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VIETNAM'S ACCESSION TO THE WTO: LESSONS FROM PAST TRADE AGREEMENTS

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Vietnam's Accession to the WTO: Lessons from Past Trade Agreements

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Summary. – This paper examines Vietnam's experience with bilateral trade agreements and compares subsequent outcomes with predictions from existing computable general equilibrium (CGE) models. Those model based assessments have greatly underestimated the impact of past agreements. Tariff reform is not the main factor driving economic adjustments, and market imperfections mean there is potential for greater output and trade expansion. The key questions to ask in future research are what critical new institutional reforms WTO accession will bring, and what incentives will be put in place to determine the evolution of investment by sector.

Keywords – Trade liberalization, Bilateral trade agreements, WTO Accession, Vietnam

JEL classification: F13, F14, O24, O53

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1. INTRODUCTION

WTO accession by Vietnam on 11 January 2007 as the 150th member of this organization culminates a long process of efforts to integrate the Vietnamese economy into international markets. Since 1986, when the Doi Moi restructuring process began, Vietnam has negotiated a series of bilateral trade agreements. Numerous market-oriented legal and economic reforms have been introduced, and significant institutional changes have put the country on the path to become a more open, socialist-oriented market economy. This was established as an overarching goal at the Ninth Party Congress in April of 2001.

Among the more than 100 other trade agreements of varying scope,¹ Vietnam signed a bilateral agreement with the European Union (EU) in 1992. It joined ASEAN in 1995, and in 2000 entered into a bilateral trade agreement (BTA) with the U.S. Each time such a major agreement was reached, Vietnam's trade with that region expanded, and these trade agreements were clearly an impetus to ongoing domestic economic reforms. They included reducing the role of state owned enterprises (SOEs), revising commercial law, granting greater access of foreign firms to the domestic economy and establishing new regulations to facilitate international trade.

Negotiations to join the WTO began in 1995 and eventually involved 20 separately negotiated bilateral agreements with WTO member countries. These agreements went beyond previously established trade agreements with those same countries and set the terms for Vietnam's accession. The final accession agreement was negotiated in 2006 with a working party including 63 countries. Overall, Vietnam's WTO membership has been predicated on the implementation of institutional reforms negotiated in earlier bilateral trade agreements, with special focus on completing legal reforms and pursuing institutional changes.

The liberal reforms undertaken by Vietnam have been associated with rapid economic growth, increasing international trade and impressive poverty reduction. GDP per capita measured in constant purchasing power parity (PPP) corrected (2000) dollars increased almost threefold from \$1,097 in 1989 to \$2,739 in 2005 (World Bank, 2006). Figure 1 presents this exceptional growth performance and accompanying expansion of trade (imports plus exports), to 140% of GDP in 2004, along with data on significant reduction in poverty. According to the *World Development Indicators* (World Bank, 2006), headcount poverty (at the \$1 per capita per day threshold) had already fallen to below 15% in 1993 and was only 2% in 2002. Vietnam's own poverty criterion set the poverty rate at 58% in 1993 and slightly below 29% in 2002, with a

food poverty measure of 24% in 1993 and 11% in 2002 (Thang, 2004). From this economic performance Vietnam would seem to be a particularly illuminating case in which to study the linkages between international trade liberalization, economic development, and poverty reduction.

[Figure 1 about here]

The policy dialogue by both foreigners and Vietnamese has often evaluated the ongoing reform process in much harsher terms than the impressive economic performance would seem to warrant.² Critiques of Vietnamese policy continue to highlight such factors as the need for deeper institutional reform and persistently high tariffs for clothing and agricultural commodities. This is so even if Vietnamese tariffs are low by developing country standards. Tariffs averaged only 16% in 2000 (STAR-Vietnam, 2002), well before WTO accession and associated commitments were even remotely in sight. Numerous studies of the likely impacts of bilateral trade agreements and WTO accession have called for further reform to spur trade and development.³ Yet, those same studies fail to demonstrate the causal mechanisms underlying the successes of earlier trade agreements. Much of the critique is informed by the basic theory underlying trade models, but existing economy wide computable general equilibrium (CGE) models have not been very helpful to policy makers. This is so both with regard to estimated aggregate levels of economic variables and in the details of how growth and trade evolve. Simulated changes are often small relative to both prior performance and to actual changes following past trade agreements.

We believe there is a contradiction between Vietnam's socioeconomic performance and the critiques of policy which have emanated from model based evaluations of the Vietnamese trade regime. The models have, as we see it, overemphasized tariff changes as the key element of reform and have failed to integrate satisfactorily the potential impact of institutional changes. It is not uncommon for authors of economy wide impact studies to acknowledge the ongoing debate in Vietnam over legal reforms, the role of SOEs, access by foreign firms, and the importance of "services trade" – banking, insurance, financial markets, wholesale and retail trade, and telecommunications. Subsequent formal modeling exercises have almost exclusively limited the analysis to tariff changes, however, probably because these other reforms are indeed

hard to capture. One study which did try to address these changes was only able to model the pro-competitive effects of service trade reforms, and concluded that impacts of the reforms negotiated in the Vietnam WTO accession agreement would be trivial in comparison to recent economic performance (Dee et al., 2005). Arguably, the performance following past bilateral trade agreements paints a very different picture of both the success of past reforms and the likely impact of WTO accession than modeling efforts have so far been able to unravel.

In this paper we examine Vietnam's past experience with economic integration as a basis for predicting the economic impact of WTO accession, and we ask whether WTO accession will further economic growth and poverty reduction. Our expectations, based on historical experience, are that impacts are likely to be much greater than existing formal modeling exercises indicate. Several lessons of relevance to developing countries more generally can be drawn from this analysis, and we suggest that a distinctly different analytical path to the evaluation of trade agreement impacts than has so far been pursued at both national and international level is long overdue. Whatever path is followed, it must better address institutional reforms and services trade issues. The same goes for the key roles played by unemployment and international capital flows as well as productivity growth in determining consequences of economic integration. The key questions which should be addressed up-front, instead of asking about tariff revisions, are: (i) What are the critical new institutional reforms WTO accession will bring about that go beyond the significant steps already taken under the various bilateral trade agreements?; and (ii) What are the likely impacts of these implementation steps in light of historical experience, and through what mechanisms do they work? We hypothesize that the mechanisms through which WTO accession will influence economic development are most likely to work through incentives to investment.

In the next section of this paper further detail on Vietnam's trade policy history is examined. We present a timeline of economic and legal reforms, pinpoint when major bilateral trade agreements were reached, and examine the trade performance following those changes. Then we review in Section 3 existing model based assessments of both WTO accession and bilateral trade agreement impacts, comparing predictions to actual outcomes. This is followed in Section 4 by an identification of the key features of those models which limit their ability to predict and indication of the directions future research on quantitative assessment of trade liberalization need to take. Section 5 concludes.

2. VIETNAM'S ECONOMIC HISTORY – POLICY AND TRADE

Figure 1 has already shown the remarkable economic performance of Vietnam following the Doi Moi (renovation) reforms in 1986. Since then GDP has grown steadily at an average of 7.6% per year. Growth accelerated to 9.8% a year from the early 1990s until 1998, but then stalled at 7.0% per year following the Asian financial crisis, before increasing again to 7.7% per year from 2002 to 2004. This rapid economic growth has been accompanied by an extraordinary increase in trade (imports plus exports) over this same period, from 23% in 1986 to 97% already in 1998 and 140% in 2004. Growth in exports has been especially impressive, from only 6.6% of GDP in 1986 to 44.8% in 1998 and 66.4% in 2004. Moreover, the share of exports in GDP has been rising somewhat faster than imports. In 1983 trade was more than two-thirds imports, whereas in 2004 exports are nearly half of the trade share of GDP. Imports continue to exceed exports as capital flows into Vietnam, but foreign direct investment (FDI) has been erratic and strongly affected by the Asian financial crisis. There was no measurable FDI in 1986; FDI grew to 7.7% of GDP by 1993, stagnated at below that level, equaling only 6.1% in 1998 and falling thereafter to less than 4% of GDP since 2002. Figure 1 shows that this erratic FDI inflow has had no discernable effect on past GDP growth, however, while the extent to which increasing GDP has been associated with reduced poverty by any measure is also clear.

Performance has been less impressive for employment expansion. According to Yoko, Winters and Dutta (2003) employment has only increased from 2 to 3% since 1990. Unemployment remains at about 6.9% in urban areas and underemployment persists in rural areas. Nevertheless, real wages have increased 36-38% over this same period, with minimum wage increases and higher wages paid by foreign enterprises accounting for wage growth.

Questions these data raise are whether the trade performance has followed or led economic growth, and whether trade policy and specifically trade agreements have played a significant role in explaining Vietnam's development success. While this short time series, serious identification difficulties, and likely measurement errors in some of this data preclude direct econometric testing of the direction of these effects, we believe much can be learned from looking at the timing of reforms and corresponding bilateral trade flows. Trade performance, and particularly export success, has been region (destination) specific, and has followed successful negotiations of bilateral and regional trade agreements.

Figure 2 presents a timeline of significant changes in Vietnam's trade and related domestic policies associated with increased international integration. The process of reforming Vietnam's trading institutions and engaging in agreements with potential trade partners has been continuous if not smooth, so it is difficult to set precise dates with reforms that would significantly influence trade trends.⁴ Specific dates for changes in bilateral export flows are more evident. Two types of events are highlighted in the timeline – key bilateral trade agreements and ongoing trade related legal reforms.

[Figure 2 about here]

Legal reforms have been instituted as part of the ongoing renovation process, in response to negotiations both of bilateral agreements and as part of the WTO accession process. The first significant changes at the border involved introduction of import tariffs in 1988, elimination of the state monopoly over international trade in 1989, and establishment of export processing zones in 1990. While additional reforms were undertaken in the 1990s, a substantial new impetus to legal reform began following the U.S. bilateral trade agreement (BTA) signed in 2000. Since then Vietnam has rewritten its commercial code almost entirely, with significant new Enterprise, Competition, and Investment Laws all introduced. The final negotiations for Vietnam's WTO accession were enabled by significant additional legal reforms undertaken particularly in 2005 as the U.S. and other WTO members insisted that Vietnam implement reforms before accession would be granted. These legal reforms have gone a long way to establish property rights and contract sanctity and to create a court system where business related legal issues can be addressed. This has made it easier for foreign firms to do business in Vietnam, and as an external benefit it is now also easier for Vietnamese firms to do business. WTO accession will insure multilateral application of the reforms negotiated with each region individually.

The timeline in Figure 2 also shows some of the key bilateral agreements negotiated by Vietnam. Yoko, Winters and Dutta (2003) notes that by 2000 Vietnam had negotiated 129 either bilateral trade agreements (57) or MFN tariff agreements (72). The first major agreement was with the EU in 1992. Vietnam also joined ASEAN in 1995, the same year that WTO accession talks formally began. Vietnam then joined APEC in 1998 and implementation of tariff reductions under CEPT/AFTA began in 2001. Agreements under ASEAN auspices with China and Japan

followed in 2002 and 2003, and implementation of the BTA with the U.S. got underway in 2002. Bilateral agreements on WTO accession were reached with WTO members, including countries with which Vietnam had previously negotiated bilateral trade agreements. For example, Vietnam concluded its accession agreement with the EU in 2004 and all accession agreements were completed in 2006, including a new agreement with the U.S. specifically to allow Vietnam to join the WTO.

It has been argued in the literature that many of the earlier bilateral agreements probably had little impact on Vietnam's trade and economic performance, since they were with similar countries, suggesting little basis for Vietnam to realize comparative advantage. Moreover, tariff reductions were typically small and occurring over long, delayed implementation periods (Fukase and Martin, 1999b). Yet, each agreement also altered institutional arrangements between Vietnam and its potential trading partners, and data on bilateral trade flows paints a different picture of the effectiveness of these early trade agreements. Figure 3 shows exports since 1986 from Vietnam to ASEAN countries (as of 1995), with the year Vietnam joined ASEAN (i.e. 1995) noted by a horizontal line. Figure 4 then shows exports from Vietnam to the EU, the U.S., China, Japan and South Korea, with the years of the EU and U.S. bilateral agreements highlighted. In each case trade takes off with a region once bilateral trade agreements have been reached.

[Figure 3 about here]

[Figure 4 about here]

Figure 3 illustrates that well before tariff reductions occurred in 2001 under CEPT/AFTA, trade with ASEAN partners increased significantly. Trade with Vietnam's most important ASEAN partner, Singapore actually began increasing in 1994, just prior to Vietnam's entry into ASEAN. Trade with other ASEAN partners started to grow in the mid to late nineties, with obvious limits due to the Asian financial crisis, and with resurgence to Singapore and several other ASEAN partners after 2000. Since 1999, exports to Singapore, Thailand and the Philippines, now Vietnam's most important ASEAN export destinations, increased at least four-fold, well beyond any model predictions of exports to these countries. Exports to Singapore reached \$1.8 billion in 2004, with exports to Thailand and the Philippines nearing \$1 billion and

to Malaysia reaching \$600 million. It should be noted that exports to these destinations did not fall as exports surged to the U.S. following the BTA.

Figure 4 shows that trade between the EU and Vietnam increased rapidly from a very low level immediately following the 1992 bilateral agreement. Exports grew rapidly again from \$4.5 billion in 2002 to \$7 billion in 2004, at the same time the U.S. BTA went into effect, and when the EU completed its WTO accession negotiations with Vietnam. Vietnam exported essentially nothing to the U.S. until the mid 1990s and just prior to implementation of the BTA in 2002 had exported at most \$1 billion per year. Those exports increased to over \$6.5 billion in 2005, making the U.S. Vietnam's second most important export destination. Exports to Japan started earlier than to most of these other destinations, and yet showed another significant increase following the ASEAN-Japan agreement in 2002, going from about \$2.5 billion and then to \$4 billion in 2004. Trade with China did not grow to significant levels until 2000, reaching \$1 billion, and then more than doubled to \$2.5 billion in 2004. Again it is noteworthy that during periods where there were significant bilateral negotiations and institutional reforms, particularly after 2001, rapid increases in exports occurred to nearly all destinations.

A common result seen in these data is that as new agreements are reached, trade to that destination increases, often dramatically. These increases apparently do not come at the expense of exports to other destinations. There is little evidence that export surges to one region diminish exports elsewhere. Region specific exports are never seen to fall, except for a few instances explained by economic problems of partners in 1998 as a result of the Asian financial crisis. It is also generally the case that trade was initially at very low levels, and increased by orders of magnitude, posing problems for our standard analytical methods.

Table 1 shows the mix of goods Vietnam has been exporting and importing as of 2003. About a fifth of Vietnam's exports are of food and live animals, with fish, crustaceans, and mollusks accounting for over half of the exports in this category, and cereals, vegetables, fruits, and coffee also contributing significant exports. Petroleum accounts for an additional 20% and labor intensive manufactured goods represent about a third of Vietnam's exports. Almost half of those manufactured goods exports are clothing while furniture and footwear are also a large fraction. Vietnam's imports have complemented those exports, including mostly either intermediate inputs (fertilizer, plastics, leather, textiles, iron and steel) or capital goods (machinery and transport equipment). Some have raised concerns as to the highly specialized

nature of Vietnam's exports and its dependence on only a few labor intensive sectors for its growth (Roland-Holst et al., 2002). Concerns have also been voiced that some labor intensive industries (e.g. electronics) have not grown as fast as clothing. Consumer goods have been only a small part of Vietnamese imports.

[Table 1 about here]

In light of the highly specialized nature of Vietnam's exports, and given concerns to be raised later on modeling predictions of Vietnam's trade, we look in Table 2 at Vietnam's bilateral trade by commodity at a level of disaggregation corresponding to three digit SITC commodities. For each of the key regions with whom bilateral trade agreements have been reached we report the extent of specialization and the number of three digit commodities traded in years before and after trade agreements were reached as well as in the most recent year for which detailed data was available, 2004. In the case of exports to the EU, in 1990 prior to the bilateral agreement the top five commodities accounted for 60.8% of exports and the top 20 for 89%. After the agreement in 1996, similar specialization remained in spite of an increase in trade levels by a factor of 24, from \$74 million to \$1.8 billion. But the number of three digit commodities exported doubled from 93 to 185. Exports to the EU quadrupled again to \$6.9 billion in 2004, and the top 20 commodities still accounted for 88% of exports, while the number of three digit commodities exported increased to 203. In the case of exports to the US, prior to the BTA the top 20 commodities accounted for 98.5% of \$342 million in exports in 1996 and 97.2% of \$885 million in exports in 2000. But in 2004, the number of commodities exported had increased from 108 to 138, and exports had increased 7.5 times, to \$6.6 billion. The U.S. has remained a relatively specialized destination, as the top 20 commodities accounted for 94.4% of imports in 2004. Singapore and China present similar stories. While substantial growth in exports following trade agreements (ASEAN entry) are found, the top five commodities account for around 80% of exports and the top 20 for over 90%. The number of three digit commodities exported increased, substantially so in China's case, reaching 171 to China and 182 to Singapore, more than to the U.S. but less than to the EU.

[Table 2 about here]

The data describing Vietnam's economic and trade experience following the opening of its markets and more specifically following its major trade agreements tells a compelling story about the correlation between institutional reforms, trade performance and economic growth. Typically, most critical tariff reductions are delayed in these agreements, and yet trade has taken off with a region, sometimes even before those reductions go in force.

The lessons which seem to emerge are that bilateral trade agreements in the past have generated new trade flows well beyond the levels likely to follow from modest tariff reductions. So based on history, it is reasonable to expect that WTO accession will continue to reinforce Vietnam's trade based growth trajectory. Trade patterns that emerged in the past have been somewhat specialized, but emergence of new traded products has been a key feature of successful agreements. In addition, it was difficult to see competition for resources resulting in gains from trade from an agreement reached with a specific partner coming at the expense of trade with other partners. Often as major new bilateral agreements were arrived at, trade flows to other destinations expanded as well. Model results compared to these actual outcomes will highlight the importance of widely applied institutional reforms and bring us to raise questions as to which constraints actually limited Vietnam's trade and economic expansion.

WTO accession in early 2007 is the next step in this process of legal and economic reform. Multilateral negotiations began in 1995 with establishment of a working party composed of 63 WTO member countries. Separate bilateral agreements concerning Vietnam's WTO accession have been reached with a total of 20 countries, including the U.S., EU China, Japan, India, Korea and Australia. WTO accession will insure multilateral application of the reforms negotiated with each region individually – both tariff reductions and institutional reforms. Vietnamese officials and observers of these negotiations have argued that concessions required of Vietnam have gone well beyond existing member practices and requirements in other recent accession agreements (e.g. China's accession to the WTO), dubbing these requirements as "WTO-Plus". In particular, agricultural reforms have gone beyond the requirements of the Uruguay Round Agreement on Agriculture, and the scope of bilateral negotiations has gone well beyond tariff reductions and includes concessions on public subsidies, further legal reform, services trade, state trading enterprises, and Vietnam's status as a non-market economy.⁵ In

predicting effects of this agreement, account must be taken of these substantial institutional reforms which continue the process ongoing since 1986.

In debate in Vietnam on potential impacts, discussion quickly moves from tariff commitments to finance and insurance, telecommunications, wholesale and retail trade, and energy, where foreign firm operation in Vietnam rather than cross border trade is the focus of the debate. We believe the critical questions that need answers to assess the likely impacts of WTO accession are whether the continuing legal reforms take Vietnam significantly beyond changes already made, and what effects on investment and productivity greater presence of foreign firms may bring. Vietnam's tariffs were low when negotiations began, and only small further reductions have been taken, though there may be some key sectors where foreign interests have gained increased market access. We contrast below the most important changes which are emerging from these negotiations and the changes which are the focus of modeling efforts as background for a discussion of the consequences of increased international economic integration.

3. MODELING VIETNAM'S TRADE AGREEMENTS

A number of modeling exercises have attempted to quantify the impacts of both bilateral trade agreements and Vietnam's accession to the WTO. Rama and Sa (2005) have carefully reviewed 26 such studies, including a study establishing an underlying database for modeling. We subsequently found another four studies which have addressed the likely economic impacts of trade liberalization in Vietnam. Several of the studies examined by Rama and Sa were partial equilibrium evaluations of likely WTO impacts on key sectors – rice, sugar, maize, livestock, textiles, and clothing. Sixteen of the 29 impact studies, however, utilized computable general equilibrium (CGE) models and provided quantitative predictions of the economy-wide impacts of trade policy reform.

Specifications of the CGE models used to investigate trade liberalization by Vietnam mostly follow either the GTAP model (Hertel and Tsigas, 1997) or the World Bank's Linkage model (van der Mensbrugghe, 2005). Such models capture economy-wide relationships among the different sectors, factor markets, households and government, allocating scarce capital and labor to the most productive uses as dictated by incentives influenced by tariffs. Most assume perfectly competitive, efficient markets. None of these studies allowed for scale economies. Sectoral aggregation varied somewhat, with few studies utilizing the detail of the existing 100

plus sector IO table, and most limiting analysis to under 20 aggregate sectors. Minor modifications to those very similar specifications have not incorporated the recent additions to the Linkage model to allow dynamic simulations, focusing rather on static long run outcomes. The length of that long run period is not specified, an issue in evaluating results against actual performance, but we assume that a ten year time horizon is relevant, and the projected impacts are a one time change in any case, not an increase in growth rates.

Base data for those models typically come from the official 1996 Vietnam IO table, with a SAM either updated using 1997 macroeconomic information as in the GTAP based models (Hertel, 1997), or in a few cases using more current SAMs (see Tarp et al. 2001, 2002 and Jensen et al., 2004). All are based on the Vietnam Living Standards Surveys, done in 1992/93 or 1997/98. Thus, base data differ little from one model to another.

Following academic tradition, each study tends to focus on one aspect of the model, with most emphasis placed on characterizing model related policy reforms. Differences in assumptions on likely tariff reductions account for much of the differences found in results. Issues beyond tariff reduction were also addressed. For example, Ianchovichina (2003) modifies tariff data to account for duty drawbacks on re-exported intermediate imports. Huong and Vanzetti (2006) consider simulations which permit unemployment. Roland-Holst et al. (2002) examine complementary domestic reform which they posit brings substantial productivity gains. Dee et al. (2005) explicitly includes pro-competitive effects of service sector reform, and is the one study allowing for imperfect competition. Several studies address poverty reduction by disaggregating households. And several studies examine replacement taxation strategies to cope with lost tariff revenue, which has accounted for over one-third of Vietnam's government revenue recently. But each study characterizes their results as a quantitative prediction of the likely impact of either WTO accession or earlier bilateral trade agreement adoption.

The general contention of the CGE studies is that Vietnam's trade regime misallocates resources. Tariff reductions will free resources now going to protected industries, and so generate greater gains from trade and expansion of export industries, so increasing GDP. But these effects are typically small, especially on aggregate economic activity. Table 3 summarizes results for 30 scenarios from seven studies which recently explicitly examined WTO accession by Vietnam. Maximum GDP increases, due to the gains from trade, were less than 3.3% until two studies after 2005 got somewhat larger impacts. Huong and Vanzetti (2006) realize a 15

percent increase in GDP when labor constraints are relaxed to account for unemployment, but their prediction is in the range of other studies when employment is constrained. Dimaranan et al. (2005) realize in one scenario a 7.88% increase in total output, about one year's growth, but in a scenario which did not take duty drawbacks into account. Taking those into account reduces their predicted impact by 70%. Nguyen and Ezaki (2005) argue that they expect liberalization to increase household consumption and reduce poverty, but their trade WTO accession/ multi-lateral liberalization scenarios actually show declines in GDP.

[Table 3 about here]

Rama and Sa (2006) observe that these models may be manipulated to obtain desired results, as most changes are the result of exogenous assumptions of the authors, who have great freedom in setting scenarios. In our review we found GDP impacts tended to grow in later studies, supporting this concern. But these are quite small impacts on long run GDP, relative to the observed average 7.5% per annum growth rate that would have increased GDP 106% over ten years. This suggests that serious constraints in this framework limit its ability to capture the rapid growth of the Vietnamese economy, over which study authors have little control.

Trade impacts from the predictions of these models in Table 3 are somewhat larger than are GDP impacts, with studies typically showing 10 to 20 percent increases in exports over the long run. Actual exports increased more than 100% from 1993 to 2002, and grew even faster afterwards. Once again, the one instance in which large trade growth is predicted is for the unemployment scenario of Huong and Vanzetti (2006). Also, later studies found somewhat larger trade impacts within the above range.

The other key findings of these studies concerned poverty impacts, and the consequences of changes in taxation regimes to make up for lost tariff revenue. Not surprisingly, low GDP impacts make poverty predictions from trade liberalization inconclusive. Even the direction of the effect of trade liberalization on poverty varied among these studies, as did the GDP impact direction. Especially in cases where trade liberalization could lead to a decline in GDP, the effects of consumption goods for the poor (e.g. food) becoming more expensive are more likely to dominate. Authors' predictions on poverty were conditional on their fiscal policy adjustments, which had at least as large an impact on GDP as did tariff reductions. Thus, losses from tax

changes could overwhelm the gains from trade, leading to the scenarios where GDP fell. These results are consistent with the findings on poverty impacts of trade liberalization of Hertel and Winters (2005), where proper modeling of microeconomic distortions is the key to getting appropriate impacts on poverty, and the effects of those distortions dominate tariff effects.

Comparisons of results from studies projecting impacts of bilateral agreements to actual outcomes are more direct because those agreements have been in force for several years, so relevant time periods exist over which observed trade and modeling results can be compared. Two studies done at the World Bank looked at impacts of Vietnam's relationship with ASEAN (Fukase and Martin, 1999b) and at the U.S. Bilateral trade agreement (Fukase and Martin, 1999a). In the case of the U.S. BTA, sectoral impacts for the successful sectors are also examined. Those studies were also done much earlier, and so anticipated lower impacts in line with typical outcomes from this type of study.

In Table 4 we compare predicted changes from the study examining trade with ASEAN partners after 1996, when Vietnam joined ASEAN.⁶ Fukase and Martin (1999b), the authors of that study, had anticipated little impact because tariff changes under CEPT/AFTA would be small and delayed over a long implementation period, and there was little scope for comparative advantage among the similar countries of the region. Their long run predictions in Table 4 seem larger than this analysis suggests, but those changes were from a very low base level of trade. In the eight years from 1996 to 2004, their prediction underestimated actual increases in exports from Vietnam to Indonesia by a factor of four, and to Malaysia and Thailand by a factor of six. In the one case where they expected a large increase, the Philippines, actual exports fell from 1996 to 2000 and then increased to nearly the predicted level by 2004. In the case of Singapore, Vietnam's largest ASEAN partner, their export prediction was a 0.4% increase, yet actual exports increased over 200%. As we saw earlier in Figure 3, exports to ASEAN partners accelerated after Vietnam's entry into that association. While the model failed to capture observed export increases, we would argue that this failure was foreordained by the structure of that model, which prevents trade flows increasing much from small initial levels.

[Table 4 about here]

The Fukase and Martin (1999a) rhetoric was somewhat more optimistic in the case of the U.S. BTA. Their predictions included some quite large percentage changes in exports for products in which exports were likely to increase due to very substantial tariff reductions by the U.S. once Vietnam faced MFN tariffs. Table 5 shows actual 1996 sectoral exports from Vietnam to the U.S., Fukase and Martin's predicted increases (in % changes) and actual changes from 1996 to 2004. Their most notable prediction was an increase in clothing exports of 1,512%, but actual exports increased over eight years by a much larger 10,635%. They predicted that textile exports would increase by 218%, but the actual increase was 40,804%. Once again, the limitation in this modeling framework of low initial trade levels is evident, as it is very difficult even when tariff reductions are quite large, for substantially increased trade flows to emerge. Results are quite similar for the other sectors presented in Table 5. That table shows comparable results for overall trade, where one would not have expected the initial condition constraint to bind so tightly. In that case, the prediction was that exports would increase 127.4%, but over eight years they grew 1,576%.

[Table 5 about here]

Tables 3, 4 and 5 have taken three different approaches to comparing CGE model results of trade agreement impacts against Vietnam's actual experience. In each case the models seriously underestimated the success of the trade agreement, as reflected both in continuing rapid economic growth, increased trade, and more importantly, increased exports to the partner with whom a new agreement has been reached. These results reflect the failure of these models to capture the trends and characteristics of trade following agreements as seen in the actual trade data discussed earlier. When one looks carefully at the limitations of these models, it is not surprising that this underestimation of trade impacts occurs; and we would argue that it is not unreasonable to expect the impact of WTO accession to follow more closely actual past experience following trade agreements rather than the model predictions.

4. MODEL LIMITATIONS

Several limitations of the CGE methodology typically employed to predict outcomes from Vietnam's past and future trade agreements are well known. For example, most models predict (only) static and long run one time reallocations of resources as a consequence of price adjustments following tariff changes (Rodrik and Rodriguez, 1999). Hence, the effects of trade agreements do not influence the path of development. While dynamic specifications are at the frontier of CGE modeling (e.g. van der Mensbrugghe, 2005), none of the studies reviewed in the background survey underlying the present paper were dynamic. That literature is still wrestling with short run macroeconomic closure issues and inability to predict the evolution of capital stock over time. Moreover, the underlying assumption that capital will reallocate to the sectors yielding highest returns, the presumption of long run static models, has not served well in predicting short to medium run investment allocations (Ianchovichina et al., 2000). In our view, models will need to do a better job of explaining short to medium run sectoral capacity evolution before they can be expected to adequately address development implications of trade liberalization.

In dynamic CGE models as well as in static models, macroeconomic performance including economic growth is assumed (not endogenously predicted) based on an external forecast. So the only mechanism by which trade can affect GDP is via gains from trade generated by resource reallocations. It is also well understood that the Harberger triangles of net surplus gains from tariff changes can be quite small. This is why results from CGE models of WTO trade liberalization impacts have generally been found to be small relative to the size of economies examined (Ackerman, 2005).

In the mid 1990s, the notion emerged that "dynamic gains" from trade liberalization were necessary to identify large impacts. The two key concepts put forward then were the pro-competitive effects of trade liberalization and productivity gains resulting from greater openness (USITC, 1997). These changes are "dynamic" only in the sense that they go beyond tariff barriers, and have not fully included a growth model or explained the processes that give rise to productivity changes over time (Piermartimi and Teh, 2005).

Only the Dee et al. (2005) study on Vietnam's services trade examined potential pro-competitive effects in the Vietnamese context as trade in general or opening service sectors to foreign firms prevent domestic firms from exploiting market power. It is unlikely, however, that

significant reductions in monopoly rents will occur as Vietnam moves from a state controlled economy to an open, market oriented economy. This is especially so since it has been common elsewhere for state enterprises to be replaced by oligopolistic multinational firms. Efficiency gains as state enterprises are replaced by private firms may be more likely to occur.

Roland-Holst et al. (2002) included productivity gains, which they attributed to complementary domestic policy reform, and which were essentially exogenously imposed in their model. Nevertheless, the econometric literature on the relationship between trade liberalization and growth remains controversial and inconclusive. The presumption that a systematic relationship between the level of trade and productivity in a sector, commonly used in CGE models to capture dynamic gains, has yet to be conclusively supported econometrically. The broader literature shows that development and growth are due as much due to technological progress or productivity gains resulting from other efficiency enhancing factors as to capital accumulation (Andersen and Dalgaard, 2006). A more solid basis for understanding the relationship between sectoral productivity, capital accumulation and trade policy is needed to capture the effects of institutional changes.

The key mechanism in existing trade models driving changes after reform is tariff reductions and subsequent price changes, but even setting tariff change assumptions for an aggregate model is problematic. One problem is that tariff equivalents of NTBs must be established. Thus, modeling exercises show an increase in Vietnamese tariffs, as a result of tariffication of NTBs, following several reforms in the late 1990s, when trade levels were increasing. A second problem is aggregation. Negotiations involve compromises at a highly disaggregated level, and critical products and corresponding tariff lines in negotiations can be for very narrowly defined sectors. In evaluating the potential outcome from the Doha Round, the World Bank (Anderson and Martin, 2005) noted that exempting just 5% of tariff lines from reduction could eliminate potential gains from Doha Round trade liberalization. None of the Vietnam studies we have reviewed are sufficiently disaggregated to overcome problems of missing critical detailed information relevant to negotiations. Rather, simplistic tariff changes, such as projecting free trade outcomes, are assumed since details of the outcome of WTO accession negotiations were not yet available at the time of writing. So, likely tariff changes are overestimated while the projected trade and economic outcomes are underestimated. This again

reinforces the notion that tariff changes, especially as equivalents of NTBs, are far from all that matters.

Some of the specific modeling choices in typical trade models have also been subject to considerable criticism (Ackerman, 2005; Taylor and von Arnim, 2006), and this includes the functional form determining how tariff reductions are translated into market access improvements. One of the most important features of these models is the Armington specification of international market share determination. In this approach, imported intermediates (by source) are assumed to be separable from domestically produced intermediate inputs. That is, firms first decide on the sourcing of their imports. Then, based on the resulting composite import price, they determine the optimal mix of imported and domestic goods (Hertel, 1997). The specific functional forms used (i.e. the constant elasticity of substitution or CES types) have the virtue of allowing observed two way trade, and they constrain base solutions and simulations of small shocks to stay near the base case outcomes, so model results appear realistic. Yet, they must essentially be seen as an ad hoc feature to cope with aggregation problems that exaggerate market power in trade and more importantly, they limit the potential for new markets to emerge.

Historically, the values of the Armington substitution elasticities were simply assumed, yet these parameters are critically important in determining the magnitude and nature of changes that occur in CGE models. We know of no studies estimating these parameters for Vietnam. Furthermore, if initial international market shares are zero, the Armington functions must keep shares at zero, and where shares are low initially, very large price differentials and/or substitution elasticities are needed to allow those sectors to grow to any appreciable size. In contrast, trade data for Vietnam following each of its major trade agreements show, at least when viewed at a reasonable degree of disaggregation, that small sectors become large and new products emerge. Table 2 demonstrated that for trade with the EU, China and Singapore, the number of three digit SITC commodities exported to those destinations from Vietnam doubled from about 100 to about 200 commodities. In the case of the BTA with the U.S., the number of commodities increased from 88 to 138, but the value of trade increased more than six-fold.

The Armington/CES functional form prevents observed increases in the number of commodities traded and in the magnitude of trade flows unless unrealistically large parameter values are chosen. Use of those large parameters would only be sensible for a brief period after

the beginning of a trade agreement. To show this, we imputed the Armington elasticities of substitution necessary to capture the observed increases in Vietnam’s share of the U.S. market following the BTA for seven of the more successful commodities (Table 6). This is a straightforward case to model – if tariffs are all that drive trade. In most cases Vietnamese exports can be considered small relative to the U.S. market. We assume that U.S. import prices for other exporters and on average remain fixed, so tariff changes closely approximate relative price changes faced by Vietnamese exporters. We then imputed the Armington elasticities reported in Table 6 using the following formulae:

$$E_{\text{clothing, Vietnam-US}} = M_{\text{clothing, US}} (\text{Share}_{\text{Vietnam}})_o ((P_{\text{US}} + T_{\text{mfn}}) / (P_{\text{US}} + T_{o, \text{Vietnam}}))^{\varepsilon}$$

$$(\text{Share}_{\text{Vietnam}})_o = (E_{\text{clothing, Vietnam-US}} / M_{\text{clothing, US}})_o$$

where $E_{\text{clothing, Vietnam-US}}$ is exports of clothing (or some other good) from Vietnam to the U.S., $M_{\text{clothing, US}}$ is total clothing imports from all exporters by the U.S., P_{US} is the world price of clothing at the U.S. border, T_{mfn} is the ad valorem MFN tariff applied by the U.S. to most imports, $T_{o, \text{Vietnam}}$ is the higher tariff paid by Vietnam prior to the BTA, o denotes the year before the BTA went into effect, and ε is the Armington elasticity of substitution to be imputed.

For some sectors – cashews, fish, crustaceans, and coffee – tariffs were initially very small, and Armington elasticities need to be over 100 for the assumed model structure to capture the successful increases in these sectors. For other sectors – apparel, clothing, electronics footwear, and furniture – tariff reductions were quite substantial yet substitution elasticities greater than eight and as high as 20 were needed to capture the big increases in Vietnam’s share of the U.S. market.

[Table 6 about here]

The results from Fukase and Martin (1999a) on the U.S. BTA highlight this problem. The small initial share of Vietnam in the U.S. clothing market dooms that model to under predict the effects of that agreement, even in the sectors where tariff changes were large. While their prediction of changes in clothing exports seemed large at 1,512%, the actual change was 10,635%, both from a very small base (Table 5). The results for electronics were comparable, even though that sector has not (yet) been as successful as clothing.

The extremely large elasticities, and very large new exports in sectors where tariffs were almost zero before an agreement suggest that other, institutional factors, not tariff changes, are what drive export success after a trade agreement. Even in cases where tariff changes are significant, the Armington elasticities must be quite large to explain observed trade changes. This highlights that movements along a restrictive demand function cannot explain the improvements in market access that these trade agreements bring. Accordingly, whatever approach is used to predict the consequences of trade agreement, it should not rely on the Armington specification, and must take into account both openings in market access (demand pull or constraints on exports) and institutional changes which affect market access, productivity and incentives to invest in the exporting country.

Labor market assumptions have also been a focus of criticism of the CGE models (Polanski, 2006; Stiglitz and Charlton, 2005). In the studies reviewed, only Huong and Vanzetti (2006) model closures permitting unemployment, but they identified only one such case, which they characterized as extreme. However, Vietnam's experience with past agreements and economic growth more generally has shown only modest employment gains (Yoko, Winters and Dutta, 2003), so the unemployment closure of Huong and Vanzetti (2006) may not be as extreme as they suggest. While still quite low relative to history, this closure finds the most reasonable trade and GDP impacts. It may also be the case that education levels constrain employment growth from some activities but not for others, suggesting that a more detailed look at labor markets is required than found in these models. At a minimum, relationships between urban and rural labor markets and the constraints they imply for particular sectors need to be better understood.

A fundamental concern in assessing alternative future model specifications is to ask what constrains sectoral growth. In most CGE models, and all those examined as part of this paper, gains for one country typically come at the expense of losses for other countries as fixed capital and labor endowments are reallocated across sectors. In the Vietnamese case, however, it is hard to argue that labor has to this point been a serious constraint on growth. The effect of FDI in augmenting capital is not apparent in determining growth either (Figure 1), and the literature has had difficulty in attributing productivity gains to the presence of FDI. Yet, it must be the case that capacity constrains growth, subject to productivity enhancing effects of institutional reforms and to demand constraints that may be relaxed as new market access opportunities arise.

Institutional changes, improved market access, and domestic reform all change the incentives to invest in particular sectors following trade agreements. Those investments together with the institutional changes both increase capacity and enhance productivity. A successful trade model would need to predict both any changes in investment patterns and productivity increases sector by sector as a consequence of all aspects of trade agreements. It is likely that high fixed (initial) costs of those investments mean that trade liberalization may facilitate the exploitation of significant scale economies. Sectoral estimates of likely capacity expansions provide better information than aggregated CGE models now do. Current models can accommodate the national accounting constraints within which such capital allocations occur, but they can capture endogenously neither the allocation of investment nor the increase in productivity that have apparently followed past trade agreements.

The earlier comparison of actual outcomes versus model predictions demonstrated that future trade liberalization is likely to have larger effects than CGE models predict; and the above model limitations help to explain why underestimation is common and inevitable. A better understanding of the mechanisms by which trade liberalization, and trade agreements in all their aspects, influences economic outcomes therefore needs to be developed. Those mechanisms must be incorporated into models intended to predict trade outcomes for them to be relevant to policy makers.

5. CONCLUSION

Vietnam has since 1986 experienced rapid economic growth and important reductions in poverty incidence. This economic performance has been accompanied by continuous, if not smooth, institutional reforms, which have substantially increased the extent of integration of Vietnam's economy into world markets. Each time Vietnam has negotiated a major trade agreement with an important partner, the extent of trade with that partner has expanded, and it would appear to never have been at the expense of trade with other regions. Agreements with the EU, ASEAN and the U.S. had already before WTO accession in early 2007 reduced tariffs to a relatively low average level. More significantly, they had helped encourage the economic, legal and administrative reforms that have formed an integral part of the Vietnamese Doi Moi market oriented restructuring process.

Existing studies have based predictions of the impact of WTO accession by Vietnam on analytical modeling frameworks, which are similar to those that have failed to predict the past success of bilateral trade agreements. There is no shortage of alternative economy wide studies utilizing CGE models to examine trade policy impacts in Vietnam. We considered 16 such studies in this research, with background documentation and further review available in Abbott et al. (2006). These models find small endogenously generated changes in trade and GDP, and they must resort to exogenous productivity shocks to get results that seem qualitatively more in line with historical experience. Moreover, it is far from apparent that the theoretical resource constraints applied in existing models reflect Vietnamese reality. Actual experience shows that trade flows to partners not participating in an agreement in a particular period expand, and that trade flow expansion in one sector does not appear to carry with it declines in other sectors. In contrast, models are typically built so that expansion of one sector (e.g. textiles and clothing) and to one partner (e.g. the U.S.) come at the expense of other sectors and other partners. Past experience generated only limited employment expansion, and models which permit unemployment provide somewhat more realistic results. More generally, it would appear that the predictions of existing modeling exercises have been largely irrelevant to the likely future Vietnamese trade experience after joining WTO. The reasons for this are embedded in the fact that tariff reform and associated price changes are of limited importance and the problems associated with low initial shares, under and unemployment, and foreign capital inflows. The same goes for market access improvements leading to demand driven outcomes, and the failure to capture endogenously the impacts of institutional changes and productivity improvements.

It is clear from our review of past studies that many authors are aware of the limitations of the basic methods applied, and yet difficulty in getting simulation results to conform to expectations as to trade reform impacts abound. The rhetoric of some studies evolves into more optimistic conclusions, but they actually involve a disconnection between the small numbers emerging from the models and the larger impacts experienced and anticipated in reality. A common strategy elsewhere has been to exogenously shift production functions outward. The claim that such shifts capture the link between trade and development highlights the inability of models (and existing theory) to represent endogenously the mechanisms by which trade may foster development and reduce poverty. There is conflicting evidence on poverty reduction as well – with some models showing trade liberalization leading to worsening poverty in Vietnam.

More importantly the impact of trade liberalization appears small relative to the effects of revenue replacement assumptions incorporated in modeling of alternative tax regimes (see Jensen and Tarp, 2005). In sum, most authors detail the important institutional changes underway in Vietnam by way of introduction, but refrain from incorporating them effectively into the subsequent analysis.

History following the implementation of past trade agreements, not model based results, would appear to justify the belief that WTO accession will lead to more rapid economic development and poverty alleviation. Vietnam's experience, especially when the effects of past bilateral trade agreements are examined, shows the potential power of trade reform, broadly considered, in helping foster development. Our analysis of model revisions necessary to make tariff changes induce observed, detailed sector outcomes demonstrates that institutional changes beyond tariffs must lie behind the changes observed in the past in Vietnam. More simply, the fact that large new trade flows appear following bilateral agreements in sectors where tariffs were previously insignificant strongly suggests something else is going on.

Policy makers on the ground in Vietnam are already grappling with the importance of these institutional changes. Discussions of the prospects and challenges from Vietnam's WTO accession invariably move towards discussion of services trade, legal reform, and the role of the state in the economy. But it is difficult to foresee quantitatively the impacts of reforms from those discussions. In the sector studies reviewed as background for this paper, authors tended to shy away from quantitative conclusions. Instead, recommendations for further institutional reforms are emphasized, while offering a simple indication of the anticipated direction of changes in competitive advantage.

The key puzzle for all those engaged in ongoing, policy relevant trade policy analysis (including academic researchers and development practitioners more broadly) is to identify the mechanisms through which trade influences development and so determine what limits the expansion of trade and growth, in particular sectors and overall. Vietnamese experience is clearly consistent with the trend toward developing dynamic versions of economy wide models (van der Mensbrugge, 2005; and Ianchovichina et al., 2000). Dynamic development questions have to be captured in short to medium run models for them to be of interest in the above endeavor. Rapid growth and especially the limited employment generation of this experience highlight the limitations of analysis based on traditional clearing of factor markets, and under and

unemployment of labor are clearly significant in Vietnam. Demand constraints are also evident in the form of reemergence of textile quotas on Vietnam from the U.S. Finally, capital constraints are more puzzling, as Vietnam's recent experience with foreign direct investment shows no consistent pattern related to economic performance.⁷ Accordingly, an important key to understanding the link between trade and development is to better understand the role of trade incentives on investment.

Cross country studies of trade and growth highlight the need to uncover better the relationship between trade and productivity, as well (Hall and Jones, 1999; Andersen and Dalgaard, 2006). The results of this paper are also consistent with the recent poverty research at the World Bank (Hertel and Winters, 2005), which highlight market imperfections such as price transmission and employment to get the linkages between trade and poverty right.

Any path forward to quantitatively assessing the potential impacts of trade agreements in Vietnam and elsewhere will evidently need to respect the fundamental national accounting identities of the social accounting matrices (SAMs) that are the foundation of model based approaches to quantitative trade reform assessment. These incorporate the basic supply-demand balances and macroeconomic consistency that must hold. Development is a dynamic process, however, and we find that the key behavioral relationships which are in need of explanation are three-fold. They include (i) uncovering the factors that determine the evolution of the capital stock, hence capacity, by sector; (ii) establishing how productivity by sector evolves in response to trade incentives and institutional reforms; and (iii) determining how factors outside the country shape developments in market access (demand). Investment incentives from both price (tariff) changes and institutional changes – both foreign and domestic – may lead to new products, expanded capital accumulation, and higher productivity. These factors must be properly integrated for the analysis to be of relevance.

Vietnam is an important case illustrating successful economic development and poverty alleviation from a low income level. The extensive involvement of the state in the Vietnamese economy may make it a special case in some respects. Yet, the institutional reforms undertaken (particularly in preparation to join the WTO and as a consequence of past bilateral agreements) are commonly found in other developing countries, or are part of reform packages widely promoted by international organizations and in bilateral aid and policy negotiations. We believe the lessons from Vietnam have broad application in terms of the methodology employed to

examine trade liberalization as well as in assessing the linkages between international trade liberalization, development and poverty.

NOTES

¹ See Thang (2004a, b).

² See for example Thanh (2005).

³ Rama and Sa (2005) provide a useful overview of existing studies. See also Abbott et al. (2006) and references cited therein.

⁴ It is a common practice in cross country growth regressions to utilize dummy variables dating trade regime changes (e.g. Sachs and Warner, 1995). Vietnam's timeline shows the danger in trying to construct such a dummy variable in a meaningful way.

⁵ See McCarty and Kalapesi (2003) for interesting background on this issue.

⁶ 1996 is the base year in both studies by Fukase and Martin (1999a, b), so we compare actual outcomes from that base year. ASEAN partnerships began in 1996, and U.S. trade started to expand in 1996 as well, but the real expansion came after the 2000 BTA was reached.

⁷ This is consistent with the cross country regression literature on the relationship between FDI and growth, where a robust general relationship has not been found (Javorcik, 2004 and Keller, 2004)

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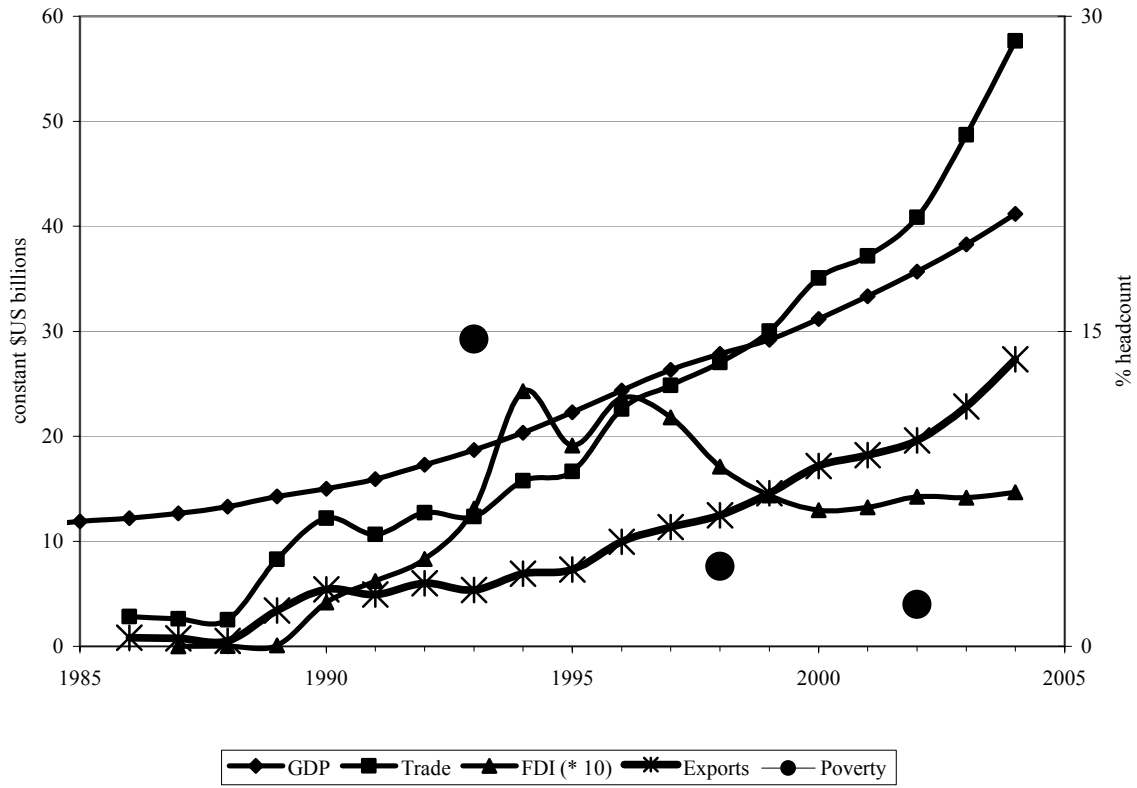
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TABLES AND FIGURES

Figure 1. Economic Growth, Trade, FDI, and Poverty in Vietnam



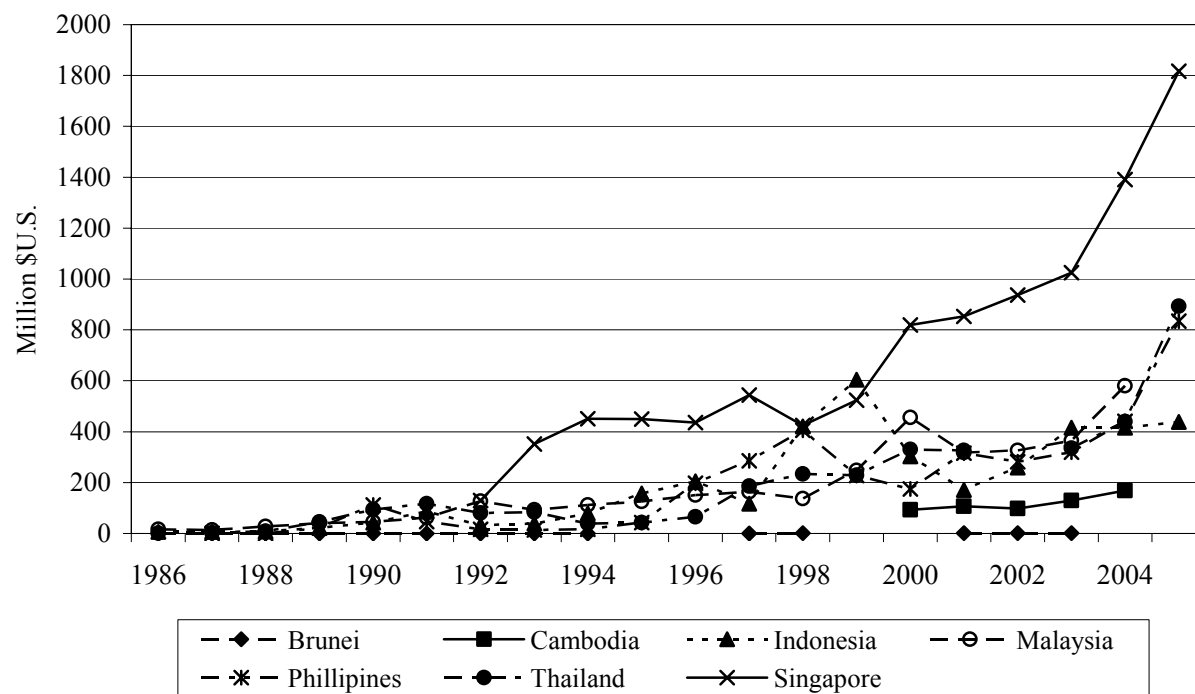
Source: World Development Indicators (World Bank, 2006)

Figure 2. *Timeline for Vietnam's Trade Agreements and Economic Reforms - 1986 to 2006*



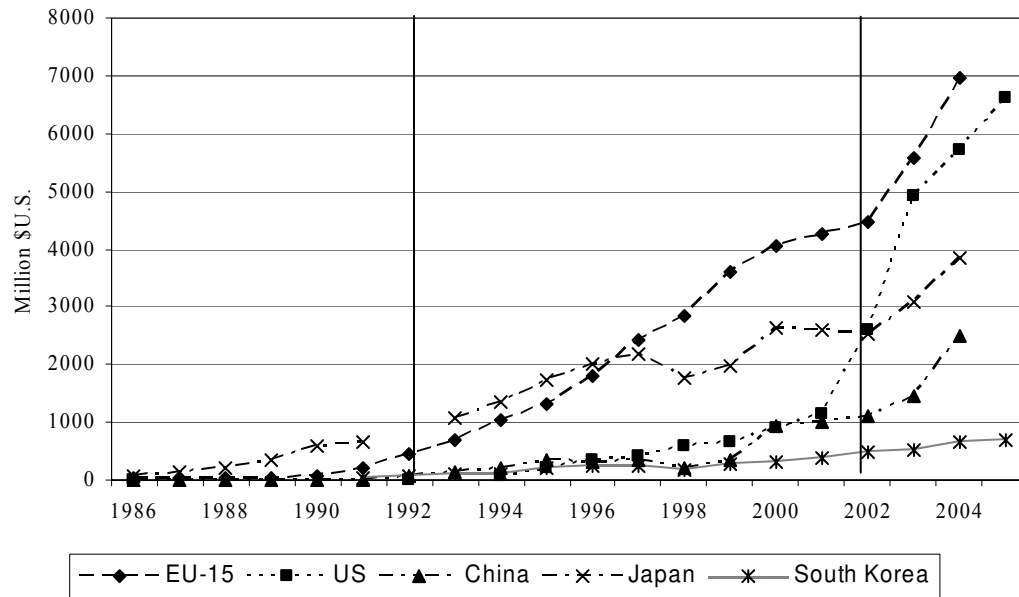
Source: Adapted mostly from Thanh (2005) and www.WTO.org

Figure 3. Vietnamese Exports to ASEAN countries Following Doi Moi (1986) and Joining ASEAN (1995), Million \$US



Source: UN comtrade (2006)

Figure 4. Value of total Vietnamese Exports to Various Trading Partners



Source: UN comtrade (2006)

Table 1. *Key Vietnamese Imports and Exports in 2003, \$U.S. million*

Leading Exports		Leading Imports	
Food and Live Animals	4,384	Chemicals, Reltd.prod.nes	3,606
<i>Fish, Crustaceans, Mullucs</i>	2,196	<i>Medicinal, Pharm.products</i>	506
<i>Cereals, Cereal preprtns.</i>	767	<i>Fertilizer except GRP272</i>	630
<i>Vegetables and Fruit</i>	503	<i>Plastics in primary form</i>	829
<i>Coffe, Tea, Cocoa, Spices</i>	682		
Fuels, Lubricants etc.	4,151	Manufactured goods	6,641
<i>Petroleum, Petrol. products</i>	3,962	<i>Leather, Leather goods</i>	504
		<i>Textile yarn, Fabric etc.</i>	2,441
		<i>Iron and Steel</i>	1,896
Misc manufactured articles	7,226	Machines, Transport Equipment	7,977
<i>Furniture, Bedding etc.</i>	644	<i>Power generating machines</i>	920
<i>Clothing and Accessories</i>	3,467	<i>Special.indust.machinery</i>	1,521
<i>Footwear</i>	2,299	<i>Generel industl.mach.nes</i>	953
		<i>Telecomm. sound equipment ect.</i>	568
		<i>Elec. mch. appar, Parts.nes</i>	1,284
		<i>Road vehicles</i>	1,293
		<i>Other transport equipment</i>	681
Other Exports	4,388	Other Imports	7,032
Total Exports	20,149	Total Imports	25,255

Source: UN comtrade (2006)

Table 2. Vietnamese Exports to the EU, U.S., Singapore and China Around Bilateral Agreements

EU - 15	1990		1996		2004	
	\$US million	%	\$US million	%	\$US million	%
Top 5 commodities	45.0	60.8	1283.1	71.9	4546.5	65.3
10 commodities	55.4	74.8	1504.1	84.3	5297.6	76.1
15 commodities	61.7	83.3	1602.7	89.9	5791.5	83.2
20 commodities	65.9	89.0	1660.3	93.1	6144.7	88.3
Total	74.0		1783.7		6962.7	
No. of 3 Digit SITC Commodities	93		185		203	

US	1996		2000		2004	
	\$US million	%	\$US million	%	\$US million	%
Top 5 commodities	306.2	89.6	671.8	75.9	5231.2	78.9
10 commodities	328.8	96.2	820.5	92.7	5925.9	89.4
15 commodities	333.6	97.6	849.9	96.0	6127.2	92.4
20 commodities	336.5	98.5	860.2	97.2	6260.9	94.4
Total	341.7		885.2		6630.1	
No. of 3 Digit SITC Commodities	88		108		138	

Singapore	1992		2000		2004	
	\$US million	%	\$US million	%	\$US million	%
Top 5 commodities	100.7	77.9	660.0	80.6	1157.0	83.2
10 commodities	116.7	90.2	699.8	85.5	1220.6	87.8
15 commodities	121.0	93.6	726.3	88.7	1256.7	90.4
20 commodities	123.5	95.5	748.0	91.3	1282.1	92.2
Total	129.3		818.9		1390.5	
No. of 3 Digit SITC Commodities	104		182		184	

China	1991		2000		2004	
	\$US million	%	\$US million	%	\$US million	%
Top 5 commodities	10.0	92.0	8.2	88.3	1946.8	78.4
10 commodities	10.7	98.8	8.6	92.4	2147.8	86.5
15 commodities	10.8	99.7	8.8	94.4	2230.4	89.9
20 commodities	10.8	100.0	8.9	95.8	2287.3	92.2
Total	10.8		9.3		2482.0	
No. of 3 Digit SITC Commodities	19		139		171	

Source: UN comtrade (2006)

Table 3. *Predictions Based on 30 Scenarios of CGE Studies of the Impact of WTO Accession on Vietnam, Percentage Change*

Study	Number of scenarios	GDP		Export		Import	
		min	max	min	max	min	max
Fukase and Martin (1999b) ^{a)}	5	-4.7	1.0	3.9	15.2	3.1	12.8
CIE (2002) ^{b)}	7	0.2	3.3	0.6	12.1	N/A	N/A
Dee et al. (2005)	4	0.03	2.44	N/A	N/A	N/A	N/A
Toan (2005) ^{c)}	1	fall		0.13		0.4	
Nguyen and Ezaki (2005)	5	-0.06	-0.68	1.73	18.24	3.15	15.39
Dimaranan et al. (2005) ^{a)}	2	6.74	7.88	15.22	18.81	N/A	N/A
Huong and Vanzetti (2006)	6	1	15	-2	57	-1	37

Source: Authors' review of cited references above and Abbott et al. (2006)

Notes:

- a) These effects are reported in output, not GDP. Since only the sector-disaggregated predicted effects on output were reported in the paper, the numbers reported here are calculated averages of the predicted effects.
- b) The effects on GDP and exports were not calculated in scenarios (ii) and (iii).
- c) Since all predicted effects in the paper are only reported disaggregated into agriculture, service, and manufacturing, the numbers reported here are averages. The paper by Toan (2005) only has one scenario.
- d) Since all predicted effects are only reported as disaggregated into 22 sectors, the numbers reported here are calculated averages of these.

Table 4. *Model Predictions Versus Actual Exports to ASEAN Partners after 1996*

	Actual value	Predicted changes		Actual changes	
	1996		1996-2000	1996-2004	2000-2004
	\$US million	%	%	%	%
Indonesia	204.4	25	48.1	103.5	37.1
Malaysia	150.4	59	202.9	285.7	27.3
Philippines	196.9	226	-11.0	124.0	151.7
Singapore	436.0	0.4	87.8	218.9	69.8
Thailand	65.7	98	403.5	568.4	32.7

Source: Predictions are from Fukase and Martin (1999b)

	Actual value	Predicted changes	Actual changes		
	1996		1996-2000	1996-2004	2000-2004
	\$US million	%	%	%	%
Agriculture and Forestry	56.1	-1	575	1383	120
Basic manufacturing	1.6	329	826	5596	515
Beverages and Tobacco	0.6	125	13	317	270
Clothing	25.7	1512	106	10635	5113
Coal, Oil, Gas	0.01	4	-49	1424	2888
Chemical, Rubber, Plastic	1.5	64	400	2140	348
Electronics & Machinery	0.4	284	737	29865	3478
Others	5.1	N/A	180	594	148
Processed Ag	119.5	19	28	44	13
Petroleum & Coal	85.8	N/A	11	340	298
Textiles	0.2	241	718	40804	4902
Transport Equipment	0.02	N/A	559	63877	9613
Light Manufacturing	45.1	147	263	2601	643
<i>Furniture & Footwear</i>	42.8		233	2182	584
<i>Rest of Light Manufact.</i>	2.3		811	10255	1037
Total	341.7	127.4	159	1576	547

Source: Predictions are taken from Fukase and Martin, World Bank, WPS2219, Nov 1999

	Vietnam's Share of U.S. Market		Tariff paid		Imputed Armington Elasticity
	2000	2004	2000	2004	
	%	%	%	%	
Cashews	11.5	30.4	0.9	0.0	-114
Apparel and Clothing	0.1	3.8	38.7	15.4	-20
Electronics	0.002	0.02	28.7	2.0	-11
Fish, Crustaceans	3.0	5.1	0.5	0.3	-375
Footwear	1.0	2.9	26.3	10.6	-8
Furniture	0.07	1.53	26.2	0.02	-13
Coffee	4.6	5.5	0.008	0.005	-5468

Source: UN comtrade (2006) and author's calculations.