Spring 5-22-2015

The Impact of Offcial Development Assistance on Foreign Direct Investment: Evidence from Vietnam

Hang Pham
hkpham@usfca.edu

The Impact of Official Development Assistance on Foreign Direct Investment: Evidence from Vietnam

Hang Ngoc Kim Pham

May 20, 2015

Advisor: Professor Sunny Wong[1]

University of San Francisco

Department of International and Development Economics

Email: hkpham173@gmail.com

Abstract

The relationship between Foreign Direct Investment (FDI) and Official Development Assistance (ODA) has not been fully established, nor has its directionality, as evidenced the disagreement among economists. Using existing literature as starting point, I extend its base by examining key causal variables for ODA and FDI within 64 Vietnamese provinces, covering the span from 1998 to 2012. With the most extensive and newest dataset available, I find that ODA attracts more FDI inflows in intermediate term (5-year average) and long term (all year average), but not in the short-term. An important policy implication of these results for developing countries, and Vietnam in particular, is that government quality needs to be sustained at a certain level, maintaining efficiency and transparency, so sufficient ODA flows can result and continue into the future.

[1]I would like to give a special thank to my advisor, Professor Sunny Wong, for his motivation, guidance and advice he has provided. Besides my advisor, I would like to thank the rest of professors and faculty at the Economic Department (University of San Francisco) for their encouragement and comments.

1 Introduction

Most empirical work affirms Foreign Direct Investment (FDI) plays as a fundamental role in developing economies, and the Vietnam is no exception. FDI promotes economic growth in a variety of ways such as opening larger foreign markets for domestic companies, expanding domestic capital, introducing/transferring new technology and products, and providing a skilled working through training, all of which improve the current economic climate.

With increases of inflows of FDI, Vietnam's growth rate, in real terms, reached 7 percent annually, which translated into a real dollar increase of $98 billion in 1990 to $823 billion in 2007 (Pham,T., 2012). In 2006, Vietnam was ranked 48th in the world, making it one of the largest exporters of diverse goods (McKinsey & Company, 2014). In 2007, Vietnam exported $27.8 billion in goods and services from foreign invested enterprises (FIEs), which accounted for 60 percent of the total national exports (UNCTAD, 2008). Significant FDI capital inflows benefit Vietnam not only in terms of higher economic and employment growth, but also in terms of reducing poverty in the country (Tran, 2005). Due to the potential benefits of FDI, attracting more FDI inflow is an essential goal for Vietnam and other developing countries.

FDI is one of the major sources of external capital for new technology and development for native industries within developing countries; therefore, host countries need to provide strong infrastructure, highly skilled labor force and educated populace (human capital) to attract more FDI (Tu T. & Vu. T.P, 2012). Large government expenditures are needed when a country lacks these basic qualities, and if the government's budget is insufficient, an outside financial resource becomes an optimal solution (Tu T. & Vu. T.P, 2012). Some economists have cited Official Development Assistance (ODA) as a channel to promote FDI and the economic growth of developing countries, including Vietnam. .

FDI via ODA plays a significant role in providing business financing to other economies and promoting their overall growth. In fact, many researchers lend strong support to the association between foreign aid and productivity levels through their empirical analyses (Burke and Ahmadi-Esfahani, 2006; Bhandari et al., 2007; Asterious, 2009). Specifically, ODA in Vietnam has jump-started the economy and assisted it in overcoming many financial challenges in the country, which has led to significant growth. Vietnam was ranked third in the world for receiving donor ODA, following Afghanistan and Myanmar (OECD, 2015); 11% was allocated to social investment and another 17% was paid to the state budget during the years of 1993-2009 (Pham, 2010).

The relationship between FDI and aid has not been fully established, nor has its directionality, as evidenced the disagreement among economists. For example, Papanek (1973), Schneider and Frey (1985), and Yasin (2005), all agree about the presence of a positive

linkage between Bilateral Official Development Assistance (BODA) and foreign investment flows. On the other hand, Karakaplan, Neyapti and Sayek (2005) argue that aid has a negative direct effect on FDI. Somewhere in between the two extremes, Berthelemy and Tichit (2004) find an insignificant effect of aid on FDI. Most of these aforementioned papers deal with international data sets. However, the aim of my paper is to provide a contextual basis for the linkage between ODA and FDI and its directionality, in Vietnam, one of largest aid recipient countries.

Using existing literature as starting point, I will extend its base by examining key causal variables for ODA and FDI within 64 Vietnamese provinces, further divided into six regions in Vietnam (a small, somewhat open economy and is considered as one of largest foreign aid recipients), covering the span from 1998 to 2012. With the most extensive and newest dataset available, I investigate the possible linkages between ODA and FDI flows to Vietnam in the short, intermediate and long term, starting with theory and ending with an empirical model. Rather than focusing on international datasets as others do, which requires stronger assumptions, my study will utilize relevant cross-provincial data and isolate the specific effects of ODA on FDI at the individual provincial level.

I find no statistically significant impact of ODA on FDI inflows in the short run, but in the intermediate and long run, there is sufficient evidence to support the idea that foreign aid has a positive significant effect on FDI inflows to Vietnam. The rest of the paper is structured in the following way. Section 2 discusses the theoretical and empirical research on the important relationship between foreign aid and FDI inflows, Section 3 specifies my theoretical and mathematical framework, Section 4 discusses the empirical model while Section 5 will focus on data sources and data description and Section 6 shows the empirical results followed by concluding remarks in Section 7.

2 Literature Review

As previously mentioned, empirical analysis measuring the linkages between ODA and FDI of recipient countries have proven ambiguous at best. The link between aid and foreign investment has not been conclusive in either a positive or a negative direction, as the conflicting findings in the body of research suggest. Results in studies have been positive, negative, or insignificant, depending on the countries in question and their differences in economic, technological, and country-specific factors of those countries.

A significant number of researchers find a positive link between aid and FDI. Yasin (2005), for example, measures the link between FDI and ODA flows to eleven Sub-Sahara Africa (SSA) countries during the period of 1990-2003 period. His data suggests that bilateral ODA

has a constructive impact on cumulative FDI flows and that ODA helps eliminate some of the impediments to FDI, such as extreme market controls and administration inadequacies, creating better conditions for attracting FDI (Yasin, 2005). ODA flows comprise both loans and grants from multilateral and bilateral agencies, both of which provide significant capital for developing countries. Despite a noteworthy surge in FDI flows to emerging markets in recent history, obstructions to FDI flows for most SSA countries still exist (Yasin, 2005).

Kimura and Todo (2010) use a cross-section gravity model to estimate the effect of aid on foreign investment from specific donor countries and find positive results in very specific conditions. In their paper, they focus on the "vanguard effect," which depends on the amount of aid. Specifically, the vanguard effect is defined as the impact that donor aid has on promoting capital investment for its own country to invest in a host economy, without the "crowding out" effect of reducing FDI inflows from other countries. According to Kimura and Todo (2010), among the five countries they selected, only Japanese aid seemed to exhibit the vanguard effect, which was attributed to the efficiency of their government in coordinating the public and private sector. This efficiency lead to an information spillover effect from the host country's business environment to private Japanese firms, stimulating a large amount of FDI inflow to the aid recipient.

Kang et al. (2011), using both macro- and micro-level in their paper, test whether Korea exhibits a vanguard effect. The authors examine foreign aid and FDI with a bilateral data set. Their paper employs data from seven donor countries along with a FDI gravity model and GMM estimation to show the differential impacts of aid on FDI inflows, based on the donor countries' aid type. Only Korean and Japanese aid leads to an increase in foreign investment inflow to the recipient developing countries, while other donors' aid acts as a substitute for FDI. They conclude that Korea and Japan demonstrate the vanguard effect.

Selaya and Sunesen (2012) formalized a simple theoretical model to show that the effect of aid flows on FDI is dependent in which sector aid is invested. Their research includes 99 countries in five-year intervals from 1970-2001. Using theoretical modeling and empirical testing, Selaya and Sunesen (2012) conclude that aid invested into complementary inputs will increase the marginal productivity of capital and promote FDI inflow. However, aid directly invested in pure physical capital will crowd out private investment. The authors believe that choosing to invest aid in complementary inputs will improve both marginal productivity of capital and the capacity of absorption in developing countries, without causing foreign capital flight.

In contrast, other research implies a negative link between ODA and FDI. Karakaplan, Neyapti and Sayek (2005) hypothesize this relationship using a large data panel of 97 countries over a long time-series (1960-2004). By implementing GMM estimation, the authors'

study provides strong evidence of a negatively significant impact of foreign aid on FDI inflows (lagged) conditional on poor governmental policy and a lack of financial markets.

Some economists have suggested there is no strong connection between aid and FDI. Kosack and Tobin (2006) and Jansky (2012) all argue that aid and FDI are neither substitutes nor complements. Kosack and Tobin (2006) believe that ODA and FDI are two independent financial sources that affect a country's economy differentially. Constructing a panel of 103 countries covering the 1970-1999 period, the authors contend that ODA promotes growth in poor countries (low level of development) and that FDI is good for developing and developed countries, but is independent of ODA's influence. Interestingly, Kosack and Tobin (2006) find that FDI has no impact on growth and human development in the less developed world. Jansky (2012) utilizes a between-country framework to investigate the linkage between ODA and FDI and he concludes that the two flows have no effect on each other. This result supports Kosack and Tobin's (2006) finding.

Few of these studies, though, focus on the differential impacts within a single country context. However, my study will provide a better picture of whether ODA influences FDI in the specific context of Vietnam. The underlying theory that makes the case for the directional relationship between FDI and ODA will be described in the next section.

3 Theoretical Model

Selaya and Sunesen (2012) use Neo-classical growth theory to describe the relationship between aid flow and FDI. Following this framework, I adopt and modify the model to explain the linkage of FDI and ODA. To begin with, I employ Cobb-Douglas production function:

$$y = Ak^{\alpha} \tag{3.1}$$

where y is total output or GDP per capita, A is the total factor productivity, k is the stock of physical capital per worker and α is a constant. From the equation (1), we can derive the marginal product of capital (MPK):

$$MPK = \alpha Ak^{\alpha-1} \tag{3.2}$$

I assume that the flow of ODA increases the initial stock of A in the economy:

$$A = A_o + ODA \tag{3.3}$$

and

$$ODA = oda * L$$

therefore,

$$A = A_0 + oda * L \tag{3.4}$$

where *oda* is the part of aid invested in complementary factors. In an open economy, capital equipment is funded by domestic savings and foreign investment. I assume foreign aid flow does not affect physical accumulation, only complementary factors[2].Therefore, the capital accumulation per capita is given as:

$$\dot{k} = sy - (n + \delta)k + fdi \tag{3.5}$$

where n is growth rate of population and δ is the depreciation rate, which is constant.

Given the world real rate of return (r^w) at any time period as:

$$r^w = MPK\text{–}\delta = \alpha A k^{\alpha-1} - \delta \tag{3.6}$$

we can derive the equation showing the steady state level of k at any point in time:

$$r^w = \alpha A {k^*}^{\alpha-1} - \delta$$

$$k^* = \left[\frac{\alpha A}{r^w + \delta}\right]^{\frac{1}{1-\alpha}}$$

$$k^* = \left[\frac{\alpha A}{(r)}\right]^{\frac{1}{1-\alpha}} \tag{3.7}$$

such that r, the sum of r^w and δ, is a gross of world real rate of return. Moreover, at the steady state level of capital stock, the stock of capital will no longer change, so $\dot{k} = 0$ at any point in time. Then, we can derive the flow of FDI per capita as:

$$fdi = (n + \delta)k^* - sy^* \tag{3.8}$$

and takes partial derivative to respect of *oda*, such that:

$$\frac{\partial fdi}{\partial oda} = (n + \delta)\frac{\partial k^*}{\partial oda} - s\frac{\partial y^*}{\partial oda} \tag{3.9}$$

[2]Selaya and Sunesen's (2012)'s data categorized financial aid investments into complementary factors and physical capital. Since my dataset does not separate these two factors, I assume that ODA only impacts complementary factors with the exception of physical capital.

Equation (9) shows two components involved in the effect of aid, so we can conclude that ODA has either a positive or negative impact on FDI[3]:

$$\frac{\partial fdi}{\partial oda} = (n+\delta)\frac{\partial k^*}{\partial oda} - s\frac{\partial y^*}{\partial oda} \gtrless 0 \tag{3.10}$$

If domestic saving is larger than the steady state capital stock, we expect aid to have a negative effect on FDI. Therefore, the final equation implies that the impact of ODA on FDI inflow is ambiguous. Since theory cannot answer the direct relationship between those two variables, we need to further investigate empirical evidence to predict the ODA and FDI relationship.

4 Empirical Model

For the purpose of this study, FDI inflow will be the dependent variable, which is correlated with other explanatory variables. Ordinary Least Squares (OLS) is the estimation technique used to estimate the direct relationship of aid on FDI. My main hypothesis posits that ODA has positive significant effect on FDI inflows. My identification strategy exploits a panel data estimation that will be employed to evaluate the impact of aid on foreign investment over the period (1998-2012):

$$lnFDI_{pt} = \beta_0 + \beta_1 lnODA_{pt} + \beta_2 X_{pt} + \varepsilon_{pt} \tag{4.1}$$

where X presents a vector of control variables such as Gross Domestic Product (GDP), level of openness, human capital and population. I employ two specifications of the model, one with regional fixed effects and the other with provincial fixed effects. A regional fixed effect takes the value of 1 if the observed province belongs to a particular region, and 0 if it does not belong to that catalog. The t denotes the given year between 1998 and 2012 and the p refers to individual provinces in Vietnam. *"p"* will be replaced by r when I control for regional level fixed effects. Variables are converted into logarithmic form to minimize large variation in the values.

Each control variable included in my equation has relevance to existing literature, and has been included in previous theoretical and empirical models. I utilize trade openness as a channel for FDI, which is calculated by summing exports and imports and then dividing by the GDP of a country. Openness motivates foreign firms to export or open a new market in host countries, which implies a positive relationship between openness and FDI inflow. Liargovas and Skandalis (2012) conclude that openness attracts FDI inflow via eight different

[3]The derivation is provided in Appendix 1.

channels of trade intensity. By constructing a panel with 36 different developing countries, the authors deduce that countries with a high level of openness have a greater opportunity to boost FDI inflow.

Economic growth is included because it is one of the criterion that foreign investors consider before they decide to invest in host country. A stronger market would positively affect the scale of production of firms and a signal for firms to enter. Manal and Liu (2011) analyzes Malaysia data and they find bi-directional causality between FDI and economic growth. This finding parallels Shotar's (2005) results, which uses data from Qatar during the period of 1980 to 2002. Shotar (2005) asserts that economic growth is one of the important determinants to attract FDI.

The higher the level of human capital stock a country has, the more inward FDI that country will receive, as foreign investors do not need to invest in high training costs for workers because skilled-labors are available; therefore, I include human capital. Bhrumik and Dimova (2013) collects firm level data from approximately 100 developed and developing countries to test the direction of the relationship between human capital and foreign investment. Their study found that human capital stock is a positively statistically significant factor for attracting FDI flow. Bhrumik and Dimova (2013) suggest that developing countries should focus more on workers' education level to stimulate demand for FDI via human capital.

Additional literature also supports the hypothesis of a positive linkage between population and inward FDI into developing countries, so I include population in my model. Population represents the size of a potential market, and a host country with a large population would offer a larger market for production and services, along with larger skilled-labor force that is needed by foreign investors (Aziz & Makkawi, 2012). Thus, we assume the advantage of a larger population would lead to the higher increase in terms of FDI.

FDI inflow in Vietnam, my dependent variable, is measured in U.S. dollars (in millions), along with other explanatory variables such as ODA, GDP and openness level.

5 Data Sources and Data Description

All data is collected from the Ministry of Planning and Investment Portal and available publications of the Statistical Yearbook of Vietnam, Vietnam General Statistics Office (GSO), spanning the years of 1998 to 2012[4]. Panel data includes sixty-four provinces, covering six geographic and socio-economic regions: Central Highlands, Mekong River Delta, North Central and Central Coastal Area, Northern Midlands and Mountain, Red River Delta

[4]Most versions are found on the General Statistics Office's website: www.gso.gov.vn. The full list of data are located in the library of Ministry of Planning and Investment Portal Vietnam.

and South East. However, since four provinces, Ha Tay, Dien Bien, Dak Nong and Hau Giang, were either separated or combined with other provinces during that period of time, I decided to construct the data with 60 provinces to create a balanced panel dataset.

The list of variables and a brief description are described in Table 1. Table 2, a summary of data, provides a general view of all data. In addition, Figure 1 describes the country's FDI and ODA trends, which increase over time. Figure 2 and Figure 3 display, respectively, the allocation of inward FDI and ODA averaged over five-year intervals. Of note, the South East region attracts the largest portion of FDI and ODA inflow in Vietnam.

6 Empirical Results

6.1 The Short Term Effect of ODA on FDI

To empirically examine linkages between FDI and ODA, I use total aid investment from other countries in each region of Vietnam as my key independent variable. The OLS results are presented in Table 3, including fixed effects. The OLS estimation using aid as a primary variable is broadly consistent with other empirical aid literature, demonstrating aid flows significantly induce more FDI inflows in Vietnam, creating a virtuous cycle. The coefficient on ODA in Column 1 implies that a one percent change in aid invested in a region promotes a 2.39 percent change of FDI flow, on average. However, when adding more explanatory variables for FDI in Column 4 and 5, the coefficients for ODA on FDI are positive but no longer statistically significant. These results indicate that there is insufficient evidence that a positive effect of ODA on FDI exists in the short term. At the same time, the tests demonstrate that GDP, human capital and level of openness are significant for the country's FDI inflow. The estimated coefficients for GDP and level of openness, as expected, are positive and significant at 1%. The coefficient for human capital is negative significant at 5% level in column 4 and at 10% level in Column 5. Skilled human capital initially leads to greater FDI inflows, but beyond a certain threshold level of human capital, the association turns negative, suggesting an inverted U-shape. This could be because when adopting a new institution or technology, the domestic economy no longer depends on FDI inflow (Dutta & Osei-Yeboah 2013). Another explanation for the changing relationship between human capital and foreign investment flow is that intensive FDI in low-skilled markets suggests a demand for a higher ratio of unskilled labor. Thus, private companies might shift demand for labor to Vietnam's neighbors, where they can maintain lower wages for unskilled-laborers. An instrumental variable two-stages least squares (2SLS) estimation is used to detect whether ODA is an endogenous variable and the results are provided in Appendix 2 and 3. The 2SLS estimates identify a large, positive, but statistically insignificant effect of ODA on FDI.

6.2 The intermediate term effect of ODA on FDI

While I find an insignificant effect of ODA on FDI in the short term, I believe that is likely attributable to the fact foreign investors need time to monitor the effects of ODA on public infrastructure and services to determine their impact on economic growth, and so they can decide whether their investment will pay off. Table 4 reports the estimates of OLS results for a balanced sample of 6 regions, covering 64 provinces, using data averaged over five-year intervals from 1998-2012[5]. The estimated coefficients on ODA are positive and significant at 1% level in all regressions. This means the aid invested in each region plays a positive role in attracting FDI. The increase in 1 percent change total ODA would lead to approximately a 3.94 % change of FDI flow. At the same time, the level of openness has a strong correlation with FDI.

Previous studies suggest that there is endogeneity issue between ODA and FDI because aid funding may promote more FDI inflow in the host country, and FDI might also impact the amount of aid. Therefore, I test for this bias using Durbin-Wu-Hausman test (Durbin, 1954; Wu, 1974; Hausman, 1978) and I fail to reject the null hypothesis (Table 6 Panel C). Even though ODA is shown to be exogenous in this test, I perform another robustness check using an IV estimator (2SLS). Land size and number of hospital beds in individual provinces are used as the instrumental variables (IVs) which directly relate to aid flow in Vietnam, but have no significant correlation with inward FDI[6]. Data for my IV estimations comes from a dataset on the GSO's website. Land size, previously used by Rajan and Subramanian (2008), is measured in square kilometers. The number of patient beds within a provincial health department is considered a variable for attracting aid to provinces, which is a proxy for public infrastructure. Hospital beds are necessary inputs for the hospitals and patients, and for a province with fewer hospital beds, more aid is needed to increase the level of public services in that province. With these two potential instruments, my 2SLS results prove to be consistent with the OLS estimates (see Table 5). The estimated coefficients on control variables are qualitatively similar to my main regressions.

Good instruments must theoretically fulfill two assumptions: (1) the IVs must strongly correlate with the endogenous variable, and (2) they have to be uncorrelated to the error

[5] Selaya and Sunesen (2012) estimated the effect of ODA on FDI by sectors through utilizing the five-year intervals.

[6] To test whether land size in Vietnamese provinces and number of hospital beds under the management of provincial department have a relationship to FDI inflows, I control for these variables in the main regression (4.1). The results indicate there is no direct significant relationship between these instruments and FDI. Additionally, I run a joint test (F-test), which indicates both variables do not explain FDI by themselves.

term. However, the instruments might be hard to find in practice. Therefore, I perform other tests to determine whether land size and number of hospital beds are valid instruments. The results are presented in Table 6. Panel A provides the first stage regression that demonstrates that both land size and number of hospital bed have statistically significant relationship with ODA at 5% and 1% respectively. In other words, I find a strong first-stage relationship between the instruments and ODA flows. I apply an F-test to check the relevance of the instruments and find that coefficients of these instruments are jointly zero for the first-stage regression. As shown in Panel B of Table 6, the F statistics are greater 10 in all specifications, which is a rule of thumb to test for the strength of the IVs (Staiger and Stock, 1997). First-stage regression stands up to the Shea partial R^2 test, which also should be greater than 0.3 (Shea, 1997). The R^2 in my first-stage regressions is around .5.

Finally, I apply a Sargan test for over-identifying restrictions to determine whether land size and number of beds at provincial level are uncorrelated with the error term in the main regression (Sargan, 1958). Results of this test are reported in Panel B of Table 6 with corresponding p-values. The over-identification test results demonstrate that the set of instruments are statistically independent of the error term in the equation (4.1).

6.3 The long term effect of ODA on FDI

An average of a 15-year span (1998-2012) is used to estimate the long term effect of ODA on foreign investment. The results are similar to the intermediate term effects, where evidence supports the positive FDI and ODA relationship. In Table 7, the estimated effect of foreign aid on FDI implies that a 1% increase in foreign aid results in a 3.39% increase in foreign investment. The statistical results from Table 7 support the findings of previous studies about the positive relationship between GDP and FDI (at 5% level) and level of openness and FDI (at 10% level). However, I could not find a positive effect of population on FDI. On the contrary, I found a negative statistically significant estimate, -.018%. This indicates that population might not represent the market size of provinces, and increases in population might crowd out FDI inflows (Blonigen, Davies, Waddell & Naughton, 2007). Table 8 presents the 2SLS regression results and is consistent with the OLS estimation, which means that foreign aid from other countries creates FDI in Vietnam. The relationship is positive and significant at 1% level. The model also satisfies all robustness tests for all specifications of the IVs (see Table 9).

Relying on theory alone does not tell us whether foreign aid increases or decreases the attractiveness of FDI for foreign investors in Vietnam; however, the empirical evidence I find in my paper strongly suggests that foreign aid promotes FDI inflows in the intermediate and long term. In order words, it seems that more foreign aid means spurs investment to the

country (positive feedback loop). Furthermore, it may take time for investors to decide to relocate because they need to perform due diligence on the climate of public services before they commit to financing a project.

7 Conclusion

This paper examines the data from 64 provinces in Vietnam to estimate the effect of financial aid on foreign investment during 1998-2012 duration time. The empirical results are obtained using OLS and 2SLS estimation techniques. I find that ODA attracts more FDI inflows in intermediate term (5-year average) and long term (all year average), but not in the short-term. Essentially, the relationship between aid and FDI appears complementary, which may be related to the "time to build" theory (Kydland & Prescott, 2006) as it relates to infrastructure development and a firm's willingness to invest when the infrastructure meets their standards. It could also be that governments are slow to act to attract both ODA and make institutional changes that would make the impact of ODA more meaningful in signaling investment to foreign investors.

An important policy implication of these results for developing countries, and Vietnam in particular, is that government quality needs to be sustained at a certain level, maintaining efficiency and transparency, so sufficient ODA flows can result and continue into the future. For future research, my model could include different categories of ODA and FDI, which would allow us to decompose the effects of aid on foreign investment by sector. Including aid and foreign investment by sector would provide us a broader picture of the impact of aid, in terms of quality and quantity, on foreign investment. However, my contribution is a significant finding to the body of literature because it provides valuable information both to the Vietnamese government and to firms considering investing in the near future, as they can better predict when other competing firms are likely to invest.

Figure 1

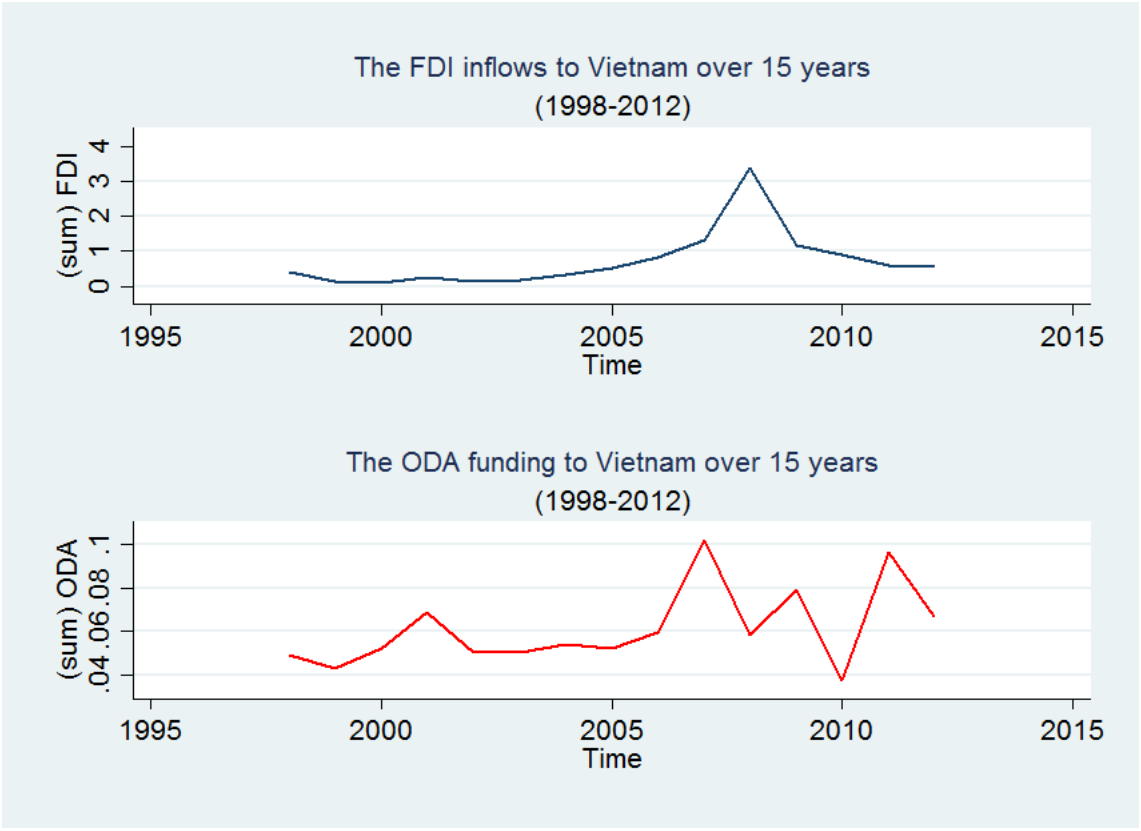
The FDI inflows to Vietnam over 15 years
(1998-2012)
(sum) FDI
0 1 2 3 4
1995 2000 2005 2010 2015
Time
The ODA funding to Vietnam over 15 years
(1998-2012)
(sum) ODA
.04 .06 .08 .1
1995 2000 2005 2010 2015
Time

Figure 2

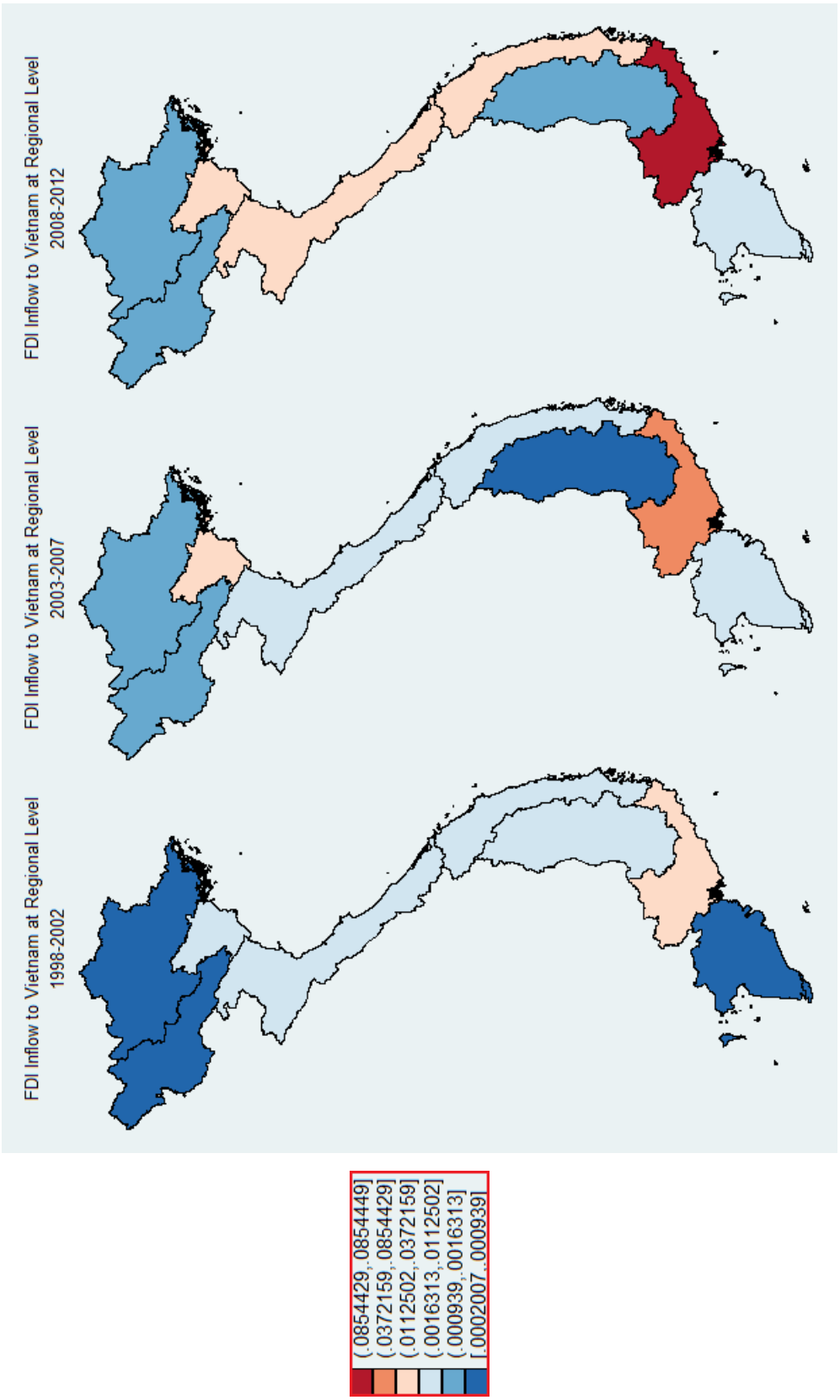
FDI Inflow to Vietnam at Regional Level
2008-2012
FDI Inflow to Vietnam at Regional Level
2003-2007
FDI Inflow to Vietnam at Regional Level
1998-2002
(.0854429,.0854449]
(.0372159,.0854429]
(.0112502,.0372159]
(.0016313,.0112502]
(.000939,.0016313]
[.0002007,.000939]

Figure 3

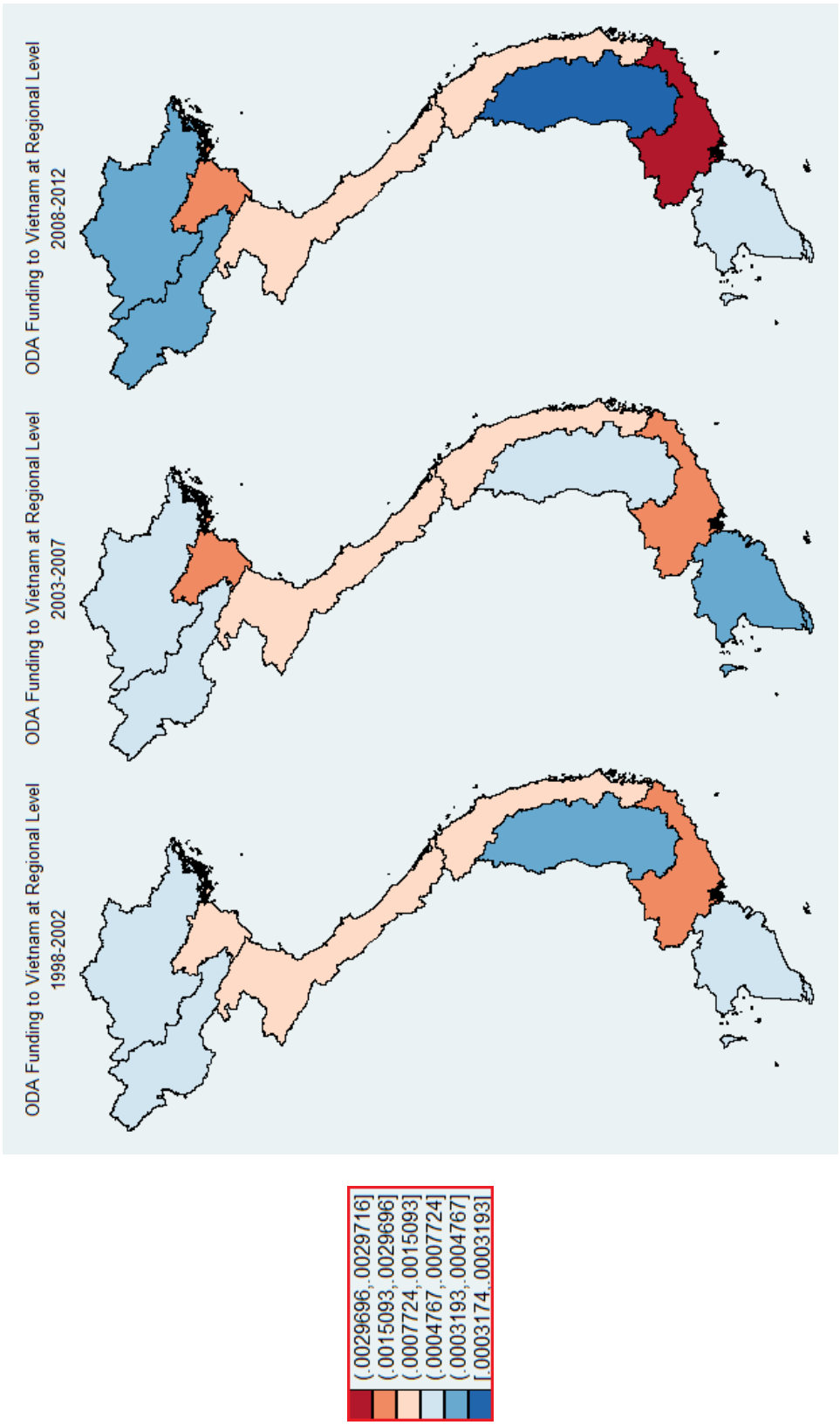
ODA Funding to Vietnam at Regional Level
2008-2012
ODA Funding to Vietnam at Regional Level
2003-2007
ODA Funding to Vietnam at Regional Level
1998-2002
(.0029696,.0029716]
(.0015093,.0029696]
(.0007724,.0015093]
(.0004767,.0007724]
(.0003193,.0004767]
[.0003174,.0003193]

Table 1: Variable description

Variables	Measured as:	Unit
FDI (in log)	log of Vietnam FDI inflows in the individual provinces	Mill. USD
ODA (in log)	log of ODA given directly to each province in Vietnam	Mill. USD
GDP (in log)	log of GDP by province	Mill. USD
Population (in log)	log of Average population by province	Thous. Person
Openness	The ratio of the sum of exports and imports to GDP	Mill. USD
Human capital	Percentage of graduates of upper secondary education by province	Percentage

NOTE: All data is collected from the Ministry of Planning and Investment Portal and publicly available editions of the Statistical Yearbook of Vietnam located in the Vietnam GSO.

Table 2: Summary Statistics

Variables	Observations	Mean	Standard deviation	Minimum	Maximum
FDI (in log)	900	0.0111074	0.6549551	0	0.4308178
ODA (in log)	900	0.0010168	0.0027534	0	0.0334778
GDP (in log)	898	5.966524	0.9386921	3.372012	9.344295
Population (in log)	900	7.049708	0.5497371	5.60175	8.946596
Human capital	900	88.95033	0.5497371	38.57	181.13
Openness	874	0.6549551	0.9998047	0.007019	7.49185

Note: The Openness is defined as the sum of exports and import divides to the GDP

Table 3: Short Term Effect of ODA on FDI

Explanatory variables	(1)	(2)	(3)	(4)	(5)
ODA (in log)	2.3915344***	0.8732534	0.8770513	0.8341077	-0.3760614
	(0.7170842)	(0.6232741)	(0.6257804)	(0.6156667)	(0.9668089)
GDP (in log)		0.0191528***	0.0191006***	0.0181952***	0.0087029
		(0.0067425)	(0.0067285)	(0.0070055)	(0.0068263)
Population (in log)		-0.0124133	-0.0118686	-0.0117008	0.0369116*
		(0.0085092)	(0.0084792)	(0.0086244)	(0.0220357)
Human capital			-0.0002027*	-0.0002180**	-0.0002277*
			(0.0001099)	(0.0001073)	(0.0001305)
Openness				0.0046262***	0.0033486***
				(0.0015880)	(0.0012960)
Constant	-0.0090645***	-0.0192882	-0.0054064	-0.0011913	-0.3247904*
	(0.0024333)	(0.0307471)	(0.0318093)	(0.0325265)	(0.1660946)
Trend	YES	YES	YES	YES	YES
Provincial FEs	NO	NO	NO	NO	YES
Regional FEs	YES	YES	YES	YES	NO
R-squared	0.1729520	0.2074527	0.2099371	0.2190699	0.2881484
Observations	900	898	898	874	874

Note: Dependent variable is the log of FDI inflows directly 64 provinces respectively, the period 1998-2012. The openness is defined as the sum of exports and imports over the GDP. Standard errors are in the parentheses. *** indicates significance at the 1% level while ** indicates significance at the 5% level and * at the 10% level. All data is collected from the Ministry of Planning and Investment Portal and publicly available editions of the Statistical Yearbook of Vietnam located in the Vietnam GSO.

Table 4: Intermediate Term Effect of ODA on FDI - 5 year average

Explanatory variables	(1)	(2)	(3)	(4)	(5)
ODA (in log)	4.7582918***	3.9478612***	3.9415415***	3.8104349***	3.9495103*
	(1.1744580)	(1.3523229)	(1.3557408)	(1.3864598)	(2.2638161)
GDP (in log)		0.0156659*	0.0157306*	0.0146519	-0.0264773
		(0.0093566)	(0.0093066)	(0.0098682)	(0.0170602)
Population (in log)		-0.0145706	-0.0144597	-0.0143041	0.0386226
		(0.0105004)	(0.0106628)	(0.0108453)	(0.0345870)
Human capital			-0.0000712	-0.0000729	-0.0000047
			(0.0002470)	(0.0002378)	-0.0003188
Openness				0.0050416**	0.0064080***
				(0.0025519)	(0.0024310)
Constant	-3.2903875***	-1.3970494	-1.3845171	-1.1565264	-5.9218948**
	(0.8388880)	(1.1375080)	(1.1227564)	(1.0558122)	(2.5536215)
Trend	YES	YES	YES	YES	YES
Regional FEs	YES	YES	YES	YES	NO
R-squared	0.4676014	0.5124016	0.5125515	0.5296661	0.6924400
Observations	180	180	180	179	179

Note: Dependent variable is the log of FDI inflows directly 64 provinces respectively, the period 1998-2012. The openness is defined as the sum of exports and imports over the GDP. Standard errors are in the parentheses. *** indicates significance at the 1% level while ** indicates significance at the 5% level and * at the 10% level. All data is collected from the Ministry of Planning and Investment Portal and publicly available editions of the Statistical Yearbook of Vietnam located in the Vietnam GSO.

5 year average: 1998-2002, 2003-2007, 2008-2012.

Table 5: Intermediate Term Effect of ODA on FDI - 5 year average (2-Stage Least Squares)

Explanatory variables	(1)	(2)	(3)	(4)
ODA (in log)	5.0444582***	4.1047057**	4.1630697**	4.4509348**
	(1.4227498)	(2.0475830)	(2.0718053)	(2.1349678)
GDP (in log)		0.0155598*	0.0155788*	0.0142321
		(0.0093666)	(0.0093541)	(0.0100069)
Population (in log)		-0.0148083	-0.0147987	-0.0152853
		(0.0098759)	(0.0099138)	(0.0098188)
Human capital			-0.0000689	-0.0000658
			(0.0002367)	(0.0002240)
Openness				0.0049606**
				(0.0024428)
Constant	-3.2761901***	-1.4068353	-1.3987353	-1.2004179
	(0.8291263)	(1.1256790)	(1.1133965)	(1.0495798)
Trend	YES	YES	YES	YES
Regional FEs	YES	YES	YES	YES
R-squared	0.4671601	0.5123154	0.5123798	0.5282342
Observations	180	180	180	179

Note: Dependent variable is the log of FDI inflows directly 64 provinces respectively, the period 1998-2012. The openness is defined as the sum of exports and imports over the GDP. Standard errors are in the parentheses. *** indicates significance at the 1% level while ** indicates significance at the 5% level and * at the 10% level. All data is collected from the Ministry of Planning and Investment Portal and publicly available editions of the Statistical Yearbook of Vietnam located in the Vietnam GSO.

5 year average: 1998-2002, 2003-2007, 2008-2012.

Table 6 : Diagnotic test on IV and test of Exogeneity - 5-year average (Intermediate Term)

Panel A: First stage regression				
	(1)	(2)	(3)	(4)
GDP (in log)		.0003743*	.0003723*	.0003181
		(.0002289)	(.0002177)	(.0002197)
Population (in log)		-.0008717**	-.0007816**	-.0007873**
		(.0003853)	(.0003917)	(.0003811)
Human capital			-.0000483**	-.0000483**
			(.0000206)	(.0000201)
Openness				.000327*
				(.0001863)
Land size	-.0000722***	-.0000439**	-.0000589**	-.0000575**
	(.0000235)	(.0000248)	(.0000269)	(.0000265)
Hospital beds	.0006254***	.0006866***	.0007005***	.0007103***
	(.0000709)	(.00007)	(.0000665)	(.0000653)
Constant	.075436*	.1264321***	.1320514***	.1362846 ***
	(.0417548)	(.046383)	(.0458291)	(.044466)
Trend	YES	YES	YES	YES
Regional FEs	YES	YES	YES	YES
R-squared	0.6987	0.7061	0.7170	0.7265
Observations	180	180	180	179
Panel B: Diagnostic Test				
Shea's partial R-squared	0.6640	0.4958	0.5141	0.5189
Robust F-test	48.4324	64.6135	76.1127	80.4141
Robust P value	0.0000	0.0000	0.0000	0.0000
Sargan overidentification static	1.48238	.134373	.169468	.082022
Sargan overidentification p value	0.2234	0.7139	0.6806	0.7746
Panel C: Test of Endogeneity (Ho: Variable is exogenous)				
Durbin test	.29485	.031279	.067095	.439916
Durbin p value	0.5871	0.8596	0.7956	0.5072
Wu-hausman test	.280567	.029373	.062645	.409145
Wu-hausman p test	0.5970	0.8641	0.8027	0.5233

Note: Dependent variable is the log of FDI inflows directly 64 provinces respectively, the period 1998-2012. The openness is defined as the sum of exports and imports over the GDP. Standard errors are in the parentheses. *** indicates significance at the 1% level while ** indicates significance at the 5% level and * at the 10% level. All data is collected from the Ministry of Planning and Investment Portal and publicly available editions of the Statistical Yearbook of Vietnam located in the Vietnam GSO.

5 year average: 1998-2002, 2003-2007, 2008-2012.

Table 7: Long Term Effect of ODA on FDI - Average of All Years

Explanatory variables	(1)	(2)	(3)	(4)
ODA (in log)	4.7936495***	3.5628995***	3.4920873***	3.3897651***
	(1.1066119)	(0.9715700)	(0.9443736)	(0.8936797)
GDP (in log)		0.0203612***	0.0208102***	0.0200008**
		(0.0070078)	(0.0070664)	(0.0084421)
Population (in log)		-0.0190699**	-0.0185519**	-0.0187234**
		(0.0078993)	(0.0080105)	(0.0092687)
Human capital			-0.0003579	-0.0003336
			(0.0004433)	(0.0004274)
Openess				0.0048227*
				(0.0026629)
Constant	-0.0002831	0.0178758	0.0425778	0.0444493
	(0.0018302)	(0.0274737)	(0.0476494)	(0.0464764)
Trend	NO	NO	NO	NO
Regional FEs	YES	YES	YES	YES
R-squared	0.6393058	0.7503377	0.7534693	0.7723147
Observations	60	60	60	60

Note: Dependent variable is the log of FDI inflows directly 64 provinces respectively, the period 1998-2012. The openness is defined as the sum of exports and imports over the GDP. Standard errors are in the parentheses. *** indicates significance at the 1% level while ** indicates significance at the 5% level and * at the 10% level. All data is collected from the Ministry of Planning and Investment Portal and publicly available editions of the Statistical Yearbook of Vietnam located in the Vietnam GSO.

Table 8: Long Term Effect of ODA on FDI - Average of All Years (2-Stage Least Squares)

Explanatory variables	(1)	(2)	(3)	(4)
ODA (in log)	4.8867644***	3.6627692***	3.8435810***	4.0847033***
	(1.2444897)	(1.0126736)	(1.0915481)	(1.1195041)
GDP (in log)		0.0202816***	0.0205162***	0.0194345**
		(0.0064670)	(0.0065924)	(0.0080711)
Population (in log)		-0.0192071***	-0.0190495**	-0.0197020**
		(0.0074157)	(0.0075765)	(0.0086413)
Human capital			-0.0003454	-0.0003094
			(0.0003926)	(0.0003681)
Openness				0.0047430*
				(0.0024507)
Constant	-0.0003239	0.0192278	0.0464407	0.0520372
	(0.0017475)	(0.0260959)	(0.0450535)	(0.0429603)
Trend	NO	NO	NO	NO
Regional FEs	YES	YES	YES	YES
R-squared	0.6392404	0.7502936	0.7529269	0.7701998
Observations	60	60	60	60

Note: Dependent variable is the log of FDI inflows directly 64 provinces respectively, the period 1998-2012. The openness is defined as the sum of exports and imports over the GDP. Standard errors are in the parentheses. *** indicates significance at the 1% level while ** indicates significance at the 5% level and * at the 10% level. All data is collected from the Ministry of Planning and Investment Portal and publicly available editions of the Statistical Yearbook of Vietnam located in the Vietnam GSO.

Table 9 : Diagnotic test on IV and test of Exogeneity - Average of All Years (Long Term)

Panel A: First stage regression				
	(1)	(2)	(3)	(4)
GDP (in log)		.0004688	.000487	.0004541**
		(.0003538)	(.0002979)	(.0002636)
Population (in log)		-.0011399**	-.000944*	-.0011029*
		(.000531)	(.0005126)	(.0004726)
Human capital			-.0000931**	-.0000892**
			(.0000436)	(.0000405)
Openness				.000319*
				(.0001647)
Land size	-.000073**	-.0000375	-.0000667	-.0000539
	(.0000361)	(.0000363)	(.000041)	(.0000387)
Hospital beds	.0006321	.0007193***	.0007352***	.0007542***
	(.0000828)***	(.0000684)	(.0000598)	(.0000585)
Constant	-.0001319	.0044192	.0113249***	.0119322***
	(.0006017)	(.0033883)	.0025021	(.0026714)
Trend	NO	NO	NO	NO
Regional FEs	YES	YES	YES	YES
R-squared	0.8025	0.8163	0.8391	0.8483
Observations	60	60	60	60
Panel B: Diagnostic Test				
Shea's partial R-squared	0.7759	0.6445	0.6864	0.7036
Robust F-test	35.1667	85.3635	118.147	118.495
Robust P value	0.0000	0.0000	0.0000	0.0000
Sargan overidentification static	1.26755	.037436	.178782	.000025
Sargan overidentification p value	0.2602	0.8466	0.6724	0.9956
Panel C: Test of Endogeneity (Ho: Variable is exogenous)				
Durbin test	.037663	.019209	.288895	1.3228
Durbin p value	0.8461	0.8898	0.5909	0.2501
Wu-hausman test	.032662	.016013	.237072	1.0821
Wu-hausman p test	0.8573)	0.8998	0.6285	0.3034

Note: Dependent variable is the log of FDI inflows directly 64 provinces respectively, the period 1998-2012. The openness is defined as the sum of exports and imports over the GDP. Standard errors are in the parentheses. *** indicates significance at the 1% level while ** indicates significance at the 5% level and * at the 10% level. All data is collected from the Ministry of Planning and Investment Portal and publicly available editions of the Statistical Yearbook of Vietnam located in the Vietnam GSO.

References

Asteriou, D. (2009). Foreign aid and economic growth: New evidence from a panel data approach for five South Asian countries. *Journal Of Policy Modeling, 31(1)*, 155-161. doi:10.1016/j.jpolmod.2008.04.012

Aziz, Abdul & Bilal Makkawi (2012). Relationship between Foreign Direct Investment and Country Population. *International Journal of Business and Management*, 7 (8). doi:10.5539/ijbm.v7n8p63

Berthélemy, J., & Tichit, A. (2004). Bilateral donors' aid allocation decisions—a three-dimensional panel analysis. *International Review Of Economics And Finance*, 13(Aid Allocations and Development Financing), 253-274. doi:10.1016/j.iref.2003.11.004

Bhandari, Rabindra, Dharmendra Dhakal, Gyan Pradhan, and Kamal Upadhyaya, (2007). Foreign Aid, FDI and Economic Growth in East European Countries. *Economics Bulletin,* Vol. 6, No. 13 pp. 1-9.

Bhaumik, S., & Dimova, R. (2013). Does Human Capital Endowment of Foreign Direct Investment Recipient Countries Really Matter? Evidence from Cross-Country Firm Level Data. *Review of Development Economics*, 17(3), 559-570.

Blonigen, B. A., Davies, R. B., Waddell, G. R., & Naughton, H. T. (2007). FDI in Space: Spatial Autoregressive Relationships in Foreign Direct Investment. *European Economic Review*, 51(5), 1303-1325. doi:http://0-dx.doi.org.ignacio.usfca.edu/10.1016/j.euroecorev.2006.08.006

Burke, P. J., & Ahmadi-Esfahani, F. Z. (2006). Aid and growth: A study of South East Asia. *Journal Of Asian Economics*, 17 (Trade, taxes and economic growth: The case of Asia and Africa), 350-362. doi:10.1016/j.asieco.2006.02.006.

Durbin, James (1954). Errors in variables. *Review of the International Statistical Institute* 22 (1/3): 23–32. doi:10.2307/1401917

Dutta, N., & Osei-Yeboah, K. (2013). A New Dimention To The Relationship Between Foreign Direct Investment and Human Capital: The Role of Political and Civil Rights. *Journal Of International Development*, 25(2), 160-179. doi:10.1002/jid.1739.

General Statistics Office of Vietnam, 1998 -2012.

Hausman, J. A. (1978). Specification Tests in Econometrics. *Econometrica 46* (6): 1251–1271.

Jansky, P. (2012). Aid and Foreign Direct Investment: Substitutes, Complements or Neither?. *International Journal Of Trade And Global Markets,* 5(2), 119-132.

Kang, S. J., Lee, H., & Park, B. (2011). Does Korea follow Japan in foreign aid? Relationships between aid and foreign investment. *Japan & The World Economy*, 2319-27. doi:10.1016/j.japwor.2010.06.001

Karakaplan, U. M., Neyapti , B., & Sayek, S (2005). Aid and foreign direct investment: International evidence. *Bilken University discussion paper* no. 05-05.

Kimura, H., & Todo, Y. (2010). Is Foreign Aid a Vanguard of Foreign Direct Investment? A Gravity-Equation Approach. *World Development*, 38(4), 482-497. doi:http://0-dx.doi.org.ignacio.usfca.edu/10.1016/j.worlddev.2009.10.005

Kosack, S., & Tobin, J. (2006). Funding Self-Sustaining Development: The Role of Aid, FDI and Government in Economic Success. *International Organization*, 60(1), 205-243.

Kydland, F. E., & Prescott, E. C. (2006). Time to Build and Aggregate Fluctuations. In J. Benassy (Ed.) , *Imperfect Competition, Nonclearing Markets and Business Cycles* (pp. 211-236). The International Library of Critical Writings in Economics series, vol. 192. An Elgar Reference Collection.

Liargovas, P., & Skandalis, K. (2012). Foreign Direct Investment and Trade Openness: The Case of Developing Economies. *Social Indicators Research*, 106(2), 323-331. doi:10.1007/s11205-011-9806-9

Manal Suliman O., & Liu Yao. (2011). Empirical Analysis of the Relationships between inward FDI and Business Cycles in Malaysia. *Modern Applied Science*, 5(3), 157-163.

McKinsey & Company. (2014). Southeast Asia at the crossroads: Three paths to prosperity.

Papanek, G. F. (1973). Aid, Foreign Private Investment, Savings, and Growth in Less Developed Countries. *Journal of Political Economy*, (1). 120.

Pham, Hoang Mai (2010). Predictability and Stability of ODA Flows The Case of Vietnam. Ministry of Planning and Investment – Vietnam.

Pham, T. (2012). Temporal causality and the dynamics of foreign direct investment and trade in Vietnam. *Journal of International Trade & Economic Development*, 21(1), 83-113. doi:10.1080/09638190903365922.

OECD (2015), Interactive summary charts for all DAC members and total DAC. *Vietnam: OECD.*

Sargan, J. D. (1958). The Estimation of Economic Relationships Using Instrumental Variables. *Econometrica*, 26, 3, 393–415.

Schneider, F. and B.S. Frey (1985). Economics and Political Determinants of Foreign Direct Investment. *Word Development*, 13(2), 653-670.

Selaya, P., & Sunesen E. R. (2012). Does Foreign Aid Increase Foreign Direct Investment?. *World Development*, 40(11), 2155-2176.

Shotar M. Manhal (2005). The Attractiveness of Qatar to Foreign Direct Investment, 1980-2002. *Applied Econometrics and International Development*, 5-3(2005), 117-132

Shea, J. (1997). Instrument Relevance in Multivariate Linear Models: A Simple Measure.

Review of Economics and Statistics, 79, 2, 348–52.

Tran, Trong Hung (2005). Impacts of Foreign Direct Investment on Poverty Reduction in Vietnam. Discuss paper. *GRIPS*, Vientam.

Tu, Thuy Anh & Vu, T.P. Mai (2012). On the Impact of ODA on FDI: Does Composition of FDI Matter? Evidence from Asean Countries. *SECO/WTI Academic Cooperation Project*. Working Paper Series.

UNCTAD (2008). Investment Policy Review: Viet Nam. Geneva.

Wu, De-Min (July 1973). Alternative Tests of Independence between Stochastic Regressors and Disturbances. *Econometrica 41 (4)*: 733–750.

Yasin, M. (2005). Official Development Assistance and Foreign Direct Investment Flows to Sub-Saharan Africa. *African Development Review*, 17(1), 23-40. doi:10.1111/j.1017 6772.2005.00105.x

Appendix

A.1 A Theoretical Model of ODA and FDI There are two components involved in the effect of aid on FDI. The first component is:

$$(n+\delta)\frac{\partial k^*}{\partial oda} = (n+\delta)\frac{\partial}{\partial oda}\left[\frac{\alpha A}{r}\right]^{\frac{1}{1-\alpha}} = (n+\delta)\frac{\alpha L}{(1-\alpha)r}\left[\frac{\alpha A}{r}\right]^{\frac{\alpha}{1-\alpha}} > 0$$

so aid inflow theoretically has a positive effect on the steady state capital stock. Second since,

$$s\frac{\partial y^*}{\partial oda} = s\frac{\partial (A{k^*}^{\alpha})}{\partial oda} = s\left[L{k^*}^{\alpha} + A\alpha {k^*}^{\alpha-1}\frac{\partial k^*}{\partial oda}\right] > 0$$

where aid flow has positive impact on domestic saving. The combination of those two equations indicates that the relationship between ODA and FDI can be positive or negative in theory:

$$\frac{\partial fdi}{\partial oda} = (n+\delta)\frac{\alpha L}{(1-\alpha)r}\left[\frac{\alpha A}{r}\right]^{\frac{\alpha}{1-\alpha}} - s\left[L{k^*}^{\alpha} + A\alpha {k^*}^{\alpha-1}\frac{\partial k^*}{\partial oda}\right] \gtrless 0$$

A.2

Appendix 2: Short Term Effect of ODA on FDI (2-Stage Least Squares)

Explanatory variables	(1)	(2)	(3)	(4)
ODA (in log)	4.8469327**	3.6225640	3.7968268	4.0803550
	(1.9488789)	(2.6376720)	(2.6392280)	(2.6989450)
GDP (in log)		0.0176712**	0.0175264**	0.0164810**
		(0.0070565)	(0.0070428)	(0.0073740)
Population (in log)		-0.0164841**	-0.0161832**	-0.0168044**
		(0.0080413)	(0.0080337)	(0.0080648)
Human capital			-0.0002058*	-0.0002261**
			(0.0001054)	(0.0001033)
Openness				0.0045185***
				(0.0015479)
Constant	-2.2968911***	-0.2290819	-0.2378249	-0.0478886
	(0.4521006)	(0.8119195)	(0.8110998)	(0.7768319)
Trend	YES	YES	YES	YES
Regional FEs	YES	YES	YES	YES
R-squared	0.1429035	0.1808922	0.1799815	0.1824269
Observations	900	898	898	874

Note: Dependent variable is the log of FDI inflows directly 64 provinces respectively, the period 1998-2012. The openness is defined as the sum of exports and imports over the GDP. Standard errors are in the parentheses. *** indicates significance at the 1% level while ** indicates significance at the 5% level and * at the 10% level. All data is collected from the Ministry of Planning and Investment Portal and publicly available editions of the Statistical Yearbook of Vietnam located in the Vietnam GSO.

A.3

Appendix 3: Diagnotic test on IV and test of Exogeneity - Short Term Effect

Panel A: First stage regression				
	(1)	(2)	(3)	(4)
GDP (in log)		.0002444	.0002315	.0002062
		(.0001699)	(.0001663)	(.0001631)
Population (in log)		-.0008101*	-.0007808**	-.0008292*
		(.0003358)	(.000337)	(.000341)
Human capital			-.0000104 *	-0.00000998*
			(.00000563)	(.00000553)
Openess				.0001627*
				(.000095)
Land size	-0.0000706***	-.0000457***	-.0000493***	-.0000436**
	(0.0000197)	(.0000171)	(.0000176)	(.0000171)
Hospital beds	0.0006129***	.0006618***	.0006661***	.0006742***
	(0.0000779)	(.0000982)	(.0000985)	(.0000993)
Constant	0.0001139	.0040352*	.0048319**	.0051611**
	(0.0002978)	(.0022791)	(.0022259)	(.0022686)
Trend	YES	YES	YES	YES
Regional FEs	YES	YES	YES	YES
R-squared	0.3742	0.4106	0.4120	0.4153
Observations	900	898	898	874
Panel B: Diagnostic Test				
Shea's partial R-squared	0.3359	0.2334	0.2352	0.2320
Robust F-test	31.1046	23.805	24.0191	23.5468
Robust P value	0.0000	0.0000	0.0000	0.0000
Sargan overidentification static	1.94255	.020255	.087605	.014293
Sargan overidentification p value	0.1634	0.8868	0.7672	0.9048
Panel C: Test of Endogeneity (Ho: Variable is exogenous)				
Durbin test	16.5427	9.16285	10.4721	12.3918
Durbin p value	0.0000	0.0025	0.0012	0.0004
Wu-hausman test	16.684	9.14391	10.4541	12.3831
Wu-hausman p test	0.0000	0.0026	0.0013	0.0005

Note: Dependent variable is the log of FDI inflows directly 64 provinces respectively, the period 1998-2012. The openness is defined as the sum of exports and imports over the GDP. Standard errors are in the parentheses. *** indicates significance at the 1% level while ** indicates significance at the 5% level and * at the 10% level. All data is collected from the Ministry of Planning and Investment Portal and publicly available editions of the Statistical Yearbook of Vietnam located in the Vietnam GSO.