Does Foreign Direct Investment Really Support Private Investment in an Emerging Economy? An Empirical Evidence in Vietnam

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ABSTRACT

Vietnam is an emerging economy which also is one of the most successful countries in attracting foreign direct investment over decades. Some studies have shown that foreign direct investment playing an important role in supporting economic growth in Vietnam. However, there have not got clear evidence about the effect of the foreign direct investment on private investment in this economy. Our paper tries to investigate the impact of foreign direct investment on private investment in Vietnam by the Error correction model. The quarterly dataset is collected in the period of 2003-2017. The estimated results show that foreign direct investment, as well as the GDP per capita, have positive impacts on private investment in both the short and long run. So the crowds-in hypothesis is confirmed in the case of the Vietnamese economy. On the other hand, we see that inflation can harm private investment and its impact level in long run is smaller than the short run. Finally, the export balance has a negative effect on private investment, however, the coefficients are not enough statistical significance implying that international trade maybe did not help to support the private investment because of the trade deficit prolong during the period.

INTRODUCTION

During the three decades of the economic revolution which was named 'Doi Moi' in Vietnam, the foreign direct investment attraction result has always been one of the most prominent achievements in this economy. Beginning from the group of lowest income countries, since 2009, the Vietnamese economy was ranked in a group of emerging markets worldwide by the Economist Intelligence Unit (EIU) denoted 'CIVETS' (including Colombia, Indonesia, Vietnam, Egypt, Turkey, and South Africa). The CIVETS group is expected to become a new motivation for the world economic growth in the next decades (McGregor, 2011). Because of the development record over the past 30 years, nowadays, Vietnam is considered one of the fastest growing countries in Asia (World Bank, 2017) and is also one of the stars of the emerging markets universe (Vanham, 2018).

According to the statistics of the General Statistics Office of Vietnam (GSO, 2018), in the period 1987-2017, Vietnam has attracted 25,524 foreign direct investment projects by a total registered capital of $320 billion from 128 countries worldwide. At present, foreign direct investment is still recognized as an important resource in order to the successful implementation of the country's industrialization and modernization strategy in the future. Over time, the sector of foreign direct investment has expanded exponentially, from the contributing only to 2% of the gross domestic product (GDP) in 1992 and by 2016 it has reached 19,63% of GDP. The statistics show that nearly 60% of foreign direct investment is concentrated in the manufacturing sector and generating over 50% of Vietnam's industrial production value, and contributing to the formation and development of some key industries including telecommunications, petroleum, electronics, cement, and steel. Besides, in 2017, the foreign direct investment sector created jobs for about 4.2 million workers with stable incomes. Not only the increase in percentage in the GDP structure but also the foreign companies have increasingly dominated the trade balance of Vietnam. In the detail, in 2000 the foreign investment sector only accounted for 27% of total export value and 27.8% of total import value, however, this sector calculated for 72.5% of export and 59.9% of import balance in 2017 (GSO, 2018). The statistical data shows a strong development trend in the foreign investment sector in Vietnam.

Going in-line with the economic revolution, the private investment and private sector have also increased many times in Vietnam. In 2016, this economy currently had nearly 488 thousand private enterprises accounted for 96.7% of the total number (about 505 thousand companies). In the private sector, these are more than 96% are small and medium enterprises, 2% are medium-sized enterprises and 2% are large enterprises. The private businesses provided about 44.9 million jobs and contributed more than 40% of the total investment value in 2017. Thus, macroeconomic developments in Vietnam over the past decade have partially confirmed to the link between foreign direct investment and the private sector in Vietnam. Since being considered as one of the main driving forces for economic growth, in recent years, the private sector has encountered many difficulties and has gradually reduced its share in Vietnam's GDP. In the detail, the contribution of the private sector has been fluctuated and decreased, from 47.22% of GDP in 2005 to 41.74% of GDP in 2016 (GSO, 2018).

In the same period, an opposite way, we have seen a strong increase in foreign direct investment flow as well as the expansion of the foreign sector into the economy. The Vietnamese policymakers have started to have some worries about this situation. So there are some research questions must be answered in order to have the policies for supporting the sustainable economic growth in the future, eg. Is there a long-term cointegrated relationship between foreign direct investment and private investment in Vietnam? Does the foreign direct investment really support the private investment? Does the expansion of the foreign direct investment relate to the narrowing of the private investment in this period? However, these topics are research questions that need to be urgently clarified in order to help policymakers in relevant fields in Vietnam develop a comprehensive strategy for socio-economic development in Viet Nam in the context foreign direct investment will continue to play an important role in the coming time. Furthermore, the success story of attracting foreign direct investment of Vietnam is a useful and worth reference for policymakers in developing countries in order to link between the succeeding in attracting foreign direct investment and the increase of private investment in the economies. Despite the foreign direct investment has an important role in the development strategy of Vietnam, however, there are very few studies focusing on the relationship between foreign direct investment and private investment in Vietnam. In order to fill this research gap, our paper aims to use the Error correction model developed by Engle and Granger (1987) to analyze the relationship between two important macro variables in Vietnam in both short and long run. Besides, our data is the quarterly form which also is the best version collected in the period from 2003 to 2017.

The paper has five sections in the structure. First, Section 2 includes the literature review on the relationship between foreign direct investment and private investment. In Section 3, we de-

scribe the methodology and the data. The empirical results and discussion are represented in Section 4. And Section 5 concludes some highlight implications.

1. LITERATURE REVIEW

The role of foreign direct investment in economic development in developing countries is an important topic that received many interests of economists worldwide. Besides, the impact of foreign direct investment on private investment also is central concerning of policymakers because there are many empirical results focused on this relationship in many countries, however, the results are not united (or contrary) with much different evidence. In the framework theories of the relationship between foreign direct investment and private investment, it has been shown that the foreign direct investment can have crowds-in (supporting) or crowds-out (harming) effect on the private sector in receiving countries. Empirical studies have shown that the kind of impact type depends on several reasons, e.g. the type of foreign direct investment into the receiving country (Dunning, 1981), human capital level (Borenzstein et al., 1998), the difference in the technology level between foreign direct investment sector and the private sector (De Mello, 1999) or development level of financial market (Alfaro et al., 2004). The crowds-in effect of the foreign direct investment on the private sector when foreign direct investment firms bring new technologies to the recipient country (Lipsey, 2004), provide new investment opportunities for domestic firms (Sun, 1998) or an increase in the demand for domestic products (Cardoso and Dornbusch, 1989). Because of the many differences in the macroeconomics environment between countries, so the investigated results are not united in the literature on the effect of the foreign direct investment on private investment in the host economies. We have some different kinds of the evidence including positive (clouds-in effect), negative effect (clouds-out effect), both positive and negative effects or non-significance on this relationship.

Firstly, there are some results found that the foreign direct investment had positive impacts on private investment in the host countries. Al-Sadig (2013) examed the effects of foreign direct investment on private investment in developing countries. The study used a large panel dataset including 91 developing host countries in 1970–2000. The result confirmed that foreign direct investment stimulated private domestic investment which supported the "crowds-in-hypothesis". The result estimated on the grouping countries based on their level of income, the study found that the positive effects of foreign direct investment on private investment in low-income countries depended on the availability of human capital. Ang (2009) analyzed the long-term relationship between private domestic investment, public investment and foreign direct investment in Malaysia in the period 1960 to 2003. The result confirmed a fairly robust cointegrated relationship between these variables in this period. In the detail, both public investment and foreign direct investment are found a complementary impact, rather than competing with the private sector in Malaysia.

In Ghana (Africa), Djokoto et al. (2014) investigated the effects of foreign direct investment into agriculture on domestic investment in this sector with a time series dataset from 1976 to 2007. In the case of Ghana, the developing agricultural sector has promoted foreign direct investment flows for some decades, so it was imperative to establish the relationship between foreign direct investments and domestic investment. The estimated result confirmed that foreign direct investment into agriculture supported domestic investment into agriculture in this country in the research period. Cho et al. (2017) investigated the relationship between foreign investment and the Croatian domestic firms by intensifying technology transfers and innovations in the economy. The study sample included 145 firms joined in the survey for the foreign investment enterprise issue. The result provided an empirical evidence that the innovation activities in subsidiaries have a positive influence on technology transfer from foreign multinational corporations. Behera (2014) examined the local company productivity spillover from foreign direct investment by a cross-industry

analysis in the Indian manufacturing. The results concluded that foreign companies raised the labor productivity of the local firms within an industry in the economy.

Secondly, on the other hand, we also have some studies confirmed that the foreign direct investment had negative impacts on private investment in the host economies. Jan Mišun and Tomšk (2002) tried to estimate whether foreign direct investment crowds-in or crowds-out domestic investment in four countries including the Czech Republic, Hungary, and Poland. The result showed that for the time period 1990-2000 there was evidence of a crowds-out effect in Poland. For the time period 1990- 2000 in Hungary and for the time period 1993-2000 the authors found a crowds-in effect in the Czech Republic. Agosin and Machado (2005) studied the relationship between foreign direct investment and domestic investment in developing countries. The estimated equation was run for 12 countries in each of three developing regions (Africa, Asia, and Latin America) in the period 1971–2000. The result showed that foreign direct investment had no impact on domestic investment in all three developing regions. In particular, there were several sub-periods for specific regions where foreign direct investment displaced domestic investment. So the authors concluded a crowding-out effect of the foreign direct investment on domestic investment in the regions. The paper also has some suggestions for policymakers to make foreign direct investment more effective in enhancing domestic investment in developing countries.

Adams (2009) analyzed the impact of foreign direct investment and domestic investment on economic growth in Sub-Saharan Africa region in 1990–2003. Besides the growth topic, The study also found that foreign direct investment had an initial negative effect on domestic investment and subsequent positive effect in later periods for the panel of countries studied. The sign and magnitude of the current and lagged foreign direct investment coefficients suggested a net crowding out effect (a negative relationship between two variables). Focusing on the Turkis economy, Saglam and Yalta (2011) tried to provide evidence on the relationships between foreign direct investment, private domestic investment and public domestic investment in 1970-2009. The study found that there was no long-term relationship between foreign direct investment, public investment, and private investment. The result also indicated the poor contribution of foreign direct investment to the Turkish investment path. They concluded that the lack of interaction between foreign direct investment and domestic investment could impede the contribution of foreign direct investment to economic growth from capital accumulation channel.

Szkorupova (2015) examined the effects of foreign direct investment on domestic investment in four countries of Central and Eastern Europe region (Czech Republic, Estonia, Hungary, and Slovakia) in the period of 1993 – 2012. Selection of countries was performed according to inflow foreign direct investment per capita ratio. However, a negative effect of domestic investment by foreign direct investment was confirmed in this region. The author pointed out some reasons explaining this situation. The foreign investors bought a share of strategic companies in some strategic industries in the economies. The domestic companies had not got enough resources to compete with multinational companies. Besides, the public policy was another reason because it only promoted the business of foreign investors, on the contrary side, domestic companies without the benefit of business. Chena et al. (2017) used a quarterly database in1994-2014 and found a neutral relationship between foreign direct investment and domestic investment in China. Furthermore, the result showed that whilst the Equity joint venture crowds in domestic investment, while foreign-funded enterprise crowds it out. The authors argued that the Chinese government could more actively promote the formation of the Equity joint ventures and used this sector as the catalyst for industrial upgrading in the future.

In the case of Vietnam, there are a few studies focussing on this issue, however, the researchers only use the micro-data in firm surveys instead of the macro level. Anwar and Nguyen (2011) examined that the presence of foreign firms in Vietnam could get benefits to domestic firms through the formation of inter-firm linkages and these relationships would help to increase the export balance of domestic firms. The empirical analysis showed that the presence of foreign firms in Vietnam making significantly affected the decision of domestic firms to export as well as sup-

porting their export share. Kokko and Thang (2014) analyzed the survival effects from both horizontal and vertical foreign direct investment in Vietnam with detailed firm-level data for the period 2001–2008. The result confirmed that the horizontal foreign direct investment likely had a crowds-out effect on the local firms in Vietnam during the research period.

2. METHODOLOGY AND DATA

2.1 Methodology

To investigated analysis the research targets, our estimated strategy includes four steps in the process. Firstly, the time-series data will be checked for the unit root by the Augmented Dickey-Fuller testing method (Dickey and Fuller, 1979). If the testing result confirms that the variables are stationary at the first difference level, then we will apply the Error correction model in this data form. In the second step, the cointegration test of Johansen (1988) will be employed to conclude about the long-term relationship between variables in the research equation. In step 3, the equation is regressed through the Ordinary Least Squares (OLS) method to identify the impact of each variable on private investment in Vietnam in the long run. Finally, the short-term relationships between variables were estimated by the Error correction model (Engle and Granger, 1987).

The Augmented Dickey-Fuller (ADF) test was developed by Dickey and Fuller (1979), which is considered the most popular testing method for the unit root situation of a time-series data. Based on the ADF testing method, we have a time-series (X) is checked whether it is stationary at the level denoted as I (0), or integrated at the first difference denoted as I (1). The testing equation is represented as follows:

$$\Delta X_t = \alpha_0 + \alpha_1 t + \alpha_2 X_{t-1} + \alpha_i \sum \Delta X_{t-i} + u_t \tag{1}$$

Where we have t is represented as a trend time. If α_2 is smaller than zero, the null hypothesis will be rejected and the X_t is confirmed as I (0). Otherwise, we have α_2 does not find the negative value as well as statistically significant, this time-series variable cannot be considered as a stationary variable. After that, we will use the test for the first difference data instead of the level data.

The testing developed by Johansen (1988) is employed to conclude about the cointegrating relationship between variables. This method uses two likelihood ratio criteria (Eigenvalues and Trace) to check the number of cointegration vectors in the research equation. The likelihood ratio values are computed as these following equations:

$$\lambda_{Maximum} = -T\ln(1-\lambda_{r+1}) \quad r = 0, 1, 2, ..., p\text{-}1 \tag{2}$$

$$\lambda_{Trace} = -T\sum_{r+1}^{p}\ln(1-\lambda_i) \quad r = 0, 1, 2, ..., p\text{-}1 \tag{3}$$

In this method, the Eigenvalues are represented by λ_i (i = 1, 2, ..., p; $\lambda_1 > \lambda_2 > ... > \lambda_p$) and T is the sample size. The null hypothesis (H_0) of r cointegrating against the alternate hypothesis (H_1) that there are (r + 1) cointegrating vectors. In the Eigenvalues test, the null hypotheses to be tested are in a checking procedure of the following: H_0: r = 0 against H_1: r = 1; H_0: r ≤ 1 against H_1: r = 2; ... ; H_0: r ≤ p - 1 against H_1: r = p. Besides, the Trace criteria also checks the null hypothesis (H_0) that has at most r cointegrating vectors in the research function. The testing result confirms the number of cointegrating vectors is less than or equal to r. So the null hypotheses to be tested are in a checking procedure as H_0: r = 0 against H_1: r ≥ 1; H_0: r ≤ 1 against H_1: r ≥ 2; ... ; H_0: r ≤ p - 1 against H_1: r = p.

Based on the reference from the previous studies, our econometric model analyses the long-term effect of the foreign direct investment on private investment in Vietnam is represented as the following form:

$$LPINV_t = \varphi_0 + \varphi_1 LGDPPER_t + \varphi_2 LFDI_t + \varphi_3 EX_t + \varphi_4 INF_t + \varepsilon_t \qquad (4)$$

Where LPINV (Private Investment) is the natural logarithm of the private investment variable. The explanatory variables include: LGDPPER is the natural logarithm of the GDP per capita, LFDI is the natural logarithm of the foreign direct investment, EX is the net export variable (calculated by the exports minus the import balance), and INF represents the inflation of the economy (measured by the volatility of the consumer price index over time). Finally, the t value denotes the time in the interval [1, n] and ε is the statistical error of the equation.

After that, the short-term relationship between private investment and explanatory variables are analyzed by the Error correction model. Following to Engle and Granger (1987), we have ECT as the variable representing the Error correction term that is calculated (the equation 5). The long-term equation is showed as follows:

$$ECT_t = LPINV_t - \varphi_0 - \varphi_1 LGDPPER_t - \varphi_2 LFDI_t - \varphi_3 EX_t - \varphi_4 INF_t \qquad (5)$$

$$\Delta LPINV_t = \beta_0 + \beta_1 \Delta LGDPPER_t + \beta_2 \Delta LFDI_t + \beta_3 \Delta EX_t + \beta_4 \Delta INF_t + \beta_5 ECT_{t-1} + \gamma_t \qquad (6)$$

The coefficient of ECT_{t-1} measures the speed of adjustment back from the short-term to the long-term equilibrium. Besides, the symbol 'Δ' is used to denote the first difference value of the time-series in the short-term equation.

2.2 The data

The data used in the paper are quarterly data collected over the period from the first quarter of 2003 to the fourth quarter of 2017 (The total number of observations is 60). All of the time-series are sourced from the General Statistics Office of Vietnam (GSO, 2018) at the current prices. Besides, the unit of private investment, foreign direct investment, and net exports are trillion VND and the unit of GDP per capita in thousand VND. The unit of the inflation variable is %. Excluding inflation and net exports, all variables are converted to the natural logarithm form. The descriptive statistics and graphs of the variables are presented as follows:

Table 1. Descriptive statistics of the variables

Statistic	LPINV	LGDPPER	LFDI	EX	INF
Mean	4.102267	8.431433	3.649283	-22.01098	1.958950
Median	4.332500	8.413500	3.944000	-18.01152	1.416500
Maximum	5.420000	9.542000	5.233000	71.84805	9.190000
Minimum	2.603000	7.083000	1.774000	-124.0393	-2.279000
Std. Dev.	0.797683	0.717280	0.847264	38.75095	2.218174
Skewness	-0.367938	-0.090704	-0.435132	-0.378627	1.220479
Kurtosis	1.912532	1.810322	2.286099	3.305148	4.895939
Jarque-Bera	4.304810	3.620608	3.167532	1.666369	23.88215
Probability	0.116204	0.163604	0.205201	0.434663	0.000007
Observations	60	60	60	60	60

Source: Author calculated from research data

Figure 1. The graphs of the variables
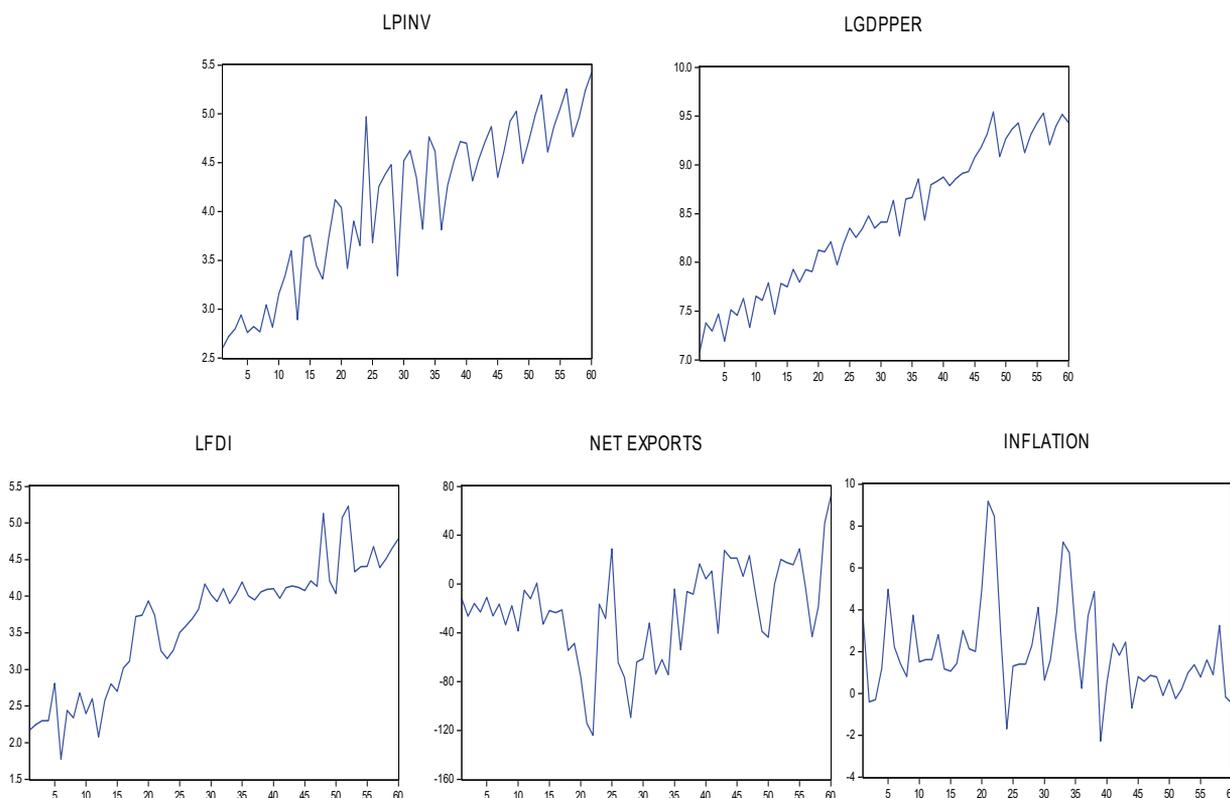
Source: Author calculated from research data

3. RESULT AND DISCUSSION

3.1 Unit Root Test and Cointegration Test

Following the theoretical econometrics, there is a simple concept about a unit root (also spoken a unit root process or a difference stationary process). The unit root is a stochastic trend in a time series or can be called as 'a random walk with a drift'. in the case we find a time series which has a unit root or non-stationary, it represents a systematic pattern that is unpredictable. In the case, there are some of the time series in the equation which has unit roots, we must consider some usual testings of statistics (eg, t, F or R^2) can not have the standard distributions (Stock and Watson, 1988). In order to pass this situation, there are some methods to test the unit root test for stationary or non-stationary in a time series before calculated in an econometric function.

As discussions in the methodology, our paper employs the Augmented Dickey-Fuller (ADF) method to test the unit root of the variables such as Private investment (LPINV), Income per capita (LGDPPER), Foreign direct investment (LFDI), Net exports (NX) and Inflation. There are three conditions used (1) with intercept, (2) with trend and intercept, and (3) without intercept for the technique. The ADF testing result confirms that there is only the inflation variable is stationary at the significance level of 1% with all analyzing models (intercept, trend and intercept, and without intercept). However, the result of the ADF test concludes that all variables are stationary at the first difference level with the 1% of significance. So the ADF testing result implies the existence of the cointegration I(1) among variable in the long-run. The unit root test results are reported in the below table.

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Table 2. Result of Unit root test of the variables

IN LEVEL			
Variable	With intercept	With trend and intercept	Without constant
Private investment (LPINV)	-1.402567	-1.825689	-3.602968
GDP per capita (LGDPPER)	-1.139401	-1.095166	6.210650***
Foreign direct investment (LFDI)	-1.291169	-4.731791***	1.331919
Net exports (EX)	-1.542551	-2.202145	-1.440824
Inflation (INF)	-4.609686***	-5.403549***	-3.370193***
IN FIRST DIFFERENCE			
Variable	With intercept	With trend and intercept	Without constant
ΔPrivate investment (ΔLPINV)	-14.48608***	-14.51679***	-12.31910***
ΔGDP per capita (ΔLGDPPER)	-12.07206***	-12.12822***	-2.807720***
ΔForeign direct investment (ΔLFDI)	-8.201998***	-8.153425***	-7.908723***
ΔNet exports (ΔEX)	-7.514873***	-7.529625***	-4.609686***
ΔInflation (ΔINF)	-8.220166***	-8.165823***	-8.295909***

Source: Author calculated from research data. * indicates significance at 0.10 level, ** indicates significance at 0.05 level, *** indicates significance at 0.01 level

To test the long-term relationship between variables, we used a cointegration testing method developed by Johansen (1988). Following to this method, the null hypothesis (H_0) can be rejected (or which imply there is a cointegrating vector in the long run) when we have the test value is greater than the critical values. Our testing result concludes that the null hypothesis of no cointegration vector will be rejected at the statistical significance of 1% level. The result also confirms that there is an existence of the long-term relationship between private investment (LPINV), gross domestic product per capita (LGDPPER), foreign direct investment (LFDI), net exports (EX) and inflation (INF) in Vietnam. The Johansen testing result is represented in Table 3.

Table 3. Results of Johansen cointegration tests

The hypothesis H_0	Trace statistic test	Max-Eigen test
There is no cointegration equation	122.0119 (77.81884)*	57.28378 (39.37013)*
There is a cointegration equation in maximum	67.7281 (54.68150)*	30.51688 (32.71527)*
There are 2 cointegration equations in maximum	34.2112 (35.45817)	27.32066 (25.86121)*
There are 3 cointegration equations in maximum	6.89056 (19.93711)	6.073904 (18.52001)
There are 4 cointegration equations in maximum	0.81666 (6.634897)	0.816665 (6.634879)

Source: Author calculated from research data.* The null hypothesis is rejected at the 1% level of significance. The critical values are in parentheses

3.2 THE RESULTS OF LONG-TERM AND SHORT-TERM EQUATION

Based on the estimation strategy described at the methodology, in this section, we will estimate the relationship between the private investment variable and the explanatory variables in the equation (4) with the Error correction model (ECM) technique of Engle and Granger (1987). First of all, the equation (4) will be estimated to identify the coefficients which exactly describe the relationships between private investment and other variables in the long run. In some cases of econometric estimation, we could not conclude whether the regression results are correctly speci-

fied. We have a good way to pass this problem is to test whether the estimated result is consistent with the regression assumptions. So, the long-term equation is estimated by the Ordinary Least Square (OLS) method. After that, some diagnostic tests will be done to confirm regression assumptions.

However, our testing results concluded that the estimated result is free of the serial autocorrelation as well as the heteroskedasticity phenomenon. The long-term estimated result and the diagnostic tests can be seen in the underlying table.

Table 4. The estimated result of the long-term equation

Dependent Variable: LPINV		
Variables	Coefficient	t-statistic
Constant	-2.926463***	-3.132240
LGDPPER	0.724625***	4.580395
LFDI	0.267077**	2.081494
EX	-0.001325	-1.046198
INF	-0.043239*	-1.960273
R-squared	0.8669	
Model diagnostics Serial Correlation test (LM Breusch-Godfrey) = 0.598678 [0.5532] Heteroskedasticity test (Breusch-Pagan-Godfrey) = 1.706588 [0.1617]		

Source: Author calculated from research data.* indicates significance at 0.10 level, ** indicates significance level at 0.05, *** indicates significance level at 0.01

The regression result shows that the foreign direct investment has positive effects on domestic investment at the statistical significance of 5% level. The estimated result computes that foreign investment increases by 1% leading to domestic direct investment would be increased by 0.26% in the same period. So the crowds-in hypothesis is confirmed in the case of the Vietnamese economy. This impact is quite apparent by the magnitude of the regression coefficient obtained. Our result is a clear evidence which demonstrates the efficiency of the attracting policy focusing on the foreign direct investment in Vietnam over the past decades. The increase in foreign investment will contribute to stimulating domestic capital inflows and the multiplier effect will continuously have an expansion of this increase in the aggregate demand as well as the economic growth of the economy. The quantitative result is also in line with the correlative graph between foreign direct investment and private investment in the study period (see Figure 2).

As a good result, in the long-term trend, Vietnam's economy will have a strong growth of all capital flows to support the growth and create many new jobs. Specifically, statistics from the General Statistics Office of Vietnam shows that in the period 2000-2017, the foreign investment increased by 14.6 times (from VND 27.1 trillion to VND 396.2 trillion) compared private investment fastly increased by 19.1 times (from VND 43.5 trillion to VND 676.3 trillion). Our result is a new evidence in macro level which also adds more information to this issue besides the previous result in Vietnam such as foreign direct investment helps an increase in the export balance of the Vietnamese domestic firms (Anwar and Nguyen, 2011). However, our result is not united with the evidence of Kokko and Thang (2014) which concluded that the horizontal foreign direct investment likely had a crowds-out effect on the local firms in Vietnam.

Figure 2. The correlative graph between LPINV and LFDI
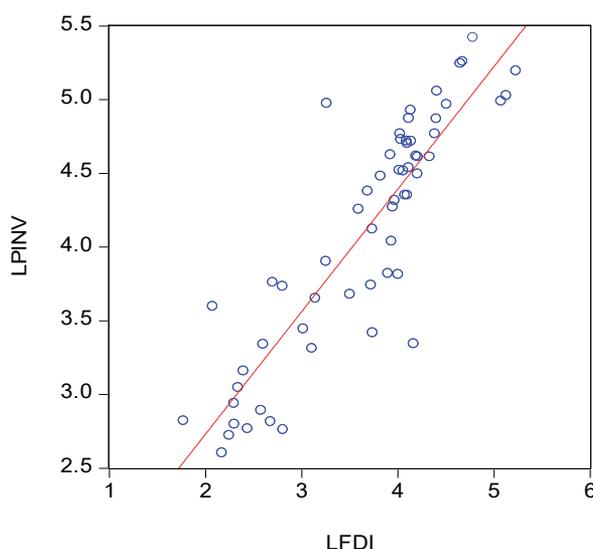
Source: Author calculated from research data

Our study is also supported by some empirical studies in both developed and developing countries. Our results also a good illustration for the Vietnamese policymakers on the positive impact of foreign direct investment on the private investment in the long run. Therefore, besides the enhancing policies for private investment, the Vietnamese policymakers need to persistence in continuous implementing the attracting policies focusing on the foreign investment flows in the future. In fact, after two decades of strong economic growth, the Vietnamese economy was facing some significant challenges which include the slowing down of the economic growth as well as some macroeconomic instability coming from the business losing and bankrupt of some large public economic corporations in the period of 2008-2014. In the detail, from the average economic growth rate reached 7.0% per year in 1995-2000 and 7.5% per year in 2001-2007, the average growth rate sharply dropped to 5.9% per year in 2008-2012 (GSO, 2018). So in the future, in order to recover and enhance the faster growth in Vietnam, the private investment and foreign direct investment will be continuously recognized and forecasted as the main forces of Vietnam's economy in the target to become a high-income country in the next decades.

Regression result also shows that the GDP per capita has a positive effect on the private investment in the long run with the significance of 1% level. The quantitative result also implies that if the GDP per capita increases by 1%, the private investment also increased by 0.72% over the same period. On the other hand, based on regression results, the level of impact of the GDP per capita on private investment (as 0.72) is significantly greater than the impact of foreign investment (0.26). Our finding demonstrates that the increase in the average income plays a decisive role in the dramatic increase in private investment, but the role of foreign investment is lower than the income in this situation. In the period 1990-2017, Vietnam has had remarkable success in improving the GDP per capita, from $200 in 1990 to $2385 in 2017. This result provides further evidence to Vietnamese policymakers in continuing to mobilize people to invest their capital through start-ups or equity investments of the companies. Thus, the positive impact of per capita GDP on private investment in longevity is clear and significant in the policymaking.

However, the inflation causes a decline in the private investment in Vietnam. The regression result shows that the inflation has a negative effect on the private investment at the10% level of significance. In particular, if the inflation increases by 1%, it would reduce 0.04% of the private investment in the same period. This finding further clarifies the link between inflation and macroeconomic instability in Vietnam (Tung and Thanh, 2015), through a decline in private investment of

the economy. So a declining in the private investment will lead to a higher unemployment rate. In the past, inflation has always been a chronic disease of the Vietnamese economy. In periods of high inflation, there was also a sharply declines in the private investment. This may explain that as inflation rises, the central bank adopts a contractionary monetary policy, rising interest rates and the decrease of the private investment flow. The result of our study suggests that the policymakers need to maintain a moderate inflation target to support an increase in private investment as well as macroeconomic stability in Vietnam.

Finally, the trade balance has a negative impact on private investment, however, this effect is not statistically significant. Our result indicates that although the openness of Vietnam has increased very fastly, however, the supporting response to the private sector is still very limited. Whereas the trade balance has been seriously affected by the deficit prolong in this period. Specifically, Vietnam's net exports have had negative values for more than two decades (from 1990 to 2013) especially unbalance in the 2007-2011 period with the total value of the trade deficit up to $67.4 billion by the average $13.5 billion per year. The trade balance only returned to a surplus with relatively small values in 2014 ($ 2.14 billion), 2016 ($ 2.52 billion) and 2017 ($ 2.67 billion). However, GSO's data shows that the foreign investment sector (currently accounting for more than 70% of total exports) is the main author of balancing the trade balance in Vietnam. Besides, the supply of foreign products continuously passes over the demand for years would increase the competitive pressure on the domestic market due to the increase in the volume of the foreign goods. After that, the trade deficit causes foreign exchange account deficits leading to macroeconomic instability. As a result, our study has not found evidence of international trade playing an active role in promoting private investment in Vietnam.

In order to analyze the short-term relationship in the private investment equation, our paper employs the Error correction model to estimate the econometric function with the variables in the first differences of data. Based on the estimated technique was developed by Engle and Granger (1987), in the first step, we will calculate the first difference of variables. In the second step, the Error correction terms (ECT) which are the error-term values in the equation (1) are used to regress in the equation (3). The estimated coefficients show the relationships between variables in the short run, besides, the coefficient of the Error correction terms also measured the speed of adjustment from the short-term to the long-term equilibrium state. In order to test the regression assumptions, our paper applies some diagnostic tests for the short-term estimated result. However, the testing results conclude that the estimated result continuously passes all diagnostic tests including the heteroskedasticity phenomenon as well as the serial autocorrelation. The estimated result of short-term coefficients and diagnostic tests are represented in the below table.

Table 5. Estimation result of the short-term equation

Dependent Variable: ΔPINV		
Variables	Coefficient	t-statistic
Constant	-0.009043	-0.227350
ΔLGDPPER	0.978572***	4.513007
ΔLFDI	0.199826*	1.796642
ΔEX	-0.000381	-0.310273
ΔINF	-0.059215***	-3.310854
ECT(-1)	-1.055527***	-7.588917
R-squared	0.6511	
Model diagnostics Serial Correlation test (LM Breusch-Godfrey) = 0.217516 [0.8053] Heteroskedasticity test (Breusch-Pagan-Godfrey) =1.256448 [0.2965]		

Source: Author calculated from research data.* indicates significance at 0.10 level, ** indicates significance level at 0.05, *** indicates significance level at 0.01

The strength of the Error correction method is that it allows the analysis of both short-term relationships between variables for more comprehensive research. In this case, the short-term result quietly supports the long-term estimated result. Thus, the short-term regression result shows that the foreign direct investment also has a positive impact on the private investment at the 10% of statistical significance. The short-term impact confirmed that the foreign direct investment supports the private investment in not only the short run but also in the long run. Besides, the estimated results also show that the supporting effect of the foreign direct investment to private investment in the long run (0.267077) is higher than in the short run (0.199826). This evidence could be understood because there are some lags in expectations in macroeconomics environment. The macro lag is explained is the period of time between the point at that a macro sock or procedure is implemented and the point time when it starts to take effect in the economy.

The GDP per capita variable still has a positive relationship with the domestic investment in the short run at the significance of 1% level. This is a clear demonstration of the positive role of income growth in the increase in private investment in Vietnam over years. In contrast to the impact of foreign direct investment, the estimated result shows that the short-term impact of GDP per capita is larger than in the long run. This is understandable because the private sector is very sensitive to people's income because the resources of this sector are financed by the income flows of the households. Similar in the long run, the inflation also has a negative impact on private investment in the short run at the 1% of significance. This result implies that as soon as inflation rises, it will quickly hurt private investment in the Vietnamese economy. Thus, inflation is a macroeconomic variable that needs to be controlled at an optimal value to promote the increase in private investment in the economy. In addition, international trade continues to have a negative coefficient, suggesting a negative relationship between net exports and private investment, however, the regression results were not statistically significant. This result adds to the evidence that international trade has no clear role in promoting the increase in private investment in Vietnam. Finally, the Error correction term coefficient is -1.055527 at the significance of 1% level, confirms a very strong speed of adjustment procedure back from the short-term to the long-term equilibrium.

CONCLUSION

The role of the foreign investment in macroeconomic issues is a major issue for economic researchers as well as policymakers in developing countries. Our paper employs the Error correction model (Engle and Granger, 1987) to analysis the impact of foreign direct investment on private investment in Vietnam, a country which is one in the highest attraction of foreign direct investment in Asian developing countries in previous time. The quantitative result indicated that the foreign direct investment had a strong positive impact on private investment in Vietnam not only the short run but also in the long run. Besides, our result also confirms that the GDP per capita plays an important role in promoting the growth of private investment. However, the policymakers in Vietnam need constancy to control inflation at a moderate rate as the results show that inflation is negatively correlated with private investment both short run and long run. This suggests that high inflation will lead to a recession of private investment and, as a result, the macroeconomic instability will occur in the economy. Finally, the study found that the net exports had negative coefficients and were not statistically significant, that given the unclear role of international trade in private investment in Vietnam (This is in line with the fact that the trade balance of Vietnam has suffered serious deficits for many years).

Our study also provides the evidence that Vietnamese policymakers need to persist preferential policies in attracting foreign direct investment in order to absorb more and more of this capital flow. Our result shows when the foreign direct investment increase, it will have a strong impact in increasing the private investment as well. In addition, the Vietnamese government should have preferential policies to encourage people to invest more in business because of rising GDP per capita is a good condition to increase the private sector. The government should also maintain

measures to curb inflation because of the negative impact of inflation on the private sector, and it is important to note the important role of maintaining moderate inflation in the annual policy targets. The Vietnamese policymakers need more policies to balance the trade balance (in which the focus is on reducing the import of goods abroad), which reduces the pressure on the competition in the domestic market to create motivation for businesses and the private investment will be stronger in Vietnam in the future. Finally, the Vietnamese government also need to continuously reform the Foreign Investment Law to create a more favorable and friendly environment for foreign investors in doing their businesses in Vietnam.

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