangladesh

1. **Gain**: Increase CS = area ASUP =21*6.8 + 0.5*(21x1.8) million = Tk. 142.8 + 18.9 = Tk.161.7 million=$ 2.69 million.

2. loss of PS = area AHG = 0.5*8x4.8 = Tk. 19.2 million = $0.32 million

3. **Saving excess resource costs** =Area HSXG - area JKLR. This is clearly positive and reflects trade creation. However, HSXG is part of CS already taken note of. So only JKLR = 10*4.8 (=48) need to be subtracted from CS, to obtain net gain.

4. **Loss**: Decrease in customs revenue from tyre imports=area GCDF= Tk.(129-96)* .33 million = Tk.10.89 million=$ 0.18 million. However, at the new demand of 8.6 million tyres, if 5% valued addition occurs in retail trade on imported tyres, and domestic VAT is 15%, that could yield post-FTA revenues of 0.15*0.43= Tk.0.06 million. In this event, net revenue loss for govt would be Tk. 10.89 – Tk. 0.06 = Tk. 10.83 million = $0.18 million

5. Decrease in customs revenue from rubber imports=area JKLR has already been covered in item 3 above.

6. **Net economic welfare**=(1-3 – 2 – 4) = Tk. 161.7– Tk. 48 – Tk. 19.2 – Tk. 10.83 = Tk. 83.67 million=$1.39 million.

Thus, in the case where Inida's export supply curve is upward sloping, we find that there is positive gain in economic welfare to Bangladesh , but it is less than in the case where Indian exports are on a horizontal supply curve at the pre-FTA ROW cif price. There is thus some extra cost of trade diversion taking place where Indian exporters face rising supply curves as compared to the horizontal ROW supply curve.

However, this would change if we allow for "technical" and "bootleg" smuggling, discussed earlier, which will affect the Customs revenue loss on tyre imports. If most of the goods are smuggled with low transaction costs, one could either count the loss of the rents from smuggling as a welfare loss and treat that similarly to the Customs revenue reduction, or one could argue that the loss of these economic rents should not be counted in the overall welfare calculation, in which case they would not be deducted in estimating the net welfare effect. If the FTA eliminates the smuggling it will also eliminate the transaction costs of the smuggling, which should count as an additional benefit of the FTA. As mentioned before, it is likely that imports from India diverted back to legal official channels will pay VAT and other domestic taxes that were previously avoided, and that could be counted as an additional benefit, depending on how you want to treat the economic rents from the evasion of these taxes. On the other hand, our analysis of informal trade shows that part of the reason for smuggling is that the

transaction costs are actually lower than the transaction costs of formal trade, the implication being that the smuggling would continue even under free trade. The point is that an FTA while substantially reducing smuggling is unlikely to eliminate such transactions due to the significant transaction costs involved in formal trade.

Implications For India

We assumed earlier that Bangladesh demand for tyres even after FTA would not result in resource constraints in India so as to allow India to export along a horizontal supply curve. Thus, following an FTA, Indian exporters would price their exports to Bangladesh at the world price, on a horizontal supply curve, or close to horizontal, so that the post-FTA equilibrium price is the same as the world price, or exceeds it by a very small to negligible margin. This means in turn that the producer surplus for the Indian exporters (and indirectly for India, since the exporters' profits are taxed) will also be very small to negligible. However, with Indian exports rising to 8.6 million tyres, there is decrease in employment and incomes in India as a result.

Gain: Increased PS =area above Indian supply curve = Area SBU =Tk.0.5*(108-96)* 8.6 million = Tk.51.6 million = $0.86 million.

Net economic welfare: Bangladesh and India
Tk. 87.63 million (Bangladesh) +Tk. 51.6 million (India)= Tk. 139.23 million=$2.3 million.

Net ROW

ROW would lose from the displacement of rubber imports into Bangladesh; but this could well be compensated by rubber imports into India following FTA.

Third Simulation
(Post-FTA) India exports to Bangladesh at above international (ROW) price but at below cif+tariff prices. Collusion between Indian exporter and Bangladesh supplier could leave Bangladesh production in tact, but the profit-maximizing price of the Indian exporter is well above ROW cif price.

For simplicity, in this simulation, we ignore smuggling and all 2 million tyre imports are legal. Pre-FTA , domestic production is at 4.8 million, and most imports come from ROW, with India contributing a small amount. With ROW cif price at Tk. 96, post tariff price is Tk. 129, as in the other simulations.

Rather than let Bangladesh producer be wiped out of the market, what happens if Indian exporters choose to collude. Given the demand (or average revenue) curve faced by Indian exporters, they can seek a profit-maximizing price at the intersection of AR and LRMC (point Z), with price = MU=OH, sufficiently high to leave some relatively efficient Bangladeshi producers in the market, say Tk. 123. Total demand in Bangladesh, at the colluded price, will then be at OP (=7.5), with OL (=1.3) supplied by domestic intra-marginal suppliers at a price of Tk. 123.

Welfare change in Bangladesh

1. **Gain**: Increase in CS = area AHQF = [(129-123)x 6.8] + 0.5*6*0.7= 6*6.8+3*0.7 = 40.8+2.1 = Tk. 42.9 million = $0.72 million
2. **Loss**: Decrease in PS = area AHWG = AG*AH – WUG = 4.8*6 – 0.5*6*3.5 = Tk.18.3 million = $0.31 million

3. **Loss**: loss of customs revenue = GCDF = (129 – 96)* = Tk. 66 million
Loss of customs revenue = XYLR = revenue from tariffs on inputs = 10*3.5= Tk.35 million. Total loss of customs revenue = Tk. 101 million = $ 1.68 million, ignoring what VAT revenues might arise from domestic retail.
4. **Net change in economic welfare in Bangladesh** = 1 – 2- 3 = 42.9 – 18.3 – 101 = - Tk.76.4 million = - $ 1.27 million.

Welfare change in India:

India's gain is captured from the huge increase in producer surplus = HUZVB = BH*HU – VZC = 23*4.8 – 0.5*3.5*5.7 = 110.4 – 9.975 = Tk.100.425 million = $1.67 million.

Overall, there is net gain in economic welfare between the two countries, but the distribution of benefits is skewed against Bangladesh, in this instance.

This situation could change if Indian producers decide to invest in Bangladesh tyre production bringing cost efficiency and thereby shifting the Bangladesh supply curve down. Higher production in Bangladesh would mean higher producer surplus which, in the case of India, would be lower in this scenario. But Indian investors gain from profit repatriation. Such distribution of gains emanating partly from trade and partly from investment, help raise aggregate economic welfare and are able to address some of the contentious political economy issues that might impede trade if distribution of gains happen to be uneven.

Figure 1

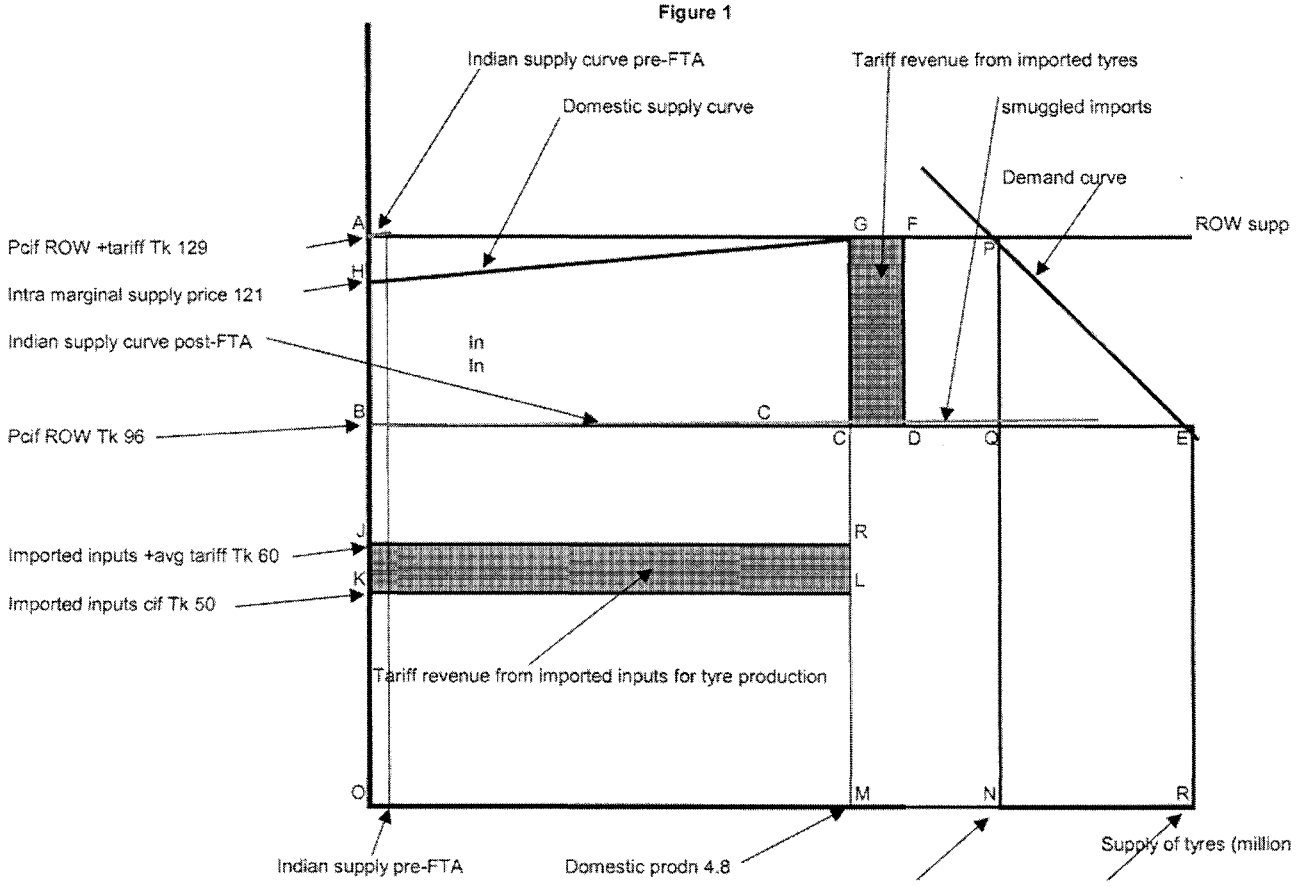

Indian supply curve pre-FTA
Tariff revenue from imported tyres
Domestic supply curve
smuggled imports
Demand curve
A
G
F
ROW supp
Pcif ROW +tariff Tk 129
H
P
Intra marginal supply price 121
Indian supply curve post-FTA
in
In
B
C
Pcif ROW Tk 96
C
D
Q
E
J
R
Imported inputs +avg tariff Tk 60
K
L
Imported inputs cif Tk 50
Tariff revenue from imported inputs for tyre production
O
M
N
R
Indian supply pre-FTA
Domestic prodn 4.8
Supply of tyres (million

Figure 2

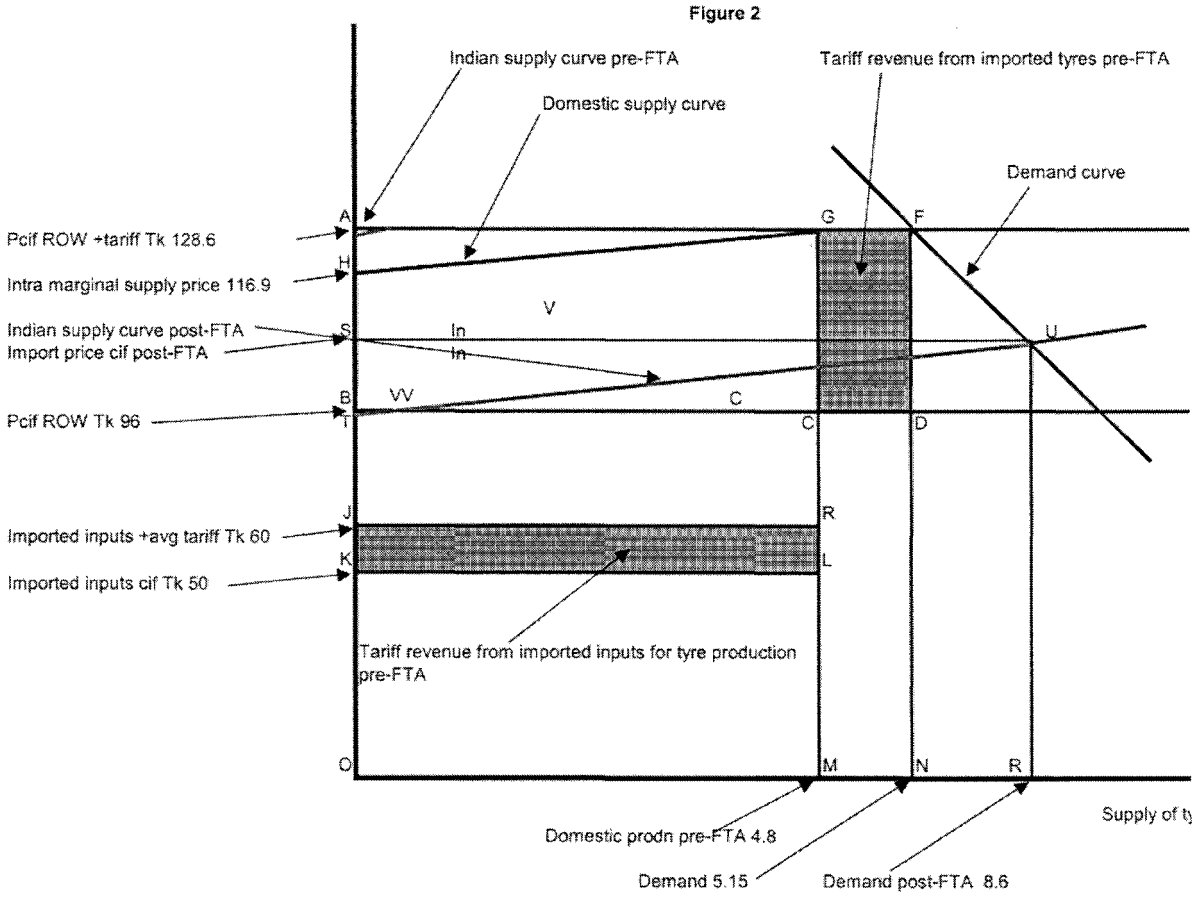
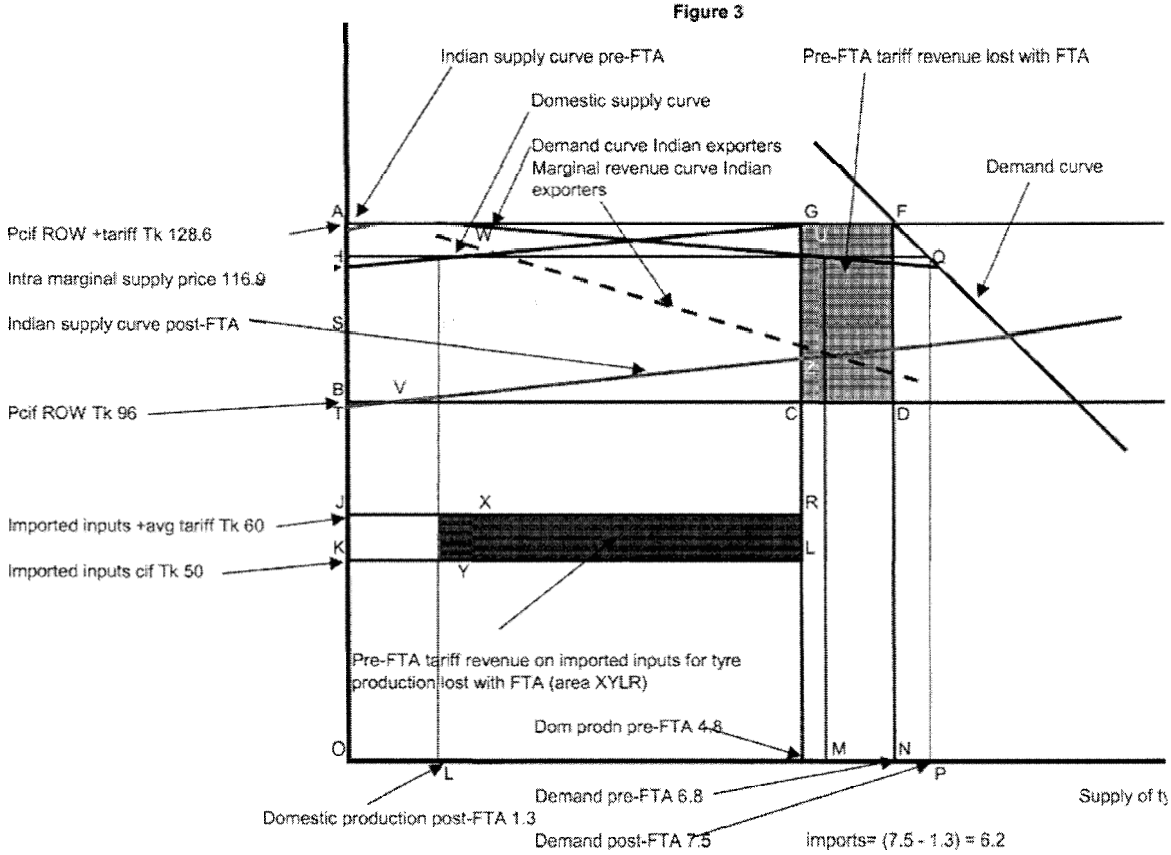

Indian supply curve pre-FTA
Tariff revenue from imported tyres pre-FTA
Domestic supply curve
Demand curve
Pcif ROW +tariff Tk 128.6
Intra marginal supply price 116.9
Indian supply curve post-FTA
Import price cif post-FTA
Pcif ROW Tk 96
Imported inputs +avg tariff Tk 60
Imported inputs cif Tk 50
Tariff revenue from imported inputs for tyre production pre-FTA
A
H
S
B
T
J
K
O
G
F
U
C
D
R
L
M
N
R
V
In
In
VV
C
Domestic prodn pre-FTA 4.8
Demand 5.15
Demand post-FTA 8.6
Supply of ty

Figure 3


Indian supply curve pre-FTA
Pre-FTA tariff revenue lost with FTA
Domestic supply curve
Demand curve Indian exporters
Marginal revenue curve Indian exporters
Demand curve
Pcif ROW +tariff Tk 128.6
Intra marginal supply price 116.9
Indian supply curve post-FTA
Pcif ROW Tk 96
Imported inputs +avg tariff Tk 60
Imported inputs cif Tk 50
Pre-FTA tariff revenue on imported inputs for tyre production lost with FTA (area XYLR)
Dom prodn pre-FTA 4.8
Demand pre-FTA 6.8
Domestic production post-FTA 1.3
Demand post-FTA 7.5
imports= (7.5 - 1.3) = 6.2
A
G
F
W
O
S
V
B
T
C
D
J
X
R
K
L
Y
O
M
N
L
P