



THE LONG RUN AND SHORT RUN IMPACTS OF FOREIGN DIRECT INVESTMENT AND EXPORT ON ECONOMIC GROWTH OF VIETNAM



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ABSTRACT

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The determinants of economic growth have always been an important issue in economic research. This paper aims to study the short run and long run impact of foreign direct investment (FDI) and export on economic growth of Vietnam using annual time series data for the period 1986-2015 by implementing ARDL and error correction model. The results show that in the long run FDI has a significant positive impact on Vietnam economic growth while the effect of export is negative. However, FDI and export do not have any significant impact on growth in the short run. These results offer new insights into Vietnam's openness policy for promoting economic growth.

Contribution/ Originality: This is the very first study to examine the long run and short run impacts of foreign direct investment and export on economic growth of Vietnam for the period 1985-2015. It employs the newly developed method bound test (ARDL) approach which operates more properly for small sample size.

1. INTRODUCTION

After decades of military conflicts and economic stagnation, Vietnam began its process of economic revival, by transforming from a centrally planning economy to a market –oriented economy with the introduction of Doi Moi (renovation) policy in 1986. Thereafter, the country has increasingly integrated into the global economy. Since the introduction of first Law on Investment in December 1987, the country has made frequent revisions on laws governing Foreign Direct Investment (FDI) to make it more attractive to investors. Numerous bilateral and multilateral free trade agreements were signed, which created favorable conditions for export trade. Particularly, becoming a member of WTO in January 2007 is a milestone for the global integration process of the country. As a result of openness policies, the share of FDI and export in the GDP has increased significantly. In 1986, FDI and export accounted for only 0 % and 6.6 % respectively in GDP but in 2015 the respective shares of FDI and export increased to 6.1% and 89.8%. However, to state that the increasing dependence of the country on export and FDI is

good for economic growth is a controversial matter. An accurate assessment of the impacts of FDI and export on economic growth is dependent on appropriate openness policies which can promote sustainable economic development.

This paper aims to assess the short run and long run impacts of FDI and export on economic growth of Vietnam. FDI and export are expected to have a positive effect on economic growth. This research will build on the existing literature in this area. Firstly, this paper will examine the short run and long run effect of FDI and export on Vietnam economic growth using annual data for an updated period 1986-2015 and this in an addition to the existing studies. Secondly, while other researches utilizes two step (Engle and Granger, 1987) method or the maximum likelihood technique of Johansen and Juselius (1990) which requires a large sample size for validity, this research employs a newly developed method bounds testing (ARDL) approach introduced by Pesaran *et al.* (2001) which operates more properly for a small sample size.

This paper is divided into six sections. The first section is introduction. The second section deals with literature review. The third section provides an overview of Vietnam's economic growth, export and foreign direct investment. The fourth section deals with data and methodology followed by empirical results. The last section includes conclusion and policy implications.

2. LITERATURE REVIEW

According to neo classical growth theory proposed by Harrod (2015); Domar (1946) and Solow (1956) FDI is a catalyst for economic growth because it increases the physical investment. In the endogenous growth model presented in Romer (1986); Romer (1991) and Lucas (1988), FDI promotes economic growth by generating technological and knowledge spillovers. These models show that FDI is an important factor contributing to economic growth in the host countries. However, the empirical results on the effects of FDI on economic growth are inconclusive.

Yao *et al.* (2008) study the mechanism of how FDI impacts the development process of China. They employ a production function with a large panel data set from the Chinese regions over the time period 1979–2003. This data set is used to test two propositions; (1) FDI is a mover of production efficiency and (2) FDI is a shifter of the host country's production frontier. Their results confirm the two hypothesis and conclude that FDI is a powerful driver of economic growth in China. The positive effect of FDI on economic growth is also found in other Asian countries such as Thailand (Roy and Mandal, 2012) Pakistan (Rahman and Shahbaz, 2013) Indonesia (Suyanto *et al.*, 2012) and so on.

Apart from time series data, panel data are also widely used in examining the relationship between FDI and economic growth. Allowing for cross country heterogeneity, Nair-reichert and Weinhold (2001) use a mixed fixed and random (MFR) panel data estimation method to examine the relationship between FDI and economic growth. Their results suggest that FDI can have a bigger effect in improving future growth rate in more open countries. Oladipo (2012) explored the FDI-growth nexus with a panel data set of 16 developing countries in Latin American and the Caribbean countries. The data is taken for the last three decades during which the countries implemented profound economic and financial reforms. Their research finds that FDI has a positive effect on economic growth in 13 out of 16 countries. Using both single equation and simultaneous equation, Li and Liu (2005) examine the endogenous relationship between FDI and economic growth in a sample of 84 countries over the period 1970-1999. They find that FDI has a positive effect on economic growth only from 1980 onwards. Before the 1980s, severe economic and social conditions in developing countries hinder FDI from contributing to economic growth. Meanwhile, Groizard (2006) points out the importance of a sound business environment in the form of good government regulations in helping FDI to boost economic growth. These empirical results show that FDI does not only enhance growth by itself but also through its interaction with other factors such as openness of policy, human capital, regulations and so on.

However, some researchers argue that FDI imposes costs for the host countries such as more competition pressure on the domestic firms, crowding out effect on domestic investment and deterioration of balance of payment because of the profit repatriations (Kholdy, 1995; Mutafoğlu, 2012; Mohamed *et al.*, 2013).

As for exports, export-led growth theory postulates that export expansion is one of the key factors of economic growth determinants because export expansion can lead to economies of scale for small economies. Furthermore, relaxation of foreign exchanges rate can facilitate input imports for domestic productions. Some empirical results support this theory (Tyler, 1981; Chow, 1987) but others find negative or insignificant impacts of export on growth (Jung and Marshall, 1985; Ahmad and Kwan, 1991).

The literature available in this area in Vietnam also comprises a mixture of results. Seng (2016) utilize panel data for 21 Asian countries and find that a 1% increase in FDI and export led to 0.334% and 1.438% in economic growth of Vietnam respectively in the long run. Similarly, using annual series data for the 1990-2013 and Johansen co-integration technique, Trinh and Nguyen (2015) finds that a 1% increase in FDI is associated with 0.24% increase in economic growth in Vietnam in the long run. By using panel data which covers 61 province of Vietnam over the period 1996-2005, Anwar and Nguyen (2010) conclude that the direct effect of FDI on Vietnam economic growth is positive but the the indirect effect through the economy's absorptive capacity is found to be negative. Vu *et al.* (2008) use sectorial data for FDI inflows in Vietnam and China to examine the sectorial impact of FDI on growth. Their results show that FDI has a statistically significant impact on economic growth operating directly and through labor productivity and the effect is different among economic sectors. While Seng (2016) finds that a 1% increase in export results in 1.438% increase in long run growth, Pham (2008) 2-VAR model indicates that the impact of export on Vietnam economic growth appears to be very small.

There are several reasons for the disparity in the empirical results about the effect of FDI and export on economic growth. Firstly, numerous studies employ different econometrics techniques and theoretical models. Secondly, these studies utilize different data set (time series data, panel data and cross sectional data). However, this disparity does not preclude the needs for further investigation of the subject.

3. OVERVIEW OF VIETNAM'S ECONOMIC GROWTH, EXPORT AND FOREIGN DIRECT INVESTMENT

The economic and political reform (Doi Moi) policy in 1986 changed Viet Nam's post-war Soviet-style subsidized economy into a market-oriented one. Viet Nam was transformed from a poor country with more than 70 per cent of living in hunger and poverty, to a middle income country with GDP per capita of US\$ 1685 in 2015. It has also integrated into the global economy by becoming an active member of international organizations, by the end of 2015 Vietnam has joined 12 bilateral and multilateral free trade agreements (FTAs). These openness of policies have supported export sectors and foreign direct investment. As seen from figure 1, the share of export to GDP in Vietnam increased significantly overtime and the values are relatively high in the recent years. FDI also increased after the first Law on Foreign Direct Investment was passed in 1987. This law was then amended and supplemented several times, notably in 1996 and 2002. Along with the expansion in export and FDI, the country has experienced impressive economic growth. Vietnam saw a tremendous increase in GDP growth between the years 1992-1996, averaging at 8.85%, before dropping in the 1996-2000 period due to the Asian financial crisis. The economy recovered after the crisis and economic growth fluctuated in the 2001-2006 period, reaching a peak of 7.1% in 2007 when Vietnam officially becomes a member of the World Trade Organization (WTO) before slowing down due to the impact of the global financial and economic downturn. There seems to be a positive correction between export and economic growth and between foreign direct investment and economic growth. However, an appropriate regression is necessary to examine the contribution of export and foreign direct investment to economic growth in Vietnam. Therefore, this research studies the short run and long run impacts of export and foreign direct investment on Vietnam economic growth by utilizing ARDL approach of cointegration.

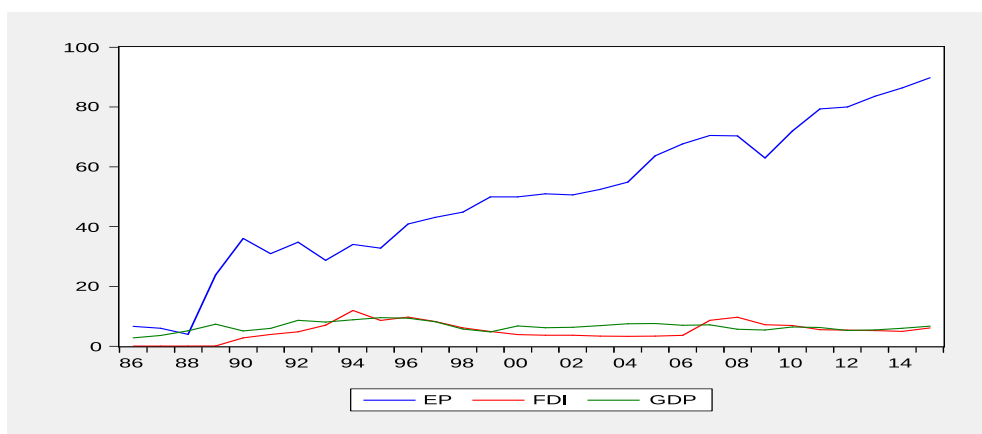


Figure-1. Export share of GDP, FDI share of GDP and annual GDP growth in Vietnam for 1986-2015 period
Source: Drawn from Eview using data from WDI (2015)

4. DATA AND METHODOLOGY

4.1. Data

This research employs three variables: (i) foreign direct investment net flow (% of GDP), (ii) exports of goods and services (% of GDP) and annual GDP growth (%) to examine the short run and long run impacts of FDI and export on economic growth. The secondary data for period 1986-2015 is collected from WDI (2015) and converted into logarithm denoted by I in each variable to make the model linear and to avoid heteroskedasticity problem (Shawa and Shen, 2013). The functional form is as shown below:

$$\text{lgdp}_t = \beta_0 + \beta_1 \text{lfdi}_t + \beta_2 \text{lep}_t + \varepsilon_t \quad (1)$$

lgdp: natural log of GDP growth
lfdi: natural log of FDI
lep: natural log of export

4.2. Methodology

The long run impacts of FDI and export on economic growth are examined by applying ARDL approach to cointegration. There are various reasons which make ARDL model more useful than other techniques. Firstly, it can be applied irrespective of whether the series are $I(0)$ or $I(1)$. Meanwhile, other approaches to cointegration tests such as Engle and Granger (1987) and Johansen and Juselius (1990) require the variables to be integrated of the same order. Also, ARDL approach is more suitable and produces more valid results for small sample size (Paul, 2014).

ARDL approach consists of four steps. The first step is to check the stationarity of the variables to ensure that no variable is integrated of order two. In the second step, the order of lags of ARDL will be chosen automatically by E-views 9.5 by using AIC then the co-integration relationship among the variables is examined by conducting F statistics. Next, if there is a co-integration relationship among the variables, the long run and short run models are derived. Finally, the stability and diagnostic test will be conducted to ensure goodness of fit of the chosen model.

The equation for ARDL test is as below:

$$\Delta \text{lgdp}_t = \delta_0 + \sum_{i=1}^l \zeta_i \cdot \Delta \text{lgdp}_{t-i} + \sum_{i=0}^m \theta_i \Delta \text{lfdi}_{t-i} + \sum_{i=0}^n \omega_i \Delta \text{lep}_{t-i} + \varphi_1 \cdot \text{lgdp}_{t-1} + \varphi_2 \text{lfdi}_{t-1} + \varphi_3 \cdot \text{lep}_{t-1} + \eta_t \quad (2)$$

The null hypothesis to be tested $H_0 : \varphi_1 = \varphi_2 = \varphi_3 = 0$. If the F statistic from this test is greater than the critical values from Pesaran *et al.* (2001) there exists a long run relationship among the variables. The long run relationship describes the impact of the independent variables on the dependent variable in the long run. The equation for long run model is as below:

$$\text{lgdp}_t = \gamma_0 + \sum_{i=1}^k \theta_{1i} \text{lgdp}_{t-i} + \sum_{i=0}^p \mu_{1i} \text{lfdi}_{t-i} + \sum_{i=0}^q \theta_{1i} \text{lep}_{t-i} + \varepsilon_{1t} \quad (3)$$

The short run relationship describes the the impact of the independent variables on the dependent variable in the short run. The following ARDL error correction term is used:

$$\Delta \text{lgdp}_t = \alpha_0 + \sum_{i=1}^E \theta_{2i} \Delta \text{lgdp}_{t-i} + \sum_{i=0}^h \mu_{2i} \Delta \text{lfdi}_{t-i} + \sum_{i=0}^u \theta_{2i} \Delta \text{lep}_{t-i} + \theta \text{ect}_{t-1} + \varepsilon_{2t} \quad (4)$$

The error correction term ect_{t-1} represents the feedback of the system in stabilizing disequilibrium in the system. In the presence of cointegration, ect_{t-1} should be negative and the higher the magnitude of ect_{t-1} , the higher will be the speed of adjustment.

5. EMPIRICAL RESULTS

The first step involves testing the stationarity of the variables.

Table-1. The Augmented Dickey Fuller – Unit root Test Results

Variables	Constant without trend		Constant with trend		Order of integration
	Level	First Difference	Level	First Difference	
lgdp	-3.104610**	-4.898222***	-3.835808**	-4.861257***	I(0)
lfdi	-7.719767***	-7.615176***	-6.329403***	-7.615333***	I(0)
lep	-2.346736	-5.311948***	-2.752902	-5.614604***	I(1)

Note: All figures are t-statistics to test the null hypothesis that series are non stationary. ** and *** denote significance at 5% and 1% respectively.

Source: Author's estimation in E-views 9.5

The unit root test is conducted to ensure that no variables are I (2). It is shown from table 1 that variables are a purely combination of I (0) and I (1), hence ARDL approach to cointegration is valid. Based on [Pesaran and Shin \(1999\)](#) recommendation to use a maximum lag length of 2 for annual data, ARDL (1, 0, 1) for equation 2 is chosen by AIC. In the next step, ARDL bound test is conducted which shows that the F statistic is greater than the critical values, confirming the existence of long run relationship among variables. The result of the bound test is shown in table 2.

Table-2. ARDL bound test

Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	k
F-statistic	6.629542	2
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	3.17	4.14
5%	3.79	4.85
2.5%	4.41	5.52
1%	5.15	6.36

Source: Author's estimation in E-views 9.5

To make the results more robust, the F-statistic is compared with the critical values provided by [Narayan \(2005\)](#) for sample size (30 observations). The result shows that F-statistic is greater than both the upper bound critical values

at 10% and 5% level of significance using unrestricted intercept and no trend. This confirms the existence of a long run relationship among export, fdi and economic growth.

Table-3. Critical values extracted from Narayan (2005)

Critical Value Bound for the F test – unrestricted intercept and no trend (k=2)						
	10%		5%		1%	
T	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
30	3.437	4.470	4.267	5.473	6.183	7.873
35	3.393	4.410	4.183	5.333	6.140	7.607

Source: Narayan (2005)

For the long run model, ARDL (2, 0, 2) is chosen by AIC. Estimation of the long run coefficients for the ARDL (2, 0, 2) model is presented in table 3. The coefficients on lfdi and lep are statistically significant at 1% and 5% respectively. The coefficients on lfdi is 0.152926 which means a 1% increase in FDI is associated with approximately 0.15% increase in GDP growth. Interestingly, 1% increase in export will lead to approximately 0.25% decrease in GDP growth.

Table-4. Estimation of long run coefficients

Dependent variable is lgdp

Variable	Coefficient	Std. Error	t-Statistic	Prob
LFDI	0.152926	0.048465	3.155409	0.0048***
LEP	-0.254790	0.092040	-2.768258	0.0115**

Note: * and *** denote significance at 10% and 1% respectively

Source: Author's estimation in E-views 9.5

The error correction model is estimated and the result is presented in table 4. FDI and export do not have any impact on economic growth, while GDP growth one period lagged is significant but has negative effect on economic growth in the short-run. The value of the error correction term (ECT (-1)) is significant and has negative sign, confirming the results of the bound test for cointegration relationship. Approximately, 75.26% of disequilibria from the previous year's shock converge back to the long run equilibrium in the current year.

Table-5. Error correction representation results for equation 4

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGDP(-1))	0.287757	0.150283	1.914769	0.0692*
D(LFDI)	0.100034	0.072450	1.380734	0.1819
D(LEP)	-0.003810	0.088611	-0.042997	0.9661
D(LEP(-1))	-0.216521	0.147858	-1.464384	0.1579
C	2.010024	0.426013	4.718216	0.0001***
ECT(-1)	-0.752661	0.162911	-4.620082	0.0001***
ECT = LGDP - (0.1529*LFDI -0.2548*LEP)				

Note: * and *** denote significance at 10% and 1% respectively

Source: Author's estimation in E-views 9.5

Various diagnostic tests were conducted to confirm the efficiency of the model, as shown in table 5. The results show that the model is free from serial correlation, functional form, heteroskedasticity problems and is normally distributed (All p_values are greater than critical values of 0.05).

Table-6. Diagnostic Test

	Test Statistic	P-value
Serial Correlation	F_statistic = 0.514196	0.6061
Functional Form	F_statistic = 0.323092	0.7278
Normality	$X^2_{(2)} = 1.405761$	0.495157
Heteroskedasticity	F_statistic = 0.588774	0.7356

Source: Author's estimation in E-views 9.5

In addition, based on cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUM of squares) proposed by [Brown et al. \(1975\)](#) the model is stable over the sample period as the plot of CUSUM and CUSUM-squared statistics is within the critical bounds (represented by a pair of straight lines).

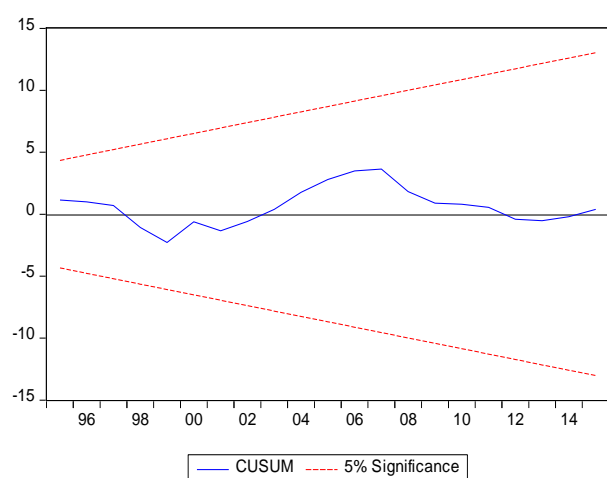


Figure-2. Plot of cumulative sum of recursive residuals

Source: Author's calculation in E-views 9.5

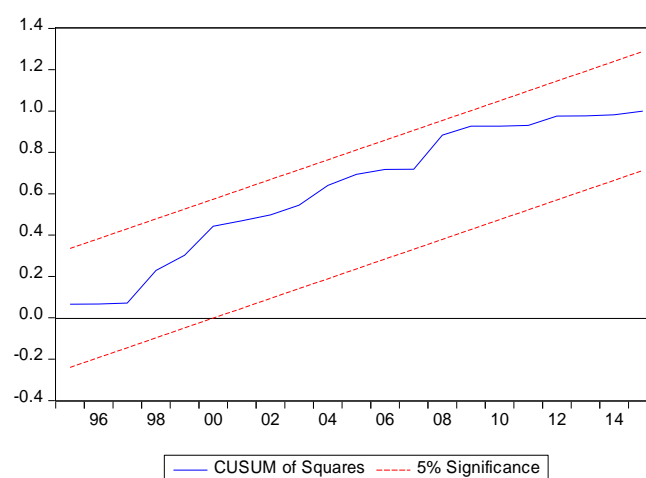


Figure-3. Plot of cumulative sum of Squares of recursive residuals

Source: Author's calculation in E-views 9.5

6. CONCLUSION AND POLICY IMPLICATIONS

This research aims to study the short run and long run impact of foreign direct investment and export on economic growth of Vietnam for the period 1986-2015. ARDL model to cointegration confirms the existence of a long run relationship among variables. In the long run, FDI has a significant positive effect on Vietnam's economic growth while the effect of export is negative. The short run impact is examined by implementing ARDL error correction model which then shows that FDI and export do not exhibit any impact on Vietnam's economic growth in the short run. This implies that it may take a long time for FDI and export to influence economic growth in Vietnam.

Above empirical findings provide some important implications for the openness policy of Vietnam. Firstly, as FDI has a significant positive impact on long run economic growth, it is important for policy makers to design policies aimed at attracting FDI. This may include creating a good macroeconomic environment, accelerating administrative reform, sustaining social and political stability and reducing government bureaucracy. Secondly, although the export sector has been expanding in recent years, represented by the increasing share of export in GDP, there is no definite econometric evidence that export expansion is a driver of long run economic growth in Vietnam. It is therefore suggested that continual export expansion can not lead to future sustainable economic growth. This conclusion is somewhat surprising. However, this does not imply that export does not play any important role in Vietnam's economic growth. It is likely that export has made certain indirect contributions to Vietnam economic growth such as improving the country's current account and setting the image of Vietnam as a dynamic exporting country... but its contributions have been offset by negative effects from excessive exports of low value added and labour intensive goods. Therefore, export expansion is good but not enough to promote economic growth. Apart from

export expansion policy, export policies should focus on other important aspects such as what to export (the quality of export goods, the export structure) and where to export (trade direction). If Vietnam wants to achieve sustainable economic growth in the future, significant reforms are necessary for the export strategy.

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