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Impact of different factors on Vietnam's trade balance

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International trade activities have contributed significantly to Vietnam's growth and development in recent years. Following the trend of deep integration into the world economy and through the signing and enforcement of the Free Trade Agreement (FTA), opportunities for Vietnam integrates further to enhance its position in the process of international integration, taking advantage of the advantages of economic integration. However, Vietnam has faced an increasing and widening trade deficit year by year. If the trade deficit situation continues to soar and if there is no sign of improvement in the long term, it will become the main cause of macroeconomic instability. Therefore, this study aims to find out the cause and recommends remedial solutions for Vietnam in the coming time to achieve sustainable development results, creating conditions for sustainable economic development in 2020 and the following years.

1. Introduction

The trade balance reflects the difference between exports and income to spend on goods imported by a foreign national in a growth stage determination (usually 1 year) (Saiki, 2005). The trade balance reflects in the Current Account. Current Account includes: Trade Balance, Service balance, Income balance and One-way current balance. The basic characteristic of the current account is to reflect income and revenue streams, meaning that revenues and expenditures reflect the transfer of property rights between residents and non-residents (Elbadawi et al., 2006). Revenues reflect an increase in owned assets, while expenditures reflect a decrease in owned assets (Lohi, 2013). The trade balance is an integral part of the aggregate demand of the economy:

$$AD = C + I + G + NX$$

where:
AD: aggregate demand reflects GDP
C: consumption by individuals in the economy
I: investment of the economy
G: Government spending
NX: net exports

Therefore, a trade deficit or surplus directly affects a country's economic growth. The trade balance reflects a country's total net savings (Elliott & Ikemoto, 2004):

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$$NX = (S-I) + (T-G)$$

where:
S: Savings
I: Investment
T: Tax revenue
G: Goverment spending

Regarding international trade: The deficit is due to economic trade deficit. Especially in the current situation of Vietnam's economy, production capacity is still poor, the competitiveness of export products is limited (Mahmood & Jongwanich, 2018). Considering the macro balance aspect of the economy - the imbalance of savings and investment: deficit due to high investment of the economy and low savings. Also consider the state of trade surplus or deficit also due to other reasons such as: Exchange rate (with other factors constant, the increase in exchange rate reduces the value of goods in foreign currencies thus stimulating export and vice versa); Inflation (another constant factor, if high domestic inflation reduces the competitiveness of that country's goods on the international market thus reducing its export volume); World prices of imports and exports (the world prices of exported goods increase the export volume and vice versa under conditions of other factors unchanged); Foreign tariffs and quotas (with other factors constant, the increase in tariffs and reduction of quotas will reduce the export value of a country). The state of the economy and the effectiveness of macroeconomic policies are partly reflected in the trade balance situation. The surplus of trade balance contributes to promoting economic growth, creating more jobs, increasing the nation's foreign exchange reserves, improving its prestige and position in the international arena. Conversely, if the trade balance deficit in the long term causes macroeconomic instability as well as increasing foreign debt, reducing the competitiveness of the economy and the weakness of operating policies. For these reasons, policymakers have proposed corrective measures to improve the trade balance and to promote its soundness. The problem of Vietnam in recent years is that the economic growth, as well as the improvement in the lives of the people, mainly come from the external capital thanks to the use of the abundant natural resources. However, the increase in income in foreign currencies including foreign direct investment (FDI), foreign aid, plus the impact of increasing natural resource prices is unstable and can have long-term consequences such as reducing competition of prices, adversely affecting processed products and increasing imports. This is a risk that could lead to a future trade deficit for Vietnam.

2. Overview and method research

2.1 Overview

Lich (2005) shows that the level of Vietnam's trade deficit at that stage, forecasts the possible tolerance of the trade balance. Thence, he proposes some solutions to stabilize the trade balance to increase the competitiveness of the economy. This work also stops at the list and analysis is not based on any international trade theory. In the period 1971 - 1993, Debelle and Farugee (1996) applied the error correction model and control panel data for 21 industrial countries and expanded the cross-data set for 34 developing industrial countries. From these results, it is possible to explain the long-term and short-term fluctuations of the Current Account. The authors pointed out that the long-term fluctuations of the trade balance had been influenced by factors such as relative income, demographics, and government debt. But the factors of fiscal surplus, capital control and terms of trade (TOT) had not played an important role. Besides, changes in short-term fiscal policy, exchange rate fluctuations of commerce, the state of the business cycle and the exchange rate had impacts on the Current Account. Calderon et al. (2002) supplemented the research of Debelle and Faruqee (1996) with a comprehensive approach, focusing primarily on underdeveloped countries and used a group of variables to control endogenous issues of explanatory variables and unobserved individual effects of each country involved. In this study, the authors used table data including 44 developing countries during 1966 - 1995. The study shows that the more countries owe, the smaller the stability of the current account deficit. Hasanov and Senhadji (2008) also included REER and TOT in the current account model for Middle-East economies and found that the regressions are only statistically significant for non-oil economies. Accordingly, shocks that increase REER are associated with higher trade and current deficits. Currently, there are many researches on the trade balance in countries, but no studies have analyzed the impact of factors on Vietnam's trade balance (Lịch, 2005; Head & Mayer, 2000). This study will fill the gap in this study.

2.2 Method research

The analytical tool used for this purpose is a gravity model. The initial idea of the model was proposed by Tinbergen (1962) to study the factors affecting bilateral trade flows (exports or imports) between the two countries. This idea quickly attracted the attention of many economists both in the field of building theoretical foundations for the model as well as applying the model in the empirical analysis. With the advantage of high explanatory power and easy-to-access data, the gravity model has so far demonstrated its role as a standard empirical analytical framework widely used in the analysis of the international trade system. Following the original idea of Timbergen (1962), the similarity of Newton's laws of universal gravitation was applied to describe

the bilateral trade attraction between the two countries. Trade flows (exports or imports) between any two countries will be proportional to the size of the two economies and inversely proportional to their geographical distances. Specifically:

$$T_{ij} = \frac{K\, Y_i^{\propto} Y_j^{\beta}}{D_{ij}^{\theta}}$$

where:

K is constant, Tij denotes exported from country i to country j, Ys is the size of the economies of the respective countries and Dij represents Geographical distance between two countries i, j and finally, α, β and θ are some numbers.

In keeping with the research question, this basic gravity model will be adjusted in two steps. The first is to adjust the dependent variable so that the variable representing the quantity under study is the trade balance between the two countries. The second is to add explanatory variables besides basic variables and to represent the model as a logarithm. First, it can be seen that the initial model only refers to bilateral trade flows between the two countries (exports or imports) but does not directly reflect the trade balance between the two countries that need to be studied. However, it is possible to customize the model to bring about a new variable representing the bilateral trade balance. This variable is the ratio of export value of country *i* to country *j* (X_{ij}) and import value of country *i* from country *j* (M_{ij}). When this variable is less than 1, exports of country *i* to country *j* will be smaller than imports of country *i* from country *j*, then country *i* will have a trade deficit. Similarly, when this variable is greater than 1, country *i* will have a trade surplus and when equal to 1, the trade balance of country *i* will be balanced. Specifically:

Exporting from country *i* to country *j*:

$$X_{ij} = \frac{K_1\, Y_i^{\propto_1} Y_j^{\beta_1}}{D_{ij}^{\theta}}$$

Importing from country *i* to country *j*:

$$M_{ij} = \frac{K_2\, Y_i^{\propto_2} Y_j^{\beta_2}}{D_{ij}^{\theta_2}}$$

The variable X_{ij} / M_{ij} represents the trade balance of country *i* for country *j* is expressed as follows:

$$\frac{X_{ij}}{M_{ij}} = \frac{K\, Y_i^{\alpha} Y_j^{\beta}}{D_{ij}^{\theta}}$$

where:

$K = K_1/K_2$, $\alpha = \alpha_1 - \alpha_2$, $\beta = \beta_1 - \beta_2$ and $\theta = \theta_1 - \theta_2$.

It can be seen that the new model still has the form of the original gravity model and now the gravity model can be used to analyze the factors affecting the bilateral trade balance between the two countries. The next step after customizing the model to appear the dependent variable to be studied is to determine the list of explanatory variables of the model. A basic gravity model will consist of four explanatory variables, the GDP and GDP variables per capita of the two countries, the distance variable (D_{ij}) and a dummy variable (borderij) to show the common boundary between the two countries. For the data that can be collected at the same time for policy recommendations, there will be two additional explanatory variables within the scope of this article: exchange rate index between countries and a dummy variable which represents free trade areas between countries. Then the model will have the following logarithm:

$$ln\frac{X_{ij}}{M_{ij}} = \alpha + \beta_1 \ln GDP_i + \beta_2 \ln GDP_j + \beta_3 \ln PGDP_i + \beta_4 \ln PGDP_j + \beta_5 \ln D_{ij} + \beta_6 \ln EXR_{ij} + \beta_7 \text{border}_{ij} + \beta_8 FTA_{ij} + \varepsilon_{ij}$$

where:

Xij/Mij: Trade balance of country i for country j
GDPs: Gross domestic product of the two countries
PGDPs: GDP per capita of the two countries
D: Geographical distance between the two countries
EXR: Exchange rate index between the two countries
Border: The dummy variable has a value of 1 if the two countries share a common border and a value of 0 if they do not share the border
FTA: The dummy variable is 1 if the two countries are in a free trade area or have a bilateral trade treaty and have a value of 0 otherwise.

In the above model, ln (X_{ij} / M_{ij}) represents the trade balance between the two countries, if ln (X_{ij} / M_{ij}) increases, X_{ij} / M_{ij} increases. Then the trade balance will improve. Therefore, if the coefficient *β* of the explanatory variable is positive, the increase of that variable, keeping the other variables constant, will improve the balance of payments of country *i*. For explanatory

variables, except EXR coefficients β of all these variables can be positive or negative, which can affect the balance of payments in opposite directions. The first four variables are standard variables of the basic gravity model, in which GDP and PGDP represent the size of the economy or the production and purchasing power of the two countries while *D* and the border represent trade costs. The impact of these variables on individual imports or exports is quite obvious. The explanatory variables representing the size of the economy have a positive effect (with a positive β coefficient) while the variables representing the trade costs have a negative impact (a negative coefficient) to the dependent variable (Tinbergen). However, since the dependent variable is no longer an individual activity but a combination of both activities (the trade balance), it depends on the correlation between the impact of the explanatory variable on imports and exports. whose coefficients β can be negative or positive. For example, if the increase in Vietnam's GDP increases exports to a level greater than the increase in imports, then the coefficient of Vietnam's GDP variable will be positive, Vietnam's GDP variable will affect. It works in the same direction as the trade balance and vice versa. Similar to the four basic variables, FTA variables can also affect dependent variables in both directions (the coefficient β may be positive or negative) (Ncube et al., 2014). FTA is a dummy variable with a value of 1 when both countries are located in a free trade area or have a bilateral trade treaty and have a value of 0 in the opposite case. Naturally, when the FTA has a value of 1, the trade relations of both countries (both exports and imports) tend to increase compared to the trade relations of those two countries when the FTA is zero. However, if joining a free trade area of both countries has the effect of increasing exports of country *i* faster than country i's import growth from country *j*, this joint accession improves the balance of payments of country *i* for country *j*. The EXR variable is predicted to have a negative impact (coefficient β with negative sign) on the balance of payments of country *i* for country *j*. The EXR variable represents the country currency *i* listed in country currency *j*. Thus, when EXR increases, the currency of country *i* will increase in price, causing the competitiveness of goods of country *i* to decrease in the international market, then the export of country *i* tends to decrease to import tends to upward direction. Combining the two effects will worsen the situation of the balance of payments of country *i* for country *j.* However, it should be noted that, in some special cases, this effect will be in the same direction (the coefficient is positive), that is when the total price elasticity of exports and imports of country *i* is less than 1 (Marshall - Lerner condition) (Johnson & Soenen, 2002).

3. Results

3.1. Data

To estimate the above model, the paper will use panel data. The advantage of using panel tables is the number of observed variables, a study of the differences between cross-units and partly overcome the multi-collinear phenomenon. Besides, table data contains more information than other types of data and allows the study of the dynamics of cross-unit changes over time.

Table 1
List of Vietnam' FTAs

No	FTA	Current Circumstance	Partnership
1	ASEAN Free Trade Area (AFTA)	Signed and In Effect from 1993	ASEAN
2	ASEAN-China Free Trade Area (ACFTA)	Signed and In Effect from 2003	ASEAN, China
3	ASEAN-Korea Free Trade Area (AKFTA)	Signed and In Effect from 2007	ASEAN, Korea
4	ASEAN-Japan Comprehensive Economic Partnership (AJCEP)	Signed and In Effect from 2008	ASEAN, Japan
5	Japan-Viet Nam Economic Partnership Agreement (VJEPA)	Signed and In Effect from 2009	Viet Nam, Japan
6	ASEAN-India Free Trade Agreement (AIFTA)	Signed and In Effect from 2010	ASEAN, India
7	ASEAN-Australia and New Zealand Free Trade Agreement (AANZFTA)	Signed and In Effect from 2010	ASEAN, Australia, New Zealand
8	Chile - Viet Nam Free Trade Agreement (VCFTA)	Signed and In Effect from 2014	Viet Nam, Chile
9	Republic of Korea-Viet Nam Free Trade Agreement (VKFTA)	Signed and In Effect from 2015	Viet Nam, Korea
10	Eurasian Economic Union – Viet Nam Free Trade Agreement (VN – EAEU FTA)	Signed and In Effect from 2016	Viet Nam, Russia, Belarus, Amenia, Kazakhstan, Kyrgyzstan
11	Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)	Signed and In Effect from 14/01/2019	Viet Nam, Canada, Mexico, Peru, Chile, New Zealand, Australia, Japan, Singapore, Brunei, Malaysia
12	ASEAN – Hongkong Free Trade Agreement (AHKFTA)	Signed and In Effect from 11/06/2019	ASEAN, Hongkong (Republic of China)
13	European Union – Viet Nam Free Trade Agreement (EVFTA)	Signed from 30/06/2019 but not yet In Effect	Viet Nam, EU (28 member)
14	Regional Comprehensive Economic Partnership (RCEP)	Negotiations launched from 03/2013	ASEAN, China, Korea, Japan, India, Australia, New Zealand
15	European Free Trade Association – Viet Nam Free Trade Agreement (Viet Nam – EFTA FTA)	Negotiations launched from 05/2012	Viet Nam, EFTA (Switzerland, Norway, Iceland, Liechtenstein)
16	Israel – Viet Nam Free Trade Agreement (Việt Nam – Israel FTA)	Negotiations launched from 12/2015	Viet Nam, Israel

(Source: Vietnam Chamber of Commerce and Industry, 2019)

Data will be collected within 18 key trading partners of Vietnam over 5 years from 2010 to 2015. The above figures have been compiled from various sources. Data on imports and export were compiled from the Ministry of Industry and Trade. GDP data and GDP per capita data are extracted from the World Development Indicator of World Bank. Data on distances and borders of countries are referenced from French Institute for Research on the International Economy (CEPII), in which the distance between the two countries is calculated by the weighted average distance between the two main cities of two country. Particularly, the exchange rate data (EXR) will be processed to convert to the index form with the base year as 2010. The source of exchange rate data will be the official exchange rate of partner countries and Vietnam for US dollars extracted from IFS and WDI. These rates will be converted through cross rates with the US dollar to form the currency of each country / Vietnam Dong. Then, these rates will be returned to the index form with the base year as 2010.

3.2. Model regression results

Table 2
Results of estimating regression models

Variable explained	Constant	Robust SE	Z	P_value
lgdp_Vietnam	-12.58253	9.185845	-1.26	0.226
lgdp_ctrj	-0.42058	0.255244	-1.45	0.146
lpgdp_Vietnam	14.14235	10.097860	1.33	0.163
lpgdp_ctrj	0.38579	0.585263	0.66	0.520
ld	* 2.81267	0.460296	6.07	0.000
lexr_index	**0.20186	0.095566	2.11	0.031
border	2.12560	1.609664	1.32	0.194
fta	* 4.67132	1.124356	3.86	0.000
cons	149.77070	137.0925	1.09	0.256
R-square	Overall	0.67		
	Within	0.12		
	Between	0.84		
N	129			
Hausman	Prob>Chi2	0.83		

*: statistically significant at 5%,**: statistically significant at 10%,
Source: Authors estimate based on collected data.

First of all, we can see that the model given is appropriate. According to the estimated results, the model's R2 value of 0.667 is quite high. Besides, the model has also undergone a Hausman test showing that the model regression with the random effect is effective. According to the estimated results, most of the explanatory variables in the model (GDP, PGDP, border) are not statistically significant. As such, these variables have no impact on Vietnam's bilateral trade balance. One of the hypotheses that can explain this result is that these variables affect Vietnam's exports and imports in the same direction and have the same size of the impact. Meanwhile, there exists a positive relationship and a statistically significant between the gap and Vietnam's trade balance and partners. If the gap increases to 1%, Vietnam's trade balance will increase to 2.81%. The further away countries are, the more Vietnam's trade balance with these countries improves. In this case, the geographical distance has hindered export activities at a lower level than affecting import activities. In Vietnam, there is also a positive relationship between engaging in free trade and improving the bilateral trade balance. Compared to countries not in bilateral agreements with Vietnam or without the free trade area, countries with these relationships have an improved trade balance of 4.67%. Thus, it can also be understood that joining the free trade sector will boost Vietnam's export activities to increase faster than imports from those countries. The estimated results of the exchange rate variable are quite opposite to the prediction of the coefficient sign presented in the methodology section. Estimated coefficients are positive signs and statistical significance. However, based on qualitative analysis, this phenomenon can be explained. The hypothesis explained here is that Vietnam's exports are mainly essential commodities such as agricultural products, etc. with the elasticity of demand at low prices. Thus, when the VND appreciates, the quantity of exported goods will decrease as the price in foreign currencies increases. Therefore, the value of Vietnam's export turnover will still increase. Similarly, for a developing economy like Vietnam, Vietnam's imports will mainly be machinery and equipment for production, which are also inelastic commodities with prices. As the exchange rate increases (the VND appreciates), the number of goods imported into Vietnam will increase as the price of foreign goods imported into Vietnam will decrease. However, the value of import turnover will still decrease because these commodities have inelastic demand in price terms. In combination, we have when the exchange rate increases, Vietnam's export turnover increases while import turnover decreases, and thus, Vietnam's trade balance is improved, consistent with the results. estimates.

After summarizing and analyzing the estimated results, it observed that Vietnam's bilateral trade balance mainly depends on three variables, distance, exchange rate, and trade agreements. All three variables have a statistically significant and positive impact on Vietnam's bilateral trade balance.

4. Recommendations

4.1. Orientation to expand trade relations with countries outside the region

Vietnam's trade balance will be improved if the government has policies to expand trade relations with many countries in the world. Dimensional relationship between the trade balance of Vietnam with a distance of two countries as a basis for making recommendations. This can be observed when Vietnam has a large trade deficit with countries located close to Vietnam such as Thailand, China, etc. while having a trade surplus with countries that are as far geographically as the US. Thus, strengthening trade relations with countries outside the region will improve bilateral trade balances, thereby improving the overall trade balance situation, reducing the level of trade deficit of Vietnam.

4.2. Promote the signing of bilateral trade agreements

The next policy recommendation made for Vietnam is to promote international economic integration, actively participate in free trade areas and conclude bilateral trade agreements. Therefore, the opportunity for Vietnam to improve its trade balance through this policy channel is huge. Therefore, this article will not directly give specific recommendations on exchange rate policy. Instead, the information on the relationship between the trade balance and the exchange rate in the article will provide an additional information channel for the Vietnamese government to refer to in the process of determining a reasonable exchange rate policy.

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