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Open Wide: Vietnam's Agricultural Trade Policy

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Abstract

Vietnam is about to join the WTO. As a major exporter of rice, coffee, cashew nuts and pepper, accession to the WTO will have little impact on these export markets, as tariffs on these exports are already low. However, accession will require Vietnam to expose some of its inefficient agricultural sectors, such as sugar and maize, to international competition. Furthermore, multilateral reforms within the WTO are likely to raise prices of temperate product goods that are imported by Vietnam, worsening its terms of trade.

A quantitative analysis of likely policy changes is undertaken assuming Vietnam's accession terms are likely to bring its agricultural tariffs down to an average of 18 per cent. A likely WTO outcome is then simulated. The impacts suggest Vietnam gains from accession but further WTO liberalisation raises import prices and has a negative impact.

JEL subject codes F13, Q17.

Key words: Vietnam, WTO negotiations, trade, agricultural tariffs

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1. Paper tiger?

The Vietnamese live in interesting times. Integration into the world economy during the 1990s has led to rapid export growth, strong growth in incomes and significant reductions in poverty. To further this integration, Vietnam has been pushing for accession to the World Trade Organization (WTO) and membership at some point seems assured. Currently, Vietnam is the only major exporter with quotas on its exports of textiles and clothing to the United States and the European Union, and membership is important if it is to compete with China in these markets. In the agricultural sector, membership may bring limited opportunities to expand exports of rice, coffee, rubber, horticultural products, fisheries and forest products. However, it is likely that support for inefficient industries such as sugar, corn, cotton, tobacco, soyabeans and pork will have to be reduced or eliminated. Significant institutional reform will also need to occur.

Terms of accession to the WTO are based on bilateral negotiations. Tariffs agreed to bilaterally are then extended to all members. Vietnam has concluded discussions with the European Union, for example, but not yet with other members, such as Australia and New Zealand. Vietnam has recently (2005) offered to reduce its agricultural tariffs to an average of 18 per cent (CIEM 2004 p. 88), but this is high by standards of recent accessions, which have tended to be between 10 and 17 per cent. However, it is not clear whether Vietnam would be regarded by member countries as a poverty-stricken country requiring special treatment, such as longer transition periods, or a fast-growing developing economy that might be seen as an export competitor. At this point, the terms of accession are unclear.

The WTO is currently negotiating further reforms, including tariff reductions. Current (December 2005) proposals range in ambition and flexibility, but the moderate EU proposal calls for an average cut in bound agricultural tariffs of 46 per cent with no final tariff exceeding 100 per cent [European Commission 2005]. Developing countries would have commitments of two thirds with a cap of 150 per cent. This proposal is consistent with that of the G20 group of developing countries. Members disagree on the possible exemptions, with the European Union suggesting that eight per cent of tariff lines receive lesser reductions. As this flexibility has the potential to severely weaken the agreement, other members suggest exemptions should apply to only one per cent of tariff lines. The major parties remain far apart on the degree of ambition of agricultural tariff cuts, but have agreed to keep talking.

The purpose of this paper is to examine the likely outcome of Vietnam's accession and the current WTO round and assess the impact on Vietnam's agricultural economy. In the next section we identify the existing policy stance and institutional features, and in the following section the likely policy changes are described in more detail. A quantitative analysis is undertaken in section 4, using ATPSM, a detailed global agricultural trade model designed for the analysis of multilateral

liberalisation. ATPSM, a joint UNCTAD-FAO product, includes Vietnam's major exports—rice, coffee and rubber—as separate commodities. However, it does not include cashew nuts, a significant export.

2. What's at stake

Export-led growth.

Vietnam is a relatively poor country with a population of 82 million generating annual output of \$45 billion. GDP has increased 7 per cent per annum since 1995, driven by exports of goods and services which have increased by 17 per cent over the period. Merchandise exports are currently worth (f.o.b.) \$25.6 billion, and imports (c.i.f.) \$31 billion, implying that trade exceeds GDP. The major destinations for Vietnam's exports are the European Union (20 per cent), United States (15 per cent), Japan (15 per cent), (China 9 per cent) and Australia (8 per cent). These links are more important than those with its ASEAN neighbours. On the import side, however, the major sources are Singapore (13 per cent), Chinese Taipei (13 per cent), Japan (13 per cent), Republic of Korea (11 per cent) and China (11 per cent). (WTO 2005. Data refer to 2004, except commodity group and destination, 2002.)

Tariffs on imports nominally average 17 per cent, but total tariff revenue collected amounted to 6.7 per cent of the value of imports in 2004. However, tariff revenue makes an important contribution to government revenues, 21 per cent. This would need to be replaced if tariff reform reduced tariff revenues.²

Agriculture

Agriculture makes a significant contribution to the economy's GDP, 23 per cent (in 2002). However, 67 per cent of the labour force is involved in producing this output. In other words, labour productivity is low. Growth in agricultural GDP has averaged around 4.3 in the 12 years since 1990, well below the national average. Nonetheless, the agriculture sector contributes to 28 per cent of merchandise exports and 9 per cent of imports. The major agricultural exports are rice (34 per cent of agricultural exports, mainly to Cuba, Malaysia, the Philippines and Indonesia), coffee (15 per cent, to the European Union and the United States) and rubber (12 per cent, to China and the European Union). Agricultural imports are more diverse, the main ones being processed tobacco (from China), concentrated dairy products (Australia and New Zealand), soyabean cake (China and Argentina) and cotton lint (the United States and Australia) (FAO 2004).

Market access

² Tariff reform need not reduce revenues. The increase in volume of imports may offset the reduction in the tariff rate. However, complete liberalization by necessity eliminates all the revenue.

Applied tariffs on Vietnam's agricultural imports average 24.5 per cent, well above the merchandise average. Tariffs are shown in table 1 for 35 aggregated commodity groups.

Table 1 Vietnam's applied agricultural tariffs

Commodity	Applied tariff	Commodity	Applied tariff
	%		%
Livestock	2	Cocoa beans	10
Bovine meat	20	Cocoa, proc.	29
Sheepmeat	20	Tobacco leaves	27
Pigmeat	25	Tobacco, proc.	65
Poultry	20	Oilseeds, temp.	12
Milk, conc.	22	Oilseeds, trop.	16
Butter	20	Vegetable oils	17
Cheese	20	Pulses	15
Wheat	12	Tomatoes	45
Rice	32	Roots & tubers	25
Barley	14	Apples	45
Maize	17	Citrus fruits	46
Sorghum	17	Bananas	40
Sugar, raw	8	Other tropical fruits	44
Sugar, refined	35	Tea	42
Coffee, green	20	Rubber	3
Coffee, proc.	50	Cotton	6
		Average	23.7

Source: Derived from FAOSTAT and UNCTAD TRAINS.

Vietnam's average agricultural tariff is significantly above its regional neighbours China (14 per cent), the Philippines (7 per cent), and Thailand (16 per cent), but on par with Indonesia (24 per cent).³ The most notable tariffs are on products for which Vietnam is a competitive exporter, namely rice (32 per cent), and green coffee (20 per cent). Tariffs on the major imports are moderate, 22 per cent on milk concentrates and 27 per cent on tobacco leaf. However, there exist peak tariffs of 40-100 per cent applied to fresh fruit, refined sugar, cereal products, wine, beer and tobacco products. Tariff escalation is evident, with processed livestock, sugar, coffee, cocoa and tobacco attracting higher tariffs than the unprocessed equivalents.

Two other points regarding tariffs are noteworthy. Some of the agricultural products are used as intermediate inputs into other products. Coarse grains and oilseeds are inputs into livestock production, and cotton is an input into textiles and apparel production. Tariffs on these goods are effectively a tax on production and possibly exports. The Vietnamese Government attempted to address this problem with a duty drawback scheme by which the import duty was exempt if production was for export. However, administrative delays hampered its implementation (Athukorala 2005). The impact of tariffs on inputs can be assessed using a measure of effective rates of protection.

³ Malaysia's average tariff is also high at around 26 per cent, but this is skewed by a high tariff of over 1000 per cent on tobacco leaf. If this is removed its tariff is 3 per cent.

In the agricultural sector, effective rates of protection are estimated to be high for rice and raw coffee, two major export crops, and fisheries, an expanding export industry. Livestock has negative protection because of the tariffs on imported inputs, maize and sorghum. Similarly, sugarcane is made more expensive to produce because of tariffs on chemicals and machinery.

Table 2 Effective rates of protection in Vietnamese agriculture

Commodity	%
Rice	18
Rubber	3
Coffee beans	39
Sugar cane	-1
Tea	65
Other crops	1
Pigmeat	-6
Cattle	4
Poultry	-1
Other	4
Forestry	5
Sea fishing	33
Fish farming	31

Source: (Athukorala 2005).

Finally, the average applied tariff in the agricultural sector in Vietnam at 24 per cent is significantly higher than the current average bound rates in several recent WTO accession countries, including China and Taiwan (table 3). However, Cambodia and Nepal, significantly poorer countries than Vietnam, have negotiated relatively high bound agricultural tariffs. Members in bilateral negotiations are likely to want Vietnam to bring its bound rates down to between 10 and 15 per cent.

Table 3 Bound agricultural tariffs in recent accession countries

Commodity	%
Albania	9.4
Croatia	9.4
Cambodia	28.1
China	15.8
Macedonia	11.3
Nepal	41.4
Taiwan (Chinese Taipei)	15.3

Source: (WTO) <http://stat.wto.org/CountryProfile/>

Non-tariff market access measures

Non-tariff barriers include various quantitative restrictions, import licensing, customs valuation procedures, rules of origins, trade-related investment measures, standards (i.e. technical barriers to trade) and sanitary and phytosanitary regulations. The WTO rules on these matters

are non-negotiable, although interpretation can be difficult. For example, SPS regulations are supposed to be implemented on a ‘scientific basis’.

In the agricultural sector there are quantitative restrictions on the imports of wine and beverages, tobacco and sugar. Vietnam has licenses on the importation of sugar, and in practise no licenses have been issued since 1997 (Nguyen and Grote 2004, p.22). This policy is not WTO-consistent and will need to be revised. The sugar industry is inefficient and from time to time has required government support to keep its mills in operation.

State trading entities have played an important role in Vietnam’s economy in the past. These institution lack transparency and are seen as a means of providing domestic support inconsistent with WTO regulations. GATT Article XVII requires that STEs must trade in a non-discriminatory manner and in accordance with commercial considerations. However, most of the limitations on private trading have been removed, eliminating the monopoly power of the government bodies.

Barriers to Vietnam’s exports

Vietnam is still heavily reliant on agricultural exports, and its main export markets are developed countries which tend to have high tariffs protecting their agricultural products. Table 4 shows Vietnam’s major export markets and the relevant tariffs facing its exports. There are very low rates of duty on the major exports, rice, coffee and rubber exports. There are, however, higher rates on more processed products, such as processed coffee and rubber footwear. Vietnam does not have preferential access into the European Union, as do the ACP and LDC countries. It does, however, have a bilateral agreement with the United States, and a regional agreement with its ASEAN partners, which take much of its rice exports. Rice is a sensitive products within the ASEAN Free Trade Agreement, and rice tariffs, 15 per cent in 2004, are to be reduced to no greater than 5 per cent in 2006.

Table 4 Tariffs facing Vietnam’s agricultural exports

Commodity	Country	MFN rates %
Rice	Cuba	13
	Malaysia	0
	the Philippines	0
	Indonesia	30
Coffee, green	European Union	4
	United States	0
Rubber	China	20
	European Union	-

Source: (WITS). Estimates of tariffs can vary for several reasons. Some tariffs are specific and hence the ad valorem equivalent depends on the relevant price, which may vary from year to year. The aggregation method, preferential arrangements and the treatment of inquota and outquota tariffs can make a significant difference to tariff estimates.

As a major rice exporter, growing mainly indica rice, Vietnam is virtually excluded from the potentially lucrative Japanese market because of the preference for the Japonica variety in that country. It exported 42 kt of Indica to Japan in 2001. Another potentially large market is the European Union, which produces and consumes both varieties and imports Indica and Japonica. The EU has imposed tariffs averaging 21 per cent on Vietnamese imports, but much higher tariffs on imports from Thailand, a potential competitor. Quotas exist on the export of Vietnamese rice, but these are generally not binding unless domestic prices rise sufficiently.

Vietnam is also a major exporter of coffee. It produces mainly the low grade robustas, mainly to the European Union and the United States. Both countries have low tariffs on unprocessed coffee. Recent technological changes have enabled roasters to make reasonable coffee from blends containing a high proportion of robustas, enabling Vietnam to capture some of the markets previously held by arabica producers. However, due to the already low tariff in the importing countries, trade liberalisation does not offer much scope for increased exports of coffee.

Domestic support

WTO developing countries must keep their Aggregate Measure of Support below ten per cent of the gross value of production. Vietnam's domestic support expenditure is well below this. It also has scope to shift support from the market distorting amber box to the exempt green box (Schmidt 2003, p.17).

Export subsidies

Vietnam provided assistance to exporters amounting to \$9 million in 2000, under an Export Support Fund (Schmidt 2003, p.18). The assistance went to fruit, vegetable and pigmeat producers. China was not permitted any export subsidies following its accession, and it seems likely that Vietnam will have to remove any export support (CIEM 2005, p. 88).

In summary, it appears that Vietnam has moderately high tariffs on its agricultural imports, low domestic support and minimal export subsidies. It faces low tariffs in its current export markets, although somewhat higher tariffs on more processed products. Tariff reductions relating to accession will very likely reduce Vietnam's import tariffs leading to significant allocative efficiency gains, but perhaps substantial adjustment costs. Multilateral liberalisation under the WTO, if it occurs, has the potential to raise Vietnam's import costs

without enhancing its exports greatly. Next, we estimate the magnitude of these likely impacts.

3. A quantitative assessment of agricultural reform

To assess the impact of trade policy reform we use ATPSM, a static global agricultural trade model jointly developed by UNCTAD and FAO. The model has a detailed commodity breakdown, including rice, coffee and rubber, three of Vietnam's major exports. It also covers 150 countries, plus the 25 EU members as one region. The model distinguishes between bound and applied tariffs and includes tariff rate quotas (where the tariff rate depends on whether imports exceed a specified quota); two import features of the post Uruguay Round tariff structure. The model results are driven by changes in policy variables (tariffs, export subsidies and domestic support) which determine changes in domestic prices, consumption and production. This in turn leads to a change in imports and exports, which feed into world prices. The model solves by finding a set of world prices that equate global imports and exports. Intersectoral effects are captured through cross-elasticities, but there are no constraints on the use of resources such as land, labour or water. Nor is there account of changes in stocks. Products are assumed to be homogeneous, with consumers and importers indifferent to the source of their products.⁴ The results indicate the effects of the policy changes assuming a constant base, 2002. There is no account of exogenous growth over the implementation period. The model is well-documented and is downloadable from the UNCTAD website.⁵ A brief description of the model can be found in the Appendix.

Scenarios

The aim of the analysis is to estimate:

- (i) the impact of Vietnam's WTO accession that involves reducing all agricultural tariffs to an average of 18 per cent; and
- (ii) the impact of a moderately ambitious WTO scenario.

To this end two scenarios are described in table 5.

⁴ This differs from the common Armington approach, in which heterogeneous products are differentiated by source.

⁵ The standard version of ATPSM is downloadable from www.unctad/tab. The version used here has been modified as documented in the Appendix.

Table 5: Alternative liberalisation scenarios

Scenario	Title	Countries	Tariffs	Export subsidies	Domestic support
			%	%	%
Scenario 1	Accession	Vietnam only	Reduced proportionately (by 24%) so that final weighted average tariff equals 18%. ⁶	0	0
Scenario 2	WTO	Developed countries	If >90, -60 If >60 and <90, -50 If >30 and <60, -45 If < 30, -35 with cap of 100.	-100	EU -70, US and Japan -60, others -50
		Developing countries	If >130, -40 If >80 and <130, -35 If >30 and <80, -30 If < 30, -25 with cap of 150. As for scenario 1 for Vietnam.	-100	-50
		LDCs	0	0	0

Accession refers to changes made by Vietnam assuming other WTO members make no changes to their policies. The WTO scenario refers to multilateral changes made by all members. This scenario do not include additional changes to Vietnamese import tariffs over and above the accession commitments. The thinking here is that Vietnam will join after the negotiations have concluded.⁷ The WTO scenario modelled here follows the EU October 2005 proposal in terms of bands and reductions, but without the exemptions for sensitive and special products.⁸ The policy changes in table 5 apply only to the 34 specified agricultural commodities. The LDCs in the model plus the Rest of World, which contains some non-LDCs, are exempt from reduction commitments.

The data

The base model volume data for Vietnam are shown in table 6. The volume data are from FAO and relate to 2002. Trade data are from Comtrade. Consumption has been derived from the production and trade data to ensure supply equals demand. The trade data have been

⁶ The final average is based on the initial import weights.

⁷ We do not simulate a scenario where Vietnam stays out of the WTO while multilateral reforms occur.

⁸ This scenario is more ambitious than any likely outcome because the exemptions may be important, particularly if they are to apply to eight per cent of tariff lines, as the European Union suggested, rather than the one per cent that would satisfy the United States. The EU proposal called for an increase in current imports or quota according to a formula if the tariff cuts are less than specified, but this idea was not taken up at the Hong Kong Ministerial (WTO 2005).

adjusted so that global imports equal global exports for each commodity. Stocks are implicitly assumed to remain unchanged. Tariffs, shown earlier in table 1, were compiled by UNCTAD and are available from WITS⁹. Elasticities are from FAO and modified where appropriate. World price for each commodity were compiled by FAO, and domestic prices are derived from world prices plus the policy variables (applied tariffs, export subsidies, domestic support and trade flows).

Impacts of liberalisation are largely dependent on the tariff reductions and the trade flows. Table 6 gives an indication of where the big impacts are likely to be. The major distortions are applied to milk concentrates and tobacco leaf. These products have significant imports coupled with high volumes.¹⁰

The demand and supply elasticities also influence the results. These are shown for Vietnam in table A1 in the Appendix.

⁹ WITS (World Integrated Trade System) is data retrieval software available from the World Bank for accessing trade and tariff data.

¹⁰ Reliable data for processed tobacco products are unavailable. Tariff revenues on these products in Vietnam are likely to be significant, but could perhaps be justified as a excise tax to encourage lower consumption.

Table 6: Base data for Vietnam's agriculture sector (2002)

Commodity	Consumption	Exports	Imports	Production
	tonnes	tonnes	tonnes	tonnes
Livestock	2,274,951	0	2,996	2,271,955
Bovine meat	201,375	1	23	201,354
Sheep meat	5,498	0	90	5,408
Pig meat	1,638,904	14,723	32	1,653,595
Poultry	430,871	0	10,869	420,002
Milk, conc.	26,962	0	26,962	0
Butter	7,441	0	7,441	0
Cheese	1,064	0	1,064	0
Hides & skins	24,283	11,780	717	35,346
Wheat	766,917	28,982	795,899	0
Rice	19,924,804	3,094,411	42,935	22,976,280
Barley	192,742	0	192,742	0
Maize	2,801,604	4,852	295,256	2,511,200
Sorghum	0	0	0	0
Sugar, raw	1,065,172	3,628	0	1,068,800
Sugar, refined	976,372	4,312	814	979,871
Coffee, green	21,841	666,859	0	688,700
Coffee, proc.	0	0	0	0
Cocoa beans	2,938	0	2,938	0
Cocoa, proc.	1,846	0	1,846	0
Tobacco leaves	59,130	3,031	27,761	34,400
Oilseeds, temp.	424,711	130,434	33,282	521,863
Oilseeds, trop.	843,485	71,945	118	915,312
Vegetable oils	440,445	19,967	259,993	200,419
Pulses	235,872	3,296	68	239,100
Tomatoes	0	0	0	0
Roots & tubers	1,551,807	301,971	3,922	1,849,856
Apples	42,136	0	42,136	0
Citrus fruits	463,386	103	0	463,489
Bananas	1,002,328	42,072	0	1,044,400
Other tropical fruits	2,980,683	227,247	31,331	3,176,600
Tea	12,362	77,238	0	89,600
Rubber	21,100	442,771	1,761	462,110
Cotton	128,721	22	116,354	12,388

Source: ATPSM database, derived from Comtrade and FAOSTAT

4. The results

Trade negotiators are generally interested in increasing exports without being flooded with imports. They wish to maintain tariff revenues, or at least ensure they are not eroded too much. Effects on producers may be given a higher priority than effects on consumers or taxpayers. Economists are more inclined to look at welfare effects, recognising that increasing exports also increases costs, and that gains to one group commonly involve losses

to another. With this in mind, changes in Vietnam's exports, imports, tariff revenues, producer surplus and welfare are presented in this section.

Accession appears to lead to a fall in exports but a gain in welfare in the agricultural sector whereas WTO liberalisation (which includes Vietnam's accession changes) has the opposite result, with the gain in exports being outweighed by the increased costs of imports.

Exports

Changes in exports for accession and the WTO liberalisation scenario are shown in table 7, along with initial values (repeated from table 6) for ease of comparison. As accession involves only Vietnam liberalising its own imports, there is no estimated increase in exports as a result of market expansion in other countries. In fact the dominant effect is a fall in exports of tropical fruit other than bananas. Vietnam both imports and exports tropical fruit, but is a net exporter. The initial applied tariff is reduced from 44 to 33 per cent, leading to a fall in production and a rise in consumption. The gap is accommodated by falling exports.

By contrast, the WTO scenario improves market access for Vietnam's exports. Liberalisation elsewhere increases demand for exports of livestock (pigs), rice, pigmeat, sugar, bananas, and citrus fruit. Vietnam currently exports piglets to China and Russia, and although the modelling results suggest European imports are the source of the expansion in demand, it is more likely that China could be an expanding market, taking into account China's proximity and the income effects of continued growth in this country. Lack of refrigeration in China, and Vietnam, influences the preference for fresh as opposed to chilled or frozen meat.

The Republic of Korea and Taiwan (Chinese Taipei) are the likely importers of pigmeat. Current production is primarily for the domestic market although trade data from 2001 suggest pigmeat is exported to Hong Kong, Russia, Macao and Malaysia. The industry is generally small-scale and inefficient. The 20 per cent of the sector using imported feeds is hampered by tariffs on these inputs. Liberalisation will reduce these costs. There is additional demand for pigmeat from the European Union, Norway and Switzerland but sanitary and phytosanitary considerations make these markets more difficult to access.

The increase in rice demand following WTO liberalisation comes from Japan, the European Union and Sri Lanka. Vietnam doesn't currently supply these markets, and doesn't produce the Japonica variety preferred in Japan. However, gaps in the market created by countries

supplying the European Union are likely to generate demand for Vietnam's rice. Vietnam has export controls on rice that are activated by rising domestic prices. Price stability effects are not captured in a static model such as ATPSM, but the controls may limit the response of producers to rising world prices.

Sugar is a sensitive industry, because of the large number of small, inefficient producers. Currently there are virtually no imports, with production of 1 million tonnes satisfying domestic demand. WTO members are pressing hard for Vietnam to significantly reduce its 35 per cent tariff, and if successful this is bound to lead to an increase in imports. Vietnam both imports and exports sugar, although it is, nominally at least, a net exporter. The increase in the world price of sugar under the WTO scenario stimulates production and generates an exportable surplus of \$19 million. However, this is probably a spurious result reflecting restrictions on imports.

The increase in global demand for bananas comes from the European Union. Vietnam doesn't supply this market currently but may fill in the gaps left by preferred producers that switch from the United States to the higher priced but restricted EU market.

Finally, the policies modelled here have little impact on exports of coffee, rubber and cashew nuts. There are low tariffs on green coffee. Rubber is not included in the Agreement on Agriculture, although it is covered under the Non-Agriculture Market Access agreement. Cashew nuts, another significant export, are not modelled within ATPSM.

Table 7 Initial and change in Vietnamese exports from alternative scenarios

Commodity	Initial	Accession	WTO
	\$m	\$m	\$m
Livestock	0	0.0	11.9
Bovine meat	0	0.0	3.8
Sheepmeat	0	0.0	0.0
Pigmeat	18	0.4	18.8
Poultry	0	0.0	0.0
Milk, conc.	0	0.0	0.0
Butter	0	0.0	0.0
Cheese	0	0.0	0.0
Hides & skins	17	-0.1	0.2
Wheat	4	0.0	0.4
Rice	646	-1.8	29.1
Barley	0	0.0	0.0
Maize	1	0.0	0.0
Sorghum	0	0.0	0.0
Sugar, raw	1	0.0	9.2
Sugar, refined	1	-1.4	19.1
Coffee, green	945	0.0	-3.7
Coffee, proc.	0	0.0	0.0
Cocoa beans	0	0.0	0.0
Cocoa, proc.	0	0.0	0.0
Tobacco leaves	9	-0.1	0.2
Oilseeds, temp.	29	-0.6	3.7
Oilseeds, trop.	20	0.0	0.1
Vegetable oils	5	0.0	0.0
Pulses	2	-0.1	0.5
Tomatoes	0	0.0	0.0
Roots & tubers	27	-0.1	1.6
Apples	0	0.0	0.0
Citrus fruits	0	0.0	5.6
Bananas	20	0.0	5.3
Other tropical fruits	167	-40.8	-7.2
Tea	175	0.0	0.8
Rubber	275	0.0	2.7
Cotton	0	0.0	0.0
Total	2,361	-45	102

Source: ATPSM simulations.

Imports

Both scenarios assume similar reduction in Vietnam's tariffs because it is assumed the terms of accession will cover its tariff reduction commitments (see table 8). The WTO scenario has a lesser overall impact on Vietnam's imports because of the increase in world prices following multilateral liberalisation. This reduces the quantity of imports in the absence of additional domestic reforms.

The rise in world prices under the WTO and not the accession scenario alters the mix of import effects. Following accession the major increases in the value of imports are in livestock, poultry meat, maize and tobacco. Vietnam currently imports livestock from the European Union. The absence of refrigeration in Vietnam underlies a preference for fresh rather than chilled or frozen meat. The tariff on livestock is low but tariffs on processed meat are much higher, around 20 to 25 per cent, and increased demand for the processed product will pull up consumption and imports of live animals. Imports of poultry are currently minimal but the increase in demand following a fall in the tariff is unlikely to be met by domestic production alone. Poultry contributes to around 20 per cent of national meat consumption (excluding fish).

Maize is currently protected by a tariff of 17 per cent. Imports, at 295 kt, from the European Union, the United States and China, are around 10 per cent of consumption. Increased demand for livestock products will drive demand for feed. Imports are estimated to rise by 19 per cent under the expected accession arrangement. Maize is an input into livestock production and lower maize prices will assist livestock producers who are facing low prices for processed products.

The likely reduction in tariffs following multilateral liberalisation can be expected to lead to an increase in imports in the tobacco, wheat, concentrated milk and poultry. Leaf tobacco is a major agricultural import, worth \$137 at world prices. Tariffs are currently 28 per cent. A 24 per cent tariff reduction increases imports by around 5 per cent in each scenario. The other increases in import values are largely price effects, reflecting increases in world prices and inelastic demand. There are falls in imports of maize and livestock.

Table 8 Change in Vietnamese imports from alternative scenarios

Commodity	Initial	Accession	WTO
	\$m	\$m	\$m
Livestock	2	10.7	-3.8
Bovine meat	1	7.0	0.0
Sheepmeat	0	0.3	0.0
Pigmeat	1	0.0	0.0
Poultry	0	26.2	2.6
Milk, conc.	128	1.0	3.1
Butter	7	0.3	0.6
Cheese	2	0.0	0.1
Hides & skins	55	0.0	0.0
Wheat	41	1.4	5.5
Rice	3	0.0	0.1
Barley	0	0.1	0.4
Maize	6	6.4	-2.4
Sorghum	0	0.0	0.0
Sugar, raw	1	0.0	0.0
Sugar, refined	27	3.3	0.0
Coffee, green	11	0.0	0.0
Coffee, proc.	4	0.0	0.0
Cocoa beans	0	0.0	0.0
Cocoa, proc.	3	0.1	0.1
Tobacco leaves	137	5.3	4.8
Oilseeds, temp.	6	0.0	0.1
Oilseeds, trop.	0	0.0	0.0
Vegetable oils	46	3.8	3.4
Pulses	12	0.0	0.0
Tomatoes	1	0.0	0.0
Roots & tubers	1	0.0	0.0
Apples	9	1.5	1.5
Citrus fruits	6	0.0	0.0
Bananas	0	0.0	0.0
Other tropical fruits	3	0.3	0.3
Tea	16	0.0	0.0
Rubber	3	0.0	0.0
Cotton	41	0.4	1.4
Total	572	68	18

Source: ATPSM simulations.

Government revenues

Imports duties (including non-agriculture) equal 7 per cent of the value of merchandise imports and contribute 21 per cent of total tax revenue (WTO 2005). The main sources of tariff revenue in the agricultural sector are tobacco, wheat, milk powder, vegetable oils and fruit. The estimated fall in tariff revenue in the sector is 15 per cent in the accession case and 20 per cent following WTO liberalisation (table 9). The reduction is less than the tariff rate decrease (i.e. 24 per cent) because of the increase in imports (12 per cent).

Table 9 Change in Vietnamese tariff revenues from alternative scenarios

Commodity	Initial	Accession	WTO
	\$m	\$m	\$m
Livestock	0.1	0.2	-0.1
Bovine meat	0.0	1.1	0.0
Sheepmeat	0.0	0.0	0.0
Pigmeat	0.0	0.0	0.0
Poultry	2.9	3.3	-0.3
Milk, conc.	10.7	-2.4	-2.0
Butter	1.9	-0.4	-0.4
Cheese	0.4	-0.1	-0.1
Hides & skins	0.0	0.0	0.0
Wheat	11.5	-2.6	-2.3
Rice	2.9	-0.7	-0.7
Barley	2.3	-0.5	-0.5
Maize	5.5	-0.5	-1.6
Sorghum	0.0	0.0	0.0
Sugar, raw	0.0	0.0	0.0
Sugar, refined	0.1	0.9	0.0
Coffee, green	0.0	0.0	0.0
Coffee, proc.	0.0	0.0	0.0
Cocoa beans	0.3	-0.1	-0.1
Cocoa, proc.	0.9	-0.2	-0.2
Tobacco leaves	23.1	-4.4	-4.5
Oilseeds, temp.	0.9	-0.2	-0.2
Oilseeds, trop.	0.0	0.0	0.0
Vegetable oils	11.0	-2.2	-2.2
Pulses	0.0	0.0	0.0
Tomatoes	0.0	0.0	0.0
Roots & tubers	0.1	0.0	0.0
Apples	10.4	-2.0	-2.0
Citrus fruits	0.0	0.0	0.0
Bananas	0.0	0.0	0.0
Other tropical fruits	10.0	-2.3	-2.3
Tea	0.0	0.0	0.0
Rubber	0.0	0.0	0.0
Cotton	8.0	-1.9	-1.9
Total	103.1	-15	-21

Source: ATPSM simulations.

Producer surplus

Many poor people depend on agricultural production and it is thus important to assess the impact of policy changes on agricultural producers. Producer surplus is a measure of the profits in the industry, that is, returns minus costs of production. Reducing tariffs tends to reduce domestic prices and returns to producers, depending on the export and import shares. Rising prices may be associated with falling returns if demand falls sufficiently. However, multilateral trade liberalisation generally leads to rising world prices, and the overall effect on the agricultural sector depends on the

combination of factors pushing prices in different directions. The change in producer surplus under the two scenarios is shown in table 10.

Tariff reduction associated with accession makes Vietnamese producers worse off. The major effects occur in the fruit, poultry, livestock and maize sectors. Many poor farmers are livestock producers, so the negative impact on these sectors is a concern.

Table 10 Change in Vietnamese producer surplus from alternative scenarios

Commodity	Accession	WTO
	\$m	\$m
Livestock	-17.0	25
Bovine meat	-12.6	7
Sheepmeat	-0.6	0
Pigmeat	-0.3	27
Poultry	-26.8	-2
Milk, conc.	0.0	0
Butter	0.0	0
Cheese	0.0	0
Hides & skins	0.0	0
Wheat	0.0	0
Rice	-4.2	55
Barley	0.0	0
Maize	-11.0	7
Sorghum	0.0	0
Sugar, raw	0.0	8
Sugar, refined	-4.1	16
Coffee, green	0.0	-3
Coffee, proc.	0.0	0
Cocoa beans	0.0	0
Cocoa, proc.	0.0	0
Tobacco leaves	-5.6	-2
Oilseeds, temp.	-0.5	3
Oilseeds, trop.	0.0	0
Vegetable oils	-1.7	-1
Pulses	-0.1	1
Tomatoes	0.0	0
Roots & tubers	-0.1	2
Apples	0.0	0
Citrus fruits	0.0	3
Bananas	0.0	4
Other tropical fruits	-26.8	-4
Tea	0.0	1
Rubber	0.0	2
Cotton	-0.2	0
Total	-112	147

Source: ATPSM simulations.

The WTO scenario leads to rising world price which are passed through to domestic producers and consumers. Producers in most sector benefit from the prices rises, although there are negative impacts in poultry, coffee, tobacco and tropical fruits. In these sectors the negative price effects from accession outweigh the multilateral liberalising effects on world prices.

Welfare

Welfare is a measure of the producer and consumer surplus effects plus government revenues and deadweight losses. Gains from removing deadweight losses arise from using resources more efficiently, such as encouraging producers to move from the sugar to the coffee sector. There may also be terms of trade effects, such as the rise in prices of wheat that comes from policy reform elsewhere. These effects may be positive or negative depending on whether the country is an importer or exporter of the product. Vietnam is an agricultural exporter, but tends to import the temperate products for which prices rise the most. These are wheat, maize and dairy products. Removal of protection in Europe and Japan lead to price rises estimated at around ten per cent for wheat and dairy products and five per cent for maize. Fortunately, price rises for tobacco leaf and vegetable oils, two other important imports for Vietnam, are minimal. Rice producers are the major beneficiaries, although the estimated world price impacts are minimal, 1 per cent. This result is sensitive to assumption made about changes in protection, particularly in Indonesia and Japan. In Indonesia the applied tariff is well below the MFN rate, although Vietnam has preferential access through AFTA. In the Japanese case the cap of 100 per cent is effective, in the modelling at least, although the Japanese regard rice as a sensitive product and have not agreed to this.

Table 11 Change in Vietnamese welfare from alternative scenarios

Commodity	Accession	WTO
	\$m	\$m
Livestock	0.23	-0.06
Bovine meat	1.17	0.02
Sheepmeat	0.05	-0.01
Pigmeat	0.00	0.36
Poultry	4.59	-0.26
Milk, conc.	0.20	-4.17
Butter	0.04	-1.22
Cheese	0.01	-0.15
Hides & skins	0.00	0.10
Wheat	0.05	-10.26
Rice	0.03	7.09
Barley	0.02	-0.38
Maize	0.94	-2.36
Sorghum	0.00	0.00
Sugar, raw	0.00	0.15
Sugar, refined	0.92	0.52
Coffee, green	0.00	-3.02
Coffee, proc.	0.00	0.00
Cocoa beans	0.00	0.00
Cocoa, proc.	0.02	-0.07
Tobacco leaves	1.22	-1.38
Oilseeds, temp.	0.00	0.73
Oilseeds, trop.	0.00	0.01
Vegetable oils	0.54	-0.14
Pulses	0.00	0.01
Tomatoes	0.00	0.00
Roots & tubers	0.00	0.31
Apples	0.58	0.17
Citrus fruits	0.00	0.04
Bananas	0.00	0.17
Other tropical fruits	0.40	1.46
Tea	0.00	0.62
Rubber	0.00	2.09
Cotton	0.02	-1.24
Total	11.03	-10.90

Source: ATPSM simulations

5. Implications and conclusions

Vietnam's accession to the WTO is attractive for reasons unrelated to agriculture (e.g. textiles, investment, services). Nonetheless, as a major industry employing many low-income workers, the effects of accession on the sector are worthy of analysis. The impacts on agricultural exports are likely to be minimal because Vietnam's major exports — rice, coffee and rubber — do not face significant tariff barriers. Furthermore, accession is unlikely to reduce these barriers, as WTO members commonly apply MFN rates on imports of non-members. Vietnam is disadvantaged by not having a quota for exports of certain products, but WTO membership doesn't provide this. On the import side accession will require reduced tariffs in Vietnam on a range of sensitive goods including

sugar, maize and oilseeds, and Vietnam can expect an increase in imports. This will cause some dislocation of labour from these industries. Maize and oilseeds are inputs into the livestock industry and these reforms will make the downstream industries more competitive. Following accession, government (tariff) revenues will decline, but not by as much as the tariff cut because of the partially offsetting increase in imports.

Multilateral liberalisation under the WTO is uncertain, particularly in its timing and the specific products which countries may choose to exempt from the agreed cuts. When an agreement is implemented it is expected to significantly raise world prices of dairy products, wheat, maize, sugar and ruminant meats (i.e. not pig and poultry meat). Vietnam is an agricultural exporter, but prices rise more for the products that it imports than it exports and as a result Vietnam will experience a fall in welfare. However, exports will rise and agricultural producers will be better off. Rice is a potentially large market if Japan, the European Union and the Republic of Korea were to liberalise, but Vietnam does not currently export to these markets. Liberalisation does little for exports of coffee, Vietnam's second largest agricultural export.

The implications for poverty are likely to be positive. Many poor farmers are livestock producers and rising producer prices should help. The larger producers, who use imported grains as intermediate inputs, will benefit from lower tariffs on these items. On the other hand, consumers will pay more for their food purchases, and food is a large share of the budget for many. Liberalisation may tighten the link between domestic and world prices, particularly if the current price sensitive constraint on rice exports is lifted. Rice is a thin market and world prices are relatively volatile. Exposure to world prices may put poor consumers at greater risk.

Given the inevitability of accession and the likely further liberalisation, what can the government do to facilitate the adjustment? Reforms are liable to cause unemployment of capital, labour and land if these resources aren't free to move between sectors. A functioning capital market, flexible exchange rates, policies to ease the movement of labour, sound macro policies and institutional reform are some of the many improvements that can help adjustment. Timing and sequencing are important. Just as it is desirable to reform the banking system before opening up the capital markets, it is also desirable to reform the labour markets before liberalising trade. Likewise, it is necessary to generate jobs in the export sector (e.g. textiles and services) before forcing adjustment on the import-competing sector.

This analysis is deficient in several respects. The production and trade data are two or three years old, and this may matter for some products. For example, coffee prices have surged since 2002. The terms of accession and multilateral liberalisation have not yet been finalised, and may not be implemented as negotiated. The model does not take account of bilateral trade, and products in the model are

assumed to be homogenous, implying exports from Vietnam can satisfy demand in any country. This leads to an overstatement of the gains. On the other hand, dynamic gains from productivity improvements and investment flows are ignored. Furthermore, we have ignored the impacts of changes in the industrial and service sectors, which are likely to dominate agricultural impacts, and provide employment for labour moving out of the agricultural sector. Finally, we have ignored duty drawbacks, the refund available to direct exporters to compensate for the cost imposed by tariffs on inputs. It is not clear what effects this would have on agricultural exports.

This study identifies the likely impacts from liberalisation. Further studies could usefully focus on the adjustment process and the impacts on poverty. While liberalisation should enhance growth and alleviate poverty, the distributional effects will dominate the allocative efficiency effects. Analysis of the distributional effects requires modelling of the markets for capital, land and labour as well as commodities. A general equilibrium analysis coupled with household survey data would be required for this purpose.

Another concern is price stability. Vietnam's producers and consumers are unused to volatile prices and lack instruments, such as hedging and future's markets, to handle the risk.

Vietnam's integration into the global economy seems well advanced, but much remains to be done. This study has attempted to examine a small aspect of the integration process, and hopefully will assist policy makers in developing sound policy to take advantage of opportunities and cope with the adjustment process.

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Appendix 1:

Table A1 ATPSM's demand and supply elasticities for Vietnam

Commodity	Demand elasticity	Supply elasticity
Livestock	-0.48	0.16
Bovine meat	-0.48	0.16
Sheepmeat	-0.4	0.15
Pigmeat	-0.45	0.25
Poultry	-0.9	0.25
Milk, conc.	-0.5	0.5
Butter	-0.7	0.07
Cheese	-0.5	0.15
Hides & skins	-0.4	0
Wheat	-0.6	0.83
Rice	-0.2	0.21
Barley	-0.35	0.32
Maize	-0.35	0.32
Sorghum	-0.35	0.45
Sugar, raw	-0.6	0.6
Sugar, refined	-0.6	0.6
Coffee, green	-0.15	0.2
Coffee, proc.	-0.15	0.2
Cocoa beans	-0.29	0.45
Cocoa, proc.	-0.55	0.4
Tobacco leaves	-0.5	0.2
Oilseeds, temp.	-0.5	0.5
Oilseeds, trop.	-0.5	0.5
Vegetable oils	-0.95	0.17
Pulses	-0.33	0.4
Tomatoes	-0.52	1.2
Roots & tubers	-0.5	0.3
Apples	-0.85	0.56
Citrus fruits	-0.6	1.42
Bananas	-0.89	0.48
Other tropical fruits	-1.04	0.48
Tea	-0.43	0.14
Rubber	-0.25	0.25
Cotton	-0.2	0.2
Average		

Source ATPSM database

Appendix 2: ATPSM Model Documentation

The Agricultural Trade Policy Simulation Model (ATPSM) is a comparative static partial equilibrium global trade model with the following features:

1. A simultaneous equation system for all countries specifying production, consumption, exports and imports that respond to domestic price changes, given a policy changes, complete price transmission and perfectly competitive markets.
2. Tariff rate quotas and quota rents;

3. Distinction between bound and applied tariff rates.
4. Stocks remain unchanged.

The standard equation system for all countries has four equations:

$$\begin{aligned}
 (1) \quad \hat{D}_{i,r} &= \eta_{i,i,r} \left[\hat{P}_{wi} \left(1 + \hat{t}_{ci,r} \right) \right] + \sum_{\substack{j=1 \\ i \neq j}}^J \eta_{i,j,r} \left[\hat{P}_{wj} \left(1 + \hat{t}_{cj,r} \right) \right]; \\
 (2) \quad \hat{S}_{i,r} &= \varepsilon_{i,i,r} \left[\hat{P}_{wi} \left(1 + \hat{t}_{pi,r} \right) \right] + \sum_{\substack{j=1 \\ i \neq j}}^J \varepsilon_{i,j,r} \left[\hat{P}_{wj} \left(1 + \hat{t}_{pj,r} \right) \right]; \\
 (3) \quad \Delta X_{i,r} &= \gamma_{i,r} \Delta S_{i,r}; \\
 (4) \quad \Delta M_{i,r} &= D_{i,r} \hat{D}_{i,r} - S_{i,r} \hat{S}_{i,r} + \Delta X_{i,r};
 \end{aligned}$$

where D , S , X , and M denote demand, supply, exports and imports respectively;

$\hat{}$ denotes relative changes and Δ absolute changes;

P_w denotes world price;

t_c denotes the domestic consumption tariff and t_p denotes the domestic production tariff;

ε denotes supply elasticity, η denotes demand elasticity, and γ denotes the initial ratio of exports to production;

i and j are commodities indexes; and

r is a country index.

Equation 3 requires that the change in exports in each market is some proportion of the change in production. This proportion is determined by the ratio of exports to production. For example, if all the initial production is exported, all the change in production is exported. If half the initial production is exported, half of the change in production is exported. This implies that the proportion of exports to production is maintained. Equation 4 clears the market, so that production plus imports equals domestic consumption and exports.¹¹ Domestic price are linked to world price via import tariffs, export subsidies and domestic support. Full transmission is assumed within the time horizon. Simulation involves finding a set of world prices that satisfies this equation. This is done using Solver in Microsoft Excel. Once world and domestic prices are determined, changes in consumer surplus, producer surplus, government revenues and welfare can be calculated by country and commodity in the usual fashion. Producer surplus may include quota rent received on exports under quota.

For this application the standard version of ATPSM has been modified to include the following features:

¹¹ This paragraph is taken from the ATPSM Handbook, available from UNCTAD's website at www.unctad.org/tab.

- (i) A land constraint that redistributes unused acreage. The production of wheat, barley, rice, maize and sorghum in each country is raised or lowered by the average change in production multiplied by the ratio of land to other primary factors. This assumes a tonne of each crop in a country uses the same amount of land. Total production of crop may fall or rise depending on the contribution of land compared with capital and labour.
- (ii) Production quotas and quota rents. Production quotas are specified for EU raw sugar and dairy products, US tobacco, Canadian dairy and poultry and Japanese rice and dairy. These quotas are assumed to be binding unless the market price falls below the shadow price. Producers then respond according to the specified supply elasticity. Quota rent contributes to producer surplus.
- (iii) A producer response to changes in quota rents on exports. Here there is no shadow price specified. Producers respond immediately to any change in rent. This implies the supply curve goes through the point at which quantity and price are observed. This permits trade diversion when quota rents change as a result of mfn reductions.
- (iv) An enlarged European Union with 25 members.
- (v) A revised determination of export or imports so that the largest trade flow is a residual. That is, for net exporters imports are a constant function of consumption and the change in exports is determined by changes in consumption, production and imports.
- (vi) Revision of domestic support data to include amber box payments for the major users. The difficulty here is the extent to which amber box payments are conflated with border measures, implying that if tariffs are removed, the additional effect of reducing support is minimal. (See de Gorter, Ingco and Ignacio (2004) for a comprehensive discussion.)