Potential Economic Impacts of Merchandise Trade Liberalization under Viet Nam's Accession to the WTO

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Abstract

This paper examines the effects of liberalizing tariffs and textile export quotas under Viet Nam's accession to the WTO. To undertake the analysis, we develop a model of Viet Nam's economy that reflects the importance of the duty exemption arrangements that allow export-oriented manufacturers to obtain intermediate inputs at world prices. The resulting GTAP-DD model is applied first to Viet Nam's fourth multilateral tariff offer, and then to a hypothetical, deeper offer that takes Viet Nam's average tariff below a simple average of 10 percent. The fourth offer is estimated to generate global gains of $460 million per year, of which over 60 percent accrues to Viet Nam. The deeper tariff experiment leads to annual gains of around $600 million per year, with $376 million accruing to Viet Nam. Under the fourth offer, most of the gains accrue from liberalization of the textile quotas, while the gains are roughly evenly split between tariff reform and textile quota abolition under the deeper reform scenario.

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Since beginning the reform process in 1986, Viet Nam has made enormous progress in reforming trade policies and economic policies generally. The process of reforming trade policies began from a regime of state trading monopolies, but has been transformed into a market oriented regime amenable to the application of WTO disciplines. The process of reform has been successful in greatly improving Viet Nam's economic performance and in sharply reducing poverty. The policy changes involved in accession to WTO will intensify and deepen the process of trade reform through a wide-ranging series of reforms in trade policies and domestic regulations. The purpose of this paper is to assess the impacts of the trade policy changes on the structure of the economy, and on economic well-being.

A key feature of accession to WTO, is a need to make reforms to trade policies in the acceding country—both by lowering barriers, and committing to keep those barriers low in the future by binding their tariffs. Recent new members have typically committed to binding all of their tariffs (WTO 2004), frequently at levels substantially below the applied rates prevailing before accession. Substantial liberalization of services trade has also been a key element, with China's accession offer on services having been cited as the largest liberalization of services ever undertaken under the WTO (Mattoo 2004). Other reforms needed for accession include the abolition of nontariff barriers, protection of intellectual property, and elimination of internal trade barriers. As China's chief WTO negotiator, Long Yongtu, has frequently observed, such reform sets off a wave of desirable amendments to laws and regulations that go well beyond the specific requirements of WTO accession. The total effect of these domestic reforms can greatly improve the efficiency of the economy, and potentially contribute to poverty reduction. It seems clear that the WTO accession process has generated a great deal of activity on the legal reform front in Viet Nam (USVTC 2004).

As well as the gains from domestic reform, there are also potentially important external benefits. WTO members are protected against a wide range of discriminatory trade measures by WTO rules, and have access to dispute settlement as a means of protecting their rights. Particularly important for Viet Nam are the provisions of the Agreement on Textiles and Clothing (WTO 1994, p86), which abolished the quotas against WTO-member exporters of these products on January 1, 2005. As a non-member of the WTO, Viet Nam is now the only major exporter of these products continuing to be subject to these barriers.

The WTO accession process is particularly complex, with its mix of regulatory reforms, import barrier reduction on thousands of tariff lines, and abolition of export barriers (Gertler 2004). The complex process, involving multilateral and bilateral elements, and uncertainty about which particular products will be liberalized the most, also makes it difficult to be sure exactly what is likely to be contained in the final outcome. Yet information on the broad economic effects of accession is sorely needed to allow policy makers to decide on the needed investments and supporting policies.

Fortunately, at this stage in the Accession process, considerable information is available about Viet Nam's current trade policies and the likely nature of the reforms involved in the accession package. Expectations based on past accessions provide some indication of likely future directions of reform. Quantitative models provide an opportunity to make assessments of the implications of these reforms for outcomes such as sectoral output and employment patterns, trade flows and overall economic welfare. These results can, in turn, provide guidance for policy makers considering changes in the policy reforms involved in the offer, or in the design of supporting policies such as infrastructure needed to support accession. This paper aims to provide some initial indicators of these likely impacts.

The effects of trade reform in an economy like Viet Nam's are importantly influenced by the presence of duty exemption arrangements for inputs used in the production of exports. In quantitative analyses based on standard modeling frameworks such as the GTAP

model (Hertel 1997), it is assumed that exporters pay duties on their intermediate inputs at the same rate as other users of these goods. Since exporters using duty exemption arrangements pay zero tariffs on these goods, use of standard models can seriously overestimate the impact of trade reform on exports, on outputs, and on economic welfare. To avoid this bias, we use the approach used by Ianchovichina and Martin (2004) for their analysis of China, and distinguish between production for export processing and for domestic uses.

In the next section of the paper, we consider the state of Viet Nam's trade policies, including the complications associated with membership of the ASEAN Free Trade Area (AFTA) (Fukase and Martin 2001) and the US-Vietnam Bilateral Trade Agreement. It then turns to an assessment of likely changes associated with WTO Accession. Then, we use simulation analysis to assess some of the broad consequences of Accession. Finally, we present some policy conclusions.

Viet Nam's Trade Policies

Viet Nam has made enormous progress in reforming its trade regime. Tariffs have been reduced substantially; enormous progress has been made in eliminating nontariff barriers; exchange rate distortions have been eliminated; trading rights have been substantially liberalized. On the import side, the main instrument of protection is clearly the tariff, although there is an important quantitative restriction on imports of sugar (CIE 2002). On the export side, Viet Nam must administer quota policies for exports to the major industrial markets.

Tariff Protection

For our analysis of the trade regime, we need to take into account the differences in tariff rates levied by Viet Nam on exports of different products and from different suppliers. To do this, we have used the 2003-4 tariff schedule for Viet Nam, which is presented at eight-digit level. To obtain the base tariff that would apply in the absence of WTO

accession, we reduced those tariff rates covered by the Vietnam-US bilateral agreement to the rate that would apply at the end of the phase-in period of this agreement, implicitly assuming that tariff rates would remain at their initial values in the absence of the restriction imposed by the bindings negotiated in the context of the WTO negotiations.

The resulting 8-digit tariff rates were converted to 6-digit level to allow them to be matched with the available trade data. The latest available data on the value of imports to Viet Nam, which were obtained from Viet Nam Customs for 2002, were then bridged to HS 2002 to allow them to be compared with the tariff statistics. Weighted average tariff rates were then calculated for groups of regions and commodities that are based on the importance of particular suppliers and commodities in Viet Nam's import mix. The composition of the broader regions and commodities used in this analysis is given in Appendix Table A.1. Because of the number of supplying regions and product categories used, there was no trade in some cells of Table 1. In such cases, the overall average tariff for that product was used, rather than setting the tariff to zero. This was preferred because any potential trade flow would not be duty-free, but must pay the tariffs in Viet Nam's tariff schedule.

It is well known that such weighted averages tend to understate the costs of protection because high tariffs reduce the weights applied to highly protected products, and a number of suggestions have been made for dealing with this problem (see, for example, Bach and Martin 1996 or Jean 2004). However, the resulting direction of bias is well-known, and weighted averages provide comparability with other studies, such as Fukase and Martin (2001). However, it is important to remember this bias when interpreting the average tariffs, or simulation model results based upon them.

Table 1. Weighted Average Tariffs in Viet Nam by Product and by Supplying Region, 2004

	Australia & NZ	China & Hong Kong	Japan	Republic of Korea	Taiwan, China	ASEAN5 MFN	ASEAN5 CEPT	Other Asia-Pacific	USA	EU25 & EFTA	Rest of Europe & Cent. Asia	Rest of World	Average
	%	%	%	%	%	%	%	%	%	%	%	%	%
Rice	20.6	20.0	20.6	20.6	20.6	40.6	5.0	40.7	20.6	40.7	20.6	20.6	20.6
Vegetables & fruit	31.8	25.6	40.0	27.9	27.9	30.0	5.0	30.0	27.7	30.0	27.9	30.3	27.9
Vegetable oils	4.7	0.8	4.7	0.0	4.7	9.5	4.3	0.0	0.0	3.4	4.7	1.3	4.7
Sugar	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0
Dairy Products	19.9	21.1	21.1	21.1	21.1	24.0	5.0	21.1	13.7	22.5	28.3	21.1	21.1
Other Agriculture	2.1	17.2	2.3	0.4	1.3	3.5	3.1	1.8	0.7	2.7	7.2	3.8	5.1
Processed food	14.4	29.6	19.8	16.5	16.9	23.7	4.9	29.5	18.2	23.1	22.1	17.7	24.0
Beverages & Tobacco	5.0	100.0	30.0	27.3	27.3	31.6	31.3	27.3	30.0	26.1	100.0	23.6	27.3
Mining products	12.9	1.5	5.0	3.4	1.0	2.7	0.5	9.2	3.9	1.3	5.0	0.7	3.4
Textiles	40.0	37.2	36.7	33.3	28.0	16.2	1.9	24.6	29.9	34.4	10.4	7.4	31.5
Clothing	50.0	50.0	50.0	49.2	50.0	30.9	3.1	49.3	50.0	49.4	49.3	49.3	49.3
Leather	9.9	16.4	30.0	11.4	17.2	8.8	3.8	6.6	23.5	11.3	6.0	6.4	15.1
Wood & Paper	4.3	24.7	23.6	15.3	19.2	15.6	3.8	0.0	12.7	10.4	9.0	11.4	14.8
Petroleum/Coal Prod.	19.0	18.6	16.4	19.0	18.9	18.6	18.6	19.0	19.0	19.0	19.0	19.0	18.6
Chem/Rubber Products	2.3	4.8	9.5	6.3	7.7	4.9	1.6	4.6	3.9	4.8	0.3	0.7	5.3
Mineral Products	22.2	20.9	9.8	10.3	25.7	28.1	4.4	22.2	22.2	11.6	22.2	1.0	22.2
Metals	5.1	7.2	4.5	6.7	8.6	5.7	1.6	2.6	3.2	4.6	4.5	1.4	5.5
Motor Vehicles/Parts	61.4	27.8	51.8	36.3	50.3	34.8	4.2	38.7	11.1	30.5	19.6	20.2	38.7
Equipment	1.9	27.6	9.2	15.4	15.6	22.6	3.7	76.4	3.6	4.2	6.6	4.9	14.6
Other Manufactures	30.0	24.4	21.8	29.8	29.6	17.4	2.2	1.0	5.0	8.5	23.8	30.0	23.8
Total	8.7	22.2	15.8	21.4	19.5	15.4	8.2	10.4	8.2	7.6	6.2	7.3	15.9

Note: Two estimates are provided for tariffs applied to other ASEAN members—one set based on MFN tariffs and the other on the ASEAN Common Effective Preferential Tariff (CEPT) rates.

Table 2. Weighted Average Tariffs in Viet Nam by Product and by Supplying Region, Post Implementation of the Fourth WTO Offer

	Australia & NZ	China & Hong Kong	Japan	Republic of Korea	Taiwan, China	ASEAN5 MFN	ASEAN5 CEPT	Other Asia-Pacific	USA	EU25 & EFTA	Rest of Europe & Cent. Asia	Rest of World	Average
	%	%	%	%	%	%	%	%	%	%	%	%	%
Rice	20.6	20.0	20.6	20.6	20.6	40.6	5.0	40.7	20.6	40.7	20.6	20.6	20.6
Vegetables & fruit	27.3	22.7	30.0	26.1	26.1	30.0	5.0	30.0	26.9	20.0	26.1	30.0	26.1
Vegetable oils	4.0	0.8	4.0	0.0	4.0	8.0	4.3	0.0	0.0	2.8	4.0	1.3	4.0
Sugar	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0
Dairy Products	19.9	21.1	21.1	21.1	21.1	24.0	5.0	21.1	13.7	22.5	28.3	21.1	21.1
Other Agriculture	2.1	16.1	1.9	0.4	1.3	3.5	3.1	1.8	0.7	2.7	5.7	3.8	4.9
Processed food	13.6	23.1	17.1	14.8	13.4	19.3	4.9	19.8	15.2	20.1	17.9	14.2	19.1
Beverages & Tobacco	5.0	80.0	30.0	25.9	25.9	31.1	30.9	25.9	30.0	21.7	80.0	20.8	25.9
Mining products	12.9	1.5	5.0	3.4	1.0	2.7	0.5	9.2	3.9	1.3	5.0	0.7	3.4
Textiles	20.0	18.2	18.0	16.2	13.5	8.2	1.9	15.0	16.3	17.0	8.7	5.7	15.4
Clothing	25.0	25.0	25.0	24.7	25.0	15.5	3.1	24.7	25.0	24.7	24.7	24.7	24.7
Leather	8.4	14.2	30.0	10.5	13.3	8.6	3.8	6.4	22.6	10.6	6.0	6.4	12.8
Wood & Paper	4.3	24.1	22.0	15.1	18.5	15.3	3.8	0.0	12.6	10.1	9.0	11.4	14.4
Petroleum/Coal Prod.	19.0	18.6	16.4	19.0	18.9	18.6	18.6	19.0	19.0	19.0	19.0	19.0	18.6
Chem/Rubber Products	2.3	4.3	8.2	5.9	7.1	4.3	1.6	4.6	3.5	4.7	0.3	0.6	4.8
Mineral Products	22.2	20.9	9.8	10.3	25.7	28.1	4.4	22.2	22.2	11.6	22.2	1.0	22.2
Metals	5.1	7.1	4.5	6.6	8.6	5.7	1.6	2.6	3.0	4.5	4.5	1.4	5.4
Motor Vehicles/Parts	61.4	27.2	51.8	36.2	50.3	34.8	4.2	38.6	11.1	30.5	19.6	20.2	38.6
Equipment	1.9	23.5	8.4	13.3	13.6	19.4	3.7	61.2	3.5	3.9	5.5	4.8	12.7
Other Manufactures	25.0	20.3	18.2	25.2	24.8	13.3	2.2	1.0	5.0	7.0	19.9	25.0	19.9
Total	8.5	17.0	12.9	15.5	13.8	14.2	8.2	8.5	7.0	6.6	6.1	7.2	12.9

While the overall weighted average tariff rate in Table 1 is 15.9 percent, this average conceals a very large amount of variation across commodities and supplying regions. Within agricultural products, there are sharp differences between the treatment of vegetable oils (3.1 percent) and Other Agricultural Products (5.1 percent) and rice; vegetables and fruit; and dairy products, with tariffs above 20 percent. Tariffs on sugar are relatively low, at 10 percent, but this is misleading, since the real protection to this commodity is provided by nontariff barriers.

Within non-agricultural products, there is also substantial variation in average tariffs. Surprisingly, given Viet Nam's status as a major exporter of clothing, the highest average tariff is on clothing. This tariff is substantially higher than that on textiles (31.5 percent), presumably reflecting a desire to provide higher effective rates of protection to clothing production for the domestic market through tariff escalation—that is by having higher tariffs on final goods than on their intermediate inputs. The tariff on motor vehicles is also relatively high at 38.7 percent, well above the average tariff on equipment, at 14.6 percent. Products of the mining sector have particularly low tariffs, at 3.4 percent, presumably reflecting their use as intermediate inputs.

Tariffs also vary substantially by supplying region. Consistent with the pattern observed in many other developing countries (Hertel and Martin 2000), relatively low tariffs are imposed on the goods supplied by the EC25, by the United States, by Australia and New Zealand. Average tariffs of over 20 percent are imposed on imports from China/Hong Kong and the Republic of Korea. Scheduled tariffs on imports from Japan and the ASEAN5 countries average just over 15 percent on the standard Most-Favored-Nation (MFN) basis.

Products from ASEAN partners are, in principle, covered by CEPT preferences. The tariffs applicable under these arrangements are shown in the column marked CEPT. The average tariff applying on imports from ASEAN partners is estimated to be 8.2 percent,

roughly half the MFN rate. However, only a small percentage[1] of imports from other ASEAN countries qualify for the tariff preferences, because most such imports do not meet Viet Nam's interpretation of the ASEAN rules of origin. Under these circumstances, using the preferential tariff rates would understate the protection imposed by Viet Nam against imports from ASEAN partners.

The tariff rates imposed on particular products by particular suppliers are shown within the table. There is considerable variation within Table 1, ranging from tariffs of 50 percent on clothing imports from China to rates of 1 percent or less on mineral products and chemical and rubber products from other suppliers. Apart from the preferences given to fellow-ASEAN members in the ASEAN-CEPT table, these differences in tariffs follow from differences in the composition of the products within the broad groups used in the analysis, rather than from discrimination by Viet Nam against different suppliers.

It is difficult to infer the objectives underlying any tariff regime. However, there does seem to be an important tendency for tariffs to rise along production chains—something evident in the low tariffs on mineral products and chemicals relative to final products such as clothing. As noted above, this gives rise to high effective rates of protection on production of final goods for the domestic market. This pattern coexists, however, with a tendency to protect industries producing intermediate inputs. High tariffs on motor vehicles raise the costs of all firms using these inputs—or services requiring these inputs—in their production process.

While production for the domestic market receives a benefit from protection to its output, production for export receives no comparable advantage in the absence of duty exemptions or drawbacks of the type provided in Viet Nam. Exporters must pay tariffs on their intermediate inputs, while receiving no benefit on the value of their outputs. The effect of tariffs on nontraded services and on wages when these reflect costs of living, also raise the costs of export-oriented activities. These cost-increasing impacts create an

[1] Some informed observers estimate this share to be 10 percent. Unfortunately, detailed information on the utilization of these preferences is not available.

anti-export bias, and a sharp discrepancy between the incentives facing producers in import-competing and export-oriented activities. Realization of the problems created by this anti-export bias caused Viet Nam to introduce special export-processing arrangements under which import tariffs are exempted or rebated. These arrangements can have major impacts on a country's trade performance and so are considered in some detail below.

Export Processing Arrangements

Export and import duty exemption to exporters in Viet Nam are provided for in Articles 10 and 11 of the Law on Export -Import Duties and Articles 12 and 13 of Decree 54/CP of August 1993. Export and import duties may be exempted in cases, including materials and raw materials imported for processing and re-export in accordance to a contract entered into with a foreign party. Exports and imports by enterprises with foreign-owned capital and the foreign parties to a business co-operation agreement in cases where it is necessary to encourage investment, shall also be considered for exemption of export and import duty. The procedures governing the use of Duty Drawback arrangements are stipulated in Article 14 of the Law on Export-Import Duties and Decree 54/CP of August 1993.

Export and import duties may be refunded in cases which include: i) import of materials for manufacturing for export; ii) temporary import of goods for export or temporary export of goods for import; and iii) quantities of imported goods sold by some Vietnamese enterprises licensed as distribution and sales agents for foreign goods as registered with the Ministry of Finance.

Procedures for duty exemption and drawback are stipulated in Circular 172/1998/TT/BTC dated 22 December 1998 on implementing Decree No 54/CP dated 28/8/1995, Decree 94/1998/ND-CP of 17/11/1998 on stipulating the details of Law on export and import duties and amended Laws on export and import duty. The General Department of Customs is assigned by the Ministry of Finance to deal with duty

exemption in most cases. The Ministry of Finance is responsible for consideration and making decision of duty exemption in some specific cases. For duty drawback, the Customs office is responsible for making decisions in virtually all cases[2].

Current tariff regulations stipulate that, intermediate goods that are used in the production of goods for export are entitled to a grace period of up to nine months (275 days). If the intermediate goods are used up in exported products before the end of the grace period,, then payment of tariffs on the imported intermediate products is not necessary. If not, at the end of the grace period, the importer has to pay the duty, which can be drawn back if the product is subsequently used in the production of exported goods.

Given the tariff system, the arrangements have certain merits in the short run for protecting Viet Nam's production of goods for export. In Viet Nam, the producers of goods for export have to import most of intermediate products. The fact is that, if these producers had to pay the tariff for their imported inputs, their competitiveness in the world market would be seriously jeopardized.

While the procedures clearly work, and have facilitated very rapid growth in Viet Nam's exports of goods that require imported intermediate inputs, there are many problems in their use. The Customs Office has difficulty in their operations regarding to figures they deal with such as the amounts of exports; the inputs' actual prices, which vary over time; and the office therefore has to rely heavily on enterprises' reports on their input-output coefficients. In the circumstance of insufficient transparency and inefficiency of the public administration in Viet Nam, wrong doings of either officers or businesses are hard to prevent.

In practice exporters face problems in obtaining duty drawback payments. Recently, the General Department of Customs issued Decision 793/2000/QD-TCHQ on confirming actual export. Accordingly, when a part or whole of shipments could not be exported as

[2] Such as exported or imported goods are forced to be returned to Viet Nam or exported back to foreign original. The Ministry of Finance is responsible in such cases.

was proposed, the Customs Office informs the General Department of Tax; the relevant Department of Tax of provinces or cities where exporters have tax code; and the Department of Export – Import (MOT), Viet Nam Chamber of Commerce and Industry, to settle the problem. However, duty drawback is slowly resolved by the Tax Office. Exporters have to go back and forth between Customs Office and the Tax Office many times in order to complete all procedures for duty drawback.

Although the majority of enterprises comply with the regulations, leakage of resources happens all the time because of the inefficient system of public administration in Viet Nam. There have been cases of under-reporting of imports or over-reporting of exports, allowing some of the duty free imports to be used for domestic consumption, contrary to the regulations. More seriously, after the new Enterprise Law made it much easier to register a business, some people took advantage of the duty exemption/drawback regulation, setting up import-export oriented businesses as a means of cheating on the grace period arrangement. Having imported the intermediate goods and sold them to other producers, these unscrupulous operators abandoned the importing firms, leaving the Customs Office unable to collect the exempted tariffs.

Even in case of perfect compliance, the tariff cum drawback arrangement is likely to lead to pressures for tariff (or other protection measures) on final goods. Since the exporting firms no longer bear the burden of these tariffs, they are less likely to oppose either the tariffs on intermediate or final goods than would be the case in the absence of the duty exemption/drawback arrangements. As in other countries (Cadot, de Melo and Olarreaga 2004), this can lead to higher protection than would otherwise be the case.

Export Quotas for Textiles and Clothing

The export quota regime that Viet Nam must impose on exports of textiles and clothing to the major industrial country markets present an increasingly important barrier against Viet Nam's exports of these goods. Under the Uruguay Round agreement, these quotas

will be abolished on January 1, 2005, for all exporters who are members of the WTO[3]. Following the abolition of these quotas, Viet Nam would be the only major exporter of textiles and clothing subject to continued quotas of the type specified under the Agreement on Textiles and Clothing. These quotas appear (Francois and Spinanger 2004) to be as restrictive against exports from Viet Nam as they are against exports from China to the United States.

A key problem with the operation of such quota regimes is their allocation to individual, exporting firms. Unless the rules on their allocation are very clear, and the operation of the quota allocation is totally transparent, there are strong incentives for corrupt behavior on the part of those undertaking the quota allocation. The best approach to allocating quotas is, in principle, their sale through a transparent bidding or auction process. This not only avoids creating incentives for corruption, but it allocates the quotas to the firms that place the highest value on them—something that is not done by other processes such as historical performance. Further, it generates valuable government revenue from the sale of the quotas. In those periods where quotas are strongly restrictive, as in Hong Kong in the 1970s and 1980s, the rents associated with quotas can account for a significant fraction of an economy's GDP. Hamilton (1980?) estimated that export quotas on textile and clothing exports accounted for 10 percent of the GDP of Hong Kong in the mid 1970s.

Unfortunately governments find it difficult to auction quotas. When quotas are valuable, as they are in Viet Nam, firms have a strong incentive to lobby governments hard to allocate the quotas to them without charge. This is frequently advocated on the grounds that selling the quotas makes exporting firms less competitive. This argument is completely unfounded. It is the presence of the restrictive quotas that makes the exporter less competitive, not whether the government sells the quotas or gives them away. In fact, selling the quotas to the firms that value them most highly will increase the country's

[3] Because of provisions in China's Accession agreement, China could be subject to textile safeguards between 2005 and 2008. These would involve higher growth rates, but could be applied by any WTO member, not just the few industrial-country members that have traditionally imposed quotas under the Agreement on Textiles and Clothing.

competitiveness by ensuring the quotas are used fully and efficiently. Nevertheless, governments only rarely seem strong enough relative to the vested interests in the industry to be able to sell the quotas.

Even if governments are unable to sell quotas in the first instance, it is important to encourage the development of secondary market in which quotas can be traded between firms. Quotas are specified at a fine level of detail, and it is difficult to predict exactly what orders can be obtained, so exporting firms—even continuing, successful firms—will have all the quotas they need. Frequently, firms will want to sell or exchange one type of quota for another. A legal, active secondary market allows quotas to be transferred quickly and efficiently between firms, and helps ensure full utilization of scarce quotas.

Implications of Viet Nam's Accession Offer

In common with other accession negotiations, Viet Nam's accession process involves both multilateral and bilateral negotiations. As well as outlining the nature of the foreign trade regime, Viet Nam has made a number of offers on a multilateral basis. The fourth of these offers was made in April 2004, and subsequent negotiations have been on a bilateral basis. Some of these negotiations—including the bilaterals with the European Union—have been concluded, although the results of these negotiations have not yet been publicly disclosed. Once all of the bilateral negotiations have been completed, the concessions made by Viet Nam to any partner will be extended to all WTO members in the preparation of the final schedule of concessions. The current, fourth, multilateral offer is thus a lower bound on the degree of liberalization in the final schedule.

The effects of the fourth offer by Viet Nam were estimated by matching these commitments with the current tariff schedule at the tariff-line level. In those cases where the commitment offer falls below the current tariff level, it is assumed that the applied rate will be reduced by as much as is required to bring Viet Nam into compliance with this commitment. The resulting tariffs were then converted to the six-digit level, and averaged up to the level of aggregation used in the model. The results for average tariffs

are presented in Table 2, to allow ready comparison with the current averages presented in Table 1.

The current offer implies a reduction in Viet Nam's weighted average tariff from 15.9 percent to 12.9 percent. This reduction is, however, not uniform across different suppliers or across commodities. For rice, for example, there is no reduction in the average import tariff. By contrast, the average tariff on imports of clothing falls from 49.3 percent to 24.7. The reductions in tariffs across supplying countries are likewise quite variable, with the average tariff on current imports from Australia/New Zealand declining from 8.7 percent to 8.5, while the tariff against the Republic of Korea declines from 21.4 to 15.5.

The benefit to a trading partner of a reduction in Viet Nam's tariffs is determined by both the initial level of the tariff and the extent of the reduction in the tariff. A useful indication of the likely importance of cuts is provided by the percentage decline in the price of imports resulting directly from the cut in the tariff. These statistics are presented in Table 3.

From Table 3, it is clear that the largest reductions in import prices under the fourth offer will be in textiles and apparel, where import prices will be reduced by an average of 12.3 and 16.5 percent respectively. Other commodities for which import prices will be reduced by relatively larger amounts are processed food (4 percent) and other manufactures at 3.2 percent. The specific nature of the commodities for which sizeable reductions in protection are occurring is clearly linked to the specific countries for whom average import prices decline—particularly China, Republic of Korea and Taiwan (China).

Table 3. Percentage Reduction in Prices by Product and by Supplying Region, Post Implementation of Offer

	Australia & NZ	China & Hong Kong	Japan	Republic of Korea	Taiwan, China	ASEAN5 MFN	ASEAN5 CEPT	Other Asia-Pacific	USA	EU25 & EFTA	Rest of Europe & Cent. Asia	Rest of World	Average
	%	%	%	%	%	%	%	%	%	%	%	%	%
Rice	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vegetables & fruit	3.4	2.3	7.1	1.4	1.4	0.0	0.0	0.0	0.7	7.7	1.4	0.2	1.4
Vegetable oils	0.7	0.0	0.7	0.0	0.7	1.4	0.0	0.0	0.0	0.6	0.7	0.0	0.7
Sugar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dairy Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Agriculture	0.0	1.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.2
Processed food	0.7	5.0	2.3	1.5	3.0	3.5	0.0	7.5	2.6	2.4	3.4	2.9	4.0
Beverages & Tobacco	0.0	10.0	0.0	1.1	1.1	0.4	0.3	1.1	0.0	3.5	10.0	2.3	1.1
Mining products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Textiles	14.3	13.9	13.7	12.8	11.3	6.9	0.0	7.7	10.4	13.0	1.6	1.5	12.3
Clothing	16.7	16.7	16.7	16.4	16.7	11.8	0.0	16.5	16.7	16.5	16.5	16.5	16.5
Leather	1.4	1.9	0.0	0.9	3.3	0.2	0.0	0.2	0.7	0.7	0.0	0.0	2.0
Wood & Paper	0.0	0.5	1.3	0.1	0.6	0.2	0.0	0.0	0.1	0.3	0.0	0.0	0.4
Petroleum/Coal Prod.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chem/Rubber Products	0.0	0.4	1.2	0.5	0.5	0.5	0.0	0.0	0.4	0.1	0.0	0.0	0.4
Mineral Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Metals	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0
Motor Vehicles/Parts	0.0	0.4	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
Equipment	0.0	3.2	0.7	1.9	1.7	2.6	0.0	8.6	0.1	0.3	1.0	0.1	1.7
Other Manufactures	3.8	3.3	3.0	3.6	3.7	3.4	0.0	0.0	0.0	1.4	3.2	3.8	3.2
Total	0.2	4.2	2.4	4.8	4.8	1.0	0.0	1.7	1.1	0.9	0.1	0.1	2.6

Note: Price changes calculated as dt/(1+t), that is assuming foreign prices are held constant.

Model and Data

We used a modified version of the GTAP 6 Data Base and a modified version of the GTAP model to assess the impacts of Viet Nam's WTO offer. We used an extension of the GTAP model (Hertel, 1997) which explicitly treats duty drawbacks on imported intermediate inputs and investment goods used in the production of exports. In assessing the impacts of China's WTO accession, Ianchovichina (2003) found that failure to account for duty exemptions which reduce border protection overstates the predicted increase in China's aggregate trade flows and China's welfare. Since duty exemption arrangements for export processing figure prominently in Viet Nam's trade policy, it is important that these arrangements be incorporated in the model.

Duty drawbacks were incorporated in the GTAP general equilibrium model following the methodology developed by Ianchovichina (2003) for the GTAP-DD model. The model allows for two separate activities in each industry. Production of exports is represented as an activity for which imported intermediate inputs are available duty-free. Production for the domestic market uses the same technology, but requires payment of duties on intermediate inputs. Firms engaging in production for either the domestic market or the export market purchase both imported and domestic intermediate inputs which are imperfect substitutes following the Armington structure.

While the original GTAP-DD model developed by Ianchovichina (2003) was based on the GTAP-5 Database, this study uses the GTAP 6 Data Base (Dimaranan and McDougall, 2005). The GTAP 6 Data Base contains detailed bilateral trade, transport, and protection data characterizing economic linkages at the level of 57 commodity groups among 87 regions, depicting global economic activity for the 2001 reference year. The national data base for Viet Nam in the GTAP data base is based on a 1997 social accounting matrix constructed from the official Vietnamese 1996 input-output table (Nielsen, 2002). The GTAP data base was aggregated into the 22 sectors and 12 regions (as shown in Table 1) based on the importance of these sectors and regions in Viet Nam's trade.

The data base was first modified to make it consistent with the GTAP-DD model. This involved the elimination of tariffs on imports of intermediate inputs of the export-oriented sub-sector of the following industries in Viet Nam: textiles, clothing, leather, wood and paper, metals, motor vehicles and parts, equipment, and other manufactures. This modification in the data was done using ALTERTAX (Malcolm, 1998), a program designed to modify the tax rates in the data while keeping the production and trade shares as close as possible to their original proportions. Another modification consistent with the GTAP-DD model was to make Viet Nam's export-oriented sectors more import-intensive. This was achieved by first modifying the elasticity of substitution between domestic and intermediate goods to make it region- and sector-specific and then setting these values for Viet Nam at twice its value in the GTAP Data Base. The import-intensities of the exporting sub-sectors were increased at the same time as tariffs on imports used by the export-oriented firms were eliminated.

The second part of the data modification was done to account for the trade policies of Viet Nam. The first adjustment was to change the tariff data for Viet Nam from the 2001 values in the GTAP 6 Data Base to 2003 MFN rates. In addition, a 100% NTB (tariff-equivalent) for Vietnamese sugar imports was introduced. The export tax equivalents on Viet Nam's exports of textiles and clothing to the EU25 and the EFTA countries[4] were adjusted from zero (as estimated by Francois and Spinanger, 2004) to 10%. The Francois and Spinanger estimates for 2001 of 20.6% and 26.9% for textile and clothing exports, respectively, to the USA were retained. Two final adjustments were to reduce export taxes on "leather" from 11.15% (from Viet Nam's I-O table data) to 1%, and to reduce export taxes on wood and paper products ranging from 9 to 14% (from Viet Nam's I-O table data) to 10%. All of these adjustments were again made using the ALTERTAX procedure.

[4] Viet Nam's bilateral agreement with the EU (EU 2005) involves the conditional abolition of these quotas, but allows them to be reimposed if the EU should be dissatisfied with progress in other areas. Since even the conditional abolition of the quotas is an outcome of the WTO negotiations, we retain the quota premium in the database, and hence attribute the benefits of its abolition to WTO accession.

An experiment designed to simulate the elimination of the export tax equivalents of the MFA/ATC quotas on textiles and clothing from all countries except Viet Nam was done next. The updated data from this experiment was used as the base data for assessing the impacts of Viet Nam's WTO accession discussed in the next section.

Liberalization Experiments

In the experiments reported in this section, we use the modified version of the GTAP model which takes into account the duty exemption arrangements for export processing that are so important for Viet Nam. Only the domestic-oriented activities in Viet Nam's manufacturing industries pay tariffs on their imports of intermediates; the export-oriented sub-sectors of these industries enjoy duty drawbacks. In Appendix Table A.2, we compare the consequences of trade reforms with and without taking into account the effects of the duty exemption arrangements. We find that taking into account these arrangements reduces the measured welfare benefits of trade reform by over 70 percent, so modeling reform in Viet Nam without taking these measures into account would substantially overstate the benefits of merchandise trade reform.

The estimated impacts from Viet Nam's current offer on Viet Nam's output volumes by sector are presented in Table 4. The total impact reported includes the impact of Viet Nam's offered reductions in tariffs, plus the effect of abolishing the quota on imports of sugar, plus the effect of being able to eliminate the export quotas on Viet Nam's exports of textiles and clothing.

At the sectoral level, the largest impacts are on outputs of sugar, and of textiles and clothing. The abolition of the import quota on sugar causes more than a halving in the output of sugar, with most of this impact coming from the abolition of the quota on imports of sugar. For clothing, output is estimated to increase by 224 percent, with the bulk of this gain coming from the abolition of the quotas. The import cuts have little effect on clothing output since the clothing sector is able to produce for export without being required to pay tariffs on imported intermediate inputs. The next largest gain is in output of textiles, with a 60 percent increase, again mostly coming from the abolition of

the export quotas on textiles and clothing. Part of this gain results directly from the abolition of quotas on textiles, and part from the abolition of quotas on clothing, which stimulates the demand for intermediate inputs such as textiles. The small reductions in output observed in many other sectors are the result of the need to free up resources to allow the substantial increases in output in textiles and clothing.

Table 4. Sectoral Output Effects of Quota Abolition and 4th Offer Tariff Reductions

	Total	Textile Quotas	Tariffs
Sectors	%	%	%
Rice	-0.8	-0.9	0.1
Vegetables & fruit	0.2	0.2	0.0
Vegetable oils	-8.1	-4.5	-3.6
Sugar	-64.0	-1.3	-62.7
Dairy Products	5.0	-2.2	7.2
Other Agriculture	-1.5	-0.9	-0.6
Processed food	-3.8	-3.2	-0.6
Beverages & Tobacco	-1.6	-0.7	-0.9
Mining products	-0.8	-0.7	0.0
Textiles	60.3	60.1	0.2
Clothing	224.0	222.8	1.2
Leather	-6.9	-8.2	1.3
Wood & Paper	-1.6	-2.5	0.9
Petroleum/Coal Prod.	-2.3	-3.5	1.2
Chem/Rubber Products	-3.5	-3.6	0.1
Mineral Products	-1.2	-1.4	0.2
Metals	-5.4	-5.4	-0.1
Motor Vehicles/Parts	-2.7	-3.1	0.4
Equipment	-7.5	-5.0	-2.4
Other Manufactures	-4.4	-4.2	-0.2
Utilities	0.2	0.0	0.1
Services	-0.3	-0.4	0.1

The implications for export volume by sector are given in Table 5. The broad pattern is similar to that observed for output in Table 4. There are substantial increases in exports of textiles and clothing. In addition, exports of sugar and related products increase substantially because of the fall in the domestic price resulting from the abolition of the quota on imports of sugar. Exports of most other commodities decline because the increased profitability of textiles and clothing allows these industries to bid up the price of resources, reducing the competitiveness of other sectors.

Table 5. Sectoral Export Effects of Quota Abolition and 4th Offer Tariff Reductions, %

Sectors	Total	Textile Quotas	Tariffs
	%	%	%
Rice	-1.0	-2.3	1.3
Vegetables & fruit	-1.4	-2.5	1.1
Vegetable oils	-7.5	-9.4	1.9
Sugar	62.2	-6.7	68.9
Dairy Products	9.2	-5.9	15.1
Other Agriculture	0.5	-2.5	3.0
Processed food	-3.0	-6.1	3.1
Beverages & Tobacco	-0.9	-3.7	2.8
Mining products	-0.8	-0.7	-0.1
Textiles	82.5	79.7	2.8
Clothing	271.6	266.5	5.1
Leather	-7.1	-8.2	1.2
Wood & Paper	-5.3	-6.7	1.4
Petroleum/Coal Prod.	-4.7	-6.8	2.2
Chem/Rubber Products	-4.3	-6.7	2.4
Mineral Products	-7.0	-7.1	0.1
Metals	-9.3	-9.7	0.4
Motor Vehicles/Parts	-6.0	-6.2	0.1
Equipment	-8.9	-9.0	0.1
Other Manufactures	-6.1	-7.8	1.7
Utilities	-9.2	-8.6	-0.7
Services	-8.7	-7.8	-0.9

The estimated welfare impacts of these two experiments are presented in Table 6. The overall impact is greatest for Viet Nam, with an overall gain of $281 million per year. The gain to the world as a whole is larger, at $460 million per year. Most regions other than Viet Nam gain, with the largest gains accruing to the US and the EU, who are able to eliminate the costly (to them) quota arrangements on textiles and clothing. Other economies that trade extensively with Viet Nam, such as the Republic of Korea and Taiwan, China also gain.

The gains to Viet Nam from Viet Nam's quotas on textiles and clothing being abolished are substantial, despite an adverse terms of trade impact as export prices received fall in the currently-restricted markets. There are also substantial gains to the US and the EU, who become able to take greater advantage of imports from Viet Nam, and benefit from

improved terms of trade as a consequence. There are losses to China and Hong Kong, ASEAN, and the rest of the Asia-Pacific that result from greater competition from Viet Nam. Finally, there are losses to Japan which benefited from lower-cost Vietnamese exports being redirected to their markets by the quotas on exports to the US and the EU.

The tariff liberalization experiment results in overall welfare gains to Viet Nam that are less than the gains resulting from elimination of the quotas on textiles and clothing. This is surprising given that the simulation involves such a modest reduction in import tariffs which are paid only by the domestic-oriented manufacturing sub-sectors. Viet Nam is the largest gainer, with gains of $111 million per year. Other countries that trade substantially with Viet Nam tend to gain, especially for China/Hong Kong, for whom the direct gains from stronger trading links apparently offset the increases in competition from Viet Nam in third-country export markets[5].

Table 6. Welfare impacts of 4th Offer liberalization, US $m

	Total	Quotas	Tariffs
Regions	$m	$m	$m
Australia/NZ	-1.0	0.4	-1.3
China & Hong Kong	-59.9	-80.2	20.3
Japan	-0.4	-4.5	4.1
Korea	23.9	22.0	1.9
Taiwan, China	23.0	18.7	4.3
ASEAN	-11.3	-11.2	-0.1
Viet Nam	280.8	170.0	110.7
Rest of Asia-Pacific	-32.9	-34.2	1.2
USA	230.2	231.2	-1.0
EU25EFTA	56.7	59.8	-3.1
Rest Europe & Cent. Asia	-6.1	-5.8	-0.3
ROW	-43.3	-43.7	0.4
World	459.6	322.4	137.2

Our analysis of quota abolition substantially understates the gains to Viet Nam, because the model assumes that the current export quota regime is administered efficiently. This

[5] When duty drawback arrangements are not taken into account, liberalization of both export-oriented and domestic-oriented sectors in Viet Nam results in loses for China/Hongkong due to competition in third-country markets. The welfare impacts of the 4th offer liberalization under the standard GTAP model which does not take duty drawback arrangements into account are given in Appendix Table A.2. The results from the standard model indicate that failure to account for duty exemptions overstates the predicted increase in Viet Nam's welfare and the global welfare gains.

requires particularly that it be possible for quotas to be transferred from suppliers who hold quota but do not have orders to those without quota but needing to meet orders. This may be done either by the government allocating quotas on some basis—such as historic performance—and allowing quotas to be sold on a secondary market. Alternatively, the government may sell quotas on a primary market—which generates government revenues—and allow their subsequent sale on secondary markets. Where secondary markets are well organized and participants are well informed about the scarcity price of quotas (see chinaquota.com for some such information), the inefficiencies of quota systems are minimized. Where quota trading is illegal, as in Viet Nam, the inevitable result is problems of corruption, and of inefficiency because quotas cannot be transferred to those best able to use them.

Effects of Deeper Liberalization

Because WTO Accession takes place on terms to be agreed between the new member and existing WTO members, there is considerable uncertainty about the exact conditions under which a country may accede. However, recent accessions provide some guide as to the likely range of outcomes, and many recent WTO members have acceded at bound tariffs of 10 percent or less in unweighted terms (WTO 2004). Some economies, such as Taiwan, China and the former Yugoslav Republic of Macedonia will have final-average bound tariff rates on non-agricultural goods closer to 5 percent. Of the recent accession countries, only Nepal and Cambodia have acceded with final bound rates on non-agricultural products substantially above 10 percent, and these countries were eligible for streamlined arrangements available only to Least Developed Countries. Given the dynamics of the process, it seems likely that Viet Nam will need to make more concessions before acceding.

Under these circumstances, it seems likely to be worthwhile to assess the implications for Viet Nam of making deeper commitments than those contained in the fourth offer. To assess the likely qualitative impacts, we consider a (purely hypothetical) scenario where Viet Nam reduces all of its tariff bindings by one-third from their level in the fourth offer.

This offer would likely reduce the simple average bound tariff below 10 percent, and reduce the applied rate below the 12.9 percent considered above. The effects of this hypothetical reform on output and export levels are compared with those of the fourth offer in Table 7.

Table 7. Impacts of alternative liberalizations on output and exports

Sectors	Output Impacts		Export Impacts	
	4th offer	Deeper cuts	4th offer	Deeper cuts
	%	%	%	%
Rice	-0.8	-0.9	-1.0	1.6
Vegetables & Fruit	0.2	-0.7	-1.4	1.5
Vegetable oil	-8.1	-13.1	-7.5	-4.1
Sugar	-64.0	-66.1	62.2	69.2
Dairy	5.0	5.3	9.2	13.7
Other Agriculture	-1.5	-1.4	0.5	1.8
Processed Fish	-3.8	-5.6	-3.0	0.4
Beverages & tobacco	-1.6	-5.1	-0.9	0.1
Mining	-0.8	-0.9	-0.8	-0.5
Textiles	60.3	65.9	82.5	85.6
Clothing	224.0	228.9	271.6	278.0
Leather	-6.9	-5.8	-7.1	-5.9
Wood and Paper	-1.6	-3.4	-5.3	-2.4
Petroleum & Coal Prods	-2.3	-17.8	-4.7	4.1
Chemicals & Rubber	-3.5	-1.6	-4.3	4.7
Non metallic Minerals	-1.2	-5.2	-7.0	-5.7
Metals	-5.4	-5.6	-9.3	-4.2
Motor Vehicles	-2.7	-1.9	-6.0	-4.7
Equipment	-7.5	-11.0	-8.9	-6.9
Other Manufactures	-4.4	-5.8	-6.1	-1.1
Utilities	0.2	0.1	-9.2	-1.8
Services	-0.3	-0.1	-8.7	-9.6

A striking feature of the move from the fourth offer to the hypothetical tariff offer where all bound tariffs are one-third lower than under this offer is the very small changes in sectoral outputs and exports observed in Table 7. While the output and export effects are generally larger than under the fourth offer, these differences are small, particularly relative to the very large impacts associated with abolition of the quotas on textiles and clothing. In part, this small difference is due to the contrived nature of the experiment, with equal percentage reductions in all tariffs. In reality, we know that the percentage cuts in tariffs are likely to differ substantially between sectors. The United States, in

particular, is pressing Viet Nam to make larger reductions in a range of sectors of particular interest, and on products covered by the zero-for-zero initiative and the chemical harmonization initiative negotiated under the Uruguay Round (Inside US Trade 2004). However, the considerable variation in Viet Nam's applied tariffs following the fourth offer noted in Table 2 means that the uniform percentage reductions in bindings would bring about some significant changes in relative prices.

The impacts of the hypothetical, deeper liberalization undertaken scenario on real incomes are presented in Table 8. From these results, it is clear that that the overall gains—to Viet Nam and to the world—are substantially larger than the gains accruing from the current offer. The gains to Viet Nam rise from $281 million per year to $376 million. Almost all of this gain comes from the deeper tariff cuts, for which the benefits of $280 million are more than twice as large as they were under the fourth offer.. The global gains are also substantially larger, at $602 million per year. Most of the additional gain accrues to Viet Nam, although around $50 million in additional gains accrues to Viet Nam's trading partners, and particularly the China-Hong Kong, China region.

Table 8. Welfare impacts of deeper liberalization, US $m

	Total	Quotas	Tariffs
Regions	$m	$m	$m
Australia/NZ	-1.4	0.3	-1.7
China & Hong Kong	-15.3	-81.0	65.7
Japan	3.8	-4.8	8.6
Korea	26.6	22.0	4.6
Taiwan, China	32.8	18.7	14.0
ASEAN	-11.6	-11.6	-0.01
Viet Nam	376.1	170.1	205.9
Rest of Asia-Pacific	-34.0	-34.5	0.5
USA	227.2	233.5	-6.2
EU25EFTA	46.1	59.6	-13.5
Rest Europe & Cent. Asia	-7.7	-5.9	-1.9
ROW	-41.1	-44.4	3.3
World	601.6	322.2	279.4

The welfare benefits of Viet Nam's accession to the WTO are an order of magnitude smaller than the $40 billion in overall welfare gains estimated by Ianchovichina and Martin (2004) and reported in Bhattasali, Li and Martin (2004). These smaller gains

reflect a combination of Viet Nam's much smaller economy than China's; the much higher initial tariffs in China (a weighted average of 35 percent in 1994, after which reductions associated with accession were undertaken), and the inclusion of China's substantial liberalization of services in the calculations reported by Ianchovichina and Martin (2004).

Conclusions

This study examines the structure of Viet Nam's current trade policies. This examination finds that average weighted-average tariff rates in Viet Nam of just under 16 percent are much lower than was the case for China prior to accession, where tariffs averaged 35 percent prior to accession. The tariff structure in Viet Nam is, however, highly uneven, with relatively high tariffs on products such as textiles and clothing.

During the accession process, Viet Nam has made a number of offers, with the latest publicly-available offer being the fourth offer, tabled in mid-2004. For this analysis, we examine the implications of this quite comprehensive offer, by comparing the values of these tariffs with 2004 applied rates to obtain an estimate of the reductions in applied tariffs that would be required to come into compliance with this offer. The resulting post-accession applied rates were weighted up to the GTAP level using trade weights obtained from Vietnamese customs officials, and then to higher levels of aggregation using the GTAP weights. This analysis showed that the largest price reductions associated with these tariff reductions would be on textiles (12.3 percent) and clothing (16.5 percent), and the average reduction in import prices would be 2.6 percent.

Because duty exemptions on intermediate inputs used in the production of exports are important in China, and because ignoring these arrangements can bias upwards the welfare impacts of trade reforms, we developed an updated version of GTAP-DD model (Ianchovichina 2003) to analyze the impacts of Viet Nam's WTO accession. This model includes two separate activities for each manufacturing sector—one domestically-oriented one that pays duties on its intermediate inputs, and a second export-oriented one exempted from paying these duties. It provides more conservative estimates of the

impacts of reform than a standard computable general equilibrium model because it takes into account the fact that export sectors are already spared the burden of paying tariffs on their intermediate inputs.

With this model, we undertook two separate experiments. For the first of these, applied tariffs were reduced in accordance with the current, fourth offer on bound tariffs. For the second, bound tariffs were cut by a further third from their levels after the current offer—bringing the unweighted average applied rate below the 10 percent simple average level frequently sought by WTO members in accession negotiations. The first experiment generated global gains of $460 million per year, of which over 60 percent accrues to Viet Nam. The deeper tariff experiment resulted in estimated annual gains of around $600 million per year, with $376 million of this accruing to Viet Nam. Under the fourth offer, most of the gains accrue from liberalization of the textile quotas, while the gains are roughly evenly split between tariff reform and textile quota abolition under the deeper reform scenario.

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Appendix 1

Appendix Table A.1. Regional and Sectoral Aggregation

Aggregated Regions	GTAP 6 Regions
AusNZ	Australia, New Zealand
CHNHK	China, Hong Kong SAR
JPN	Japan
KOR	Republic of Korea
TWN	Taiwan, China
ASEAN	Indonesia, Malaysia, Philippines, Singapore, Thailand
VNM	Viet Nam
RestAP	Rest of Oceania, Rest of East Asia, Rest of Southeast Asia, Bangladesh, India, Sri Lanka, Rest of South Asia
USA	United States
EU25EFTA	Austria, Belgium, Denmark, Finland, France, Germany, United Kingdom, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, Cyprus, Czechoslovakia, Hungary, Malta, Poland, Slovakia, Slovenia, Estonia, Latvia, Lithuania, Switzerland, Rest of EFTA
RestECA	Turkey, Albania, Bulgaria, Croatia, Romania, Russian Federation, Rest of Former Soviet Union, Rest of Europe
ROW	Canada, Mexico, Rest of North America, Colombia, Peru, Venezuela, Rest of Andean Pact, Argentina, Brazil, Chile, Uruguay, Rest of South America, Central America, Rest of Free Trade Area of Americas, Rest of the Caribbean, Rest of Middle East, Morocco, Rest of North Africa, Botswana, South Africa, Rest of SACU, Malawi, Mozambique, Tanzania, Zambia, Zimbabwe, Rest of SADC, Madagascar, Uganda, Rest of Sub-Saharan Africa
Aggregated Sectors	**GTAP Sectors**
Rice	paddy rice; processed rice
VegFrt	vegetables fruits and nuts
VegOil	vegetable oils and fats
Sugar	sugar
Dairy	raw milk; dairy products
OthAgr	wheat; cereal grains nec; oil seeds; sugar cane and sugar beet; plant-based fibers; crops, nec; cattle, sheep, goats, horses; animal products, nec; wool; forestry
PrFdFsh	meat: cattle, sheep, goats, horses; meat products, nec; food products, nec; fishing
BevTob	beverages and tobacco products
Mining	coal; oil; gas; minerals, nec
Textiles	textiles
Clothing	wearing apparel
Leather	leather products
LumPPP	wood products; paper products and publishing
P_C	petroleum and coal products
CRP	chemical, rubber, plastic products
NMM	mineral products, nec
Metals	ferrous metals; metals nec; metal products
MVH	motor vehicles and parts

Equipment	transport equipment nec; electronic equipment; machinery and equipment nec
OthManuf	manufactures nec
Utilities	electricity; gas manufacture and distribution; water
Services	construction; trade; transport nec; sea transport, air transport; communication; financial services nec; insurance; business services nec; recreation and other services; public administration, defence, education, health; dwellings

Appendix Table A.2. Welfare impacts of 4th Offer liberalization, US $m, with and without duty drawbacks (DD)

Regions	Total		Quotas		Tariffs	
	With	Without	With	Without	With	Without
Australia/NZ	-1.0	5.89	0.4	-0.06	-1.3	5.95
China & Hong Kong	-59.9	-149.14	-80.2	-107.75	20.3	-41.39
Japan	-0.4	30.06	-4.5	-28.54	4.1	58.60
Korea	23.9	74.20	22.0	28.10	1.9	46.10
Taiwan, China	23.0	39.05	18.7	10.09	4.3	28.96
ASEAN	-11.3	-44.67	-11.2	-30.02	-0.1	-14.65
Viet Nam	280.8	1218.93	170.0	652.62	110.7	566.30
Rest of Asia-Pacific	-32.9	-79.24	-34.2	-57.15	1.2	-22.09
USA	230.2	384.04	231.2	332.66	-1.0	51.38
EU25EFTA	56.7	203.91	59.8	113.93	-3.1	89.98
Rest Europe & Cent. Asia	-6.1	-20.83	-5.8	-13.53	-0.3	-7.30
ROW	-43.3	-43.25	-43.7	-48.17	0.4	4.91
World	459.6	1618.95	322.4	852.18	137.2	766.75