**STUDY ON THE IMPACTS OF SOME MACROECONOMIC FACTORS ON VIETNAMESE BALANCE OF TRADE**

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**Abstract.** In this paper, the Econometric Model is used in analyzing the impact of some macroeconomic factors such as Exchange Rate, Commercial Openness and Foreign Direct Investment on Vietnamese balance of trade during the period between 2005 and 2018. Therefore, some implications are included.

**1. Introduction**

In general, the balance of trade is understood as the measurement of the difference between the value of exports and imports of goods of a country or an economy over a certain period of time, usually a year. .

Another more intuitive way, “The balance of trade, also known as the tangible balance, reflects the difference between revenues from exports and expenditures on imports of goods, which these goods may be observed by usual eyes when traveling across borders”. This concept is designed to better understand the components of the current account balance in the balance of payments, in which, in contrast to the tangible balance as mentioned above, the intangible balance is the balance measures a one-way gap in services, income and current transfers that cannot be observed with the usual eyes.

There are a number of macroeconomic factors affecting the trade balance, including:

***Commercial policies***

Trade policy affects balance of trade through adjustment measures that directly affect goods export and import activities. Balance of trade adjustments are usually done through measures such as export promotion and import management.

Trade policies are that of a country use to discriminate between domestic and foreign manufacturers. It includes the system of laws, regulations, policies and practices of the Government that affect a country's trade. The main instruments of trade policy include: import tariffs, import quotas, export subsidies, content requirements for localization.

In the context of trade deficit, countries often use policies to encourage exports and restrict imports. However, at present, import restriction policy is not an effective solution and to regulate trade union in the long term, countries often use competitive import methods.

***Investment policy***

Policies and measures relating to investment that directly or indirectly affect balance of trade due to investment related to imports and the effectiveness of investment activities related to the competitiveness of imported substitutes and a country's exports.

In the context of international economic integration, when trade barriers have been gradually removed, investment activities have been strengthened while developing countries have yet to meet the demand for raw materials and inputs for production as well as production of advanced and modern machines and equipment for production and business activities. This inevitably leads to the need to import goods to meet domestic production needs.

In addition to the investment factor, the factors of foreign direct investment (FDI), foreign aid and remittances have both direct and indirect effects on trade finance, which can improve or cause negative impacts balance of trade’s deficiency.

Foreign direct investment is an important part of the Capital Balance and the increase in attracting foreign direct investment has the effect of compensating the current account deficit. Especially for developing countries where service export is limited and the sources of transfer are not significant, FDI plays an important role in the sound trade promotion.

If the increase of FDI inflows into the development of manufacturing industries to replace imports and produce exports will increase balance of trade in the long term. However, the increase in FDI entails an increase in imports and may cause a trade deficit if the protection policy is only export-oriented. At the same time, when FDI inflows increase, the supply of foreign currencies in the market increases, domestic demand increases and can lead to an upward trend of local currency prices, thereby limiting exports and encouraging imports. If the Government does not intervene reasonably, it will lead to a deficit of balance of trade and a current account deficit.

The increase in remittance income from foreign countries such as aid, net income from investment projects, remittances all have the effect of offset the trade deficit and improve the tolerance of the current account. Meanwhile, the ineffective use of borrowed funds will worsen the situation of the current account balance and the situation of foreign debt.

In addition, the domestic investment policy also greatly affects the balance of trade through the orientation and efficiency of use of investment capital and the structure of investment capital. For example, inadequate investment in supporting industries has increased the need to import raw materials and fuels for the production of export goods, thereby reducing the competitiveness of export and imported replacement goods due to high cost. This makes it difficult to improve trade standards because to increase exports, it must increase imports.

***Exchange rate policy***

International financial institutions such as the World Bank and the International Monetary Fund often recommend that countries devalue their currencies when they have problems with their balance of payments. These organizations said that the devaluation of the domestic currency would increase the domestic price of imported goods and reduce the price of exported goods abroad. The results of both impacts increase the competitiveness of domestic goods in the international market. The resources will be attracted towards focusing on domestic manufacturing industries that are able to compete with imports and be able to compete on the world market. This leads to an increase in exports and a decrease in imports, thereby improving the country's trade standards.

However, when considering the use of dumping measures to improve balance of trade, it is necessary to consider the following issues:

***Firstly***, the latency in consumer reactions. Consumption behavior of consumers in the country and the world has a certain lag after a country applies the devaluation of the local currency. Domestic consumers need time to switch from consuming domestic goods instead of imported goods because when buying, consumers are not only interested in price but also the quality, brand of the product or may be due to habit. Similarly, consumers in importing countries have not been able to immediately replace consumption habits by buying goods from dumping countries.

***Second***, the delay in the manufacturer's response. Although exports are encouraged after a country has implemented a devaluation of the local currency, domestic producers also need time to expand production or move to other manufacturing industries. .

***Thirdly***, imperfect competition from export and import partners. In response to a country's devaluation measures, foreign exporters can reduce the prices of their exports to devalued countries to avoid losing the market. Meanwhile, importers of dumped countries may also respond by reducing the prices of goods on the domestic market and thus limiting the volume of imports from the dumping country.

***Fourthly***, the devaluation of the local currency may not work to improve the balance of trade in the short term. In the short term, when devaluation of the local currency, the export price of goods in domestic currency is unchanged, the export volume of goods has not changed much, so the export value in domestic currency has not changed much. Meanwhile, the import price of goods in domestic currency has increased, and the import volume of goods has not changed much in the short term, causing the import value of goods converted into domestic currency to increase. And so, in the short term, a country's trade policy may become worse before the country's devaluation measures. In the long term, when export volume is adjusted up and import volume decreases, the devaluation of the domestic currency will only show the effect of improving trade balance. However, the use of the local currency devaluation measure to improve trade union often only works in some countries, mainly in developing countries with a high degree of import dependence.

***Other policies***

In addition to the above-mentioned policies, other policies such as tax policies, fiscal policies, interest rates, foreign debt management, consumption policies, etc. all have direct or indirect effects on trade promotion. In particular, the tax policy has the effect of restricting or encouraging export and import. The interest rate policy has an effect on business investment activities thus affecting import and export activities. Fiscal policy may affect spending. The foreign debt management policy has the effect of regulating the loan flow in the direction of effective use, reasonable allocation and reasonable financing for the trade deficit. In addition, protectionist policies or the weakness of market economy institutions, the non-transparency of economic policies, etc. can cause waste, trade fraud. So the impact is exacerbated by the state of a country's trade finance regime.

To sum up, from the different approaches the variables can affect the trade balance, thereby providing an important theoretical basis for selecting variables for the quantitative model. Those are Commercial openness, Initial scale of net foreign assets, Development of the financial system, Development period and relative income, Exchange rate, Foreign Direct Investment and Capital account control level.

***Commercial openness***

The greater the commercial openness will contribute to expanding the export scale and creating favorable conditions for import activities. Domestic goods have the opportunity to export in larger quantities and to penetrate more easily into the world market while the domestic market also has access to foreign goods, services and technology. This variable, because it can promote exports and imports at the same time, has an unclear impact on the trade balance.

***Initial scale of net foreign assets***

Following the inter-periodic approach, net initial foreign assets may affect the current account (balance of trade). The total current account and zero capital account in a flexible exchange rate mechanism implies that an economy with a larger net foreign asset size can accept the current and trade account deficits in a long period without default. This can lead to an inverse relationship between this variable and the trade balance.

***Development of the financial system***

According to the monetary approach, an excess of money can lead to a trade deficit because the economy will spend more than income and consumption of goods and services from abroad. However, according to the inter-periodic approach, the money-to-GDP ratio can be considered a financial depth, a decisive factor in saving. This is a measure for the development of the financial system, the more developed the financial system can lead to increased savings, a trade balance surplus.

***Development period and relative income***

An inter-periodic approach for a higher level of development, countries will maintain a current account surplus (balance of trade) to pay off accumulated foreign debts, and export capital to other less developed countries. However, according to the multiplier and spending approach, when income is higher, the increase in spending causes the trade balance to deteriorate.

***Exchange rate***

Following the elasticity approach, the nominal devaluation of the domestic currency can improve the balance of trade in the long run if the Marshall - Lerner condition is satisfied. As for the inter-periodic approach, the real exchange rate can affect the balance of trade in two ways. A decrease in the real exchange rate increases the purchasing power of the domestic currency on foreign goods, thereby increasing consumption and reducing savings and a deteriorating balance of trade. However, the balance of trade can be a “buffer” for consumption in the event of shocks to domestic cash flows (e.g. inefficient investments). Therefore, in response to falling real exchange rates, the economy is able to maintain current account surpluses and invest abroad more than increase consumption and that can improve external balance.

***Foreign Direct Investment***

Increasing foreign investment will be a stable source of finance to finance the trade deficit. Moreover, the effect of FDI on the trade balance is through increased economic growth and higher NFA accumulation, thereby increasing trade deficit. However, FDI can also be an important resource to improve domestic production capacity, then exports, leading to an improved trade balance.

***Capital account control level***

The inter-periodic approach suggests that capital account control can be regarded as a bad indicator of the possibility that a difficult-to-manage country is externally balanced so capital controls are given to counter capital outflows, due to concerns about trade deficits in the past. However, capital controls may lead to a smaller current and current account deficit since external funding for the deficit will now be more limited.

**2. Analysis of the impact of some macroeconomic factors on Vietnamese balance of trade**

***2.1. Variables in the model and data analysis***

As analyzed above, the trade balance is affected by the main factors from trade policy, investment policy, exchange rate policy and other policies. In the empirical analysis of Section 1, due to some limitations in data collection, the authors selected macro variables representing the three basic policies mentioned above, and assumed other factors remaining to be constant - common assumption when analyzing economic situations. The macroeconomic variables selected for analysis also changed compared to previous studies, such as Rudiger Dornbusch and Paul Krugman (1976) introduced the theory of the J-curve phenomenon to describe the evolution of the trade balance under the impact of exchange rates. Accordingly, the short elasticities of demand and supply of foreign currencies in a short time create the J curve phenomenon. It is the short-term decline of net exports following a devaluation of the exchange rate, and then the improvement of net exports. According to this theory, the trade balance situation would worsen (trade deficit increases) shortly after a devaluation in the exchange rate called Curve J. The study of Bo Sodersten (1980) standardized trade balance or import and export balance. It was the correlation of the value of imports of goods calculated according to the CIF price, that is, the price of goods (cost), insurance costs (insurance) and shipping costs (freight) with the value of exports. Exports were calculated at FOB prices, which meaned that prices were only accepted by foreign customers, excluding insurance and shipping costs. Francisco Rodríguez and Dani Rodrik (2000) provided general assessments of the relationship between trade policy and economic growth, thereby making recommendations for dealing with this relationship. Macro (2001) analyzed the trade deficit situation of some Latin American countries such as Brazil, Argentina ... and examined the relationship between this situation and investment and exchange rate policies and the growth of the economy. Calderon et al. (2002) showed that in developing countries, the more countries owed, the smaller the stability of the current account deficited. Chinn & Prasad (2003) found that the trade balance is directly proportional to the budget balance and NFA. Based on the analysis of the structural situation of the Chinese economy, macroeconomic policies had been applied, especially the exchange rate policy had been applied in this country, Yin Zhang and Guanghua Wan (2004) made many recommendations for flexible adjustment of China's trade balance in the future. These were relatively valuable recommendations for Vietnam because China is also in the context of newly joining the WTO. And Linda Goldberg et al. (2005) assessed and analyzed the basic effects of the internationalization of the dollar on the world economy in general and the trade balance adjustment responses. Gruber & Kamin (2008) sought to examine the notion that differences in financial development explain the global current account imbalance model. Experimental results with 84 countries from 1982 to 2006 showed very little evidence to support this hypothesis. Rahman (2008) showed that FDI had a negative effect on the trade balance, while remittances had a positive effect in the new member countries of the European Union. Christiansen et al. (2009) pointed out that domestic financial liberalization is associated with improved trade balances, while capital account liberalization had the opposite effect in low-income countries. Recently, Yang (2011) studied the factors affecting the current and trade balance of emerging Asian countries, showing the effects of variables such as NFA, trade openness or REER. To the outside balance is very different between countries.

For the case of Vietnam, a study by Tu Thuy Anh & Dao Nguyen Thang (2008) assessed trade between Vietnam and ASEAN + 3, showing that the determinant of trade deficit was the goal of economic growth. Naray et al. (2009) suggested that the main reason for the trade deficit was that Vietnam imported a large amount of raw materials and inputs for export production. In addition, a number of studies have focused on analyzing the impact of exchange rates on the trade balance. For example, Nguyen Thi Kim Thanh (2011) said that VND devaluation is unlikely to increase the competitiveness of exports. In addition, the production capacity of imported substitutes and goods meeting export standards in Vietnam was still limited. Since then, the author thought that the exchange rate management to boost exports and restrict imports is a medium-term issue. Besides, research by To Trung Thanh & Nguyen Tri Dung (2012) showed that Vietnam's trade deficit is due to "real" factors from the structure of the economy. Specifically, the variables representing trade policies, investment policies and exchange rate policies are trade openness, FDI, and exchange rates between USD and VND.

In the situation of this paper, the dependent variable in the analysis is the balance of trade. Variables were selected based on the qualitative analysis in Section 1 and related empirical studies such as To Trung Thanh (2016). Due to some limitations on data collection, research limits were only implemented during 2005-2018. However, this period is not too far from the present and reflects quite sufficient information on Vietnamese balance of trade. The collected variables are shown in Table 1.

**Table 1: Variables, data sources and measurements**

|  |  |  |
| --- | --- | --- |
| Variable | Measurement | Source |
| GDP | Gross Domestic Product at current prices | [https://finance.vietstock.vn](https://finance.vietstock.vn/) |
| EX | Value of Exported goods | [https://finance.vietstock.vn](https://finance.vietstock.vn/) |
| IM | Value of Imported goods | [https://finance.vietstock.vn](https://finance.vietstock.vn/) |
| BoT | Balance of Trade$$BoT=EX-IM$$ | Authors' calculations based on collected data |
| OPEN | Commercial Openness$$OPEN=\frac{EX+IM }{GDP}.100\%$$ | Authors' calculations based on collected data |
| FDI | Actual Foreign Direct Investment | [https://finance.vietstock.vn](https://finance.vietstock.vn/) |
| EXR | Exchange Rate at the end of the period | [https://finance.vietstock.vn](https://finance.vietstock.vn/) and [https://www.sbv.gov.vn](https://www.sbv.gov.vn/) |

 *(Source: Summary of author)*

Based on the results of qualitative research on the relationship between macroeconomic variables on the balance of trade, the topic selected to analyze the impact of each independent variables - the Exchange Rate, Commercial Openness and Foreign Direct Investment – on the Balance of Trade in three seperate models, as shown in Table 2.

**Table 2: Research variables**

|  |  |  |
| --- | --- | --- |
| Paradigm | Dependent variable | Independent variables |
| 1 | BoT | Currency exchange rate |
| 2 | BoT | Trade openness |
| 3 | BoT | Foreign direct investment |

*(Source: Author)*

Analytical data is presented in Table 3.

**Table 3: Experimental analysis data**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year | BoT (million USD) | Actual FDI (million USD) | OPEN (%) | EXR (VND/USD) |
| 2005 | -4314 | 3,308.80 | 131 | 15,916 |
| 2006 | -5064.9 | 4,100.10 | 128 | 16,054 |
| 2007 | -14203.3 | 8,030 | 157 | 16,114 |
| 2008 | -18028.7 | 11,500 | 165 | 16,977 |
| 2009 | -12852.5 | 10,000 | 137 | 17,941 |
| 2010 | -12646.7 | 11,000 | 150 | 18,932 |
| 2011 | -9844.1 | 11,000 | 167 | 20,828 |
| 2012 | 2888.93 | 10,460 | 145 | 20,828 |
| 2013 | 142.4 | 11,510 | 155 | 21,036 |
| 2014 | 1984 | 12,350 | 161 | 21246 |
| 2015 | -3170 | 14,500 | 171 | 21,890 |
| 2016 | 2680 | 15,800 | 172 | 22,159 |
| 2017 | 2674 | 17,500 | 190 | 22,425 |
| 2018 | 7211 | 19,100 | 199 | 22,825 |

*(Source: Author’s calculations)*

***2.2. Experimental results***

Firstly, we test the stationarity of the time series: The test results show that, with a 10% significance level, the initial series do not stop, but the first-order differential series are all stop.

**Table 4: Station test for first-order differential time series**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
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|  |  |
| --- | --- |
| Null Hypothesis: D(BOT) has a unit root |  |
| Exogenous: Constant |  |  |
| Lag Length: 0 (Automatic based on SIC, MAXLAG=2) |
|  |  |  |  |  |
|  |  |  | t-Statistic |   Prob.\* |
| Augmented Dickey-Fuller test statistic | -3.358656 |  0.0353 |

 |

|  |  |
| --- | --- |
| Null Hypothesis: D(FDI) has a unit root |  |
| Exogenous: Constant |  |  |
| Lag Length: 0 (Automatic based on SIC, MAXLAG=2) |
|  |  |  |  |  |
|  |  |  | t-Statistic |   Prob.\* |
| Augmented Dickey-Fuller test statistic | -2.911685 |  0.0730 |

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|  |  |
| --- | --- |
| Null Hypothesis: D(OPEN) has a unit root |  |
| Exogenous: Constant |  |  |
| Lag Length: 1 (Automatic based on SIC, MAXLAG=2) |
|  |  |  | t-Statistic |   Prob.\* |
| Augmented Dickey-Fuller test statistic | -5.216624 |  0.0022 |

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|  |  |
| --- | --- |
| Null Hypothesis: D(EXR) has a unit root |  |
| Exogenous: Constant |  |  |
| Lag Length: 0 (Automatic based on SIC, MAXLAG=2) |
|  |  |  | t-Statistic |   Prob.\* |
| Augmented Dickey-Fuller test statistic | -2.719602 |  0.0991 |

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*(Source: Author)*

Therefore, the estimation of the models needs to be transformed into the first-order differential time series, which are denoted by D\_BoT, D\_FDI, D\_OPEN, D\_EXR respectively. Now, we make estimates of the models.

*2.2.1. Model 1:*



Regression results: 

**Table 5: Result of estimation of model 1**

|  |  |  |
| --- | --- | --- |
| Dependent Variable: D\_BOT |  |  |
| Method: Least Squares |  |  |
| Sample (adjusted): 2006 2018 |  |  |
| Included observations: 13 after adjustments |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.   |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 4421.240 | 1381.254 | 3.200887 | 0.0084 |
| D\_FDI | -2.909919 | 0.740566 | -3.929317 | 0.0024 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.583956 |     Mean dependent var | 886.5385 |
| Adjusted R-squared | 0.546134 |     S.D. dependent var | 5609.635 |
| S.E. of regression | 3779.187 |     Akaike info criterion | 19.45304 |
| Sum squared resid | 1.57E+08 |     Schwarz criterion | 19.53996 |
| Log likelihood | -124.4448 |     Hannan-Quinn criter. | 19.43518 |
| F-statistic | 15.43953 |     Durbin-Watson stat | 2.406397 |
| Prob(F-statistic) | 0.002355 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

*(Source: Author)*

*(i) Test the non-zero of the estimated coefficients:*

At a significance level of 5%, the regression coefficient of the variable D\_FDI is statistically significant.

*(ii) Heteroskedasticity test:*

**Table 6: Result of Heteroskedasticity Test for model 1**

|  |  |
| --- | --- |
| Heteroskedasticity Test: White |  |
| F-statistic | 0.727657 |     Prob. F(2,10) | 0.5069 |
| Obs\*R-squared | 1.651556 |     Prob. Chi-Square(2) | 0.4379 |
| Scaled explained SS | 0.656633 |     Prob. Chi-Square(2) | 0.7201 |

*(Source: Author)*

At a 5% significance level, there is not heteroskedasticity phenomenon in model 1.

*(iii) Testing the autocorrelation phenomenon:*

**Table 7: Result of serial correlation test for model 1**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| --- | --- |
| Breusch-Godfrey Serial Correlation LM Test: |  |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 1.248234 |     Prob. F(1,10) | 0.2900 |
| Obs\*R-squared | 1.442630 |     Prob. Chi-Square(1) | 0.2297 |
|  |  |  |  |  |
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| --- | --- |
| Breusch-Godfrey Serial Correlation LM Test: |  |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 0.692105 |     Prob. F(2,9) | 0.5253 |
| Obs\*R-squared | 1.732893 |     Prob. Chi-Square(2) | 0.4204 |
|  |  |  |  |  |
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| --- | --- |
| Breusch-Godfrey Serial Correlation LM Test: |  |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 1.986328 |     Prob. F(3,8) | 0.1947 |
| Obs\*R-squared | 5.549601 |     Prob. Chi-Square(3) | 0.1357 |
|  |  |  |  |  |
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| --- | --- |
| Breusch-Godfrey Serial Correlation LM Test: |  |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 1.705799 |     Prob. F(4,7) | 0.2521 |
| Obs\*R-squared | 6.416862 |     Prob. Chi-Square(4) | 0.1701 |
|  |  |  |  |  |
|  |  |  |  |  |

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*(Source: Author)*

At the significance of 5%, the model has no correlation phenomena of lags 1, 2, 3, 4.

*(iv) Model specification test:*

**Table 8: Result of Model specification****test for model 1**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
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|  |  |  |
| --- | --- | --- |
| Ramsey RESET Test: |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 0.205179 |     Prob. F(1,10) | 0.6602 |
| Log likelihood ratio | 0.264033 |     Prob. Chi-Square(1) | 0.6074 |
|  |  |  |  |  |
|  |  |  |  |  |

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| --- | --- | --- |
| Ramsey RESET Test: |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 0.146331 |     Prob. F(2,9) | 0.8659 |
| Log likelihood ratio | 0.416007 |     Prob. Chi-Square(2) | 0.8122 |
|  |  |  |  |  |
|  |  |  |  |  |

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*(Source: Author)*

At a 5% significance level, even if adding 1 or 2 elements to the model, the model is well specified.

*(v) Test of the normal distribution of residual:*

**Table 9: Result of residual’s normal distribution****test for model 1**



*(Source: Author)*

At a 5% significance level, the residual is normally distributed.

According to econometric theory, model 1 is “acceptable” since the regression coefficients of D\_FDI are statistically significant, there is no heteroskedasticity phenomenon, no autocorrelation phenomenon, model is well-specified, the residual is normally distributed.

Therefore, the result of the regression model 1:



shows that in Vietnam, in the period 2005-2018, foreign direct investment had a significant opposite effect on the trade balance. This result reflects that the increase in FDI may worsen the trade balance. Although wages are low, due to low productivity, lack of skilled labor, underdeveloped supporting industries, and low scientific and technological capacities, FDI mainly invests in assembly and outsourcing. Therefore, increasing FDI means increasing import at large scale. Meanwhile, FDI is not yet an important resource to spread technology, improve domestic production capacity, thereby affecting the export capacity of the economy is not great.

*2.2.2. Model 2:*



Regression results:

**Table 10: Result of estimation of model 2**

|  |  |  |
| --- | --- | --- |
| Dependent Variable: D\_BOT |  |  |
| Method: Least Squares |  |  |
| Sample (adjusted): 2006 2018 |  |  |
| Included observations: 13 after adjustments |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.   |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2226.751 | 1206.223 | 1.846053 | 0.0919 |
| D\_OPEN | -256.2171 | 75.91540 | -3.375035 | 0.0062 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.508728 |     Mean dependent var | 886.5385 |
| Adjusted R-squared | 0.464067 |     S.D. dependent var | 5609.635 |
| S.E. of regression | 4106.671 |     Akaike info criterion | 19.61925 |
| Sum squared resid | 1.86E+08 |     Schwarz criterion | 19.70617 |
| Log likelihood | -125.5251 |     Hannan-Quinn criter. | 19.60139 |
| F-statistic | 11.39086 |     Durbin-Watson stat | 1.229599 |
| Prob(F-statistic) | 0.006197 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

*(Source: Author)*

*(i) Test the non-zero of the estimated coefficients:*

At the significance level of 5%, the estimated coefficient of the variable D\_OPEN is statistically significant.

*(ii) Heteroskedasticity test:*

**Table 11: Result of Heteroskedasticity Test for model 2**

|  |  |
| --- | --- |
| Heteroskedasticity Test: White |  |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 0.618711 |     Prob. F(2,10) | 0.5580 |
| Obs\*R-squared | 1.431509 |     Prob. Chi-Square(2) | 0.4888 |
| Scaled explained SS | 0.156517 |     Prob. Chi-Square(2) | 0.9247 |
|  |  |  |  |  |
|  |  |  |  |  |

*(Source: Author)*

At a 5% significance level, there is not heteroskedasticity phenomenon in model 2.

*(iii) Testing the autocorrelation phenomenon:*

**Table 12: Result of serial correlation test for model 2**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

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| --- | --- |
| Breusch-Godfrey Serial Correlation LM Test: |  |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 1.061525 |     Prob. F(1,10) | 0.3271 |
| Obs\*R-squared | 1.247552 |     Prob. Chi-Square(1) | 0.2640 |
|  |  |  |  |  |
|  |  |  |  |  |

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| --- | --- |
| Breusch-Godfrey Serial Correlation LM Test: |  |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 0.523542 |     Prob. F(2,9) | 0.6094 |
| Obs\*R-squared | 1.354829 |     Prob. Chi-Square(2) | 0.5079 |
|  |  |  |  |  |
|  |  |  |  |  |

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| --- | --- |
| Breusch-Godfrey Serial Correlation LM Test: |  |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 2.110798 |     Prob. F(3,8) | 0.1772 |
| Obs\*R-squared | 5.743711 |     Prob. Chi-Square(3) | 0.1248 |
|  |  |  |  |  |
|  |  |  |  |  |

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| --- | --- |
| Breusch-Godfrey Serial Correlation LM Test: |  |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 1.441610 |     Prob. F(4,7) | 0.3150 |
| Obs\*R-squared | 5.871936 |     Prob. Chi-Square(4) | 0.2089 |
|  |  |  |  |  |
|  |  |  |  |  |

 |

*(Source: Author)*

At the significance of 5%, the model has no correlation phenomena of lags 1, 2, 3, 4.

*(iv) Model specification test:*

**Table 13: Result of Model specification****test for model 2**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
| Ramsey RESET Test: |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 0.350199 |     Prob. F(1,10) | 0.5671 |
| Log likelihood ratio | 0.447468 |     Prob. Chi-Square(1) | 0.5035 |
|  |  |  |  |  |
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| --- | --- | --- |
| Ramsey RESET Test: |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 0.162655 |     Prob. F(2,9) | 0.8523 |
| Log likelihood ratio | 0.461599 |     Prob. Chi-Square(2) | 0.7939 |
|  |  |  |  |  |
|  |  |  |  |  |

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*(Source: Author)*

At a 5% significance level, even if adding 1 or 2 elements to the model, the model is well specified.

*(v) Test of the normal distribution of residual:*

**Table 14: Result of residual’s normal distribution****test for model 2**



*(Source: Author)*

At a 5% significance level, the residual is normally distributed.

According to econometric theory, model 1 is “acceptable” since the regression coefficients of D\_FDI are statistically significant, there is no heteroskedasticity phenomenon, no autocorrelation phenomenon, model is well-specified, the residual is normally distributed.

Therefore, the result of the regression model 2:



shows that in Vietnam, in the period of 2005-2018, the commercial openness of the economy has a significant opposite effect on the trade balance. The estimated coefficient of LNOPEN is negative and statistically significant, meaning that in the long term, the greater the commercial openness can worsen the trade balance. Thus, in Vietnam, trade liberalization has contributed to increasing exports by opening up many opportunities to penetrate the world market, but at the same time, increasing imports at large scale. This reflects the absence of supporting industries and a processing economy, located at a low position in the global value chain.

*2.2.3. Model 3:*



Regression results:

**Table 15: Result of estimation of model 3**

|  |  |  |
| --- | --- | --- |
| Dependent Variable: D\_BOT |  |  |
| Method: Least Squares |  |  |
| Sample (adjusted): 2006 2018 |  |  |
| Included observations: 13 after adjustments |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.   |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 837.8176 | 2342.276 | 0.357694 | 0.7273 |
| D\_EXR | 0.091673 | 3.174163 | 0.028881 | 0.9775 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.000076 |     Mean dependent var | 886.5385 |
| Adjusted R-squared | -0.090826 |     S.D. dependent var | 5609.635 |
| S.E. of regression | 5858.851 |     Akaike info criterion | 20.32993 |
| Sum squared resid | 3.78E+08 |     Schwarz criterion | 20.41685 |
| Log likelihood | -130.1446 |     Hannan-Quinn criter. | 20.31207 |
| F-statistic | 0.000834 |     Durbin-Watson stat | 2.116342 |
| Prob(F-statistic) | 0.977477 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

*(Source: Author)*

The results show that the regression coefficient of exchange rate in the regression model is not statistically significant at the 5% significance level. Since the model has not passed the first test for the statistically significant of the estimated coefficients, we do not perform the remaining tests with model 3. And we “believe that” the exchange rate has no impact on the balance of trade.

Therefore, with the situation of Vietnam, in the period of 2005-2018, the exchange rate has not contributed to the increase in exports or imports. Because, when the nominal exchange rate goes up (the VND is undervalued), it will theoretically make exports more competitive. Meanwhile, the purchasing power of the local currency dropped, limiting people to import consumer goods. This effect may increase the trade balance. However, most of Vietnam's exports are processed, accordingly, an increase in exports also means that imported raw materials and fuels also increase, eliminating the competitive effect of the exchange rate. Finally, the effect of the nominal exchange rate on balance of trade has been suppressed.

**3. Conclusion**

From the experimental results received, the author recommends the following:

***Firstly***, maintaining an attractive and stable investment environment to attract foreign investment flows. This is a very important factor for our country especially when the demand for capital is increasing. This will have a great influence on Vietnam's ability to improve production capacity and competitiveness. But empirical evidence shows that foreign direct investment has the opposite effect on trade union, so it is necessary to attract FDI in combination with other measures to boost exports.

The FDI sector is playing an increasingly important role in our country's export growth. At the same time, the flows of indirect investment are increasingly acting as a major source of funding for Vietnam's trade deficit. Therefore, encouraging foreign investment in export-oriented manufacturing sectors and industries is of great significance. A lesson learned from many countries in adjusting balance of trade is to use measures to enhance the attraction of foreign investment. This allows domestic enterprises to take advantage of capital, technology, management experience, marketing experience... to improve the production capacity and competitiveness of export and import substitutes. Of course, the attraction of foreign investment capital must be combined with measures to improve the efficiency of the use of investment capital and measures to help maximize the comparative advantages of our country.

The general measure is to improve the open investment environment in accordance with the commitments of the Government and the regulations of international organizations, maintaining a stable and attractive investment environment for foreign investors. Minimize the discrimination between domestic investors and foreign investors, creating equality with types of enterprises of all economic sectors. Diversify the fields and forms of foreign investment through allowing flexibility to switch investment forms, allowing investment in areas that the State does not ban, especially in the field of manufacturing exported goods. In addition, provinces, cities and localities need to formulate clear plans and strategies and provide incentives to attract foreign investment into their localities.

***Secondly***, FDI marketing to support the development of Vietnam's supporting industry. Since many economists say that Vietnam has great potential to develop supporting industries which are based on the ability to absorb new technology and the skill of Vietnamese workers. Compared to Thailand, one of the leading countries in supporting industries, Vietnam can not only keep up but it can overcome it. To be able to turn Vietnam's potential into reality requires the efforts of both businesses and state agencies. In which the top requirement is human resource training, businesses must ensure the quality of goods, reduce costs, strictly comply with the delivery deadline to protect the environment, and must develop rapidly infrastructure. A fact that needs to be acknowledged is that the number of Vietnamese enterprises engaged in supporting industries is very small, not to mention supplying for export production and meeting foreign import demands. For example, in the field of supplying components for Japanese factories in Vietnam today, the top is still Japanese component suppliers, followed by Taiwanese enterprises and finally. New businesses are Vietnamese (accounting for a very small percentage). Currently, Vietnamese manufacturers have not been able to supply most of the parts for Toyota Vietnam, while in Thailand or Indonesia, the ratio is 80-90%. Currently, the majority of manufacturers for export in Vietnam still have to import primarily. Thus, Vietnam's supporting industry is still too poor and insufficient to support and become a driving force for export growth and economic growth. For example, in the field of capacity building for businesses, in the short term, it is necessary to investigate the need to strengthen the capacity of supporting industries, find ways to expand opportunities for Vietnamese students and workers. In the medium term, it is necessary to strengthen the deployment and expansion of education and training opportunities for Vietnamese workers. In terms of human resources, capacity building for current engineering students and workers will benefit both FDI and Vietnamese businesses. Improving the curriculum, forming coordination mechanisms between FDI enterprises and training centers. Preferential measures on production, investment, education and training related to supporting industries should be launched as soon as possible with a sufficiently competitive and reasonable level. In order to develop the supporting industry quickly and sustainably in Vietnam, the efforts and coordination of both domestic and foreign suppliers in Vietnam are required.

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