



## INSTITUTIONAL QUALITY AND FOREIGN DIRECT INVESTMENT INFLOWS: THE CASE OF VIETNAM



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### ABSTRACT

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This article examines the effect of institutional quality on Foreign Direct Investment (FDI) inflows in Vietnam, using a set of panel data from a Provincial Competitiveness Index (PCI) survey and inward FDI to 59 provinces and cities of Vietnam in the period of 2010-2017. This study also accounts for the fundamental determinants of FDI and gravity variables that are widely used in studies of FDI. In order to tackle the problem of endogeneity including reverse causality, a very classic problem facing almost the researches on determinants of FDI, this study applies Difference Generalize Method of Moments (GMM) estimation with period-specific predetermined instruments to investigate the relation between quality of provincial governance and FDI inflows. After controlling for factors other than institutional quality, the outcome shows that the provincial competitiveness index in terms of institutional quality is significant in explaining the difference in inward FDI from province to province in Vietnam.

**Contribution/ Originality:** This is one of the first panel data studies of institutional effect on FDI inflows at the provincial level in Vietnam using the Provincial Competitiveness Index (PCI) as a proxy for the quality of regional institutions.

## 1. INTRODUCTION

Foreign direct investment (FDI) has recently become one of the most prominent features that make up the picture of globalization. Over the last decades, worldwide FDI flows have remarkably grown by a factor of 10 while international trade volume has just doubled (Levy *et al.*, 2007). The flow of FDI has been viewed as one of the primary driving forces behind the growth of developing and transition economies (UNCTAD, 2006). That is the reason why economies make their top priority absorbing FDI and enormous interest in the core determinants of FDI is becoming increasingly relevant to the success of policies to lure investors (Ho and Rashid, 2011).

It is obviously not a matter of argument that FDI does not automatically fall into place. Various determinants have been classified that affect the location of multinational enterprises (Busse and Hefeker, 2007). In addition to the important economic determinants of FDI such as economy stability; market size, structure and growth; exchange rate, inflation, labor cost, industrialization (Kok and Ersoy, 2009; Sahoo, 2012), recent reports have highlighted the significance of the quality of institution environment in attracting FDI flows. There are valid reasons to believe that a good institutional environment is a key to a high absorptive capacity of FDI. It has stemmed from the concept of

locational advantage or the ownership – location – internalization (OLI) paradigm by Dunning (1998). Accordingly, one of things that make a host country an appealing destination of foreign investor is the location advantage that arises from not only abundant natural resources, huge market size, low price factor of production but also the institutions of the host economy. In research on the role of institutions, North (1991) also pointed out that the institutions formed the stimulus for economic activities in general and investment in particular through allowing lower information and transaction costs and cutting down uncertainty. Henisz, (2000) and Tina *et al.* (2002) stated that the role of institutions is more than a direct impact on transaction of production cost. Poor quality of institutions can drive the foreign investors to risks of being unfairly treated, which demotivate investment flows. Mudambi and Navarra (2002) came to the same conclusion that the incentives established by institutions significantly impact flows of FDI. Evidence from recent studies still reinforces the argument that foreign investors pay a great attention to “created assets” by host economy or so-called creative locational advantage especially knowledge-based properties and the quality of the institution rather than a traditional location advantage in their investment decisions (Bevan *et al.*, 2004; Daude and Stein, 2007; Mudambi *et al.*, 2013).

While the existing literature has mainly focused on the effect of institutional quality on FDI inflows at country level, based on the cross-countries analysis, this research aims at investigating this relationship within a specific country – the case of Vietnam, based on a province level study.

Vietnam is likely to offer an appropriate test for several reasons. First, in recent years especially after Vietnam joined the World Trade Organisation (WTO) in 2007, Vietnam has emerged as one of the developing countries that attract a significant inward FDI. From 2007 to 2017, the amount of FDI invested into Vietnam has more than doubled, as indicated in Figure 1.

Second, a striking feature that can easily be found in the FDI inflows distribution of Vietnam is that there has been a profoundly uneven share of FDI among provinces. Some provinces have a high capacity of attracting FDI while others fall behind (Chien and Zhang, 2012). The diversity in the market size, the infrastructure, the openness to trade and other economic factors cannot totally explain the difference in FDI absorptive capacity between provinces.

Third, despite a homogeneous political system and government structure, compared to other low-income countries, Vietnam has a high level of discretion by provincial government officials (Fforde and De Vylder, 1996). The differences in culture and history between the regions characterize the way that institution regulations are implemented. Hence, Vietnam offers an ample opportunity to study the effect of the quality of the institutions on FDI inflows.

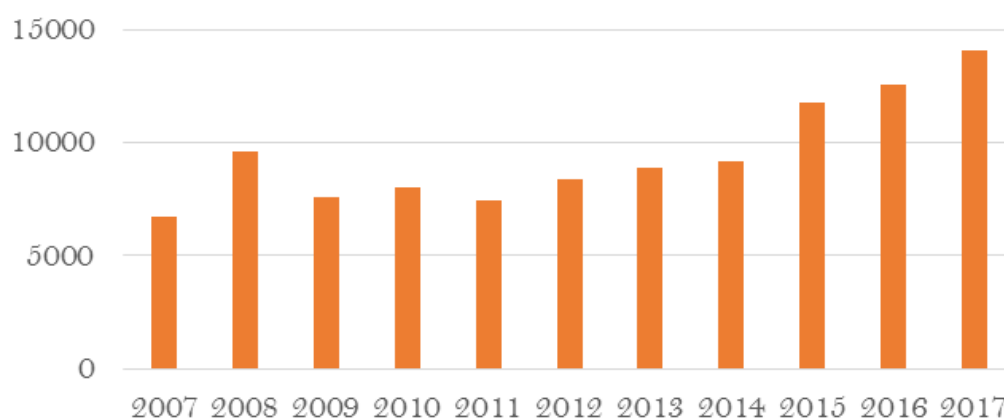


Figure-1. FDI net inflows into Vietnam in the period 2007-2017 (mil \$ US).

Source: World Bank Indicator.

This study contributes to the existing literature in two important aspects:

First, while there are a number of studies that examine how the quality of institutions affects FDI, they mostly concentrate on studying this at a cross-country level. The study fills this gap by identifying the role of institutional quality on FDI inflows at a cross-province level. My analysis helps me to investigate constant numerous factors such as language, national tax policy, trade policy, inflation rate, interest rate, exchange rate that would significantly differ between countries and hence, be hard to control in previous cross-country studies. To the best of my knowledge, this is one of the first studies of institutional effect on FDI inflows or in other words, the location choices by foreign investor in Vietnam at the provincial level using the Provincial Competitiveness Index (PCI) as a proxy for quality of regional institutions.

Second, the expected empirical results are likely to enhance our understanding of the effectiveness of regional institution development and other economic factors improvement on the change in FDI inflows. The outcomes are important to help Vietnam's provincial authorities harmonize policies design, execution and implementation aimed at absorbing FDI.

## 2. LITERATURE REVIEW

Among the existing empirical literatures of FDI location choice to date, a very early study on the impact of institutions on FDI which is also an often-cited article was conducted by [Wheeler and Mody \(1992\)](#). In their case study of U.S firms' investment decisions, a principal component of risk factors relating to institutional quality including corruption, red tape, political stability, quality of legal system and some other indices was taken into consideration as a determinant. The empirical results, however, reported a very small effect of this variable on U.S foreign affiliates. This outcome could be attributable to the fact that they combined institutional factors with some other factors such as cultural interaction, expatriate environment, attitude toward the private sector or desire for foreign investment that are not strongly associated with the quality of institutions. Hence, the impact of institutional quality itself on FDI was not singled out and was still ambiguous.

Later, key findings from studies of [Acemoglu et al. \(2011\)](#); [Globerman and Shapiro \(2002\)](#); [Acemoglu et al. \(2011\)](#); [Bénassy-Quéré et al. \(2007\)](#); [Gani \(2007\)](#) all reported a significantly positive relationship between the quality of an institution and FDI in the economy. Also, in the light of the theory of multinational enterprise location developed by [Markusen \(1997\)](#); [Carr et al. \(2001\)](#); [Blonigen et al. \(2003\)](#) the findings from [Daude and Stein \(2007\)](#) pointed out that better institutions are positively associated with FDI, which was robust to various estimation methods. In a study that investigated the effect of institutional quality on FDI inflows in Asian economies, [Irfan \(2017\)](#) concluded that there were large variations in the impact of institutional quality on FDI in the SAARC, Central Asian and ASEAN regions. While the governance index is positively related to FDI in Central Asia, it was found to be in negative correlation with FDI in SAARC region. Using a panel data of sixteen Arab countries, [Aziz \(2018\)](#) reported that economic freedom, ease of doing business and international country risk in terms of institutional quality had a significant and positive influence on inwards FDI in these economies. The common thing shared by these studies was the use of composite measures of institutional quality.

Instead of using an aggregate index as a measure of institution, some authors investigated the role of each individual component of institution. The most common aspects appearing in existing literatures were the links between corruption, regulatory framework, property right or law enforcement efficiency and FDI flows. [Mauro \(1995\)](#); [Wei and Shleifer \(2000\)](#); [Henisz \(2000\)](#) and [Javorcik and Wei \(2009\)](#) provided empirical evidence of the negative effect of corruption on FDI. However, these outcomes were then challenged by the fact that there seems to be a high collinearity between corruption and GDP per capita inducing a spurious regression outcome if GDP per capita was not captured in the model as a control variable ([Dacin et al., 2002](#)). Additionally, the study of [Egger and Winner \(2005\)](#) with data from 73 countries from 1995 to 1999 revealed a contrasting empirical result that the corruption could be an incentive for FDI inflows or in other words, that there is a positive link between corruption and FDI. By using the sum of control of corruption and rule of law indicators as proxy for institutional quality,

Peres *et al.* (2018) provided empirical evidence that institutional quality was in a significantly positive association with FDI in developed countries. In the developing countries, the institutional quality effect was insignificant because of the weak structure of institutions. However, in the most recent study of Sabir *et al.* (2019) the positive relationship between institutional quality and FDI was reported for all groups of countries from low, lower-middle, upper-middle to high-income ones.

With regards to other institutional variables, Lee and Mansfield (1996) reinforced the findings presented in an earlier study by Knack and Keefer (1995) that property rights played an important role in promoting the FDI inflows. Relating to the political risk as a measure of institutional quality, Jun and Singh (1996) with the analysis of a data sample of 31 developing countries reported that countries with higher political risk are less appealing to foreign investors. Also, Aizenman and Spiegel (2006) using institutional index as an indicator of property rights ended up with the same conclusion that it was positively related to ratio of subsequent FDI inflows to both private investment and gross capital flows. Recently, Mina (2015) pointed out that social cohesion-related institutions could significantly affect FDI inflows in 52 middle income countries by changing the context in which foreign investors made their investment decisions.

Among scarce existing literature of the impact of within-country local institution on inward FDI, Daniele and Marani (2011) with a panel data analysis from 103 provinces in Italy in the period 2002 – 2006, examined the effect of organized crime, seen as a signal of the low quality of the institutional environment on FDI inflows. The empirical results showed that there was a robustly negative relationship between the level of incidence of organized crimes and the inward FDI to Italian provinces and the effect was very much uneven across regions. The shortcoming of this study was the narrow sense of institutional environment. In fact, crime is a very tiny aspect of institutions that may be or may be not perceived by foreign investors. Different from Daniele and Marani, in a study investigating the strength of the impact of economic institutions across China's regions and the role of cultural distances as well as its interaction with institution in influencing FDI location choice, Du *et al.* (2012) used an aggregate index of institutions and successfully singled out the effect of institutional quality on FDI inflows.

Due to the lack of data, empirical studies on impact of institutional quality on FDI inflows in the specific case of Vietnam are hard to find. Meyer and Nguyen (2005) in their research on how sub-national institutions affect foreign direct investment entry strategy in emerging markets used empirical evidence from Vietnam. The main findings from this study suggested that the quality of institutions significantly affect the strategy of entry by foreign investors. However, the authors might be criticized for the way they choose to measure institutions as well as the data collection for this variable. They just simply measured the quality of the institution through the accessibility of scarce resources proxied by the amount of real estate made available and the influence of existing state-owned enterprises (SOEs) proxied by share of output by SOEs compared to that of all domestic enterprises. The role of governance is weakly captured by these proxies. Obviously, the way they operationalized the data for institutional variable possibly induced a bias regression result and it was difficult to come to a firm conclusion about the effect of institutions because the measure itself was not a good representative index.

In a different way of choosing measure of institutions, by utilizing the Provincial of Competitiveness Index survey, Tran *et al.* (2009) explored the impacts of institutional reforms in Vietnam on the economic performance of firms. It was reported that provincial competitiveness including market information transparency, land and tenure security, labor training assistance, quality of judiciary system and administrative reforms, as a measure of institutional environment, significantly explained the distinctions and differences in firm performance across provinces nationwide. Dang (2013) in a study about the relationship between institutional quality and FDI in the case of Vietnam focused on answering the question of whether or not foreign investment boosts up the institutional quality, which meant he approached the problem from the perspective that higher investment induced improvement of the institutions. In the most recent study that investigated the effect of institution on FDI attraction, Nguyen

(2015) due to the unavailability of data, analyzed a sample of 43 provinces and cities in the period 2005-2012 and came to the conclusion that the quality of the local institutions imposed positive influences on FDI inflows.

### 3. METHODOLOGY AND DATA

#### 3.1. Methodology

To empirically estimate the impact of institutional quality on FDI, I regressed the following baseline model:

$$FDI_{it} = \alpha + \beta INST_{it} + \delta Z_{it} + u_{it} \quad (1)$$

$$i=1, 2, 3, \dots, N; t=1, 2, 3, \dots, T; N=59; T=8$$

The definition of variables is as follows:

- i.  $FDI_{it}$  is the dependent variable that refers to the inward FDI to province  $i$  at time  $t$ ;
- ii.  $INST_{it}$  is the explanatory variable that links to the quality of local institution of province  $i$  at time  $t$ ;
- iii.  $Z_{it}$  is a vector of control variables including:  $\ln GDP_{it}$ ,  $POP_{it}$ ,  $OPEN_{it}$ ,  $LABOR_{it}$ ,  $EDU_{it}$  that indicates Gross Domestic Product, population, openness to trade, labor force and education quality for province  $i$  at time  $t$ , respectively.
- iv.  $u_{it}$  is the error term which consists of two components: unobserved time-invariant effect  $\mu_i$  and observation-specific disturbance term  $\varepsilon_{it}$

$$u_{it} = \mu_i + \varepsilon_{it} \quad (2)$$

where  $\mu_i \sim iid(0, \sigma_\mu^2)$  and  $\varepsilon_{it} \sim iid(0, \sigma_\varepsilon^2)$ ;  $E(\mu_i, \varepsilon_{it}) = 0$ , i.e.  $\mu_i$  and  $\varepsilon_{it}$  are independent of each other.

It is argued that FDI is characterized by dynamic nature which implies that lagged value of FDI could have significant impact on current value. As a consequence, the lagged value of FDI at first order ( $FDI_{it-1}$ ) is included in the model as an explanatory variable. Equation 1 could be rewritten as follows:

$$FDI_{it} = \alpha + \gamma FDI_{it-1} + \beta INST_{it} + \delta_1 \ln GDP_{it} + \delta_2 POP_{it} + \delta_3 OPEN_{it} + \delta_4 LABOR_{it} + \delta_5 EDU_{it} + u_{it} \quad (3)$$

For the above regression model Equation 3, there are typical problems that are encountered in almost all the studies on institutional quality and FDI and that can induce a bias outcome. First is the problem of the direction of causal effect. In the hypotheses, I suggested that the institutional quality acts as an incentive for FDI inflows. However, the reverse direction of effect is obviously feasible. Indeed, the FDI inflow is likely to promote the quality of the institutions in the respect that the foreign investors can demand and impose pressure on the provincial government to improve the quality of institutions (Selowsky and Martin, 1997).

Second, the institutional variable might be endogenous because it is correlated with unobserved abilities such as history, culture, level of province's economy development etc. In order to circumvent these problems, an instrumental variable should be used. Following the existing literatures, there are several ways to choose a strong and valid instrument variable. Daude and Stein (2007) used an index of ethno-linguistic fragmentation from Easterly and Levine (1997) and the fraction of population that speak a chosen foreign language from Hall and Jones (1999) to create the institutions variable in their cross-country analysis. Buchanan *et al.* (2012) utilized the association between legal environment and external finance reported in an earlier study of Porta *et al.* (1997) to choose the legal origins as an instrument variable.

In this study, taking the advantage of a panel data set and differenced GMM regression, I take the first differences of all variables in Equation 3 and used a dynamic period-specific instruments technique in which lagged differences are used as instruments for level. The differenced model originated from Equation 3 was as follows:

$$(FDI_{it} - FDI_{it-1}) = \gamma(FDI_{it-1} - FDI_{it-2}) + \beta(INST_{it} - INST_{it-1}) + \delta_1(\ln GDP_{it} - \ln GDP_{it-1}) + \delta_2(POP_{it} - POP_{it-1}) + \delta_3(OPEN_{it} - OPEN_{it-1}) + \delta_4(LABOR_{it} - LABOR_{it-1}) + \delta_5(EDU_{it} - EDU_{it-1}) + (u_{it} - u_{it-1}) \quad (4)$$

By first differencing the regressors, unobserved effect term  $\mu_i$  will be removed because it is time-invariant. From Equation 2, we have:

$$u_{it} - u_{it-1} = (\mu_i - \mu_i) + (\varepsilon_{it} - \varepsilon_{it-1}) = \varepsilon_{it} - \varepsilon_{it-1}$$

or  $\Delta u_{it} = \Delta \varepsilon_{it}$  (5)

Substitute Equation 5 into Equation 4, the first differenced equation could be rewritten as follows:

$$\Delta FDI_{it} = \gamma \Delta FDI_{it-1} + \beta \Delta INST_{it} + \delta_1 \Delta \ln GDP_{it} + \delta_2 \Delta POP_{it} + \delta_3 \Delta OPEN_{it} + \delta_4 \Delta LABOR_{it} + \delta_5 \Delta EDU_{it} + \Delta \varepsilon_{it} \quad (6)$$

After conducting the GMM regression in which lagged differences in Equation 6 were used as instruments for level equation, I used tests for the validity of the model to further confirm the result. The first was the Sargan test which helps check the over-identification of the instrument variables or whether the excluded instruments are properly independent of the error. In this test, the  $p$ -value was expected to be large so that the null hypothesis ( $H_0$ : over-identifying restrictions are valid) could not be rejected. In this case, the instruments are fine. On the contrary, rejection of the null hypothesis implies that there is a correlation between instruments and error terms, or that the model is mis-specified. In Eviews, the  $p$ -value can easily be calculated using J-statistic, with the number of coefficients and instrument rank extracted from GMM estimation result.

The second test was the Arellano-Bond test that is used to check the serial correlation of error terms. I calculated the first and the second order serial correlation statistics (AR(1) and AR(2)) as suggested by Arellano and Bond (1991). Due to the presence of lagged dependent variable in the estimated model, the first order serial correlation was expected. For the second order serial correlation, if the null hypothesis ( $H_0$ : no autocorrelation in the first-differenced errors at order 2) could not be rejected, the model estimates were consistent.

### 3.2. Data Description

#### i. Institution Variable

The main explanatory variable is the quality of the provincial institution. Despite the significance of the institution effect on the economic growth in general and on FDI in particular, which has been indicated in the literature, there is no standard to date of how to measure the quality of institutions. Researchers who carried out the studies on the impact of institution as a composite variable as aforementioned in the literature review used indices from different sources. Acemoglu *et al.* (2011); Buchanan *et al.* (2012) used data from International Country Risk Guide (ICRG) while Knack and Keefer (1995) based their studies on the Business Environmental Risk Intelligence index. Daude and Stein (2007) took advantage of data drawn by World Bank in the World Business Environment Survey (WBES), in addition to ICR. Collins *et al.* (2008) in their works relied on the overall ranking of countries' business environment reported by the World Competitiveness Yearbook; the regulative and cognitive institution proxy reported by Heritage Foundation's Economic Freedom Index; and the World Values Survey (WVS) to measure the difference in institutional quality across countries. Mauro (1995) assessed the distinction in quality of institution through indexes comprised of nine Business International indicators. Bénassy-Quéré *et al.* (2007) approached the institution measurement through the Institutional Profiles (IP) database developed by French Ministry of Finance evaluating political institutions, public order, public governance, market freedom, investment on future, ability to reform, security of transactions and contracts, regulation, openness and social cohesion in 52 countries. All of these measures of quality of institution are reported only at a country level.

In this study, to analyze the impact of institutional quality on the FDI inflows at the province level, I explored the annual data from Vietnam Provincial Competitiveness Index (PCI). PCI has been previously used in a number of studies relating to regional governance quality in Vietnam: Tran *et al.* (2009); Dang (2013); Nguyen (2015). PCI has been regarded as a critical tool for measuring, evaluating and ranking the economic governance quality of 63 provinces of Vietnam by their environments for private sector development. It is based on a nationwide survey by the United States Agency for International Development Project carried out by Vietnam Chamber of Commerce



and Industry. In this survey, private businesses will be asked a list of questions relating to their performance and perceptions about the support from provincial government for the business environment. The output of this survey will be used to assess nine sub - indices of PCI including: (1) Entry cost; (2) Land access and security of Tenure; (3) Transparency and access to information; (4) Time cost; (5) Proactivity; (6) Informal charge; (7) Business support services; (8) Labor Training; (9) Legal institutions. The overall index of PCI is a weighted index of these nine sub-indices with the highest weight of 15% assigned to the sub-indices strongly related to private sector performance and the lowest weight of 5% assigned to sub-indices whose association to private business sector is low. The overall index is ranged from 10 to 100 with higher scores describing higher quality of local institutions. The data is collected for the period 2010 - 2017 with the participation of 59 provinces nationwide.

## ii. Foreign Direct Investment Variable

The dependent variable is the annual FDI which is derived from Vietnam's Provincial Year Book. In this specific study, FDI data is also collected for period 2010 - 2017 accordingly.

## iii. Control Variables

There are a huge number of variables that have been regarded in previous studies as desirable determinants of FDI inflows. Taking advantage of their outputs and considering the specificities of the case study, I included some control variables in the regression model.

*Market size:* Amongst the determinants of FDI from earlier studies, market size is the most important and statistically significant indicator (Blonigen, 2005; Moosa and Cardak, 2006; Mina, 2007; Kleinert, 2009). Particularly, in the case of Vietnam, due to a big gap in the level of development between the regions, it is much more important to control for the market size. There are several proxies for local market size. At the provincial level, I followed the strategy by Daniele and Marani (2011) and Wang *et al.* (2013) to choose Gross Domestic Product (GDP) and the population of each province as measures of provinces' market size. The data is obtained from Vietnam's GSO.

*Openness to trade:* following Ali *et al.* (2010) I used the ratio of export plus import to GDP of each province to control for the impact of openness to trade on inward FDI. The data is drawn from Vietnam's GSO.

*Labor:* The labor force is regarded as an important determinant of FDI according to Nguyen (2015). Following the previous studies that used labor force as an instrument variable, I explored the share of labor in population who are aged from 15 to 64 years. The data was from Vietnam's GSO.

*Education:* It was extensively addressed in the existing literature that the provinces with a better education system are more attractive to foreign investors. In my study, I used the ratio of high school graduates as a proxy for education quality. The data was retrieved from the General Statistic Office's yearbooks.

The descriptive statistics on the data set are shown in Table 1.

Table-1. Descriptive Statistics.

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
FDI	472	228.9499	527.4224	1	4271
INST	472	58.95957	3.985545	47.80619	73.53
LNGDP	472	7.436223	1.841277	-3.96121	10.62221
POP	472	1477.886	1270.669	380.8	8444.6
OPEN	472	75.15152	80.25245	0.255602	647.6062
LABOR	472	58.49386	3.74035	47.3	68.5
EDU	472	95.87222	4.828729	69.34	99.98

The correlation matrix among variables in the model is presented in Table 2. As can be seen from the result, there was a positive correlation between the Provincial Competitive Index and Foreign Direct Investment inflow. The signs of other correlation coefficients except for labor also coincide with the expected outcome of the study.

Table-2. Correlation matrix.

Variable	FDI	INST	LNGDP	POP	OPEN	LABOR	EDU
FDI	1						
INST	0.165*	1					
LNGDP	0.337*	0.258*	1				
POP	0.513*	0.140*	0.401*	1			
OPEN	0.456*	0.217*	0.315*	0.318*	1		
LABOR	-0.250*	-0.339*	-0.225*	-0.315*	-0.103**	1	
EDU	0.090	-0.011	0.064	0.091**	0.089	0.102**	1

\*: statistical significance at 1%

\*\*: statistical significance at 5%

## 4. EMPIRICAL RESULTS

### 4.1. Estimated Results and Discussions

At a glance, the results in Table 3 showed that the FDI inflows to provinces of Vietnam were positively correlated to institutional quality, GDP, labor force and openness to trade. Other variables of the model were reported in negative relationship with the inward FDI. All the estimates were statistically significant.

As can be seen from the estimated results, an increase by one point in Provincial Competitiveness Index could promote the value of inward FDI by 62.3 corresponding units. This result implied that the foreign investors to Vietnam considered provincial governance as a key determinant to location decision. Therefore, the local authorities in provinces of Vietnam should try to improve the institutional quality as well as investment environment that supports foreign investors in order to lure in more FDI. This finding fell in line with almost all the studies in the same field.

It was also indicated that GDP has a significant and positive effect on the volume of FDI inflows. More precisely, an increase by 1% in GDP can lead to a rise by approximately 615 units of inward FDI. This result coincides with the current situation in Vietnam in that the big provinces/ cities with a high rate of economic growth always tops the list of FDI while others are left behind with a low capacity of attracting FDI for years.

Labor force was also positively associated with GDP. It could easily be explained by the fact that almost all the FDI projects in Vietnam focus on labor-intensive industries that have a high demand for labor especially a low-cost labor force. Hence, the province with a high ratio of labor is advantaged in attracting FDI.

The outcome also supported other studies that openness to trade has positive impact on FDI. In a highly integrated world, the more open an economy is, the more investment it can attract.

Table-3. GMM regression.

Dependent Variable: FDI

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI(-1)	-0.198046*	0.023846	-8.305087	0.0000
INST	62.34431*	8.503324	7.331758	0.0000
LN(GDP)	614.5901**	283.1712	2.170383	0.0307
POP	-0.678520**	0.271583	-2.498391	0.0129
OPEN	16.03264*	1.071313	14.96541	0.0000
LABOR	74.72707*	25.28618	2.955254	0.0033
EDU	-118.2219*	12.18932	-9.698814	0.0000

J statistic: 20.16258

Instrument rank: 21

\*: statistical significance at 1%

\*\*: statistical significance at 5%



#### 4.2. Test for Over-Identifying Restrictions and Serial Correlation

The Sargan test for over-identifying restrictions which helps us to evaluate the validity of the instruments included in the model was based on the J-statistic and Instrument rank given in Table 3. Corresponding to the reported J-statistic (20.16258), Instrument rank (21) and number of coefficients (7), the calculated  $p$ -value for Sargan test was 0.125 which was a signal of a good instrumental variable technique. In other words, the GMM model with instruments in this study was appropriate.

**Table-4. Arellano-Bond Serial Correlation Test.**

Test order	m-Statistic	rho	SE(rho)	Prob.
AR(1)	-2.200051	-28906764.392869	13139136.204099	0.0278
AR(2)	0.846542	7719845.648672	9119272.528810	0.3973

The result of Arellano-Bond test is given in Table 4. As indicated, the first order statistic AR(1) was significant which means that the first-differenced errors were auto correlated at order 1. The second order statistic AR(2) was, however, insignificant. Therefore, we could not reject the null hypothesis of no second-order autocorrelation of errors. In summary, it can be concluded that the model residuals are not autocorrelated, or the estimates were consistent.

## 5. CONCLUSION

The key feature of the institution in Vietnam is the diversity in the implementation of the Government's policies and regulations across regions and provinces. This research argues that such difference in the quality of institution between provinces affects the location decisions by foreign investors, hence the difference in FDI inflows. This research contributes to existing literature on institution, location and foreign direct investment in some ways and it is one of very few studies of this topic in the specific context of Vietnam.

One likely shortcoming of this research was that the data was not available for all the provinces of Vietnam and the research time period was fairly short. In order to investigate whether the same trend applies to a longer time period, future study using a larger data set covering more years to increase the time variance in the set of institution variables should be undertaken. This might be useful and essential for a better understanding of the institutional effects.

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