Asian Journal of Agricultural Extension, Economics & Sociology
8(1): 1-12, 2016; Article no.AJAEES.20429
ISSN: 2320-7027

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An Inter-temporal Approach to Gauge Determinants of Trade Deficits in Vietnam during 1997-2012

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Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

Article Information

DOI: 10.9734/AJAEES/2016/20429
Editor(s):
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(2) Jamal Alrusheidat, Assistant and Consultant to Director general for Extension Education Director of Extension Education Department, National Centre for Agricultural Research and Extension (NCARE), Amman, Jordan.
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Complete Peer review History: http://sciencedomain.org/review-history/11784

Original Research Article

Received 27th July 2015
Accepted 23rd September 2015
Published 9th October 2015

ABSTRACT

This paper will investigate the determinants of Vietnam's trade deficit from an inter-temporal approach, in which the dynamic of the trade balance is the outcome of forward-looking consumption and investment decisions. The result shows that relative income, NFA, financial depth, exchange rate, FDI and the economy's openness have significant impacts on the trade deficit during the period of 1997-2012. The paper then recommends changing the growth model and restructuring the economy, supplemented with FDI and exchange rate policies to sustainably solve the trade deficit problem in Vietnam.

Keywords: Inter-temporal approach; trade deficit, Vietnam; exchange rate; NFA; FDI.

JEL classification: F10, F14, F15

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1. INTRODUCTION

After a successful period with export-oriented policies, the trade balance of Vietnam recorded a span of prolonged serious deficit, especially from 2003 to 2011. The trade balance began to experience small-scaled surpluses in 2012 and 2013, which did not result from improved economic structure or exports competitiveness but from a serious reduction in the aggregate demand. Therefore, trade surplus could not be sustainable, the efforts to manage trade balance in the middle-term will be met with difficulties when the domestic demand recovers.

In certain periods, trade deficit is not always 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 due to heavy demand for foreign raw materials, equipment and technologies while 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 trade deficit continues to increase for long without any sign of improvement, it means the previous process of foreign capital and technology accumulation and diffusion was not efficient in enhancing the economy's capacity to produce and export. Besides, trade deficit is one of the basic sources of macroeconomic instability in Vietnam. Trade deficit puts pressure on VND value, negatively affecting the dynamic of exchange rates and inflation. Also, the balance of payment is disturbed and foreign reserves decreased, which reduces the effectiveness of exchange rate policy as well as the market confidence in the State Bank of Vietnam (SBV). Serious trade deficit also means that the capital account would be in high surplus and national debt is accumulated.

Given the situation in Vietnam, some research questions should be addressed, i.e. what are the core reasons for the trade deficit and what are the solutions that need to be done in order to gradually decrease the trade deficit and sustainably maintain external balance? There have been many approaches attempting to explain the dynamic of the current balance and trade balance. A few notable methods include the absorption approach, the trade elasticity approach; and from the mid-1990s to the present, the inter-temporal approach. Studying the current balance and the trade balance using the inter-temporal approach is a novel and developing trend, it allows closer examination on the effects of many variables on the current account and trade balance, including policy variables. Accordingly, the current account is defined as the difference between domestic saving and investment [1]. This approach attempts to explain the changes in the current account through examination of the consumption, saving and investment decisions during each period. It provides a synthesis of the trade and the capital flow views by analyzing how the macroeconomic elements determine the future relative prices and how these prices affect saving and investment decisions.

The empirical literature on the applications of the inter-temporal approach has followed two main directions. On the one hand, several studies have tried to establish evidences in favor of the baseline model using different testing strategies. On the other hand, some papers have examined the long-term relationship between the current account and macroeconomic determinants using different standard econometric techniques [2-4]. Most of these studies identified variables that had significant impacts on the short-term and long-term current account and trade balance such as initial net foreign asset (NFA) position, trade openness, real effective exchange rate (REER), relative income, growth rate, financial development... as well as other policy and institution factors.

Given rich empirical studies in different countries, there has never been a study applying this approach to examine the current account and the trade balance of Vietnam. This paper will discuss the causes of dynamics of the trade balance from this perspective, then assessing the effectiveness of several trade related policies, and proposing policy recommendations. The scope of this paper is from 1997-2012 during which Vietnam has intensively integrated into the global economy.

The paper will start with the overview of saving - investment gap and the trade balance in Vietnam, which provides the background for the inter-temporal approach applied. It is followed by the estimation methodology and variables. The estimation result discussions will come next and finally, conclusion and policy recommendations will end the paper.

2. 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 to improve 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 and sustainable economic growth. A country is able to choose different growth models in order to accomplish these intermediate goals. To achieve rapid economic growth, an economy could choose between (i) extensive economic growth– accumulating factors of productions 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, given unchanged input factors, growth can still be achieved by improving the effectiveness of resources use.

Fig. 1 indicates that Vietnam maintained its economic growth by capital accumulation. Investment increased and remained at a relatively high level, especially since 1996. The investment/GDP ratio increased from average 33.30% per year during 1996 – 2000 to average 42.70% per year during 2006 – 2010. The average ratio was 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 was still relatively high in comparison with 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 Figs. for 2011 were 34.6% and 5.89%, respectively.

Fig. 2 indicates that 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). 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, Vietnam's economic growth was mostly attributed to capital accumulation. From 1990 to 2000, the contribution of capital to growth was only 34%, but this contribution increased to 53%, highest among Asian countries during 2000-2008 (Table 1). Meanwhile, the contribution of capital to the GDP growth in Vietnam was above 60% during 1990-2011 [5].

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

The contribution of TFP to growth in Vietnam has declined significantly over time. Table 1 indicates that the contribution of TFP to growth reduced from 44% (during 1990 -2000) to 26% (during 2000 – 2008), much lower than that of China, India and other South East Asian countries. The contribution of TFP to GDP growth was only 19.6% during 1990-2011 [5]. Besides, labor productivity of Vietnam is low due to the fact that most of the labor force is unskilled with inadequate labor discipline and lack of modern management skills. According to 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 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 investment is low, this is clearly reflected by the constant increase of the ICOR index. The economy had a relatively high level of ICOR; from 4.89 during 2000-2005, increased to 7.43 during 2006-2010 [6]. Investment from the public sector accounts for a large proportion of the gross national investment, 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 across two periods, bringing down the average investment effectiveness of the whole economy [6].

Because the growth model of Vietnam relied heavily on inefficient investment, domestic saving was inadequate to meet the demand for domestic investment, which widened the investment – saving gap. From the inter-temporal approach, this situation implies trade deficit in Vietnam. Fig. 3 shows that the investment – saving gap of the economy has dramatically

increased since 2007, accompanied with increasing trade deficit. The investment – saving gap reached a very high level of 11.5% during 2006 – 2011.

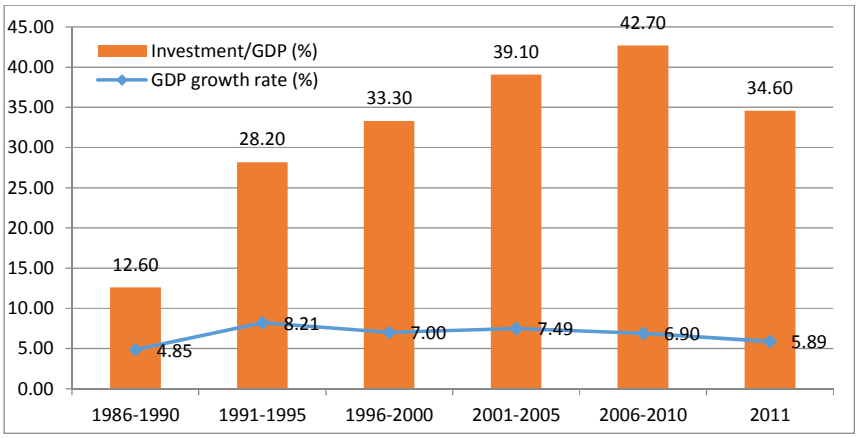

Fig. 1. Economic growth rate and investment/GDP ratio (%)
Source: General Statistics Office

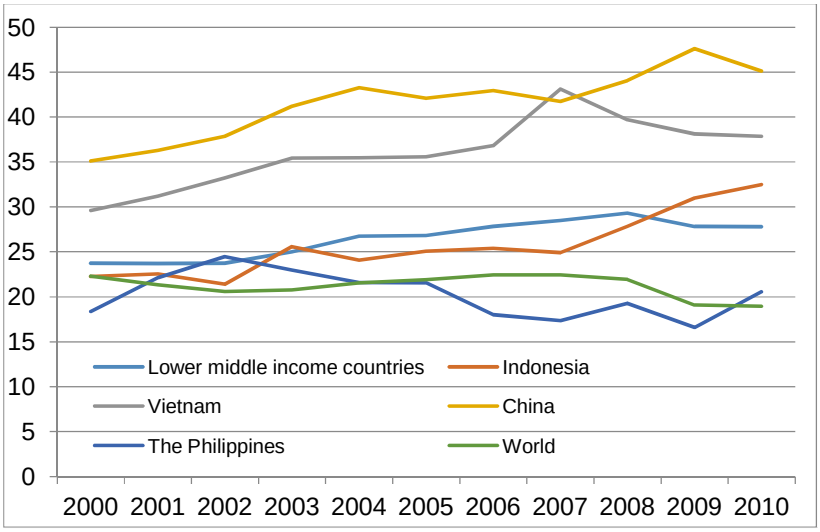

Fig. 2. Comparison in investment/GDP ratio between Vietnam and several countries (%)
Source: World Bank, investment is measured by fixed capital accumulation

Table 1. Contribution 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

Table 2. ICOR by economic sectors

	Calculated from investment				Calculated from capital 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).

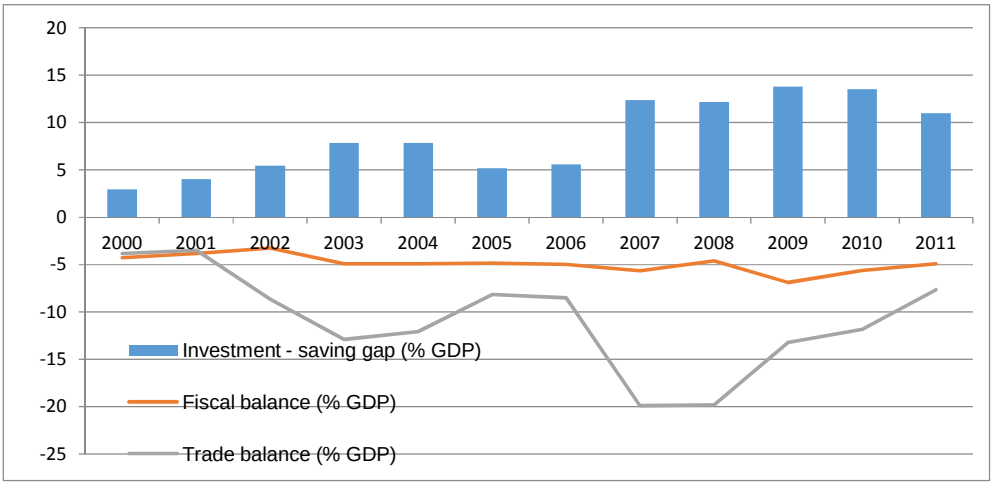

Fig. 3. Trade deficit, investment – saving gap and fiscal deficit (%GDP)
Source: IMF, WDI and GSO

The inadequate saving ratio could be explained by some following reasons. Net domestic savings include net government savings and net private savings from households and businesses including State-owned enterprises (SOEs). Fiscal deficit (negative net government savings), which persistently stayed at a high level in a prolonged period in order to support the growth model, contributed to the low domestic saving rate. Besides, with the support from macroeconomic policies and the internal problems of the banking and financial system, the investment – saving gap (negative net savings) of the private sector also increases. Reported data on the net private savings is not available, but it can be assessed by observing the behavior of households and businesses during the past years. For the households, because the financial system was still immature, poorly operated and contained high risks, given the context of high inflation and increasing macroeconomic instability, the net savings from this sector cannot be large. Meanwhile, the scale of credit in the businesses has been increasing during recent years. The causes of this situation were i) monetary and fiscal easing in a prolonged period, ii) incautious, shortsighted, spread out but inefficient investment activities of the businesses and iii) poorly operated financial system with inadequate macroeconomic and microeconomic supervision, in which, many small commercial banks targeted at huge credit expansion, even at the expense of safety.

3. METHODOLOGY AND VARIABLES

The aforementioned results showed that the saving – investment gap resulted from the structural characteristics and the growth model was the main cause of trade deficit in Vietnam over many years. The following sections will use the inter-temporal approach to analyze the important variables that influence the saving – investment gap and subsequently influence the trade balance.

Some studies used pooled OLS regressions and fixed-effect techniques to investigate the dynamic of the current account [2,7]. This method requires strict assumptions that the error terms have no correlation with the variables at all time periods. In this paper, due to limitation of the data availability, we also use the traditional OLS method and tests for autocorrelation will be conducted. The estimated equation is as following:

$Y_t = \alpha + ß.X_t + \varepsilon_t$

In which: Y_t is the dependent variables, including current account (CA) and trade balance (NX); X_t is the independent variables, including NFA, OPEN, Rel_y, F_DEEP, FDI, Growth, REER, which are suggested by the literature review. Initially, we estimate the basic model which incorporates all the independent variables. We then estimate some other models for comparative analysis. We also run the estimation with both current account balance and trade balance because current account deficit in Vietnam was mostly caused by trade deficit. The main sources of data are from International Financial Statistics (IFS) and General Statistics Office of Vietnam (GSO). The data is collected quarterly, from the 1st quarter of 1996 to the end of the 2nd quarter of 2012.

For robustness and comparative analysis, we also employ the VAR model with the variables listed in Table 4.

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

Variable	Measurement	Source
GDPr	Real GDP (at 1994 price)	GSO
CA	$CA = \frac{CA}{GDP} x100\%$	IFS
EX	Export value	IFS
IM	Import value	IFS
M2	M2 money supply	IFS
NX	$NX = \frac{EX - IM}{GDP} x100\%$	IFS
NFA	$NFA = \frac{NFA}{GDP} x100\%$ In which NFA is measure by one period lagged net foreign asset.	IFS
OPEN	$OPEN = \frac{EX + IM}{GDP} x100\%$	IFS
F_DEEP	$F_{DEEP} = \frac{M2}{GDP} x100\%$	IFS
Rel_y	$REL_Y = \frac{GDPrVi\hat{e}tNam}{GDPrUSA} x100\%$	IFS
FDI	$FDI = \frac{FDI}{GDP} x100\%$	IFS
GROWTH	GDP growth rate of Vietnam	GSO
REER	Real effective exchange rate	Calculated by the author based on GSO data

Table 4. Variable measurement and data sources for the VAR model

Variable	Measurement	Source
NX	(Export - Import)/GDP	IFS
F_DEEP	M2/GDP	IFS
FDI	FDI/GDP	IFS
NFA	NFA/GDP	IFS
OPEN	(Export + Import)/GDP	IFS
REER	Real effective exchange rate	Calculated by the author based on GSO data
Rel_y	Real GDP of Vietnam/Real GDP of the US	GSO

4. ESTIMATION DISCUSSION

4.1 The OLS Model Results

The OLS regression results are shown in Table 5. Model (1), (2) and (3) present results for current account; model (4), (5) and (6) for trade balance. Model (2), (3), (5) and (6) respectively omit one of the two variables of relative income (Rel_y) and GDP growth (GROWTH). However, the impact channels of these two variables on current account and trade balance are different, both of them are included in model (1) and (4) as baseline models. Tests for serial correlation in these models are presented in Table A.1 (in Appendix)[1].

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 NFA will have a positive effect on the current account. Second, the sum of current account and capital account balance is zero in the floating exchange rate regime, which implies that an economy with a larger net foreign asset position can endure current account deficit in a long period. This could lead to a negative relation between this variable and the current account balance. In the standard model, estimation results show that NFA has a negative effect on the current balance and the trade balance at conventional significant levels, however the magnitude of this effect is not large. This implies that in Vietnam, the effect from the second channel crowds out the first, large initial net foreign asset allows the economy to have trade deficit for long.

According to Solow's growth model, in the initial stage, an underdeveloped country will achieve higher economic growth rate when receiving foreign capital for development. Progressively, the economy will gradually come close to a steady state during 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 trade deficit. In addition, in another perspective, 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, growth rate might have a negative impact on trade balance. All models show common results, that the economic growth is negatively correlated with current account and trade balance, implying that the expenditure effect is overwhelming in the country.

Relative income is measured by the ratio of domestic real income against foreign income (i.e. the US). In the initial stage of the development process, an economy might experience trade deficit due to the demand for foreign finance. 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 developed economies [7]. Therefore, it is expected that there is a positive relation between relative income and current account. In the case of Vietnam, the estimated results suggest that 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. The increase in income in this stage in Vietnam would cause increase in imports and therefore worsen trade balance.

Estimation results indicate that an increase in the trade openness level tend to increase trade deficit and worsen current account. Vietnam is still a developing country with underdeveloped supporting industries; most of the imported goods are machinery, raw material and components for domestic production and export. Trade liberalization therefore would increase export as well as import, so the trade balance might not be improved. In the process of trade liberalization in Vietnam, it can be observed that each step of deeper integration into the global economy is usually followed by periods of large trade deficit.

REER is a measure of the value of a country's currency compared with a basket of main trading partners' currencies. REER greater than 1 means the domestic currency is overvalued, leading to a deterioration in the competitiveness of the country's exported goods and worsening the trade balance. However, the estimation results for Vietnam display no clear evidence for REER impacts. The estimated coefficients are not statistically significant at conventional levels. Some models even yield estimated coefficients with opposite signs. This result could be explained by the following observations.

[1]*Other tests will be provided upon request.*

Table 5. OLS regression results

	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

Fig. 4 shows NEER, REER [2] and trade balance/GDP (%) in Vietnam for the period 1996-2013. Figure 4 indicates that because of the fixed exchange rate and USD-pegged regime, the gap between NEER and REER since 2005 has increased rapidly, VND is being overvalued recently. The figure also points that the exchange rate and the trade balance in Vietnam display little resemblance of the theoretical relationship. This phenomenon reflects the fact that the trade balance of Vietnam mainly depended on real and structural factors, not on the nominal factors. It could be explained by the fact that domestic production for exports relied mostly on imported inputs as the supporting industries are still inadequate and underdeveloped. Meanwhile most of Vietnam's exported goods are processing goods, if exports increase, imports of raw materials will also increase. Thus, it could be concluded that the REER does not have a significant impact on trade balance in Vietnam. This result implies that the objective of sustainably improving 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.

The estimated results in the first 2 models indicate that the financial depth does not affect the current account. However, model (3) and (6) show that the impact is significantly positive at 10% level. This result implies that the financial depth has its role as a measurement for the development level of the financial system, if the financial system develops, the saving will be more and investment will be more cautious. It thus could reduce the gap between investment and savings, helping improve trade balance. The impact of this variable is nevertheless relatively low and unclear in some models, which is in accordance with some studies claiming that the impact of financial depth is usually less arbitrary from a theoretical point of view [2].

All models indicate that increase in foreign direct investment has negative effect on the current account and trade balance at conventional significance levels. FDI is now still one of the main sources in funding the deficit in current balance. However, the FDI sector mainly focuses on processing industries and the added value is quite low. Increasing FDI will lead an increase in importing materials for production and will negatively affect the trade balance.

4.2 The VAR Model Results

In the VAR model, the unit root tests implemented show that aside from NX and FDI, which are I(0), other variables are all I(1). Therefore, we estimate VAR model using NX, FDI and first order difference of the remaining variables. We employ the Schwarz information criterion to select the appropriate lag of 1.

[2] *$NEER_i = \sum_{j=1}^{n} e_{ij}.w_j/e_{0j}$ 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; w_j is the proportion of country j's import-export turnover in the total import-export turnover of Vietnam. $REER_i = NEER_i . (CPI_i^{VN}/CPI_0^{VN})/(CPI_i^{w}/CPI_0^{w})$, 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, including Australia, Cambodia, Canada, Hong Kong, China, India, Indonesia, Japan, South Korea, Malaysia, Philippines, Russia, Singapore, Thailand, the United Kingdom and the US.*

Stability tests of the VAR model show that the model satisfies the stability conditions.

Granger causality test is conducted to examine the Cholesky order; the results are shown in Table 6. According to this, the Cholesky order for the VAR model is d(Rel_y), d(REER), FDI, d(NFA), d(OPEN), NX và d(F_DEEP).

The impulse response functions and the variance decompositions from the VAR model are represented in Fig. 5 and Fig. 6. The results are mostly in agreement with those from the OLS model estimation. The impulse response functions imply a strong impact of the financial depth on the trade balance. 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 impact on the trade balance. The effect is nevertheless only significant in about 3 quarters after the shock, and then it will quickly expire from the 4th quarter. An increase in REER will immediately cause trade deficit at a minimal level. And after that it will help improve the trade balance in about 6 quarters and then will gradually expire. Meanwhile, a positive shock to trade openness will increase the trade deficit in about 3 quarters, then the balance will be improved in the following 3 quarters. 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. Meanwhile, the variance decomposition results imply that changes in the trade balance are mainly due to the impacts from 2 variables of financial depth and net foreign asset. Moreover, after about 5-6 quarters, the impact of relative income also increases and gradually affects trade balance fluctuation.

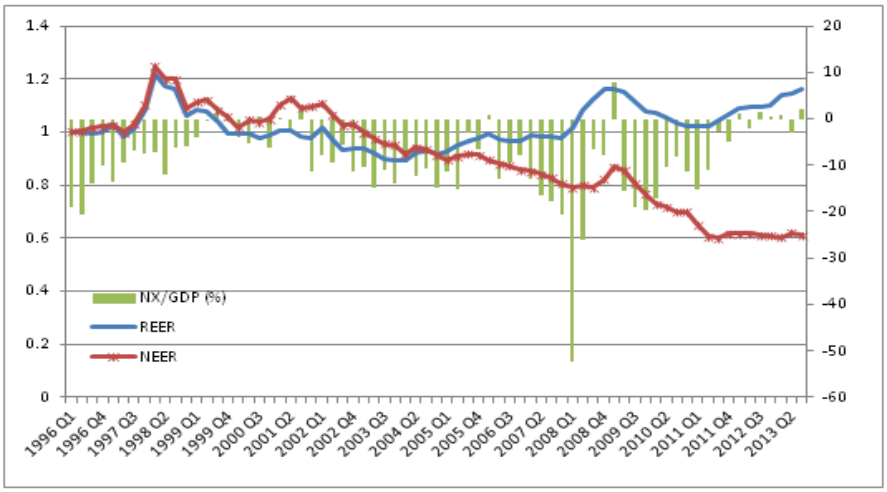

Fig. 4. REER, NEER and trade deficit
Source: Calculated by the author

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

Source: Calculated by the author

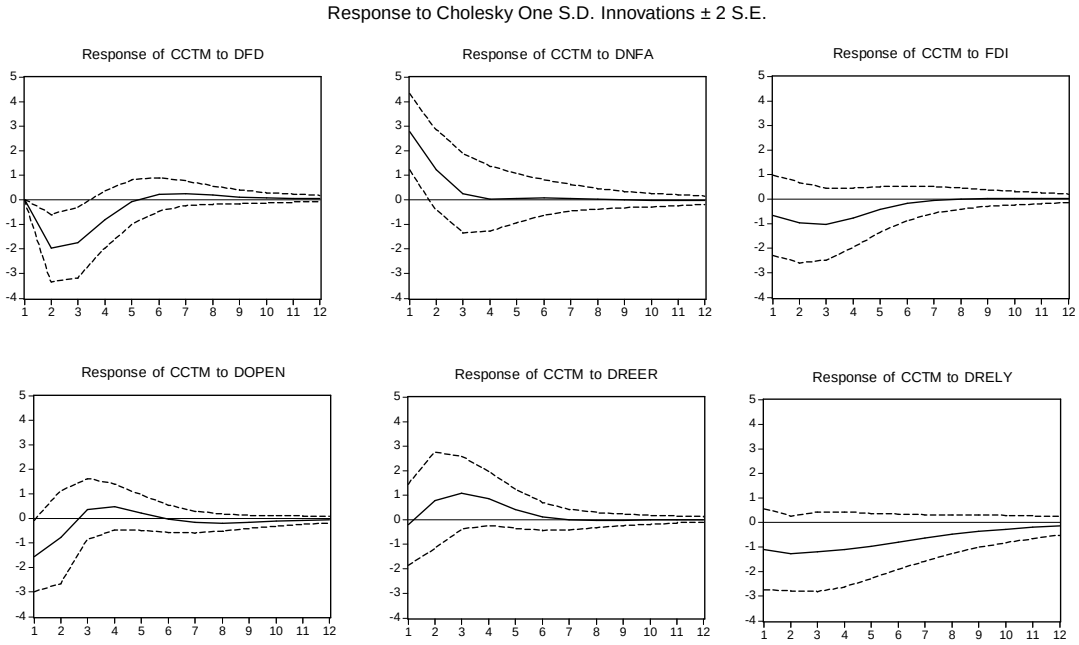

Fig. 5. Impulse response functions

Source: VAR model results

Note: CCTM: trade balance (NX), DFD: d(F_DEEP), DNFA: d(NFA), DOPEN: d(OPEN), DREER: d(REER), DRELY: d(Rel_y)

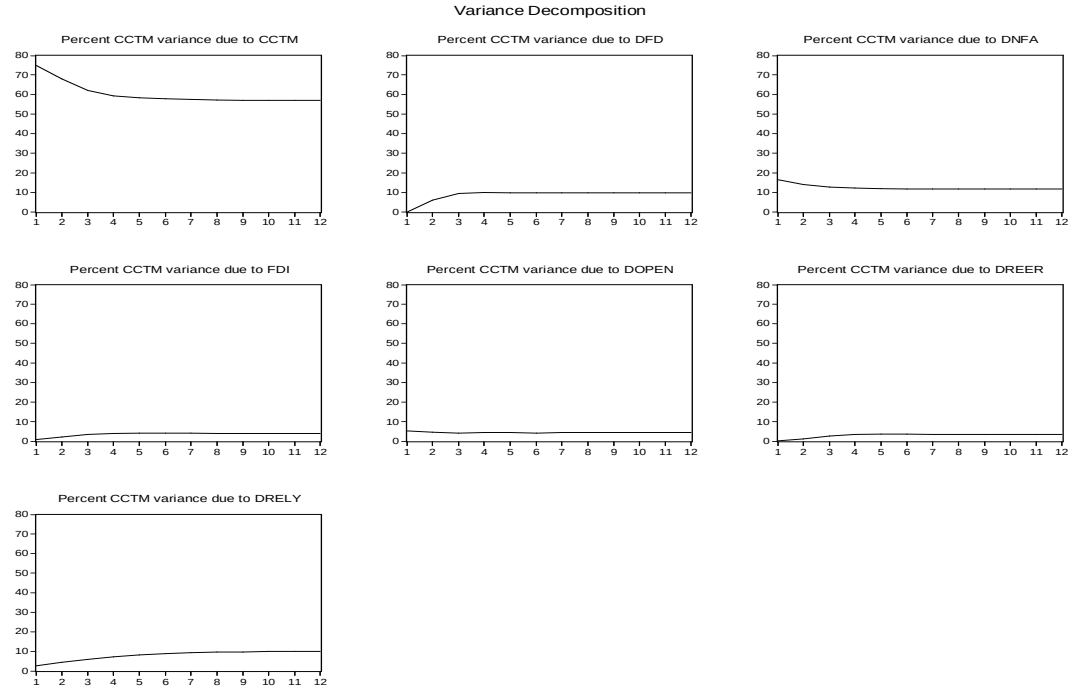

Fig. 6. Variance decompositions

Source: VAR model results

Note: CCTM: trade balance (NX), DFD: d(F_DEEP), DNFA: d(NFA), DOPEN: d(OPEN), DREER: d(REER), DRELY: d(Rel_y)

5. CONCLUSION AND POLICY RECOMMENDATIONS

The research results imply that, in order to sustainably resolve the trade deficit, changing the growth model and restructuring 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. It will then gradually cut down the proportion of investment contribution to growth, simultaneously with enhance the investment efficiency. Restructuring the economy in 3 major fields (public investment, state-owned enterprises, finance and banking) is now considered as 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, there are some policy recommendations that help improve the external trade structure and thus contribute to the trade balance sustainability. Current popular trend of multinational corporations is to transfer investment to Vietnam in the process of restructuring the value chain and global manufacturing network, this offers 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. In addition, the research results imply that the trade balance in Vietnam is mainly affected by real and structural factors, not the nominal factors. Therefore, using the exchange rate policy 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 overvalue VND could cause difficulties in building supporting industries due to its encouragement of importing input factors instead of encouragement for domestic supporting industries. FDI enterprises also find little motivation to improve the value-added and the opportunity to attract more FDI that create intensive technological transfusion will be reduced. Therefore, given the current exchange rate regime, level of flexibility of exchange rate should be needed. In the medium-term, once macro conditions are better, domestic financial market is improved, an efficient monitoring mechanism is 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 for Vietnam.

ACKNOWLEDGEMENTS

This research is funded by Vietnam National Foundation for Science and Technology Development (NAFOSTED) under grant number II4.1-2012.04

COMPETING INTERESTS

Author has declared that no competing interests exist.

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APPENDIX

Table A.1. Serial Correlation LM Tests for models (1), (2), (3), (4), (5), (6)

1. Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	2.076977	Probability	0.134855
Obs*R-squared	4.557656	Probability	0.102404
2. Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.865698	Probability	0.164118
Obs*R-squared	4.055104	Probability	0.131657
3. Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	2.275075	Probability	0.112048
Obs*R-squared	4.879110	Probability	0.087200
4. Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.561970	Probability	0.197690
Obs*R-squared	6.844393	Probability	0.144343
5. Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.510776	Probability	0.211735
Obs*R-squared	6.533824	Probability	0.162672
6. Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.678763	Probability	0.155473
Obs*R-squared	8.878952	Probability	0.113991

Peer-review history:
The peer review history for this paper can be accessed here:
http://sciencedomain.org/review-history/11784