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Potential Economic Impacts of the Vietnam-Korea Free Trade Agreement on Vietnam

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This paper provides an assessment of the potential economic impacts of the Vietnam-Korea free trade agreement on Vietnam, by using general equilibrium modeling. The results show that Vietnam-Korea FTA will increase aggregate welfare for both countries in the long run. The most important gains accrue from better allocation of resources consequent to trade liberalization. All the sectoral differences and changes are consistent with the trade profiles of the two countries, and the long-run results are more pronounced than those of the short-run. In comparison with other ASEAN countries, the CGE analysis suggests that Vietnam's agriculture exports to Korea would especially rise in the long run. However, there will be strong competition in this sector among ASEAN members. Thus, an earlier conclusion of a comprehensive FTA with Korea is expected to be a good strategy for Vietnam, so as to avoid the direct competition with ASEAN members in the future.

Keywords: Free Trade Agreement, General Equilibrium, GTAP, Vietnam, Korea, Trade Policy
JEL classification: F1, F4, D5

I. INTRODUCTION

Vietnam-Korea relations have developed considerably since the establishment of diplomatic ties in 1992. The relationship has been rapidly deepened in all fields such as the political and economic, social and cultural fields and trade and investment, education and people-to-people exchanges. During the short period of two decades, there has been great progress in bilateral trade relations. Trade

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volume has increased 74-fold from about US$ 500 million in 1992 to US$ 37 billion in 2015. The average annual growth rate of Vietnam's imports from Korea was about 25 percent, whereas Vietnam's exports to Korea increased by nearly 19 percent per annum during this period (Table 1). Korea has been one of Vietnam's top trading partners since 1992; Korea is the second-largest import market and fourth-largest export market for Vietnam, while Vietnam was Korea's fourth-largest export market in 2015. Vietnam is also one of Korea's largest export markets for industrial goods. On the other hand, although Korea's trade share declined, Korea has maintained its position as one of Vietnam's top 10 trading partners for the past 20 years (UNSD, 2016). In an effort to improve on the strategic partnership established between the two countries, the trade ministers of Vietnam and Korea signed a free-trade agreement (FTA) on May 5th, 2015. Both countries hope bilateral trade volume will reach US$70 billion by 2020 (VCCI, 2016).

Vietnam is the most attractive integration partner for East Asian countries such as China, Japan and Korea. Vietnam is a member of ASEAN, and ASEAN has signed trade agreements with China, Korea and Japan. The Vietnam-Korea FTA (VKFTA) is in effect; thus, an evaluation of the potential impacts of the VKFTA is necessary and important for policy implications for both countries.

There are few studies available on the effects of a potential FTA between Vietnam and Korea, because it has only been recently initiated. Previous studies (MUTRAP, 2010; Cheong, 2012) used econometric analysis, mostly the Computable General Equilibrium (CGE) model, to assess the FTA's effects on the economy as a whole, which does not focus on impacts on the industry level. Moreover, the Vietnam-Korea FTA was initiated in the context of the implementation of the ASEAN -Korea FTA (AKFTA). Thus, it is necessary to evaluate the potential impacts of the VKFTA versus the AKFTA.

The objectives of this paper are to provide a comprehensive assessment of the potential economic impacts of the Vietnam-Korea Free Trade Agreement, compare the potential effects of the Vietnam-Korea FTA in the context of the ASEAN-Korea FTA, and suggest policy implications for Vietnam.

The paper is organized as follows. Section 2 provides general information on the background to the trade relationship between Vietnam and Korea. Section 3 analyzes the impact of the Vietnam and Korea FTA on Vietnam's economy including on elements such as: welfare, economic growth, trade, industrial production, and

employment. Section 4 compares the potential effects of the Vietnam-Korea FTA in the context of the ASEAN-Korea FTA, focusing on the agricultural sector. Section 5 proposes policy implications and concludes the paper.

II. Vietnam - Korea Trade Relations

Korea has been one of Vietnam's top trading partners since 1992. The share of Vietnam's trade with Korea in Korea's total trade has increased rapidly over the years. On the other hand, though Korea's trade share has declined, Korea has maintained its position as one of Vietnam's top 10 trading partners for the past 20 years. As can be seen from Table 1, except for the period during the Asian financial crisis, the trade volume between the two countries has increased rapidly, at about 19 percent annually on average. The scale of bilateral trade relations further deepened in 2007, when the Korea-ASEAN Free Trade Agreement (merchandise) went into effect. In terms of volume, Vietnam's exports to Korea rose from only US$ 57.3 million in 1992 to US$ 7,167 million in 2014, while its imports from Korea increased dramatically from US$ 436.2 million to US$ 21,728 million in the same period.

Table 1. Vietnam-Korea Bilateral Trade Volume and Growth: 1992-2014

	Export (US$ mil)	Inc. Rate (%)	Import(US$ mil)	Inc. Rate (%)
1992	57.3	39.32	436.2	119.25
1995	193.6	70.16	1,351.0	31.50
2000	322.4	22.03	1,686.0	16.67
2005	694.0	3.08	3,431.7	5.41
2010	3,330.8	40.54	9,652.1	35.00
2014	7,167.5	7.25	21,728.5	5.08
Average		24.55		19.44

Source: UN Comtrade database, 2015

Trade between Vietnam and Korea by HS chapter is shown in Table 2. The reported data shows that machinery, textiles, and mineral products are major export and import products of Vietnam. These items account for about 54 percent, 41 percent, and 26 percent of Vietnam export and import, respectively. For trade in manufacturing, electrical, metal, and textile products account for more than 50

percent of Vietnam's imports from Korea. These sectors also show a big deficit in trade between the two countries.

Table 2. Vietnam's Trade with Korea by Sector in 2014

Sector	HS Code	Exports (US$ million)	Share (%)	Imports (US$ million)	Share (%)	Balance (US$ million)
Animal Products	01-05	504.4	6.70	121.3	0.54	383.2
Vegetable Products	06-15	301.5	4.00	14.8	0.07	286.6
Foodstuffs	16-24	231.2	3.07	79.6	0.36	151.7
Mineral Products	25-27	363.9	4.83	675.1	3.01	(311.1)
Chemicals	28-38	119.5	1.59	1,051.4	4.69	(931.9)
Plastics/Rubbers	39-40	170.3	2.26	2,293.5	10.24	(2,123.2)
Leather & Furs	41-43	92.5	1.23	243.6	1.09	(151.2)
Wood Products	44-49	351.4	4.67	216.3	0.97	135.1
Textiles	50-63	2,477.2	32.89	2,388.0	10.66	89.2
Footwear/Headgear	64-67	345.7	4.59	52.5	0.23	293.2
Stone/Glass	68-71	62.2	0.83	98.1	0.44	(35.8)
Metals	72-83	379.9	5.04	3,073.1	13.72	(2,693.2)
Machinery/Electrical	84-85	1,290.6	17.14	10,093.4	45.05	(8,802.9)
Transportation	86-89	105.0	1.39	583.5	2.60	(478.5)
Miscellaneous	90-97	372.2	4.94	744.5	3.32	(372.3)
Total		7,531.4	100.00	22,403.5	100.00	(14,872.1)

Source: UN Comtrade database, 2015

In order to assess whether Vietnam-Korea bilateral trade is consistent with the comparative advantage principle, or whether Vietnam-Korea trade is complementary or competitive in nature, we formulated the Revealed Comparative Advantage (RCA-see WTO 2012) for the two countries in the year 2014. Table 3 summarizes the RCA profiles of Vietnam (RCAV) and Korea (RCAK) at HS 6-digit level, according to the 15 HS sectors. Starting at the left-hand data column, it is evident that nearly all sectors contain 6-digit HS codes where both Vietnam and Korea appear to hold a comparative advantage (RCAV and RCAK> 1). However, the number of codes for which both areas' RCAs are greater than one is far smaller than the number of codes for which both Vietnam and Korea do not have a comparative advantage (RCAV and RCAK< 1), as indicated in the second data column. The third data column shows the number of codes for which Vietnam has

RCAs greater than one, but Korea does not. Among these 5,251 codes, Vietnam holds a comparative advantage against Korea mostly in the chemical, textiles, and machinery/electrical sectors. However, these sectors also contain a significant amount of codes for which Vietnam's RCAs are less than one, but Korea's RCAs are greater than one, as shown in the last column. This indicates the big range of overlapping RCAs between two countries, which implies that the intra-industry becomes more intense when the Vietnam-Korea FTA is in effect.

Table 3. Summary of RCA in Vietnam and Korea's Exports

Sector	HS Code	RCAV and RCAK > 1	RCAV and RCAK < 1	RCAV> 1, RCAK < 1	RCAV< 1, RCAK> 1
Animal Products	01-05	76	596	370	302
Vegetable Products	06-15	71	633	409	1,077
Foodstuffs	16-24	49	373	238	184
Mineral Products	25-27	32	264	160	136
Chemicals	28-38	157	1,417	700	874
Plastics/Rubbers	39-40	96	326	177	245
Leather & Furs	41-43	29	109	86	52
Wood Products	44-49	54	416	265	205
Textiles	50-63	414	1,178	950	642
Footwear/Headgear	64-67	29	65	68	26
Stone/Glass	68-71	36	350	197	189
Metals	72-83	241	885	470	656
Machinery/Electrical	84-85	248	1,294	663	879
Transportation	86-89	43	217	121	139
Miscellaneous	90-97	107	601	377	331
Total		1,682	8,724	5,251	5,937

Source: UN comtrade data, 2015

Sectors in which both Korea and Vietnam have a comparative disadvantage are candidates for trade diversion, because duty reduction in these codes could enable exports from Vietnam to Korea (or exports from Korea to Vietnam) to increase at the expense of the country that lacks comparative advantage. The information from the RCAs' analysis indicates that the structure of bilateral trade between Korea and Vietnam is complementary rather than competitive, as the countries hold very different comparative advantages.

III. Potential Impacts of the Vietnam-Korea FTA

This section provides an analysis of the potential impacts of the Vietnam-Korea FTA based on general equilibrium modeling. The general equilibrium modeling is based on the Global Trade Analysis Project (GTAP) model. Two hypothetical tariff liberalization scenarios are examined in the GTAP model, focusing on the short run and long run. GTAP is a multi-region computable general equilibrium (CGE) model designed for the comparative-static analysis of trade policy issues (Adams et al. 1997). It can be used to capture effects on output mix, factor usage, trade effects and resultant welfare distribution between countries as a result of changing trade policies at the country, bilateral, regional and multilateral levels. Since the GTAP model places emphasis on resource reallocation across economic sectors, it is a good instrument for identifying the winning and losing countries and sectors under policy changes involving the trade aspects of the FTAs. The theory of the GTAP model is documented in Hertel (1997) and the brief summary of the GTAP model used here is described in Ahmed (2010). In this study, GTAP database version 7 was aggregated by combining countries into three single regions: Vietnam, Korea, and Rest of the World (ROW). 57 commodities are aggregated into 10 commodity groups.

GTAP 7 database uses 2004 as its reference year[2]. The year 2004 cannot serve as a good basis to analyze the FTA between Vietnam and Korea, since many agreements were signed in the Asian region from 2004 until present. During this period of time, Vietnam signed various agreements via ASEAN, of particular note the FTA between ASEAN and Korea (AKFTA), which went into effect in 2007. Since tariff rates will be effective for bilateral trade between Korea and Vietnam after the implementation of the AKFTA, it should be adjusted and incorporated into the model in order to forecast a more realistic estimation than using GTAP's base tariff rates. Thus, we performed some updates to the database, in order to bring the baseline to the year 2010. Given that altering only tariff data and leaving the other flows of the database untouched will violate the initial

[2] A caveat of this study is that the analysis was conducted using GTAP database V7 due to limited resources and availability of the newest database to the authors. Nevertheless, when an anonymous referee checked some results of our analysis using the newest version, GTAP V8.1, the main results of this study remained qualitatively unchanged. We are grateful to the anonymous referee for his/her efforts.

consistency of the database, it is necessary to allow the rest of the database to change so as to maintain its internal balance. Following Malcolm (1998), the tax adjustment procedure used here includes a number of modifications to the GTAP model.

Table 4. Base and New Bilateral Tariff Data

Sector	Base data		New data	
	Vietnam	Korea	Vietnam	Korea
Fishing	5.38	19.89	14.60	16.54
Mineral products	17.95	4.14	9.14	2.33
Other agricultures	2.98	289.21	11.06	173.03
Electrical and Machinery	7.70	5.30	3.35	4.28
Textile	30.22	10.46	11.45	9.21
Transportation	34.29	5.33	25.91	4.39
Iron and Steel	5.80	5.03	4.23	2.92
Plastic and Rubber	6.88	3.15	3.69	3.75
Other manufactures	21.96	13.88	7.50	8.07
Services	0.00	0.00	0.00	0.00
Average	14.80	39.60	10.10	24.95

Source: Author's calculation from WITS and GTAP database

The bilateral tariff rates for the GTAP's base year (2004) and the latest applied rates (2010) are presented in Table 4. As can be seen, the remaining tariff rates for both parties are high compared to that of 2010. Overall, tariff rates have been reduced in Vietnam and Korea during the period of 2004-2010 as a result of the Korea-ASEAN FTA. The remaining rates are relatively low in manufactured products compared with agricultural items. This means manufacturing sectors are virtually liberalized in the ASEAN-Korea FTA, while Korea has marked agricultural and marine products as sensitive products and several other products among them have been designated as highly sensitive products. Vietnam still applies high tariff rates on most industries except for electronic-chemical products, which means that there is much room for improving market access through a bilateral FTA. Vietnam also preserves relatively high tariffs in textiles (11.45 percent) and transportation equipment (25.91 percent).

Two scenarios have been conducted on the revised GTAP database: (1) 50

percent trade liberalization and (2) full liberalization. In scenario 1 ("SC1"), Korea's tariff rates on fishing and other agricultural products are reduced by 50 percent, while Vietnam's tariff rates on machinery and transportation equipment are reduced by 50 percent. These sectors have been considered as sensitive in trade between the two countries. Therefore, the tariffs are expected to be gradually cut in the process of trade liberalization. Tariffs on other products are completely eliminated. This simulation incorporates the standard general equilibrium closure, and the results can be interpreted as the short-run impact of the agreement with Vietnam. In the second simulation ("SC2"), all tariffs are reduced to zero between two countries. This simulation can be interpreted as the long-run impacts of a Vietnam-Korea FTA on the Vietnamese economy. The term "long-run" used here does not refer to a specific amount of time. Instead, it is meant to refer to the time it takes to fully implement an FTA's commitments. Nevertheless, it is convenient to view the long-run effects as those that are likely to occur within five to ten years of the signing of the agreement.

1. Impacts on Growth and Welfare

In the GTAP model, the analysis of the costs and benefits can be evaluated by undertaking a welfare analysis and decomposing the changes in welfare into their component parts (see Huff and Hertel, 2001). Such welfare changes come from five sources: (i) allocative efficiency, (ii) endowment effects, (iii) technical changes, (iv) terms of trade (TOT) effects, and (v) investment-savings (IS) effects. The decomposition of welfare changes in each country for the VKFTA simulation is shown in Table 5. Vietnam and Korea have welfare gains in both scenarios, in which Korea's gain is almost four and five times that of Vietnam's in SC1 and SC2, respectively. In both scenarios, most of the gains are from allocative efficiency, which account for over 70 percent of total welfare changes. However, gains from TOT and IS effects are different for the two countries. In Vietnam's case, terms of trade are not the source of economic welfare gains. This is because labor and wage costs are likely to rise with free trade agreements and labor intensive exports may thus suffer from adverse terms of trade. The most important gains would, however, accrue from better allocation of resources consequent to trade liberalization. These efficiency gains would be highest through import increases.

Table 5. Effects on National Welfare

	Sources of changes (%)				Value (US$ million)
	Allocation	Terms of Trade	Investment	Total	
Partial Scenario - SC1					
Vietnam	90.95	-4.35	13.58	100.00	232
Korea	63.21	45.99	-9.17	100.00	1022
Full Scenario - SC2					
Vietnam	77.39	14.27	8.41	100.00	314
Korea	71.65	35.60	-7.31	100.00	1545

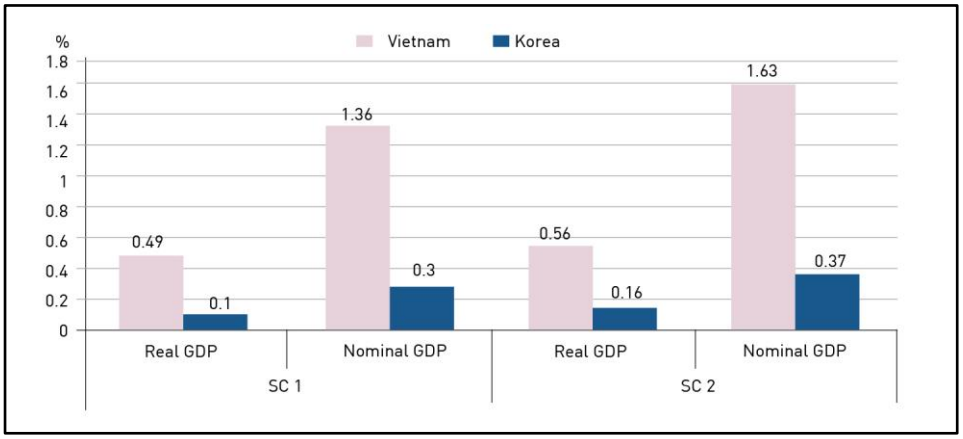
One interpretation would be that Vietnam has little to gain from an agreement with Korea relative to unilateral liberalization. In Korea's case, terms-of-trade effects are significant and investment-saving eff Table 10. Korea'ects are even negative. These TOT effects reflect the benefits of export expansion into the Vietnamese market. In the case of full liberalization, Korea will gain more from allocative efficiency while Vietnam's welfare gains significantly accrue from terms of trade effects. This implies that the liberalization of sectors that are considered sensitive can bring more benefits to Vietnam and Korea.

The potential impact of the Vietnam-Korea FTA on GDP is similar in the two scenarios. Given the gains in national welfare described above, one would expect the GDP gains for Korea to be high in both scenarios, but this is not the case. As shown in Figure 1, Korea's real GDP grows by 0.1 percent in SC1 and nominal GDP by 0.3 percent, while the corresponding figures for Vietnam are 0.49 percent and 1.36 percent, respectively.

Significant gains in GDP for Vietnam occur in the long term, with nominal GDP expanding by 1.63 percent in SC2. This might be due to the economic effects from investment inflow and enhanced technical cooperation, as well as an improved allocation of Vietnam's resources in the long run. In the short run, Vietnam consumes more with its output, which grows modestly. In the long run Vietnam consumes more not only because its terms of trade improve, but also because output increases[3].

[3] Simulation on GTAP database version 8.1 shows a similar pattern of changes in GDP. See Appendix 1 for details.

Figure 1. Effects on GDP Growth



2. Impacts on Trade

Table 6 below summarizes the impact of the two scenarios on Vietnam and Korea's aggregate trade. In the short-run scenario, SC1, Vietnam's total trade volume rises by US$ 2,744.7 million or 3.89 percent (deviation from base year), while Korea's total trade volume rises by only US$ 807.9 million or 0.14 percent. This is reasonable, because Korea has been one of the largest trading partners of Vietnam. Vietnam is not only a small economy but also a small market for Korea's exports. The FTA between Vietnam and Korea, thus, would have a significant impact on Vietnam's trade rather than that of Korea. When considering the full liberalization scenario, the effects on Vietnam's trade are not significant. The volume will rise by 3.91 percent at about US$ 2.7 billion, while corresponding figures for Korea will decrease both in terms of value and percentage. This indicates the potential of trade expansion in overlapping RCA's products, in which Vietnam has a relatively higher comparative advantage than Korea.

Table 6. Changes in Total Trade

	SC1		SC2	
	Value (US$ million)	%	Value (US$ million)	%
Vietnam	2,744.7	3.89	2,757.3	3.91
Korea	807.9	0.14	278.2	0.05

One counterintuitive aspect of the simulation is that Vietnam imports and, especially, exports decline in a number of sectors even though tariffs are being reduced in both Vietnam and Korea. This result is evident in the data shown above, but not in the bilateral data. As shown in Table 7, imports in the two countries increase significantly in both scenarios. The value of Vietnam's imports from Korea expands by about US$ 3.2 billion and US$ 3.5 billion in SC1 and SC2, respectively. In both SC1 and SC2, textiles, mineral and transportation imports are major items in terms of value and percentage change. Vietnam's imports of textiles increase by almost US$ 1.9billion, while imports of mineral and transportation products increase by approximately half of US$ 1 billion.

Table 7. Changes in Bilateral Trade (Unit: US$ million)

Sector	Changes in Vietnam Imports from Korea				Changes in Korea Imports from Vietnam			
	SC1		SC2		SC1		SC2	
	Value	%	Value	%	Value	%	Value	%
Fishing	0.1	19.73	0.1	18.65	1.2	9.84	2.6	21.31
Mineral products	459.0	83.61	459.0	83.61	21.0	17.80	21.0	17.80
Other agricultures	4.0	58.99	4.5	66.42	668.0	125.33	1,340.0	251.41
Electrical and Machinery	277.0	26.46	276.0	26.36	28.0	26.42	28.0	26.42
Textiles	1,891.0	80.71	1,887.0	80.54	157.0	70.72	156.0	70.27
Transportation	248.0	49.21	489.0	97.02	0.3	20.92	0.4	24.18
Iron and Steel	87.0	23.97	87.0	23.97	1.9	13.97	1.9	13.97
Plastic and Rubber	156.0	21.25	155.0	21.12	8.7	16.51	8.5	16.13
Other manufactures	140.0	51.47	158.0	58.09	116.0	35.80	111.0	34.26
Services	1.5	3.60	1.5	3.60	-2.6	-4.91	-2.7	-5.09
Total	3,265.0	55.71	3,517.0	60.01	998.0	69.45	1,666.0	115.94

For Korea, only agricultural imports show a significant expansion as result of the VKFTA. In SC1, agricultural imports increase by US$ 668 million; however, the corresponding figure is almost doubled in SC2, US$ 1,340 million. Textiles and other manufactures also experience an increase in imports, though their values are small.

3. Impacts on Wage and Employment

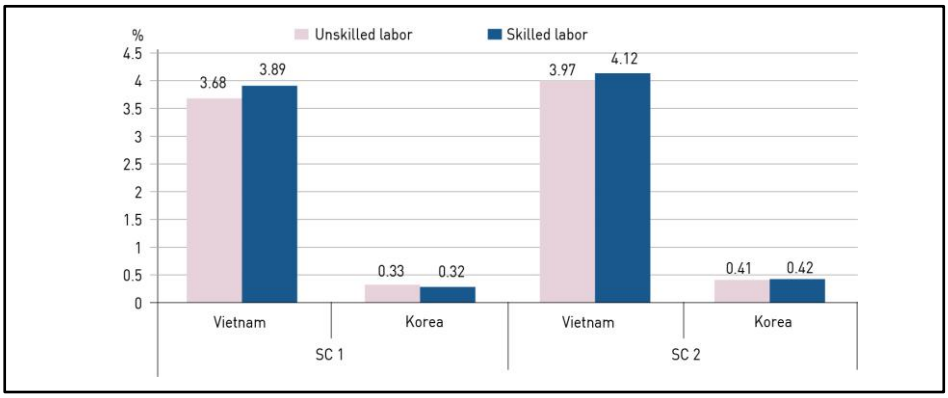
In the standard GTAP general equilibrium closure, the quantity of labor is fixed and the economy is assumed to be at full employment. Changes in labor demand are resolved in two ways. First, economy-wide wages rise or fall so that the post-simulation supply of and demand for labor are equal in the economy. Second, labor resources are redistributed across the economy so that industries can accommodate changes in demand that arise from the simulation. As a result, there is no overall increase in employment from any simulation run with the standard general equilibrium closure, only in wages and the distribution of labor change.

The GTAP simulation results provide information relevant to labor: the supply price of and the firm demand for factors. The supply price of labor can be interpreted as the wage rate, while changes in demand for labor provide information on which sectors are losing workers and which sectors are gaining them. The labor component of the GTAP database is divided into skilled and unskilled labor, and simulation results are provided for both.

In general, there is not much difference between the wage rate for skilled labor and unskilled labor (Figure 2). In SC1, the wage rates of labor increase by nearly 4 percent for Vietnam and 0.3 percent for Korea. In full liberalization, the increases are somewhat larger; 3.97 percent for unskilled labor and 4.12 percent for skilled labor in the case of Vietnam. Thus it appears that the proposed FTA will raise wages in the short and long run, but that unskilled workers will benefit more than skilled workers in the long run.

The demand for labor by the various economic sectors is predicted to change, as reported in Table 8. In both scenarios, demand for the two types of labor is expected to rise significantly in the textile industry. Gains are also expected in the agricultural and service sectors. However, almost all sectors are predicted to witness decline in labor demand. Trends for unskilled labor are similar to those for skilled labor.

Figure 2. Changes in Wages by Type of Labor



The GTAP scenarios likely overstate both the change in wages and the changes in the distribution of employment that would result from an FTA if there is some slack in the Vietnam's labor market. In other words, if there are underutilized labor resources in Vietnam, the increase in wages necessary to equalize labor supply and demand would be lower than the values predicted by GTAP. Similarly, the distribution effects predicted by GTAP would be less severe if sectors such as meat, rice, textiles, apparel, and footwear are able to attract workers who are currently unemployed before attracting workers from other sectors. However, official unemployment statistics indicate that Vietnam's unemployment rate is quite low.

Table 8. Changes in Vietnam's Employment by Sector

(Unit: percent)

Sector	SC 1		SC 2	
	Skilled Labor	Unskilled Labor	Skilled Labor	Unskilled Labor
Fishing	-1.47	-1.43	-1.69	-1.66
Mineral products	-5.07	-4.97	-5.33	-5.25
Other agricultures	-0.90	-0.84	-0.06	-0.02
Electrical and Machinery	-4.14	-3.87	-4.13	-3.94
Textiles	11.00	11.26	10.51	10.71
Transportation	-2.54	-2.27	-3.59	-3.40
Iron and Steel	-4.31	-4.05	-4.10	-3.91
Plastic and Rubber	-2.14	-1.87	-2.40	-2.21
Other manufactures	-3.15	-2.90	-4.04	-3.86
Services	0.09	0.38	0.20	0.41

The trade liberalization that is introduced in the FTA affects trade and industrial production. An internationally competitive industry will increase exports, and the quantity of production will also rise. The estimated impacts of the Vietnam-Korea FTA on each industry are shown in Table 9. Data from Table 9 shows that Vietnam's industrial production will shrink in almost all sectors, while Korea will witness a slight decrease in industrial output in five of ten sectors. However, the aggregate output of industrial production will increase for Vietnam in both scenarios, which are 5.02 percent and 5.53 percent, respectively.

Table 9. Changes in Industrial Output by Sector

	SC 1		SC 2	
Sector	Vietnam	Korea	Vietnam	Korea
Fishing	-0.85	0.05	-0.98	0.11
Mineral products	-3.54	0.42	-3.71	0.38
Other agricultures	-0.47	-0.44	0.00	-0.86
Electrical and Machinery	-3.81	-0.81	-3.79	-1.04
Textiles	11.34	5.42	10.88	5.61
Transportation	-2.21	-0.34	-3.26	-0.17
Iron and Steel	-3.99	-0.58	-3.78	-0.73
Plastic and Rubber	-1.80	-0.07	-2.05	-0.13
Other manufactures	-2.82	0.35	-3.70	0.70
Services	0.44	0.05	0.58	0.09
Total	5.02	0.15	5.53	0.22

As for specific sectors, there was an extremely substantial expansion of the textile industry when Vietnam and Korea signed the FTA. This is partly because low-cost intermediates resulting from import liberalization lower the cost of production; partly because Vietnam has a clear comparative advantage in labor-intensive sectors against Korea, whereas its competitive position for these commodities is less clear within ASEAN.

The next largest changes are in the service sector in Vietnam and the mineral sector in Korea. Korea also expects a gain in the manufacturing sector, which will increase from 0.35 percent in SC1 to 0.70 percent in SC2. For Vietnam, the full liberalization scenario will bring positive changes in agricultural sector. However, most sectors will experience a larger shrinkage in their production output. This can be explained by the dependence of Vietnam's economy on input from Korea. This also means that the Vietnamese economy will grow by expanding the production

of competitive industries, while structurally adjusting industries which are less competitive. Overall, these results imply that the VKFTA will affect Vietnam's industrial production substantially. There will be pressure for the Vietnamese industry to restructure after the signing of the FTA. However, one might expected that the dependence of Vietnam's industrial production on Korea's input would be more severe as a result of the VKFTA.

IV. SENSITIVE PRODUCTS AND ASEAN COMPARISON

For several reasons that are now well articulated in current negotiations, agriculture is very important to both Korea and Vietnam. For Vietnam, it represents the main source of employment, accounting for nearly 60 percent of total employment. In addition to employment, agriculture also plays a key role in Vietnam's economic growth profiles. At the same time, agriculture exports account for a sizeable proportion of export revenues in Vietnam. For Korea, agriculture has been the most sluggish sector of the economy. Korea, therefore, prohibited unrestricted beef and rice imports and severely limited many other agricultural imports. These reasons explain the importance of the agricultural sector in the two countries in the context of the Vietnam-Korea FTA. Improving the current conditions of the international markets in agricultural products and giving more attention to their concerns could lead to better integration of the two economies and promote economic growth and cooperation.

The aim of this section is to precisely assess the potential impact of the VKFTA on both countries' agriculture sectors. A comparison of the quantitative economic impacts among ASEAN members versus Korea is also assessed because Vietnam, Korea, and ASEAN countries have been currently implementing their commitments via the Korea-ASEAN FTA. For this purpose, data on regions have been categorized into 8 sub-regions; Korea, Vietnam, Singapore, Thailand, Malaysia, Indonesia, Philippines, and the Rest of World, and all sectors have been aggregated into detailed agricultural subsectors, manufactures, and services. Due to the progress of the AKFTA implementation, we consider a scenario in which tariffs on the agricultural imports of Korea and other ASEAN members are reduced by 80 percent, while other sectors receive full liberalization. For Vietnam and Korea, all tariffs are reduced to zero between the two countries.

Vietnam's tariff rates are in general lower than the tariff rates of ASEAN

countries (Table 10). Vietnam's highest rates can be found in vegetables, animal, and meat products. Especially, Vietnam has zero percent duty rates for rice and dairy products. Such tariff data suggests that both Vietnam and Korea will experience significant reductions in agricultural protection following the conclusion of the FTA between Vietnam and Korea. It also appears that there will be an asymmetrical market opening in manufacturing sectors, with Korean manufacturers benefiting from a greater increase in access than Vietnam's manufacturers. The duty reductions in the manufacturing industries could serve as a double-edged sword for Vietnam's manufacturers, who would benefit on the one hand from cheaper input costs, but potentially lose on the other hand due to increased competition from Korea.

Table 10. Korea's Average Tariffs on Imports from ASEAN

(Unit: percent)

Sector	VNM	THA	MYS	PHL	IND	SGP
Fisheries	19.9	19.5	21	22.3	19.4	12.1
Animal products	11.7	6.94	15.6	4.42	6.16	5.14
Grains	3.22	3.81	623	2.41	3.37	0
Rice	0	450	0	0	0	0
Meats	29.8	23	0	57.8	6.55	20.9
Vegetables	688	14	71.6	30.4	592	56
Other crops	3.38	12.6	11.2	17.3	8.67	51.1
Dairy	0	42.1	57.4	0	59.7	107
Food	16.8	35.7	14.9	26.8	11.2	38.3
Forestry	4.01	4.42	1.4	4.54	2.55	2.45
Manufactures	6.73	4.19	2.83	1.49	3.39	1.85

Note: Country code: VNM-Vietnam, THA-Thailand, MYS-Malaysia, PHL-Philippines, IDN-Indonesia, and SGP-Singapore

Source: GTAP V.7 database

1. Impact on Welfare and Growth

Figure 3 shows the welfare gain for Vietnam and ASEAN-5 countries. Overall, Vietnam's welfare gain is substantially greater than the welfare gain predicted for the ASEAN-5. The largest source of gain in Vietnam's welfare comes from better allocation of resources consequent to trade liberalization, whereas the main

source of welfare gain for ASEAN come from TOT (Thailand, Philippines, and Indonesia). Malaysia, the Philippines, and Singapore also gain from saving and investment efficiency. This means that the Vietnamese economy is likely to be inefficient in terms of resource allocation compared with ASEAN-5. In addition, Vietnam's welfare gain from TOT and IS accounts for a relatively smaller share of total gain than that of ASEAN-5. Thus, it can be said that Vietnam might not be able to compete with ASEAN-5 in accessing the Korean market in the context of the AKFTA.

Regarding economic growth rates, Vietnam achieves the largest growth rate among ASEAN countries (Figure 4). Vietnam's real and nominal GDP will increase by 0.73 and 1.07 percent as a result of simulation, respectively. Note that the simulations include the loss of revenues given the tariff fall. Vietnam's GDP growth comes mainly from the improvement of resource allocation. In the case of the ASEAN-5, Thailand has a similar pattern of growth rate to Vietnam. The rest of the ASEAN-5 have their aggregated GDP slightly increased, or even decreased as a result of liberalization.

Figure 3.Changes in Welfare: Vietnam and ASEAN-5

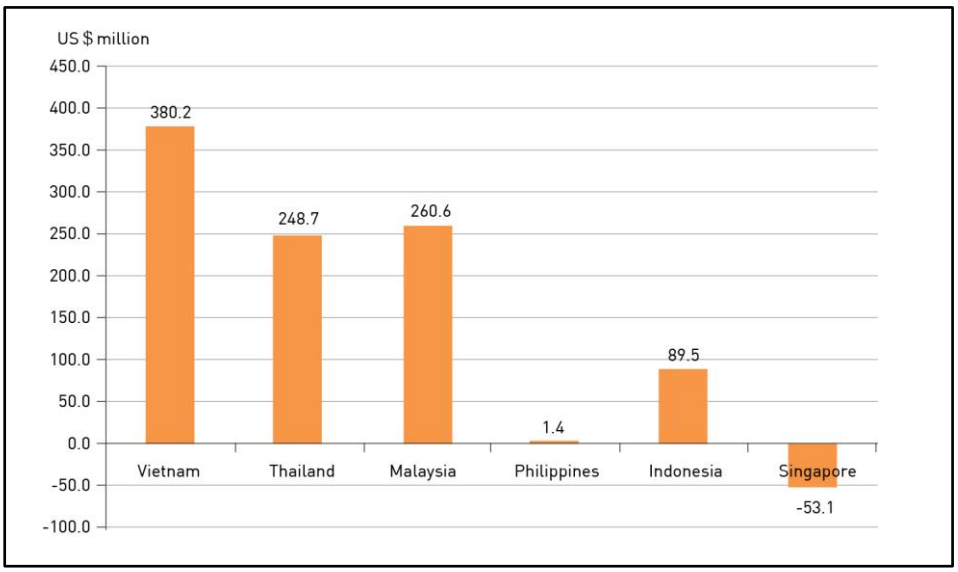
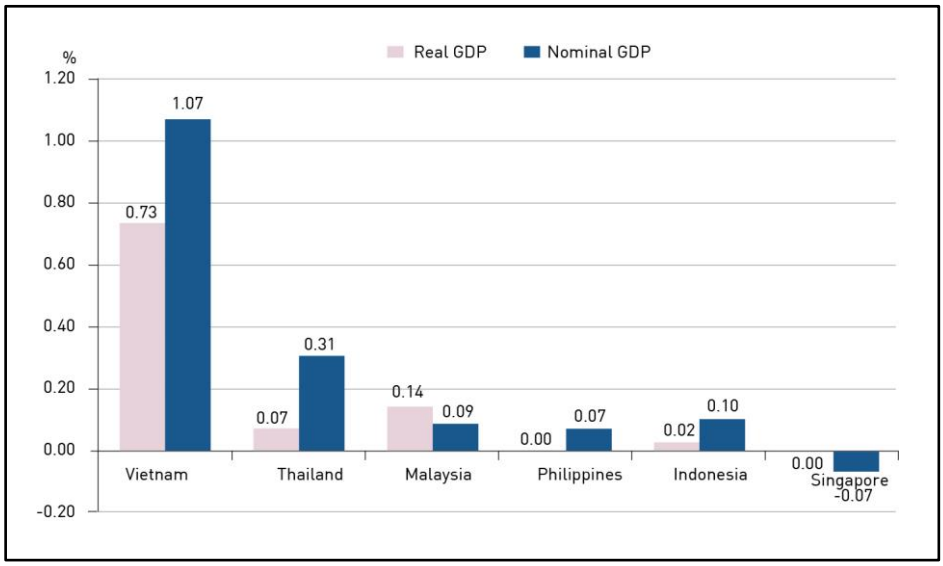


Figure 4.Changes in GDP Growth



2. Impact on Trade

As a result of the proposed liberalization scenario, there is significant interest in Vietnam regarding the potential shifting of exports from Vietnam to other ASEAN countries, particularly Thailand. Table 11 reports the change in ASEAN's exports to Korea by sector. The data demonstrates that Vietnam's exports to Korea increase significantly in food, vegetables, and fisheries. However, these sectors also show export increases in other countries. For example, fisheries exports from Thailand and the Philippines increase by US$ 3.6 million and US$ 9.1 million, respectively, compared with Vietnam's US$ 3.7 million. As for the food industry, exports from Thailand are the largest in terms of volume, and other ASEAN-5 countries also display a considerable increase in this sector. Vietnam is the world's second largest exporter of rice; however rice exports to Korea show a decline as result of trade liberalization. Thailand, instead, will gain from this product category.

Table 11. Changes in Bilateral Exports to Korea

(Unit: US$ million)

Sector	VNM	THA	MYS	PHL	IND	SGP
Fisheries	3.7	3.6	0.4	9.1	0.9	0.1
Animal Products	0.5	0.1	0.5	0.0	0.3	0.1
Grain	0.6	7.4	1.5	0.0	0.1	0.0
Rice	-0.4	116.9	-0.4	-0.2	-0.6	0.0
Meat	0.6	30.8	0.0	0.8	0.3	0.7
Vegetables	55.8	-1.2	0.4	15.1	12.8	0.0
Other Crops	3.2	2.0	3.0	0.4	3.6	2.4
Dairy	0.0	0.0	0.1	0.0	1.4	4.0
Food	80.0	158.0	7.4	25.0	16.6	17.9
Forestry	0.6	0.1	0.8	0.0	0.1	0.0
Manufactures	215.0	484.0	686.0	195.0	885.0	557.0
Services	-0.6	1.0	2.0	0.7	0.9	15.0
Total	360.0	803.0	702.0	246.0	922.0	596.0

V. CONCLUSION AND POLICY IMPLICATIONS

Korea is a very attractive integration partner for Vietnam, compared to other countries, thanks to its market size, bilateral trade and investment pattern, and the stability of its macroeconomic environment. It has been one of Vietnam's largest trading partners and principal source of imports and foreign investment for the last two decades. In an ex ante analysis, this study identifies several benefits and a few possible drawbacks for Vietnam's economy as a result of the FTA between Vietnam and Korea.

The GTAP simulation results show that the Vietnam-Korea FTA is expected to boost Vietnam and Korea's economic welfare gains in both liberalization scenarios. The largest economic welfare gains are from allocative efficiency, which account for over 70 percent of total welfare changes. For Vietnam, terms of trade are not the source of economic welfare gains. The most important gains would however accrue from better allocation of resources consequent to trade liberalization. Given the gains in economic welfare described above, one would expect the GDP gains for Korea to be higher, but this is not the case. As predicted by GTAP, in the long run, Vietnam's GDP will expand by 1.63 percent. This might be due to economic effects from investment inflow and enhanced technical cooperation, as

well as an improved allocation of Vietnam's resources in the long run. In terms of production output, the VKFTA produces mixed effects on different sectors in Vietnam. In the case of specific sectors, the textile industry expands by a substantial degree when Vietnam and Korea sign the FTA. The impact of the VKFTA on trade shows that Vietnam's export gains are concentrated on agriculture, fisheries, and textiles. Trade liberalization also reduces the level of unemployment in the member regions. It appears that the proposed FTA will raise wages in the short and long run, but that unskilled workers will benefit more than skilled workers in the long run. This study yielded comparable and similar results compared with the few studies dealing with the impact of the VKFTA.

Based on the analysis results, the implications for Vietnam's policy are as follows.

Free trade agreements are important for economic development. Trade liberalization helps create bigger, more efficient, attractive and dynamic markets, thereby benefiting the economy at large. However, FTAs between countries with different levels of economic development, such as Vietnam and Korea, may damage the lesser developed country, which would be, in this case, Vietnam. Therefore, the challenge for Vietnam is to find the right balance between liberalization and development, and the right time to open up the market. Basically, the VKFTA must ensure the principles of reciprocity and mutual benefits for both sides. A developing country like Vietnam will not be able to implement broad liberalization. On the other hand, market access gains for Vietnam may be limited if Korea's agricultural subsidies are not reduced; restrictive rules of origin, technical barriers to trade (TBTs) such as quality standards and supply-side constraints also limit the possible gains from improved access to the Korean market.

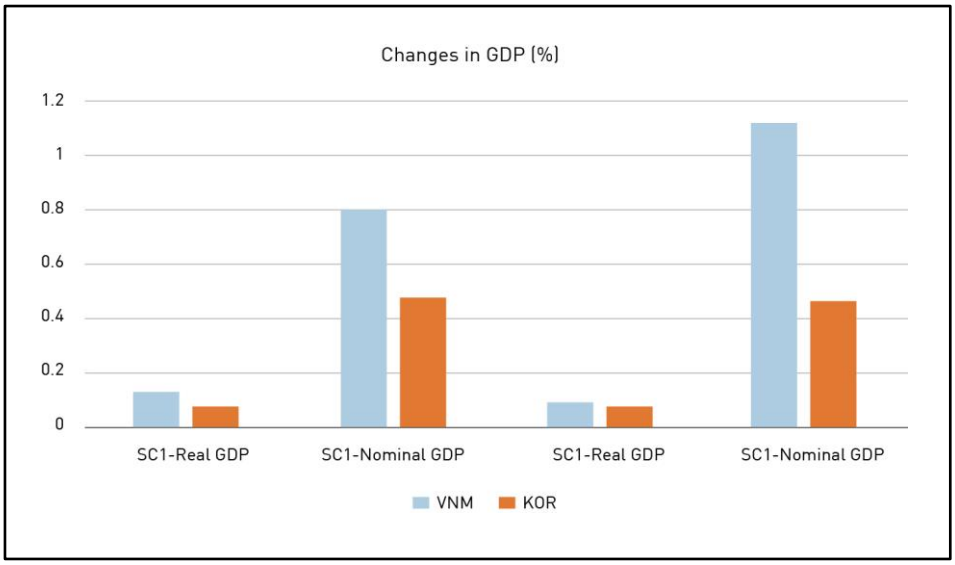
Another important goal of Vietnam's trade policy is to raise the value-added of its natural resource exports, through which it could enter various niche markets. If Vietnam seeks to expand exports of agricultural and processed food products, it should offer the reduction of tariffs for processed foods in exchange of a reduction of tariffs on agriculture and processed foods from Korea. Vietnam should move toward exporting processed natural resources that require the use of high-level technology, in order to be less dependent on the fluctuating prices of natural resources, so as to benefit from positive externalities, and enhance growth rates in the long run.

Korea's tariff escalation within an FTA does not impede exports of all types of processed goods, but certainly affects some export products in which Vietnam holds a natural comparative advantage. Given that products on Korea's sensitive list are major exporting items for Vietnam, thus making tariff elimination negligible, Vietnam should provide incentives to encourage Korean investments in these industries. The Vietnamese government might consider launching a campaign raising awareness among Korean investors that Vietnam could be an investment "hub" to distribute products in a number of countries, enjoying the preferential treatment Vietnam products benefit from when exported to other FTAs members.

In the context of the VKFTA, it is likely to be more difficult for Vietnam to compete in the Korean market with other ASEAN countries that have relatively higher competitiveness in key industries. The analysis results show that the sectors substantially increasing exports to Korea under the VKFTA compared to the rest of ASEAN are worth noting. For example, while agricultural exports to Korea are likely to rise significantly in the long run, those from ASEAN are also expected to increase; the same trend applies to fishery, processed food, and other manufacturing products such as textiles and apparels, leather, electronics and transport equipment. Thus, an earlier conclusion of a comprehensive FTA with Korea would be a good strategy for Vietnam to avoid direct competition with ASEAN members in the future.

The limitations of this research may include the following aspects. First, although this study has examined numerous aspects of potential impacts of the Vietnam-Korea FTA by applying CGE methods, the results are limited mainly due to the characteristics of applied models and data. Second, although the scale and complexity of the CGE modeling system require that the selection of functional forms and closure rules are transparent, simple and straightforward as a whole, there is no proper facility to substantiate that they are appropriately chosen for specific types of economies. Finally, present research does not include the possible economic effects from other forms of economic cooperation beyond trade issues. Therefore, it is worth incorporating these dynamic impacts in future studies.

APPENDIX 1. Effects on GDP Growth



Source: Tthis figure was gratefully provided by an anonymous referee using the GTAP version 8.1.

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