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The Impact of International Capital Flows on Economic Growth: The Case of Vietnam

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External capital flows enable developing countries to strengthen investment activities, increase economic growth and reduce poverty. Therefore, this research is conducted primarily to investigate the impact of the long-term and short-term capital flows on Vietnamese real GDP growth. The autoregressive distributed lag (ARDL) bound testing method is applied to examine the empirical relationship. The regression results show that there is a long-run relationship between foreign capital flows and economic efficiency. ODA is found to have a stronger impact on the economy than FDI and short-term capital flows.

JEL Codes: F21, F32, F35 and F63

1. Introduction

Most developing countries have low living standard and Vietnam is no exception due to the lack of financial resources for investment. Foreign capital flows are essential to fill the capital gap. They can be categorized into 3 general types: long-term capital including foreign aid (ODA), foreign direct investment (FDI) and short-term capital known as "hot money". These kinds of foreign capital flows benefit the economy by cutting a budget deficit and boosting trade activities. Therefore, this research empirically analyzes the impacts of international capital flows on Vietnam's economic growth.

The relationship between external capital flows and economic growth is examined in many empirical studies, with mixed and even contradictory results. Some of the papers find that foreign capital flows have negative effects on growth such as the paper of Mallik (2008), Athukorala (2003), etc. Contrary results are also found in other papers like Karras (2006), Ericsson and Irandoust (2005), etc. Some of the previous research cannot distinguish the distinct characteristics of each country due to using panel data, so it is difficult to draw policy implications for a specific country. In recent years, Vietnam's economy has been reformed and restructured to attract foreign capital inflows. However, there has not been any research on this topic for Vietnam – a developing country. Because of this situation and the lack of consensus on foreign flow's impact, the new experimental research as a case study of Vietnam is implemented. It finds that ODA has a positive impact on growth while FDI and "hot money" are found not to have significant impact. These results refute the explanation that FDI and "hot money" have made important contributions to Vietnam's growth.

The significance of this research is that it simultaneously considers the effects of FDI, ODA and short-term capital flows on economic growth. It also takes advantage of the ARDL bound testing procedure to bring consistent results. These findings are particularly valuable to policy

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makers and foreign investors who want to understand the effectiveness of economic resources in Vietnam.

The rest of this paper is organized as follows: section 2 gives a brief literature review related to the link between international capital flows and economic growth. Section 3 presents data and methodology. The empirical results will be presented in section 4. Finally, section 5 gives conclusions.

2. Literature Review

Karras (2006) investigates the impact of ODA on GDP per capita growth using panel data of 71 developing countries from 1960 to 1997. He concludes that ODA has significantly positive effects in the long term, finding that when ODA increases to $20 per capita, economic growth rate goes up to 0.16%. He does not consider the effects of policy. Ericsson and Irandoust (2005) use the maximum likelihood estimation for cointegration with the panel data of five African countries from 1965 to 2000. They find that both ODA and FDI have positive effects on economic growth. Bhandari et al (2007) also find that FDI is a determinant of economic growth, while ODA does not play an important role in promoting European countries' growth. They apply fixed effects estimation of panel data in the 1993-2002 period. Similarly, Ndambendia et al (2010) examine the relationship between FDI, ODA and the economic growth of 36 African countries. Using a fixed-effects dynamic panel data model, they assert that there is a strong positive relationship between these external capital flows and economic growth. However, Athukorala (2003) also examines the impact of FDI on Sri Lanka's economic growth using cointegration and an error correction model (ECM) with annual time series data for the period 1959-2002. He concludes that FDI is statistically insignificant. This result goes against the conclusion of Bengoa et al (2003) for 18 Latin American countries over the period 1970-1999 and Durham (2004) for 80 countries from 1979 to 1998. These authors also show that the relationship between FDI and growth depends on the absorption of host countries. The mentioned studies have provided opposite results due to the different characteristics of the countries. The studies' results based on panel data cannot be applied for a particular country. Thus, this paper does research on Vietnam as a case study whose results will be much more reflective of the country's performance. However, the weaknesses of country studies are usually short time series and crude methodologies. As the result, the paper adopts ARDL bound testing which is appropriate to small sample to give reliable regression results.

Duassa and Kassim (2009) also consider the importance of foreign indirect investment (FII) to Malaysia's economy. They use vector error correction model (VECM) with quarterly real GDP data and FII inflows from big investors such as US, UK, Singapore, HongKong. They find that UK's FII highly contributes to the country's GDP in long term. However, many authors such as Sula and Willet (2006), Henry (2003), Patro and Wald (2005) suppose that the volatility of FII is often considered as the main reason for the loss of financial market liquidity which causes to financial crisis. In particular, excessive capital inflows can lead to inflationary pressures and the formation of asset price bubbles. Further, the abrupt withdrawal of investment portfolios causes large corrections in asset prices that can create risks to an economy (National Bank of Malaysia, 2006; Shinn, 2000).

The current existing research mainly focuses on explaining the discrete impact of FDI, ODA, FII on economic growth. Thus, we cannot see a comprehensive picture of the impact of all international capital flows on growth. In addition, short-term capital flows include not only FII but also short-term foreign bank loans. Therefore, this paper measures "hot money" instead of

FII. It examines the impact of both short-term and long-term capital flows on Vietnam's economic growth with the following hypotheses:

Hypothesis 1: ODA has positive effect on Vietnam's growth.
Hypothesis 2: FDI has positive effect on Vietnam's growth.
Hypothesis 3: "Hot money" flow has positive effect on Vietnam's growth.

3. Methodology

3.1 Data

FDI inflows and disbursed ODA data in Vietnam are collected from Ministry of Planning and Investment. Domestic investment capital which represents domestic resource is also taken into consideration. It is the amount of capital expenditure to increase or maintain production capacity, collected from Vietnamese Statistical Yearbook. Vietnam GDP data as well as values of export and import goods are collected from Vietnam General Statistics Office.

"Hot money" flow is calculated by the residual method of the World Bank which was first introduced in 1985, since then this approach has been used to measure short-term capital flow by many researchers. Total economic transactions with foreign countries as well as cross-border capital flows are reflected on the balance of payments (BOP). Therefore, the estimation of short-term international capital flow is usually based on BOP. The figures relating to the balance of payments are collected from the IMF's database to calculate the flow of "hot money" for Vietnam.

All variables' data cover the period 2007Q1-2015Q3 when Vietnam's economy has been successful in attracting foreign investment capital during nearly 10 years. The inflows of FDI and ODA tend to continuously increase while "hot money" tends to flow out of the country. Vietnam also pursued trade liberalization and increased investment in this period. The restrictions on the flow of capital have been gradually removed to increase competitiveness and attract foreign investors.

3.2 Models

The study tries to test three hypotheses that international capital flows have positive effect on Vietnam's economic growth. The contribution of this paper is that "hot money" is added to consider its impact on Vietnam's growth. It divides into two models. Model 1 considers the impact of long-term capital flows. This model is expressed as logarithms, because log difference of real GDP implies economic growth rate. Model 1 used in the empirical analysis is determined as follows:

$$LnGDP = \beta_0 + \beta_1 LnFDI + \beta_2 LnODA + \beta_3 LnINV + \varepsilon_t \quad (1)$$

Where

LnGDP represents the real economic growth, measured by the logarithm of seasonally adjusted real output.

LnFDI and LnODA in turn are the logarithm of FDI inflows and disbursed ODA. Two variables represent long-term international capital flows used to evaluate their impacts on Vietnam's economic growth.

LnINV is the logarithm of domestic investment. This variable is included in the model to consider internal resource in addition to external resources. This variable also appears in neoclassical model and is considered as a determinant of economic growth. It plays a role of control variable in the model.

Model 2 examines the impact of "hot money" on Vietnam's economic growth. Because net inward and outward short-term capital flows can be negative figures, we cannot use the logarithmic form. Model 2 is defined as follows:

$$GDPG = \beta_0 + \beta_1 HM + \beta_2 INV + \beta_3 OPENESE + \varepsilon_t \quad (2)$$

Where

GDPG is economic growth rate. HM, "hot money" flow, is calculated by taking the change in foreign exchange reserves minus net export minus net FDI.

INV and OPENESE in turn are domestic investment and economic openness index, included in the model as control variables. The OPENESE variable is the ratio of exports plus imports to GDP. It is representative for general policy environment in Vietnam.

3.3 Method

This paper analyses time series data to examine the impact of international capital flows on Vietnam's growth with the autoregressive distributed lag (ARDL) bound testing method improved by Pesaran and Shin (1999) for many reasons:

Firstly, most macroeconomic variables are non-stationary. We must take the difference before regressing. This can lose the long-term information. To solve this problem, my paper uses the more standardized technique of co-integration and the error correction mechanism (ECM) to estimate the long-term and short-term relationship between variables in model.

Secondly, the ARDL bound testing approach avoids the issue of degree of integration. It is more flexible, because it can be applied when variables are not integrated to the same order (Pesaran (1997)).

Thirdly, Pesaran and Shin (1999) suggest that the ARDL approach is particularly appropriate for small samples, and it is also more effective than other methods of VAR.

Finally, Harris and Sollis (2003) show that the ARDL approach often brings unbiased estimation results in long run and t-statistics in the model are reasonable even if the estimated coefficient is endogenous. Pesaran and Shin (1995) also prove that the estimated coefficients in the long term based on the process of ARDL bound testing is extremely consistent. To apply this method, model 1 is rewritten as follows:

$$\Delta \ln(\mathrm{GDP}) = \beta_0 + \sum_{i=1}^{P} \beta_i \, \Delta \ln(\mathrm{GDP})_{t-i} + \sum_{i=0}^{p} \mu_i \, \Delta \ln(\mathrm{FDI})_{t-i} + \sum_{i=0}^{p} \varphi_i \, \Delta \ln(\mathrm{ODA})_{t-i} + \sum_{i=0}^{p} \delta_i \, \Delta \ln(\mathrm{INV})_{t-i} + \vartheta_1 \ln(\mathrm{GDP})_{t-1} + \vartheta_2 \ln(\mathrm{FDI})_{t-1} + \vartheta_3 \ln(\mathrm{ODA})_{t-1} + \vartheta_4 \ln(\mathrm{INV})_{t-1} + \varepsilon_t \quad (3)$$

And model 2 is rewritten as follows:

$$\Delta GDPG = \beta_0 + \sum_{i=1}^{P} \beta_i \Delta GDPG_{t-i} + \sum_{i=0}^{p} \mu_i \Delta HM_{t-i} + \sum_{i=0}^{p} \varphi_i \Delta INV_{t-i} + \sum_{i=0}^{p} \delta_i \Delta OPENESE_{t-i} + \vartheta_1 GDPG_{t-1} + \vartheta_2 HM_{t-1} + \vartheta_3 INV_{t-1} + \vartheta_4 OPENESE_{t-1} + \varepsilon_t \quad (4)$$

Where

β_0 is the drift, ε_t is white noise error, p is optimal lag, Δ is difference, β_i, μ_i, φ_i, θ_i, δ_i are the short-term impact of variables in the model while ϑ_1, ϑ_2, ϑ_3, ϑ_4, ϑ_5 express long-term elasticities.

The co-integration approach of ARDL bound testing has three stages. Firstly, F test is used to determine the presence of co-integration relationship between the variables. Null hypothesis is determined as follows:

$H_0: \vartheta_1 = \vartheta_2 = \vartheta_3 = \vartheta_4 = \vartheta_5 = 0$
$H_1: \vartheta_1 \neq 0, \vartheta_2 \neq 0, \vartheta_3 \neq 0, \vartheta_4 \neq 0, \vartheta_5 \neq 0$

When long-term relationships exist between the variables, the estimation of the short-term and long-term parameters can be performed. The long-term estimation coefficients are defined by ARDL approach. The short-term parameter can be achieved by estimating error correction model. The adjustment coefficient in the model indicates the speed of adjustment to return to balance.

General error correction models are as follows:

$$\Delta \ln(GDP) = \beta_0 + \sum_{i=1}^{P} \beta_i \Delta \ln(GDP)_{t-i} + \sum_{i=0}^{p} \mu_i \Delta \ln(FDI)_{t-i} + \sum_{i=0}^{p} \varphi_i \Delta \ln(ODA)_{t-i} + \sum_{i=0}^{p} \delta_i \Delta \ln(INV)_{t-i} + \lambda EC_{t-1} + u_t$$

$$\Delta GDPG = \beta_0 + \sum_{i=1}^{P} \beta_i \Delta GDPG_{t-i} + \sum_{i=0}^{p} \mu_i \Delta HM_{t-i} + \sum_{i=0}^{p} \varphi_i \Delta INV_{t-i} + \sum_{i=0}^{p} \delta_i \Delta OPENESE_{t-i} + \lambda EC_{t-1} + u_t$$

Where, λ is the speed of parameters adjustment and EC is the residual taken out from the equation (3) and equation (4).

To confirm the stability of the regression results, diagnostic tests of the models were also performed. The diagnostic tests include a serial correlation test (or autocorrelation), the test of functional form in order to control the problem of missing variables as well as a heteroscedasticity test. Moreover, the paper also performs the CUSUM and CUSUMSQ tests to check the consistency of the model. These tests aim to check the structural stability of the parameters.

4. Results

4.1 Unit Root Test

First of all, the paper performs a unit root test to determine the degree of integration of each variable in the model. This is necessary to ensure that non variables are stationary at level 2 - I(2) and to avoid giving false regression results. According to Ouattara (2006), the F-statistic of Pesaran et al (2001) is no longer true when the variables are I(2), because bound testing is based on the assumption that all variables must be I(0) or I(1).

In this section, the paper uses the Dickey-Fuller unit root test (ADF). The ADF test has the null hypothesis: $\rho = 1-\phi = 0$ (non-stationary). The optimum lags are selected according to the AIC, HQC, SIC information. The results of unit root test for model 1 and model 2 are presented in table 1 below:

Table 1: Unit Root Test - Augmented Dickey Fuller (ADF) test

	Variables	Lags	Drift, trend	ADF statistic value	Conlusion
Model 1	LnGDPSA	3	Drift and trend	-3.444*	I(1)
	LnFDI	1	Drift	-2.966**	I(0)
	LnODA	2	Drift and trend	-10.0165***	I(0)
	LnINV	3	Drift and trend	-7.0227***	I(1)
Model 2	GDPG	2	Drift	-250.8332***	I(1)
	HM	0	Drift	-4.377841***	I(0)
	OPENESE	0	Drift	-4.671018***	I(0)
	INV	3	Drift and trend	-7.0227***	I(1)

Note: *, **, *** Significant at 10%, 5%, 1%

The table shows that all variables in model 1 and model 2 are stationary at I(0) or I(1). It means that they all reject null hypothesis at the significance levels. However, Perron (1989) indicates that the presence of structural break points makes the ADF test results biased toward not rejecting H_0. Therefore, the paper selects the test of Zivot and Andrews (1992) to perform unit root test taking into account structural break points. The null hypothesis of this test is: $\alpha = 0$ meaning non-stationary series without structural break point, and the alternative hypothesis is: $\alpha < 0$ meaning stationary series with a structural break point. We have the results of Zivot and Andrews test for model 1 and model 2 presented in table 2:

Table 2: Zivot – Andrews structural break point unit root test

	Variables	Minimum t-statistic	Critical value		
			1%	5%	10%
Model 1	LnGDPSA	-5.419** (2010q1)	-5.57	-5.08	-4.82
	LnFDI	-5.859*** (2009q2)	-5.34	-4.80	-4.58
	LnODA	-11.422*** (2009q2)	-5.57	-5.08	-4.82
	LnINV	-8.244*** (2008q3)	-5.57	-5.08	-4.82
Model 2	GDPG	-112.413***(2014q2)	-5.34	-4.80	-4.58
	HM	-6.251*** (2008q2)	-5.34	-4.80	-4.58
	OPENESE	-7.037*** (2008q4)	-5.34	-4.80	-4.58
	INV	-13.620 *** (2011q4)	-5.57	-5.08	-4.82

Note: *, **, *** Significant at 10%, 5%, 1%

Table 2 shows that the absolute values of minimum t-statistic are greater than the absolute value of critical values, so H_0 is rejected. It also means that there is not any variable in both models integrated at level 2. Therefore, it satisfies conditions to run ARDL bound testing to find out long-term relationships between variables.

4.2 Test for Co-Integration

The co-integration test of Pesaran et al (2001) is applied to determine the existence of long-term relationships between variables that will ensure the soundness of estimation results and conclusions about the parameters of the model. The paper performs an F-test with the following null hypothesis: the long-term parameters of variables in two models ($LnGDP_{t-1}$, $LnFDI_{t-1}$, $LnODA_{t-1}$, $LnINV_{t-1}$ and $GDPG_{t-1}$, HM_{t-1}, $OPENESE_{t-1,}$ INV_{t-1}) are both equal to 0. Pesaran et al (2001) provide upper and lower critical values for the asymptotic distribution of the F-statistic. If the calculated F-statistic value was smaller than lower critical values, the variables wouldn't have co-integration. If the F-statistic value exceeded upper critical values, there would be long-term relationships between variables. The results are presented in table 3.

Table 3: Co-integration test

	F-statistic	Critical values							
		10%		5%		2.5%		1%	
Model 1	F = 4.413	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
Model 2	F = 3.834	2.72	3.77	3.23	4.35	3.69	4.89	4.29	5.61

Table 3 shows that the F-statistic values in both model 1 and model 2 are larger than upper critical values in turn at the 5% and 10% significance level. Therefore, we can reject H_0. It means that we can estimate the long-term and short-term movements to determine the impact of international capital flows on Vietnam's economic growth.

4.3 The ARDL Estimation Results

The paper uses STATA software to estimate the long-term and short-term coefficients for both model 1 and model 2. The estimation results can answer the question if the hypotheses: foreign capital flows have positive effect on Vietnam's growth can be accepted. They are presented in table 4:

Table 4: Impact of international capital flows on Vietnam's economic growth

		D.LnGDP		D.GDPG
ADJ				
	L1.LnGDP	-0.125	L1.GDPG	-0.7168479
		(3.29)***		(0.4564505)
LR				
	LnFDI	-0.026	HM	-0.00000123
		(0.71)		(0.0000017)
	LnODA	0.418	INV	0.0000984
		(4.95)***		(0.000055)
	LnINV	0.017	OPENESE	-0.0002036
		(0.19)		(0.0002287)
SR				
	LD.LnGDP	-0.653	LD.GDPG	-0.4619015
		(3.40)***		(0.3441711)
	L2D.LnGDP	-0.729	L2D.GDPG	-0.6541872
		(5.27)***		(0.2347103)**
	L3D.LnGDP	-0.533	L3D.GDPG	-0.8437848
		(3.86)***		(0.1210137)***
	D.LnFDI	0.007	D.HM	0.00000156
		(1.89)*		(0.000001)
	LD.LnFDI	0.008	LD.HM	0.00000145
		(2.55)**		(0.000000696)*
	L2D.LnFDI	0.002	L2D.HM	0.0000014
		(0.79)		(0.000000493)***
	L3D.LnFDI	0.007	D.OPENESE	0.0001618
		(2.52)**		(0.0000909)*
	D.LnODA	-0.054	_cons	0.0426856
		(3.63)***		(0.0167195)**
	LD.LnODA	-0.044		
		(3.83)***		
	L2D.LnODA	-0.030		
		(3.90)***		
	L3D.LnODA	-0.018		
		(4.11)***		
	_cons	1.367		
		(3.56)***		
F		7.74***		12352.77***
R^2		0.89		0.91
N		31		31
A: Serial correlation		chi2 = 2.8 (0.0943)		chi2 = 0.498 (0.4802)
B: Functional form		F(3, 12) = 1.92 (0.1801)		F(3, 16) = 0.62 (0.6140)
C: Heteroscedasticity		chi2 = 0.78 (0.3779)		chi2 = 0.15 (0.6995)
D: ARCH effect		chi2 = 0.003(0.9535)		chi2 = 2.219 (0.1363)

**p<0.1, ** p*<0.05; **** p*<0.01

A: based on Breusch Godfrey LM test
B: based on Ramsey Reset test
C: based on Breusch Pagan Heteroscedasticity test.
D: based on LM test

The Long-Run Empirical Estimates

Table 4 shows that when foreign aid increases 1 percent, Vietnam's economic growth will rise 0.4 percent. Therefore, we cannot reject hypothesis 1 that ODA has a positive impact on Vietnam's economic growth in long run. The coefficient of regression on FDI inflows is negative and insignificant while domestic investment has positive impact on economic growth and also has no statistical significance. We cannot find strong evidences which show their

impact on Vietnam's economic growth in the long term. Similarly, the regression result of short-term international capital flows also shows their negative impact on Vietnam's growth, and it is statistically insignificant. Therefore, we cannot accept hypothesis 2 and 3 that FDI inflow and short-term capital flows have positive effects on Vietnam's growth in the long run.

The Short-Run Estimates

The regression parameters of the difference variables in model 1 and model 2 express the elasticities in short term, and adjustment coefficients express the speed of adjustment of the models to equilibrium.

In model 1, the estimation coefficients of the variables ΔLnFDI, ΔLnODA, ΔLnGDPSA show the short-run impact on the economic growth. Adjustment coefficient is -0.125, meaning that the speed of adjustment to long-term equilibrium value is 12.5 percent with 1% significant level. This figure shows that the adjustment speed is quite slow. The negative sign of the adjustment coefficient also affirms that the co-integration relationship exists between the variables in the model. The estimated coefficients in short term have statistical significance. FDI has positive impact on Vietnam's economic growth while ODA has negative impact in the short term. The estimated coefficient of FDI (ΔLnFDI) is 0.007 which is positively correlated with economic growth at 10% significance level. The lag variables of ΔLnFDI also show positive impact on economic growth. This is the short-term fluctuation mechanism over time contributing to GDP growth. Therefore, we can accept hypothesis 1: FDI has positive effect on Vietnam's growth in the short term. In contrast, the lag variables of ΔLnODA show negative impact with 1% significant level, so we cannot accept hypothesis 2 in the short term.

With regard to "hot money" flow, this analysis finds that it brings positive effect on the economic growth in the short term. The lag variables of short-term capital flows (ΔHM) show positive impact on Vietnam's growth. It also shows that when short-term capital flows increase into a million dollar, Vietnam's economic growth increase to 1.45 percent. Therefore, we can accept hypothesis 3 in short run.

Diagnostic tests show that model 1 and model 2 have no series correlation when the p-value of model 1 (0.0943) is greater than 5% significance level, and the p-value of model 2 (0.4802) is greater than 1% significance level. These models also pass the functional form test and heteroscedasticity test when their p-values are greater than 1% significance level. Therefore, we can assert that the regression results are reliable.

4.4 Test for the Stability of Model

In this section, the paper checks the stability of the parameters in the model using the CUSUM and CUSUMSQ tests proposed by Brown et al (1975). If the CUSUM and CUSUMSQ graphs remain within the limit of critical values at a 5% significance level, we cannot reject the null hypothesis: all the regression coefficients are stable. However, if they are beyond the limits, the null hypothesis can be rejected at a 5% significance level. The results of model 1 is shown in the following figure:

Figure 1: CUSUM and CUSUMSQ test for model 1

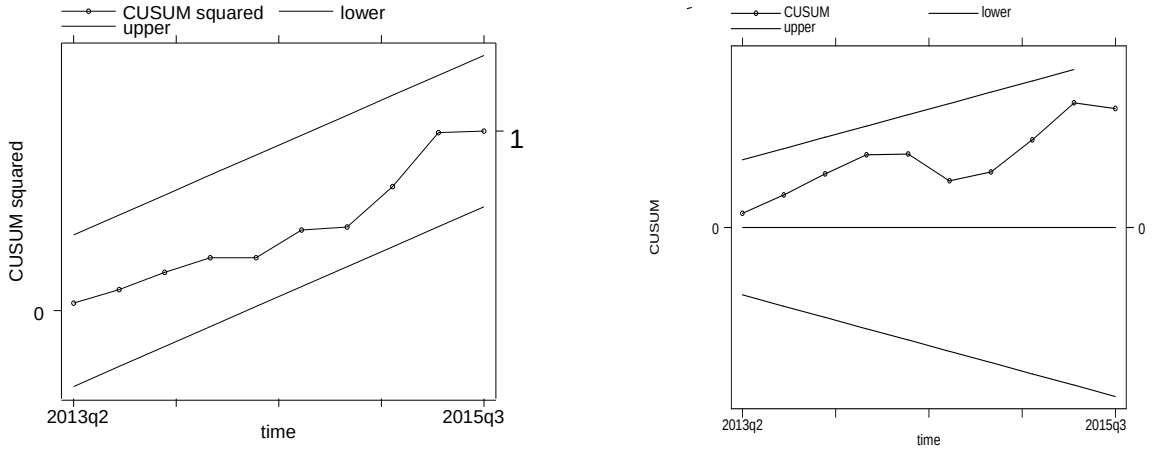
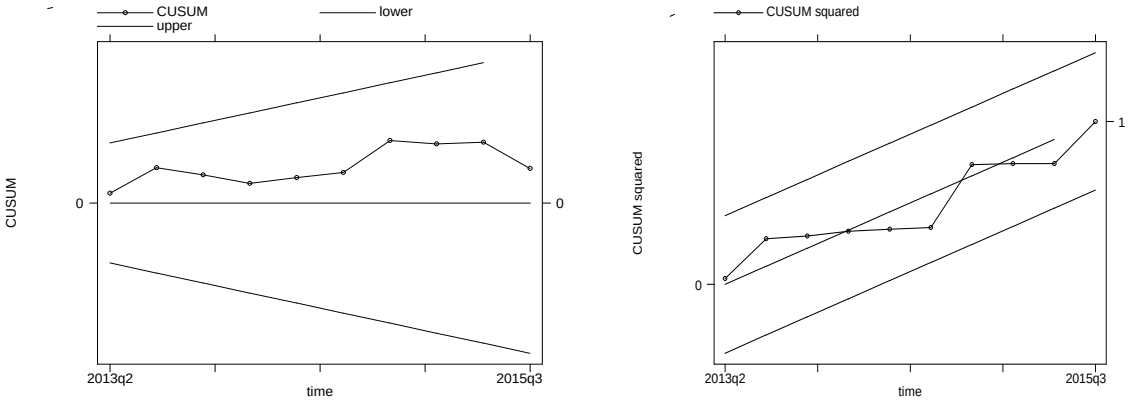


Figure 1 expresses the expected results of the CUSUM and CUSUMSQ tests. The above graphs show that CUSUM and CUSUMSQ are in line with a 5% significance level, meaning that the regression parameters in the model are stable. Similar results are also found for model 2 in following figure:

Figure 2: CUSUM and CUSUMSQ test for model 2



5. Conclusions

This study combines external investment resources such as FDI, ODA and “hot money” flows to explain Vietnam’s real GDP change. Especially, it is aimed to test the effectiveness of external capital flows. The paper also incorporate domestic investment as internal capital resource into models. Time series data from 2007Q1 to 2015Q3 is used to estimate long-term equilibrium and short-term movement with the ARDL bound testing method. Advanced econometric techniques are applied to diagnostic checking in time series data. Later estimates are implemented to find out short-run and long-run elasticities.

My results show that ODA brings negative impact on Vietnam’s economic growth in the short term, but it brings positive impact in the long term. It will be an important factor for economic growth, so we can accept hypothesis 1 in the long run. The paper also finds the insignificant impact of FDI and "hot money" flows on growth in the long term. This implies the inefficient utilization of these capital flow in Vietnam. They only have positive impact and statistical significance in short term. Therefore, hypothesis 2 and 3 that FDI and “hot money” have

positive effect is not supported in the long term, but these hypotheses are accepted in the short term. Domestic investment capital is positive for economic growth, but its impact is not reflected strongly in the model. This implies that domestic investment is not really powerful enough to create the influence on Vietnam's economic growth. Maybe, the amount of domestic capital is still low. If internal investment resources are increased, they could potentially play a useful role in boosting growth for Vietnam in the future.

The estimation results show the important role of ODA in promoting Vietnam's growth in long term. This implies that it should be treated with caution by policy makers, because when the amount of ODA falls dramatically, it can causes negative impacts on the economy. However, ODA consists of foreign loans with associated repayment obligations. Therefore, even though the loans have concessional terms such as low interest rates, and longer repayment periods, it is necessary to exercise caution to avoid an excessive external debt burden. In order to maximize growth when minimizing external debts, it may appear that the role of ODA should instead be played by FDI. However, FDI is found to have a weak impact on Vietnam's economy in long term. This result implies that the usage of FDI inflows is not really effective. The findings are consistent with the finding of Karras (2006), Athukorala (2003) in long term. Interestingly, my paper finds that ODA has a negative impact while FDI and "hot money" have positive effects on Vietnam's economic growth in the short term during the period of 2007-2015. Beside, my result implies that Vietnam's economy relies on financing from external sources to attain economic growth rather than concentrating on its own resources.

The paper hasn't yet considered policy factors that can explain clearly why FDI and short-term capital flow do not have strong effects on Vietnam's growth in the long term. Future work need to be done on explaining why these sources are used inefficiently and bring solutions for how they might be employed more effectively. Additionally, economic analysis at the sector level could provide insight into the investment efficiency of individual sectors, and then we can have investment allocation solutions for each sector.

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