Impacts of East Asian Integration on Vietnam: A CGE Analysis

Nguyen Tien Dung
Lecturer, Faculty of International Economics
College of Economics, Vietnam National University, Hanoi

Abstract:

Through liberalization of trade and investment regimes conducted over the last two decades, Vietnam has developed profound trade and investment relations with East Asian countries. Vietnam's integration with the regional economy has been recently accelerated with its participation into several regional FTAs. This paper attempts to give an overview of the ongoing regional integration and conducts a dynamic simulation analysis based on a global CGE model to quantify the impacts of regional economic integration on Vietnam's economy. The main conclusion is that regional economic integration generally has positive impacts on Vietnam's economic growth and industrialization, but these positive impacts are in large part brought about by the greater capital inflows. The realization of the potential benefits of regional integration would depend on the capability of Vietnam to attract foreign investment through the liberalization of investment regimes and improvements in infrastructures and human resources.

1. Introduction

The implementation of the open-door policies and progressive trade and investment reforms conducted over the last two decade has led to an increasing integration of Vietnam with the regional economy. East Asian countries are the major trading and investment partner of Vietnam. Since the early 1990s, East Asian countries have been the major sources for Vietnam's imports of machine and production materials and the market for half of Vietnam's exports. A large part of FDI inflows to Vietnam has so far originated in East Asia. Together with unilateral reform measures and its recent accession to the WTO, Vietnam has accelerated the integration with the regional economy. Vietnam is now a signatory to several FTAs, while several other FTAs with the participation of Vietnam have been under negotiation or discussion. The effort to integrate with the regional economy began in 1995 when Vietnam became a member of ASEAN, and was then followed by APEC membership in 1998. As a member of ASEAN, Vietnam has participated in the recently

established FTAs between ASEAN and Japan, China and Korea.

While the increasing integration with the regional economy offers various opportunities to Vietnam in terms of greater market access for Vietnam's exports and greater inflows of foreign investment, concerns have been raised among Vietnamese policy makers and academic circle over the possible adverse impacts of the ongoing regional integration on the future development and industrialization in Vietnam. Domestic producers would face increasingly competitive pressures from the regional imports as tariffs are reduced. The pressure of competition would not only occur in the domestic market, but also in the export market and for foreign investment.

This paper attempts to give an overview of the ongoing regional integration and conduct a dynamic simulation analysis based on a global CGE model to quantify the impacts of regional economic integration on Vietnam's economy. The paper is organized as follows. Section 2 discusses in brief the liberalization of trade and investment regimes in Vietnam. It is followed by section 3 giving an overview of Vietnam's integration with the regional economy. The structure of the global CGE model employed for the dynamic simulation analysis is presented in section 4, and simulation scenarios are performed and discussed in section 5. Concluding remarks and policy implications are given in section 6.

2. Liberalization of Trade and Investment Regimes

Since the late 1980s, Vietnam's trade reforms have been progressed steadily, consisting of the creation and amendment of a system of taxation of imports and exports, the gradual removal of non-tariff barriers, progressive deregulation of trade regimes and relaxation of restrictions on entry to trading activities. The tariff system introduced in the late 1980s has been simplified and rationalized, and tariff rates have been lowered. The average weighted tariff rate dropped from 20% in early 1990s to around 15% in the early 2000s prior the accession to the WTO. Export duties have been lowered, and the number of exports subject to duties has been reduced over time.

With the recent acquisition of WTO membership, further progresses have been made toward the liberalization of trade and investment regimes. Under the WTO deal, Vietnam has agreed to lower the tariff- and non-tariff barriers and bring the trade policies in conformity with WTO rules and regulations. The tariffs on industrial products are to be cut by 13% on average, and the tariffs on agricultural products are to be reduced by 21% over the period of 3 to 5 years. Quantitative restrictions and state-trading rights will be abolished for all products with the exception of petroleum and sugar industries. Export subsidies of all kinds are no longer allowed, while other subsidies need to be brought in conformity with WTO rules and regulations.

Despite the progressive trade reforms, Vietnam's trade regimes have remained rather restrictive. While intermediate inputs and capital goods are largely subject to zero or low tariff rates, high tariff and non-tariff barriers are employed to protect many consumer goods and certain production inputs that are being domestically produced such as cement, fertilizers, or steal. The protection through tariffs is also provided to some so-called infant industries, such as automobile or petroleum products. The automobile sector continues to enjoy the high level of protection after the accession to the WTO as the tariff reduction for this sector is scheduled until 2019. Given this structure of protection, the effective protection provided to domestic products, and consumer goods in particular, is much higher than that offered by the nominal tariff rates.

Together with trade liberalization, the investment regimes have been gradually liberalized

during the last 20 years to attract foreign investment. Restrictions on trading activities have been removed and foreign firms are allowed to conduct trading activities for a majority of products. Export requirements and the local content requirement previously imposed to promote the spillover effect on the domestic economy were abolished as part of WTO commitments. The differentiated pricing of land rents, water and electricity has been abolished. Foreign investors are allowed to set up their own plant, and enterprises fully owned by foreign investors now account for more than 70% of total FDI flows to Vietnam.

The investment regimes have been further liberalized with the promulgation of the Law of Investment in 2005, which combined the two separate laws on domestic investment and foreign investment in an attempt to create an equal playing field for all enterprises. The Investment Law has substantially improved the environment for both foreign and domestic investment through the simplification of administration procedures and deregulation, and has provided a greater autonomy for investors through sectoral liberalization. Except for the sectors of conditional and prohibited investment, most of other sectors are now opened up for domestic and foreign investors, and they are allowed to conduct business in any sector that they wish. The conditional investment sectors, as stipulated in the Law of Investment, consist mostly of service sectors, whereas the prohibited list is specified for health and security purposes[1].

In addition to the new Investment Law, restrictions on foreign investment have been relaxed in a substantial way through the commitments made by Vietnam in regards to trade in services under the WTO deal. During its accession to the WTO, Vietnam has committed to opening most of the services sectors to foreign providers, ranging from trade, transports, telecommunication, banking and finance to tourism and consultancy services. In many areas, foreign investors are allowed to set up their own establishment without limits on the scope of activity and equity participation[2]. Foreign investors are allowed take different forms of investment, ranging from direct investment, acquisition and merging to portfolio investment.

Trade liberalization and the open-door policy have contributed to the rapid expansion of foreign trade over the last two decades. Vietnam' exports have increased more than 11 times between 1995 and 2008, with the annual growth rate averaging 20.7%. The expansion of exports has been accompanied by the growth of labor-intensive exports in addition to the natural resource based exports of crude oil and agricultural products. Exports of garment and textile have been given further boost upon Vietnam's accession to the WTO as export quotas imposed on these have been removed[3]. Imports also grew fast and consisted of mostly machinery and equipment and production

[1] According to the Investment Law, conditional sectors include banking and insurance, telecommunication, transportation, postal, education and health, broadcastings, mining and fishing. The conditional list and the conditions for investment, however, can be adjusted with some sectors can be added up in accordance with the economic situation and development policy. In addition to conditional investment, large-scale projects are still subjects to screening and approval by the government.

[2] For example, foreign investors are allowed to set up 100% foreign establishment in the distribution services (both whole sale and retail), banking sector, financial services and telecommunication. Certain limitations on the scope of activity and foreign ownership are imposed temporarily but will be phased out within 5 years after the accession.

[3] Before 2007, export quotas were imposed on the export of garment and textiles to the EU, the United Sates, and Norway. These quotas were imposed by the importing countries, and were removed for WTO members in 2005, as mandated by the Agreement on Trade in Textiles (ATC). Vietnam's exports were no longer subject to these quotas after it acquired the WTO membership.

inputs. The high growth of imports has largely been stimulated by the inflows of foreign investment and the increasing domestic demand for production inputs. The rapid increase in trade has contributed the growth and modernization of the economy and turned Vietnam into one of the most open economies in the region with the trade share to GDP reaching nearly 1.50.

Stimulated by Vietnam's impressive economic growth and the progresses in liberalizing investment regimes, the inflows of FDI to Vietnam have been on steady increase since the late of 1980s. The amount of foreign direct investment reached over 10 billion USD in 2006, and surged to over 20 billion USD in 2007 and more than 60 billion USD in 2008. In total, the committed FDI flows amounted to nearly 200 billion USD between 1988 and 2009. Together with the surge in direct investment, the opening of financial market to foreign investment has recently invited large inflows of portfolio investment, amounting to around 10 billion USD in the period 2006-2007.

Despite the huge amount of FDI attracted so far, the FDI inflows have been biased toward import-substituting and non-traded sectors. The FDI inflows have been in large part seeking for natural resources and domestic market. Market-seeking FDI tends to flow to highly protected industries in order to overcome the tariff- and non-tariff barriers and exploit the domestic market, while natural resource seeking FDI tend to involve in oil and gas sectors. Besides that, large proportion of FDI has been flowed to service sectors, and particularly hotels, and real estates. The FDI flows to services increased substantially in the last two years, and indeed largely accounted for the recent surge in FDI flows.

The FDI inflows have significantly contributed to Vietnam's high economic growth over the last decade. The foreign sector accounted for 18.7% of GDP in 2006, and contributed to nearly 20% of economic growth between 1995 and 2006. As most of FDI has flowed to non-agricultural sectors, foreign investment has played even a greater role in manufactures and services. The foreign firms now produce more than 40% of industrial output and industrial growth. Despite the recent bias toward services sectors, more than a half of Vietnam's exports are now produced by foreign firms. The role of foreign firms in export promotion is even more important when taking into account the fact that more than 75% of non-agricultural exports are produced FDI firms and more than 60% of export growth between 1995 and 2008 was contributed by foreign firms.

3. Integration with the Regional Economy

Until the late of 1980s, Vietnam mainly traded with the Soviet bloc countries and relied on assistance from these countries for necessary production inputs and capital goods. The collapse of the Soviet bloc interrupted the trading relation and assistance from these countries, and forced Vietnam to develop trade and investment relations with the rest of the world, and East Asian countries in particular. Since the early of 1990s, East Asian countries have remained the major trading partners of Vietnam. The large trade between Vietnam and Asian trading partners reflects not only the geographical proximity but also the FDI inflows from regional economies.

Table 1: Vietnam's Merchandise Trade 1995-2008

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
A. EXPORTS														
Total Value (millions US dollars)	5448.9	7255.9	9185.0	9360.3	11541.4	14482.7	15029.2	16706.1	20149.3	26485.0	32447.1	39826.2	48561.4	62685.1
Annual growth (%)		33.2	26.6	1.9	23.3	25.5	3.8	11.2	20.6	31.4	22.5	22.7	21.9	29.1
Geographical composition of exports (%)														
ASEAN-5	18.3	22.8	20.5	20.0	19.6	16.6	15.5	13.1	13.0	13.5	15.7	14.4	14.3	13.7
Indonesia	1.0	0.6	0.5	3.4	3.6	1.7	1.8	2.0	2.3	1.7	1.4	2.4	2.4	1.3
Malaysia	2.0	1.1	1.5	1.2	2.2	2.9	2.2	2.1	2.3	2.4	3.2	3.1	3.2	3.1
Philippines	0.8	1.8	2.6	4.3	3.4	3.3	2.5	1.9	1.7	1.9	2.6	2.0	2.0	2.9
Singapore	12.7	17.8	13.2	7.9	7.6	6.1	6.9	5.8	5.1	5.6	5.9	4.5	4.6	4.2
Thailand	1.9	1.5	2.6	3.2	2.7	2.6	2.1	1.4	1.7	2.0	2.7	2.3	2.1	2.2
North East Asia	50.5	45.4	41.5	33.9	32.7	38.2	36.3	33.4	31.8	31.4	29.3	27.0	26.2	27.3
Taiwan	8.1	7.4	8.9	7.2	5.9	5.2	5.4	4.9	3.7	3.4	2.9	2.4	2.3	2.2
Korea	4.3	7.7	4.5	2.4	2.8	2.4	2.7	2.8	2.4	2.3	2.0	2.1	2.6	2.8
Hong kong	4.7	4.3	4.7	3.4	2.0	2.2	2.1	2.0	1.8	1.4	1.1	1.1	1.2	1.4
Japan	26.8	21.3	18.2	16.2	15.5	17.8	16.7	14.6	14.4	13.4	13.4	13.2	12.5	13.6
China	6.6	4.7	5.2	4.7	6.5	10.6	9.4	9.1	9.3	10.9	9.9	8.1	7.5	7.2
US	3.1	2.8	3.1	5.0	4.4	5.1	7.1	14.7	19.5	19.0	18.3	19.7	20.8	18.9
EU	12.2	11.7	17.5	22.2	21.8	19.6	20.0	18.9	19.1	18.8	17.0	17.8	18.7	-
A. IMPORTS														
Total Value (millions US dollars)	8155.4	11143.6	11592.3	11499.6	11742.1	15636.5	16218.0	19745.6	25255.8	31968.8	36761.1	44891.1	62764.7	80713.8
Annual growth (%)		36.6	4.0	-0.8	2.1	33.2	3.7	21.8	27.9	26.6	15.0	22.1	39.8	28.6
Geographical composition of exports (%)														
ASEAN-5	27.8	26.1	27.3	27.9	26.2	27.5	25.1	23.5	22.9	23.6	24.5	27.1	24.6	23.6
Indonesia	2.3	1.3	1.7	2.2	2.4	2.2	1.8	1.8	2.2	2.1	1.9	2.3	2.2	2.1
Malaysia	2.3	1.8	2.0	2.2	2.6	2.5	2.9	3.5	3.7	3.8	3.4	3.3	3.6	3.2
Philippines	0.3	0.3	0.3	0.6	0.4	0.4	0.3	0.5	0.6	0.6	0.6	0.8	0.7	0.5
Singapore	17.5	18.2	18.4	17.1	16.0	17.2	15.3	12.8	11.4	11.3	12.2	14.0	12.1	11.6
Thailand	5.4	4.4	5.0	5.9	4.8	5.2	4.9	4.8	5.1	5.8	6.5	6.8	6.0	6.1
North East Asia	46.8	48.7	48.0	46.5	49.8	50.7	50.7	52.0	50.1	50.9	52.0	49.6	52.8	41.8
Taiwan	11.1	11.3	12.8	12.0	13.3	12.0	12.4	12.8	11.5	11.6	11.7	10.7	11.1	10.4
Korea	15.4	16.0	13.5	12.4	12.7	11.2	11.6	11.5	10.4	10.5	9.8	8.7	8.5	8.8
Hong kong	5.1	7.1	5.2	4.8	4.3	3.8	3.3	4.1	3.9	3.4	3.4	3.2	3.1	3.3
Japan	11.2	11.3	13.0	12.9	13.8	14.7	13.5	12.7	11.8	11.1	11.1	10.5	9.9	-
China	4.0	3.0	3.5	4.5	5.7	9.0	9.9	10.9	12.4	14.4	16.0	16.5	20.3	19.4
US	1.6	2.2	2.2	2.8	2.7	2.3	2.5	2.3	4.5	3.5	2.3	2.2	2.7	3.3
EU	8.7	10.3	11.5	10.8	9.3	8.4	9.3	9.3	9.8	8.4	7.0	7.0	8.2	-

Sources: Vietnam's Statistical Yearbooks, various issues

Notes: (a) East Asia includes ASEAN-5 countries; (b) ASEAN-5consists of Malaysia, Indonesia, Philippines, Singapore and Thailand

Despite the recent decline in Vietnam's trade share with East Asian countries caused by the redirection of Vietnam's exports of labor-intensive products toward the US and EU markets, the regional economies still accounts a large proportion in Vietnam's trade. Around 40% of Vietnam's exports are shipped to the regional market, while two-thirds of the country's imports are sourced from regional trading partners. Within East Asia, ASEAN countries as the whole have been the largest trading partners, but most of Vietnam's trade with ASEAN is with Singapore[4]. The two-way trade with other ASEAN countries remains limited, but has been on steady rise following the tariff reductions under the AFTA. Japan has been one of the largest trading partners of Vietnam, and is the largest regional market for Vietnam's agricultural and labor-intensive products. Trade with China has also increased substantially over the last decade, and China is currently the largest import source for Vietnam (see Table 1).

Vietnam's trade with regional countries reflects its general composition of trade and comparative advantage. Most of Vietnam's exports to regional markets are natural-resource based and agricultural products. Vietnam is a large supplier of crude oil to China, and to a lesser extent, it exports crude oil to Japan, Singapore and some other East Asian countries. Fishery and other agricultural products are the major exports to regional countries, particularly to Japan, China, Korea and Singapore. Exports of textile, garment and footwear are shipped to high-income regional economies, largely to Japan and Korea. Exports of electronics have begun from the late of 1990s, but the volume of exports remains limited. Electronic parts and products are produced by foreign firms in Vietnam and are exported to their affiliates in the region.
Machinery, equipment and production inputs constitute a large proportion in Vietnam's imports as the country heavily depends on the import of these products for investment and domestic production. Most of Vietnam's imports from the region are production inputs, ranging from petroleum, iron and steel, fertilizers, plastics and chemical, electronic parts and products and materials for textile and garments. Vietnam has trade deficits with the regional trading partners, but these trade deficits are stimulated by the regional investment flows into Vietnam, as can be observed in the case of Japan, Korea and Taiwan.

East Asian countries are not only major trading partners, but they are also major investors in Vietnam. Around two-thirds of the foreign investment in Vietnam has been from East Asian countries. Combined together, East Asian countries has invested 78 billion USD in Vietnam during the period 1988-2009, accounting for more than 40% of total FDI inflows to Vietnam. Different from middle-income ASEAN countries and China where foreign firms from Japan, the US and the EU, large part of FDI inflows to Vietnam originated from the Asian New Industrialized Countries (NICs), i.e. Korea, Taiwan, Singapore and Hong kong. Foreign direct investments from Japan have become significant since the latter half of 1990s (see Table 2).

Together with unilateral reform measures and WTO accession, Vietnam has recently accelerated the integration with the regional economy. Vietnam is now a signatory to several FTAs, while several other FTAs with the participation of Vietnam have been under negotiation or discussion. The effort to integrate with the regional economy began in 1995 when Vietnam became

[4] Singapore, like Hong kong, has been acting as sub-contractors for Vietnam in the international market, and the statistics of Vietnam`s trade with these countries also include re-exports. The decreasing trade shares with these countries partly reflect the fact that an increasing portion of Vietnamese products has been directly exported to the foreign market without going through Singapore and Hong kong.

a member of ASEAN and committed itself to tariff reductions under the ASEAN free trade area (AFTA). It was then followed by APEC membership in 1998 and the signing of the bilateral trade agreement between Vietnam and the US in 2000. As a member of ASEAN, Vietnam has participated in the recently established FTAs between ASEAN and Japan, China and Korea (ASEAN+1 FTAs). ASEAN countries, including Vietnam, has concluded an FTA with Australia and New Zealand, and have been negotiating FTA agreements with the US, the EU, India.

Table 2: Vietnam's FDI Inflows 1988-2009

Unit: million USD, %

	Number of projects	Amount of registered capital (million USD)	Composition by the number of project (%)	Composition by registered capital (%)
Total	**12575**	**194429.5**	**100.00**	**100.00**
Of which				
Northeast Asia	7617	78119.1	60.57	40.18
Korea	2560	26880.4	20.36	13.83
Taiwan	2260	22618.8	17.97	11.63
Japan	1247	17149.6	9.92	8.82
Hong kong	740	8540	5.88	4.39
China	810	2930.3	6.44	1.51
ASEAN-5	1637	40506.9	13.02	20.83
Indonesia	31	327.8	0.25	0.17
Malaysia	395	17202.3	3.14	8.85
Philippines	57	432.7	0.45	0.22
Singapore	870	16345.7	6.92	8.41
Thailand	284	6198.4	2.26	3.19
US	589	15403.1	4.68	7.92
Other countries	2732	60400.4	21.72565	31.06545

Sources: Vietnam's General Statistical Office
Homepage: http://www.gso.gov.vn/

Unlike Thailand and Singapore, Vietnam has not been very active in pursuing FTAs. Most the FTAs Vietnam has participated so far are together with ASEAN countries. The number of FTAs with the involvement of Vietnam is less than those of middle and high income ASEAN countries. In addition to ASEAN+1 FTAs, Vietnam has been negotiating some bilateral trade and investment agreements with Japan, the US and the EU, which are largely conducted for securing the access to its major export markets as well as for promoting FDI inflows[5]. The reluctance toward regional economic integration reflects its concerns over the increasing competition from the regional imports and the possible adverse impacts of the ongoing regional economic integration on the domestic economy. The reluctance toward regional integration also reflects in part the lack of human resources for negotiations as well as the disadvantage for a small country like Vietnam to

[5] Vietnam and Japan has concluded an economic Partnership Agreement (EPA) in 2009, which provide duty-free access to Japanese market for major exports of Vietnam, including seafood, textile leather, computer. Howeve, this EPA is still waiting for ratification by the two countries.

join bilateral negotiations with big trading partners[6].

The FTAs between ASEAN and China, Korea and Japan have been under implementation. All the ASEAN+1 FTAs are wide in scope, covering not only merchandise trade, but also trade in services and investment liberalization. After concluding the agreement on trade in goods, ASEAN members and Korea have reached an agreement on trade in services in 2009, and later concluded an agreement on investment in 2009. China and ASEAN members also concluded the agreements on trade in services and on investment in 2007 and 2009 correspondingly. Negotiation between ASEAN and Japan has been taking place to liberalize investment flows and services trade.

However, ASEAN and its partners have only reached agreement in the liberalization of trade in goods, while trade in services and investment are still under discussion and negotiation. In the ASEAN+1 FTAs, member countries are obliged to completely eliminate, or substantially reduce, tariffs and non-tariff barriers, and the majority of commodities will be subject to liberalization in the end. Tariff reductions are to be completed in large part within 5 to 10 years for the normal track, but sensitive products have a longer implementation period and lesser reduction requirement. Besides that, preferential treatments are provided to less developed ASEAN members, including Vietnam, through the longer period of implementation and the greater number of products that can be classified into the sensitive list (see Table 3). The rest of this section will give a brief discussion of Vietnam's participation in the ASEAN+1 FTAs and the prospect for a broader FTA in East Asia.

Table 3: Vietnam's liberalization commitment under ASEAN+1 FTAs

FTAs	Normal track	Sensitive products
China-ASEAN Free Trade Area (CAFTA)	Tariff cuts begin in 2005 and all tariffs will be completely removed by 2015 or 2018; Tariff lines with the rates of over 40% will be cut by more than a half in the first five years.	Tariff reduction will be completed in 2020. The tariff rates for highly sensitive products are only subject to less than 50% tariff cuts by 2018; No more than 500 tariff lines can be classified in the sensitive list.
Korea-ASEAN free Trade Area (KAFTA)	Tariff removal is completed between 2006 and 2016; The tariff lines with the rates of over 20% will be reduced by more than half to two-thirds between 2006 and 2011, and the maximum tariffs will be less than 20% by 2011	Tariffs are to be reduced to 0 to 5% by 2021 for the product in the sensitive list; Highly sensitive products are not subject to substantial reductions, but are classified into different groups with different tariff ceilings and reduction requirements; less than 10% of tariff lines and 25% of import value are allowed to be phased in the sensitive list
ASEAN-Japan Comprehensive Economic Partnership (AJCEP)	Tariff reductions follow 12 schedules with the implementation period ranging from 1 to 18 years from the day of entry into force. Some products are exempted from reduction commitments including automobiles; many electronic products and steel and iron have a long time frame for tariff reductions, lasting from 16 to 18 years.	

Sources: Author's summarization based on the corresponding agreements.

ASEAN Economic Community. Under the ASEAN free trade area (AFTA), the member countries are obligated to reduce tariffs on intra-ASEAN trade to less than 5% by the year 2002 for

[6] Small countries like Vietnam are not well positioned in bilateral negotiations with big partners, and they might end up with the conditions and terms that are not best suited to their interests (Rajan and Sen, 2005).

developed ASEAN members, and by 2006 for Vietnam. After the completion of tariff reductions under the AFTA, ASEAN countries are aiming to establish the ASEAN Economic Community in 2015, covering the liberalization of trade in goods and services and the liberalization of investment regimes. Under the AEC, tariffs imposed on intra-ASEAN trade will be completely abolished, and restrictions on trade in services and capital flows are removed. The ASEAN Economic Community aims to make ASEAN a single market and production base with free flows of goods, services and investment. Toward this goal, two framework agreements on investment and service trade has been signed by the members, and negotiations on the liberalization of service trade and investment regimes have been under place.

China-ASEAN Free Trade Area (CAFTA). The China-ASEAN FTA (CAFTA) proposed to remove tariffs for most of products, subjecting to different tracks, and with certain flexibility and preferential treatment given to less-developed ASEAN members. In addition to the early harvest tariff cuts implemented since 2004, the CAFTA specifies two schedules with different speed and extent of liberalization: the normal track and the schedule for sensitive products. Less-developed ASEAN members mostly enjoy preferential treatment in terms of longer implementation period and lesser degree of commitments. In the normal track, tariff cuts begin in 2005 and all tariffs will be completely removed by 2010-2012 for China and ASEAN-6 members, and by 2015 or 2018 for Vietnam and other new ASEAN members. Tariffs will be reduced in equal proportions, but in some cases high tariffs are subject to larger reduction requirements. In the case of Vietnam, tariff lines with the rates of over 40% will be cut by more than a half in the first five years. Vietnam is also required to reduce at least 50% of the tariff lines classified in the normal track to less than 5% in 2010.

The sensitive list is further divided into sensitive list and highly sensitive list, which are subject to different requirements on the schedule and the extent of tariff reductions. Products in the sensitive list will have tariff rates reduced to less than 5% by the years 2018 for ASEAN-6 and China and by 2020 for other ASEAN members. The tariff rates for highly sensitive products are only subject to less than 50% tariff cuts by 2015 and 2018 for China and ASEAN-6 and less developed ASEAN members respectively. CAFTA member countries have flexibility in deciding products to be phased in the sensitive list, but subject to limitation in terms of the number of tariff lines and import value. In the case of ASEAN-6 and China, less than 400 tariff lines are allowed to be classified in the sensitive list and the value of products in the sensitive list must be less than 10% of total import value. Less developed ASEAN members are allowed to classify as much as 500 tariff lines in the sensitive list, and are not subject to the ceiling of import value.

Korea-ASEAN Free Trade Area (KAFTA). Similar to the CAFTA, tariff reductions under the KAFTA follows different tracks, depending whether products are classified in the normal, sensitive or highly sensitive list. More favorable schedules are also applied to Vietnam and other less-developed ASEAN countries. For the products in the normal track, tariffs will be reduced gradually between 2006 and 2010 for ASEAN-6 and Korea, and between 2006 and 2016 for other ASEAN members. Larger tariff cuts are applied for initial years and high tariff products. As for Vietnam, the tariff lines with the rates of over 20% will be reduced by more than half to two third between 2006 and 2011, and the maximum tariffs will be less than 20% by 2011.

The products placed in the sensitive and highly sensitive lists have a longer period of implementation and less strict reduction schedules. Sensitive products will have tariff reduced to 0 to 5% by 2016 for Korea and ASEAN-6, by 2021 for Vietnam and 2024 for other ASEAN members.

Highly sensitive products are not subject to substantial reductions, but are classified into different groups with different tariff ceilings and reductions. Certain products in the highly sensitive list are exempted from tariff reductions. Similar to the CAFTA, the classification of products into the sensitive or highly sensitive list is decided by each country but subject to the limitations on the number of tariff lines and import value. The limitations for the sensitive list are set at 10% of tariff lines and import value for Korea and ASEAN-6, and 10% of tariff lines and 25% of import value for Vietnam. Most of products that are classified by Vietnam into the sensitive list are being highly protected, including automobile, iron and steel and certain electronics.

Japan-ASEAN Comprehensive Economic Partnership (JACEP). Japan and Southeast Asian countries signed a framework agreement on comprehensive economic partnership in 2003 with a view to liberalizing trade and investment flows between Japan and ASEAN countries. After five years of negotiation, the agreement on comprehensive economic partnership (AJCEP) was concluded by ASEAN and Japan in March 2008 and came into force in December 2008. The agreement focuses on the liberalization of trade in goods, leaving the liberalization of trade in services and investment liberalization for further negotiations.

Tariff reductions under AJCEP follow a somewhat complicated modality with various tracks and time frames applied to different countries and products. In the case of Vietnam, there are 12 reduction schedules with the implementation period ranging from 1 to 18 years from the day of entry into force. In the end, around 90% of trade between Japan and ASEAN members will be tariff free. Besides the general exceptions provided for the security and related purposes, certain products are exempted from reduction commitment or are completely excluded, varying from agricultural products in Japan to automobiles in ASEAN members. As for Vietnam, most of products exempted from reduction commitments are automobiles, whereas many electronic products and steel and iron have a long time frame for tariff reductions, lasting from 16 to 18 years.

Prospect for a broader free trade area in East Asia. Although initial proposals for a closer economic cooperation in the region was put forward since early, economic integration in East Asia has gained its momentum with the signing of China-ASEAN free trade area in 2001. There has been a rapid proliferation of free trade agreements in East Asia in recent years, reflecting various considerations, economically, politically and culturally. On the economic aspect, East Asian countries are motivated to secure the market access for their exports for sustaining economic growth in the face the slow progress in the trade liberalization at the WTO and the APEC forum as well as the regional integration in Europe and North America. Some countries has followed the course of competitive liberalization with the signing of FTAs with a large numbers of trading partners in an attempt to make them a production hub with low costs of production, greater market access for exports and better capacity for attracting foreign investment[7]. Motivated by different strategic and economic considerations, East Asian countries have followed regional integration individually rather than collectively, resulting in a network of FTAs in the region. According to Kumar (2005), there are more than 60 FTAs with the participation of East Asian countries, including both the FTAs within East Asia and those with countries outside East Asia.

Together with the establishments of bilateral and multilateral trading arrangements among East Asian countries, discussions have been going on the formation of a region-wide FTA in East Asian.

[7] See, for example, Kawai (2005) and Rajan and Sen (2005) for a discussion of the motives underlying the recent proliferation of FTAs in East Asia.

In addition to the discussion among academic circles, more official mechanisms have been well established to facilitate the economic cooperation in East Asia, including the East Asian Summit and ASEAN+3 forum. Various scenarios have been put forward for a region-wide FTA, including ASEAN+3 (ASEAN, China, Japan, Korea) FTAs, East Asian FTA (ASEAN, China, Japan, Korea, Taiwan and Hong kong), and a broader FTA covering all East Asian countries, India, Australia, and New Zealand. The ongoing discussion on regional integration covers not only trade and investment liberalization, but also financial cooperation and the formation of a currency union in East Asia. It is expected that the current network of FTAs will be finally merged into a single FTA for East Asia. However, it will take time for the formation of a region-wide FTA due to the region's diversity in economic development and the resulting hesitation to trade liberalization, the concern over trade diversion as well as the lack of political leadership (Kawai, 2005).

4. The Model Specification

This paper employs a global CGE model to perform a dynamic simulation analysis of the impacts of regional economic integration on Vietnam's economy. The global CGE model has been developed by Nguyen and Ezaki (2005), and has been employed to conduct static simulation analysis of the impacts of regional integration on Vietnam, Indonesia and Thailand[8]. The global CGE model specifies 22 industries and 16 countries and regions. The regional classification is focussed on East Asia, consisting of 5 ASEAN countries (Malaysia, Indonesia, Thailand, Singapore and Vietnam), five Northeast Asian countries (China, Hong kong, Taiwan, Korea and Japan), and India, Australia and New Zealand, the US, the EU and the rest of the world. Industrial activities are specified with an emphasis on the agricultural and manufacturing sectors, taking into consideration the diversified pattern of production and comparative advantage as well as the structure of protection in each individual country and region.

The global CGE model consists of 16 country models linked together through international trade and foreign investment. Country models closely follow the standard neoclassical CGE model, in which capital and labor are mobile across economic sectors with the assumption of full employment. Three production factors are specified for each country model, i.e. capital, skilled labor and unskilled labor. Household get incomes from labor and capital, and saves a proportion of their incomes. The rest of household income is spent on consumer goods in fixed expenditure shares under the assumption of Cobb-Doughlas utility function. Government revenue is derived from taxes. There are nine types of taxes and subsidies are specified in each country model, consisting of tariffs, export duties, production taxes, capital and output subsidies, and sales taxes imposed on consumer goods, intermediate inputs and capital goods. Total government revenue is allocated to savings and consumption in fixed proportions.

The external sector in country models is modeled with the assumption of product differentiation, in which domestic and foreign goods are imperfect substitutes. The supply for domestic and foreign markets is determined from the revenue maximization condition, using the Constant Elasticity of Transformation (CET) function. Total domestic demand is satisfied through domestic production and imports, and the demand for imports and domestically produced goods is modeled using the Armington structure. Country models are linked together through trade and investment flows. The demand for imports is further disaggregated into the demand for import from different sources, which are by assumption considered as imperfect substitutes. International transportation services are incorporated and create a gap between the f.o.b prices in exporting countries and the c.i.f. prices

[8] See Nguyen and Ezaki (2005, 2007), Chaiwoot et al (2007) and Hartono et al (2007)

in importing countries. The global demand for transportation services is computed by summing across all countries and industries, and the demand for transportation services is then determined for countries and regions from the cost minimization condition based on the CES functional form. The partial adjustment approach discussed in Hertel (1997) is employed to allow for international capital mobility. Investment decisions are made in such a way that the rates of return on capital are equalized across countries and regions. In this treatment, investment only partially adjusts in response to the changes in the rate of return caused by trade liberalization. At a low value of the flexibility parameter, the expected rate of return to capital is not very sensitive to the change in capital stock, thus a large change in investment is required to equalize the expected rate of return to capital. A low flexibility parameter means a greater capital mobility and vice versa.

The CGE model is run for 15 years using the recursively dynamic method. In each period, total stocks of capital and labor are held fixed in each period, but are updated between periods. The change in domestic savings and capital inflows, and the resulting change in domestic investment, is added to the capital stock in the next period. The movement of labor across countries and regions is not allowed, and labor stocks are updated between period using exogenous growth rates of labor forces. GTAP database version 6.0 constructed for 2004 is employed for the simulation analysis, and is aggregated into 22 industries and 16 countries or regions in accordance with the model[9].

5. Dynamic Simulation Analysis

5.1. Simulation scenarios

The CGE model is employed to conduct dynamic simulation analysis of regional economic integration in East Asia. We focus on the ASEAN Economic Community (AEC) and the three ASEAN+1 FTA agreements, which have now been concluded and under implementation. In addition to these simulation scenarios, we also investigate the possible formation of a region-wide FTA in East Asia covering all ASEAN countries, Hong kong, Korea, Taiwan, China and Japan. Our simulation analysis is not only restricted to the case of trade liberalization, but also takes into account the potential impacts of investment liberalization within the FTA region. For each FTA, two simulation exercises are performed. The first takes into account the removal of tariffs, while the second examines the case of the combined trade and investment liberalization.

In the scenarios of trade liberalization, we assume the complete removal of tariffs imposed on bilateral trade for all FTA member countries. In the simulations with investment liberalization, we increase the parameters of flexibility assuming the liberalization of investment regimes would lead to the greater degree of capital mobility. The parameters of flexibility is set at -10 in the base run, and is increased to -5 for all the countries involved in the FTA for the scenarios of combined trade and investment liberalization. Indeed the degree of capital mobility are not only affected the barriers to foreign investment, but it also reflects the availability of institutional and economic infrastructures and the business environment favorable to foreign investment. Thus the simulations with investment liberalization do not only imply the removal of investment barriers, but also broader institutional and economic reforms to attract foreign investment.

The partial adjustment model of capital mobility is modified to account for the case of investment liberalization within the FTA region of concern. We separately apply the partial adjustment model to the FTA region and non-FTA region using a two-tier structure. In the first tier,

[9] More details about GTAP database version 6 can be found in GTAP homepage (http://www.gtap.agecon.purdue.edu/).

the model of capital mobility is applied to non-FTA countries and the FTA region as the whole. In the second tier, capital is allocated among FTA members given the rate of return to capital. In the simulations with investment liberalization, we increase the parameter of flexibility in the partial adjustment model applied to the FTA region.

Table 4: Simulation Scenarios

Scenarios	Description
AEC-TL	ASEAN Economic Community – trade liberalization
AEC-TIL	ASEAN Economic Community – combined trade and investment liberalization
CAFTA-TL	China-ASEAN free trade area- trade liberalization only
CAFTA-TIL	China-ASEAN free trade area- combined trade and investment liberalization
KAFTA-TL	Korea-ASEAN free trade area- trade liberalization only
KAFTA-TIL	Korea-ASEAN free trade area- combined trade and investment liberalization
JAFTA-TL	Japan-ASEAN free trade area- trade liberalization only
JAFTA-TIL	Japan-ASEAN free trade area- combined trade and investment liberalization
EAFTA-TL	East Asian free trade area- trade liberalization only
EAFTA-TIL	East Asian free trade area- combined trade and investment liberalization

Note: TL: trade liberalization; TIL: combined trade and investment liberalization

The CGE model is run for 15 years. Growth rates of labor forces and productivity are assigned to produce the targeted base-run economic growth. On the simulation exercises, the counterfactual shocks are given in the first year, consisting of the tariff removal and/or greater degree of capital mobility. Indeed trade liberalization under the FTAs follows somewhat complicated schedules with different time frame, different extents of reduction and exception being applied to different products and countries. We have adopted a simple way of conducting simulations to avoid the complexity of quantifying the actual tariff reduction schedules. The simulation exercises are not designed to quantify the actual impacts of these FTAs, but to analyze possible implications of regional economic integration for Vietnam's economic and industrial development.

5.2. Macroeconomic Impacts of Regional Integration

Regional integration could bring various benefits to Vietnam through the increased market access for Vietnam's exports and greater opportunities to attract foreign investment, and thereby promoting industrialization and economic growth in Vietnam. As half of Vietnam's exports are now directed to the regional market, the lowering of tariffs in regional trading partners could greatly improve the market access for Vietnam's exports. In addition, as the tariff rates remain at the high level in some regional countries, the liberalization in the regional trading partners could generate significant benefits. Regional integration also helps to attract foreign investment through improved investment environment and market enlargement. As the regional tariffs are reduced, foreign investors would not be restricted to the domestic market, but they could produce for the whole regional market. This would promote the reallocation and adjustment of production across the region.

The simulation results for the case of trade liberalization are reported in the first part of Table 5 for the initial year (the year 2001) and the last year (the year 2015). In all the FTAs investigated, trade liberalization leads to the expansion of output and welfare gains for Vietnam. There is also export expansion resulting from the reallocation of resources toward exporting industries and the greater market access for Vietnam's exports. The removal of tariffs in the FTA member countries stimulates the inflows of foreign capital into Vietnam, as it can be observed from the increase in

capital stocks and investment in all the simulations.

In the dynamic analysis, the welfare and output gains accumulate over time as new investment flows in and creates new production capacity. In the first year, when capital stocks are fixed, the inflows of foreign investment and the resulting higher level of domestic investment have only the demand-side effect. Over time, greater capital flows resulting from trade liberalization are added to the capital stock, and thus create even greater welfare and output gains. As can be seen from Table 5, the first year impacts of the FTAs are rather limited, but increase substantially in the later years. The gains in real GDP from the ASEAN+1 FTAs are around 1% in the first year, but increase to 4% to 6% in the last year. The increase in real GDP from the East Asian FTA scenario increases from 3.8% in the first year to 15.2% in the last year.

Several studies, including Ezaki and Nguyen (2007), have shown the large contribution of foreign investment to the overall output and welfare gains of regional economic integration. The importance of foreign investment in realizing the potential benefits of regional economic integration is also observed in our dynamic simulation analysis. The simulations with combined trade and investment liberalization show that considerable gains in output and welfare can be attained by liberalizing investment regimes and creating a more conducive environment for both domestic and foreign investment. With the exception of China-ASEAN FTA, large capital inflows brought about by investment liberalization substantially increases production capacity and output, especially when major investing countries in East Asia are included.

Table 5: Impacts of Regional Economic Integration on Vietnam's Economy- Macro Variables
(Percentage changes compared to the base-run scenarios)

	EAC		CAFTA		KAFTA		JAFTA		EAFTA	
	First	Last year	First	Last year	First	Last year	First	Last year	First	Last year
A. Trade Liberalization										
Consumer price index	-1.25	-1.48	-1.33	-2.41	0.43	-0.56	-0.90	-1.63	0.37	-1.97
Average wage rate	1.21	1.87	4.22	7.26	7.53	9.98	3.40	4.45	13.38	20.25
Average wage rate (skilled labor)	0.52	1.14	2.76	5.35	4.43	6.66	2.00	3.09	8.74	14.74
Average wage rate (Unskilled labor)	1.49	2.17	4.76	7.98	8.65	11.24	3.92	4.97	15.11	22.33
Capital rent	1.46	0.07	4.60	0.42	7.40	2.17	3.67	-0.35	13.28	2.10
Capital stock	0.00	2.48	0.00	8.65	0.00	8.97	0.00	5.90	0.00	21.25
Real GDP	0.48	2.02	1.37	5.49	0.90	6.27	0.90	4.67	3.76	15.21
Private consumption	2.56	3.66	5.76	10.75	6.92	11.16	4.34	6.67	13.13	24.47
Government consumption	-7.40	-6.42	-19.93	-20.92	-15.97	-12.70	-13.22	-9.50	-35.56	-31.17
Investment	2.19	3.49	6.62	13.45	7.59	12.80	5.41	7.98	16.05	31.91
Imports	2.86	3.80	9.35	15.03	7.99	11.33	5.90	7.49	20.17	30.87
Exports	1.07	2.33	5.56	10.86	1.97	6.00	2.43	4.90	9.47	19.04
B. Trade and Investment Liberalization										
Consumer price index	3.40	-3.64	2.08	-3.75	4.52	-2.60	6.55	-5.13	5.35	-4.61
Average wage rate	10.93	3.53	11.56	4.51	16.45	11.97	18.88	12.63	24.37	25.45
Average wage rate (skilled labor)	10.05	2.87	9.86	2.66	13.11	8.64	16.90	11.43	18.79	19.82
Average wage rate (Unskilled labor)	11.23	3.80	12.20	5.22	17.69	13.22	19.61	13.08	26.46	27.58
Capital rent	9.09	-9.10	10.43	-2.80	14.39	-6.92	15.84	-17.52	22.13	-10.14
Capital stock	0.00	16.62	0.00	10.16	0.00	23.84	0.00	42.92	0.00	48.86
Real GDP	2.27	9.68	2.72	5.77	2.46	14.22	3.45	24.60	5.53	29.57
Private consumption	6.15	9.06	8.61	9.96	10.28	16.93	9.91	22.25	17.34	36.53
Government consumption	-2.49	-1.67	-16.28	-21.58	-11.57	-8.32	-6.63	2.64	-30.75	-24.99
Investment	53.72	8.04	47.58	-0.64	55.29	18.79	85.78	37.08	83.76	44.85
Imports	17.17	8.35	20.60	11.47	21.33	16.36	28.34	24.35	38.03	41.38
Exports	-7.54	10.35	-1.51	13.92	-6.05	14.02	-11.08	22.52	-3.15	33.55

Source: Author's calculations

Notes: AEC: ASEAN Economic Community; CAFTA: China-ASEANFTA; KAFTA: Korea-ASEAN FTA; JAFTA: Japan-ASEAN FTA; EAFTA: East Asian FTA.

Even all the investigated FTAs generate output and welfare gains for Vietnam, the impacts of regional integration vary over time and with the FTAs in investigation. In the trade liberalization scenarios, the ASEAN+1 FTAs create more output and welfare gains as compared to the AEC. Among the ASEAN+1 FTAs, the KAFTA creates the large welfare and output gains for Vietnam. There are considerable gains from the FTA between China and ASEAN, largely brought about by the fast growing Chinese economy and the growing trade volume between Vietnam and China. There are also considerable potential gains for Vietnam from trade liberalization under the JAFTA, largely brought about by the complementarities between Vietnam and Japan.

The implications of regional integration are different under the scenarios of combined trade and investment liberalization. The FTAs between ASEAN and Japan and Korea produce far larger impacts on Vietnam as compared to the CAFTA and AEC. The large output gains from the combined trade and investment liberalization under the JAFTA and KAFTA are largely brought about by the increase foreign capital inflows. This reflects the fact that both Korea and Japan are the major sources of foreign investment in the region. In the scenario of the JAFTA, the capital stocks of Vietnam increase by more than 40%, whereas the gain in real GDP amounts to nearly 25% in the final year. Combined trade and investment liberalization under the KAFTA also produces substantial increases in output and capital inflows, but to a lesser extent as compared to the case of JAFTA.

As both China and ASEAN countries have remained the recipients of FDI rather than sources of FDI, investment liberalization in these countries does not create large gains in investment. Indeed, in the case of the CAFTA, the combined investment and trade liberalization seems to divert investment flows toward other countries, thus lowering the gains in real GDP and capital stocks for Vietnam, in comparison with the case of trade liberalization.

The formation of a region-wide FTA could offer greater benefits and opportunities for the regional countries. A regional FTA in East Asia would further open the market access for member countries, improve the efficiency through the greater resource reallocation, and stimulate the inflow of investment and reallocation of production across the region. The East Asian FTA (EAFTA) produces the largest impacts among the scenarios of trade liberalization. Combined trade and investment liberalization also produces substantial additional gains in terms of output, exports and investment. The gain in real GDP amounts to 15.2% in the case of trade liberalization, and increases to nearly 30% when investment liberalization included.

5.3. Regional Integration and Industrialization

Regional economic integration has raised various concerns among Vietnam's policy makers and academic circles over its possible negative impacts. Tariff reductions would lead to increasing competitive pressures from the regional imports. Domestic firms, lack of capital and technological capabilities and managerial skills may fail to compete with regional producers, and at the same time, they may not be able to utilize new export opportunities brought about by regional integration. As a consequence, the country may be marginalized, ending up with some low-tech, low value-added industries. The concerns over the possible negative impacts of regional economic integration has largely explained for the reluctance on the side of Vietnam in pursuing further integration with the regional economy.

This section attempts to examine the implication of regional economic integration on the development and upgrading of Vietnam's industries. Table 6 presents the sectoral impacts of the

investigated FTAs on Vietnam in terms of percentage changes in production output compared to the base-run level. The first part of Table 6 presents the simulation results for the scenarios of trade liberalization, while the simulation results for combined trade and investment liberalization is presented in the latter part.

The initial year impacts show the substantial adjustments in Vietnam's production following the removal of tariffs and investment liberalization in all the simulation scenarios. While some industries expand, other industries suffer a sharp contraction. The expanding industries consist of agriculture, mining, and labor-intensive industries. At the same time, the contracting industries consist mostly of capital-intensive industries, which are highly protected in Vietnam. The automobile sector and other transportation means are the most affected and suffer a large output loss in initial years. Both these industries are among the highly protected sectors in Vietnam, and to different extents, have suffered from inefficiency and low competitiveness due to the small size of domestic market[10]. The first-year's sectoral impacts can be viewed as static one, and are in line with the current pattern of Vietnam's regional trade and comparative advantage. Most of Vietnam's current exports to the regional market are natural resources based and labor intensive products. These are also the products that Vietnam possesses a comparative advantage as compared to the regional countries.

Although the sectoral adjustments follow a similar direction in the investigated FTAs, the sectoral impacts of the FTAs vary, depending on the volume of trade, the extent of protection and the degree of complementarities in the economic structure between the FTA member countries. Trade liberalization under the AEC shows a limited impacts on Vietnam's industries, but much greater sectoral impacts are observed under the ASEAN+1 FTAs with China, Japan and Korea as well as under the East Asian FTA. Much more sectoral adjustment is observed in the simulation of the East Asian FTA. This implies a more challenging sectoral adjustment in the forthcoming years when Vietnam start meaningful tariff reductions under the ASEAN+1 FTAs.

Under the scenarios of trade liberalization, the FTA with China has largest impacts on Vietnam manufacturing sector. Furthermore the FTA with China seems to produce more benefits to the light industries as compared to the heavy industries. The expansionary effects are also observed under the FTAs with Japan and Korea in the light manufactures, but to a lesser extent as compared to the CAFTA. The FTAs with Japan and Korea seems to have contractionary effects on heavy manufactures, with most of the potential adverse impacts fall on the automobile sector and other transportation means. Heavy manufactures seems suffer a largest output loss under the KAFTA, in which the output of the heavy manufactures as the whole still suffers a loss throughout the simulation period. Under the JAFTA, the output of heavy manufactures also contract in the first year, but recover in the later years thank to the capital inflows.

The greater sectoral adjustments from the FTAs between ASSEAN with Korea and Japan can be expected pattern of trade and comparative advantage between Vietnam, Korea and Japan. These two countries have more advanced manufacturing sectors, and they have comparative advantage in capital industries, including electronics, automobile and transportation means. Since Japan and Korea are more complementary in terms of trade and production to Vietnam, the FTAs with these

[10] A study by Ohno (2005) shows that the automobile sector still suffers small domestic markets, low capacity utilization, high cost and the low level of localization. At the same time, some other protected industries like motorcycles were able to perform better thank to the availability of local demand.

countries would lead to greater sectoral adjustments in Vietnam.

The sectoral impacts of regional integration also differ with the scenarios of trade liberalization and combined trade and investment liberalization. Under the assumption of greater capital mobility, the increase in capital inflows further contributes to the expansion in Vietnam's manufactures, and the heavy manufactures in particular. This is especially the case when the major investing countries in the regions, that are Japan and Korea, are included. The combined trade and investment liberalization under the JAFTA and KAFTA substantially increases the output of manufactures to a greater extent as compared to the CAFTA. Among the ASEAN+1 FTAs, the largest manufacturing output gain is observed under the JAFTA, and furthermore heavy manufactures expand to a greater extent as compared to light manufactures.

Large capital inflows do not only promote stronger expansion in light manufactures but also in heavy manufactures. In aggregate, both light manufactures and heavy manufactures expand to a greater extent compared to the case of trade liberalization in the final year. Light manufactures experience a continuous and increasing expansion as more capital flows in over time. Heavy manufactures suffer initial contraction as in the scenarios of trade liberalization, but many of which expand later and have substantial output gain in the final year. This is the case for metal, chemical, electronics, the automobile sector and other transportation means. If the expansion in the light manufactures are largely driven by higher export demand resulting from the removal of tariff in the regional countries, the expansion in the later years in heavy manufactures are led by higher domestic demand.

Although regional integration may result in a substantial sectoral adjustment in Vietnam, our simulation analysis suggests that the adjustments are short-term. Several highly protected manufactures, and heavy manufactures in particular, may suffer output losses in initial years. Over time, as more capital flows in and is added to the production capacity, agriculture and labor-intensive industries expand even more, while heavy manufactures recover from the initial losses and expand in later years. In the scenarios of trade liberalization, total output of the manufacturing sector expands in all simulations at the rate ranging from 1.2% in the case of the AEC to more than 16% in the case of the EAFTA. Total manufacturing output increases substantially as compared to the case of trade liberalization, with the output gain raging from 8.9% in the case of the AEC to 27.7% in the EAFTA.

The simulation analysis shows the important role of foreign investment in realizing the potential benefits of regional economic integration. Large capital inflows do not only generate substantial increases in output and income, it also promotes the development of Vietnam's industries. Trade liberalization needs to be accompanied by adequate policies to attract investment toward potential exporting industries through the liberalization of investment regimes and establishment of favorable investment environment. More benefits of FDI inflows can be expected as the simulation analysis do not take into account the transfers of technology and managerial skills associated with foreign investment. When these effects are incorporated, one can expect even greater implication of regional integration for Vietnam's industrial development and upgrading. Our simulation analysis suggests that, instead of continued protection of certain industries, it could be a better policy option for Vietnam to promote exports and foreign investment through deeper integration with the regional economy.

Table 6: Impacts of Regional Economic Integration on Vietnam's Economy- Macro Variables
(Percentage changes compared to the base-run scenarios)

	EAC		CAFTA		KAFTA		JAFTA		EAFTA	
	First year	Last year	First year	Last year	First year	Last year	First year	Last year	First year	Last year
A. Trade Liberalization										
Crop	1.63	3.56	-1.11	4.47	13.39	21.44	2.51	7.05	9.88	26.89
Livestock	1.51	2.88	2.35	7.41	2.42	7.57	1.85	5.16	4.24	16.76
Forestry	-1.72	-0.10	-5.14	-0.10	-10.75	-4.89	-4.83	-0.21	-16.98	-4.43
Fishing	-0.89	0.82	-0.93	4.64	-1.12	4.68	-0.49	3.39	-0.74	13.05
Mining	-0.66	1.21	-2.80	3.09	-7.12	-1.13	-2.65	2.04	-12.01	1.28
Food	-3.11	-1.23	-4.40	0.74	-4.66	1.30	-2.98	1.31	-7.44	5.76
Textile	1.45	2.32	17.57	27.40	8.74	11.85	8.89	8.98	35.00	48.63
Leather	2.69	3.35	15.47	23.45	5.98	8.33	6.13	7.07	27.52	38.52
Wood	-1.40	-0.04	-4.48	-0.28	-9.35	-4.59	-3.89	0.01	-14.36	-4.03
Chemical	-1.72	-0.17	-1.52	3.87	-6.93	-1.75	-3.15	0.68	-8.49	3.03
Automobile	0.31	1.90	-3.71	0.96	-7.74	-2.14	-6.77	-1.66	-17.12	-4.72
Other trans. means	-3.73	-2.75	-10.11	-8.55	-7.34	-3.12	-8.23	-4.51	-17.81	-9.99
Electronics	2.99	4.24	3.87	9.38	-1.96	2.07	2.26	5.52	-0.54	10.02
Machine	3.62	5.14	6.29	12.01	-2.24	2.01	3.32	6.45	2.19	12.05
Metal	1.64	3.40	0.43	6.28	-6.10	-0.57	-0.39	4.20	-7.95	5.07
Other manufactures	-1.21	0.63	-2.95	3.04	-4.87	1.38	-1.83	2.47	-8.15	6.26
Utility	0.32	1.79	0.78	6.06	-1.01	3.94	0.20	3.63	-0.43	11.53
Construction	2.07	3.36	6.21	12.90	7.02	12.22	5.09	7.71	14.96	30.74
Trade	0.67	1.99	1.79	6.90	0.92	5.63	1.27	4.27	2.88	14.63
Transport and telecom.	1.70	2.90	3.21	8.40	1.31	5.87	2.03	5.01	3.62	15.95
Public services	-4.09	-3.28	-11.27	-10.80	-9.34	-6.46	-7.45	-4.68	-20.43	-15.52
Other services	-0.21	1.64	-0.87	5.44	-2.30	4.34	-0.79	3.70	-3.46	11.78
B. Trade and Investment Liberalization										
Crop	-6.40	12.99	-7.43	7.01	5.13	32.30	-9.40	29.05	0.10	45.13
Livestock	1.64	10.20	2.52	7.95	2.61	15.16	1.98	23.96	4.26	30.87
Forestry	-12.43	11.20	-13.17	4.88	-19.41	5.77	-20.26	22.54	-27.77	12.71
Fishing	-3.70	8.90	-3.11	6.17	-3.56	12.99	-4.85	22.89	-4.98	27.40
Mining	-7.57	11.95	-7.60	6.60	-12.78	8.98	-12.70	26.16	-16.40	25.99
Food	-10.66	7.61	-10.23	3.84	-11.27	10.23	-14.51	20.61	-17.81	19.13
Textile	-8.92	8.17	7.93	31.74	-1.86	18.25	-8.64	19.97	15.32	59.23
Leather	-7.47	8.37	6.85	26.97	-3.80	13.45	-10.40	16.37	14.09	49.69
Wood	-11.48	10.04	-12.10	3.73	-17.54	4.82	-18.78	20.55	-25.67	8.25
Chemical	-9.52	9.63	-7.56	7.73	-13.65	7.80	-14.61	21.58	-16.26	20.07
Automobile	16.12	10.16	7.58	-3.02	4.67	6.03	12.46	23.98	-8.87	4.64
Other trans. means	-0.52	4.91	-9.03	-10.21	-4.98	4.57	-2.17	17.13	-15.19	-0.48
Electronics	-2.16	11.32	-0.84	9.49	-6.38	8.55	-5.77	25.10	-15.49	18.17
Machine	-7.47	12.06	-3.52	12.67	-12.43	8.19	-14.68	24.45	-30.47	9.68
Metal	-2.79	13.51	-3.03	7.09	-9.70	8.91	-7.28	29.86	-13.72	18.78
Other manufactures	9.28	9.22	4.75	1.44	4.17	10.36	12.56	26.97	1.73	19.95
Utility	-0.54	9.57	-0.01	6.86	-1.76	11.79	-1.27	23.28	-2.64	24.75
Construction	51.62	8.09	45.61	-0.62	52.83	18.33	82.19	36.64	79.88	43.77
Trade	3.71	8.75	4.15	6.69	3.68	12.64	5.80	22.55	6.44	27.68
Transport and telecom.	6.15	9.62	6.85	7.61	5.57	12.79	8.55	23.93	9.18	29.15
Public services	-2.49	1.31	-10.01	-10.73	-7.85	-2.10	-5.55	6.47	-18.75	-8.68
Other services	-3.19	11.73	-3.11	7.23	-4.88	14.57	-5.37	28.11	-6.53	29.81

Source: Author's calculations

One of the major obstacles to promote industrialization in Vietnam is the lack of skilled workers. According to a labor force survey conducted in 2005, skilled labor accounted for only 10% of total labor forces. The number of average schooling years for Vietnamese labor forces were 7.2 years, which is lower than the corresponding numbers for Thailand and China in early 1990s, and for Indonesia in the late 1990s (UNDP, 2010, p.44). Furthermore, graduates from secondary and upper secondary schools in Vietnam tend to go to universities instead of vocational schools, further contributing to the lack of skilled workers. The proportion of labor with vocational training declined from 9.1% in 1996 to 4.7% in 2005.

The lack of skilled workers is further exacerbated by the low quality of the training system. Most of Vietnam's universities and vocational schools have been run and financed by the government. However, due to the lack of financial resources and inadequate investment, most of educational institutions are poorly equipped and managed, and thus performed poorly. There are also problems in the training curriculum at the vocational schools and universities. Teaching curriculum are often more theoretically oriented, and the content does not reflect well the need of the private sector. Vietnam's high education system also suffers from the inadequate quantity and quality of teachers. Despite the huge expansion in the number of students since the 1990s, the number of teacher shows only a modest increase Perkins and Tu Anh, 2009, pp.35).

The lack of well trained labor forces largely explains for the fact that most of Vietnam's manufacturing exports are low-end products largely based on cheap and unskilled labors. In the case of garments, one of the major exports of Vietnam, production activities are largely assembly oriented, depending on imported textile, fiber and components. Not only exports, but production for domestic market also heavily relies on imported inputs. Automobile and electronics are the most notable examples, where parts and components are imported and assembled by domestic and foreign firms, and the final products are sold at the domestic markets. In the past, the government has made many efforts to increase the domestic content in these manufactures through tax incentive and subsidies. However, their efforts have failed.

As income rises in Vietnam, the comparative advantage based on low-wage and unskilled labor is eroding and it would be more difficult to sustain the export growth of assembly labor-intensive products in the forthcoming years. The availability of well-trained labor forces are essential for Vietnam to successfully integrate with the global and regional economy, and making the most from the integration with the global and regional economy. A well-trained labor force is also needed to develop high-end, more capital and skill-intensive manufactures in Vietnam. In a globalizing world economy where an increasing number of countries have been engaging in trade and investment regimes, it is the quality of human resources that determine the country's comparative advantage.

6. Concluding Remarks

This paper has conducted a quantitative analysis of the impacts of regional economic integration on Vietnam, using a global CGE model. Different from our previous studies, this paper has investigated the implication of investment liberalization in addition to trade liberalization, and has performed a dynamic simulation analysis to investigate the impacts of regional integration. Five regional trading arrangements that are of most relevance for Vietnam have been examined, including the ASEAN Economic Community (AEC), ASEAN+1 FTAs between ASEAN and China, Korea and Japan and the possible formation of a broader free trade area in East Asia.

The simulation analysis has shown the positive impacts of regional economic integration on Vietnam's economy. Although the implication of regional integration varies with the FTAs depending on the economic structure of the countries involved, all the FTAs in investigation lead to output and welfare gains, while stimulating exports. Despite the concern over the increasing competition for foreign investment in the region, regional integration seems further stimulate capital inflows to Vietnam, especially in the case trade liberalization is combined with the removal of investment barriers.

The simulation analysis shows the importance of foreign investment in realizing the potential benefits of regional economic integration. Greater capital inflows do not only create additional output gains, but also promote the industrial development in Vietnam, for both exporting industries and import-substituting industries. Trade liberalization needs to be accompanied by adequate policies to attract foreign investment through the removal of investment barriers and creation of a better investment environment. The availability of well-trained labor forces is of great importance for Vietnam to move up the development ladder and promote the industrial development.

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Appendix A: Regional and Industrial Classification

Table A1: Regional Mapping

Regions and Countries	Description
1. Vietnam	Vietnam
2. Indonesia	Indonesia
3. Malaysia	Malaysia
4. Philippines	Philippines
5. Thailand	Thailand
6. Singapore	Singapore
7. China	China
8. Korea	Korea
9. Hong kong	Hong kong
10. Taiwan	Taiwan
11. Japan	Japan
12. India	India
13. Oceania	Australia, New Zealand and other Oceania countries
14. The United of States	The United States
15. European Union 27	Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, England, Italia, Latvia, Lithuania, Luxemburg, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden,Switzerland, Norway
16. Rest of the World	Other countries

Table A2: Industrial Mapping

Industries	Description
1. Crop	Paddy rice, processed meat, processed rice, wheat, cereal grains nec, vegetable, fruit, nuts, oil seeds, sugar cane, sugar beet, plant-based fibers, other crops
2. Livestock	Cattle, sheep, goats, horses, other animal products, raw milk, wool, silk-worm, cocoons
3. Forestry	Forestry
4. Fishing	Fishing
5. Mining	Coal, oil, gas, other minerals
6.Food processing	Vegetable, oils and fats, diary products, sugar, beverages and tobacco products, other food products
7. Wood	Wood products, paper, publishing
8. Chemical.	Petroleum, coal product, chemical products, plastic products, rubber, other mineral products
9. Automobile	Motor vehicles and parts
10. Other transportation means	Transportation equipments nec
11. Electronics	Electronic equipments
12. Machinery	Other machinery and equipment
13. Metal	Ferrous and non-ferrous metals
14. Textiles	Textiles and wearing apparel
15. Leather	Leather products
16. Other manufactures	Other manufactures
17. Utility	Electricity, gas manufactures and distribution, water
18. Construction	Construction
19. Trade	Whole sale and retail trade
20. Transport and telecommunication	Transport and telecommunication
21. Other private services	Financial services, recrectional services, business services
22. Public services	Public administration, education and health