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This paper is from the
GTAP Annual Conference on Global Economic Analysis
https://www.gtap.agecon.purdue.edu/events/conferences/default.asp

Vietnam's Accession to the WTO: Ex-post evaluation in a dynamic perspective *

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April 15th, 2008

Abstract

Vietnam has been part of countries intensively studied by CGE modellers for the past years. This rapidly growing economy has participated in a number of new bilateral agreements and has recently joined the World Trade Organisation (WTO), leading to numerous assessments of expected gains. Various figures have been proposed for the latter, ranging from a few hundred million (Dimaranan et al., 2005) to dozens of billion dollars (Roland-Holst et al., 2002), obtained under very diverse modelling assumptions. The particular context of rapid growth and structural changes of Vietnam makes this type of exercise delicate under the CGE framework.

In this paper, we propose a new assessment of Vietnam accession in a dynamic approach. Our analysis benefit from the ex-post perspective offered one year after the WTO's membership acceptation. We rely on a dynamic multi-region multi-sector CGE (MIRAGE model from CEPII) in a version incorporating duty-drawbacks modelling. Concerning WTO provisions, tariff diminution commitments are taken into account at a fine level thanks to the MAcMap-HS6 database.

In addition to the standard assessment methodology, we show how baseline improvements allow better results. A particular attention is paid on the role of textile and garment sectors, an important issue in the negotiations. The sensitivity of the results to some different assumptions on labour market or macro closure is also tested.

Our results tends to show that gains for Vietnam linked to WTO accession are positive for merchandises commitments, but highly dependent on the evolution of textile and apparel sectors, whose exports were boosted by the commitments.

JEL Classification: D58; F13; F15.

Key words: computable general equilibrium model, trade policy, international trade organisations

*This work has been completed with the support of Adetef Vietnam in the context of the French-Vietnam Economic and Finance Forum. We thank the economists from Ministry of Planning and Investment for their help. Special thanks to Yvan Decreux and Christophe Gouel for helpful technical discussions.
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1 Introduction

Experiencing a tremendous growth in the steps of China, Vietnam is more and more scrutinised by the international community, fascinated by the recovery of this communist country. The recognition of this success came to an apogee with the accession of the country to the WTO on January 11, 2007. This process of accession, started in 1995, was in the continuation of the radical economic reform initiated ten years earlier. As Vietnam success relies heavily on exports (representing more than 70% of GDP in 2005), especially to developed countries' markets, everyone anticipates a very positive impact of this new status. However, assessing more quantitatively the effect of the commitments remains a sensitive exercise: many CGE ex-ante evaluations led to diverging diagnostics, which fed the critics on the limitation of these tools for such analysis.

This paper intends to prolong the works on the issue of Vietnam's accession to WTO, using a quantitative assessment with CGE methodology. Rather than eluding some technical problems which have been emphasised in the literature, we will look whether they constitute real constraints for the relevance of the analysis and if so, what can be attempted to get around these difficulties. As far as we know, this study is the first to implement the final tariff commitments at the HS6 level of detail and to take into account the alternative effect of regional integration in the assessment.

Vietnam committed for some changes on a large number of its tariffs and also promised to implement a set of other measures concerning technical barriers to trade, intellectual property, and liberalisation in services. The case of Vietnam and WTO is also particularly interesting because this country undergoes a strong growth with important structural changes, is highly dependent on trade and has been studied by several teams of modellers. As WTO accession went past, it is now easier to review the different works and compare the proposed results with what effectively occurred to the Vietnamese economy.

Our main focus will be the effect of WTO accession for Vietnam, mainly through the commitments signed in late 2006. The paper will be organised the following way. After having briefly reminded what is the situation of Vietnam today and what are the main challenges for this country related to trade policies, we will in a first section delimit the aspects in the WTO commitments that we can quantitatively assess in order to understand what part of the story our CGE analysis can cover. Secondly, we will conduct our own standard analysis of Vietnam accession using MIRAGE, the CGE from CEPII, with most commonly recognised modelling features. This first simulation will be used as benchmark for the rest of the analysis. This section will end with a comparison with results from previous studies and a review of some critics made to the methodology. In a third step, we will compare these results to the observed trends and show how to improve the results from section 2 with a more precise baseline. In particular, we will focus on a few strategic sectors see how better estimating quantitative restrictions is determinant to understand the outcome of these negotiations. Last, we will test some alternative hypotheses on labour market and macroeconomic closure to illustrate the sensitivity of these assumptions.

2 Vietnam trade policy and WTO accession

2.1 Vietnam economic and trade history

After two decades of war, Vietnam entered in the end 70s a period of planned economy which aimed at rebuilding agricultural and industrial capacities. However, the rhythm of recovery of its economy was boosted by the "Doi Moi" inflexion of 1986, initiating a liberalisation of prices, a reform of the legal and institutional environment and the opening up of the country to the rest of the world through incentives for trade-oriented industries and foreign direct investments. Vietnam revealed quickly a strong supporter of economic integration, which was illustrated by two major initiatives in 1995: the entrance into ASEAN and the application for WTO membership.

The effects of the "Doi Moi" policy have been particularly visible over the last decades. The Vietnamese gross domestic product has been multiplied by 3 from 1987 to 2006, with a sustained growth at an average rate of 7.3%.[1] With a share of exports exceeding 70% of its GDP (see figure 1), Vietnam succeeded to open up rapidly and to achieve at the same time considerable social progress. The country is today frequently cited as an example in terms of poverty reduction and development achievements.

[Figure 1 about here.]

However, because of the difficulties encountered by South-East Asia in the late 90s, the trade wake-up of Vietnam is still recent. International trade has exploded over the last five years at a rate exceeding 17% a year following a model of industrial development quite similar to China's. Vietnam has specialised its exports on a few labour-intensive industrial sectors with high demand from developed economies, and valued its natural resources (oil, agricultural products) in a context of high prices. Understanding the role of WTO accession in this context of rapid development is a delicate task, considering all the different influences that drive Vietnam opening.

2.1.1 Vietnam trade liberalisation: the take-off

When negotiations for accession began in 1995, tariffs were still high in the country and restricted a significant part of trade. Some heterogeneity remains today in the level of protection across sectors (still 66% of applied duty on beverage and tobacco and 34% on motor vehicles in 2006).[2] However, the overall protection decreased significantly in the recent period from 19.0% in 1999 to 13.2% in 2006.

[1] Source: World Development Indicators

[2] Source: WITS, UNCTAD. Trade weighted average on major partners are used on WITS data for these calculations. However, the tariff structure presented in part 2 follows a methodology based on reference group weights, as applied in MAcMap database.

In connection with this evolution, Vietnam trade has experienced a very rapid growth with an average annual growth of 16.9% in import value between 2000 and 2005 and 19.6% on export.[3] But, as for most developing countries, the structure of these exchanges is very asymmetric in type of goods as in identity of partners.

Imports are mainly sourced from regional producers, which emphasises the importance of trade agreements with neighbouring partners. ASEAN, China and Taiwan feed the domestic market with processed goods and industries with raw materials, whereas high quality products are delivered by South Korea and Japan. In particular, the country is dependent on refined petroleum products (18.1% of imports in 2005), plastics and chemical products (15.9%), metals and iron (11.8%), and textile raw materials for its exporting industry (4.4%).

[Figure 2 about here.]

[Figure 3 about here.]

This surge in imports needs has been compensated by an expansion of exports, helped by several devaluations of the Vietnam Dong and a policy of duty drawbacks. The major export commodity is crude oil (23% in 2005), which boosts export revenues thanks to the increase in the price of energy. However, Vietnam still depends on foreign refinery capacities and needs to import its refined oil. Several projects are aiming at getting out of this configuration but none is completed at this date.

Vietnam has fostered a specialisation strategy for exports with the development of a few labour-intensive industrial sectors that have revealed particularly effective. Main exports, besides oil, are apparel (15.0%) and footwear (14.8%), which rely mainly on western markets' demand, in a context of high international competition. Other significant sectors are furniture (5.4%) and primary sectors: coffee and tea (4.1%), sea products (6.6%).

Looking at Herfindahl index,[4], Vietnam presents similar concentration to some of its closest neighbours such as China or Thailand (see table 1). But, index values change with the different levels of aggregation. At the HS6 level (96 sectors), differences between China and Vietnam in terms of sectoral concentration appear larger and Vietnam shows as much dependency on a few lines as a less developed economy as Cambodia.

[Table 1 about here.]

This dependency of Vietnam exports on a few products make the country particularly vulnerable to conjunctural parameters and trade ruling. In particular, the quality of its relations with a

[3] Trade data presented here come from CHELEM database, CEPII's harmonised database on global trade, relying mainly on COMTRADE.

[4] We computed a normalised Herfindahl-Hirschmann, in 2005, using different nomenclatures for goods: hs2 (96 lines), hs4 (1241 lines) and hs6 (5113 lines) in the BACI database

few major western economies is vital for Vietnam and conditions greatly the success of trade negotiations.

A first illustration of this dependency is the effect of the recognition by the US of Vietnam as a regular trade partner in 2001 through the US Bilateral Trade Agreement (US-BTA). Even if Vietnam remained under the "non-market economy" status, this decision changed drastically the pattern of trade between the two countries. This was particularly significant concerning the exports of textile from Vietnam which exploded after 2001 when US tariffs on Vietnamese products went down from non-MFN (Most Favoured Nation) to the MFN regime: exports to North America jumped from $80 million to $2,340 million in only two years. However, exports of textile were still constrained under quotas and after the end of the Agreement on Textile and Clothes for WTO countries in 2005, Vietnam was one of the last countries exposed to this kind of restrictions (a notable exception however is the Memorandum of Understanding signed between the US and the EU with China to agree on some delayed full access to their markets).

Concerning exports of shoes, Vietnam depends heavily on European markets, which absorbed $3,103 million from the $5,045 million exports in 2005. When imports in the EU were submitted to an anti-dumping policy in mid 2005, even if the US new opportunities enabled the Vietnamese shoes industries to find a new substitution market, the growth rate of shoes exports was slowed down from 23.4% in 2003 and 2004 to 10.5% in 2005.

2.1.2 An active trade policy to consolidate benefits of openness

In order to promote its exports, Vietnam has multiplied legal reforms and trade agreements during the last decades. After the implementation of HS tariff (instead of quotas), the creation of export zones and the introduction of duty exemptions on export industry's inputs (duty drawbacks), the country signed numerous agreements to obtain a better access on foreign markets. The first important sign of normalisation of trade relations was the agreement with the European Union in 1992, which was followed by the end of the US embargo in 1994 and the entrance in ASEAN in 1995. In 1999, Vietnam obtained from Japan access to the MFN status and in 2000, with the US-BTA, the same concession was obtained from the USA in exchange of partial tariff liberalisation and domestic reforms. The US-BTA was particularly important because it included several requirements based on WTO regulations, going even further on a few topics, such as regulation of services, and intellectual property dispositions (known as "WTO+" commitments).

As a consequence, the accession to WTO appears as the final mark of a long-prepared process rather than the beginning of a new era. As an illustration, Vietnam had already signed in 2000 commitments with 129 countries to provide MFN access to its products, including 57 formalised trade agreements (Niimi et al., 2003). Major additional agreements followed the US-BTA, such as the Asian Free Trade Agreement in 2001, completed with a China-ASEAN and a Japan-ASEAN agreement in 2002 and 2003. An important agreement was finally signed in 2004 with the European Union to guarantee the support for WTO membership, which was obtained in

late 2006 with the support of the USA.

2.2 WTO entrance commitments

Concessions required from applicants during WTO negotiations have shown more and more stringent over time. The issues addressed between Vietnam and its main trade partners and the final outcome of negotiations ultimately reflect the new nature of trade concerns.

Tariff barriers to trade: A large number of cuts were obtained after years of negotiations with a schedule of reduction planning a tariff decrease for 4,235 products among more than 10,000 HS8 lines till 2014, most of them being implemented by 2012.[5] Agricultural sectors remain protected with less than half of lines subject to cut with simple average bounds decreasing from 25.4% to 21.0% (figure 4). Industrial products lines have more important tariff peak cuts and are lowered in average from 16.2% to 12.4% (figure 5). All products covered by the Information Technology Agreement are committed to enter duty-free in 2014 at the latest.

[Figure 4 about here.]

[Figure 5 about here.]

Quantitative restrictions: Vietnam was authorised to keep some of its quotas under the form of Tariff Rate Quotas but will have to expand the quota volume by 5% a year. This concerns only a few agricultural products such as salt, sugar, tobacco and bird eggs.

Domestic support and export subsidies: Agricultural subsidies are capped to their average observed values during the period 1999-2001 concerning domestic support (which represents around $246 million a year (WTO)). Export subsidies on agricultural products are banned whereas they represented an average of 1.2% for rice, 1.9% to 6% on pork products, 2.6% to 3.3% for canned vegetables and fruits and 1.5% on coffee exports for the 1999-2001 period.

Sanitary and Phyto-sanitary regulations: Vietnam government adopted a new law in 2006 in order to achieve implementation of standards for all food products. In November 2004, Vietnam declared that around 50% of its norms and standards for food products were compliant with international requirements (FAO/WTO, Codex, IPPC, OIE). But some international standards remain unreachable in the short term and the country participates actively to regional and international organisations to establish standards and norm taking better into account its domestic constraints.

Legislation ruling industrial sectors: Vietnam is committed to go further on the way of opening the capital of former state-owned enterprises (SOEs), which still accounted for 38.4% of its GDP in 2005.[6] Except for firms of tobacco, oil extraction and petroleum products, media and defence, a reform in legislation has been initiated in 2004 (Decision No 155/2004/QD-TTg) to

[5] Except for a few products such as Vehicule and Vehicule parts with some commitments going as far as 2019.
[6] Source: General Office of Statistics(GSO), Hanoi

ensure capitalisation of most of SOEs. The Law on Investment of 2005 allows foreign investors to take participations into Vietnamese firms up to 30% of the capital. Non State-owned firms are subject to bankruptcy rules and cannot receive subsidies from the government when in financial difficulties. For exporting firms, duty drawbacks on imports remain but all subsidies with a coupled effect on export-oriented production have to be banned by Vietnam (supposed to be $12 million in 2004 as declared by Vietnam to WTO).

Information Technology Agreement (ITA): This agreement, signed by most WTO countries (representing 97% of trade), has been aiming at removing duties on all IT products. Vietnam has seven years of delay to apply this agreement on all its IT products imports.

Anti-dumping policies: Vietnam is not considered by its major trade partners as a market economy. The USA and the EU are particularly concerned about discrimination between domestic firms and foreign firms and also the bad enforcement of certain conventions and treaties such as intellectual property rights conventions. As long as Vietnam has not shown its compliance to market economy standards in the importer regulation, importer countries can investigate anti-dumping cases in the framework of WTO regulations. This "non market economy" status can be invoked for a maximal duration of 12 years. Two famous anti-dumping cases were conducted during the last decade against Vietnam. The first opposed the USA to Vietnam concerning catfish exports in 2002, and the second was initiated by the European Union against exports of Vietnamese footwear in 2005. Both investigations concluded that Vietnam had "dumped" its sales through illegitimate subsidies and led to application of high duties as retorsion.

Trade-Related Investment Measures (TRIMs): Vietnam committed to eliminate some distorting measures aiming at guaranteeing local content for certain industries and a 80% mandatory ratio of exports for certain categories of products, threatened by increased competition from foreign firms investing in Vietnam.

Trade-Related Aspects of Intellectual Property Rights (TRIPS): Vietnam has been part of the World Intellectual Property Organisation (WIPO) since 1976 and signed major treaties on intellectual properties in the years preceding accession: Bern convention in 2004, Geneva convention in 2005, Brussels convention and Madrid Agreement in 2006 and Roma convention in 2007. It implemented in its national regulations the requirements of these international conventions. However, difficulties of enforcement and level of penalties allow some doubt on the immediate efficiency of property rights protection.

Trade in services: In the framework of AFTA negotiation, Vietnam had already committed to liberalise some of its services sectors, namely telecommunications, tourism, transportation and financial services. This consist mainly in allowing free installation of foreign firms in Vietnam for trading services. With WTO accession, the list has been slightly extended to some other businesses such as legal services, construction services, education and research services, retail distribution services, environmental services and health services. However for each category, exchange from mode 3 (Commercial presence) remains restricted for a transitional period with limitation in the participation that foreign capital can obtain in domestic firms (30% in general,

49% to 51% for some specific sectors).

There has been intense debate to determine how acceptable were the concessions requested from Vietnam by other countries (Oxfam, 2004). Vietnam had to make more commitments than countries that accessed WTO earlier, especially on legal aspects and on services liberalisation. However, some arrangements were found for specific sectors as a few tariff-rate quotas were implemented and protection was little reduced on certain categories of goods (agricultural goods and vehicles in particular).

In the following part, we will assess the effect of the liberalisation in goods, taking in consideration quantitative commitments in this domain. We will mainly deal with tariff reduction, including ITA duty removal and include the effect of textile quotas removal. We will not quantify other types of commitments, such as the effect of TRIPS, TRIMs and liberalisation in services.

3 Assessment of WTO accession under standard modelling assumptions

In this section, we aim at analysing the tariff effect of the commitment schedule signed by Vietnam for its accession to WTO and compare this impact to the overall opening of Vietnam since 2001. In order to do so, we use the CGE model from CEPII, MIRAGE, in a dynamic framework.

In a first part, we will present our data estimates for protection in the different scenarios assessed for this paper, built from the MAcMap-HS6 database at a fine level. In the second part, we will present the model and results obtained from our central scenario, following standard assumptions. Last, we will discuss the results building on observations such as Abbott et al. (2007). The next sections will aim at investigating some of the problems raised by the discussion.

3.1 Description of the trade policy scenarios used for WTO accession assessment

As stated in the first part, efforts of Vietnam to open its economy began several years before applying for accession to WTO and the process of accession itself occurred simultaneously to numerous trade agreements or tariff schedule changes, more or less related to WTO requirements and doctrine. For example, ASEAN agreements with other regions such as China, Japan or the European Union can be explained better as a trend to reinforce regionalism rather than favour a real multilateral approach.

Moreover, as we rely on 2001 data for the Social Accounting Matrix and tariffs, a large part of liberalisation had already occurred at the beginning of our period of reference. In 2001, Vietnam was in the middle of the process of negotiation with WTO countries and had begun to lower some of its applied tariffs. The country is just starting the implementation of the bilateral trade agreement with the USA, a necessary step to succeed its WTO application.

Between 2001 and 2007, tariffs have also been significantly reduced in accordance with regional commitments and bilateral negotiations. On December 12th 2006, when Vietnam ratified the WTO commitments for accession, many efforts were in fact behind, concerning tariff barriers as well as other regulatory requirements.

In order to take into account an important part of the gains linked to WTO negotiations, we will approach the question of WTO impact on trade the following way: "What would have happened if Vietnam had stopped its WTO negotiation process in 2001, relying mainly on the ongoing and future FTAs?" This original perspective will enable to dissociate the effect of WTO accession from the other integration benefits in Vietnam opening, and keep from limiting the study to the residual aspect of the WTO accession effect after 2007.

3.1.1 Baseline scenario

Using a dynamic model, we chose to compare the baseline path of Vietnam economy from 2001 to 2015 (no accession to WTO) with the scenario of WTO accession. The baseline used in other exercises conducted with MIRAGE, and which incorporates major dynamic components, was adapted in the present exercise to the requirements of this mono-country focus.

The total factor productivity in Vietnam was assumed to go on its very fast growth rate trend for all the period considered. This indicator was endogenously computed using exogenous GDP forecast, provided for Vietnam by the Vietnamese administration (Ministry of Planning and Investment). Their optimistic scenarios mention an annual growth rate of 8.5% till 2010 and 8% on the 2010-2015 period. For other regions, World Bank forecasts were used.[7] Population growth projections were taken from UN forecast statistics and applied to the labour stock.

The Vietnamese SAM delivered by the GTAP database apparently does not take into account the dramatic production and trade increase which followed application of MFN status by the USA to Vietnam in 2000. As a consequence, we implemented this change of tariffs in order to take this effect into account from the reference year (2001). The tariff values were extracted from Fukase & Martin (2000) and a pre-simulation was run on the 2001 year to adjust trade flows and the corresponding structure of the economy.

Several trade policy agreements were then introduced in the baseline:

- *ASEAN Free Trade Agreement (AFTA):* a linear tariff decrease was introduced from 2001 to 2010 to initial tariff for ASEAN6 countries (Thailand, Indonesia, Philippines, Malaysia, Singapore and Brunei) and from 2001 to 2015 for tariff applied by new members (Vietnam, Cambodia, Myanmar and Laos). This agreement takes into account a list of sensitive products that are not liberalised.[8]

[7] After +8.5% GDP growth in 2007, the IMF forecasts a slight slow down in 2008 at 7.3%. Vietnam GDP is then expected to rise again and be stable at a +8% average on the 2010-2013 period (IMF, 2008).

[8] The list of 158 items excluded from any ASEAN FTA for Vietnam relies on the Vietnamese Common Effective Preferential Tariff (CEPT) list (www.us-asean.org/afta.asp), classified in AHTN nomenclature

- *Japan-ASEAN Free Trade Agreement:* the talks for a Japan-ASEAN FTA formally started in April 2005. In our baseline, we assume this agreement to start in 2009 as wished by both parties. We kept for Vietnam the list of exception used for ASEAN and did consider rice as exception product on the Japanese side.[9]

- *China-ASEAN Free Trade Agreement:* the tariff decrease is linear from 2004 to 2010 for ASEAN6 and China, from 2004 to 2015 for tariffs applied by Vietnam, Cambodia, Myanmar and Laos. Here again, the liberalisation is considered total except for a list of sensitive products.[10]

- *ASEAN-Korea Free Trade Agreement:* South Korea and 9 ASEAN countries signed this FTA in 2006 (Thailand is still negotiating about agricultural products at this date). Korea and the 9 ASEAN countries were considered eliminating tariffs on their products from 2006 to 2010 with a list of exception products.[11]

- *US-BTA Free Trade Agreement:* this important trade agreement signed in 2000 implemented significant changes in domestic regulation in order to improve the business climate for foreign firms. The application of MFN tariff by the USA to Vietnam constitutes a major change in the bilateral trade relations. On the Vietnamese side, commitments were made for opening market for 223 strategic products before the end of 2003 (list is available at www.usvtc.org/trade/bta/text/).

Some other major trade agreements under negotiation were not considered because of high uncertainty on their outcome. It is the case of the Doha Development Agenda, of the EU-ASEAN FTA, of AFTA-CER (ASEAN with Autralia and New-Zealand), and ASEAN-India.

For all the regions not included in FTAs, no changes were applied on 2001 tariff in our baseline. As the reference situation corresponds to an assumption of Vietnam withdrawal from WTO negotiations, the evolution of tariff from 2001 to 2007 is not assumed for these regions to follow the historic path (significant cuts related to WTO negotiations) but to remain constant as an illustration of the *status quo*.

(www.aseansec.org/15986.htm). We only take products that are considered as highly sensitive or the general exceptions.

[9] Negotiations for the ASEAN-Japan Comprehensive Economic Partnership (AJCEP) Agreement were held in Singapore on November 2007 (see www.aseansec.org/21147.htm). Lists of exception are not yet available for this trade agreement. In August 2007, Japan announced that it would remove tariffs on at least 90% of its imports from ASEAN.

[10] The list of 188 sensitive products for China is provided in appendix

[11] Both parties agreed on removing tariffs constituting 90% of their respective imports (in terms of number of products and volume) before 2010 (7% of remaining products will have tariffs in the 0-5% range before 2016 and the last 3% remain excluded from negotiations). Korea sensitive products include highly sensitive rice, other agricultural products (poultry, garlic, onion, hot peppers, and most fruits) and some marine products (frozen and live fish) within the 3% category of highly sensitive products. We excluded these products from the liberalisation at the HS6 level. On the ASEAN side, only sensitive products for the Vietnam were considered, like for the Japan-ASEAN FTA.

Tariff changes were computed for each year of the 2001-2015 period at the HS6 level thanks to the MAcMap-HS6 v1 database (5113 products) and aggregated with reference group methodology (5 reference groups in the world) in order to avoid aggregation bias.[12]

3.1.2 Simulation scenario

The simulation relies on the same dynamic path as the baseline path but incorporates WTO accession commitments. As a consequence, all FTAs in the baseline are kept in the simulation. This means that the effect of WTO accession is assessed in a context where Vietnam opens considerably through regionalism. This aspect will be important to keep in mind when discussing results. WTO commitments were taken into account in three ways:

- From 2001 to 2007, applied tariffs toward countries and regions not included into FTAs were decreased linearly, when they were higher, to their consolidated level reported by Vietnam in 2007. The underlying assumption is indeed that this decrease was the result of concessions made to other WTO members during the accession negotiations.
- From 2007 to 2015, Vietnam's applied tariffs, when higher, were lowered at the level of CTS commitments scheduled for WTO entrance. The baseline tariff level was automatically kept when it was found lower than the new WTO bound. The commitments were introduced and processed with the MAcMap-HS6 v1 database at the detailed level and aggregated with the same methodology as for the baseline.
- Our analysis of tariff applied to Vietnam shows that all countries were already applying MFN tariffs to Vietnam in 2001. As a consequence, no change in tariffs applied to Vietnam was considered in the case of accession.

3.1.3 The phasing out of textile quotas

Aiming at accompanying the transition of textile sectors for developed countries which were threatened by the expansion of the Asian industry, the Multi-Fibre Agreement has set up a regime of quotas for many years on Asian products in the framework of the GATT. The phasing out of quotas was scheduled for 2005 in compliance with the Agreement on Textiles and Clothing signed in 1995 by WTO members. In order to prepare the WTO accession of Vietnam, the European Union removed their last quotas on Vietnamese exports of textile in 2004 but the USA maintained them till the accession of Vietnam to WTO.

A delicate task for the scenario specifications was to consider what would have happened if Vietnam had stopped its accession to WTO. We supposed that if Vietnam had withdrawn from WTO negotiation in 2001, neither the European Union nor the USA would have removed these quotas. In order to introduce quantitative equivalents to these restrictions in the model, we used tax exports equivalents computed by Francois & Spinanger (2004). Following Dimaranan et al.

[12] See Bouët et al. (2004) for a complete description of the database and the aggregation methodology.

(2005), we replaced the null values for the EU by an ad valorem equivalent of 10% on textile and on apparel products. We will comment in a later section the modelling of this end of quotas.

3.1.4 Description of tariff structure changes

Because the baseline incorporates a significant number of trade agreements, Vietnam undergoes in this study a significant opening with a decrease of its tariff going from an average trade-weighted aggregate of 19.6% in 2001 down to 11.3% in 2015 under intra-ASEAN, ASEAN-China, ASEAN-Japan and ASEAN-Korea trade agreements. The simulation with WTO accession leads to an average protection of 5.3% (see figure 6). This decrease in tariff barriers is progressive in accordance with FTA or WTO commitments.[13] The regional distribution of tariff reductions is a consequence of the assumptions made in the baseline and WTO scenario concerning regional integration and bilateral free trade agreements. ASEAN countries, China, Japan and Korea experience a decrease of their tariff as a result of FTAs. The USA see their tariff slightly decrease after the US-BTA cut on strategic products. Other countries do not experience cuts in the baseline except in the case of WTO accession.

[Figure 6 about here.]

Looking at the sectoral decomposition shows high heterogeneity in the exposure of Vietnamese sectors. Most important effects on imports are driven by the regional integration and many sectors are affected by this general opening movement. The impact of WTO commitments is more focused on a few sectors: rice and crops remain hardly at the same level of protection, whereas meat, fruits and vegetables undergo a more significant opening when comparing baseline and WTO scenario (see figure 7). On the manufacturing products side, textile and apparel, as well as leather are more strongly exposed under the WTO scenario. However, major parts of intermediate products used by these sectors are already exempted of duties, through a mechanism of duty drawbacks for exporting firms (see Dimaranan et al. (2005), for a more detailed description). The electronic sector undergoes also a liberalisation linked with the implementation of the Information Technology Agreement (ITA) by Vietnam.

[Figure 7 about here.]

As stated before, tariffs faced by Vietnam did not change significantly after its WTO accession. The USA were the last WTO member not applying MFN tariffs in 2000 to Vietnam. As a consequence, exports in this study will be mainly affected through the modelling of the end of quotas on Textile and Apparel sectors. European Union's quotas were considered removed in 2004 and the US quotas in 2007 if Vietnam enters WTO.

[13] Weights come from BACI (from CEPII) trade flows in 2001 aggregated in five reference groups of countries for the aggregation from the HS6 level to the GTAP level; GTAP trade flow data in 2001 were then used for the upper aggregation level and reference group for Vietnam was constituted from ASEAN + China + Rest of Asia. The aggregates compute this way are larger than biased ad valorem equivalent computed from country trade weights. The figures obtained are in that case 16.2%, 7.7% and 5.3% respectively.

3.2 Computing macroeconomic effects

3.2.1 Model features

In order to assess the effect of WTO accession, we used MIRAGE, the multi-region multi-sector model of Computable General Equilibrium (CGE) developed by CEPII for trade policy analysis. This model relies on GTAP database; it can be run in a dynamic recursive framework and incorporates optional features such as quality differentiation for goods, foreign investment modelling, imperfect competition (Decreux & Valin, 2007).

The GTAP database includes in its 6.2 version a Social Accounting Matrix for Vietnam based on data from CIEM (Jensen et al., 2004). As a result, the GTAP SAM of Vietnam represents a compromise between the structure of Vietnam economy in 2000 and trade flows in 2001. Some data on the GTAP SAM were however adjusted in the current study to best reflect the present context: for the three major exporting sectors in manufacture, we fine-tuned the value-added intensity in production of Vietnamese sectors thanks to data obtained from UNIDO.[14] Value added on production ratios were adjusted to 30.6%, 23.4% and 39.7% respectively for Leather, Textile and Apparel sectors, allowing to better reflect the situation of Vietnamese sectors relatively to other international competitors.

GTAP sectors and regions aggregation were specifically chosen to represent adequately the structure of Vietnam sectors and major trade partners (see table 2 and 3).

[Table 2 about here.]

[Table 3 about here.]

Considering the specificities of Vietnam, the model was run with some particular features.

Dual production for duty drawbacks modelling: Like China, Vietnam applies duty-drawbacks for intermediate consumption by exporting firms. We developed a specific version of the model following the methodology introduced in the GTAP framework by Ianchovichina (2004) and first applied to Vietnam by Dimaranan et al. (2005). Production sectors of Vietnam were distinguished between exporting sectors and domestic production sectors (see table 4). Factors were allocated proportionally to the output of the two categories of sectors, which means that sectors were initially calibrated from the same structure. Demand for goods was also split in two markets: a first market for final consumption goods, intermediate goods and capital goods used by local consumption producers; a second market for intermediate and capital goods used by the export industry (see figure 8). Last, a duty drawback "shock" was applied to imported goods and capital consumed by exporting industries by setting tariffs to zero on these kind of goods in the pre-experiment simulation. Assuming they correspond to the share of production between domestic-oriented and export-oriented firms, this allows to correct the bias due to the domestic and imported shares of intermediate consumption and capital. As export-oriented firms perceive

[14] INDSTAT4 2007 database.

a lower price on imported inputs as a result of duty drawbacks, one can expect a larger share of foreign intermediate consumption to be consumed by exporting firms.

[Table 4 about here.]

[Figure 8 about here.]

Intermediate consumption: Rigidity was introduced between energy and non-energy intermediate consumption in order to model the specific dependency of international demand to energetic goods.[15] This change appears particularly important in the present modelling in order to reproduce the increasing share of crude oil in the value of Vietnamese exports.

Labour market: In our central scenario, the skilled labour market is considered perfect whereas unskilled labour market is modelled with a dual market structure. This design, tested in several CGE models (van der Mensbrugghe, 2007; Decreux & Valin, 2007, for MIRAGE), relies on the distinction between a rural labour market for agricultural sectors and an urban labour market for industry and services.

For the rural labour market, agricultural sectors were modelled with an assumption of constant labour supply: at a given year, any shock bringing some extra migration from rural areas to cities lead to replacement of these workers due to underemployment (following the approach of Lewis (1954)). As a consequence, wages are set endogenously under an exogenous labour supply. On the urban labour market, prices are set exogenously. This means that any shock of demand from industrial or services sectors can be satisfied by recruitment of rural workers, without any price tension on the urban labour market.[16] The migration rate is controlled exogenously overtime relying on official projections. The overall effect of this dual labour market design is the possibility of increasing total active population in response to a demand shock by industrial sectors. This feature was inserted in our modelling in the following regions: China, Vietnam, ASEAN5, RoAsia, AfricaME. Labour supply in the baseline was imported from FAO statistics and corrected with ILO data in order to take into account the following evolutions: (i) demography, (ii) migration from rural to urban areas, (iii) move from unskilled to skilled category due to education. This creates an important lever for development. Because migrant workers boost their productivity when entering an urban sector, we changed the labour force, expressed in wage volume in GTAP, into a volume in number of workers to apply the CET or the migration effect. For developed countries, we use a CET function. We will discuss the role of this assumption in section 5.2.

Although MIRAGE allows different competition regimes, considering the lack of data on the number of firms by sector and precise information concerning market power of Vietnamese firms on domestic and foreign markets, we set the modelling with a perfect competition regime.

[15] From a technical point of view, this was performed with the implementation of a double-tier constant elasticity of substitution function with an elasticity of 0.1 to represent complementarities between energetic and non energetic goods. Energetic and non energetic goods were then disaggregated in separate bundles.

[16] For a given year, response of labour supply to a shock is then determined endogenously. We check ex post that the added supply of labour remains small when compared with unemployment rate

3.2.2 Central scenario results

The effects of liberalisation induced by WTO, as investigated in a few former studies, are found limited when comparing the baseline results ("Vietnam development without WTO tariff reduction") and the simulation results ("Vietnam development with WTO tariff reduction"). Indeed, the country should improve its welfare by +0.9% in 2015 through the new tariff schedule and the end of quotas, which represent a gain of $598 million.[17]

Following Dimaranan et al. approach, we look separately at the results with and without quota phasing out. The end of quotas accounts for 61% of the gains and modelling the same effect without taking into account quotas removal leads to gains of only +0.4% in 2015 (table 8).

These gains can be compared to those obtained when incorporating all trade agreements signed by Vietnam only in the simulation scenario and not in the baseline as before. Having run such an alternative scenario, , we find that GDP gains are +3.7% and total welfare gains represent +1.5% with the the cumulative impact of these openness policies.

Considering that the end of quotas plays a significant role in Vietnamese exports burst, it is no surprise that the US and the EU take a large benefit from this accession ($1,178 million and $271 million respectively), with the decrease of apparel prices on their domestic market (see figure 9). And China losses (-$710 million) symetrically reflect the loss of market share linked to this new opportunity offered to Vietnam textile. ASEAN5 losses (-$196 million) can be explained by the decreased importance of the regional AFTA in a more multilaterally opened world.

As explained by Ianchovichina (2004), the modelling of duty drawbacks changes the magnitude of results. On China, Ianchovichina find that omitting duty drawbacks can lead to overestimate gains by 15%. On Vietnam, Dimaranan et al. find a figure over 70%. However, our modelling defends that taking into account duty drawbacks reduces Vietnam estimated gains by a ratio closer to 10% in the case with quotas (closer to 22% in the case without quotas). This ratio in fact highly depends on the structure of exporting sectors. This structure is determined by the calibration in the preexperiment. Ianchovichina and Dimaranan et al. double the elasticity of substitution for intermediate consumption in their initial shock. In our approach, we choose not to change this elasticity because of lack of data to determine the final share of imported goods in each category of industry. As a consequence, removing the duty drawbacks in the preexperiment maintains a higher share of domestic input for exporting firms than in previous studies because we assume the same substitution as in the general model. In fact, data for this share of domestic inputs is not available in GTAP database (sectors are not distinguished between exporting sector and domestic oriented sector). To this limitation adds the constraint that intermediate and final consumption goods are mixed in trade flows, making it not possible either to distinguish differences in origin of intermediate consumption products and final consumption products. Table 5 shows the share of imported goods that we used for exports and exempted of duty, before the preexperiment (no shift of consumption from exporting firms) and after the preexperiment (taking into account preference of exporting firms for imported inputs). Table 6 illustrates the

[17] Values in this part are expressed in 2001 US dollars.

small magnitude of change in duty drawbacks consideration for our scenario with the expected revenue decrease under the WTO accession.

[Table 5 about here.]

[Table 6 about here.]

When looking at sectors, the effect of the end of quotas is very clear. The figures obtained are large, but remain however modest when compared with the very fast growth that these sectors have experienced for a few years. However, this does not take into account the new monitoring programs set up by the American trade authorities in order to indirectly keep some control on the volume of textile imported from Vietnam. Estimates of quotas used here will be discussed in the next section.

Effects on other sectors' exports are all negative. This point appears particularly debatable. However, domestic production increases for some of these sectors, thanks to an increase of demand. But exports drop in relative share, in a context of rapid growth for Vietnam, when quotas are phased out. In the case where quotas are not phased out, it appears that a lot of sector experience an increase in their exports under the WTO accession. This important effect related to quotas modelling is due to the macroeconomic closure of the model, which follows the standard assumption that the trade balance remains constant due to long run exchange rate adjustments. We will come back on this hypothesis in section 5.

[Figure 9 about here.]

[Table 7 about here.]

Another interesting fact appears at the macroeconomic level. On the import side, effect of WTO accession is an increase in final demand (+5.8% in 2015), following price decrease. But on the export side, the demand is mainly focused on textile and leather with the end of quotas, as all intermediate consumptions are already exempted from duties and MFN tariffs are already applied to Vietnam exports. As a consequence, Vietnam exports rise only in a few sectors but in a very large proportion. The rapid expansion of these competitive industrial sectors is also sped up by the hypothesis of fixed wage for unskilled labour, which assumes an unconstrained supply of workers. The amplitude of growth is then mainly set up through the dynamics of capital and skilled labour. Hence, prices decrease slightly on the foreign markets for apparel and textile, especially because quota rents are removed for Vietnamese exporters which reduce their prices to the US and the EU markets. This creates a decrease in terms of trade which impacts negatively welfare and limits its expansion (-1.35% in 2015). In a word, if the end of quotas linked to WTO accession favours growth by encouraging the specialisation of Vietnam into a few labour intensive sectors, benefits of this accession could be limited because of the price decrease for Vietnamese exports on some foreign markets. We come back to this question in section 4.

[Table 8 about here.]

Employment in the industry should be 5.2% higher in 2015 driven by the expansion of major exporting sectors. The creation of activity will increase the average wage of unskilled labour by 1.6%, mainly thanks to the hiring of new workers in better paid activities (migrants from rural areas and workers from informal urban sector). This is considered under the assumption that wages are maintained at their level in real term thanks to the margin made by the industry, which can be debated in a context of high inflation (+8.3% in 2005 (GSO), and by far higher in the beginning of 2008). We will explore this dimension in a next section. Skilled workers should experience a 1.8% increase of their wages, mainly explained by the tension induced by needs of the expanding industry. As we already considered an increase in skilled labour resource in the model, this increase in wages suggest that the supply growth estimated could not be enough for responding to the fast development requirements.

3.3 What can be inferred from these results ?

These results, obtained with a standard CGE methodology, raise various questions. Indeed, as developed in section 1, Vietnam has experienced a very high growth during the last decade and yet, the estimates with CGE methodology of the contribution of tariff decrease reveal to be very small in comparison. We have just shown that the estimated welfare gains for Vietnam were around +1.5% from 2001 to 2015 when taking into account regional FTA and WTO effects. Should we assume Vietnam medium growth rate is 7% on the period, the 0.9% of gains from accession represent +2.2% of 2001 GDP and should be compared to the 258% overall increase on the period... How this difference can be explained and what can be improved?

This question has already been addressed in the litterature. A lot of points participate to the answer. First, we only look here at one contribution to growth, at a time when the role of trade openness related to other factors such as rule of law, democracy and reforms is more and more invoked to explain some success stories of development (see the multiple contributions in Aghion & Durlauf (2005)). Even some more direct factors related to WTO commitments such as non tariff barriers (except textile quotas), barriers to services, and qualitative agreements with consequences on FDIs and technology transfers are not studied in this work as no satisfying methodology has made consensus.

The gains obtained in our study look however quite consistent with those obtained in similar recent studies. Abbott et al. (2007) reviewed seven CGE papers focusing on Vietnam accession to WTO. They showed that most of them anticipated a positive effect of Vietnam accession, although they assumed different modelling assumptions. A few more studies have been completed more recently (Fujii & Roland-Holst, 2007; DIAL, 2007) and confirmed these trends. We report the gains reviewed in Abbott and updated by DIAL in table 9.

[Table 9 about here.]

Abbott et al. provide many details on the mechanisms that CGE models can hardly reproduce, either because of theoretical foundations (static framework, CES, Armington elasticity, labour market assumptions), either because of the absence of consistent quantitative estimates (dynamic gains, effect of FDI, extensive margin of trade...). Taylor & Von Arnim (2006) also report the macroeconomic closure assumptions as an important determinant for results.

We propose in the next section to focus on the dynamic of the Vietnam trade to improve the results obtained in the central scenario. We will first look at the role of exports in growth and second refine the effect of WTO accession on the textile and apparel sector.

4 Confronting the dynamic of Vietnam trade

Using recursive dynamic modelling to assess Vietnam gains from WTO accession appears an important requisite considering the deep structural changes that the country experienced for two decades, in a high growth environment. Moreover, trade expanded even more quickly than growth: there was an average rise of 16.9% a year in import value between 2000 and 2005 and 19.6% on export value. On this point, standard dynamic assumptions are not satisfactory. The model assumes a growth rate of 8% for Vietnam's GDP but Armington constraints prevent trade to grow at a higher rate when relative prices of imports do not vary. Although they tend to decrease through tariff changes, they do obviously not enough to explain the historic data, as illustrated by Abbott et al.

In this part, we propose to take advantage of the dynamic framework to better reproduce these trends and improve our results. Even if the values of Armington will always remain constraining in a CGE approach (as long as one relies on Armington rules for explaining cross flows at the aggregated level), we use sectoral TFPs in our dual production structure to adjust the dynamic path.

4.1 Better reproducing structural changes in the baseline

In our central scenario, growth is computed exogenously for Vietnam. We use GDP projections from the World Bank for all regions, except for Vietnam for which we assume a high growth scenario of 8% till 2015 in the baseline.[18] Growth is converted into a homogenous TFP applied to the different sectors in the model. This means that sector producing non tradable or little tradable goods grow as much as exporting sectors, before reallocation of new workers and investment. In fact, in the case of Vietnam, this assumption is not realistic because value added and exports rose more in some sectors than in others, which cannot be obtained in the model through a standard accumulation of capital and reallocation of labour. Moreover, IMF statistics show significant variation in labour productivity across main sectors (agriculture, industry services)

[18] Of course, this growth also takes into account the effect of WTO accession in the official statistics. However, as we showed before, GDP gains from CGE are small in comparison with dynamic growth; applying the observed and predicted growth to the baseline ("Vietnam without WTO") does not appear absurd.

and we can anticipate a lot more heterogeneity between industrial sectors.

In order to test the effect of this first bias and to better represent structural changes, we introduced in the model a sector-specific TFP. For domestic sectors, we used an exogenous differential where as for exporting sectors, we computed the differential allowing to match the exports in the baseline. This was done while keeping as a global constraint the exogenous GDP forecast. This means the historic GDP is still respected through a global TFP equal for all sectors.

Because no ratio of TFP was available, TFP differentials for domestic oriented production were set equal to labour productivity differentials obtained from IMF. Using data on employment per sector from IMF (2007), we calculated on the 2001-2006 period that labour productivity was growing 4.2% in agriculture, 3.8% in industry, -1.8% in construction and 2.4% for services. We introduced this differentiation in the model as shown in table 10.

[Table 10 about here.]

For export-oriented industries, we introduced in the model the 2006 export values in dollar corrected by inflation and computed the corresponding growth in sectoral TFP for the exporting sectors. After 2006, we assumed a constant growth in TFP, following a linear pattern.[19]

Considering the findings of new trade theory showing that exporting firms are more competitive than domestic oriented firms (Melitz, 2003; Baldwin & Forslid, 2006), it appeared consistent to assume high TFP growth for the case of Vietnam exporting firms, especially considering that the government strongly supported investment in export oriented industries. Some very high values of sectoral TFPs probably did not only reflect changes linked to technology but also evolutions in the structure of the production process (for example, segmentation of the value-added chain). For these sectors, the increase in TFP led to significant increase in volume of value-added in the model; but the price of value added is then dropping, and as a consequence, overall value-added (in value) finally varies little (intermediate consumption and value added are linked through a Leontieff function). Using this mechanisms allowed to boost production and intermediate input consumption for fast growing exporting sectors. This typically reflects what happens when there is a segmentation of production and intra-sector trade increase.

Another explanation for trade increase comes from the role of extensive margin with trade of new varieties. This probably plays a role as well for Vietnam but not as large as one could expect, as illustrated by a detailed analysis at the HS6 line level (see table 11).

[Table 11 about here.]

As a result, this improved baseline allowed to better reproduce the opening of Vietnam's economy by fitting more closely the intensification of trade. Table 10 shows the difference obtained in increase of export as share of GDP between the two baselines.

[19] Assuming a log-linear pattern did not appear credible because the fast increase in certain productions such as garments, leather or furniture did not appear sustainable at this growth rate. This reflect probably that log-linear increase do not take into account the catch-up effect following the fast technological progress.

[Figure 10 about here.]

An important consequence of changing the baseline concerns the share of trade in textile and garment in 2015. In our central scenario, with homogeneous TFP gains, the export for this sector was expected to be $10.5 billions in 2015. With the new assumptions on heterogeneous productivity, we find in our baseline $8.2 billions in 2010 and almost 15 billions in 2015. As a consequence, the effect of quota removal appears more harmful through a degradation of terms of trade. Instead of a gain of 0.9% in 2015, the increased expansion of textile leads to a net loss of -0.4% through a deterioration in terms of trade (-1.9%). This change in results shows the sensitivity of results to the modelling of the textile and apparel sector, and its quantitative trade restriction measurement. That is why we propose in the next section to refine this projection and to improve the results by a more detailed focus on the textile and apparel exports.

4.2 A focus on textile and garment exports

The previous simulations illustrates how the success of Vietnam future trade policies can depend on the magnitude of garment sector exports (and to a lesser extent, textile exports). According to the Vietnamese Information Agency, exports of textile and garments have experienced a very large increase in 2007, in accordance with what could be expected by the modelling. Exports amounted $7.8 billion, from which $4.3 billion to the USA. The Vietnamese government now anticipates $9.5 billion export for the year 2008, far earlier than was planned in the 2006-2010 Development Plan ($7 billion in 2008 and $10 billion in 2010), which would make textile and garment exports the first source of trade revenues.

The surge anticipated by the model for 2007 was more important than the one observed in 2007, but however consistent with the observed increase. The rise computed from 2006 to 2007 was around +54% instead of the 34% observed. From 2007 to 2008, the effect of the quota increase is already taken into account and the export growth of the sector is mainly driven by productivity growth and new investments. The model anticipates as a consequence an increase in export of garment of +24%, closer to the annonced results of +22%, thanks to the sectoral calibration of the TFP growth. However, Vietnamese exports to the US market are found to experience a too high rise in 2007 in the model (from $1.5 billion in 2006 to $4.2 billion in 2007). This suggest two things: first that exports to the US were more constrained in 2001 than the single tariff barrier taken from Fukase & Martin (2000) because export value before end of quotas was not large enough. Second, that the determinant value of quota EAV used in the modelling so far and taken from Francois & Spinanger (2004) is probably too large.[20] In order to correct the first bias, we assumed an additional NTB barrier related to the ante-USBTA period and set to the same value as the tariff barrier. We estimated then the value of export EAV which was reproducing the effect of US quotas removal in 2007 in order to better reproduce the Vietnam-US textile-garment trade between 2006 and 2008. By reducing the export tax equivalent 40%, we

[20] This is without surprise as Francois & Spinanger are very prudent on the robustness of their quota equivalent estimate for Vietnam, who went through important trade policy changes on the period of their regression

obtained in the model a rise for Vietnam exports to the US of 35% for garments. We ran the model with these new values, instead of estimates used in previous studies.

The results from this second improved baseline show less important effects on exports of textile and garment (see figure 11).

[Figure 11 about here.]

The nature of results raises two questions. First, we can wonder if there is a risk of depreciation of terms of trade as suggested by the surge in textile and garment following WTO accession. Using the BACI database,[21] we find no clear evidence that there is an overall decrease in prices of textile-garment when compared with prices of exports on the Vietnamese side: we find for garment a decrease of 8% on the 1996-2001 period but a 5% increase on the 2001-2004 period; price of textile exports however decrease 14% on the eight-year period. But import price of textile and garment show a significant decrease for US on the period: -15% for textile and -8% for garment. Even if we could not use post 2004 data, this suggest that the improved access to the US market could lead to a drop in Vietnamese export prices following WTO accession.

The second question is related to the distribution of gains and losses following improved market access for Vietnamese textile and clothes. Because of an aggregation bias, China is shown as the losing exporter because of competition from Vietnam. Indeed, market shares of China and Vietnam on the US market both increase during the recent period, as explained by Chaponnière et al. (2007). Table 12 however shows that Vietnam market share was still modest on the different markets at an aggregated level.

[Table 12 about here.]

At a more detailed sectoral level, if China remains by far the biggest exporter for most HS6 lines, the share of Vietnam can be not negligible. Looking at the US market for some specific goods (see table 13), Vietnam shows a competitive industrial strategy with specialization on some segments. The first fourth exports products represent more than a third of China's export volume. More important, Vietnam's volume of exports to the US is larger than China's for 4 sectors, which illustrates that competition on some segments is not with China but with some other exporters.[22]

[Table 13 about here.]

Assessing more precisely the effect of trade liberalisation on the Vietnamese sector of textile and apparel allows to improve the results from the central scenario (see 14). The welfare gains do

[21] The BACI database, developed at CEPII, provides harmonised HS6 bilateral trade flows in value and in volume for over 200 countries. Description of the BACI database is available on the CEPII website .

[22] All competitors are not present in the table. For some lines, other exporters play an important role such as EU27, Mexico or other ASEAN countries.

not vary significantly (+1% instead of +0.9% in the central scenario) but the effect on growth appears more limited (+0.9% instead of +2.4%). This illustrates the importance of focusing on the historic trends to better reproduce the dynamic of sectors in our assessment.

In the last section, we will additionally look at the sensitivity of results to two assumptions. First, we will see what would change if there was no exchange rate adjustment in the short term for Vietnam. Second, we will look at the role of specification we made on labour market. The results from these alternative are also reported in table 14.

[Table 14 about here.]

5 Role of a few closures in the estimation

5.1 Changing assumption on trade balance

In the MIRAGE model, the standard assumption on current account is that trade deficit complemented with transnational investment and capital returns remain constant as share of world GDP. This reflects the long term equilibrium hypothesis: if a trade deficit appears, effective exchange rate will depreciate and exports will rise and equilibrate the system. However, this assumption can be discussed in the present case. The Vietnamese Dong is controlled by the State Bank of Vietnam and exchange rates are not set by the financial market. Moreover, Vietnam experienced in the last year an increasing imbalance concerning its trade. Imports have been rising faster than exports and trade deficit reached -$2,776 million in 2006 according to the IMF (4.6 % of GDP). The role expected from WTO accession on this issue was not considered so far in our study. In order to bridge this gap, we ran another simulation with a closure where the trade balance was not controlled and the effective exchange rate was considered constant for Vietnam. The results show that with a constant effective exchange rate, Vietnam takes more benefit from WTO accession thanks to a surplus of 2.1 billion dollars to the trade balance (see figure 12). This result illustrates that the effect from WTO favours mainly exports with the end of textile quotas. Exports are also boosted as the currency does not appreciate with increasing foreign demand of Vietnamese goods. This effect is expected to compensate the recent deepening observed over the last past years. However, in our baseline, we did not take into account the effects of monetary policies (inflation, nominal exchange rates) which would be needed to reproduce better the path of Vietnamese trade balance over the period considered.

[Figure 12 about here.]

It is not relevant to assess long run welfare gains through this type of closure, considering that artificially fixed exchange rate prevents adjustment, which affects strongly the level of prices and revenues in case of extra exports. But it is interesting to observe the short run impacts suggested by such an assumption. In the fixed exchange rate closure, real wages decrease in all sectors and the national GDP expressed in dollars is strongly diminished. This could have significant

consequences as Vietnam is a very open economy. In the present case, the year of the end of quotas, the GDP in volume gains 1.3% but the gains for GDP in value are limited to 0.6% and consumption drops by 1.2% following drop in salaries. The growth in GDP volume is kept high through an increase in the number of unskilled workers hired in formal urban sectors (+3.9%). In 2015, the GDP gain in volume is only 1.0% and the welfare loss -1.7% if not equilibrium occurs on exchange rate.

These results are interesting in showing that macroeconomic assumptions are not neutral for assessment of such policy. The long term benefits of Vietnam accession to WTO appears to be positive as long as balances in currencies come to an equilibrium. In the short run, the immediate effects of accession could be more ambiguous and will rely on macro economic policy led by the State Bank of Vietnam in a current context of increasing trade deficit and inflation concerns.

5.2 Role of the labour market modelling

Most CGE models rely on a perfect mobility assumption in labour markets. Workers can freely move from one sector to another, without any friction neither adjustment costs, and wages are ruled by an open competition market which is perfectly cleared. These assumptions, convenient for a first approach, are highly debatable when addressing sensitive issues such as trade liberalisation, especially when involved countries have an obviously sluggish labour market with a high level of unemployment or underemployment. Weaknesses of CGE models on this point have been emphasized recently by various modellers (see among others Maechler & Roland-Holst, 1995; Marouani, 2002; Polaski, 2006; van der Mensbrugghe, 2007). Numerous attempts have been done to implement more satisfying descriptions of market imperfections such as segmentation between rural and urban, formal and informal, public and private labour markets.

In our central scenario, we used a specific design for the labour market, considering the peculiar situation of Vietnam, with a large labour reservoir in countryside and a migration toward cities benefiting to industry and services. As explained in section 3, we set up a dual labour market for unskilled labour in Vietnam and we assumed that wages were exogenous in urban sectors because labour supply was not constrained due to migration, unemployment and informal economy workforce. [23]

Among recent contributions, van der Mensbrugghe (2006, 2007) underlines that considering fixed wages with unlimited labour supply as a modelling of underemployment can lead to significant change of gains for developing countries. Indeed, free entrance of new workers facing expanding industrial labour demand allows to reproduce the rapid expansion of these sectors, which is usually more constrained when assuming full employment and endogenous wages. These observations incite to be particularly vigilant concerning labour market assumptions in models.

We tested what would become the results if our representation of labour market was replaced by

[23] This design, first developed in the model in Bouët et al. (2004), is more fully described in Decreux & Valin (2007).

a standard perfect labour market approach. It appears that using perfect labour specifications changes dramatically the results in our case. GDP gains decrease from +2.4% in the central scenario to +0.1% with this design, mainly because of limited creation of activity (no unemployment and no productivity change between rural and urban sectors). Welfare is not surprisingly impacted because of the loss of the quota rent (only allocated to Vietnam producers in our approach, the most pessimistic consideration, see Dimaranan et al. (2005) for more description on quota regime in Vietnam) and drops to -0.5%. This rent is no longer compensated by creation of new jobs because of the constraints on labour supply.

6 Conclusion

In this article, we studied the effect of Vietnam's accession on its trade of merchandise in a CGE framework. Our analysis lead us to several conclusions.

From a policy point of view, it appears that Vietnam commitments and gains in the negociation process should benefit to the country. Welfare gains are estimated to be around 1% of the GDP at the end of the schedule implementation (2015 for most products). These gains will be the results of the tariff decrease on imports (for 39% of it) and of the new market access for textile and garment (for 61% of it). Predicting the evolution of the garment sector, which became first exporting sector for Vietnam in 2008, is a tricky issue. Success of Vietnam economic development appears however dependant on the capability of the country to diversify both its exporting goods, and also export markets as it relies today heavily on western demand (EU27 and USA). We also showed that the policy on labour market was important to allow full development of these sectors, by taking benefit of the powerful resources of migrants and being watchful on skilled labour demand.

From a technical point of view, a few points can also be emphasised.

First, the role of duty drawbacks is important for liberalisation assessments of countries using this trade policy tool. However, as shown by the difference between our results and those from different papers, the range of results can be large, depending on the ratio of imports which is assumed in intermediate consumption of exporting firms. Determining more precisely this parameter should allow to find a consensus on the value of gains which is effectively overestimated without this modelling feature.

Second, dynamic modelling matters for high growth economies. Determining the best way to take into account structural changes in this kind of assessment remains to explore but our study shows that reproducing the past structural change and assuming continuation of the observed trends change the nature of results.

Third, our work illustrates one more time, if needed, the important role of labour market specifications. Perfect labour market cannot be used for developing economies even for multilateral assessments without introducing a significant bias in the results.

Last, macroeconomic closure usually used in CGE relies on long run macroeconomic balance,

which can be also questioned in the case of high developing countries with significant imbalances. We remind in the case of Vietnam that introducing different assumptions can lead to dramatically different results.

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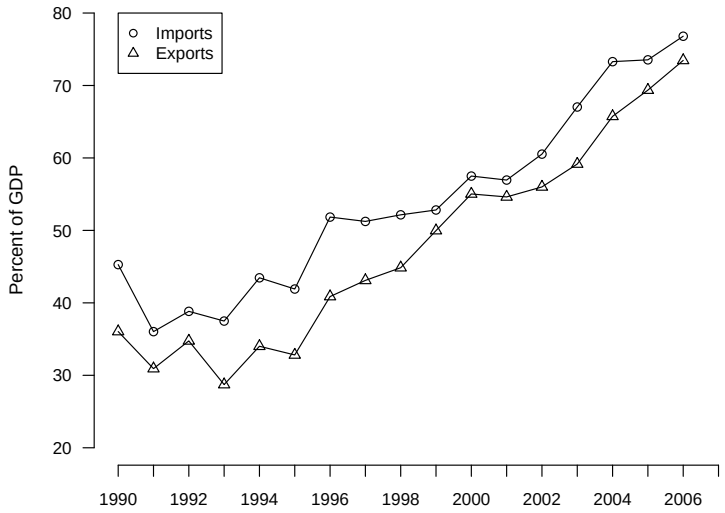
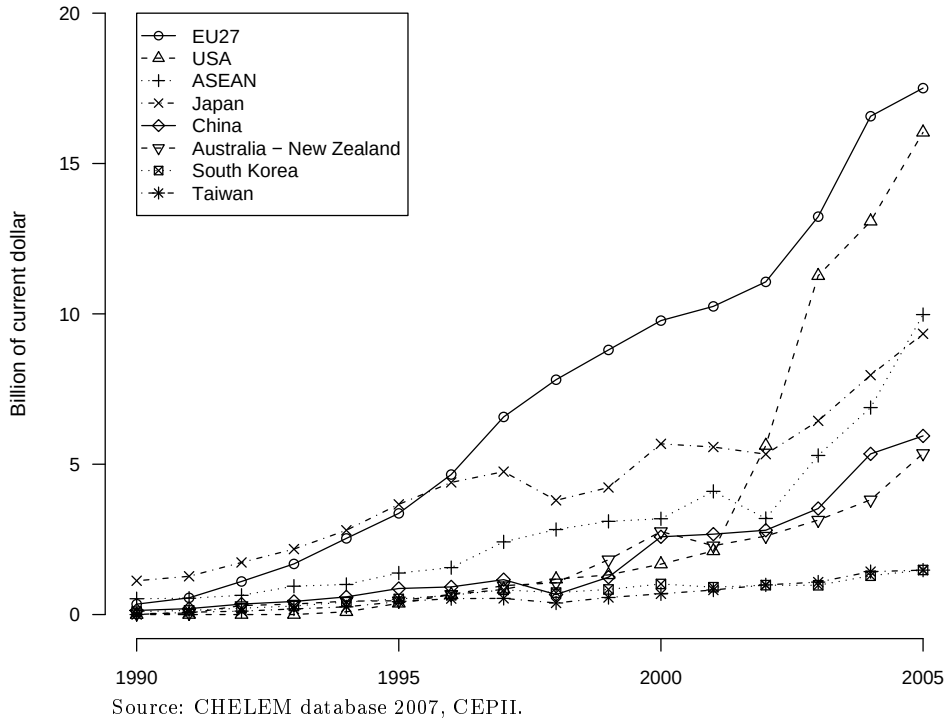


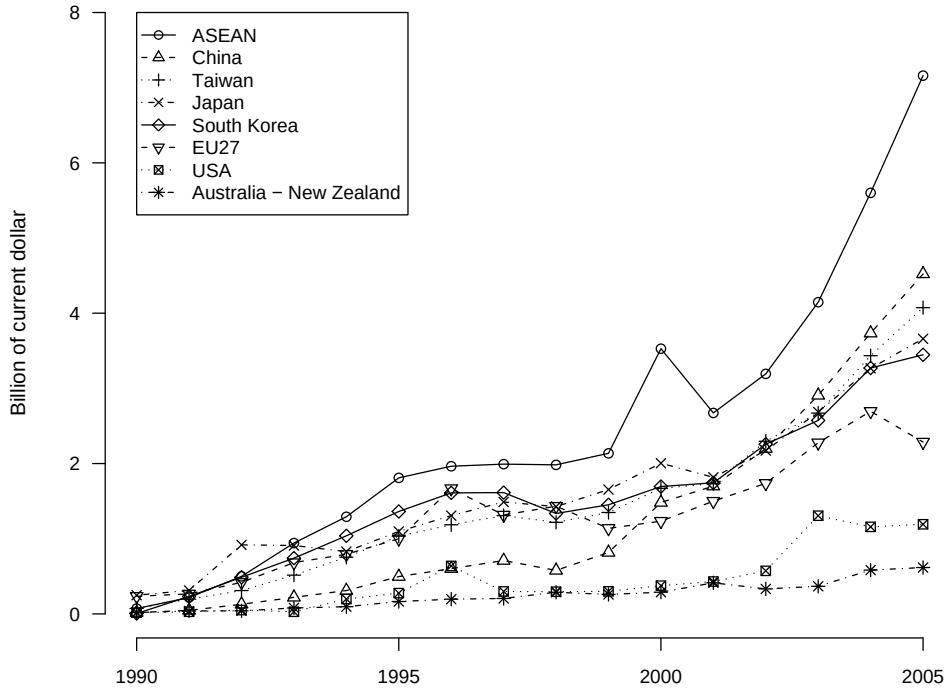
Source: World Development Indicators 2007, World Bank.

Figure 1: Trade of Vietnam as a share of GDP



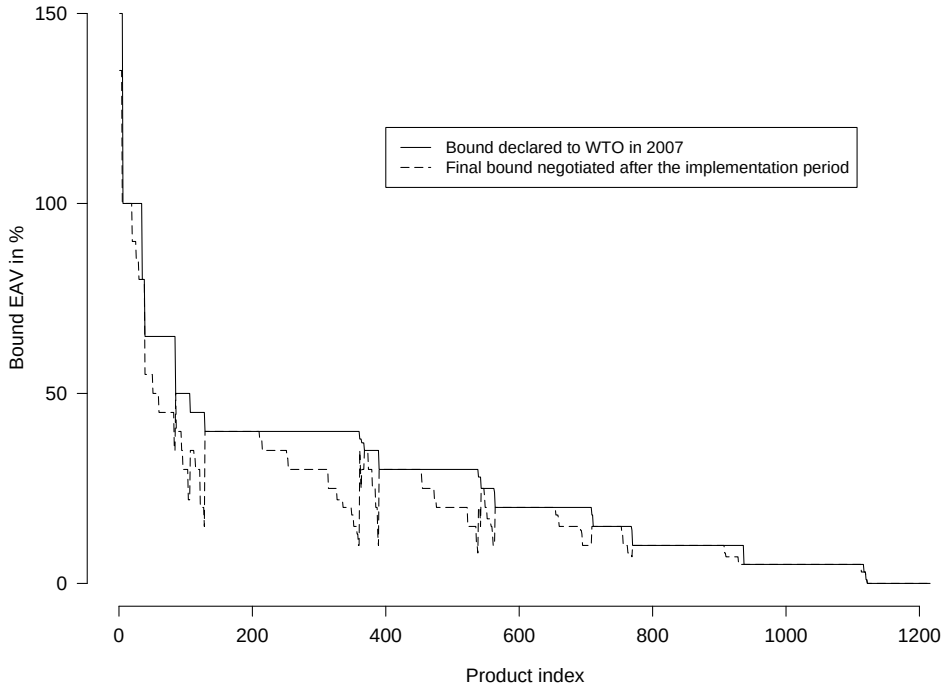
Source: CHELEM database 2007, CEPII.

Figure 2: Exports of Vietnam by destination



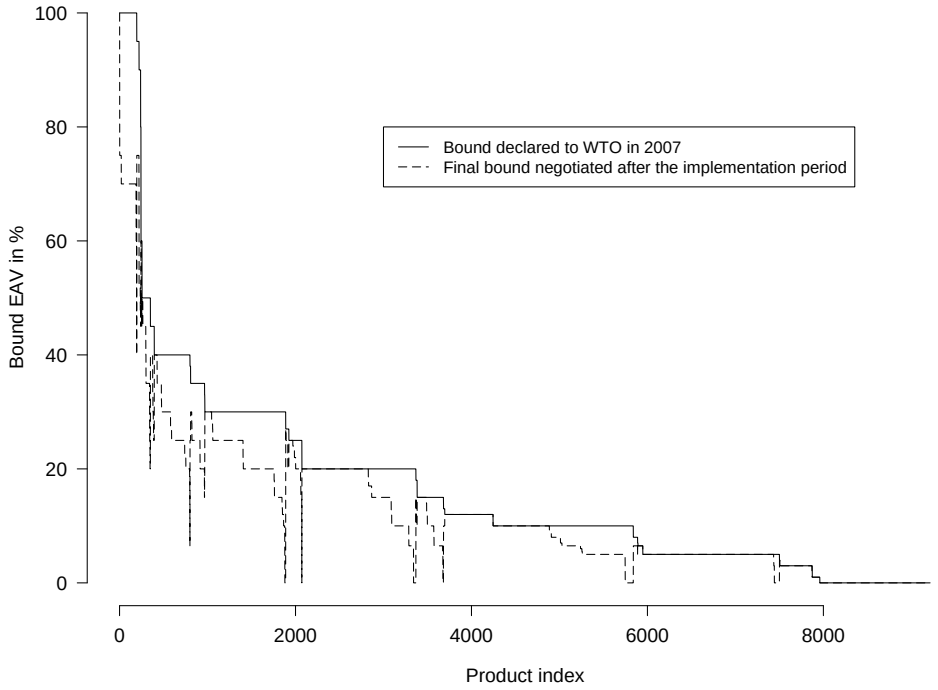
Source: CHELEM database 2007, CEPII.

Figure 3: Imports of Vietnam by origin



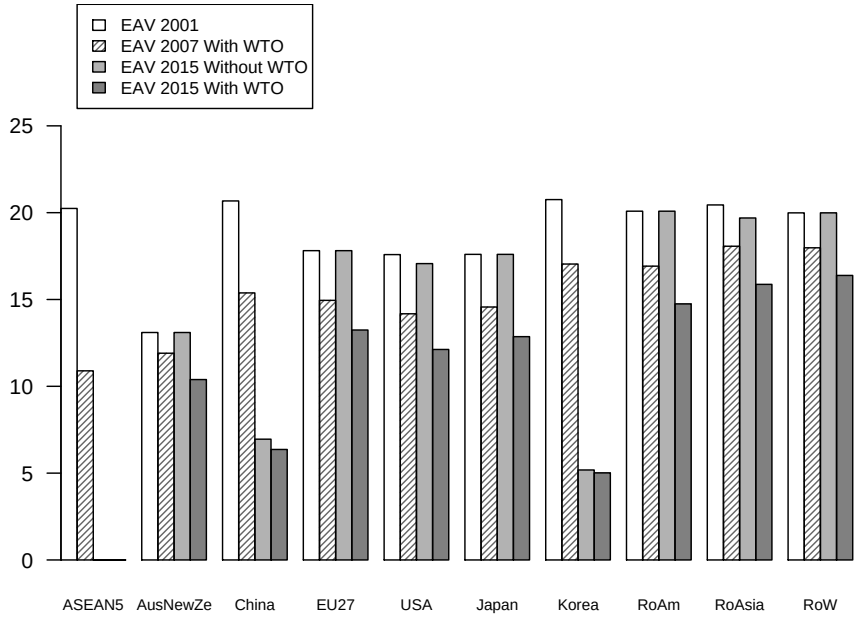
Source: Report of the Working Party on the Accession of Vietnam, WTO (2007).

Figure 4: WTO cuts on Vietnam tariff bounds with accession - Agricultural products



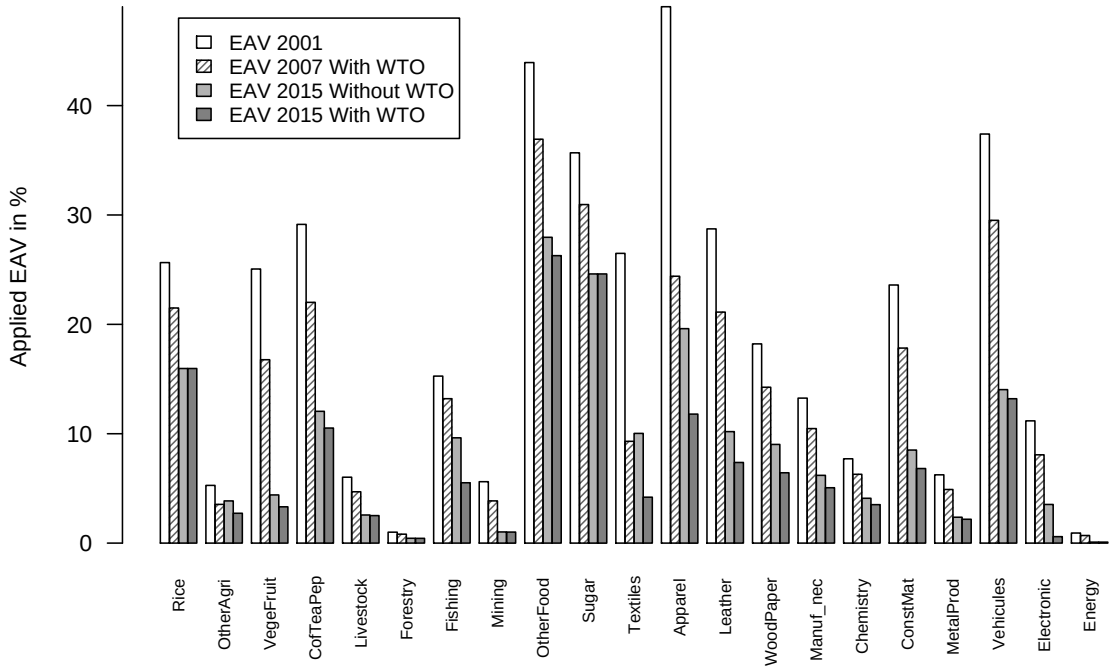
Source: Report of the Working Party on the Accession of Vietnam, WTO (2007).

Figure 5: WTO cuts on Vietnam tariff bounds with accession - Non agricultural products



Source: MAcMap-HS6 v1, CEPII 2004; authors' calculations.

Figure 6: Protection structure of Vietnam by exporting region



Source: MAcMap-HS6 v1, CEPII 2004; authors' calculations.

Figure 7: Protection structure of Vietnam by sector

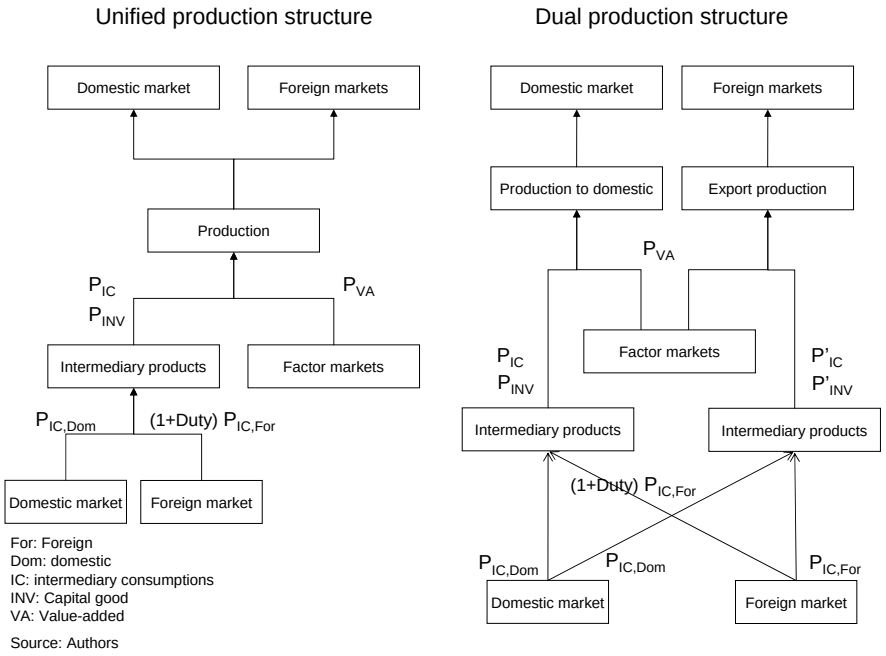
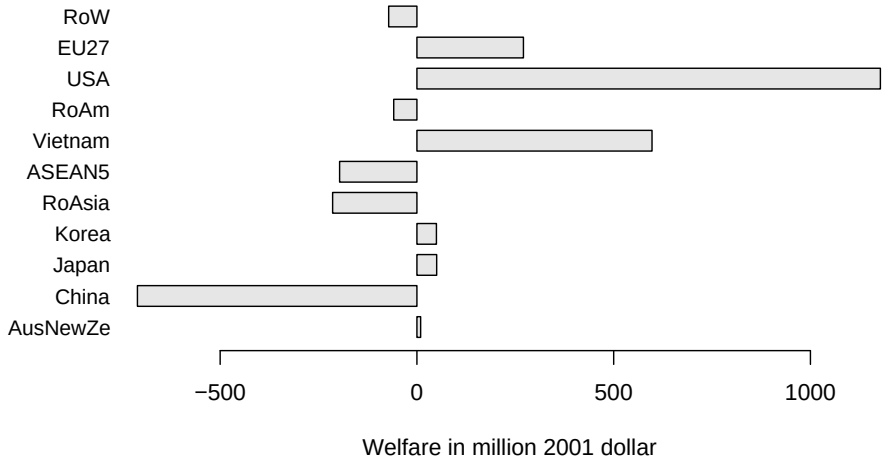
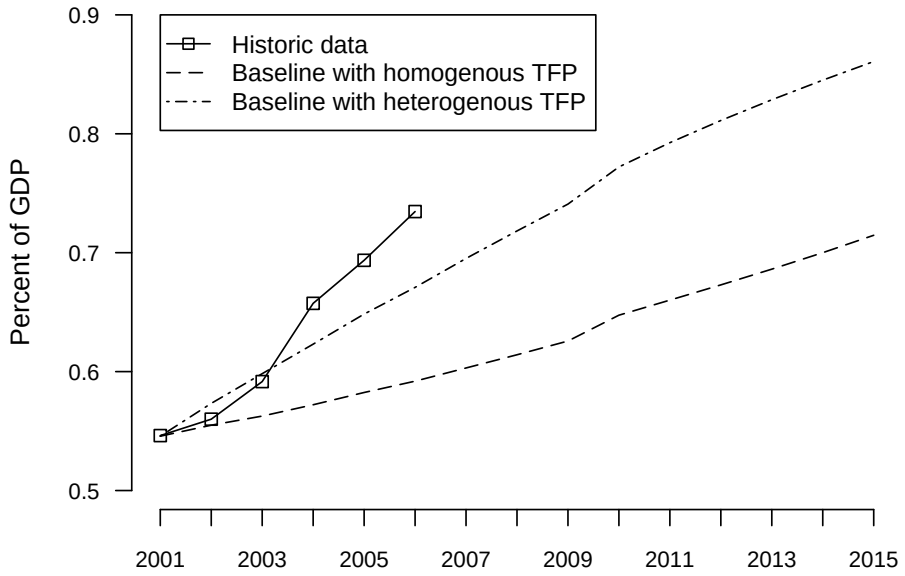


Figure 8: Configuration of production with and without duty drawbacks



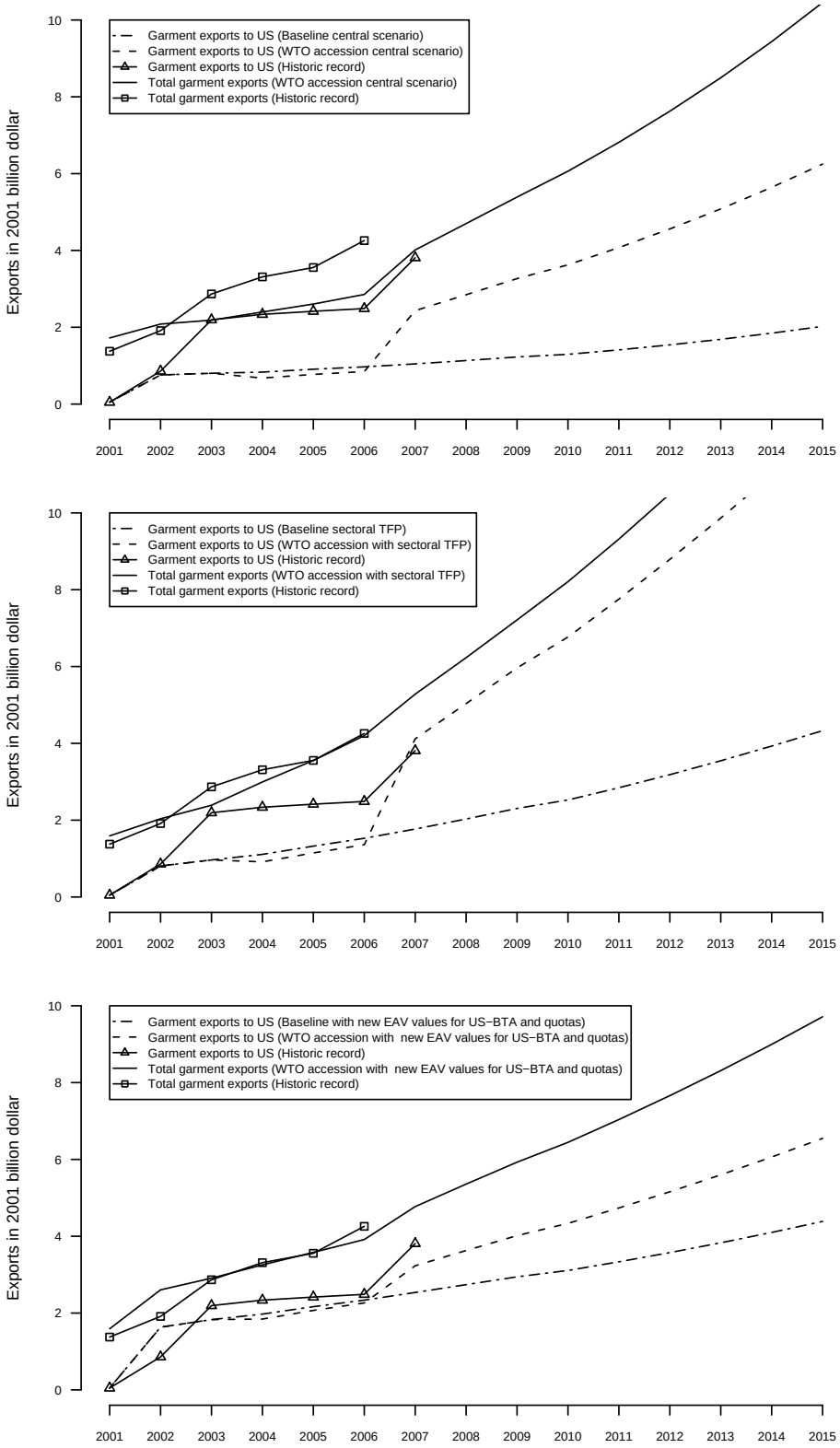
Source: Authors' calculations.

Figure 9: Distribution of gains between countries



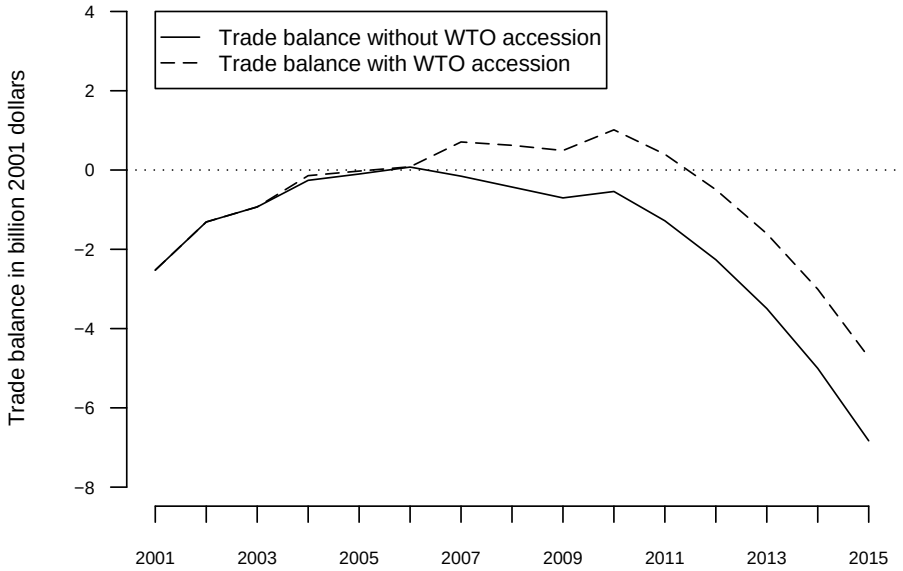
Source: Historic data from World Develoment Indicators, 2008; Authors' calculations for model baseline.

Figure 10: Exports as share of GDP in the different baselines



Source: Authors' calculations

Figure 11: Evolution of apparel export following three different dynamic specifications



Source: Authors' calculations

Figure 12: Trade balance under fixed real effective exchange rate closure

	Vietnam	Cambodia	Japan	China	Thailand	USA
HS2	0.242	0.589	0.315	0.260	0.229	0.197
HS4	0.224	0.302	0.145	0.106	0.112	0.078
HS6	0.220	0.216	0.090	0.076	0.086	0.060

Source: BACI, Authors' calculations

Table 1: Normalised Herfindahl-Hirschmann index on Vietnam exports in 2005

Name	**Description**	**GTAP code (version 6.2)**
Vietnam	Vietnam	VNM
ASEAN5	Indonesia, Malaysia, Philippines, Singapore, Thailand	IDN, MYS, PHL, SGP, THA
AusNewZe	Australia, New Zealand, other Oceania	AUS, NZL, XOC
China	China, Hong-Kong	CHN, HKG
EU27	Member States of the European Union	AUT, BEL, DNK, FIN, FRA, DEU, GBR, GRC, IRL, ITA, LUX, NLD, PRT, ESP, SWE, BGR, CYP, CZE, HUN, MLT, POL, ROM, SVK, SVN, EST, LVA, LTU
USA	United States of America	USA
Japan	Japan	JPN
Korea	South Korea	KOR
RoAm	Rest of North and Latin America countries	CAN, MEX, XNA, BOL, COL, ECU, PER, VEN, ARG, BRA, CHL, PRY, URY, XSM, XCA, XFA, XCB
RoAsia	Rest of Asian countries	TWN, XEA, KHM, XSE, BGD, IND, PAK, LKA, XSA
RoW	Rest of the World	CHE, XEF, XER, ALB, HRV, RUS, XSU, TUR, IRN, XME, EGY, MAR, TUN, XNF, BWA, ZAF, XSC, MWI, MUS, MOZ, TZA, ZMB, ZWE, XSD, MDG, NGA, SEN, UGA, XSS

Table 2: Regional aggregation used for the modelling

Name	Description	GTAP codes
Rice	Paddy rice, Processed rice	pdr, pcr
OtherAgri	Cereals, Oil seeds, Sugar cane. Sugar beet, Plant-based fibers, Raw-milk, Wool. silk-worm cotton	wht, gro, osd, rmk, wol
VegeFruit	Vegetables. Fruits. Nuts	v_f
CofTeaPep	Crops nec (coffee, tea, pepper)	ocr
Livestock	Animals and animal products	ctl, oap
Forestry	Forestry	frs
Fishing	Fishing	fsh
Mining	Coal, Oil, Gas, Mineral nec	coa, oil, gas, omn
OtherFood	Meat, Vegetable oil and fats, Dairy products, Food products nec, Beverage and tobacco products	cmt, omt, vol, mil, ofd, b_t
Sugar	Sugar	sgr
Textiles	Textiles	tex
Apparel	Wearing apparel	wap
Leather	Leather products	lea
WoodPaper	Wood products, Paper products, Publishing	lum, ppp
Manuf_nec	Petroleum and coke products, Machinary, Manufacture nec	p_c, ome, omf
Chemistry	Chemical, rubber and plastic products	crp
ConstMat	Mineral products nec	nmm
MetalProd	Metals and metals products	i_s, nfm, fmp
Vehicules	Motor vehicules and parts, transport equipment nec	mvh, otn
Electronic	Electronic equipment	ele
Energy	Electricity and gas manufacture and distribution	ely, gdt
Construct	Construction	cns
BusServ	Water, Communications, Financial services nec, Insurances, Business services nec, Recreation and other services, Dwellings	wtr, cmn, ofi, isr, obs, dwe
Trade	Trade	trd
Transport	Transports	otp, wtp, atp
PubServ	Public administration, defence, health, education services	osg

Table 3: Sectoral aggregation used for the modelling

Sectors	Export share in production	*Export value (mio $)*
Rice	6.0%	*384*
OtherAgri	12.5%	*41*
VegeFruit	14.0%	*257*
CofTeaPep	92.6%	*755*
Livestock	3.7%	*68*
Forestry	1.4%	*8*
Fishing	3.4%	*52*
Mining	78.1%	*2,262*
OtherFood	33.5%	*1,518*
Sugar	3.4%	*13*
Textiles	36.0%	*555*
Apparel	82.2%	*1,697*
Leather	67.1%	*2,990*
WoodPaper	34.7%	*659*
Manuf nec	68.9%	*1,304*
Chemistry	17.8%	*516*
ConMateri	8.2%	*223*
MetalProd	9.0%	*164*
Vehicules	7.4%	*126*
Electronic	87.6%	*544*
ElecGas	0.1%	*2*
BusServ	15.6%	*761*
Construct	0.8%	*71*
Trade	3.5%	*138*
Transport	51.4%	*705*
PubServ	5.4%	*259*
Total	23.6%	*16,072*

Source: GTAP database and authors' calculations

Table 4: Proportion exporting firms in production and Vietnam's export value in 2001

Good	Without DD	With DD
Rice	9.12%	10.94%
OtherAgri	9.70%	10.56%
VegeFruit	8.63%	12.80%
CofTeaPep	38.57%	53.57%
Livestock	9.21%	9.26%
Forestry	24.75%	25.00%
Fishing	13.13%	12.50%
Mining	15.49%	21.88%
OtherFood	6.54%	12.48%
Sugar	6.42%	14.29%
Textiles	46.85%	63.04%
Apparel	25.12%	50.69%
Leather	48.48%	71.06%
WoodPaper	16.61%	24.45%
Manuf nec	18.82%	23.53%
Chemistry	17.68%	21.18%
ConMateri	7.30%	12.52%
MetalProd	17.40%	21.46%
Vehicules	11.82%	25.71%
Electronic	33.82%	40.60%
ElecGas	11.76%	11.76%
BusServ	12.39%	12.36%
Construct	19.30%	27.84%
Trade	21.79%	22.63%
Transport	10.80%	11.07%
PubServ	1.18%	1.14%
Total	17.7%	23.71%

Note: DD = duty drawbacks

Table 5: Proportion of imports within each good used as intermediate consumption by exporting firms

	With duty drawbacks		*Without duty drawbacks*	
	No WTO	WTO	No WTO	WTO
2001	1,898	1,898	2,533	2,533
2008	2,588	2,345	3,402	3,025
2015	1,410	1,216	1,884	1,623

Table 6: Revenues from duty under different modelling assumptions (million of 2001 dollars)

	Without quotas						With quotas					
	Output		Domestic		Exports		Output		Domestic		Exports	
	Value	*Variation*	Value	*Variation*	Value	*Variation*	Value	*Variation*	Value	*Variation*	Value	Variation
Rice	24	*0.2%*	22	*0.2%*	2	*0.2%*	3	*0.0%*	36	*0.3%*	-33	-3.5%
OtherAgri	-0	*0.0%*	-2	*-0.8%*	2	*0.5%*	-6	*-0.8%*	2	*0.7%*	-8	-1.8%
VegeFruit	-15	*-0.4%*	-20	*-0.7%*	5	*0.9%*	-11	*-0.3%*	0	*0.0%*	-11	-2.2%
CofTeaPep	2	*0.2%*	-0	*-0.4%*	2	*0.3%*	-13	*-1.2%*	-5	*-4.1%*	-8	-0.9%
Livestock	8	*0.2%*	8	*0.2%*	0	*0.2%*	11	*0.3%*	13	*0.4%*	-2	-2.1%
Forestry	-4	*-0.3%*	-4	*-0.3%*	0	*0.3%*	-48	*-3.6%*	-47	*-3.6%*	-1	-4.0%
Fishing	-2	*-0.1%*	-2	*-0.1%*	0	*0.2%*	-36	*-1.1%*	-34	*-1.1%*	-2	-2.8%
Mining	7	*0.1%*	7	*0.4%*	0	*0.0%*	-39	*-0.4%*	4	*0.2%*	-43	-0.5%
OtherFood	-28	*-0.3%*	-59	*-0.9%*	31	*0.8%*	-322	*-3.0%*	-166	*-2.5%*	-156	-3.9%
Sugar	3	*0.4%*	3	*0.4%*	0	*0.4%*	-11	*-1.2%*	-9	*-1.0%*	-2	-4.1%
Textiles	54	*1.0%*	12	*0.4%*	41	*1.8%*	2,026	*37.9%*	893	*29.0%*	1,133	50.0%
Apparel	85	*1.2%*	-15	*-1.7%*	100	*1.7%*	6,056	*86.9%*	139	*15.2%*	5,917	97.7%
Leather	340	*1.8%*	109	*1.7%*	230	*1.8%*	-1,092	*-5.7%*	-400	*-6.2%*	-692	-5.4%
WoodPaper	-16	*-0.3%*	-29	*-0.8%*	13	*0.7%*	-222	*-4.0%*	-120	*-3.2%*	-102	-5.8%
Manuf nec	81	*1.0%*	15	*0.7%*	66	*1.1%*	-274	*-3.3%*	-53	*-2.4%*	-221	-3.7%
Chemistry	95	*0.6%*	42	*0.4%*	53	*1.0%*	-527	*-3.5%*	-259	*-2.6%*	-268	-5.0%
ConstMat	12	*0.1%*	7	*0.1%*	5	*0.6%*	-23	*-0.3%*	28	*0.3%*	-51	-5.6%
MetalProd	81	*1.1%*	72	*1.1%*	9	*1.2%*	-120	*-1.6%*	-85	*-1.3%*	-35	-4.7%
Vehicules	24	*0.6%*	20	*0.5%*	4	*0.8%*	-116	*-2.7%*	-95	*-2.5%*	-21	-4.1%
Electronic	34	*1.4%*	10	*3.2%*	24	*1.1%*	-45	*-1.8%*	-1	*-0.3%*	-44	-2.0%
Energy	26	*0.4%*	26	*0.4%*	0	*0.3%*	-89	*-1.3%*	-88	*-1.3%*	-1	-11.1%
BusServ	58	*0.3%*	54	*0.4%*	4	*0.2%*	-326	*-1.9%*	-224	*-1.5%*	-102	-5.0%
Construct	112	*0.4%*	111	*0.4%*	1	*0.5%*	264	*1.0%*	270	*1.1%*	-6	-3.2%
Trade	70	*0.5%*	69	*0.5%*	1	*0.4%*	131	*0.9%*	145	*1.0%*	-14	-4.2%
Transport	30	*0.7%*	25	*1.0%*	5	*0.3%*	4	*0.1%*	20	*0.8%*	-16	-1.0%
PubServ	31	*0.2%*	31	*0.2%*	0	*0.0%*	-19	*-0.1%*	17	*0.1%*	-36	-4.9%
Total	1,111	*0.5%*	512	*0.3%*	599	*1.0%*	5,156	*2.4%*	-19	*0.0%*	5,175	8.8%

Table 7: Main results on export and output in central scenario

Variation in 2015	WTO without end of quotas	WTO with end of quotas	WTO and FTAs
GDP	0.5%	2.4%	3.7%
Terms of trade	-0.1%	-1.4%	-3.0%
Real effective exchange rate	-0.2%	1.0%	-2.7%
Real wages unskilled	0.4%	1.6%	4.5%
Real wages skilled	0.9%	1.8%	7.8%
Capital return	0.6%	6.4%	12.3%
Foreign direct investment	1.0%	4.7%	16.3%
Welfare	0.4%	0.9%	1.5%

Source: Authors' calculations

Table 8: WTO accession: effect on macroeconomic indicators for the central scenario and FTA assessment

Name	Nb of scen.	GDP (Welf) *Min*	GDP (Welf) *Max*	Exp. *Min*	Exp. *Max*	Imp. *Min*	Imp. *Max*	Model caracteristics	Baseline	Scenarios
Fukase and Martin (2000)	3	(0.4)	(-2.4)	0.9	12.1	NA	NA	GTAP static	Modified GTAP4 database	Granting of MFN by USA; Sensitivity analysis: +/- 50% on elasticities
Fukase and Martin (2001)	5	-4.7	1	3.9	15.2	3.1	12.8	GTAP static	Modified GTAP4 database	
Roland-Holst et al. (2002)	7	0.2	3.3	0.6	12.1	NA	NA	CNAM single country model (World Bank style) with dynamic gains	VN SAM 2000 (Jensen, 2004) Business as Usual	WTO accession; WTO accession + China productivity growth; Trade boost from USBTA; FDI boost;
Nguyen and Ezaki (2005)	5	-0.06	-0.68	1.73	18.24	3.15	15.39	Static multiregion, dual labour market, exogenous wages for formal sector	GTAP6	3 Regional FTAs; Regional FTA + Bilateral FTA Japan + US; Multilateral liberalisation
Dimaranan et al. (2005)	2	6.74	7.88	15.22	18.81	NA	NA	GTAP static ATC, multiregion, duty-drawbacks	GTAP6, end of EU quota, IC rebalancing	WTO accession schedule; +33% Deeper liberalisation
Huong and Vanzetti (2006)	6	1	15	-2	57	-1	37	GTAP static, exogenous wage for unskilled labour	GTAP6	-100% Unilateral; Harmonised 10% level unilateral; -100% Bilateral (EU); -100% Regional; -50% WTO members Opening; -100% World
Fujii and Roland-Holst (2007)	3	-0.27	5.31	-0.82	20.5	-1.28	27.5	GTAP static linked to a micro simulation model	GTAP6	-100% Vietnam; -100% Vietnam + Improved market access; Partial opening Vietnam;

Source: Inspired from Abbott et al. (2007). Update from DIAL (2007) and completed by authors.

Table 9: Review of past studies in CGE on trade agreements for Vietnam

	Observed annual growth		TFP differential for modelling		
	Value added	Exports	TFP domestic	TFP export 1	TFP export 2
Rice	1.9%	27.0%	4.2%	4.2%	4.2%
OtherAgri	5.5%	6.1%	4.2%	4.2%	4.2%
VegeFruit	4.4%	22.0%	4.2%	4.2%	4.2%
CofTeaPep	5.5%	20.9%	4.2%	4.2%	4.2%
Livestock	7.2%	6.0%	4.2%	4.2%	4.2%
Forestry	0.9%	23.3%	4.2%	4.2%	4.2%
Fishing	8.6%	-9.3%	4.2%	4.2%	4.2%
Mining	4.4%	21.6%	3.8%	12.6%	14.5%
OtherFood	15.4%	15.8%	3.8%	26.3%	35.6%
Sugar	na	-43.2%	3.8%	3.8%	3.8%
Textiles	15.9%	30.7%	3.8%	27.6%	12.4%
Apparel	22.6%	27.9%	3.8%	12.5%	3.8%
Leather	18.9%	17.4%	3.8%	14.3%	16.9%
WoodPaper	20.3%	34.6%	3.8%	3.8%	3.8%
Chemistry	18.1%	31.8%	3.8%	25.4%	29.3%
ConstMat	12.6%	22.0%	3.8%	8.6%	11.3%
MetalProd	23.1%	40.1%	3.8%	43.6%	43.6%
Vehicules	22.4%	27.5%	3.8%	26.3%	29.6%
Electronic	19.6%	30.0%	3.8%	34.3%	39.0%
Manuf nec	21.7%	23.1%	3.8%	10.3%	13.0%
Energy	14.3%	17.0%	3.8%	3.8%	3.8%
Construct	10.4%		-1.8%	-1.8%	-1.8%
Trade	8.3%		2.4%	2.4%	2.4%
Transport	8.3%		2.4%	2.4%	2.4%
BusServ	7.6%		2.4%	2.4%	2.4%
PubServ	7.6%		2.4%	2.4%	2.4%

Notes: Value added growth from IMF (2007) average on the period 2002-2006. For agricultural products, production is used instead of value added. Exports growth is averaged on the period 2001-2006 from CHELEM database (CEPII).
TFP export 1 is used for the baseline with differentiated TFP. TFP export 2 is used for the baseline with differentiated TFP and textile and garments sector improvement.
Source: IMF, CHELEM and authors calculations

Table 10: Differentiated TFPs introduced in the model

	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Exports in Agriculture ($ million)	**1,923**	**1,600**	**1,462**	**1,471**	**1,870**	**2,447**	**3,011**
(number of hs6 lines)	*339*	*362*	*368*	*377*	*387*	*407*	*411*
% change in number of hs6 lines	*6.6%*	*6.8%*	*1.7%*	*2.4%*	*2.7%*	*5.2%*	*1.0%*
Exports in Industry ($ million)	**8,285**	**11,397**	**11,927**	**13,983**	**18,952**	**24,227**	**29,078**
(number of hs6 lines)	*2237*	*2521*	*2575*	*2700*	*2863*	*2973*	*3065*
% change in number of hs6 lines	*3.8%*	*12.7%*	*2.1%*	*4.9%*	*6.0%*	*3.8%*	*3.1%*
Total	**10,208**	**12,997**	**13,389**	**15,454**	**20,822**	**26,673**	**32,088**
(number of hs6 lines)	*2576*	*2883*	*2943*	*3077*	*3250*	*3380*	*3476*
% change in number of hs6 lines	*4.2%*	*11.9%*	*2.1%*	*4.6%*	*5.6%*	*4.0%*	*2.8%*

Source: BACI, Author's calculations, trade flows in millions of US dollars

Table 11: Increase in export and number of varieties for Vietnam

	Wearing Apparel			Textile		
Importing Country	Vietnam	China	*World (mio $)*	Vietnam	China	*World (mio $)*
USA	4.3%	23.6%	*55,136*	1.4%	22.6%	*40,363*
Japan	3.6%	78.0%	*15,262*	1.6%	69.8%	*11,739*
Mexico	2.0%	6.0%	*1,819*	0.2%	8.0%	*6,267*
Canada	1.8%	47.5%	*4,537*	0.3%	20.7%	*5,473*
Korea	1.7%	74.4%	*2,416*	2.1%	49.2%	*4,342*
ASEAN	1.2%	31.2%	*2,311*	0.8%	26.5%	*9,514*
EU27	1.0%	22.9%	*86,161*	0.2%	10.2%	*97,960*
Australia	0.9%	74.0%	*2,388*	0.5%	43.6%	*2,507*

Source: BACI (2007)

Table 12: Market shares of Vietnam for textile and wearing apparel in main destination markets (2005)

HS6 Code	Description Description	Vietnam	Bangla-desh	China	Indo-nesia	India	Thai-land	Turkey	Moroc-co	Tuni-sia	*US import (mio $)*	*Vietnam / China*
620462	Women's trousers and shorts of cotton	4.8%	3.8%	11.0%	4.7%	2.3%	1.9%	1.9%	0.1%	0.1%	*6,060*	*0.44*
620193	Men's anoraks and similar articles, of man-made fibres	19.1%	7.4%	46.9%	2.3%	0.6%	2.7%	0.0%	0.0%	0.0%	*925*	*0.41*
620342	Men's trousers and shorts, of cotton	2.8%	6.3%	8.0%	2.6%	2.7%	0.8%	0.9%	0.1%	0.2%	*5,099*	*0.35*
620520	Men's shirts of cotton	4.1%	12.6%	7.2%	8.8%	10.9%	1.6%	2.6%	0.0%	0.2%	*2,798*	*0.57*
610510	Men's shirts of cotton, knitted or crocheted	6.3%	2.0%	3.2%	4.0%	13.8%	5.8%	0.6%	0.0%	0.0%	*1,660*	**2.01**
620293	Women's anoraks and similar articles, of man-made fibres	14.3%	4.8%	61.1%	3.6%	1.5%	1.6%	0.1%	0.0%	0.0%	*721*	*0.23*
610610	Women's blouses, shirts of cotton, knitted or crocheted	8.9%	2.7%	4.7%	4.0%	2.9%	3.3%	0.9%	0.1%	0.0%	*965*	**1.91**
650590	Hats and other headgear, knitted or crocheted	9.9%	15.4%	43.5%	1.3%	0.3%	0.4%	0.0%	0.0%	0.0%	*742*	*0.23*
620343	Men's trousers and shorts of synthetic fibres	5.0%	5.3%	15.7%	8.0%	3.6%	1.5%	0.1%	0.0%	0.0%	*1,304*	*0.32*
620413	Women's suits of synthetic fibres	36.6%	0.0%	29.2%	8.5%	0.3%	5.7%	0.1%	0.0%	0.0%	*176*	**1.25**
620463	Women's trousers and shorts of synthetic fibres	5.8%	3.0%	13.9%	13.2%	1.5%	1.4%	4.2%	0.0%	0.1%	*1,081*	*0.42*
610462	Women's trousers and shorts of cotton, knitted or crocheted	5.9%	0.7%	12.2%	3.6%	1.6%	1.1%	2.6%	0.0%	0.0%	*1,053*	*0.48*
621040	Men's garments of textile fabrics with plastics	17.9%	6.0%	45.6%	5.2%	0.5%	4.2%	0.0%	0.0%	0.0%	*302*	*0.39*
620433	Men's jackets and blazers of synthetic fibres	12.8%	2.3%	33.4%	7.1%	1.4%	2.6%	2.2%	0.1%	0.2%	*404*	*0.38*
610230	Women's overcoats, car-coats, capes, cloaks	20.2%	3.9%	16.0%	2.4%	1.5%	2.2%	0.4%	0.1%	0.0%	*253*	**1.26**
610130	Overcoats, car-coats, capes, anoraks, incl. ski-jackets	20.6%	6.1%	6.0%	5.4%	2.7%	2.7%	0.2%	0.1%	0.0%	*243*	**3.45**
611120	Babies garments of cotton, knitted or crocheted	4.3%	1.6%	45.1%	2.4%	4.7%	13.9%	0.5%	0.1%	0.1%	*894*	*0.10*
620530	Men's shirts of man-made fibres	6.1%	8.6%	17.7%	5.3%	2.5%	1.4%	0.1%	0.0%	0.1%	*620*	*0.35*
611420	Special garments for professional, n.e.s., of cotton	7.7%	0.5%	13.1%	2.6%	4.8%	1.8%	2.7%	0.0%	0.1%	*489*	*0.59*
621050	Women's garments of textile fabrics, with plastics	19.5%	7.4%	39.6%	1.7%	0.6%	3.6%	0.0%	0.0%	0.0%	*181*	*0.49*

Source: BACI (2007) and authors' calculations

Table 13: US markets shares of some countries for 20 largest HS6 export volume of wearing apparel from Vietnam (2005)

Variation in 2015	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP	0.5%	2.4%	3.7%	1.6%	1.3%	1%	0.1%
Terms of trade	-0.1%	-1.4%	-3.0%	-1.9%	-0.6%	-1.5%	-0.7%
Real effective exchange rate	-0.2%	1.0%	-2.7%	1.5%	0.8%	0.0%	1.0%
Real wages unskilled	0.4%	1.6%	4.5%	1.7%	1.3%	0.6%	1.5%
Real wages skilled	0.9%	1.8%	7.8%	0.5%	1.5%	-1.0%	-0.4%
Capital return	0.6%	6.4%	12.3%	8.9%	4.3%	7.3%	4.5%
Foreign direct investment	1.0%	4.7%	16.3%	5.6%	3.2%	4.5%	2.4%
Welfare	0.4%	0.9%	1.5%	-0.4%	1.0%	-1.7%	-0.5%

Note: (1) WTO without end of quotas - Central scenario specifications

(2) WTO with end of quotas - Central scenario specifications

(3) WTO and free trade commitments on the period 2001-2015 (ASEAN, China, Japan, Korea)

(4) WTO with end of quotas - Sectoral TFPs

(5) WTO with end of quotas - Sectoral TFPs and improved garment EAV for quotas

(6) WTO with end of quotas - Fixed exchange rate

(7) WTO with end of quotas - Perfect labour market

Source: Author's calculations

Table 14: WTO accession: effect on macroeconomic indicators for different specifications