

MULTIDIMENSIONAL IMPACTS OF JOINING TRANS-PACIFIC PARTNERSHIP: FAVOURABLE AND ADVERSE EFFECTS ON VIETNAMESE ECONOMY

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Summary

Although the U.S. has withdrawn from the Trans-Pacific Partnership (TPP) agreement, Japan and other members are currently encouraging to figure out the solution to continue TPP. The prospect of a TPP without the U.S. is still bright, and Vietnam needs to determine both positive and negative effects to be ready in case TPP gets into force. This paper evaluates the impacts of that agreement on the Vietnamese economy through the changes in tariffs. The results of Computable General Equilibrium (CGE) model imply that TPP will have favourable effects on improving households' income and welfare, encouraging domestic production and firms' revenue. At the same time, TPP has adverse impacts that increase the government deficit and decrease the national account; especially, those situations will be worse when firms have poor competitiveness. Moreover, TPP's impact on the oil and gas sector will lean toward the negative side due to the weak competitiveness of local producers. Thus, firms and the government must work harder, especially in the oil and gas sector, to improve the competitiveness and to sustainably protect domestic production.

Key words: Trans-Pacific Partnership (TPP), Computable General Equilibrium (CGE), Vietnam Input-Output, tariff, import policy.

1. Introduction

Economists believe that joining Free Trade Agreements (FTAs), such as the Trans-Pacific Partnership (TPP), is the opportunities for Vietnam to improve its economic situation, especially in living standards, production outputs, exports, etc. This paper adopts the Computable General Equilibrium (CGE) model developed by Kato [1], with the latest Input-Output table of Vietnam to verify the impacts of participation in TPP on all agents in the economy of this country.

Since 1900s, Free Trade Agreements (FTAs) have become continuously widespread over the world. The cumulative number of FTAs notified has increased by approximately 49 times from 13 (in 1990) to 635 (in 2016) [2]. Of these, the number of FTAs in effect in Asia is 225 in 2016, accounting for 53% of the total number in the world [3]. Although applying FTAs relatively late, Asia is currently at the forefront of global FTA activity [4]. FTAs have become important trade instruments to enhance the key role of this region in global commerce [5].

Adapting to the growing tendency of regionalism in Asia's economy, Vietnam has already signed 11 FTAs¹ and has been negotiating for 5 other FTAs². Thus, Vietnam has become one of the most dynamic emerging economies in term of numbers of FTAs that this country is participating in. According to statistics, the GDP of Vietnam has increased 1.8 times from USD 85 billion in 2005 to USD 146.27 billion in 2016, when trade balance has been changed from deficit to surplus [6, 7]. Foreign investment in the same period also increased dramatically about 7.6 times from USD 1.92 billion to USD 14.68 billion [8]. The signed FTAs are believed as the motivators to keep Vietnamese economy to grow rapidly and stably. Most of existing studies, include Nguyen et al. [9], support the view that a specific FTA has positive impacts on the Vietnamese economy.

As its final agreement was signed in February 2016, the Trans-Pacific Partnership (TPP) is the latest FTA that Vietnam has joined. With the withdrawal of the U.S., TPP currently has eleven members, including large markets such as Japan, Australia, Canada and New Zealand, and at least 6 potential members, including South Korea and Taiwan,

¹11 signed FTAs: (1) ASEAN Free Trade Area; (2) ASEAN - Australia and New Zealand Free Trade Agreement; (3) ASEAN - India Comprehensive Economic Co-operation Agreement; (4) ASEAN - Japan Comprehensive Economic Partnership (5) ASEAN - People's Republic of China Comprehensive Economic Co-operation Agreement; (6) ASEAN-[Republic of] Korea Comprehensive Economic Co-operation Agreement; (7) Chile - Vietnam Free Trade Agreement; (8) Japan - Vietnam Economic Partnership Agreement; (9) Vietnam - Eurasian Economic Union Free Trade Agreement; (10) [Republic of] Korea - Vietnam Free Trade Agreement; (11) Trans-Pacific Partnership (TPP)

² (1) ASEAN - Hong Kong, China Free Trade Agreement; (2) Regional Comprehensive Economic Partnership; (3) Vietnam - European Free Trade Association Free Trade Agreement; (4) Vietnam-European Union Free Trade Agreement; (5) Vietnam - Israel Free Trade Agreement

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etc. This FTA has many provisions to minimise tariff barriers and export-import procedures, therefore it will come with many opportunities as well as many risks for members. Most existing and potential members of TPP are major customers of Vietnam's import - export activities, thus, TPP is expected to have noticeable impacts on the country's current macroeconomic indexes. In TPP provisions, there are two agreements that may lead to visible fluctuations in the Vietnamese economy, that include: (1) the elimination of agricultural import tariffs; and (2) the cutting down of most industrial import tariffs. This paper will, therefore, focus on analysing that circumstance.

The structure of this paper can be described as follows: Section 2 will review the literature related to the CGE model and evaluations of FTAs' impacts on an economy. Section 3 will discuss the data and methodology employed in this paper. Section 4 will show the effectiveness of the CGE model in simulating the Vietnamese economy and the main results from simulations corresponding to scenarios. Section 5 will conclude the main findings of this paper.

2. Literature review

With the advantage of being able to use actual economic data to analyse the reaction of the economy to changes in policy, in technology or inside economic sectors and agents, the CGE model has been widely used in macroeconomics researches. Since 1970s, numerous articles using the CGE model have been published, many among which simulate the movement of particular economy sector when tax policies or tariffs are changed. Nguyen et al. [10] used the CGE model to evaluate tax reform in Vietnam and the results indicated that there were many benefits from tax reform. The CGE model and micro-simulation in Kompas et al. [11] showed that the policy restricting rice exports of the Vietnamese Government has led the total savings and total income of the rural area to fall down. Mohiuddin and Kato [12] pointed out that subsidy in import tariff of the Japanese fishery industry could have positive impacts on both of the domestic consumers and producers, meanwhile income of that industry would increase by trade liberalisation.

More extensively, researches have taken into account the reaction of the entire economy when tariffs are changed due to a country's participating in FTAs. To [13] investigated the impacts of regional integration in East Asia on the welfare and sectorial output in Vietnam. This study found out that welfare increased thanks to rice exports

and output of the manufacture sectors. Nguyen and Ezaki [14] also surveyed the regional economic integration of Vietnam and concluded that there is a positive effect on the economic development and industrialisation due to higher foreign investment. Related to Trans-Pacific Partnership (TPP) participation, the most recent research of Cororaton and Orden [15] shows that if Philippine participate in TPP, the capital inflows, welfare, as well as the production sector benefit will increase.

There are still few studies on impacts of TPP on its member once this FTA gets into force. Therefore, this paper, which uses the CGE model to analyse the impacts of TPP on the Vietnamese economy, can have a significant contribution to the literature of macroeconomics researches on FTAs. In addition, this paper assists the Vietnamese government to have an outlook on the multidimensional impacts of TPP in order to prepare for the whole economy.

3. Data and methodology

As discussed in the previous parts, this paper employs the CGE model to evaluate the impacts of joining TPP on the Vietnamese economy, based on the FORTRAN programme developed by Kato [1]. To simulate the movements of the economy, we use the latest Input-Output table of Vietnam published by the Vietnam General Statistics Office and the International Finance Statistics data from IMF.

3.1. Data

The Input-Output table of Vietnam with 138 intermediate goods is re-structured into three main sectors, which are (1) agricultural, (2) industrial and (3) commercial-services. In addition, the International Finance Statistics data from IMF is used to collect data of government savings and other finance indicators. All the above data are gathered into the Social Accounting Matrix (SAM) table. The SAM table of Vietnam is shown in Table 1.

3.2. Methodology

The CGE Model in this research applies the conventional static model. In assumption, the Vietnamese economy has 3 main sectors (i.e. agricultural, industrial and commercial-services) and 4 agents (including firms, consumers, governments and foreigner investors). Firms are assumed to maximise their profit, meanwhile consumers are assumed to maximise their utility over three sectors' products, and the government is assumed to

Table 1. Social Accounting Matrix table

Unit: Billion Vietnam dong

	Agricultural	Industrial	Commercial & service	Capital	Labour	Production tax	Tariff	Final cons (Household)	Final cons (Government)	Final cons (Investment)	Foreign sector	Total
Agricultural	69,315	133,331	12,462					50,488	0	46,603	55,641	367,839
Industrial	110,172	756,749	302,583					422,836	0	141,654	648,877	2,382,871
Commercial & service	26,787	150,942	204,533					346,160	79,106	298,747	63,120	1,169,395
Capital	12,957	209,196	174,143									396,296
Labour	119,614	117,639	318,823									556,076
Production tax	1,729	58,389	81,752									141,870
Tariff	687	31,314	6									32,007
Final cons (Household)				396,296	556,076							952,372
Final cons (Government)						141,870	32,007	80,926				254,803
Final cons (Investment)								51,963	175,697		259,345	487,005
Foreign sector	26,578	925,312	75,093									1,026,982
Total	367,839	2,382,871	1,169,395	396,296	556,076	141,870	32,007	952,372	254,803	487,005	1,026,982	

balance budget constraint by determining tax and tariff. Furthermore, we assume the economy is competitive and that all prices will be determined by equilibrium conditions.

3.2.1. Household

Households are assumed to be homogenous, and their utility is given by Cobb-Douglass function as follow:

$$U(X_1, X_2, X_3) = \prod_{i=1}^3 X_i^{\alpha_i}$$

Where X_i is households' consumption of the goods of sector i ; α_i is parameter which can be calculated from the SAM table with assumption that $\sum_{i=1}^3 \alpha_i = 1$.

The optimal behaviour of households is to maximise their utility, subject to the budget constraint that is given by:

$$\sum_{i=1}^3 p_i X_i = I(1 - \tau^l) - S^l$$

Where p_i is price of goods in sector i ; τ^l is income tax rate and S^l is amount of households savings that is determined based on constant saving rate s^l , such that: $S^l = s^l I(1 - \tau^l)$ (where saving rate s^l can be calculated from the SAM table); I is income of households that is interpreted by the following formula:

$$I = \sum_{i=1}^3 r_i K_i + \sum_{i=1}^3 w_i L_i$$

Where K_i , L_i , r_i , w_i are endowment of capital, endowment of labour, rental cost and wage rate of sector i , respectively. Values of $r_i K_i$, $w_i L_i$ can be obtained from the SAM table.

The first order conditions yield the demand function as follows:

$$X_i = \frac{\alpha_i I(1 - \tau^l)(1 - s^l)}{p_i}$$

$$\Rightarrow \alpha_i = \frac{p_i X_i}{I(1 - \tau^l)(1 - s^l)} = \frac{p_i X_i}{(\sum_{i=1}^3 r_i K_i + \sum_{i=1}^3 w_i L_i)(1 - \tau^l)(1 - s^l)}$$

$(i = 1, 2, 3)$

The estimated values of α_i are displayed in Table 2.

3.2.2. Firms

Each firm is assumed to participate in four steps, in which the firm has to decide its production process on several inputs and outputs to maximise its profit based on clear market conditions. The details of steps are described as follows:

Step 1: Produce composite goods

In this step, we assume firms using labour, L_i , and capital, K_i , to produce composite goods, Y_i , following the Cobb-Douglass production function:

$$Y_i = K_i^{\beta_{K,i}} L_i^{\beta_{L,i}}, \quad i = 1, 2, 3$$

Where $\beta_{K,i}$, $\beta_{L,i}$ are parameters of capital and labour, satisfying the assumption that $\beta_{K,i} + \beta_{L,i} = 1$.

The optimal behaviour of firms subject to the above production function to maximise their profit, π_i , that is given by:

$$\pi_i = p_i^Y Y_i - r_i K_i - w_i L_i, \quad i = 1, 2, 3$$

Where p_i^Y is price of composite goods produced by firm i .

The first order conditions yield:

$$K_i = \frac{\beta_{K,i}}{r_i} p_i^Y Y_i \Rightarrow \beta_{K,i} = \frac{r_i K_i}{p_i^Y Y_i}$$

$$L_i = \frac{\beta_{L,i}}{w_i} p_i^Y Y_i \Rightarrow \beta_{L,i} = \frac{w_i L_i}{p_i^Y Y_i}$$

$(i = 1, 2, 3)$

$\beta_{K,i}$, $\beta_{L,i}$ can be calculated from the SAM table and the estimated values are shown in Table 2.

Step 2: Produce domestic goods

In the second step, firms adopt their own composite goods, Y_i , as well as intermediate goods from other firms to produce domestic goods, Z_i with technology such that:

Table 2. Parameter values

	α_i	$\beta_{K,i}$	$\beta_{L,i}$	$\alpha x_{i,j}$ (j=1)	$\alpha x_{i,j}$ (j=2)	$\alpha x_{i,j}$ (j=3)	αy_i	κ_i^e	κ_i^d	γ_i^m	γ_i^d
Agricultural	0.06161	0.09774	0.90226	0.20456	0.09747	0.01231	0.39124	0.16337	0.83663	0.08733	0.91267
Industrial	0.51598	0.64007	0.35993	0.32514	0.55324	0.29883	0.23894	0.45495	0.54505	0.55169	0.44831
Commercial and service	0.42241	0.35326	0.64674	0.07905	0.11035	0.20200	0.48686	0.05768	0.94232	0.06788	0.93212

$$Z_i = \min \left(\frac{X_{i,j}}{ax_{i,j}}, \frac{Y_i}{ay_i} \right), \quad i = 1, 2, 3$$

Where $X_{i,j}$ is intermediate goods produced by firm j ; $ax_{i,j}$, ay_i are the amount of intermediate goods and composite goods to produce 1 unit of domestic goods, and they can be calculated from the SAM table and displayed in Table 2.

It is assumed that firms try to maximise their profit that is given by:

$$\pi_i = p_i^Z Z_i - \left(p_i^Y Y_i + \sum_{j=1}^3 p_j^X X_{i,j} \right), \quad i = 1, 2, 3$$

Where p_i^Z is price of domestic goods. With the assumption that the market is fully competitive, the zero-profit condition will be satisfied. It means that $p_i^Z Z_i = p_i^Y Y_i + \sum_{j=1}^3 p_j^X X_{i,j}$ (where p_j^X is the price of intermediate goods).

Step 3: Decompose domestic goods into exported goods and final domestic goods

Firms, in this step, will decompose their domestic goods, Z_i , into exported goods, E_i , and final domestic goods, D_i , in order to maximise the profit. That behaviour can be described such that:

$$\begin{aligned} \max \pi_i &= p_i^e E_i + p_i^d D_i - (1 + \tau_i^p - \tau_i^s) p_i^Z Z_i \\ \text{s. t. } Z_i &= E_i^{\kappa_i^e} D_i^{\kappa_i^d} \\ &(i = 1, 2, 3) \end{aligned}$$

Where p_i^e , p_i^d are respectively price of exported goods and final domestic goods; τ_i^p , τ_i^s are production tax rate and subsidy rate, respectively; κ_i^e , κ_i^d are parameters satisfying homogeneity condition $\kappa_i^e + \kappa_i^d = 1$. Note that, p_i^e , p_i^d are measured by domestic currency and $p_i^e E_i$, $p_i^d D_i$, $\tau_i^p p_i^Z Z_i$, $\tau_i^s p_i^Z Z_i$ can be obtained in the SAM table.

The first order conditions yield:

$$\begin{aligned} E_i &= \frac{\kappa_i^e (1 + \tau_i^p - \tau_i^s) p_i^Z Z_i}{p_i^e} \Rightarrow \kappa_i^e = \frac{1}{(1 + \tau_i^p - \tau_i^s)} \frac{p_i^e E_i}{p_i^Z Z_i} \\ D_i &= \frac{\kappa_i^d (1 + \tau_i^p - \tau_i^s) p_i^Z Z_i}{p_i^d} \Rightarrow \kappa_i^d = \frac{p_i^d D_i}{(1 + \tau_i^p - \tau_i^s) p_i^Z Z_i} \\ &(i = 1, 2, 3) \end{aligned}$$

The estimated values of κ_i^e , κ_i^d are shown in Table 2.

Step 4: Produce final consumption goods

In the last step, it is assumed that firms will produce final consumption goods, Q_i , by using final domestic

goods given in the 3rd step and imported goods, M_i . The production technology follows the Cobb-Douglas function:

$$Q_i = M_i^{\gamma_i^m} D_i^{\gamma_i^d}, \quad i = 1, 2, 3$$

Where parameters γ_i^m , γ_i^d are assumed to satisfy condition $\gamma_i^m + \gamma_i^d = 1$.

The optimal behaviour of firms, as usual, is to maximise the profit that is given by:

$$\pi_i = p_i^q Q_i - p_i^d D_i - (1 + \tau_i^m) p_i^m M_i, \quad i = 1, 2, 3$$

Where p_i^q , p_i^m , τ_i^m are price of final consumption goods, price of imported goods and import tariff rate, respectively. Note that $p_i^q Q_i$, $p_i^d D_i$, $\tau_i^m p_i^m M_i$, $p_i^m M_i$ can be obtained in the SAM table.

The first order conditions yield:

$$\begin{aligned} M_i &= \frac{\gamma_i^m p_i^q Q_i}{(1 + \tau_i^m) p_i^m} \Rightarrow \gamma_i^m = \frac{(1 + \tau_i^m) p_i^m M_i}{p_i^q Q_i} \\ D_i &= \frac{\gamma_i^d p_i^q Q_i}{p_i^d} \Rightarrow \gamma_i^d = \frac{p_i^d D_i}{p_i^q Q_i} \\ &(i = 1, 2, 3) \end{aligned}$$

The estimated values of γ_i^m , γ_i^d are shown in Table 2.

3.2.3. Government

The government is assumed to determine tax and tariff to balance the budget constraint such that:

$$\sum_{i=1}^3 p_i^q X_i^G + S^G + Sub = T^l + T^p + T^m$$

Where $\sum_{i=1}^3 p_i^q X_i^G$, Sub are total government consumption of final consumption goods and total subsidies, respectively; S^G is total government savings determined by saving rate s^G , which has been calculated by the SAM table, in formula: $S^G = s^G (T^l + T^p + T^m)$; T^l , T^p , T^m are respectively total income taxes, production taxes and import tariffs given by:

$$\begin{aligned} T^l &= \tau^l \left(\sum_{i=1}^3 r_i K_i + \sum_{i=1}^3 w_i L_i \right) \\ T^p &= \sum_{i=1}^3 (\tau_i^p p_i^Z Z_i) \\ T^m &= \sum_{i=1}^3 (\tau_i^m p_i^m M_i) \end{aligned}$$

3.2.4. Equilibrium conditions

Market clearing conditions of goods are stated as the equation between total supply and total demand for goods, such that:

$$Q_i = X_i + X_i^G + X_i^S + \sum_{j=1}^3 X_{i,j}, \quad i = 1, 2, 3$$

Where X_i^S is the demand for goods i of investment sector, which satisfies the budget constraint given by:

$$\sum_{i=1}^3 p_i^q X_i^S = S^G + S^I + S^F$$

Where S^I is subtraction of exports from imports, representing savings/investment of foreign sector. S^I can be calculated from the SAM table.

4. Empirical Analysis

4.1. Benchmark and calibration

The benchmark case is the measurement evaluating the effectiveness of the CGE model. Therein, the closer estimated value is to actual data, the more effectiveness the model has. Otherwise, the CGE model needs to be calibrated to become a reliable model to analyse scenarios.

Table 3 shows that the estimated values in the benchmark case are approximate actual data of Vietnam. Therefore, the CGE model in this paper is valuable and can be used to evaluate the movement of Vietnam's market.

4.2. Scenarios

According to the provisions of TPP, participating countries have to eliminate immediately import tariffs on all commodities in the agricultural sector, and have to eliminate or cut down most of the industrial sector's import tariffs. In order to understand the impact of joining TPP on the Vietnamese economy, this paper will verify the effects of eliminating agricultural tariff and reducing industrial tariff separately and simultaneously, through scenarios as given below:

- (1) Scenario 1: Agricultural import tariffs will be eliminated;
- (2) Scenario 2: Industrial import tariffs will reduce to 30% of current value;
- (3) Scenario 3: Agricultural import tariffs will be eliminated and industrial import tariffs will be reduced to 30% of current value.

4.3. Empirical Results

The estimated results in corresponding scenarios which are displayed in Table 4 to Table 7 imply that reduction in tariffs have various effects on the Vietnamese economy. On the one hand, they have positive impacts on consumers and firms such as improving household's income, consumption and welfare; improving firms' revenue and domestic production. On the other hand, they have negative impacts that increase government's

Table 3. Economic values of benchmark model

Unit: Billion Vietnam dong

	Household consumption		Government consumption		Composite goods		Domestic goods		Exported goods		Final domestic goods	
	Model	Actual	Model	Actual	Model	Actual	Model	Actual	Model	Actual	Model	Actual
Agricultural	50,487.6	50,488	0	0	132,570.8	132,571	338,844.5	338,844	55,640.6	55,641	284,933.4	284,933
Industrial	422,835.8	422,836	0	0	326,835.5	326,836	1,367,857.0	1,367,857	648,877.2	648,877	777,368.7	777,369
Commercial and service	346,159.8	346,160	79,106.1	79,106	492,965.9	492,966	1,012,544.7	1,012,545	63,119.7	63,120	1,031,176.5	1,031,176

	Imported goods		Final consumption goods		Labour		Capital	
	Model	Actual	Model	Actual	Model	Actual	Model	Actual
Agricultural	26,578.2	26,578	312,198.7	312,199	119,613.8	119,614	12,957.1	12,957
Industrial	925,311.6	925,312	1,733,994.2	1,733,994	117,639.1	117,639	209,196.5	209,196
Commercial and service	75,092.6	75,093	1,106,275.5	1,106,275	318,823.0	318,823	174,142.9	174,143

	Savings	
	Model	Actual
Households	51,963.1	51,963
Government	175,697.0	175,697
Foreign	259,345.0	259,345

	Tax	
	Model	Actual
Income	80,925.9	80,926
Production	141,869.9	141,870
Tariff	32,007.3	32,007

Table 4. Effects on consumers corresponding to scenarios

Unit: Billion Vietnam dong

	Actual	Scenario 1*		Scenario 2**		Scenario 3***	
		Estimated	% change	Estimated	% change	Estimated	% change
Labour income							
- Agricultural	12,957	12,994	0.282	14,219	9.736	14,263	10.076
- Industrial	209,196	209,775	0.276	229,139	9.533	229,835	9.865
- Commercial & services	174,143	174,602	0.263	189,969	9.088	190,521	9.405
Capital income							
- Agricultural	119,614	119,951	0.282	131,260	9.736	131,666	10.076
- Industrial	117,639	117,964	0.276	128,854	9.533	129,245	9.865
- Commercial & services	318,823	319,663	0.263	347,797	9.088	348,807	9.405
Consumption							
- Agricultural	50,488	50,624	0.271	55,199	9.331	55,363	9.656
- Industrial	422,836	423,980	0.271	462,290	9.331	463,666	9.656
- Commercial & services	346,160	347,096	0.271	378,460	9.331	379,586	9.656
Equivalent Variation		2,248		77,549		80,252	

*Scenario 1: Agricultural tariffs reduce to 0%; **Scenario 2: Industrial tariffs reduce to 30%; ***Scenario 3: Agricultural tariffs reduce to 0% and industrial tariffs reduce to 30%.

Table 5. Effects on firms corresponding to scenarios

Unit: Billion Vietnam dong

	Actual	Scenario 1*		Scenario 2**		Scenario 3***	
		Estimated	% change	Estimated	% change	Estimated	% change
Revenue							
- Agricultural	312,199	313,080	0.282	342,595	9.736	343,655	10.076
- Industrial	1,733,994	1,738,786	0.276	1,899,298	9.533	1,905,060	9.865
- Commercial & services	1,106,275	1,109,190	0.263	1,206,813	9.088	1,210,317	9.405
Domestic Production							
- Agricultural	338,844	339,219	0.110	351,752	3.809	352,202	3.942
- Industrial	1,367,857	1,368,760	0.066	1,399,015	2.278	1,400,101	2.357
- Commercial & services	1,012,545	1,013,843	0.128	1,057,345	4.425	1,058,907	4.579

*Scenario 1: Agricultural tariffs reduce to 0%; **Scenario 2: Industrial tariffs reduce to 30%; ***Scenario 3: Agricultural tariffs reduce to 0% and industrial tariffs reduce to 30%.

Table 6. Effects on government corresponding to scenarios

Unit: Billion Vietnam dong

	Actual	Scenario 1*		Scenario 2**		Scenario 3***	
		Estimated	% change	Estimated	% change	Estimated	% change
Tax Revenue	255	255	-0.093	247	-3.199	246	-3.311
- Income tax	80,926	81,145	0.271	88,477	9.331	88,740	9.656
- Production tax	141,870	142,015	0.102	146,883	3.534	147,058	3.657
- Import tariff	32,007	31,407	-1.876	11,292	-64.721	10,570	-66.977
Government's deficit		236		8,151		8,435	

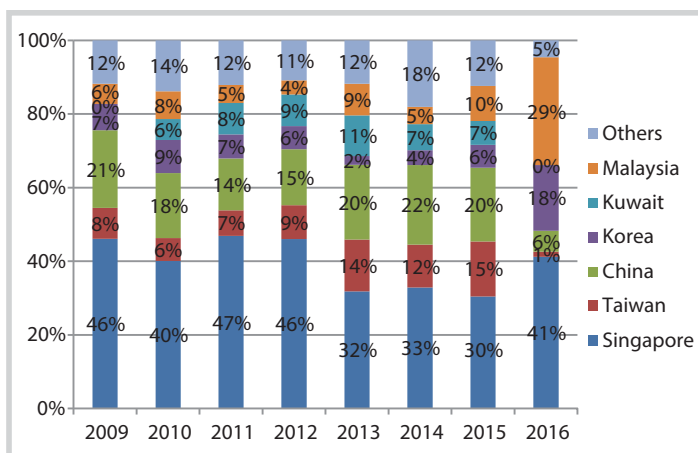
*Scenario 1: Agricultural tariffs reduce to 0%; **Scenario 2: Industrial tariffs reduce to 30%; ***Scenario 3: Agricultural tariffs reduce to 0% and industrial tariffs reduce to 30%.

Table 7. Effects on import - export balance corresponding to scenarios

Unit: Billion Vietnam dong

	Actual	Scenario 1*		Scenario 2**		Scenario 3***	
		Estimated	% change	Estimated	% change	Estimated	% change
Export							
- Agricultural	55,641	55,702	0.110	57,760	3.809	57,834	3.942
- Industrial	648,877	649,306	0.066	663,658	2.278	664,173	2.357
- Commercial & services	63,120	63,201	0.128	65,912	4.425	66,010	4.579
Import							
- Agricultural	26,578	27,342	2.875	29,166	9.736	30,012	12.921
- Industrial	925,312	927,869	0.276	1,037,291	12.102	1,040,438	12.442
- Commercial & services	75,093	75,290	0.263	81,917	9.088	82,155	9.405
Ex-Im Balance	(259,345)	(262,293)	1.137	(361,044)	39.214	(364,588)	40.580

*Scenario 1: Agricultural tariffs reduce to 0%; **Scenario 2: Industrial tariffs reduce to 30%; ***Scenario 3: Agricultural tariffs reduce to 0% and industrial tariffs reduce to 30%.



Source: prepared by author

Figure 1. Proportion of imported petroleum products into Vietnam, by sources

deficit and decrease national account; furthermore, because of the increase in imports, there is a risk for domestic firms if they are not competitive enough.

4.3.1. Household's benefits

Participating in TPP and reducing import tariffs of agricultural and industrial goods bring undeniable benefits for households. Specifically, consumers have chances to increase their income (including labour income and capital income), consumption and welfare³ (Table 4). When tariffs decrease, import prices will decrease and households can consume more imported goods with rate of 0.27%, 9.33% and 9.66% for scenario 1, scenario 2 and scenario 3, respectively. At the same time, firms can increase their production in Step 4 (produce final consumption goods) and the consequence is that households can get more dividend income and wage income. For instance, in scenario 3, labour income in the agricultural sector, industrial sector and commercial-services sector notably increases with rate of 10%, 9.8% and 9.4%, respectively; and, capital income in those sectors also increases with the same level.

In addition, the change of consumption, income and equivalent variations when agricultural tariffs are eliminated (scenario 1) is much smaller than those values in the case of reducing industrial import tariff (scenario 2) or in the case of both tariffs being cut down (scenario 3). For instance, equivalent variation in scenario 1 is only VND 2,248 billion but in scenario 2 and scenario 3 is hugely rocketed to VND 77,549 billion and VND 80,252 billion, respectively. That phenomenon might be explained by the reasons that (1) Vietnam has already cut tariffs for most of agricultural goods as this country has participated in other FTAs; and (2) Vietnam is an agricultural exporter, therefore

its dependence on imported agricultural products is less than that on imported industrial products.

4.3.2. Firms' dilemma

From the firms' point of view, decreasing in tariffs contains both opportunities and risks. In a positive way, firms can increase domestic production as shown in Table 5: domestic production of sectors, which increases with a rate of 0.06 - 0.13% in scenario 1, then 2.3 - 4.4% and 2.4 - 4.6% in scenario 2 and scenario 3, respectively. Firms can also increase their revenue because of higher final consumption production. For example, in scenario 3, the revenue of firms in the agricultural sector, industrial sector and commercial-services sector climbs up by 10%, 9.86% and 9.4%, respectively. Note that the effect of scenario 1 is not as strong as that of scenario 2 and scenario 3 with the same reasons discussed in the previous part.

In a negative way, economists believe that if domestic firms are not competitive enough in comparison with foreign companies, joining FTAs will become a big obstacle for firms as consumers prefer using imported products with higher quality but lower price. The results in Table 7 imply that consumers tend to import more products once tariffs are reduced under the effects of TPP. As a consequence, many domestic firms might be overshadowed by foreigner firms and even eliminated.

4.3.3. Adverse effects on the government

The change in tariffs have no effect on any domestic tax rate (i.e. income tax rate, and production tax rate). However, because of a reduction in import tariffs when Vietnam participates in TPP, the government's income from tariff will be decreased. In Table 6, the government's income from tariffs declines by 1.9%, 64.7% and 67% corresponding to scenario 1, scenario 2 and scenario 3, respectively, (note that the effect of scenario 1 is not as strong as that of scenario 2 and scenario 3 with the same reasons discussed in the previous parts). Even though the government revenue from income tax (imposed on households) and from production tax (imposed on firms) increases as household's income

³ In this research, welfare is reflected by equivalent variation, which is defined as the difference between income before a policy change and minimum expenditure to guarantee the utility level before the policy change, with prices obtained before the policy change

and firms' production are raised, the declining of tariffs still worsens the government's deficit. From scenario 1 to scenario 3, the government's deficit increases noticeably from VND 236 billion to VND 8,435 billion.

As mentioned in the previous parts, domestic firms may face problems if they do not have enough competitiveness. If that case happens, revenue from production tax may fall, making the government's deficit become more serious.

4.3.4. *The complex effects on Import - Export balance*

The impacts of participating in TPP, which can be described through cut-down tariffs, encourage both imports and exports. Depending on which side has more effect, it will determine the aggregate effect on export-import balance.

The estimated results in Table 7 imply that new tariffs for agricultural goods and industrial goods help increase exports of all sectors, but also increase imports several times more than exports. For instance, in scenario 3, the increasing rates of exports for agricultural, industrial and commercial-services sectors are 3.9%, 2.4% and 4.6%, respectively; meanwhile, the rates of imports for the same sectors are 12.9%, 12.4% and 9.4%, respectively. Therefore, Vietnam, which is a net importer, will face a larger deficit of approximately 262, 361 and 365 thousand billion Vietnam dong in import-export balance corresponding to scenario 1, scenario 2 and scenario 3.

In the worst case, if domestic firms might be dominated or eliminated by foreign firms, exports of Vietnam will be less effective, meanwhile imports will be more effective, thus the deficit in import-export balance will be even much more serious.

5. Implications for oil and gas sector

Although the CGE model employed in this paper has just focused on estimating for general sectors (industry and agriculture), its empirical results are also helpful to capture the potential picture of specific sub-sectors, such as oil and gas. More specifically, provisions of the TPP agreement signed by the Vietnamese government regulate the roadmap to gradually eliminate import tariffs for petroleum products. Therein, the tariffs will remain at a rate of 20% in the first 4 years since the signing date, then reduce to 8% and 7% in the next 2 years and 4 years, respectively, before being totally eliminated from the 11th

year. Thus, TPP is expected to have significant impacts on the petroleum market in Vietnam.

From consumers' point of view, the reduction of tariff to zero will lead to lower prices. Therefore, households and other petroleum end-users will get benefits from TPP. In addition, it is necessary to mention that, petroleum products are important inputs for many economic sectors. The cheaper fuel price is, the cheaper products' price will be. Thus, not only consumers can benefit exponentially but also the macroeconomic circumstance can be improved (e.g. low CPI, low inflation, etc.).

From domestic petroleum producers' point of view, there are more complicated implications. The diagram in Figure 1 indicates that import amount of petroleum products from Singapore and Malaysia, which are two participants of TPP, accounts for 70% in 2016. Once TPP gets into force, it is believed that import amounts of petroleum products from countries like Singapore or Malaysia will have more motivation to boom in Vietnam's market. Theoretically, Vietnam domestic producers (e.g. Dung Quat refinery, Nghi Son refinery) can also expand their market by exporting their products to those markets. However, in terms of quality specifications, products of Vietnam's refineries cannot compete with imported products in the local market, needless to compare the competitiveness in the international market. Hence, there are still lots of works for Vietnamese refineries to do to maintain their position in the market, in which pricing strategy seems to be the most appropriate strategy for them in this situation.

The analyses above imply that the effects of TPP on the government and on the import-export balance via petroleum products will lean toward the disadvantage side.

6. Conclusions

This paper comprehensively considered the impacts of participating in TPP on the whole Vietnamese economy. It is undeniable that TPP is a bright opportunity for the Vietnamese economic circumstance. It helps consumers improve their income and have the chance to consume more with lower prices. Furthermore, TPP helps domestic companies increase domestic production and their revenue.

However, there are also many risks for the economy. Deduction in tariff leads to increase in import values

as well as the decrease of import tax revenue (for the Government), thus TPP will worsen government deficit and national accounts. Moreover, it is worried that Vietnamese companies are not strong enough to compete with foreign firms. Once Vietnam joins TPP, domestic firms may be dominated by foreign firms and the situation of deficit may be more serious.

In conclusion, TPP may get into force in the coming time for all members, including Vietnam. Therefore, Vietnam needs to have good preparations to take advantage of the changes brought about by its participation in this FTA. More specifically, the government needs to have policies that encourage firms to improve their technology level as well as quality level and management ability to be ready in a competitive market. Based on the estimation in this paper, it is indicated that the deduction of industrial tariffs will have more effects on the economy than the elimination of agricultural tariffs. Therein, the analyses imply that the impacts of TPP on the oil and gas sector will lean toward the negative side due to the weak competitiveness of local producers. Thus, firms and the government must work harder, especially in the oil and gas sector, to improve the competitiveness and to fairly protect domestic production against import products.

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