

Original Research Article

**Determinants of Trade Deficit in Vietnam
– From An Intertemporal Approach¹**

Abstract

This paper will discuss the causes of Vietnam's trade deficit from an intertemporal approach. According to the theory, the dynamic of the trade balance is the outcome of forward-looking consumption and investment decisions. Results show that relative income, NFA, financial depth, exchange rate, FDI and the economy's openness all have significant influence on the trade deficit in the periods of interest. The paper recommends changing the growth model and restructuring the economy, supplemented with some FDI and exchange rate related policies to sustainably solve the trade deficit problem of Vietnam.

Key words: Intertemporal approach, Trade deficit, Vietnam, exchange rate, NFA

Introduction

After a successful period with export-oriented policies, the trade balance of Vietnam recorded a prolonged deficit, which became a very serious problem, especially from 2003 to 2011. The balance of trade began to experience small-scaled surpluses in 2012 and 2013, which did not result from an improved economic structure or business competitiveness but from a serious reduction in the aggregate demand. Therefore, the decreasing trend in the trade deficit should not be sustainable, as efforts to control the trade deficit in the middle-term will be met with difficulty when domestic demand is recovered.

In some aspects and in certain periods, trade deficit is not entirely negative to an economy. Specifically, to developing countries which are in the transitional period such as Vietnam, the economy might have to endure a trade deficit when there is heavy demand for foreign raw materials, equipment and technologies and domestic manufacturing capabilities are still inadequate, domestic capital resources are limited and exporting value does not sufficiently compensate for importing expenditure. However, if the magnitude of the trade deficit continues to increase during an extended period without a sign of improvement, then it means the previous process of foreign capital and technology accumulation and transference was not efficient in enhancing the economy's ability to produce and export. Also, trade deficit is one of the basic sources of macroeconomic instability. Trade deficit should put pressure on VND value, negatively affect the dynamic of exchange rates and inflation; the balance of payment is disturbed; the foreign reserves are decreased which causes the effectiveness of exchange rate policies as well as the level of market confidence in the ability of SBV to manage the economy to be reduced; which might cause more serious dollarization and increase pressure on the foreign exchange market. High trade deficit also means that the capital account should be in high surplus and national debt is accumulated.

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39 What are the core reasons for the trade deficit in Vietnam and what are the solutions that need
40 to be done in order to gradually decrease the trade deficit and sustainably achieve trade
41 balance? This paper will discuss the causes that lead to the dynamic of the trade balance
42 from a new perspective – the intertemporal approach and from there assessing the
43 effectiveness of several trade related policies, as well as recommending on policies to reduce
44 the trade deficit and achieve sustainable trade balance. The scope of this paper is from 1997-
45 2012 for the reason that it is the period in which Vietnam has a profound integration into the
46 global economy, as well as the period of unexpected developments in trade deficit, which
47 have significant ramifications on the whole economy.

48 **Brief literature review on the intertemporal approach**

49 Until now there have been many models and approaches attempting an explanation for the
50 dynamic of the current balance and the trade balance. A few notable methods include the
51 absorption approach, the trade elasticity approach; and from the mid-1990s to the present,
52 there is a development of the intertemporal approach.

53 Today, studying the current balance and the trade balance using the intertemporal approach is
54 a novel and developing trend in the world, it allows closer examination on the effects of
55 many variables on the current account and trade balance, including the policy variables.
56 According to the intertemporal approach, the dynamic of the trade balance is the outcome of
57 forward-looking consumption and investment decisions. This model shows that the changes
58 in the trade balance might reflect on the elements that affect the national saving and
59 investment; also, it allows for extension to many variables that might have underlying
60 influence on the current account.

61 This approach was extended by Obstfeld & Rogoff (1994). In these studies, the current
62 account was defined as the different between domestic saving and investment: $CA = S - I$,
63 and they focused on the macroeconomic elements that determined these saving and
64 investment variables. The intertemporal approach suggested that the determinants of long-
65 term saving and investment can be calculated using the expected values of different
66 macroeconomic variables. This approach attempted to explain the changes in the current
67 account through examination of the consumption, saving and investment decisions during
68 each period. This approach provided a synthesis of the trade and the capital flow views by
69 analyzing how the macroeconomic elements determined the future relative prices and how
70 these prices impacted on saving and investment decisions (Obstfeld & Rogoff, 1994).

71 The empirical literature on the applications of the intertemporal approach has followed two
72 main directions. On the one hand, several studies have tried to established evidence in favor
73 of the baseline model using different testing strategies. On the other hand, some papers have
74 attempt to examine the long-term relationship between the current account and several basic
75 macroeconomic determinants using different standard econometric techniques (Chinn &
76 Prasad, 2003; Gruber & Kamin, 2007; Lucun Yang, 2001). Most of these studies identified a
77 group of variables that had significant impact on the short-term and long-term current
78 balance, including: initial net foreign asset position, trade openness, effective real exchange
79 rate, relative income, growth rate, commercial exchange rate, financial development level,...
80 as well as other policy and institution factors. However, because each of the economic sector
81 has unique characteristics, the impact of each variables on the current account can be
82 different.

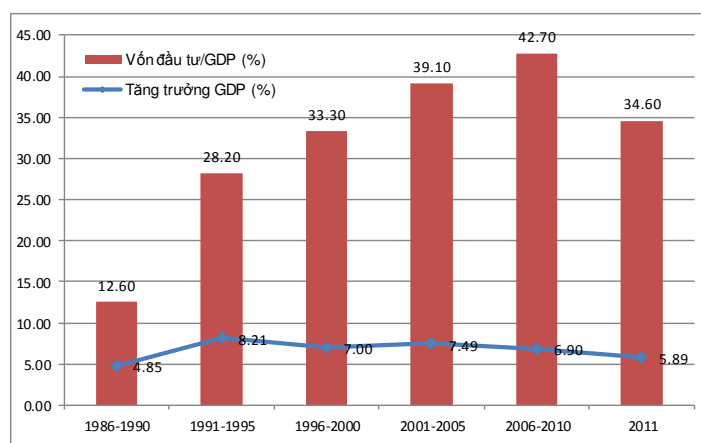
83 It could be said that since the application of the intertemporal approach to the study of the
84 current account, many researches have been conducted on this subject. However, there has

never been a study applying this approach to examine the current account and the trade balance of Vietnam.

The saving – investment gap and the trade deficit in Vietnam

According to the analysis framework on the foundations of economic growth, the ultimate objective of growth is “improving the long-term wellbeing of the society in a sustainable and equitable way”. To aim for this ultimate objective, the complementary and inseparable intermediate goals that need to be achieved are rapid economic growth and sustainable economic growth. However, a country is able to choose for themselves different growth models in order to accomplish these intermediate goals. To achieve rapid economic growth, an economy could choose between: (i) extensive economic growth – increasing the amount of input and/or (ii) intensive economic growth – increasing the effectiveness of input uses. Therefore, the growth of an economy can be simply attributed to the rapid increase in the amount of the factors of production such as labor, capital and natural resources. However, under the condition that the amount of input factors do not change, growth can still be achieved by improving the effectiveness of resources use (which could be easily measured by indexes such as total factor productivity (TFP), labor productivity, ICOR).

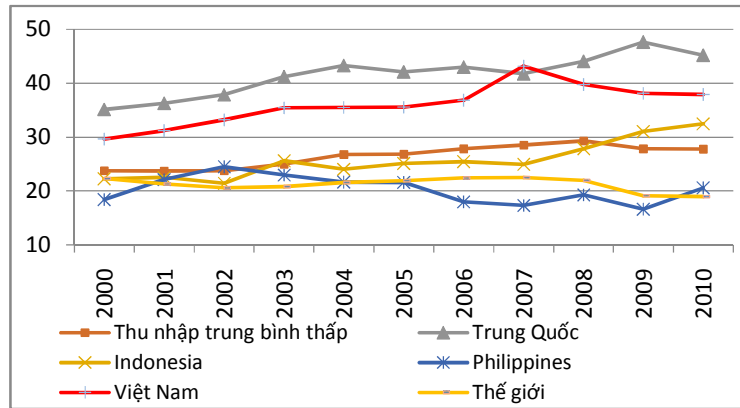
Figure 1. Economic growth rate and investment/GDP ratio (%)



Source: General Statistics Office.

Figure 1 indicates that Vietnam maintained its economic growth by depending on capital investment, gross national investment continued to increase and remained at a relatively high level, especially since 1996. The investment/GDP ratio increased from 33.23% per year during the 1996 – 2000 period to 42.85% per year during the 2006 – 2010 period and approximately 41% per year for the whole 2001 – 2010 period. In 2011, with the government efforts to control inflation and stabilize the economy, the investment/GDP ratio decreased significantly to 34.6%; but this figure was still relatively high compared with the GDP growth rate. During the period from 1991 – 1995, the investment/GDP ratio was 28.2% but generated an average growth rate of 8.21%. However, during 2006 – 2010, investment reached 42.7% GDP but only generated 6.9% growth rate; the figures for 2011 were 34.5% and 5.89%, respectively.

Figure 2. Comparison in investment/GDP ratio between Vietnam and several countries (%)



Source: World Bank, investment figures are measured by asset accumulation value in the economy

Compared to other countries in the region and lower middle income countries, Vietnam was one of the countries with the highest investment/GDP ratio (only lower than China) (Figure 2). Additionally, while the ratio remained relatively stable in other countries, it displayed a significant increasing trend in Vietnam during recent years.

With the investment/GDP ratio at a very high level, apparently, the contribution of capital resources to the GDP growth was large. From 1990 to 2000, the contribution of capital to growth was only 34%, but during the next 10 years, this contribution increased to 53%, highest among Asian countries (Table 1). Thus, Vietnam economic growth during the “Doi Moi” period was mostly attributed to capital accumulation, especially investment from the public sector.

Table 1. Contribution proportion of factors to GDP growth, 1990 - 2008

Country	Period 1990-2000				Period 2000-2008			
	GDP Growth	Factor			GDP Growth	Factor		
		Capital	Labor	TFP		Capital	Lao động	TFP
Vietnam	100%	34%	22%	44%	100%	53%	19%	26%
China	100%	36%	7%	56%	100%	42%	6%	52%
India	100%	40%	23%	38%	100%	42%	22%	37%
Cambodia	100%	38%	34%	27%	100%	47%	39%	14%
Indonesia	100%	61%	27%	12%	100%	27%	22%	49%
Malaysia	100%	54%	30%	16%	100%	30%	20%	50%
Philippines	100%	43%	47%	10%	100%	21%	40%	38%
Thailand	100%	61%	7%	32%	100%	17%	30%	53%

Source: WDI; ACI, from Vietnam competitiveness Report 2010 of CIEM.

However, since 2000, the quality of Vietnam’s economic growth (the effectiveness of resources use, especially capital resources) has been gradually declining and is now at a low level. This fact can be simply analyzed through total factor productivity (TFP), labor productivity and ICOR index.

The contribution of TFP to growth in Vietnam has decline significantly over time. Table 1 indicates that, the contribution of TFP to growth reduced from 44% (from 1990 to 2000) to 26% (from 2000 – 2008), much lower than China, India and other South East Asian countries. At the same time, labor productivity of Vietnam is low due to the fact that most of the labor force are unskilled, inadequate labor discipline and the lack of modern management skills. According to the International Labor Organization (ILO), despite improved growth rate during the 2001-2010 period, labor productivity of Vietnam was only 68.8% of the average productivity of the group of lower middle income countries, 57.8% of China, about 34.2% and 22% of Thailand and Malaysia, respectively.

Meanwhile, despite being the main driving force for economic growth, the effectiveness of capital investment is declining and is now at a low level, this is clearly illustrated in the constant increase of the ICOR. According to Bui Trinh (2011), the economy had a relatively high level of ICOR; from 4.89 during 2000-2005, increased to 7.43 during 2006-2010. Investment from the public sector account for a large proportion of the gross national investment, and having a lower effectiveness than investment from the private sector and foreign sector (ICOR of this sector increased respectively from 6.94 to 9.68), it brought down the average investment effectiveness of the whole economy.

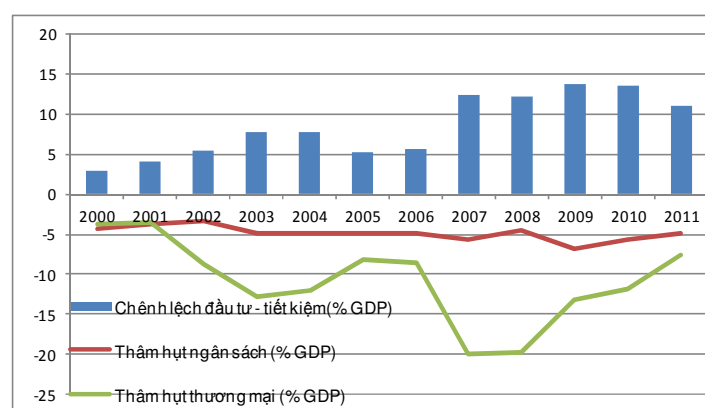
Table 2. ICOR by economic sector

	Calculated from capital investment				Calculated from asset accumulation			
	Total	Public	Private	FDI	Total	Public	Private	FDI
ICOR (2000-05)	4.89	6.94	2.93	5.20	3.04	4.37	1.81	3.11
ICOR (2006-10)	7.43	9.68	4.01	15.71	4.40	5.13	2.54	9.70

Source: Bui Trinh (2011).

While the growth model of Vietnam relied heavily on investment, domestic saving was inadequate to meet demand of the gross national investment. Due to this, the national investment – saving gap is always at a high level. In theory, the trade balance reflects the domestic saving and investment gap (net savings) of a nation. Net national saving is equal to net government saving (fiscal balance) plus the saving – investment gap of the private sector. Thus, if a country experiences trade deficit, it is reflected by a negative net saving (which means the investment rate is higher than the saving rate). The intertemporal approach focuses on this relationship in order to explain the dynamic of the trade balance.

Figure 3. Trade deficit, investment – saving gap and fiscal deficit (%GDP)



Source: IMF, WDI and GSO.

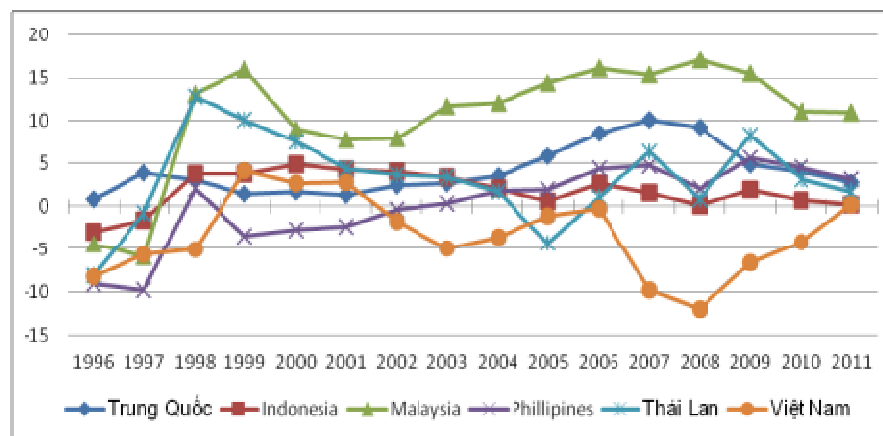
Figure 3 shows that the investment – saving gap of the economy has dramatically increased since 2007, followed by an increase in the trade deficit. Investment – saving gap reached a very high level of 11.5% during the 2006 – 2011 period, while the other countries all experienced net saving, even at a very high level such as Malaysia (Figure 4). This happened mainly because the domestic investment rate was too high, which stemmed from the fact that the growth model depend on investment, while investment remained wasteful and inefficient.

Net domestic savings include net government savings and net savings of the private sector (from households and businesses – also including SOEs (state owned enterprises). Fiscal deficit (negative net government savings), which was persistently at a high level in a prolonged period in order to support the growth model, contributed to the low domestic saving rate. However, with an equally important role, and with the “support” from macroeconomic policies and the internal problems of the banking and financial sector, the investment – saving gap (negative net savings) of the private sector also increases.

Reported data on the net savings of the private sector is not available, but it can be assessed by observing the behavior of households and businesses in the past years. For the households, because the financial market was still immature, poorly operated and contained high risks; in the context of high inflation and increasing macroeconomic instability during recent years, the net savings from this sector cannot be very large. Especially since 2007, when Vietnam has been receiving a large influx of foreign capital, the SBV with little experience in sterilization, , the results were high inflation and bubbles in the asset as well as the stock and real estate markets. This led to excessive consumption for some consumers, especially in urban areas.

Meanwhile, the business sector had a very large investment to savings ratio – which could be observed through the increasing scale of credit during recent years. The causes of this imbalance were not only from the stimulating policies through monetary and fiscal easing in a prolonged period; from the incautious, shortsighted, spread out but inefficient investment activities of the businesses; but also from the poorly operated banking system with inadequate macroeconomic and microeconomic monitoring, in which, many small commercial banks operated with the goal of rapid development by mean of disproportionate credit expansion, even at the expense of control and safety measures.

Figure 4. Saving – investment gap of countries in the region



Source: IMF

Estimation Results

The aforementioned research results showed that the saving – investment gap (from the structural characteristics and the growth model) was the main cause that led to the trade deficit in Vietnam over many years. The following section will use the intertemporal approach to analyze the important variables (and from that related policies could be assessed) that influence the saving – investment gap and subsequently influence the trade balance.

OLS Model Results

On the quantitative methods that were employed in studying this subject, Debelle & Faruquee (1996), Chinn & Prasad (2003) used a pooled OLS regression and the fixed-effects techniques to estimate the current account. Stromm, Cashin and some other authors argued that this method required strict assumptions that the error terms had no correlation with the variables at all time periods; they suggested incorporating the lagged versions of the dependent variable into the model. However, in this paper, due to the limitation of data available, we still use the traditional OLS method to estimate the model. Hypothesis testing showed that the autocorrelation assumption was not violated:

$$Y_t = \alpha + \beta \cdot X_t + \varepsilon_t$$

In which: Y_t is the dependent variables, including the current account variable (CA) and the trade balance variable (NX); X_t is the independent variables, including NFA, OPEN, Rel_y, F_DEEP, FDI, Growth, REER. Initially, we estimated the basic model which incorporated all the independent variables. Additionally, we estimated some other models for comparative analysis. We also run the estimation with both the current balance as well as the trade balance, because current account deficit in Vietnam was mostly caused by trade balance deficit. Another issue is due to the limitation of data available on term of trade (TOT) in Vietnam, this variable was not included in the model to explain the dynamic of the current account; although this could lead to unexpected results. The main sources of data were from the International Financial Statistics (IFS) and official published data from GSO. The data was collected quarterly (from the 1st quarter of 1996 to the end of the 2nd quarter of 2012).

Table 3. Variable measurement and data sources for the OLS model

Variable	Measurement	Source
GDP, GDP _r	Nominal and Real GDP (at 1994 price)	GSO
CA	$CA = \frac{CA}{GDP} \times 100\%$	IFS
EX	Export value	IFS
IM	Import value	IFS
M2	M2 money supply	IFS
NX	$NX = \frac{EX - IM}{GDP} \times 100\%$	IFS
NFA	$NFA = \frac{NFA}{GDP} \times 100\%$ In which NFA is measure with one period lagged net foreign asset value to avoid internal issues in the trade balances.	IFS
OPEN	$OPEN = \frac{EX + IM}{GDP} \times 100\%$	IFS
F_DEEP	$F_{DEEP} = \frac{M2}{GDP} \times 100\%$	IFS
Rel_y	$REL_y = \frac{GDP_{rVietNam}}{GDP_{rUSA}} \times 100\%$	IFS

FDI	$FDI = \frac{FDI}{GDP} \times 100\%$	IFS
GROWTH	GDP growth rate of Vietnam	GSO
REER	Real effective exchange rate	Calculated by the author based on GSO data

The regression results of the current account and the trade balance on these independent variables are shown in Table 4. Model (1), (2) and (3) give results on the current account; model (4), (5) and (6) give results on the trade balance. In which, model (2), (3), (5) and (6) respectively omitted one of the two variables: relative income (Rel_y) and GDP growth (GROWTH) because these two variables both represent the development stages of an economy. Because the channels of impacts of these variables on the current account are different, both of the variables are included in model (1) and (4) to create the baseline models.

Table 4. Regression results on the determinants of current account and trade balance

	CA			NX		
	(1)	(2)	(3)	(4)	(5)	(6)
NFA	-0,06*	-0,07**	-0,04	-0,05	-0,05*	-0,03
Rel_y	-100,55		-267,06**	-39,18		-201,74
GROWTH	-1,94**	-2,31***		-1,90**	-2,04**	
OPEN	-0,09	-0,07	-0,12*	-0,13*	-0,13*	-0,17**
F_DEEP	0,02	0,02	0,03*	0,02	0,02	0,03*
FDI	-0,59*	-0,63*	-0,71**	-0,83**	-0,85**	-0,95**
REER	-21,78	-27,84	5,56	-7,17	-9,53	19,52
Obs.	66	66	66	66	66	66
R-square	0,31	0,30	0,25	0,37	0,37	0,32
Note: *, **, ***: is statistically significant at 10%, 5%, 1% level.						

Source: Calculated by the author

Initial net foreign asset position

Initial net foreign asset position might affect the current account balance through two different channels. First, an economy with higher NFA apparently can benefit more from foreign investment. From the saving – investment perspective, an increase in the flow of foreign income will have a positive effect on the current account. Thus, there is a positive relation between NFA and current account balance. Second, the sum of current account and capital account balance is zero in the floating exchange rate regime, which implied that an economy with larger net foreign asset position can endure trade deficit in a long period. This could lead to a negative relation between this variable and the trade balance. In the standard model, estimation results showed that NFA had a negative effect on the current balance and the trade balance at the standard significant levels, however the magnitude of this effect was not large. This implied that in Vietnam, the effect from the second channel crowded out the first, therefore, large initial net foreign asset allowed the economy to have trade deficit in a long period. Thus, net foreign asset had a negative correlation with trade balance as well as current balance in Vietnam.

Economic growth

According to Solow's growth model, in the initial stage, an underdeveloped country will achieve higher economic growth rate when receiving foreign capital for investment and development. Progressively, the economy will gradually come close to a stationarity in which economic growth rate gradually decreases. A country with high economic growth rate indicates that this country is currently in the initial stage of development, and tends to allow for a deficit in the trade balance. In addition, a different approach is that: in countries with higher GDP growth rate, households tend to increase consumption, businesses tend to import more foreign goods to invest and so the trade balance may get worse. Therefore, actual growth might have a negative effect on the trade balance. Both models, the standard model and the model with only one variable represents the development of the economy show a common results, that economic growth has a negative effect on the current account and the trade balance. This also explains that in recent years (2012-2013), while economic growth rate decreased, trade balance was improved.

Relative income

Relative income is measured via the ratio of domestic real income against foreign income (generally the US). Debelle and Faruquee (1996) claimed that in the initial stage of the development process, an economy might experience trade deficit due to the demand for foreign finance of the economy. However, in the later stages of development, the economy usually has current account surplus to pay for previously accumulated foreign debts and also exports capital to lesser development economies. Therefore, they expect a positive relation between relative income and current account. Here, Debelle and Faruquee divided the process into two development stages and claimed that increase in relative income would take an economy to the second stage of development. However, based on quantitative research results in Vietnam, although relative income increased, the first stage of development is still not yet completed, thus the stage in which growth of relative income might improve current account is still not achieved. In addition, increase in income in this stage in Vietnam would cause the increase in import value and therefore worsen the trade balance.

Trade openness

Estimation results indicated that an increase in the trade openness level tended to increase the trade deficit and worsen the current account. Vietnam is still a developing country with underdeveloped supporting industries, most of the imported goods are machinery, raw material and components which provide for production and export. Trade liberalization therefore would increase export as well as import, so the trade balance might not be improved. Observing the process of trade liberalization in Vietnam, it can be seen that following each steps of deeper integration into the global economy are usually periods of large deficit in current and trade balance. After joining AFTA in 1996, ACFTA in 2003 and WTO in 2007, the level of trade openness in Vietnam increased significantly: 74.62% in 1996; 114.80% in 2003 (an increase of 11 percentage points compared with 2002) and 156.76% in 2007 (an increase of 20 percentage points compared with 2006), along with it was the increase in the deficit of the trade and the current balance.

Real effective exchange rate

REER is a measure of the value of a country's currency compared with a basket of foreign currencies (mostly the currencies of the country's main trading partners). If REER has a value which is greater than 1, it means the country's currency is being over-valuated, this could lead to a reduction in the competitiveness of the country's exported goods and worsen the country's trade balance, and vice versa. However, the model results for Vietnam displayed no indication of that phenomenon. The obtained coefficients, even in the trade

balance models, were not statistically significant. Different model specifications even yielded estimation numbers with opposite signs.

Figure 5. REER, NEER and trade deficit



Figure 5 showed the NEER, REER² and the trade balance/GDP ratio (%) in Vietnam for the period from 1996 to 2013. The results showed that because of the fixed exchange rate and USD-pegged regime, from 2005 until now, the gap between NEER and REER has increase rapidly, starting from 2011, VND is being over valued. However, figure 5 indicate that in practice, the exchange rate and the trade balance in Vietnam display little resemblance of the theoretical strong relation. This phenomenon reflected the fact that the trade balance of Vietnam mainly depended on the “real” and “structural” factors, not on the “nominal” factors. The cause of that is because the domestic and export production structure relied mostly on imported inputs while the supporting industries are still inadequate and underdeveloped. Vietnam’s imports are still mostly factors of production, including: machinery, equipment, tools, components and raw materials. This part always proportioned for more than 90% of total imported value, which lasted for many year without a sign of improvement. Most of Vietnam’s exported goods are also processing goods, which means if exports increased, imported raw materials will also increase. Thus, it could be concluded that the REER does not have a significant impact on the current balance and the trade balance in Vietnam.

These result implied that the objective of sustainably improving the trade balance might be difficult to achieve with only exchange rate policies, there need to be substantial improvement in the growth model as well as the economic structure.

² $NEER_i = \sum_{j=1}^n e_{ij} \cdot w_j / e_{0j}$ in which, e_{ij} is the bilateral nominal exchange rate of country j in the period i to Vietnam, calculated through the exchange rate of each currency with USD; e_{0j} is the bilateral nominal exchange rate of country j to Vietnam during the base period, which in this paper is the first quarter of 1996; w_j is the proportion of country j ’s import-export turnover in the total import-export turnover of Vietnam. $REER_i = NEER_i \cdot (CPI_i^{VN} / CPI_0^{VN}) / (CPI_i^w / CPI_0^w)$, in which, CPI_i^w is the consumer’s price index of country w in period i ; CPI_i^{VN} is Vietnam’s consumer’s price index in period i . The selected base period is the 1st quarter of 1996. In this calculation, we employed the data from 16 countries with the highest import-export turnover in the total import-export turnover of Vietnam, which includes: Australia, Cambodia, Canada, Hong Kong, China, India, Indonesia, Japan, South Korea, Malaysia, Philippines, Russia, Singapore, Thailand, the United Kingdom and the US.

Financial Depth

Similar to trade openness, estimated results in the first 2 models also indicated that this variable did not affect the current account. However model (3) and (6) implied that there was a positive effect at 10% significant level. Although the impact level of this variable to the current account or the trade balance is not significant, an estimated coefficient with positive sign had some certain implications. This was contrary to the initial assumption that financial depth negatively affected the trade balance. Therefore, financial depth had its role as a measurement for the development level of the financial system, the more the financial system developed, the more savings will be, thus reduced the gap between domestic investment and savings, and therefore helped improve the trade balance as well as the current account. However, the impact of this variable on the current account is relatively low and also unclear. This is also accord with Chinn & Prasad (2003) who claimed that the impact of financial depth are usually less arbitrary from a theoretical point of view.

Foreign Direct Investment

All three models indicated that an increase in foreign direct investment had a negative effect on the current account of Vietnam with a significant level of 10%, and on more clearly on the trade balance with a significant level of 5%. FDI is still one of the main source in funding the deficit in the current balance and the trade balance. However, the FDI sector mainly focuses on processing industries, the added value is quite low, so that increasing FDI will also mean an increase in importing material for production and will negatively affect the trade balance. Additionally, FDI also indirectly impact on the current balance through economic growth. Businesses from the FDI sector are always more efficient in production, therefore increasing FDI will also contribute to a higher growth rate, which will negatively affect the trade balance. Currently, FDI is still a trade surplus area in the economy, however, if FDI continues to increase while the investment and production structure is unchanged; the surplus might decrease and eventually lead to more deficit in the trade balance.

VAR Model Results

For robustness, the author also employed the VAR model with the variables listed in Table 5.

Table 5. Variables measurement and data sources for the VAR model

Variable Name	Measurement	Source
NX	(Export - Import)/GDP	IFS, GSO
F_DEEP	M2/GDP	IFS, GSO
FDI	FDI/GDP	IFS, GSO
NFA	NFA/GDP	IFS, GSO
OPEN	(Export + Import)/GDP	IFS, GSO
REER		IFS, GSO
Rel_y	Real GDP of Vietnam/Real GDP of the US	IFS, GSO

The unit root tests implemented show that aside from NX, which is I(0), other variables were all I(1). Therefore, in order to estimate the effects of the variables on the trade balance, we will calculated the first order difference of these variables, and estimate the VAR model using NX and first order difference of the remaining variables. To select the appropriate lag level, the author employed the Schwarz information criterion and results show that the appropriate level is 1. Stability tests of the VAR model showed that the model satisfied the stability conditions.

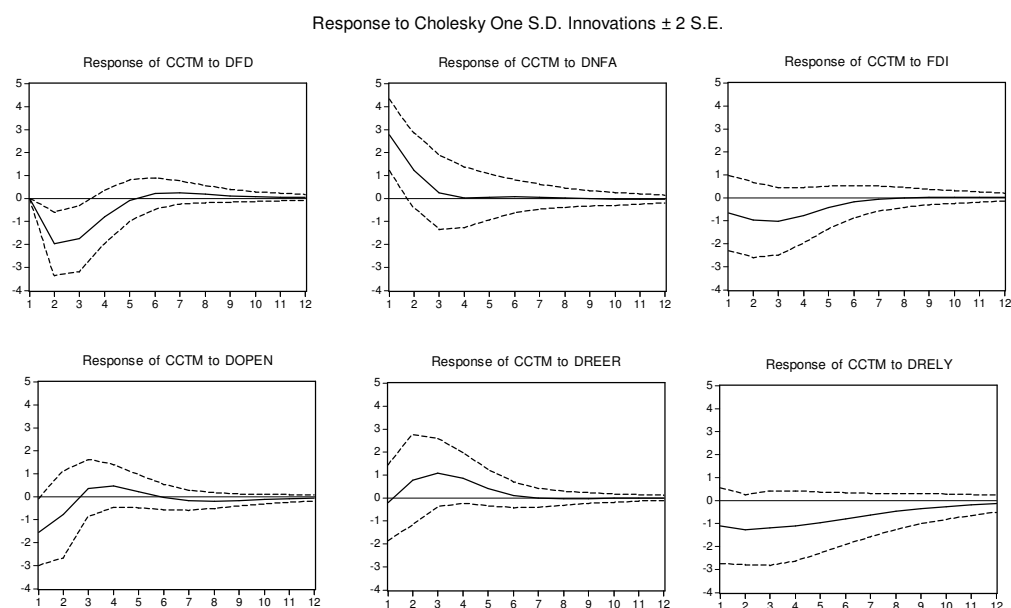
Granger causality test was employed to examine the Cholesky order, the results are shown in Table 6. According to this, the Cholesky order is dRel_y; dREER; FDI; dNFA; dOPEN; NX và dF_DEEP. Other Cholesky orders were also estimated for comparative analysis.

Table 6. Granger causality test results

	NX	d(F_DEEP)	d(NFA)	FDI	d(OPEN)	d(REER)	d(Rel_y)	All
NX	-	8.83***	0.44	0.77	0.02	0.13	0.05	12.18*
d(F_DEEP)	9.00***	-	1.26	0.03	2.67	2.36	4.86**	24.47***
d(NFA)	2.38	4.25**	-	1.74	1.51	0.16	0.11	11.21*
FDI	5.81**	0.01	0.16	-	2.07	1.57	0.02	11.06*
d(OPEN)	2.89*	5.51**	0.24	1.04	-	0.12	6.50**	11.51*
d(REER)	0.40	1.80	1.28	3.27*	0.08	-	3.04*	9.58
d(Rel_y)	0.49	4.33**	0.90	0.37	2.37	0.61	-	7.01

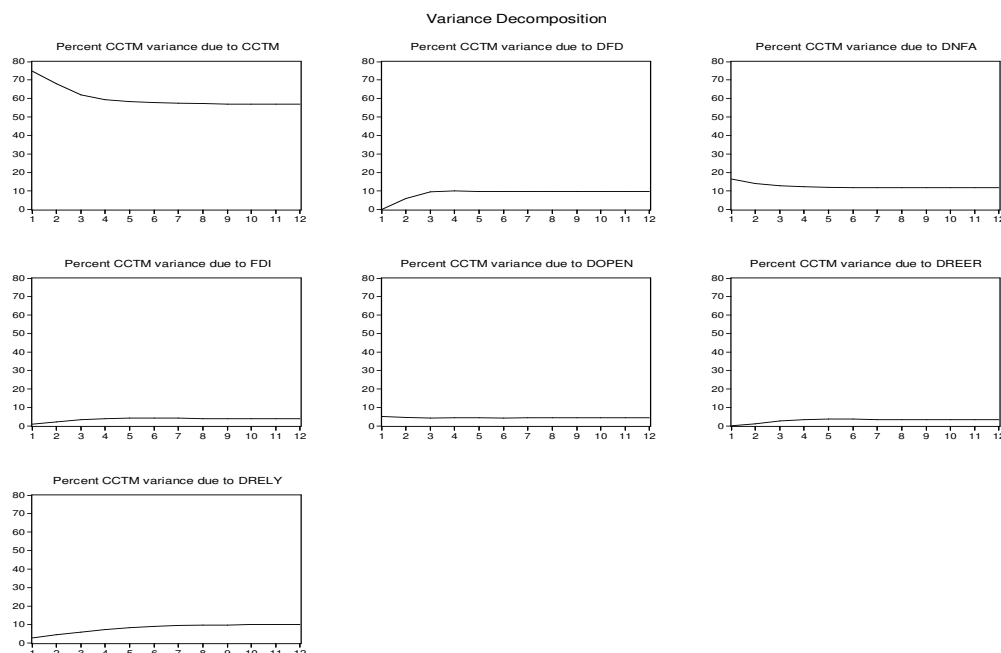
We now analyze the effect of these variables on the trade balance through the impulse response functions and the variance decompositions (Figure 6 and Figure 7). The results are relatively in agreement with those from the OLS model estimation.

Figure 6. Impulse response function



Source: VAR model results

Figure 7. Variance decomposition



Source: VAR model results

Specifically, the impulse response functions results imply a strong impact of the financial depth on the trade balance. For example, with a positive shock of financial depth, the trade balance will immediately experience a drastic decrease after 2-3 quarters. However, from the 5th quarter onward, this impact will gradually weaken and there will be some quarters later that displays sign of minimal positive effect, then it will completely expire after approximately 10 quarters.

A NFA positive shock also has a fairly strong effect on the trade balance, however, the effect is only significant in about 3 quarters after the shock, and then it will quickly expire from the 4th quarter. This result is also in agreement with some results from other studies such as Chinn & Prasad (2003); with some countries in the research of Lucun Yang (2011).

Both trade openness and real efficient exchange rate indicate that there is a J-curve effect with different levels. With real efficient exchange rate, an increase of REER will immediately cause trade deficit, though at a minimal level. And after that it will help improve the trade balance in a duration of about 6 quarters then will gradually expire.

With trade openness, a positive shock which increase the trade openness level will increase the trade balance deficit in about 3 quarters, then the balance will be improved with a lower level in the following 3 quarters. Moreover, unlike REER, after the 6th quarter, the trade balance will endure a slight deficit from the trade openness shock in the next 4-6 quarters, then it will eventually expire.

Of the two remaining variables, both FDI and relative income have a long lasting negative effect on the trade balance. While an FDI positive shock increases trade deficit in a duration of 8 quarters, a shock of relative income has longer impact, up to approximately 12 quarters before gradually expiring. This is completely in accord with the assumption that in Vietnam, although relative income increased, the first stage of development has not been completed,

therefore the stage in which an increase of relative income would improve the current account has not yet been achieved.

The variance decomposition analysis results imply that changes in the trade balance is mainly due to the impacts from 2 variables of financial depth and net foreign asset. Moreover, after about 5-6 quarters, the influence of relative income also increases and gradually impacts the change of the trade balance.

Policy Recommendations

The research results imply that, in order to sustainably resolve the trade balance issues, changing the growth model and restructuring of the economy are the key issues, whereby, the difference between national investment and saving is improved, ensuring the major macroeconomic balances of the economy. Renovating the growth model in Vietnam is considered to be the process of changing from extensive economic growth to intensive growth on the basis of enhancing technical efficiency, allocation efficiency and technical progress; thus gradually cut down on the proportion of investment contribution to growth, simultaneously with enhancing the efficiency in investment, with the objective of achieving sustainable growth (economic sustainability, social sustainability and environmental sustainability). Restructuring the economy in 3 major fields (public investment, state-owned enterprises, finance and banking) is now considered the imperative process in growth model renovation solutions, which will also contribute to the reduction of the investment – savings gap. Restructuring public investment supports increasing the average investment efficiency of the economy, restructuring state-owned enterprises helps settle domestic enterprises that currently contribute greatly to the trade deficit, and restructuring the finance and banking system is not only to raise the net-savings rate of households, but also to efficiently control the credit growth rate. .

Besides, the following policy recommendations would help improve the international trade structure (based on the research results) and thus contribute to the trade balance sustainability.

Recommendations related to FDI attraction policies

In order to increase the contribution of FDI sector to improve the trade balance, there need to be changes in the manufacturing structure of this sector, instead of investing in Vietnam only to take advantage of cheap labor, we need to focus the investment in manufacturing industries that had high added value in Vietnam, and also strongly developing supporting industries. Current popular trend of multinational corporations is to transfer investment to Vietnam in the process of restructuring the value chain and global manufacturing network, so this offered a great opportunity for Vietnam to attract investment on manufacturing industries that have high added value and climb up to the higher stages in global value chain.

Recommendations related to exchange rate policies

The research results imply that the trade balance in Vietnam is mainly affected by “real”, “structural” factors, not the “nominal” factors. Therefore, the objective of using the exchange rate to support export should be inappropriate in the current stage. However, if maintaining fixed exchange rate management for a long period, manufacturing and export structure will not have the motivation to renovate in a positive way. Specifically, the current exchange rate regime that highly over-value VND could cause difficulties in building supporting industries due to its encouragement of importing input factors instead of encouragement and support for domestic production. This then makes the processing manufacture problems of the economy

become more serious. Besides, FDI enterprises also find little motivation to improve the and the value-added, and the opportunity to attract more FDI that create chance of intensive technological transfusion will be reduced. Therefore, given the current exchange rate regime, solutions to strengthen the flexibility of exchange rate in permitted boundaries are needed. In medium-term, once macro conditions are ripe, domestic financial market is improved, an efficient monitoring mechanisms are established, the financial openness is increasing in accordance with the engaged roadmap of opening the capital account, then a managed floating-exchange rate regime should be the best choice.

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