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REMITTANCES, FOREIGN DIRECT INVESTMENT, IMPORTS AND ECONOMIC GROWTH: EMPIRICAL EVIDENCE FROM VIETNAM

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ABSTRACT

This article aims to examine the effect of remittances, Foreign Direct Investment (FDI) and imports on economic growth in Vietnam, using a set of time series data in the period of 2000-2018, applying the Autoregressive Distributed Lag (ARDL) bounds testing approach. Also, an Error Correction Model (ECM) derived from ARDL model is utilized to check the short-run dynamics. From the empirical result of the study, it is showed that there is a long-term relationship among remittances, FDI, imports and economic growth in Vietnam during the period time of study. Specifically, remittances and imports have significantly positive impacts while FDI has negative influence on economic growth. In the short run, the growth effects of remittances and FDI are similar to those in the long run while the effect of imports is statistically insignificant. Finally, the model passes relevant diagnostic tests for time series data and the parameters are proved to be stable over time.

Contribution/ Originality: This is one of the first time series studies using ARDL bounds testing approach to cointegration to examine both long run and short run effects of remittances, Foreign Direct Investment and imports on economic growth in the case of Vietnam.

1. INTRODUCTION

After over 30 years of renovation and international economic integration, Vietnam has made great achievements in socio-economic development. The economy continues to maintain a fairly high growth rate. From one of the poorest countries in the world, Vietnam has escaped from underdevelopment situation, becoming a middle-income country with GDP per capita in 2019 reaching nearly 3,000 USD. The question "What are the driving forces behind the growth of Vietnam economy in recent decades?" remains of great concerns.

A wide range of studies on determinants of economic growth pointed out that Vietnam, like many other developing countries, seems to benefit a lot from international financial flows especially remittances and FDI. In 2019, with the amount of remittances reaching $16.7 billion, Vietnam continues to be in the top 10 remittances recipient countries in the world. The FDI inflows also bloom at $38.1 billion, hitting a 10-year record. Remittances and FDI are said to have the greatest impact on economic growth with respect to creating job, generating income, developing infrastructure, and contributing to the improvement of the international balance of payment. However, the influence of international financial flows on the economic growth is still controversial. A few other studies have

showed conflicting results that these financial flows have no positive effect or even have negative effects on the economic growth of the host country.

International trade has also been considered one of the key drivers of national economic growth. Numerous studies have been conducted to assess the impact of foreign trade on economic growth from different perspectives. While almost the empirical results indicated that export is positively related to economic growth, the influence of import is not consistent. In some studies, import was found to have a negative effect on economic growth while in other studies, it has been reported to promote economic growth.

This paper aims at examining the determinants of Vietnam's economic growth by providing an empirical analysis of the potential effects of external factors including remittances, FDI and imports using Autoregressive Distributed Lag (ARDL) model. The rest of the paper is organized as follows: part 2 presents the literature review; part 3 describes the data and methodology used in the study; part 4 discusses the empirical results; and the conclusion is given in the final part.

2. LITERATURE REVIEW

The studies on effects of external factors including remittances, foreign investment and trade on economic growth has resulted in disputed outcomes. Regarding the impacts of remittances on economic growth, it is argued that remittances have both positive and negative influences. Generally, remittances contribute to economic growth by increasing physical capital investment, facilitating human capital formation, accelerating the financial development, contributing to cover deficits in the trade balance and in the current account of receiving country. Research by Nyamongo, Misati, Kipyegon, and Ndirangu (2012) that examined the nexus between remittances, financial development and economic growth in selected countries in Africa during the period 1980–2009 concluded that remittances promoted the growth of these economies. Siddique, Selvanathan, and Selvanathan (2012) contributed to the literature on the positive effects of remittances on economic growth by a case study in Bangladesh, India and Sri Lanka over a 25-year period. Conversely, in a study that covered 16 advanced economies and 54 developing countries over 1970–2004, Chami et al. (2008) indicated that it was hard to acquire a robust positive association between remittances and economic growth. Moreover, with the inclusion of interaction term of financial depth and remittances, there were evidences that the growth of remittances accompanied by financial development might curb economic growth in receiving countries. Among literatures on the nexus between remittances and economic growth in Vietnam, Le (2015) and Dang (2015) concluded that remittances positively affect the economic growth in both long run and short run. However, study by Ravinesh Kumar and Thu Vu (2014) couldn't signify evidence of robust relationship between the two variables.

With regards to the effect of FDI on economic growth, mixed empirical evidences have led to continuing debate among both academics and policy makers. In a study that investigated the effect of FDI and public debt on economic growth in selected Caribbean countries in the period 1975–2015, Onafowora and Owoye (2019) found evidence that FDI significantly stimulated economic growth. This result supported the positive view of the effect of FDI on economic growth in a wide range of earlier literature. For instance, by using a data set of 140 countries all over the world from 1970 to 2009, Iamsiraroj and Ulubasoglu (2015) indicated that FDI together with openness to trade and development of financial market had positive impact on economic growth. Tiwari and Mutascu (2011) also reported that FDI and exports positively affected economic growth in a panel framework for 23 developing Asian countries over the period 1986-2008. From opposite view, Bermejo Carbonell and Werner (2018) found that in the case of Spain over the studied period 1984-2010, even when this country offered favorable conditions for FDI to unfurl its hypothetical positive effects (developed financial market, skilled labor, etc.), there were no evidences that FDI fostered economic growth. In the case of Bangladesh, Rahman (2015) also found negative relationship between FDI and economic growth by empirically estimating time series data from 1999 to 2013.

Concerning the nexus between imports and economic growth, it is argued that the growth effect of imports depends on its composition. Generally, a rising level of imports of intermediate and capital goods are believed to foster economic growth. Chaudhary, Shirazi, and Choudhary (2007) reported a long-run positive relationship between imports and economic growth in Bangladesh. A two-way relationship between import and income growth was also obtained in a study by Mishra (2012) on the dynamics of imports and economic growth in India over a 40-year period. On the contrary, Jawaid (2014) in an attempt to investigate effect of trade openness on the economic growth in Pakistan, concluded that imports had significantly negative effect on the economic growth in this country.

In Vietnam, while there have been a few literatures on growth effects of external determinants on economy, it is hard to find consistent evidences on the long-term impact of remittances, FDI and imports on economic growth jointly. Therefore, this empirical study is indeed necessary to fill the research gap.

3. METHODOLOGY AND DATA

3.1. Methodology

The aim of this study is to investigate the effect of remittances, FDI and imports on economic growth in the case of Vietnam. In order to address the research question, the baseline model is developed as in Equation 1:

$$GDP_t = \alpha_0 + \alpha_1 REM_t + \alpha_2 FDI_t + \alpha_3 IMP_t + \varepsilon_t \tag{1}$$

in which:

GDP: Gross Domestic Product per capita.

REM: personal remittances including personal transfers and compensation of employees.

FDI: net inflows of foreign direct investment.

IMP: imports of goods and services.

The relationship between remittances, FDI, imports and economic growth is examined using Autoregressive Distributed Lag (ARDL) model. Compared with some other regression models, the ARDL model excels with some advantages: (1) performing well with small sample sizes, (2) applicable for different orders if co-integration, i.e. the time series are either stationary at level or stationary at first difference, or mutually integrated (3) allowing estimate short run adjustment with Error Correction Model (ECM) derived from ARDL through a simple linear transformation without losing degrees of freedom (Pesaran, Shin, & Smith, 2001). Basically, there are 4 steps involved in an ARDL bounds testing approach: (1) testing the integration properties of variables, (2) testing the existence of long-run cointegration among variables using the bounds F-test; (3) estimating short-run and long-run relationships in the optimal model with proper lags of variables, (4) checking the stability of the model .

By using ARDL approach to cointegration, the ARDL framework of the baseline model given in Equation 1 is rewritten as in Equation 2:

$$\Delta GDP_t = \gamma_0 + \sum_{q=1}^{n_1} \gamma_{1q} \Delta GDP_{t-q} + \sum_{q=0}^{n_2} \gamma_{2q} \Delta REM_{t-q} + \sum_{q=0}^{n_3} \gamma_{3q} \Delta FDI_{t-q} + \sum_{q=0}^{n_4} \gamma_{4q} \Delta IMP_{t-q} + \beta_1 GDP_{t-1} + \beta_2 REM_{t-1} + \beta_3 FDI_{t-1}$$
$$+ \beta_4 IMP_{t-1} + \omega_t \tag{2}$$

in which Δ denotes the first difference form; γ_0 is the drift term; $\gamma_1, \gamma_2, \gamma_3, \gamma_4$ capture short-run dynamics;

$\beta_1, \beta_2, \beta_3, \beta_4$ measure long-run effects; and ω_t is the white noise error.

In order to test whether the long-run cointegration between the variables exits or not, the bounds test is performed. The null hypothesis of no long-run cointegration is defined by:

$$H_0 : \theta_1 = \theta_2 = \theta_3 = \theta_4 = \theta_5 = \theta_6 = 0$$

The alternative hypothesis of existence of long run relationship:

$$H_1 : \theta_1 \neq 0, \text{ or } \theta_2 \neq 0, \text{ or } \theta_3 \neq 0, \text{ or } \theta_4 \neq 0, \text{ or } \theta_5 \neq 0 \text{ or } \theta_6 \neq 0.$$

There are three possible outcomes for the bounds test. If the value of computed F-statistic falls above the upper critical bound I(1), the null hypothesis should be rejected which implies there exists cointegration among the analyzed variables. If the F-statistic falls below the lower bound critical value I(0), the null hypothesis could not be rejected which means there is no existence of cointegration among the variables. In case F-statistic lies between upper bound I (1) and lower bound I(0), the test is inconclusive.

After testing the long run relationship among variables, in the next step, the Error Correction Model (ECM) derived from ARDL model is used to check the short-run dynamics. With the specification of ECM to combine short run adjustments with long run equilibrium without losing long run information, we can also check the stability of the long run parameters. With respect to Eq-2, the derived ECM is specified as in Equation 3:

$$\Delta GDP_t = \gamma_0 + \sum_{q=1}^{n_1} \gamma_{1q} \Delta GDP_{t-q} + \sum_{q=0}^{n_2} \gamma_{2q} \Delta REM_{t-q} + \sum_{q=0}^{n_3} \gamma_{3q} \Delta FDI_{t-q} + \sum_{q=0}^{n_4} \gamma_{4q} \Delta IMP_{t-q} + \eta ECT_{t-1} + \omega_t \qquad (3)$$

where ECT_{t-1} stands for the error correction term while the coefficient η captures the speed of adjustment to reach equilibrium in the presence of shocks. To confirm the co-integration relationship between variables, the coefficient η is expected to be negative and statistically significant.

3.2. Data Description

To examine the relationship between remittances, FDI, imports and economic growth, this study employs the time series data in the time period 2000-2018 on a yearly basic. Details are as follows: data on remittances are sourced from International Financial Statistics – IFS database, data on GDP, FDI and import are collected from World Development Indicators – WDI. For consistent and effective results, all the variables are taken in the natural logarithms.

4. EMPIRICAL RESULTS

4.1. Unit Root Tests

The ARDL co-integration test is based on the assumption that all the variables must be integrated at level or first difference, i.e., I(0) or I(1). In this study, the Augmented Dickey Fuller (ADF) test is employed to test for the stationarity of variables. The results of unit root test showed in Table 1 confirmed that all variables in the model are stationary at first different at 1%, 5% or 10% level of significance, which meets the aforesaid requirements.

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Table-1. Unit root tests.

Variables	ADF test with Intercept		ADF test with Intercept and Trend		Conclusion
	Level	First difference	Level	First difference	
GDP	–1.219846	–2.863277*	–0.386341	–5.159110*	I(1)
REM	–2.238312	–6.372858***	–2.691967	–5.271274***	I(1)
FDI	–1.677444	–3.405049**	–2.450101	–3.296541*	I(1)
IMP	–1.666533	–5.594541***	–3.627597*	–5.658139***	I(1)

Note: *** statistical significance at 1%.
** statistical significance at 5%
* statistical significance at 10%.

4.2. ARDL Cointegration Test

After confirming that all of the variables are integrated at order 1, ARDL bounds test is applied to estimate Eq-2. The computed F-statistic and critical values for 1%, 5% and 10% level of significance are showed respectively in Table 2. It can be seen that the value of F-statistic exceeds the upper bound critical values for all the three significance levels. Therefore, we could reject the null hypothesis and accept the alternative hypothesis. The rejection of the null hypothesis H_0 implies that there is a long-term relationship among GDP, remittances, FDI and imports in Vietnam during the period time of study.

Table-2. ARDL cointegration test.

Estimated model	F-statistic	1% critical values		5% critical values		10% critical values	
		I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
GDP=*f*(REM, FDI, IMP)	8.78	5.33	7.06	3.71	5.02	3.01	4.15

4.3. ARDL Model

ARDL model with optimal lags are presented in panel A of Table 3. Based on AIC criteria, the optimal ARDL model is ARDL (1, 0, 2, 1). Panel B of the table presents the result of relevant diagnostic tests for time series data. The p-values of the tests showed in parenthesis suggest that the null hypothesis could not be rejected for all the four tests, which implies that the data is free from serial correlation, heteroscedasticity, functional misspecification and the errors follows a normal distribution. Therefore, it could be concluded that the model is reliable.

Table-3. ARDL model.

Variable	Coefficient	t-statistic
Panel (A)		
GDP(-1)	0.811***	18.608
REM	0.793***	4.074
FDI	-0.277**	-3.194
FDI(-1)	0.176**	2.418
FDI(-2)	0.080	-1.696
IMP	-0.166	-1.002
IMP(-1)	0.557***	3.810
Constant	-1.405**	-2.366
Panel (B) Diagnostic tests		
Serial correlation	0.158 (0.92)	
Heteroskedasticity	4.605 (0.71)	
Functional form	2.653 (0.14)	
Normality	2.665 (0.26)	
DW	2.073	
Numbers in parenthesis under diagnostic tests are the p-value.		

Note: *** statistical significance at 1%
** statistical significance at 5%
* statistical significance at 10%.

4.4. Short-Run and Long-Run Estimates

The results of short-run and long-run estimation are displayed in Table 4. The core findings of the study could be summarized as follows:

(i) Firstly, remittances have significantly positive impact on the economy of Vietnam in both long-run and short-run. Specifically, in long-term, when remittances increase by 1%, GDP per capita increases sharply by 4.16%. In short-term, 1% increase in remittances stimulates GDP per capita by approximately 0.8%. This outcome falls in line with almost existing studies on economic effects of remittances in developing countries. For instance, Tahir, Khan, and Shah (2015); Makun (2018) reported the positive impact of remittances on economic growth in the context of Pakistan and Fiji Island, respectively. In the case of Vietnam, Dang (2015) in a study on nexus between remittances and growth concluded that the ratio of remittances to GDP imposed a significantly positive impact on

economic growth in both the short and long term. It is recorded that in the past, remittances to Vietnam were mostly used for household expenses and bank savings. In recent years, a large proportion of remittances has been diverted to investment purposes such as investment in real estate, production and business activities. According to Lowell (2000) through increasing consumption or promoting investment, remittances will stimulate economic growth. If invested, remittances obviously foster output growth; if consumed, they generate a positive multiplier effect. One remittance unit spent on basic needs would promote retail sales, which would lead to further demand for goods and services, then stimulates the economy output.

(ii) Secondly, opposite to the conventional view that Foreign Direct Investment generally promotes economic growth in developing countries, in this article FDI is found to hinder economic growth in both long-run and short-run. More precisely, 1% increase in FDI is estimated to create a corresponding decrease of GDP per capita by 0.28% in short-term and 0.96% in long-term. This result is consistent with a few previous studies on the relationship between FDI on economic growth in the case of developing countries by Herzer (2012) and Nguyen (2019). The negative effect of FDI could be explained by the fact that Vietnam is a labor-intensive economy and almost FDI invested to Vietnam come from investors who are looking for low-cost and low-skill labor force. Accordingly, the FDI enterprises locate the low added-value stages of production such as assembling, processing and manufacturing in Vietnam and leave a modest profit to the domestic economy.

(iii) Finally, in the short run, imports are negatively associated with GDP. However, the estimated result is statistically insignificant. In the long run, the estimate turns to positive sign which indicates that the growth of imports tends to boost the growth of Vietnam economy. This outcome could be partly attributed to Vietnam's foreign trade pattern. In the most recent years, Vietnam's imports mostly consist of electrical machinery and equipment, mineral fuels, textile and garment materials and accessories, etc. that are used as input for domestic industries, hence contributing to GDP and fostering the growth process. Also, imports have increasingly become important as a channel for technology and knowledge diffusion to the domestic economy.

Table-4. Short-run and long-run estimates.

Short-run estimates (dependent variable ΔGDP)			Long-run estimates (dependent variable GDP)		
Variables	Coefficient	t-statistic	Variables	Coefficient	t-stasistic
ΔREM	0.79***	4.07	REM	4.19***	3.76
ΔFDI	–0.28***	–3.19	FDI	–0.958**	–2.68
$\Delta FDI(-1)$	0.08	1.70	IMP	2.066**	3.09
ΔIMP	–0.17	–1.00	C	–7. 2***	–3.81
ECT_{t-1}	–0.19***	–4.34			
$ECT_{t-1}= \Delta GDP-(4.19*\Delta REM-0.96*\Delta FDI+2.07*\Delta IMP-7.42)$					

Note: *** statistical significance at 1%.
** statistical significance at 5%
* statistical significance at 10%.

4.5. Stability Checking

The parameter stability of the model was checked by running tests of CUSUM (cumulative sum of recursive residuals) and CUSUM of Squares (cumulative sum of squares of recursive residuals). The plot of CUSUM and CUSUM of Squares displayed in Figure 1 and Figure 2 fall well within the 5% significance boundaries. Therefore, the estimated parameters are stable over time.
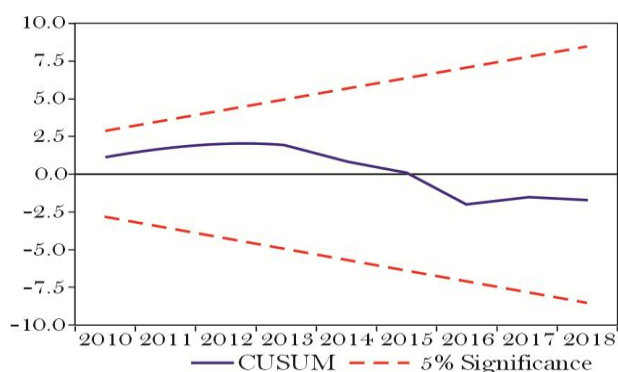
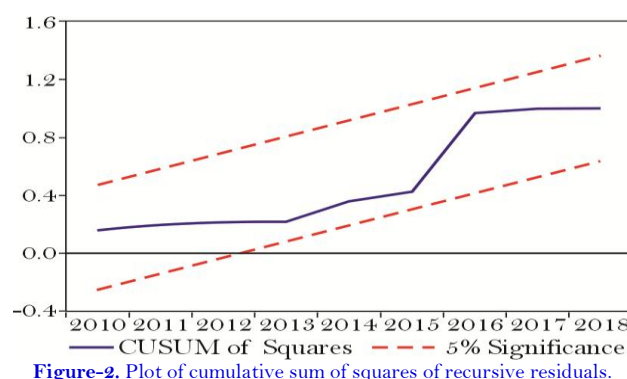Figure-1. Plot of cumulative sum of recursive residuals.

Figure-2. Plot of cumulative sum of squares of recursive residuals.

5. CONCLUSION

Applying the ARDL bounds testing approach to cointegration, this empirical study examines the relationship between remittances, FDI, imports and economic growth over the period 2000 - 2018 in Vietnam. Given the goodness of fit and stability of the model, it is suggested that remittances are crucial to stimulate the economic growth while FDI tends to have negative effects in both long run and short run. Imports are also found to promote economic growth in the long run, whereas the estimate on short run dynamics is statistically insignificant. The main findings of the study have been interpreted from different perspectives in the specific context of Vietnam economy.

There are still some likely shortcomings in this study. Firstly, the data set cover a fairly short time period due to the unavailability of the data. Secondly, the model is developed assuming that the relationship between variables are linear. Actually, the relationships may be nonlinear, which should be considered in the future researches for better understanding and interpretation.

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