SMUGGLING AND THE ECONOMIC WELFARE CONSEQUENCES OF AN FTA: A CASE STUDY OF INDIA - BANGLADESH TRADE IN SUGAR

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ACRONYMS	
APEDA	Agriculture and Processed Foods Export Development Authority
BSFIC	Bangladesh Sugar and Food Industries Corporation
DEPB	Duty Exemption Passbook
ECA	Essential Commodities Act
FTA	Free trade agreement
HS	Harmonized System
ISMA	Indian Sugar Manufacturers Association
LDF	Landed duty free
MFN	Most Favoured Nation
NTB	Non Tariff Barrier
PDS	Public Distribution System
QR	Quantitative restriction
ROW	Rest of the world
SAFTA	South Asia Free Trade Agreement
SAP	State Advised Price
SAPTA	South Asia Preferential Trade Agreement
SMP	Statutory Minimum Price
STC	State Trading Corporation
UP	Uttar Pradesh
VAT	Value added tax

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1. INTRODUCTION

There is an extensive economics literature on preferential trading arrangements-both theoretical and applied[1]. To simplify, this literature typically treats changes in "economic welfare" resulting from a preferential agreement as the sum of changes in consumers' surplus, producers' surplus and government revenue from tariffs (customs duties). This provides a framework for understanding the impact of preferential trade policies in the real world, but many complexities need to be considered[2]. For example, 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 e.g. 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 . 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.

Another complication, especially important in developing countries, is the existence of various kinds of smuggling and illegal trade. It is useful to distinguish two kinds of illegal trade, traditional smuggling or "bootleg" trade which by-passes Customs posts , 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 are prevalent in South Asia, especially in the border areas between India and its neighbours. They 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 land borders, and "technical" smuggling at the principal sea ports and at the major land Customs posts. In the case of India-Bangladesh trade, the Petrapole-Benapole border crossing is especially important, as it lies on the main roads that link Kolkata and West Bengal with Jessore, Dhaka and the rest of Bangladesh.

In principle "bootleg" smuggling could be organized by large and medium scale manufacturers and traders, but the evidence in South Asia is that most of it is run by relatively small local traders and that it occurs in border areas with the participation of local people with contacts on both sides of the border[3]. 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

*This paper is a revised and updated version of one of the chapters I contributed to a World Bank report on India-Bangladesh trade : World Bank (2006), Vol II.

[1] Summaries of the main issues covered in this literature are in Panagariya (2000) and World Bank (2000).

[2] Partial equilibrium methods for dealing with various complexities in industry level studies are discussed in Pursell (2004)

[3] There is an extensive literature on India-Bangladesh informal trade. See Bayes (2004), Pohit and Taneja (2000), Chaudhari et al (1995), Taneja (2001), Government of India (2002), Rahman and Razzaque (1998), Bakht (1996), Ghafur et al (1991). Some of these studies and some recent findings are summarized in World Bank (2006), Vol I, pp53-61.

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 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. 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 in this way 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 economic welfare consequences can be analyzed following normal principles. For example:

<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 and legal Indian 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)

<u>For the exporting country (example India)</u>
+ 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 legal exports to Bangladesh displaced by the smuggled exports[4]
- consumers' surplus loss if the smuggled exports lead to price increases in India

"Technical" smuggling refers to the many techniques that 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.

Both "bootleg" border smuggling and "technical" smuggling and the associated transaction costs and economic rents considerably complicate the task of simulating the likely welfare consequences of an

[4] 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.

FTA. However, the principal determinants of the broad outcome remain the same i.e. after taking account of the prior existence of the smuggling, whether or not the diversion of trade from the rest of the world (ROW) that occurs is accompanied by price reductions in the importing country. At one extreme, if there are no changes in domestic prices, 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.

In a partial equilibrium setting, this paper discusses the likely impact of "bootleg" and "technical" smuggling in the sugar trade between India and Bangladesh, on the economic welfare consequences of a hypothetical bilateral FTA which would include the sugar industry. India is 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 and khandsari 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 the Indian cane harvest is used in small artisanal or semi-artisanal operations to produce gur, which is a sweetener 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 to 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[5], 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.

The rest of this paper is organized as follows. The next section (section 2) summarizes some principal features of the Indian sugar 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 sugar 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 a government firm (BSFIC) 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

[5] 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.

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.

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. [6]

Structure In 2004 there were about 507 officially recognized sugar mills, of which 174 were private, 33 public sector, and 300 cooperatives with farmer participation. The cooperatives are mostly in 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%.[7] 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[8]) had increased from about 11 kg /person in the mid 1980s to about 15.5 kg/person in 2004, whereas combined gur and khandsari consumption had declined from about 11 kg/person to 9.8 kg/person in 2004.[9]

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.

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6 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).

7 CMIE (2004, July)

8 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.

9 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.

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.

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[10], 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[11]. 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

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

[11] 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.

understating production and making unrecorded free market sales is one of the well recognized classic sources of "black money" in India.

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 at present two private exchanges are 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[12]. 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[13]. 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[14], 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 respectively 30 percent and 10 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[15]. The 1991/92 reforms "decanalised" sugar exports by allowing sugar to be exported by ISGIEIC[16], a company owned

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[12] 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.

[13] 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.

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

[15] State Trading Corporation

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

by the 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 1991-2008

	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
2006	60	60	85	ECA
2007	60	60	85	ECA
2008	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[17] 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

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	30	----	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[18], 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[19] 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[20]. 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 permitted mills to sell the refined sugar in the domestic market, provided

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

[18] 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.

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

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

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 well 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 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[21] 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[22]. 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.

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

22 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

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 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[23]. 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. But 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 18-20 million tons during 1999-2003 (Fig 2). Production slumped in 2004 and 2005, but recovered again in 2006. These changes principally reflect 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 38 percent between 1994 and 2005[24]. 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

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

[24] The average real Rupee price was about the same in 2005 as in 2002.. The increase in the US dollar price shown in Fig 3 is principally due to appreciation of the Indian Rupee/dollar exchange rate during this period.

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 16 years, it has also been strongly cyclical, with three periods (1991-94, 1995-1998, and 1999-2005) in each of which expansion was followed by contraction. As discussed previously, the expansionary phases of these 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 4.4 million tons by March 2004. As already discussed, exports during this episode were stimulated by export subsidies that were increased to keep exports profitable as world prices declined.

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[25]. 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.

[25] Pursell and Gupta (1998)

Fig 1
India: Sugar Cane Production 1991-2006
(Oct-Sept sugar seasons)

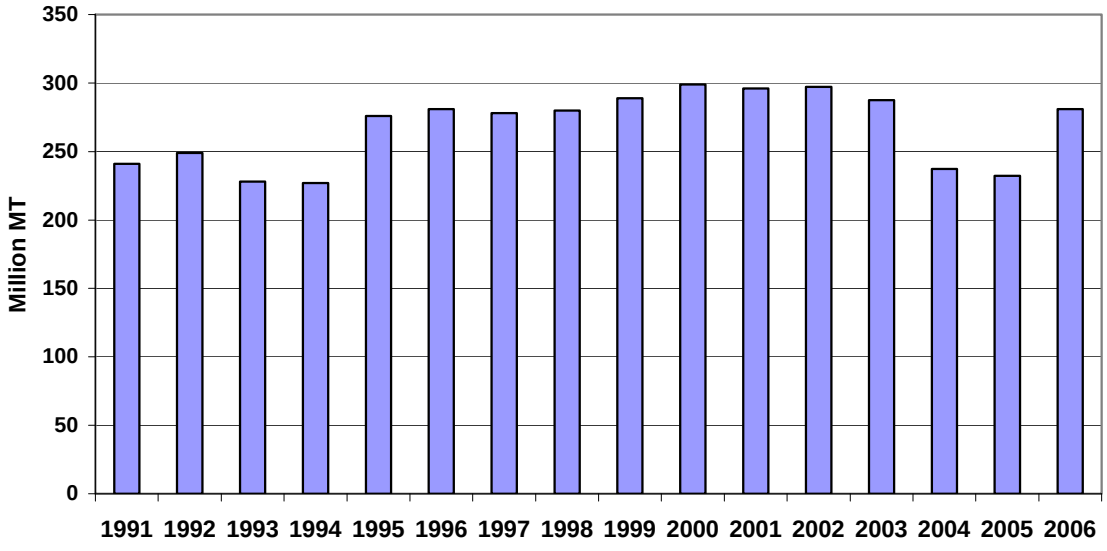
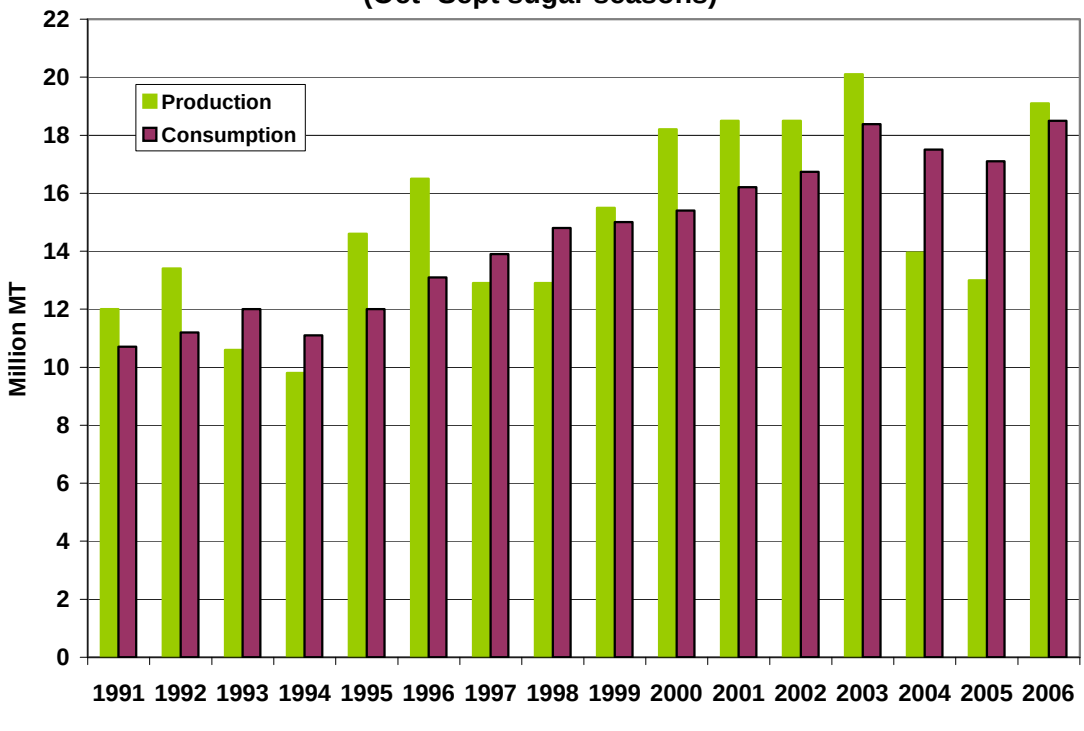
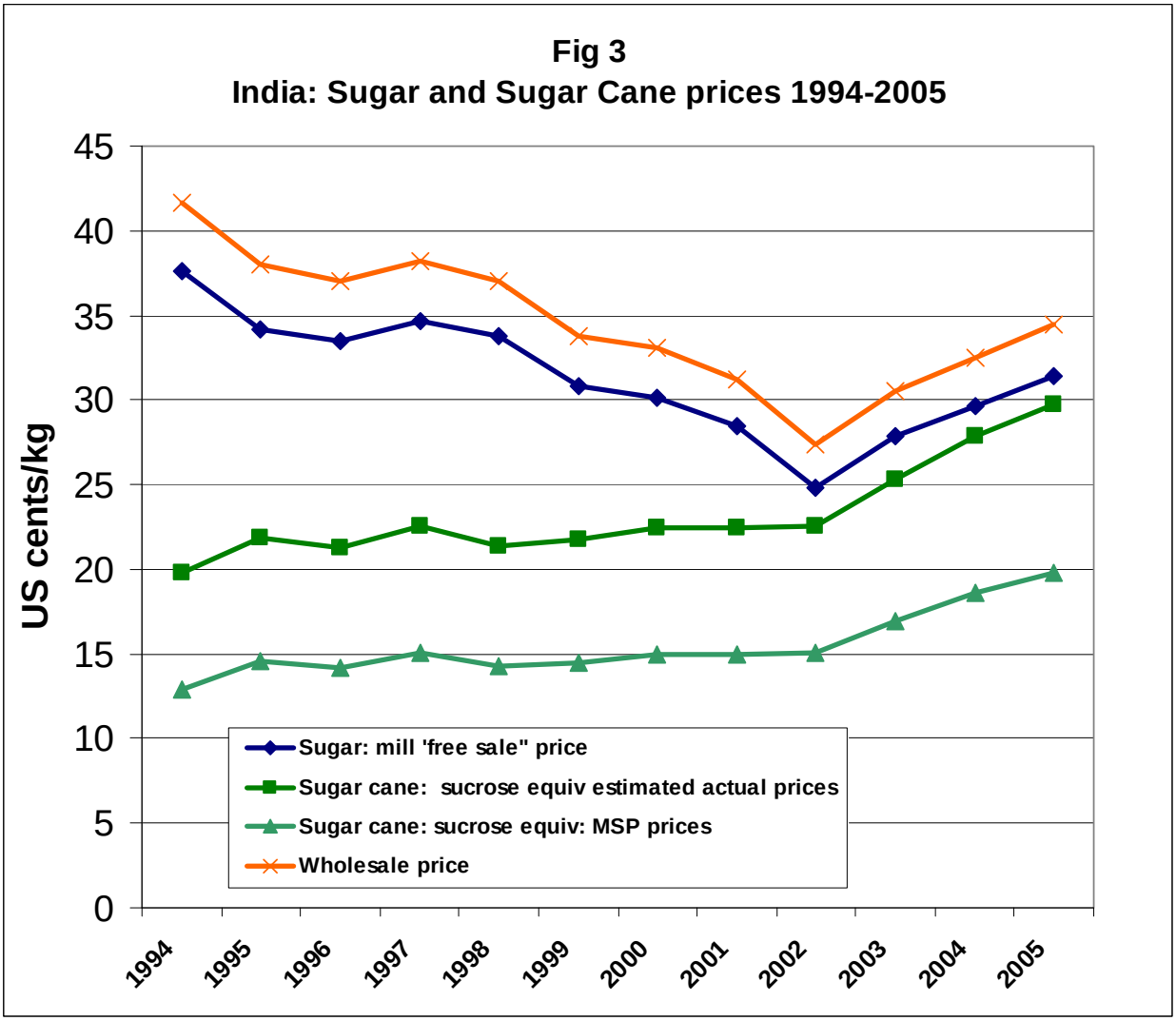


Fig 2
India: Mill Sugar Production and Consumption 1991-2006
(Oct -Sept sugar seasons)





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[26], 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

[26] 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.

			Table 4				
		India: Sugar Exports and Imports FY 1997 to FY 2007					
	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	41	1596
2004	304	655	959	74	0	74	884
2005	30	72	102	932	0	933	-831
2006	97	190	287	554	5	559	-271
2007	***211***	***545***	***756***	***0***	***1***	***1***	***755***
Sources: DGFT website: trade data bank. 2006/07 first six months only							

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.

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.
The next section of this paper on Bangladesh, shows 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[27]. 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.

[27] For a fascinating account of how this border trade operates in practice see Chaudhari et al (1995), Chapter 4.

Table 5		
India and Bangladesh:Domestic and Border Prices for Refined Sugar		
	($US cents/kg)	
	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.		

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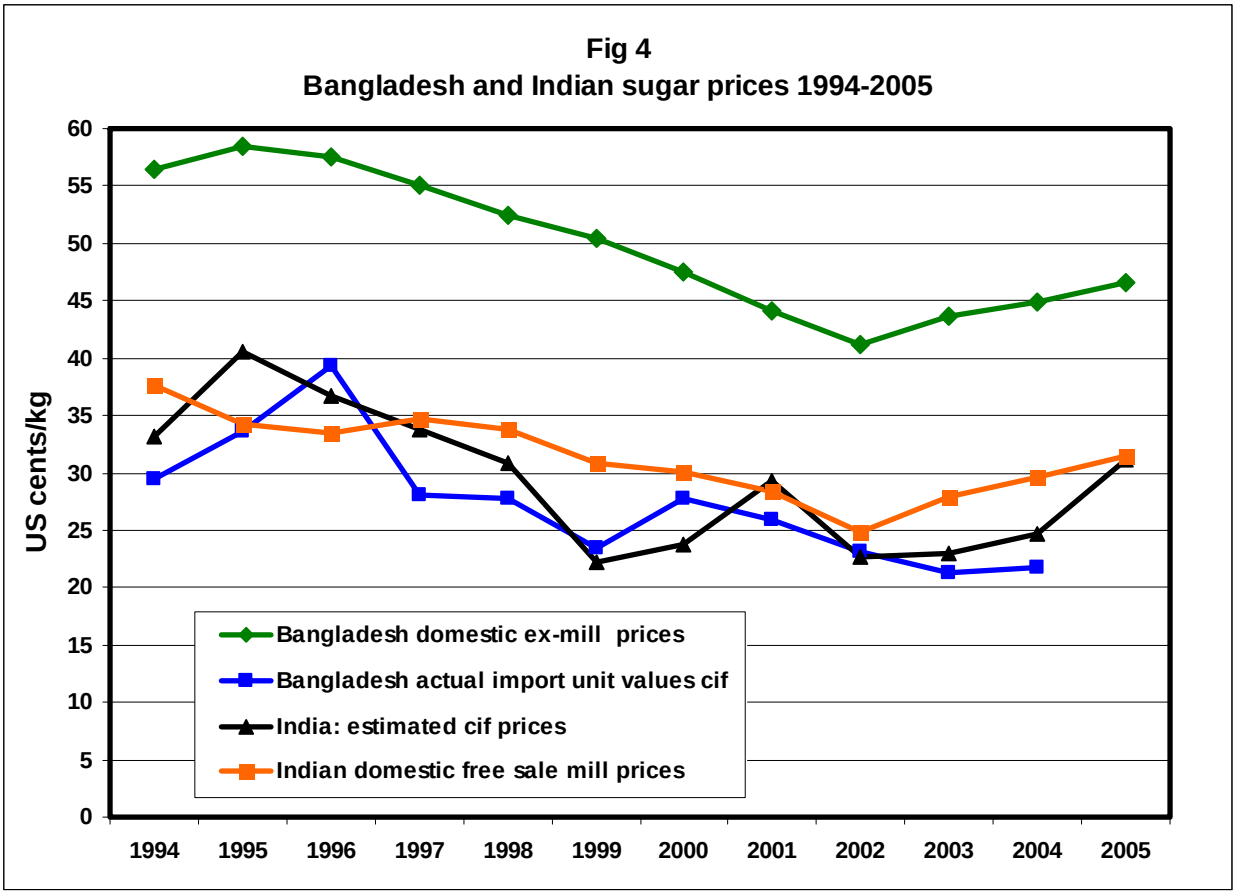
Smuggling at all these levels requires connivance and illegal payments or benefits to officials, not only at the border but in state and local regulatory and tax jurisdictions as well. The hypothesis that a substantial part of the smuggling to Bangladesh may start with illegal sales at sugar mills is plausible in view of the well documented role of the sugar sector in the generation of black money in India.[29] 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.

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

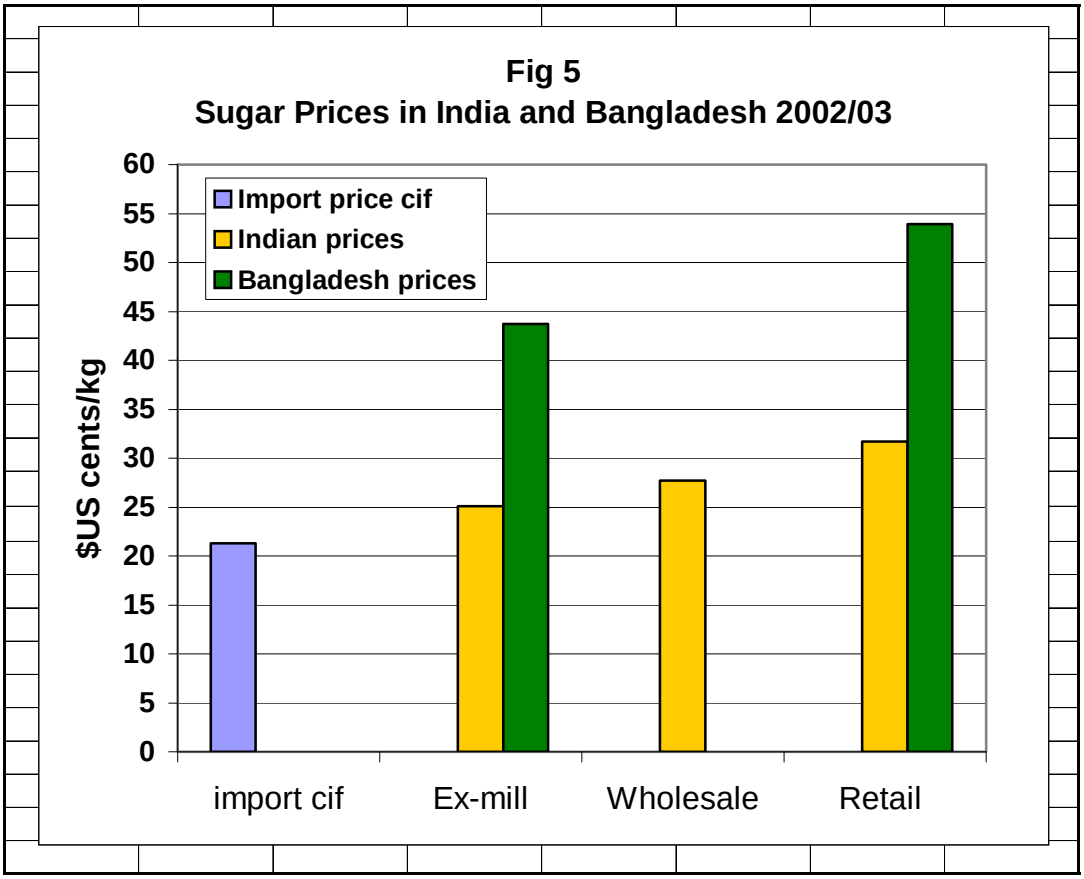


3. The Bangladesh industry: structure, policies and recent developments

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.

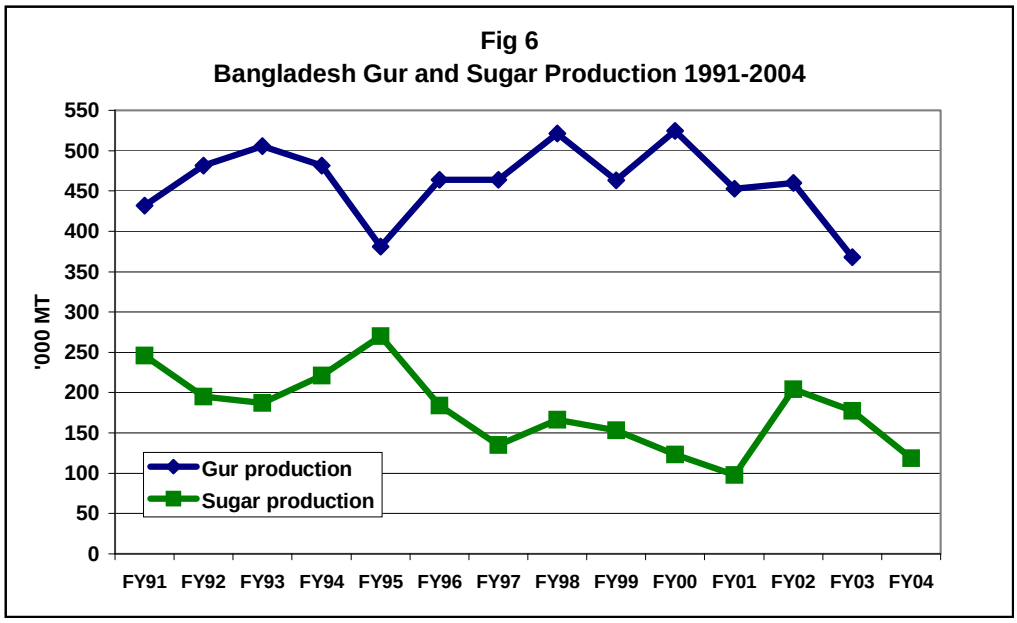
Structure. The sugar industry in Bangladesh is dominated by the Bangladesh Sugar and Food Industries Corporation (BSFIC), until recently a public sector sugar milling monopoly. Up to June 2002 BSFIC also shared a monopoly over sugar imports with another government firm, the Trading Corporation of Bangladesh. 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. During 2005 it was announced that two other mills were 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 over manning (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[30]. As a result, in any given season some

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



of its mills are not operating at all (for example, the Kaliachapra mill which was privatized in 2004 had been closed since 1994[31]) and in some seasons others operate far below their capacity.

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



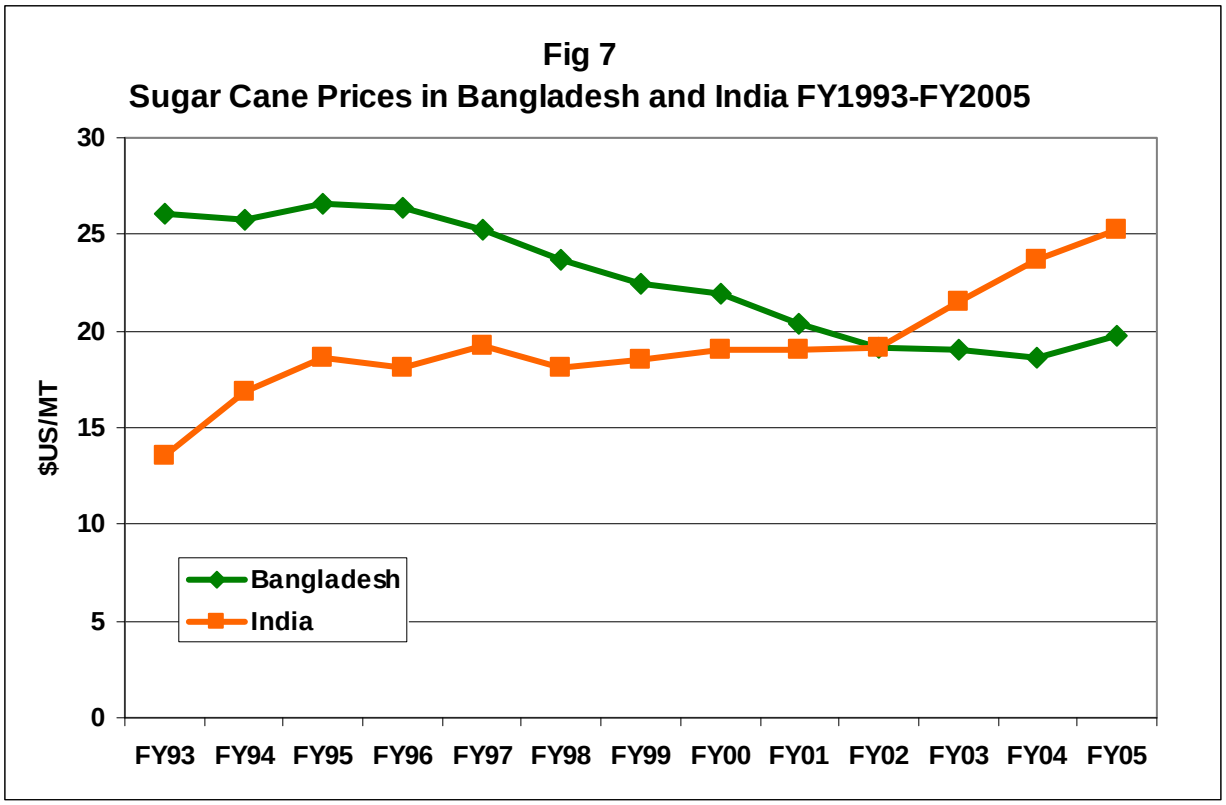
Various reports state that the combined sugar production capacity of BSFIC's mills (defined for a October-September sugar year) is about 210, 000 MT, but its actual production in favourable years has been more e.g. it was 270,000 MT in 1994/95. However, it fluctuates very widely (Fig 6) and has been 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 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[32]. 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)[33]. 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%.[34] 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

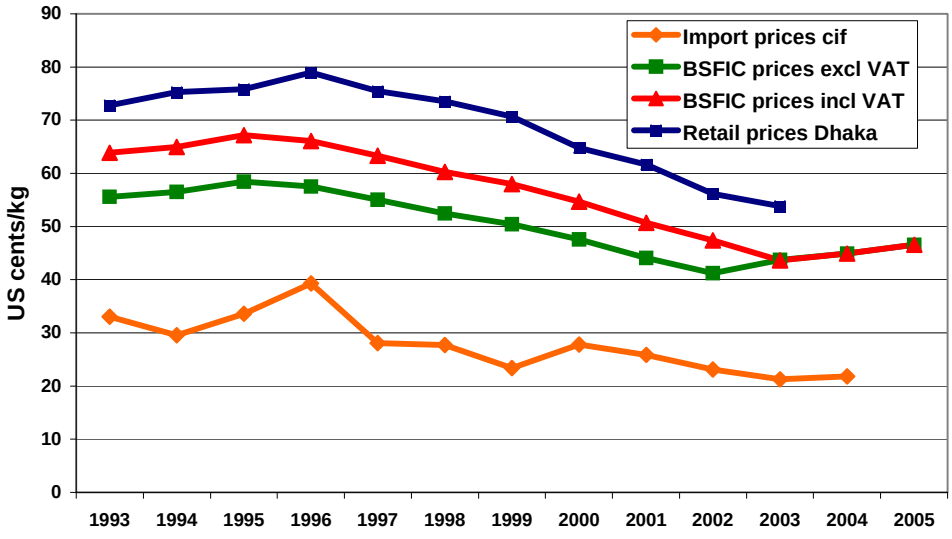
[32] See for example, an article in *The Independent* September 24, 2004: "Farmers selling their crops to molasses producers". According to the article, sources at Rajshahi Sugar Mills said that because of a shortage of "manpower, magistrates and police" it was not possible to take action against the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

[33] 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.

[34] 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 the mills' 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%.

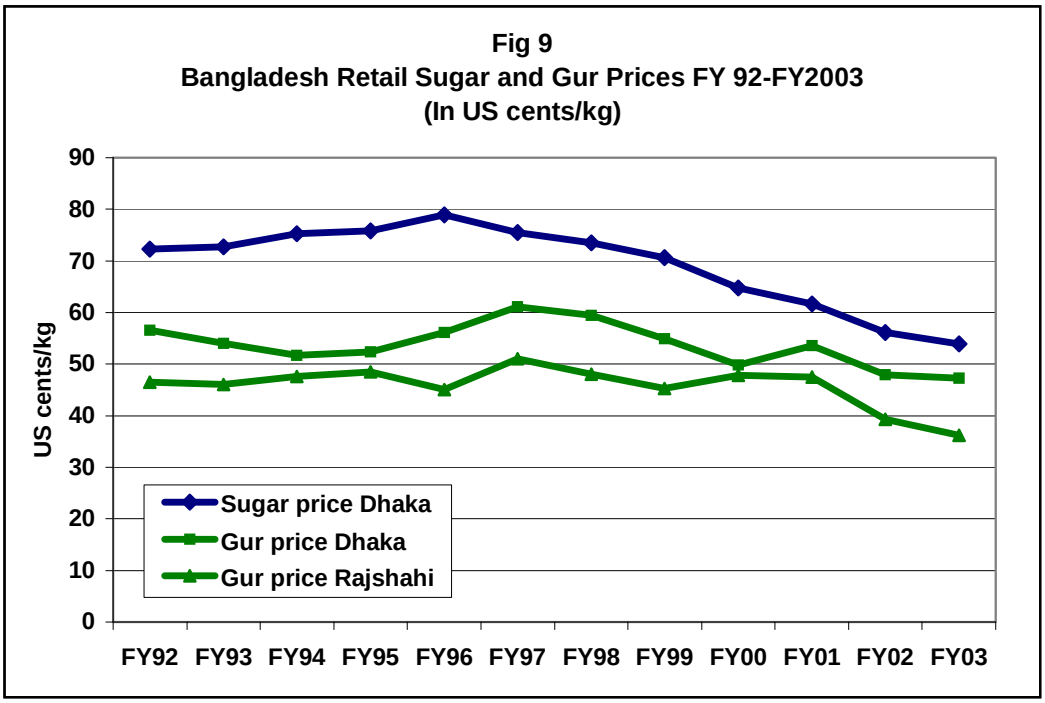
sugar at $250/MT or below, the experience in India suggests that very high sugar tariffs would be needed for financial viability of the Bangladesh mills, even if there were major improvements in management and milling efficiency.

Fig 8
Bangladesh Import and Domestic Prices for Sugar 1992/93-2004/05
(US cents/kg)



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.

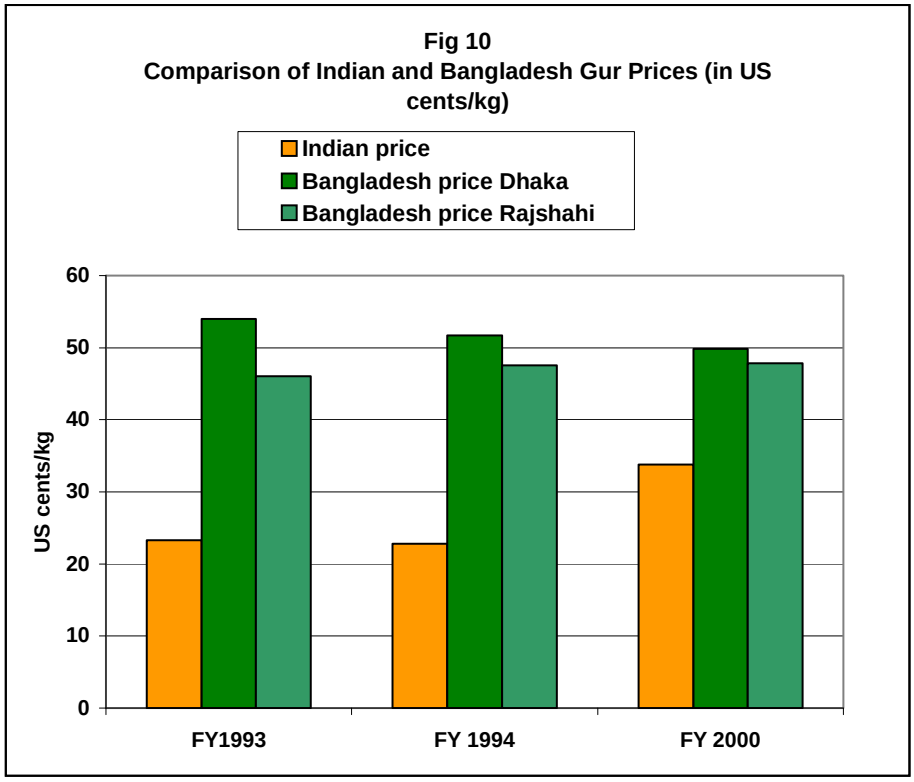
Gur prices. As in India gur prices are neither controlled nor subject to indirect taxes, but even though most gur is produced in rural areas by small scale business including many illegal operators, there is a market which seems to function effectively with prices that are systematically collected and 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[35]. 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.

[35] Information from Ziaul Ahsan



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.

		Table 6		
Bangladesh: Sugar Import Policies and Protective Tariffs				
Fiscal	Protective Import Duty Rate %		Total import	
year	Raw	Refined	duty rate: raw &	QR?
	HS 170111	HS 170199	refined %	
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.

4. Sugar imports from India: how much smuggling?

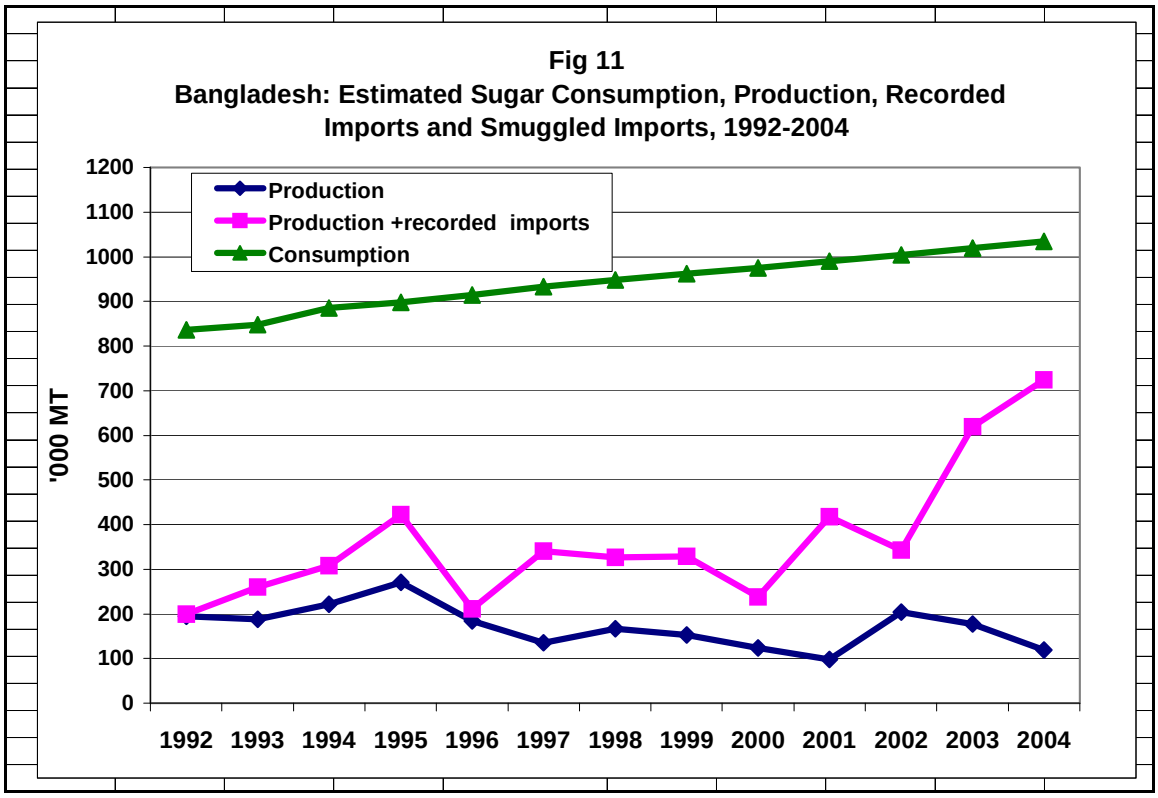
It is generally recognized that large quantities of sugar are regularly smuggled from India into Bangladesh. This is a consistent finding of all the studies of informal trade, both in India and Bangladesh[36], that have reported the results of field surveys of informal trade in border areas, and is mentioned as a matter of course in press and other reports on the Bangladesh sugar industry[37]. 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

[36] 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)

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

per capita consumption of 14.3 kg.[38] 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[39]. 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[40]. 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 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.[41]



[38] 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

[39] *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";

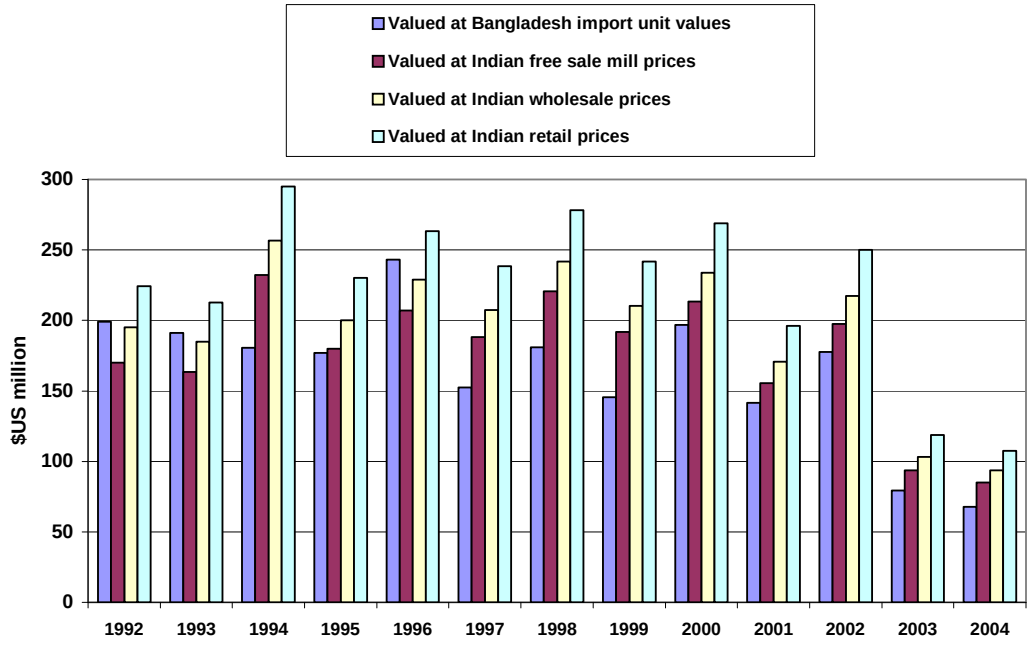
[40] These estimates are obviously very rough approximations even assuming that the assumption of 7.5 kg/per captita consumption is about correct (it presumably would have changed-probably increased –over the period). Among other things, the sugar availability estimates have not allowed for changes in 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.

[41] 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.

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, 1993, and 1996, or in years when Indian sugar exports have been subsidized, as was the from April 2001 to about mid-2005. However Indian sugar exports that receive subsidies are recorded in Indian Customs records and therefore in the official Indian export trade 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, in 2003 and 2004 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.

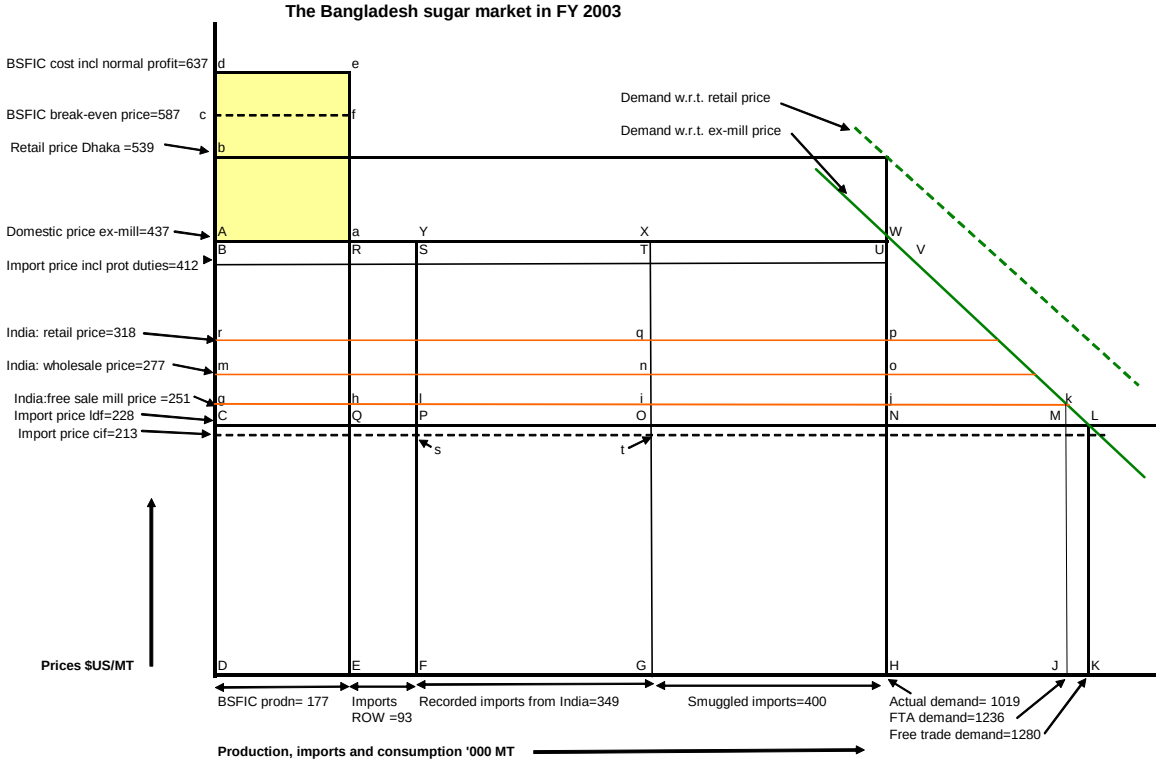
5. Simulating the effects of free trade between India and Bangladesh in sugar: The base scenario in 2002/03.

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.

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.

	Table 7				
The Bangladesh sugar market in FY03: decomposition into principlal components					
	BSFIC	Recorded	Recorded	Smuggled	Total
	production	imports	imports	imports	market
		from	from	from India	demand &
		ROW	India		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

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 Ac 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)[42]. On this 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[43], 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.[44] 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

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[42] 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 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.

[43] 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.

[44] 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.

from countries other than India (area RQPS), and $64.2 million on the 349,000 tons imported from India (area TOPS).

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 $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).

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[45]. In this way, the Indian indirect taxes act as *de facto* export taxes paid by Bangladeshis to the Indian government. In

[45] 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.

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.

	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	36.0
Of which Indian indirect taxes*	0	7.0	7.0
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			

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[46].

[46] 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

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.

Economic welfare effects in Bangladesh.

- 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 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:

  (1) 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

  (2) 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.

  (3) Lost Customs revenue ($64.2 million) and importer economic rents ($2.3 million) from replaced legal 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.

  (4) 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.

  (5) Consumers' surplus ($20.2 million) on the increased consumption of sugar resulting from the lowered price
- 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.

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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.

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-?

- 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 labour 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.

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[47] 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[48]) 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.

[47] Das and Pohit (2004)

[48] Das, Mishra and Pohit (2003)

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 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.

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 if 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.

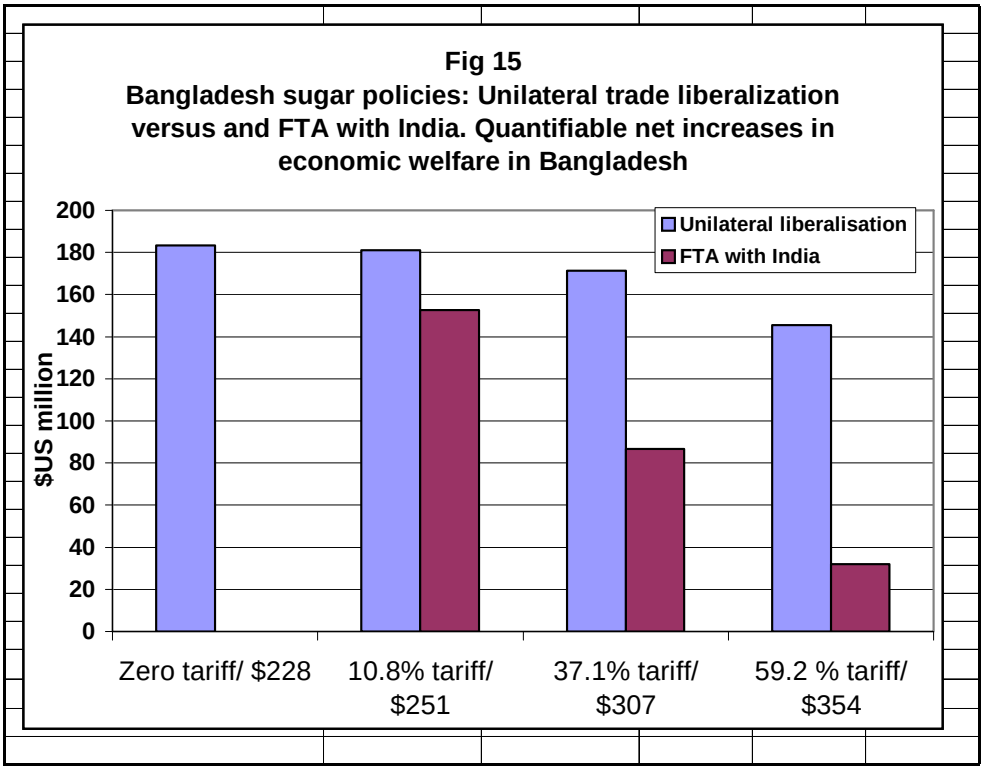
In the third simulation (column (c) of Table 15, Bangladesh cuts it MFN tariff to 37.1%, which has been selected for this experiment to give the same landed duty-inclusive sugar price as the ldf price of sugar imported from India in the second FTA simulation (Tables 9 and Table 10, second column). In 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 prices 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 prices 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 Appendix Table 4) 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[49]. 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 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

[49] 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.

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.

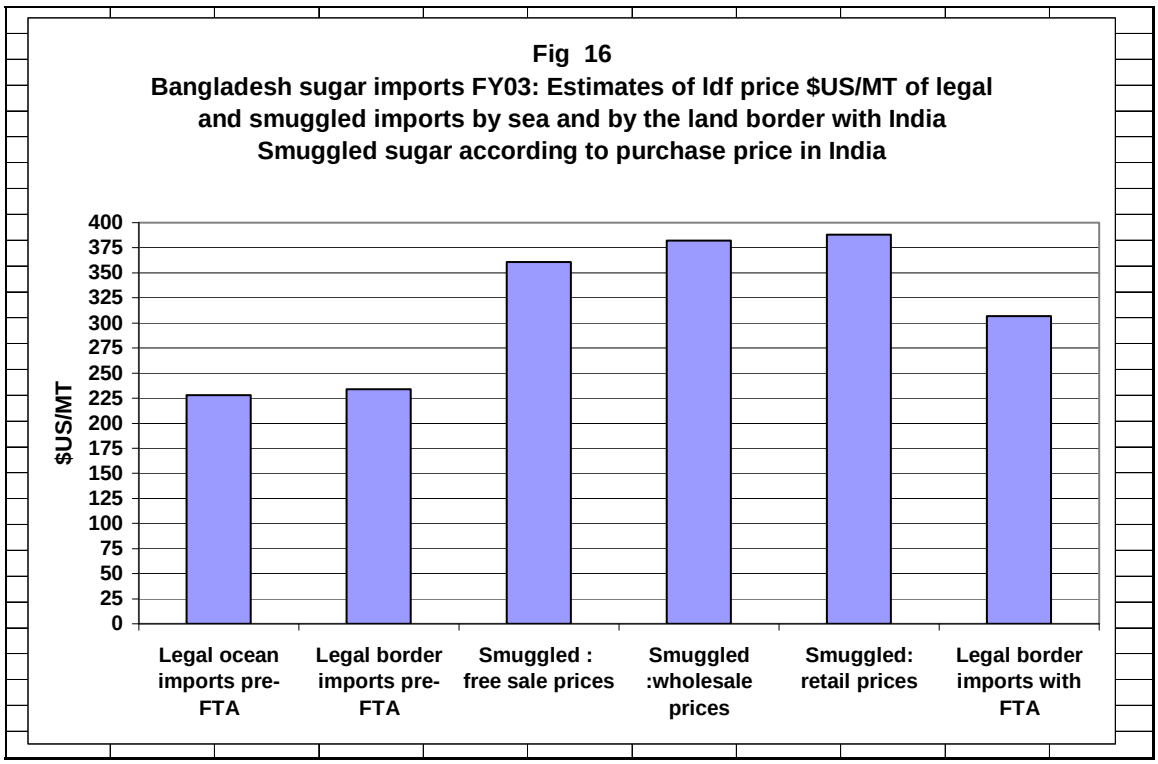
Table 14
Welfare changes after an FTA: Two examples of how the disappearance of Indian excise taxes and cess and economic rents included in the cost of smuggled sugar could affect the aggregate welfare outcome
($US million)

	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[50]. 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 BSFIC'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.

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[50] 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.

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 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.[51] There is an extensive literature on this topic [52]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

[51] 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.

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

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 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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Appendices

				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 pre-FTA		**Smuggled exports pre-FTA**		**Legal exports 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.