

CAPITAL FLOWS AND ECONOMIC GROWTH. EVIDENCE FROM VIETNAM

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Abstract

The study examines the impact of foreign capital flows on economic growth in Vietnam over the period 1989-2019 using autoregressive distributed lag (ARDL). The findings indicate that there exists a long-run relationship between economic growth and foreign capital flows. Foreign direct investment stimulates economic growth both directly and indirectly since the findings indicate that in both the short and long run, foreign direct investment has significantly positive effects on economic growth. Foreign direct investment can also indirectly affect growth through appreciation of human capital due to the existence of a bi-directional Granger causality relationship between human capital and foreign direct investment. Our findings suggest that foreign direct investment and human capital are complementary to improving economic growth and Vietnam should promote foreign direct investment with enhancing human capital accumulation. External debt, however, has an insignificant impact on growth and the impact of foreign aid is also negative. Vietnam, therefore should not rely on external debt in the long run and allocate the effectiveness of foreign aid to achieve the optimal target.

Keywords: foreign capital flows, economic growth, ARDL, Vietnam

JEL Codes: A10, E22, F43

Introduction

Developing and less developed nations have some traits in common as lower per capita income and inadequate domestic resources to finance public investments for economic growth. Low savings and budget deficits lead to a significant financing gap then hinders public investment. Therefore, closing the saving investment gaps is one of the targets for sustainable development of developing countries and Vietnam is no exception. Most developing countries have received a large number of foreign capital inflows from some sources, namely foreign direct investment (FDI), foreign aid as official development assistance, and external debt from developed nations to fill the gap of inadequate capital.

As one of the leading investment destinations in Southeast Asia, Vietnam has attracted a large amount of FDI flows in recent years, based on competitive advantages of geography, unexplored sectors, a growing consumer market and labour force. The Vietnam economy has benefited immensely from significant foreign direct investment flows for more than three decades with the high contribution of FDI flows to economic growth. During the last two decades, it has witnessed the rapid growth rate of Vietnam, and one of the significant determinants of its miracle growth rate is the large inflows of foreign capital from international organizations. According to the General Statistics Office (2019), during the period from 1991

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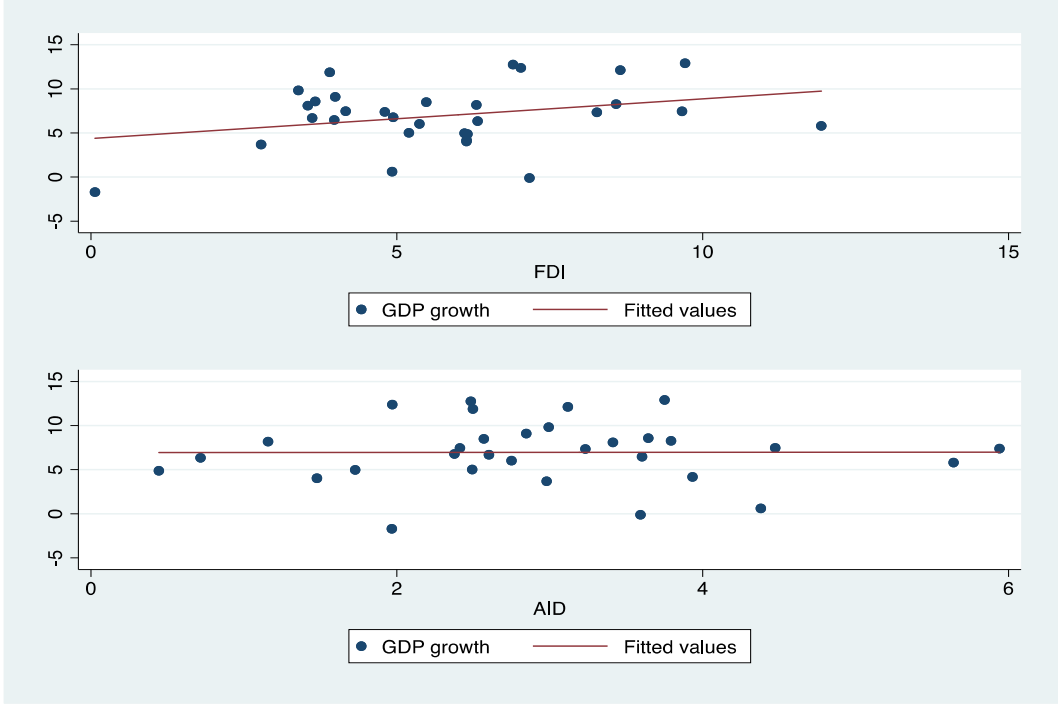
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to 2019, the estimated average of FDI flows in Vietnam is 6.88 US\$ billion, hitting a record in 2019 with US\$ 20.38 billion. Figure 1 illustrates the relation between GDP growth and foreign direct investment and foreign aid (% of GDP) in Vietnam over the period 1989-2019. The first group has a strong positive association between GDP growth and FDI (% of GDP). By contrast, the second groups between GDP growth and AID (% of GDP) seem to be relatively flat.

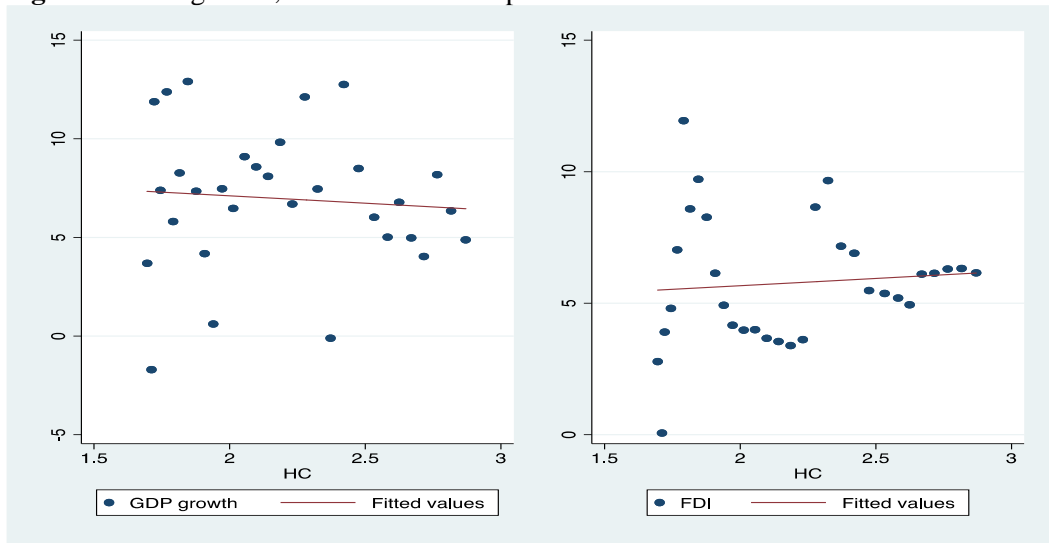
Figure 1. FDI, AID as a share of GDP



Source: Author’s calculations based on World Development Indicators and Penn World Table 10.0

In comparison with other international capital flows, the dominant contributor to economic growth is FDI flows and followed by foreign aid which seems to be a flat line. Foreign capital flows, therefore, have received substantial attention in recent years among academics and policymakers in Vietnam. Besides, human capital is considered to be an important pillar of economic growth (Mankiw, Romer, & Weil, 1992), developing countries hence facilitate the development of human capital through attracting foreign capital flows due to their limitations about education and social welfare, in the belief that foreign capital flows can increase human capital accumulation in host countries through growth effect of foreign flows. The critical role of human capital on the determinant of economic growth is depicted in Figure 2, which show the association between GDP growth, FDI and human capital for Vietnam in the period 1989-2019. As for the GDP growth and human capital, the relationship seems to be relatively flat. By contrast, the second group between FDI share of GDP and human capital have a strong positive relationship.

Figure 2. GDP growth, FDI and human capital in Vietnam



Source: Author's calculations based on World Development Indicators and Penn World Table 10.0

Vietnam has received substantial capital flows and has experienced impressive economic growth during recent years. However, Vietnam has still faced significant challenges to achieve the sustainable growth target by keeping a high level of growth rate, increasing income per capita and reducing the extreme poverty rate. Rare studies examine the link between foreign capital flow and economic growth in Vietnam, and others focus on the relationship between FDI and economic growth in Vietnam with mixed results. Nguyen (2016) investigates the relationship between international capital flows including foreign direct investment FDI, foreign aid ODA and economic growth during the period 2007Q1- 2015Q3 by applying ARDL methodology. The results show that FDI has a positive impact in the short-run but weak effect on long-run economic growth while ODA is a significant positive effect in the long run. By applying Johansen (1988) methodology to investigate the long-run relationship between FDI, ODA, trade openness and economic growth in Vietnam from 1990-2014, Nguyen and Pham (2016) reveal that FDI has an insignificantly impact on economic growth while ODA has a significant positive effect on economic growth. Therefore, the relationship between foreign capital inflows and economic growth remains unclear in Vietnam.

The key issue addressed by this paper is whether an immense increase in capital flows has promoted economic growth. This question is still subject to examination of empirical research. Our purpose is to examine the differential impact of the various capital flows, including FDI, foreign aid, and external debt on economic growth in Vietnam. Thus, this study contributes to the literature in two ways. First, to examine the impact of foreign capital flows such as foreign direct investment, foreign aid, external debt on economic growth in Vietnam given the extensive argument above. Secondly, we deploy ARDL methodology with complete data on all the key variables of interest.

The rest of the paper is structured as follows: the second section examines the theoretical and empirical literature on foreign inflows and economic growth. This is followed by section three, where data resources and descriptive statistics are discussed. The fourth section presents the methodology and model specification, while section five highlights the empirical results and the final part provides concluding remarks and policy implications of the study.

1. A theoretical and empirical literature review

Foreign capital inflows refer to all sorts of capital from a country to another country, which could be namely foreign direct investment, foreign aid, external debt, technical assistant

(Jhingan, 2010). The primary role of foreign capital flows in economic growth has been traced to neoclassical economics, which supported that international capital can boost domestic investment and spur economic growth for capital-scarce nations due to the allocative efficiency of capital. Liberalization allows to efficiently allocate capital from developed countries, where the return of capital is too low, to capital-scarce countries, where the return is too high (Fischer, 1997). The main points are that resource flows complement the domestic resources, close the investment financing gap and supplement domestic savings. Both neoclassical and endogenous growth theories agreed that foreign capital flows are the essential factor in accumulating capital and bringing technological progress in economic development. Foreign capital plays a vital role in economic growth for developing countries due to providing a level of technology transfer, increasing the skill levels in labor, and knowledge spillovers (Grossman & Helpman, 1991; Mankiw et al., 1992). According to Todaro and Smith (2011), foreign capital flows are an essential factor in economic development growth since foreign capital can close the saving-investment gap, as well as fill the technology and skills gap when host countries receive technology and training for skilled labor thorough process of learning by doing from developed countries. Therefore, foreign capital flows have been considered as one of the major conduits of technology transfer and closing the saving-investment gap because foreign capital consists of knowledge of new technologies and can be complemented capital for developing countries achieving economic growth targets.

On the other hand, there are some critics of these theories that the inflows of international capital have some detrimental effects on economic growth instead of promoting growth through crowding out domestic investments. Another analysis of the negative impact is associated with the collapse of the domestic firms in the case of competitive advantages of the multinational firms over domestic firms in terms of technology and managerial capabilities (Tang, Selvanathan, & Selvanathan, 2008). In addition, Morrissey (2012) and Ndikumana and Sarr (2019) concluded that the contribution of international capital flows in African growth in terms of employment and welfare has been limited due to the absence of significant linkages among externalities, technology spillovers and domestic economy. They claimed that the consequences of African dependence on the international flows could expose the economy to risk in export instability and growth volatility.

Though many empirical studies have been conducted on the relationship between foreign capital flows and economic growth, there is no consensus on the real impact of its foreign inflows on developing countries. While some research showed the positive effect of some components of foreign capital flows such as FDI, foreign loans, foreign aid on economic growth, others showed that these factors of foreign capital have no significant positive effect on growth rate (Goh, Sam, & McNown, 2017; Gunby, Jin, & Robert Reed, 2017). Therefore, the effect of foreign capital on economic growth is still a subject of debate in the field of empirical research.

There is also a strand of research literature that examines the impacts of official development aid on growth since significant volumes of foreign aid have been channelled to developing nations for more than five decades. Official development aid is one of the major sources of foreign capital flows to developing countries and it is considered as a significant element for less developed countries to fund their developmental programs. Foreign assistance is able to affect economic performance due to some reasons as follows. Firstly, foreign aid can stimulate physical and human capital in developing countries where there is less physical capital and less high-skilled labor. Second, foreign aid can boost productivity through technological transfers as well as promote local business. Third, underdeveloped countries close the saving-investment and technological gaps to achieve economic growth and provide resources such as managerial skills, organizational capacity, and market access (Morrissey, 2001). In empirical studies, foreign assistance and economic growth are still great attention to

many economists and policymakers due to mixed results. Mallik (2008) examined the effectiveness of foreign aid in economic growth in six very poor African countries by applying Johansen's cointegration test, the results provide that the impact of aid on economic growth was significantly negative. Recently, dynamic time-series evidence for African countries (Juselius, Møller, & Tarp, 2014) supported that foreign aid is associated with economic growth, particularly from the perspective of positive aggregate developmental role and a similar conclusion from meta-relationship (Mekasha & Tarp, 2013) also revealed the aid-growth relationship. In addition, Ekanayake and Chatrna (2010) tested the effect of foreign aid in 85 developing countries between Asia, Africa, Latin America and the Caribbean from 1980 to 2007. They concluded that mixed impact of foreign aid on economic growth are found in these countries and the majority of factors lead to the success of aid as economic policies, human capital development.

Our study is also related to foreign direct investment literature, which focuses the examining the effect of FDI on growth. The relationship between FDI flows and economic growth is not a new phenomenon and the existing literature have extensively concerned and debated the relationship. FDI is a significant component of foreign capital inflows that developing countries expect to attract from developed countries. From theories point of view, as one of the main mechanisms to boost productivity, host countries seek FDI with the expectation to benefit from it through knowledge spillover. There are different ways of knowledge spillovers, including technology transfers or bringing the latest processes or managerial skills to the domestic market. Much work has been done to investigate the relationship between FDI and economic growth, however the results have long been a subject of debate because of mixed consensus. Some empirical concluded that FDI is considered as a fundamental engine in the growth of developing countries due to its technology transfer and capital (Anwar & Sun, 2011; Iamsiraroj, 2016; Keho, 2015; Lean & Tan, 2011; Sunde, 2017; Tahir, Estrada, & Afridi, 2019). Alfaro, Chanda, Kalemli-Ozcan, and Sayek (2010) highlighted the important role of the financial market as a mechanism to further enable FDI flows affecting growth. They confirmed that an increase in volumes of FDI flows produces additional gains for financially developed economies. Another strand of the literature is the argument of no positive impact of foreign direct investment on growth (Adams, 2009; Adams & Opoku, 2015; Akinlo, 2004; Durham, 2004; Gunby et al., 2017; Lean, 2008; Mencinger, 2003; Temiz & Gökmen, 2014). They explained that the level impact of foreign direct investment on host countries depends on the level of absorptive capacity of its countries, including the level of technological advancement, macroeconomic stability and human capital development.

Recently, many empirical studies have mainly focused on the relationship between foreign debt and economic growth but the impact of external debt accumulation on investment and growth remains questionable for policymakers. It has been witnessed in the last three or four decades that some emerging and developing countries have been using foreign currency loans to promote their economic performance because external debt provides capital inflows to be used for expenditures that can accelerate the pace of economic growth in these countries. On the other hand, the main theories which are the leading explanation for the negative effect between foreign debt and economic growth are called the debt overhang hypothesis of Krugman (1988) and Sachs (1989) then advocated by Cohen (1993). These groups have mainly focused on the negative effect of debt overhang, which is defined as a situation in which the expected returns from any additional investment are low due to the debt service obligations of the debtor countries. The empirical evidence is far from conclusive either supporting or rejecting the external debt-led growth hypothesis. Empirical on both effect sides of external debt are mixed. While there is relatively more evidence in support of the negative effect of the overhang hypothesis between debt and the growth of recipient economies, evidence on positive effects is very limited. The empirical studies on the effect of foreign loans and economic

growth have found similar findings that foreign loans had negative impact on economic growth (Adams & Atsu, 2014; Dreher, 2006; Ehigiamusoe & Lean, 2019; Hameed, Ashraf, & Chaudhary, 2008). Changyong, Jun, and Chen (2012) claimed that debt would be the most formidable barrier to renewed economic growth when the debt-GDP ratio crosses a certain limit. Afonso and Jalles (2013) reported that higher debt level would higher the expected future tax that adversely affects the growth outcome and employment of the economy owing due to its effect on consumption and investment.

The review of the literature showed that foreign capital inflows with some components bring a significantly positive impact on developing countries. The fact is that there are different kinds of determinants and effects of foreign capital flows on economic growth. Consequently, our paper contributes to the literature by investigating the differential effects of foreign capital flows on economic growth with specific characteristics and the policy environment in Vietnam. The descriptive statistics and data resources are described next.

2. Data resources and description of variables

The descriptive statistics and correlation of Vietnam time-series data during the 1989-2019 period are shown in Table 1 and Table 2 respectively, the former presents the descriptive statistics, and the latter is a correlation analysis of the six variables. GDP is real gross domestic product as a proxy for economic growth measured by the difference of the log of GDP per capita (y) and log of GDP per capita at the initial year (y_0). Foreign capital flows include foreign direct investment (FDI), foreign aid (AID) and external debt (ED), in which variable FDI is foreign direct investment measured by net flows (% of GDP), AID is foreign aid as a ratio of gross national income GNI, ED is the external debt as a ratio of GNI, GOV is government consumption expenditure as a ratio of GDP, HC is human capital. All variables are transformed into natural logarithms before analysis. The dataset is mainly collected from the World Development Indicator database of the World Bank except for human capital and GDP which are gathered from Penn World Table version 10.0 developed by Feenstra, Inklaar and Timmer (2015).

Table 1. Descriptive statistics of variables in the period 1989-2019

	GDP	FDI	AID	ED	GOV	HC
Mean	6.967	5.771	2.935	3.13	6.803	2.1923
Maximum	12.907	11.939	5.941	7.909	12.339	2.87
Minimum	-1.7	0.0647	0.4437	1.466	5.465	1.696
Std.Dev.	3.556	2.406	1.24	1.623	1.362	0.373
Skewness	-0.381	0.347	0.312	1.300	2.308	0.302
Kurtosis	3.165	3.469	3.338	4.349	9.765	1.773

Source: Author's calculations

The results of the correlation matrix reveal that a negative correlation exists between GDP with ED, GOV and HC while a positive correlation between FDI and HC, GDP and FDI. Some studies have concerned the possible existence of high multicollinearity among the explanatory variables that caused estimates to contradict the economic theories (Agung, 2011; Hamsal, 2006). According to Iyoha (2004), the correlation value is more than 0.95%, which makes the multicollinearity among variables. Therefore, there is impossible for multicollinearity among independent variables because all the correlation coefficients are below 0.95% based on the result reported in Table 2.

Table 2. Correlation among variables

	lnGDP	lnFDI	lnAID	lnED	lnGOV	lnHC
lnFDI	0.4305					
lnAID	0.0795	0.1956				
lnED	-0.1271	-0.4446	-0.1009			
lnGOV	-0.1515	0.1535	-0.3861	0.2628		
lnHC	-0.0785	0.3662	-0.4440	-0.6713	0.1602	

Note: ***, ** and * indicate statistically significant at 1%, 5% and 10% respectively.

Source: Author's calculations

3. Econometric methodology

We employ the autoregressive distributed lag (ARDL) framework by Pesaran and Shin (1995) and Pesaran, Shin, and Smith (2001) to determine the cointegration relationship between foreign capital inflows and economic growth using 1989-2019 time series data of Vietnam. The ARDL bounds test was chosen in this paper because of its advantages in comparison with conventional methodologies, including Engle and Granger (1987) and Johansen (1988). Firstly, the approach is very useful in case of limited sample data (Pesaran et al., 2001). Secondly, the ARDL model has a flexible order of integration without a condition of the same order integration of the variables, which are purely ordered zero I(0), order one I(1), or a combination of both.

$$\begin{aligned}
 d(\ln GDP_t) = & a_{01} + b_{11}\ln GDP_{t-1} + b_{21}\ln FDI_{t-1} + b_{31}\ln AID_{t-1} + b_{41}\ln ED_{t-1} + b_{51}\ln GOV_{t-1} + b_{61}\ln HC_{t-1} \\
 & + \sum_{i=1}^p a_{1i}d(\ln GDP_{t-i}) + \sum_{i=1}^q a_{2i}d(\ln FDI_{t-i}) + \sum_{i=1}^q a_{3i}d(\ln AID_{t-i}) + \sum_{i=1}^q a_{4i}d(\ln ED_{t-i}) \\
 & + \sum_{i=1}^q a_{5i}d(\ln GOV_{t-i}) + \sum_{i=1}^q a_{6i}d(\ln HC_{t-i}) + \varepsilon_t \quad (1)
 \end{aligned}$$

Where lnGDP, lnFDI, lnAID, lnED, lnGOV, lnHC are respectively the natural logarithm of GDP per capita, foreign direct investment, foreign aid, external debt, government expenditure and human capital as defined in section 3, d is the first difference and ε_t are the error terms, p and q are the optimal lag length. This study is incorporated two control variables such as human capital and government expenditure. The coefficients such as b_{1i} , b_{2i} , b_{3i} , b_{4i} , b_{5i} , b_{6i} are the long-run multipliers while the short-run multipliers are presented in the coefficients of different terms.

To proceed with the ARDL methodology, the first step is to test stationary between the variables by applying unit root tests to confirm the order of integration of the data in this paper. We then test for the order of integration of these series to be certain that there is a long-run relationship between the variables. The presence of the long-run relationship is to proceed in the bounds test based on a joint F test with the null hypothesis of no cointegration. The value of F test statistic is compared with the critical values, which are given in two sets; lower bound I(0) and upper bound I(1). The former of lower critical bound value is assumptions of integration of order zero of the ARDL model, the latter bound is based on the assumption of integration of order one of the models. The null hypothesis of no long-run relationship is rejected if the calculated F- statistic is more than the upper bound I(1), while we fail to reject the H_0 when the value of the F test falls below the lower bound value. Otherwise, the test turns

out to be inconclusive. Once the long-run relationship is examined, the long-run model is estimated as follows:

$$\ln GDP_t = a_0 + \sum_{i=1}^p a_{i1} \ln GDP_{t-i} + \sum_{i=1}^q a_{i2} \ln FDI_{t-i} + \sum_{i=1}^q a_{i3} \ln AID_{t-i} + \sum_{i=1}^q a_{i4} \ln ED_{t-i} + \sum_{i=1}^q a_{i5} \ln GOV_{t-i} + \sum_{i=1}^q a_{i6} \ln HC_{t-i} + \varepsilon_{1t} \quad (2)$$

Using the ordinary least square (OLS) method, the first equation is to estimate that the lags orders of ARDL model are selected by either the lowest Akaike Information Criterion (AIC) or Schwarz bayesian Criterion (SBC). The maximum of two Lag lengths for annual data is recommended by Pesaran et al. (2001), hence, the lag length is chosen with the lowest AIC. The short-run and long-run Granger causality among the variables are specified with the presence of the error correction model ECM.

$$d(\ln GDP_t) = a_{02} + \sum_{i=1}^p a_1 d(\ln GDP_{t-i}) + \sum_{i=1}^q a_2 d(\ln FDI_{t-i}) + \sum_{i=1}^q a_3 d(\ln AID_{t-i}) + \sum_{i=1}^q a_4 d(\ln ED_{t-i}) + \sum_{i=1}^q a_5 d(\ln GOV_{t-i}) + \sum_{i=1}^q a_6 d(\ln HC_{t-i}) + \alpha ECT_{t-1} + \varepsilon_{2t} \quad (3)$$

Where α is the coefficient of the error correction term (ECT) and it represents the convergence speed of the model into the equilibrium. The sign of the error correction term will be negative and statistically significant to be certain of convergence to the long-run equilibrium. Ramsey RESET test is also applied to assess parameters stability in this study.

4. Empirical results

4.1 Unit roots tests

To determine the level of integration of the model variables, the unit root test is conducted by using both Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests.

Table 3. Unit root tests results

Variables	Augmented Dickey-Fuller (ADF)			Phillips-Person (PP)		
	Level	First difference	Remark	Level	First difference	Remark
lnGDP	-5.351***	-	I(0)	-5.919***	-	I(0)
lnFDI	-2.217	-4.106***	I(1)	-2.125	-14.113***	I(1)
lnAID	-0.082	-3.405**	I(1)	-2.255	-10.396***	I(1)
lnED	-1.466	-2.783*	I(1)	-0.77	-5.166***	I(1)
lnGOV	-4.383***	-	I(0)	-4.49***	-	I(0)
lnHC	-4.416***	-	I(0)	-5.734***	-	I(0)

Note: (***), (**), and (*) denotes 1%, 5% and 10% levels of statistical significance.

Source: Author's calculations

Table 3 indicates that GDP, government expenditure GOV and human capital HC variables are integrated at order zero I(0) at 1% significant level by both ADF and PP tests

while foreign direct investment FDI, foreign aid AID and external debt ED variables are integrated at order one I(1) at 1% level of significance. With the confirmation of a mixture of I(0) and I(1) variables, ARDL cointegration methodology is an appropriate methodology to examine a long-run relationship between the variables in this study.

4.2 ARDL bounds tests for cointegration

To empirically analyze the existence of a long-run relationship and short-run dynamic interaction among the variables in this study, the autoregressive distributed lag (ARDL) cointegration method is applied, which was developed by Pesaran and Shin (1995) and Pesaran et al. (2001). One of the two main advantages of this methods comparison with other conventional integration methods is that all variables under study in ARDL model need not to be of the same order of integration. All variables are able to integrate order one or order zero. The second advantage is that ARDL technique is also helpful for both estimations of short-run and long-run models without biased estimates.

Table 4: Cointegration test results

Dependent variables	Functions	F-statistic	Decision
lnGDP	$\ln\text{GDP}=f(\ln\text{FDI}, \ln\text{AID}, \ln\text{ED}, \ln\text{GOV}, \ln\text{HC})$	6.597***	Cointegration
lnFDI	$\ln\text{FDI}=f(\ln\text{GDP}, \ln\text{AID}, \ln\text{ED}, \ln\text{GOV}, \ln\text{HC})$	39.242***	Cointegration
lnAID	$\ln\text{AID}=f(\ln\text{GDP}, \ln\text{FDI}, \ln\text{ED}, \ln\text{GOV}, \ln\text{HC})$	4.797***	Cointegration
lnED	$\ln\text{ED}=f(\ln\text{GDP}, \ln\text{FDI}, \ln\text{AID}, \ln\text{GOV}, \ln\text{HC})$	2.859	No cointegration

Critical values			
Significant level	Lower bounds I(0)	Upper bounds I(1)	
1%	3.41	4.68	
5%	2.62	3.79	
10%	2.26	3.35	

Note: (***), (**), and (*) denote 1%, 5% and 10% levels of statistical significance, respectively, the null hypothesis of no evidence of cointegration. The optimal lag is determined by AIC. Lower and upper-bounds critical values are obtained from Pesaran et al. (2001).

Source: Author's calculations

In this study, our ARDL model is chosen based on the Akaike Information Criteria (AIC) for lag selection criteria. The results of ARDL- bounds test with estimated F statistics

values is presented in Table 4. The bounds test results reveal that there is the existence of a cointegration relationship between economic growth and the regressors in all the models except the external debt variable when this variable is the dependent variable as in equation (1). The results in Table 4 reveal that the F-statistics value exceeds the upper critical bounds value at 1% level of significance. That means the existence of cointegration among the variables. However, the external debt variable (ED) is used as the dependent variable, the null hypothesis of no cointegration is not rejected because the calculated F statistics is less than the lower critical value at the 5% level.

4.3 Granger short-run and long-run causality tests

The results of the long-run model are shown in Table 5. The estimated coefficients of the long-run relationship are significant for foreign direct investment FDI, foreign aid AID and human capital but not significant for external debt ED and government consumption expenditure GOV. Foreign direct investment has a significant positive impact on economic growth at the 5% level. The long-run results indicate that a 1% increase in foreign direct investment is associated with a 1.26% increase in growth. The foreign aid variable has a negative sign and is significant at the 5% level. This is quite surprising but is consistent with Ehigiamusoe and Lean (2019), Adams and Atsu (2014) and Kodama (2012) that these studies showed negative effect of aid flows occurring in many developing nations because foreign aid is wasted. Baafi Antwi (2010) reported that flows of international aid become additional capital to domestic resources, which speed the growth process of the economy. However, the author noted the poor performance of foreign aid in the long run because donor conditionality has some effects on loan efficient allocation and thus leads to poor impact of aid on growth. While the insignificant impact of external debt on economic growth found in this study is consistent with most previous studies.

Table 5. Estimated Long Run Coeffecents using the ARDL Approach- ARDL(1,1,1,0,0,1) based on AIC

Variable	Coefficient	t-Statistic	Probability
lnFDI	1.26**	2.17	0.043
lnAID	0.89**	-2.11	0.048
lnED	0.488	1.18	0.250
lnGOV	-1.045	-0.71	0.485
lnHC	3.38**	2.27	0.035
C	0.163	0.11	0.917
R-squared	0.48	-	-
F-statistic	2.02**	-	0.0421

Note: (***), (**), and (*) denotes 1%, 5% and 10% levels of statistical significance.

Source: Author's calculations

Regarding the control variables included in the model, the results indicate that human capital has a significant impact on economic growth at 5% level of significance and this is consistent with the economic theory about the relationship between human capital and economic growth (Barro, 1991; Mankiw et al., 1992) and empirical studies (Aghion, Bacchetta, Ranciere, & Rogoff, 2009; Dinh Su & Phuc Nguyen, 2020; Ehigiamusoe & Lean, 2019).

However, government consumption expenditure is not significant and has a negative impact on economic growth in Vietnam, which is consistent with some empirical studies (Lean & Tan, 2011; Rousseau & Yilmazkuday, 2009; Samargandi, Fidrmuc, & Ghosh, 2015). There are comment consequences in most developing countries with inefficient and unproductive government expenditure (Rousseau & Yilmazkuday, 2009). According to Samargandi et al. (2015), an increase in government expenditure could distort some effects such as an increase in the burden on citizens in the future that leads to decreasing private spending and investment, therefore government expenditure could negatively impact economic growth.

Table 6. Short Run Results

Variable	Coefficient	t-Statistic	Probability
d(lnFDI)	0.731**	2.24	0.037
d(lnAID)	-0.88	-1.64	0.117
d(lnED)	0.4189	1.16	0.258
d(lnGOV)	-0.901	-0.72	0.482
d(lnHC)	3.481**	2.29	0.033
C	0.1627	0.11	0.917
ECT(-1)	-1.16***	-6.89	0.000
R-squared	0.77	-	-
F-statistic	7.07***	-	0.000

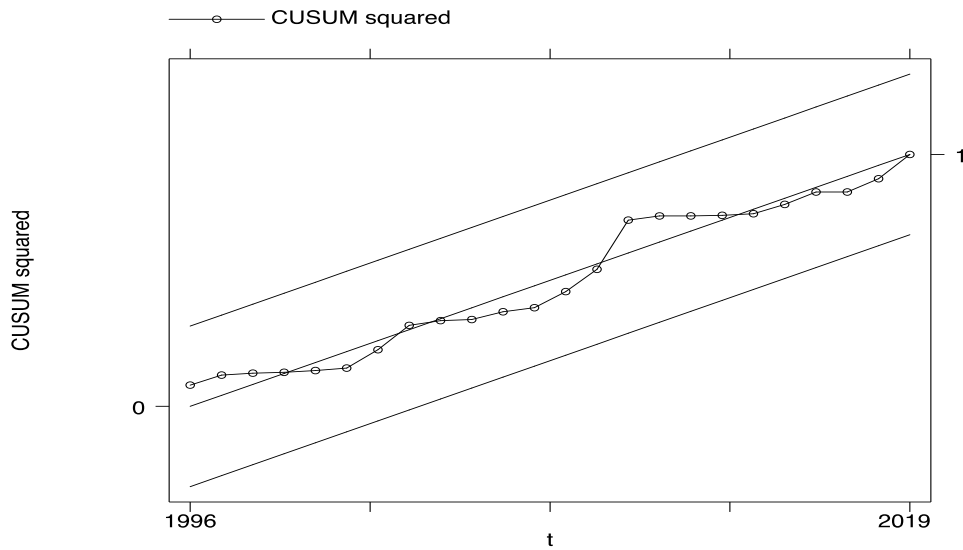
Note: (***), (**), and (*) denotes 1%, 5% and 10% levels of statistical significance.

Source: Author's calculations

The estimated short-run coefficients are reported in Table 6. The error correction factor measures the speed of adjustment back to the long-run equilibrium. The coefficient of the lagged error correction term is significant at 1% level with the expected sign. When the value of the error correction term is between -2 and -1 then the lagged error correction term will be in a damping manner about the equilibrium path. Its value is estimated at 1.15, which implies that instead of monotonically converging back to the equilibrium path directly, the error correction process fluctuates around the long-run value in a damening manner before convergence to the equilibrium path.

To employ the stability of the long-run coefficient in ARDL modelling, the short-run relationship is examined by testing residuals. Once the ECM model has been conducted, the squared cumulative sum of recursive residuals (CUSUM) test is examing to assess the stability of long-run parameters (Pesaran & Pesaran, 1997). The CUSUM test result has been examined and the graph is plotted as given in Figure 3. The graph showed that the estimated line is lying inside the critical bands of the 5% confidence interval of parameter stability. Therefore, the results reported earlier are reliable and stable.

Figure 3. Stability tests result



Source: Author's calculations

The results of the short-run Granger causality tests are shown in Table 7. Granger causality is only investigated in the models having cointegration relationship, therefore causality is not examined in the equation with external debt as the dependent variable. In the short run, the value of F-statistics on the independent variables suggests that at the 10% level or better there is bi-directional Granger causality between foreign direct investment and government, between human capital and foreign direct investment and between external debt and foreign direct investment. It is interesting that the existence of bi-directional causality between foreign direct investment and human capital confirm the widespread belief that FDI can generate positive productivity externalities for a host country and generate positive spillovers in case of the mobility of well-trained labour channel. The finding means that foreign direct investment and human capital are complementary in producing productivity growth in Vietnam. Human capital, therefore becomes productive in absorbing FDI inflows. The finding is in line with the study of Vu (2008), which found evidence of the significant effect of FDI on human capital in Vietnam. As such, it is necessary to boost human capital since skilled workers have been sufficient to attract foreign direct investment. Besides, the unidirectional Granger causality running from foreign direct investment to economic growth is interesting and indicate that FDI promotes growth in the short run and is one of the main drivers of economic growth in Vietnam.

Table 7. Granger Causality test results

Dependent variable	F statistics						Direction of causality
	d(lnGDP)	d(lnFDI)	d(lnAID)	d(lnED)	d(lnGOV)	d(HC)	
d(lnGDP)	---	4.441**	0.2557	0.085	2.887*	0.339	FDI→GDP; GOV→GDP

d(lnFDI)	1.266	-----	0.1761	2.888*	4.942**	5.744**	ED→FDI; GOV→FDI; HC→FDI
d(lnAID)	0.3012	1.113	-----	0.292	1.074	6.729***	HC→AID
d(lnGOV)	0.196	5.645**	0.271	23.456***	-----	21.791***	FDI→GOV; ED→GOV; HC→GOV
d(lnHC)	6.4578**	5.683**	1.915	16.148***	2.398	-----	GDP→HC; FDI→HC; ED→HC

Note: (***), (**), and (*) denotes 1%, 5% and 10% levels of statistical significance.

Source: Author's calculations

Table 8. Results of diagnostic tests

Diagnostics	Null hypothesis	χ^2 statistic	Conclusion
Breusch-Godfrey serial correlation test	H ₀ : no serial correlation	0.622 (0.4305)	Don't reject H ₀
White Heteroskedsticity test	H ₀ : no heteroskedasticity	30 (0.414)	Don't reject H ₀
Jarque-Bera test	H ₀ : Residuals are normally distributed	0.6216 (0.951)	Don't reject H ₀

Note: P-values are in parenthesis.

Source: Author's calculations.

Some diagnostic tests have been conducted in this study to check the validity of the estimated ARDL model based on some tests, namely, serial correlations (Breusch-Godfrey test), normality of errors (Jarque-Bera test) and heteroscedasticity test. Results of the diagnostic tests presented in Table 8 suggest that there is no evidence of autocorrelation in ARDL model. The model also all passes the normality test and normality of errors.

5. Conclusions and recommendations

This research investigates the impact of international capital flows on economic growth in Vietnam among the series of economic growth, foreign direct investment, foreign aid, external debt, government consumption expenditure and human capital for the period 1989-2019. We employ ARDL bounds testing framework to investigate the existence of a long-run relationship among the above noted series, and Granger causality to test the direction of causality between the variables. The results show that the components of foreign capital flows in Vietnam have different effects on outcomes. Foreign direct investment emerged as the most significant contributor to economic growth, while foreign aid has a negative effect on economic

growth. The current trends in international capital flows and their challenging prospects could raise major issues for Vietnam that must continue to depend on substantial external financing to achieve economic growth and social objectives. Together with improvement of aid implementation and absorption, Vietnam must deal with a majority of problems to create conducive environment to attract stable international capital flows.

First, the findings of this study on the relationship between foreign aid and economic growth in Vietnam shows that the foreign aid received by Vietnam over the years has detrimental effects on the growth in the long run, which is consistent with the results of Fasanya and Onakoya (2012), Adams and Atsu (2014), Klobodu and Adams (2016) and Ehigiamusoe and Lean (2019) who demonstrated that the effectiveness of aid should promote in a host country. As a developing country, Vietnam is facing a shortage of capital, therefore, foreign capital are important determinants that drive economic growth. Foreign aid, however, is necessary but not a sufficient condition for growth as the study's finding, therefore, Vietnam should reform to achieve the effectiveness of aid because aid effectiveness depends on the policy space. Policymakers should improve to deepen financial openness to enhance the effectiveness of aid because deepening financial absorptive capacity allow monetary management to mitigate the negative incentive effects of aid flows. Ang (2010) and Nkusu and Sayek (2004) found that financial openness can play a facilitative role in enhancing economic growth because the interaction variable between aid and financial liberalization is significant and positively correlated with economic growth. Vietnam needs to rely on international flows such as foreign aid to meet the external financing requirement for the by itself is not enough to promote growth but rather the policy and macroeconomic environment for growth.

Second, aside from attracting international capital flows, Vietnam should place on the labor-intensive export-oriented project as the priority in project licensing to gain productivity and lead to sustained growth based on the development of human capital, away from investment in capital-intensive import-substitution and domestic consumption industries. The paper's findings show that human capital has a positively significant impact on economic growth in the long run and there is existence in the bi-directional Granger causality between human capital and foreign direct investment. Therefore, rather than make some mistake of locking into inefficient capital stock which has led to economic decline as in some African countries, policymakers should provide vocational training to increase high skilled workers. Besides, the strong foundation for human resources with the educated program is an advantage for Vietnam in case of attracting international capital flows especially foreign direct investment because high skilled resources tend to absorb technology transfer, management skills and gain productivity. With industrious labour, Vietnam should enhance the development impact of international capital flows, especially the beneficial effect of FDI associated with the efficiency of resources can be raised. Vietnam should diversify international investment having linages with many sectors of the economy in order to favour synergies that gain productivity through spillover effects.

Finally, on the question of how to enhance the development effects and effectiveness of international flows such as foreign direct investment and foreign aid on Vietnamese economy, macroeconomic environment is an essential and key requirement to fulfil the qualify for the effectiveness of international capital flows on economic growth. Institutional infrastructure and government effectiveness are major determinants of the policy environment to reduce corruption and promote economic stability to gain sustained growth. In addition, it is worth mentioning that the insight finding of the study is the bi-directional Granger cause between foreign direct investment and human capital, therefore, policymakers should focus on seeking assistance for productive investment from foreign direct investment flows in sectors of the economy that would gain productivity, revenue and promote growth.

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