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Impacts of Institutions on the Performances of Enterprises in Vietnam

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Abstract: This paper investigates the impacts of institutions on the performances of enterprises in Vietnam. The result obtained from the quantitative research method shows that the criteria on institutions do affect the performances of enterprises in Vietnam; while some criteria have positive impacts, others negatively affect them. Moreover, the improvement in the quality of economic institutions will lead to the differences in the performances among different types of enterprises. More specifically, improving economic institutional quality will result in higher increases in the revenues and added values of state-owned enterprises than those of FDI enterprises. Similarly, the improvement also leads to the higher increase in private enterprises' revenues but lower increases in their added values and added value ratios compared to those of FDI enterprises. However, there is no difference in the impact of institutional quality improvement on the before-tax earnings of different types of enterprises. Based on the research's result, the paper proposes some suggestions to improve the quality of economic institutions, and thus improve enterprises' performances and success, on all three aspects including "rules", "players" and "implementation procedures".

Keywords: Institutions, enterprises performance, Vietnam.

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IMPACTS OF INSTITUTIONS ON THE PERFORMANCES OF ENTERPRISES IN VIETNAM

Chu Thi Mai Phuong¹

1. Introduction

In the three decades from “Doi Moi”² 1986 to 2015, the economy of Vietnam has been developing amazingly, at an average annual growth rate of 6.5% (General Office of Statistics, 2015); and enterprises are the main source contributing to the gross domestic products (GDP) of Vietnam. According to Schumpeter (1935, 1942), enterprises play an important role in developing ideas and new technologies, increasing demands by providing new products and services, and most importantly, creating new jobs. Enterprises and other economic organizations are alleged to have sources to invest in services and new technologies, which help improve the standard of living. Thus, enterprises become the foundation for economic growth.

In addition, economists believe that one of the most important factors that determine the successes of enterprises is the institution. North (1990) showed that different institutional qualities would lead to different development results. In an innovative institutional environment, enterprises had a good condition to develop well-known brand name products and helped create national brand names. Similarly, the compliance with laws and rules, especially regulations on property rights, in an environment of good quality would encourage investors to invest in technology innovations and product improvements (Baumol, 1990). Moreover, Rodrik (2007) supposed that if there was not a good institutional environment with property rights protection system and good authorities, enterprises would not be able to operate well. Porter (2008) also believed that the economic institutional environment was the factor that directly affected enterprises' productivity and helped enterprises achieve the highest level of productivity and innovation. Alternatively, according to Johan (2015), good institutional quality created a favorable condition for enterprises' productivity improvement and growths.

In short, the economic institution plays an important role in the performances of enterprises. In Vietnam, there have been some researchers on this relationship; however, they still have some limitations. Thus, I analyze the impact of institutions on the performances of enterprises in Vietnam

This paper aims at analyzing the impacts of institutions on performances of enterprises. Empirical results will provide important evidence for policymakers to adopt

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² “Doi Moi” is the name given to the economic reforms initiated in 1986 with the goal of transforming the economy of Vietnam from a centrally planned one into a socialist-oriented market economy.

solutions for improving the economic institution in order to create the incentives for enterprises to enhance performance productivities which bring success and growth to enterprises. Specifically, the paper will answer the following questions: i) how institutions affect firm performance? ii) Does institutional reform make the performance of domestic enterprises higher increases than that of FDI enterprises? The result of this research will be a crucial principle for policy-makers to improve the institutional environment, attract more foreign investors, enhance productivity and firm performance and boost the success of firms.

2. Literature review on institution

Over the last three decades, there have been many studies about the relationship between economic institutions and economic efficiency. North (1981, 1989, 1990) emphasized the role of institutions, especially the regulations on contract implementation and property right protection, in creating incentives that improve the economic growth. Similarly, North and Weingast (1989) believed that close and stable establishment of property rights was the key factor for the development of western countries; and it also stimulated economic growth via creating incentives for accumulations and innovations. Helpman (2008) also shared this opinion. However, the drawback of these studies is that they did not show the causation between economic institutions and economic efficiency. In reality, reverse causality is totally possible as economic growth will provide resources and create demands for better institutional quality and vice versa. Other studies by Keefer (1995), Hall and Jones (1999), Acemoglu et al. (2001, 2002), Easterly and Levine (2003), Rodrik et al. (2004) and Feyrer and Sacerdote (2009) have shown that institutional quality has the large causal effect on economic development. However, the opinion about the causal relationship between economic institutions and economic efficiency was not supported in the study by Glaeser et al (2004).

Moreover, the paper by Acemoglu et al (2005a) suggested that economic institution is the key factor determining the success and prosperity of nations and regions. In other words, the quality of economic institutions is much more important than geography, culture and managing capability (Acemoglu and Robinson, 2012).

Based on the role of institutions in the overall economy, many scholars have developed the idea to investigate the role of economic institutions in enterprises. Some to be mentioned are papers by Hayek (1973, 1976a, 1979a), Eucken (1940, 1992), Buchanan (1991) and Casson (1993) emphasized the key role of economic institutions in exploring useful knowledge and organizing the exploitation of sources of capital, labor, skills, and raw materials, and creating increasing outputs. In the other hand, Hoskisson et al (2000) indicated that the role of economic institutions in the economy was to reduce transaction

cost and information cost, to ensure property rights and to establish a stabilized environment to encourage interactions among subjects. Lawful regulations and official economic institutions were the foundation for business strategies of enterprises (Oliver, 1997; Peng, 2000) and thus, affected firms' operations and productivities (Scott, 1995).

Moreover, a research by World Bank (2002) showed that in a country that has the good economic institution, risks arising from transactions in the market could be managed and thus, firms' performance productivities and abilities to make the profit would be enhanced. Accordingly, the role of economic institutions concentrated on creating a favorable business environment. Boettke et al (2003) focused on how enterprises can stimulate the economy. They suggested that "economic growth, driven by entrepreneurship, cannot be explained without the reference to institutions" (p.3). Similarly, Bowen (2008) also emphasized that "the nature of a country's institutions may contribute to economic growth, not only by creating conditions supportive of entrepreneurial activity but also by helping to direct entrepreneurial efforts toward particular types of activity" (p.762).

In addition, according to economists specializing in transaction costs (Coase, 1937 and Williamson, 1985) under an economic institution that provided a behavior framework to reduce the randomness in the transactions among firms, transaction cost was clear and low, then enterprises tended to make long-term investments and focus on creativeness and inventions. On the contrary, under an economic institution where transaction costs were implicit and non-transparent (information searching, bribe, unofficial costs, high and undetermined time cost of transactions), enterprises tend to invest in the short terms or invest less.

Most of later empirical studies support the opinion that economic institutions are positively correlated with enterprises' performances. Hallward – Dreimeier et al (2006, p.1514) showed that an enterprise' ROA had the positive correlation with rapid land clearance, reliable infrastructure and good financial services using a sample of 1500 Chinese enterprises in 2006. Similarly, Ward et al (2010) investigated the impact of economic institutions on firms' success in Philipines. The result indicated that when economic institutions were improved, the gross profit of firms would increase by several percents. An economy whose economic institutions are weak will prevent its enterprises from entering the market (Djankov et al, 2002).

In addition, Lasagni et al. (2012) investigated the effect of the quality of economic institutions in different provinces on the ratio of revenue over inputs (capital and labor) of 4,000 firms in Italy in 2008. The result showed that economic institutions positively affected the ratio between revenue and inputs of enterprises and that as a result of better

quality of economic institutions in the North compared to those of the South, the performances of enterprises in the North were also better than those in the South.

Recently, Johan (2015) studied the effect of institutional quality on the productivity and growth of 16,105 firms in 42 developing countries using a sample combining institutional quality data from the survey of experts from the University of Gothenburg and enterprise data from the World Bank Enterprises Survey. The result of this study confirms that good economic institutional quality is a condition for enterprises to increase productivity and growth.

In opposition to these findings, Beck et al. (2005), based on World Bank's World Business Environment Survey, studied the impact of economic institutions on revenue growth rates of 4,000 enterprises in 54 countries. The result showed that economic institutional factors did not affect the revenue growth rate of firms and the main factor affecting revenue growth rate was the size of the business. However, for the group of small or newly established businesses, economic institutions had a great impact on their performance.

Thus, over the past three decades, there have been numerous theoretical and empirical studies on the impact of economic institutions on the performance of firms. However, most empirical studies use cross-sectional data, which causes limitations such as small sample size, biased estimation due to unobserved variables, and lack of findings of intertemporal effect. Using panel data to analyze can overcome that limitation because panel data contain information on both the intertemporal dynamics and the individuality of the entities may allow one to control the effects of missing or unobserved variables.

In Vietnam, there are some studies on the role of institutions in the performance of firms. The first to be mentioned is the study by Tran Thi Bich et al. (2009) which investigated the impact of institutional change on labor productivity of non-state enterprises in Vietnam from 2005 to 2006. The paper uses quantitative research methodology with panel data pairing from two sets of data: the Vietnamese Enterprise Survey and the Provincial Competitiveness Indices (PCI) dataset. Research result showden that improvements in the provision of market information support, safe land use, and labor training had a positive impact on corporate performance. In contrast, weaknesses in the judicial system and administrative reform would hinder the growth of enterprises. However, the study does not have a clear theoretical model, and the model studied in this paper is based on the results of relevant studies (Carlier and Tran, 2005; Kane et al., 2007; Malesky, 2004). The period for the study was only 2 years and the paper only investigated non-state enterprises.

In a paper that studied the relationship between the export strategy and the business performance of small and medium private enterprises and the extent to which local economic institutions influenced the relationship, Nguyen Van Thang et al. (2013) pointed out that the improvement of economic institutional indicators will increase the efficiency of small and medium enterprises. Specifically, this study also used quantitative research methodology with panel data pairing from two sets of data which were the Vietnam Enterprise Survey and the Provincial Competitiveness Indices dataset. However, this study did not have a clear theoretical model, and it is based only on the results of related studies (Meyer and Nguyen, 2005; Estrin et al., 2008). The study used data of an only 2-year period (2005-2006) and is only for small and medium private enterprises. Thus, although the paper studied the impact of the economic institution on business performances, it was carried out on a small sample size (the study of each province, city, sector, and type of enterprise), and thus it is not representative for the whole economy.

On the other hand, the Asia Pacific Institute of Management and T & C Consulting (2014) studied the impact of corruption on the development of enterprises using both qualitative and quantitative research methods. The quantitative study was conducted using the VCCI PCI dataset and the GSO Enterprise Survey from 2009 to 2011. The study result showed that enterprises spent a large amount of money every year on informal charges. Most firms paid a "lubricant" charge because they thought it's a "play rule" (the rules do not necessarily coincide with the law). The informal charges associated with growth are only in the group of enterprises that have efficient businesses and the impact of informal charges is greater for new firms. Finally, corruption reduces the efficiency of enterprises' performances. This research incurs limitations as it used only one indicator of institutional quality and a short period of study (3 years).

In summary, there have not been many studies on the impact of economic institutions on the performance of enterprises in Vietnam and their results still incur limitations. Specifically, the researchers are conducted just for one sector, one type of firms and one size of firms and one geographic area and thus it is not representative of the whole economy.

In this paper, we study the role of economic institutions in the performances of enterprises in all sectors, geographical areas, and of all enterprise sizes and types. Thus, this study can represent the whole economy of Vietnam. The paper will compare the impacts of the economic institutions on the performances of enterprises among different types of ownership, in a consecutive period of 9 years (2006 – 2014). Many papers around the world indicate that for different types of enterprise (different types of ownership), the effects of economic institutions vary greatly in terms of access to capital, technology, and

access to global market; thus, institutions affect the different enterprises' productivities differently (Angelucci et al., 2002; Estrin et al., 2009). Nigel et al. (2010) argued that economic institutions strongly influenced the operation of state-owned and private enterprises rather than FDI enterprises.

3. Economic institutions in Vietnam: The difference in implementations by provinces and Measurements

3.1 The difference in the implementation of economic institutions among provinces in Vietnam

In reality, it is hard to identify what creates the difference in economic management among provinces. In Viet Nam, the political system and government structures are identical in all provinces and provincial governments do not have the power to promulgate laws; however, they are the bodies that directly implement laws and policies and the implementation of laws is different among provinces. In this paper, we explain for this difference by the following reasons: (i) Urban versus Rural, (ii) North versus South, and (iii) the complexity and ambiguity of the laws and regulations.

(i) Urban versus Rural

In Vietnam, big cities tend to attract the most highly educated human resources for all positions including officials of the provincial authorities. Apart from that, there are also many more dynamic and influential business associations in urban than in rural areas. Moreover, cities have advantages over rural areas of information technology; thus, enterprises in urban areas can update information about policy changes more quickly and accurately.

(ii) North versus South

The differences between the south and the north come from the historical factors. Accordingly, the culture of North Vietnam was previously described as a culture of wet rice cultivation with village settlements. A village was an autonomous region where people paid taxes and fulfilled obligations to the State. Due to the unclear demographic system and the communication difficulties, the village chiefs were motivated to retain a portion of the taxes and create their own rules, leading to high level of independence of local governments and the lack of transparency between local and central governments (Tran et al., 2008).

South Vietnam is concentrated around the Mekong Delta. Difficulties in establishing a new life led the people here to be open and cooperative. This explains why South Vietnamese leaders understand the needs and aspirations of the private sector. As a result, Southern leaders often provide businesses with information on legal requirements,

business partners, and technology services to promote the development of private enterprises (Tran et al., 2008).

In addition, recent political and historical factors also influence the differences in institutional practice between the southern and northern provinces. Before 1975, the South was under the domination of the United States, and Southern Vietnam followed the market economy. When the country reunited in 1975, the country adopted a centrally planned economy. Thus, the South only implemented the planned economy for 11 years (1975 - 1986), while the North implemented the planned economy for 32 years (1954 - 1986). Therefore, in the Northern provinces, land and agricultural centralization is more rigorous and comprehensive than in the Southern provinces. Also due to the difference, during "Doi Moi", it is easier for the Northern provinces to manage the market economy than the Northern provinces (Dinh Thi Thanh Binh, 2009).

(iii) The complexity and ambiguity of the laws and regulations

In Viet Nam, due to the complexity of the laws, a large number of subordinate documents such as decrees, decisions, and regulations are issued to guide the implementation of laws. Moreover, continuous legislative amendments of laws can create inconsistencies in implementation across provinces. Complexity and ambiguity in many laws and regulations at the central level make the implementation of the law highly dependent on interpretative documents by local officials. Even when the rules are clear, there is always some ways to explain policies in a way that is favorable for a particular group (Tenev et al., 2003). Some provinces explicitly stated that their objective was to attract foreign direct investment, thus, they grant many favors for enterprises of this type such as access to land, access to finance, high-quality labor, and tax incentives. Similarly, private firms often complain that provinces have biased attitudes toward the state sector. One example of state sector bias is the difference in collateral requirement between private and state-owned enterprises. In order to get a loan, a firm in the private sector is required to have sufficient collaterals to fully pay the loan in the worst case, whereas no collateral is required to loan to the state sector. Bankers in state-owned commercial banks tend to believe that lending to the state sector is a safer bet.

3.2 Measurements of economic institutions in Vietnam

Economic institutions in Vietnam are measured by the Provincial Competitiveness Index (PCI) on Vietnam's business environment, conducted annually by Vietnam Chamber of Commerce and Industry (VCCI) (Nguyen Van Thang et al, 2012, 2013; Tran Thi Bich et al, 2008; Neil et al, 2013; Doan Quang Hung et al, 2014; Pham The Anh and Nguyen Duc Hung, 2014). Although provincial governments do not have the power to promulgate

laws and policies, they are the bodies that directly implement them. The difference across provinces in the implementation allows analyzing economic institutions at the provincial level.

PCI was introduced in 2005. At that time, VCCI only calculated PCI for 42 of the 63 provinces and cities of Vietnam with 8 sub-indices. Since 2006, PCI has been calculated for 63 provinces and cities with 10 sub-indices. The 10 sub-indices include: (i) Entry costs for business start-up; (ii) Access to land security of business premises; (iii) Transparency and access to information; (iv) Time requirements for bureaucratic procedures and inspections; (v) Informal charges; (vi) State-Sector Bias; (vii) Proactiveness and creativeness of provincial leadership; (viii) Business support services; (ix) Labor training and (x) Legal procedures for dispute resolution (For detail, please see Appendix 2). More specifically,

- (i) Entry costs for business start-up: A measure of the time it takes firms to register, acquire land, and receive all the necessary licenses to start the business, the number of licenses required and the perceived degree of difficulty to obtain all licenses/permits.
- (ii) Access to the land security of business premises: A measure combining two dimensions of the land problems confronting entrepreneurs: how easy it is to access land and the security of tenure once the land is acquired. The first dimension comprises whether firms possess their official land use rights certificate, whether they have enough land for their business expansion requirements, whether they are renting from SOEs and an assessment of land conversion efforts. The second dimension includes perceptions of various tenure security risks (such as expropriation, unfair compensation values, or changes in the lease contract) as well as the duration of tenure.
- (iii) Transparency and access to information: A measure of whether firms have access to the proper planning and legal documents necessary to run their business, whether those documents are equitably available, whether new policies and laws are communicated to firms and predictably implemented, and the business utility of the provincial web page.
- (iv) Time requirements for bureaucratic procedures and inspections: A measure of how much time firms waste on bureaucratic compliance as well as how often and how long firms must shut their operations down for inspections by local regulatory agencies.
- (v) Informal charges: A measure of how much firms pay in informal charges, how much of an obstacle those extra fees pose for their business operations, whether payment of those extra fees results in expected results or 'services', and whether

provincial officials use compliance with local regulations to extract rents.

- (vi) State-Sector Bias: A measure of the competition regime confronting private business focusing on the perceived bias of provincial governments toward state-owned enterprises (SOES) and equitized firms in terms of incentives, policy, and access to capital.
- (vii) Proactiveness and creativeness of provincial leadership: A measure of the creativity and cleverness of provinces in both implementing central policy, designing their own initiatives for private sector development, and working within sometimes unclear national regulatory frameworks to assist and interpret in favor of local private firms.
- (viii) Business support services: A measure of provincial services for private sector trade promotion, provision of regulatory information to firms, business partner matchmaking, provision of industrial zones or industrial clusters, and technological services for firms.
- (ix) Labor training: A measure of the efforts by provincial authorities to promote vocational training and skills development for local industries and to assist in the placement of local labor.
- (x) Legal procedures for dispute resolution:
- (xi) the private sector in the provincial legal institutions, whether firms regard provincial legal institutions as an effective vehicle for dispute resolution or as an avenue for lodging appeals against the corrupt official behavior.

The PCI is constructed in a three-step sequence, referred to as “the 3 Cs”

Step 1: Data Collection

Two general types of data are used to construct the sub-indices. The first is perceptions data drawn from a mail-out survey of private firms. This perceptions or "soft" data was combined with objective or "hard" data gathered from statistical yearbooks, interviews with third-parties such as state-owned banks or real estate firms, or collected from business associations.

Step 2: Processing the Data to Construct the Subindices

An important strength of the PCI is that it compares provincial economic governance against best practices already found in Vietnam, not against some idealized standard. For this reason, the indicator was standardized to a ten-point scale³, whereby the

³ The following standardization formula was used if a high score on an indicator meant good governance: $\{9 * ((\text{Provincial Score} - \text{Sample Minimum}) / (\text{Sample Maximum} - \text{Sample Minimum})) + 1\}$. If a high score on an indicator meant poor performance, the above formula was subtracted from 11. $11 - [9 * ((\text{Provincial Score} - \text{Sample Minimum}) / (\text{Sample Maximum} - \text{Sample Minimum})) + 1]$

best and worst performing provinces would be awarded the scores of 10 and 1 respectively, and the other 61 provinces would be distributed somewhere along the scale between these two scores.

Step 3: Construction of the Final PCI

A simple summation of these sub-indices yields the un-weighted index with a maximum possibility of 100 points

4. Methodology

4.1 Theoretical models

Cobb – Douglas production function, the theoretical model used to analyze the relationship takes the following form:

$$Y_i = A_i f_i(X_j) = A_i X_j^{\beta_j} \quad (1)$$

in which, Y_i – output of enterprise i , A_i – technological capacity of enterprise i or productivity factor of enterprise i , X_i - inputs for production of enterprise i . Suppose that enterprise i combines two inputs i.e. labor L_i and capital K_i in production process, the Cobb-Douglas production function is now rewritten under linear function as follows:

$$Y_i = A_i K_i^{\beta_1} L_i^{\beta_2} \quad \text{or} \quad \ln Y_i = \ln A_i + \beta_1 \ln K_i + \beta_2 \ln L_i + v_i, \quad (2)$$

in which β_1 and β_2 are the elasticity of output with respect to capital and labor respectively; v_i is the random error of the model assumed that having the average value of 0 and fixed variance. A_i is described by the following equation

$$\ln A_i = a_0 + \sum_j a_{1j} C_{ji} + \sum_j a_{2j} Z_{ji} + \sum_j \gamma_j PCI_{ji} + e_i, \quad (3)$$

in which, PCI_{ji} is the vector of variables representing the effect of the provincial competitiveness index number j on the performance of enterprise number i . C_{ji} is the vector of variables representing management mechanism and other features of enterprise (e.g ownership category, enterprise scope, operating field, operating years). Z_{ji} is the vector controlling effect of other factors such as economic locality (include 7 economic regions which are municipalities, Red river delta, Northern mountainous area, central coast, central highland, Southeast area, Mekong river delta); finally e_i is the error measuring effect of random productivity shocks which have independent distribution and standardization with average value of 0 and fixed variance. Combine (2) and (3), we have the aggregate model as follows:

$$\ln Y_i = \beta_0 + \beta_1 \ln K_i + \beta_2 \ln L_i + \sum_j a_{1j} C_{ji} + \sum_j a_{2j} Z_{ji} + \sum_j \gamma_j PCI_{ji} + \varepsilon_i \quad (4)$$

Equation (4) could be estimated using cross-section data. However, using this method causes limitations such as small sample size, biased estimation due to unobserved

variables, and lack of findings of the intertemporal effect. Using panel data to analyze can overcome that limitation because panel data contain information on both the intertemporal dynamics and the individuality of the entities may allow one to control the effects of missing or unobserved variables. Equation (4) with panel data is transformed into the new form:

$$\ln Y_{it} = \beta_0 + \beta_1 \ln K_{it} + \beta_2 \ln L_{it} + \sum_j \beta_{3j} C_{ijt} + \sum_j \beta_{4j} Z_{ijt} + \sum_j \gamma_j PCI_{ijt} + c_i + u_{it} \quad (5)$$

This study also uses Composite PCI to replace the 9 sub-indices of PCI. Then, model (5) can be rewritten as:

$$\ln Y_{it} = \beta_0 + \beta_1 \ln K_{it} + \beta_2 \ln L_{it} + \sum_j \beta_{3j} C_{ijt} + \sum_j \beta_{4j} Z_{ijt} + \gamma \text{Composite PCI}_{it} + c_i + u_{it} \quad (6)$$

In order to analyze the impact of economic institutions on the performances of different types of enterprise, the paper uses the interaction terms between Composite PCI and dummy variables for types of enterprise (FDI enterprise, the state-owned enterprise, and non-state enterprise, where enterprises belonging to the FDI group will be the base category). Then, model (5) is rewritten as follows:

$$\ln Y_{it} = \beta_0 + \beta_1 \ln K_{it} + \beta_2 \ln L_{it} + \sum_j \beta_{3j} C_{ijt} + \sum_j \beta_{4j} Z_{ijt} + \gamma_1 \text{Composite PCI} + \gamma_2 \text{Composite PCI_State-owned enterprise} + \gamma_3 \text{Composite PCI_Non-State enterprise} + c_i + u_{it} \quad (7)$$

in which, Composite PCI_State-owned enterprise = Composite PCI * Dummy State-owned enterprise and Composite PCI_Non-State enterprise = Composite PCI * Dummy Non-State enterprise. c_i captures the individual effect and is assumed to be fixed in the fixed effects model. For the random effects model, it is stochastic and distributed. In other words, the individual effect is not correlated with the error-term but with the regressors in the fixed effects model. Moreover, u_{it} is the error-term.

4.2 Data sources

Data of enterprises are extracted from the Enterprises Survey (GES) done by the General Statistics Office for the time from 2006 to 2014. Meanwhile, data of the economic institution are from the PCI Data by the Chamber of Commerce and Industry of Vietnam for the time from 2006 – 2014. PCI includes many criteria which best represent the business environment or the market-supporting economic institutions. Although authorities at provincial level do not have the power to promulgate regulations and policies, they are the ones who directly implement them. The difference among provinces in the implementation of laws and policies allows using provincial level as the unit to measure the quality of economic institutions (Nguyen Van Thang et al, 2012). The full data set used

for studying the impact of the economic institutions on the investment decisions and performances of enterprises is created by combining the above data sets.

4.3 Variables and proxies

Dependent variable: Enterprises' performance: There are many proxies that can be used to measure the performance of enterprises such as before-tax profit, after-tax profit, revenue and net revenue. This paper will use the total revenue from goods and services sold and total before-tax profit of enterprises as the proxy to measure their performances (Madsen, 1987 and Almasand Hans, 2008; Pham The Anh and Nguyen Duc Hung, 2014). Especially, the study makes the new contribution to the topic as it uses the added values from the business and production process (see Appendix 3) and the ratio between the value added and the average number of the labor of enterprises as the proxies to measure enterprises' performances.

Independent variables:

The two most important inputs, capital ($K_{i,t}$) and labor ($L_{i,t}$)⁴, are measured by the average physical capital (average of the physical capital at the beginning of the year and the physical capital at the end of the year) and average number of labors (the average of the number of labors at the beginning of the year and the number of labors at the end of the year) which are used in the business operation of an enterprise (Pham The anh and Nguyen Duc Hung, 2014; Tran Thi Bich et al, 2008; Bernanke and Gilchrist, 1996; Budina et al, 2000; Nguyen Thi Canh, 2004). This variable will be transformed into logarithms when put in the model.

The variable reflecting the economic institution is measured by the Provincial Competitiveness Index of Vietnam (Nguyen Van Thang et al, 2012, 2013; Tran Thi Bich et al, 2008; Neil et al, 2013; Doan Quang Hung et al, 2014; Pham The Anh and Nguyen Duc Hung, 2014). PCI from 2006 to 2009 consists of 10 sub-indices. Then, from 2009 to 2012, in order to reflect the development of the economy and changes in the legal environment, the sub-index State- Sector Bias was dropped out and there were 9 sub-indices left. From 2013 to 2014, PCI developed a new sub-index to reflex the equal competitive environment. Thus, this study only uses the nine most stable criteria in nine consecutive years including (i) entry costs for business start-up, (ii) access to land security of business premises, (iii) transparency and access to information, (iv) time requirements for bureaucratic procedures and inspections, (v) informal charges, (vi) proactiveness and creativeness of provincial leadership, (vii) business support services, (viii) Labor training and (ix) legal procedures

⁴ The Enterprise Survey by the General Statistics Office of Vietnam only provides information on the number of full-time workers of enterprises. There is no information on the number of working hours for each enterprise in this survey. The data source does not distinguish between the types of workers

for dispute resolution. Besides, Composite PCI is also used. Finally, the model also uses an interaction term which is the product of Composite PCI and types of ownership to analyze the impact of economic institutions on the performances of enterprises with regards to types of ownership.

As stated above, PCI evaluates the efficiency of economic governance and establishment of a favorable business environment of the local governments. There are differences in the governance of different provinces/ regions because of the difference in implement capability, regional culture, and geographic characteristics such as high-quality labors, better infrastructure in cities and easier access to land in countrysides, etc. Thus, which justifies the use of the PCI as the proxy for economic institutions at the regional level.

Independent variables reflecting the characteristics of an enterprise (C_{ijt}) include types of ownership (FDI enterprise, the state-owned enterprise, and non-state enterprise), business scales (big-sized enterprises, medium-sized enterprises, and small and very small enterprises), business sectors and ages of the enterprises. Of which, the first characteristic is represented by 2 dummy variables, which take on the value of 1 if subject belongs to the research category and 0 otherwise; and enterprises belonging to the FDI group will be the base category. The second characteristic⁵ is represented by 3 dummy variables which take on the value of 1 if subject belongs to the research category and 0 otherwise, and enterprises having big sizes will be the base category. Enterprises are classified into sectors according to level 1 industry classification VSIC - 2007 including industry and manufacturing, agriculture – forestry – fishing, mining and quarrying, construction, retail, transportation and storage, accommodation and food services, information and communication, finance and banking, real estates, science and technology, electricity and gas supply, water supply, sewerage, waste management and remediation, and others. 13 dummy variables present business sectors; in which these dummy variables which take on the value of 1 if subject belongs to the research category and 0 otherwise, and other sectors will be the base category. Age of an enterprise is the difference between the survey year and the establishment year of the enterprise. Vector Z_{ijt} represents the geographic location. 6 dummy variables will be used to represent 7 economic regions which are municipalities, Red river delta, Northern mountainous area, central coast, central highland, Southeast area, Mekong river delta. These dummy variables take on the value off 1 if the subject belongs to the research category and 0 otherwise, and municipalities belong to the base category.

5. Estimation and discussion

⁵ In Vietnam, Decision no. 56/2009/NĐ-CP of the Government defines different enterprise sizes as follows: Enterprises with less than 10 workers is classified as very-small enterprises, the enterprise with 10-200 workers are classified as small-sized enterprises, enterprises with 200-300 workers are classified as medium-sized enterprises, and enterprises with more than 300 workers are classified as large-sized ones.

5.1 Statistical descriptions and correlation between variables

The statistical descriptions of variables can be seen in Table 5.1.

Descriptive statistics show that the market entry costs indicator was ranked the highest with an average score of 7.61, followed by an indicator of informal costs with an average score of 6.20. The lowest rating was on the proactiveness and creativeness of local leaders with 4.67 points. Before-tax earnings can take on the negative value, thus, we can not take the logarithm of this variable. On the other hand, the paper only studies those businesses with positive revenue.

Table 5.1. Statistical descriptions of variables

<i>Variable</i>	Number of observations	Mean	Standard deviation	Minimum	Maximum
<i>Revenue</i>	1001753	34486.76	821770.10	0.1	512000000
<i>Before-tax earnings</i>	1011473	1262.96	141753.20	-39100000	61000000
<i>Added values</i>	4377672	6.52	1.48	0,14	58900000
<i>Average number of labors</i>	1013890	40.97	328.39	1	86974
<i>Average amount of capital</i>	1013890	41406.29	1330688.00	0.35	540000000
<i>Enterprise age</i>	1013890	4.93	4.96	1	77
<i>Entry costs</i>	1013890	7.61	1.04	5.07	9.6
<i>Access to land</i>	1013890	5.77	1.22	3.04	8.84
<i>Transparency</i>	1013890	5.98	0.58	2.76	8,.85
<i>Time costs</i>	1013890	5.91	0.84	2.85	8.93
<i>Informal costs</i>	1013890	6.20	0.83	4.33	8.94
<i>Proactiveness and creativeness</i>	1013890	4.67	1.35	1.39	9.39
<i>Labor training</i>	1013890	5.71	0.72	1.84	8.4
<i>Legal procedures</i>	1013890	4.62	1.06	2	7.34
<i>Supporting services</i>	1013890	5.88	1.51	1.4	8.75
<i>Composite PCI</i>	1013890	58.79	4.17	36.39	75.96
<i>State-owned enterprise</i>	1013890	0.01	0.10	0	1
<i>Non-State enterprise</i>	1013890	0.96	0.20	0	1
<i>Super small enterprise</i>	1013890	0.60	0.49	0	1
<i>Small-sized enterprise</i>	1013890	0.36	0.48	0	1
<i>Medium-sized enterprise</i>	1013890	0.01	0.11	0	1
<i>Agriculture, Forestry and Fishery</i>	1013890	0.02	0.12	0	1

Industry	1013890	0.18	0.39	0	1
Electricity production and distribution	1013890	0.00	0.07	0	1
Water Supplies	1013890	0.00	0.06	0	1
Construction	1013890	0.15	0.35	0	1
Retail	1013890	0.38	0.49	0	1
Transportation	1013890	0.06	0.24	0	1

Table 5.1. Statistical descriptions of variables (cont.)

Variable	Number of observations	Mean	Standard deviation	Minimum	Maximum
Service	1013890	0.03	0.18	0	1
Information	1013890	0.01	0.12	0	1
Finance	1013890	0.01	0.10	0	1
Real Estate	1013890	0.01	0.12	0	1
Science	1013890	0.07	0.26	0	1
Red River Delta	1013890	0.09	0.29	0	1
Northern Mountainous Area	1013890	0.07	0.25	0	1
Central Coast	1013890	0.10	0.30	0	1
Central Highland	1013890	0.02	0.15	0	1
Southeast area	1013890	0.11	0.31	0	1
Mekong River Delta	1013890	0.25	0.43	0	1

Sources: Calculated by the authors from GSO Enterprise Survey data and VCCI PCI data for the 2006 – 2014 period.

On the other hand, the structure of the sample by type shows that 96% are private enterprises, 3% are FDI enterprises and 1% are state-owned enterprises. As for the size of enterprises, 3% are large enterprises, 60% are super small enterprises, 36% are small enterprises and 1% are medium enterprises. By sector, retail sales account for 38% of the sample, followed by processing and manufacturing 18% and construction, at 15%. In the economic region, the most concentrated area is the Central City (37%), followed by the Mekong River Delta (25%), and least in the Central Highlands (2%).

The correlation matrix between variables is shown in Table 5.2 below. According to this matrix, two important inputs are labor and capital, which are strongly positively correlated with the performance of enterprises (the correlation coefficient is greater than 50%). This correlation is perfectly consistent with economic theory. In addition, most

indicators of economic institutions have the positive but low correlation with the performance of enterprises. In particular, the correlation between business performance and institutional factors ranges from 1% to 3%. On the other hand, the composite PCI has a low correlation with performance (about 2%). Finally, the level of correlation between the explanatory variables is lower than 70%, so there is no high multicollinearity between the explanatory variables.

5.2 Estimation and discussion

In this study, the model can be estimated using panel data regression method, including Pooled OLS model (POLS), random effect model (RE) and fixed effect model (FE)⁶. In order to choose the most effective model, refer to appendix tables that show the results of the tests. Include Lagrange Multiplier test (xttest0) to choose between POLS and RE model, where the null hypothesis is that the disturbances' variance is constant across entities or POLS model are more suitable, and Hausman test (Hausman, 1978) to choose between RE model and FE model, where the null hypothesis underlying the Hausman test is that the difference in the coefficient estimates of the consistent FE and the RE models are not systematic, and thus individual-level effects can be adequately modeled by an RE model.

The result of the test for choosing between POLS and RE indicates that RE model is more efficient (see Appendix 4). On the other hand, the data used in this study is an unbalanced panel dataset, with small T (9 years) and large N (625293 enterprises). Therefore, the model used for analysis in the study is the robust random-effects model (RE) (Baltagi, 2008). Also, Hausman test indicates that RE model is more efficient (see Appendix 5 and Appendix 6). The estimations of the impacts of economic institutions on the performances of enterprises are shown in Table 5.3.

The result from Table 5.3 shows that two important inputs, labor, and capital, have positive effects on firms' performances (revenue, before tax earnings, and added values). This finding is perfectly consistent with economic theories.

On the other hand, the more experienced the business is, the higher its revenue is, but the marginal returns decrease. Also, the regression coefficients on the types of

⁶ Potentially reverse causality between economic institutions and a firm's performance could be an issue. To check, we can use the causality test for panel data. One condition of the test is that each entity must be investigated in at least 5 periods (Baltagi, 2008). This study uses panel data with T=9 years, however, each enterprise was investigated in no more than 5 periods, so the test cannot be done. However, the performance of an individual firm is unlikely to have an impact on the institutions in the whole region since it can be assumed that the influence of each individual firm is too small to affect aggregate outcomes.

enterprise (state-owned and private enterprises) are statistically significant at 1%. This implies, in the same economic institution environment, there is a difference in average performances of state-owned and private enterprises in comparison with that of FDI enterprises. Specifically, FDI enterprises have better performances (revenue and added values) than other enterprises. However, before-tax earnings of FDI enterprises are smaller than those of other firms.

Basically, FDI enterprises have strong financial resources, professional methods of doing business, and better access to credit and land resources domestic ones (VCCI, 2015). As a result, revenues and added values of FDI enterprises are likely to be larger than state-owned and private enterprises. As for pre-tax earnings and added value ratio, as most private enterprises are small and medium-sized ones, they face many difficulties in doing business such as lack of capital, difficulty in accessing financial sources, limited product demand, severe competitions, etc (Central Institute for Economic Management-CIEM, 2016); Thus, the performances of private enterprises are very limited. Meanwhile, most state-owned enterprises are large enterprises and are supported by the state through financial relations. At the same time, the FDI enterprises often take advantage of transfer pricing by purchasing the input materials of the parent companies at high prices and selling products to the parent companies at low prices. This results in the loss in subsidiaries and larger profits in parent companies. Thus, before-tax earnings of FDI enterprises is smaller than that of state-owned enterprises.

Moreover, the majority of control variables for business sector are statistically significant at 10%, which means that in the same economic institutional environment there are differences in performance of enterprises across sectors. Specifically, industries with the high concentration of businesses such as industry, construction, and retail have higher revenues than other industries but their earnings, added values, and added value ratio are smaller than those of other sectors. In addition, there are differences in revenues, added values but no differences in pre-tax earnings among enterprises in different regions. In particular, although the central city area has the largest number of businesses (37%), the average revenue of enterprises in this area is smaller than those in the Red River Delta, The Central Highlands, Southeast area but greater than the rest. In contrast, the average added value of firms in the central city is greater than those of firms in other regions but smaller than those of firms in the Mekong Delta area. Also, the added value ratio of firms in the Centre city area is larger than those of other regions.

For the group of the control variable for enterprise size, super small, small and medium-sized enterprises have higher average revenues and added values than large-sized firms, but their pre-tax earnings are smaller.

In particular, most economic institution variables are significant at 10%. This implies that most of the changes in economic institutions affect enterprise performance. Some indicators have positive effects while some have negative effects. Specifically,

i) Indicator on market entry costs has a positive impact on revenue, before-tax earning and added value. This result is consistent with economic theory. In contrast, market entry costs indicator has the negative effect on the value-added ratio. By 2015, the cost of entering the market has been reduced maximally (PCI Report, 2015). Therefore, the cost to enter the market fell sharply, and firms quickly enter the market and conduct productions;

Table 5.2. Pair-wise correlation matrix between variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Revenue	1.00															
2. Before-tax earnings	0.47	1.00														
3. Added values	0.63	0.80	1.00													
4. Average labor force	0.26	0.13	0.53	1.00												
5. Average capital	0.57	0.62	0.74	0.28	1.00											
6. Enterprise age	0.15	0.13	0.20	0.10	0.16	1.00										
7. Entry costs	0.01	0.01	0.01	0.01	0.02	0.06	1.00									
8. Access to land	-0.01	0.02	0.01	0.03	0.01	-0.01	0.32	1.00								
9. Transparency	0.00	0.01	-0.01	-0.02	0.02	-0.01	0.05	-0.66	1.00							
10. Time costs	-0.02	-0.01	0.02	0.02	0.01	-0.05	0.34	0.66	-0.33	1.00						
11. Informal costs	-0.01	0.02	-0.01	0.01	-0.01	-0.07	0.28	0.30	0.14	0.34	1.00					
12. Proactiveness and creativeness	-0.03	-0.01	0.01	0.01	-0.01	-0.11	-0.29	0.52	-0.25	0.24	0.24	1.00				
13. Labor training	0.02	0.03	0.02	-0.01	0.01	0.11	-0.12	-0.43	0.27	-0.61	-0.24	-0.17	1.00			
14. Legal procedures	-0.02	-0.01	0.01	0.02	-0.02	-0.10	-0.79	-0.19	-0.14	-0.23	-0.08	0.57	0.23	1.00		
15. Supporting services	0.01	0.01	0.01	-0.02	0.01	0.04	-0.38	-0.88	0.33	-0.73	-0.48	-0.43	0.64	0.35	1.00	
16. Composite PCI	0.01	0.03	0.02	-0.01	0.02	0.07	0.33	-0.39	0.40	-0.37	0.03	-0.31	0.73	-0.11	0.52	1.00

Sources: Calculated by the authors from GSO Enterprise Survey data and VCCI PCI data for the 2006 – 2014 period.

Table 5.3. Estimation results: Impacts of economic institutions on revenues, before-tax earnings, added values and ratio of added values over average capital force

Variables	Ln(Revenue)		Before-tax earnings		Ln(Added values)		Ratio of added values over average capital force	
<i>LnL</i>	0.808***	0.808***	1454.042***	1444.402***	0.651***	0.647***	-238.45***	-223.065***
<i>LnK</i>	0.300***	0.290***	1186.165***	1150.197***	0.455***	0.46***	233.698***	215.553***
<i>Enterprise Age</i>	0.108***	0.111***	161.115***	177.324***	0.02***	0.019***	-2.178	-4.660
<i>(Enterprise Age)²</i>	-0.002***	-0.002***	0.427	0.138	0.001***	0.001***	0.210	0.272
<i>State-owned Enterprise</i>	-0.420***	-0.406***	14939.556*	15009.838*	-0.163***	-0.153***	-103.211	-88.988
<i>Private enterprise</i>	-0.650***	-0.653***	-6590.205***	-6599.181***	-0.7***	-0.684***	-301.587***	-338.080**
<i>Super small enterprise</i>	0.307***	0.285***	-17775.308***	-17895.274***	0.113***	0.121***	-70.580	-101.592
<i>Small-sized enterprise</i>	0.369***	0.356***	-20300.195***	-20350.069***	0.076***	0.082***	-33.430	-45.801
<i>Medium-sized enterprise</i>	0.205***	0.200***	-14525.648***	-14555.159***	0.17***	0.168***	34.089	30.924
<i>Agriculture, Forestry and Fishery</i>	-0.392***	-0.335***	-9787.45***	-9636.64***	-0.274***	-0.31***	2518.214*	2505.804*
<i>Mining</i>	0.096***	0.129***	3742.522	3811.998	0.16***	0.129***	-186.55***	-183.499***
<i>Industry</i>	0.391***	0.409***	-1517.385***	-1485.912***	0.026***	0.022***	-169.419***	-158.477***
<i>Construction</i>	0.139***	0.161***	-1692.179***	-1639.013***	-0.324***	-0.334***	-326.202***	-313.249***
<i>Retail</i>	1.107***	1.125***	-423.227*	-388.330*	-0.093***	-0.101***	-295.943***	-277.814***
<i>Transportation</i>	0.715***	0.731***	-1028.349***	-974.459***	0.262***	0.259***	-145.296***	-127.493***
<i>Service</i>	0.041***	0.057***	-82.902	-16.663	-0.511***	-0.514***	-84.497**	-55.679
<i>Information</i>	0.251***	0.238***	2557.659**	2561.525**	-0.077***	-0.078***	-18.901	-5.436
<i>Finance</i>	-0.321***	-0.281***	12078.129***	12215.492***	-0.278***	-0.302***	1887.587	1922.785
<i>Real Estate</i>	-0.568***	-0.548***	-514.181	-445.295	-0.098***	-0.107***	-254.522**	-206.626*
<i>Science</i>	-0.067***	-0.065***	109.834	119.790	0.071***	0.069***	-138.329***	-136.305***
<i>Electricity production and distribution</i>	0.133***	0.194***	2933.925*	3081.250*	0.241***	0.196***	-50.837***	-28.556***
<i>Water Supplies</i>	0.014	0.036	-6155.320***	-6133.689***	0.019	0.006	-80.867**	-74.173**
<i>Red River Delta</i>	0.019***	0.082***	-202.005	200.354	-0.039***	-0.099***	-161.182***	-23.861

Table 5.3. Estimation results: Impacts of economic institutions on revenues, before-tax earnings, added values and ratio of added values over average capital force (cont.)

Variables	Ln(Revenue)		Before-tax earnings		Ln(Added values)		Ratio of added values over average capital force	
<i>Northern mountainous area</i>	-0.020***	0.080***	-275.910	96.200	-0.015*	-0.142***	-205.964***	-35.310
<i>Central Coast</i>	-0.022***	0.065***	-272.189	12.415	-0.061***	-0.138***	-82.464*	-75.579***
<i>Central Highlands</i>	0.070***	0.169***	-570.098	-166.073	-0.081***	-0.176***	-216.282**	-22.597
<i>Southeast area</i>	0.019***	0.129***	306.914	514.762	0.056***	-0.004	98.144	80.865
<i>Mekong River Delta</i>	-0.041***	-0.029***	-255.266	-69.117	0.101***	0.146***	-197.299***	-110.652***
<i>Entry costs</i>	0.010***		249.520**		0.016***		49.266	
<i>Access to land</i>	0.049***		389.734*		-0.005**		58.723**	
<i>Transparency</i>	-0.051***		225.898*		0.054***		244.859***	
<i>Time costs</i>	0.020***		31.789*		0.008***		-16.441	
<i>Informal costs</i>	0.022***		61.065*		0.062***		-115.038***	
<i>Proactiveness and creativeness</i>	-0.002		-218.319		-0.046***		-26.763	
<i>Labor training</i>	-0.034***		-325.357***		0.049***		-189.452**	
<i>Legal procedures</i>	0.012***		279.234*		0.017***		49.767	
<i>Supporting services</i>	-0.003*		281.696**		0.009***		68.483**	
<i>Composite PCI</i>		0.002***		63.593***		0.007***		12.999***
<i>Intercept</i>	2.336***	2.398***	6161.147*	8691.996**	0.946***	2.277***	-1403.068***	-1284.178***
<i>Number of observation</i>	1001753	1001753	1011473	1011473	437672	437672	437672	437672
<i>Coefficient of determination</i>	0.4982	0.4949	0.32	0.32	0.7399	0.7384	0.17	0.17

Note: *, **, *** means that the coefficient is statistically significant at 10%, 5%, 1% level of significance respectively.

Sources: Calculated by the authors from GSO Enterprise Survey data and VCCI PCI data for the 2006 – 2014 period.

ii) Indicator on land access has positive impacts on revenues, before tax earnings, added value ratio of enterprises. This result is consistent with economic theory. In contrast, it has the opposite effects to added value. Easy access to land and stable land use are critical to the survival and development of an enterprise's business operations. The publicity of information on the planning of sectors, especially the land use planning at different levels and land prices on electronic information portals are also effective, helping investors easily find out. Therefore, this indicator positively impacts firms' performances. However, the problem of stable land use is still limited. For example, many enterprises have land but do not have the certificates of land use rights, which creates hesitations in doing businesses. Also, there are differences in land access and stable use of land among types of enterprises, and among enterprises of different sizes. Therefore, in some cases access to land and stable use of land negatively impacts the successes of enterprises;

iii) Indicator on transparency has positive impacts on the before-tax earnings, added value, the added value ratio of enterprises. This result is consistent with economic theory. In contrast, this indicator has the opposite effect on revenues of firms. Information transparency is one of the most important criteria in the 10 criteria for assessing the provincial competitiveness index because it is the key to the successes of businesses. Transparency also reduces the cost of searching for information and informal cost and creates equal business opportunities for firms, etc. Therefore, enterprises will have the confidence to make investments and improve their performances;

iv) Indicator on time costs has a positive impact on enterprises' performances. This result is consistent with economic theory. Improvements in this area, or said, in other words, improvement of administrative procedures (regulations, qualifications, and attitudes of operational staff), and time for inspection will help enterprises improve their performances;

v) Indicator on informal costs has positive impacts on revenues, before tax earnings, added values of enterprises. This result is consistent with economic theory. In contrast, it has the opposite effect on the added value ratio. This is one of the areas that face big concerns of businesses when operating in the market. This cost makes the capital cost and production cost of enterprises increased. More importantly, informal costs cause transparency which results in the distrust of both domestic and foreign enterprises and investors. Reduction of this cost will have a positive impact on the performances of firms;

vi) Indicator on the proactiveness and creativeness of provincial leadership does not affect the revenues, before tax earnings, added value ratio of enterprises but negatively affects the added values of enterprises. In the implementation of policies from the central level, local leaders have shown their dynamism and creativity in leadership. However, the

local authorities have not done inspection and review of the implementation of the directions from upper levels enough. Therefore, local staffs who directly work with enterprises are still harassed, causing obstacles to firms, and thus bad effects on firms' profits;

vii) Indicator on labor training has negative effects on the majority of the enterprise's performance measurements. This result is not consistent with economic theory. On the contrary, it positively impacts added values of enterprises. The quality of labor training is considered one of the leading factors determining the ability to attract investment, affecting the future development of the economy and enterprises. However, due to the large differences between the skills of workers and the needs of enterprises or the difference in the demand for labor between industries, most of the enterprises have to train more or re-train employees, which make training costs increase. As a result, the improvement of this index does not bring positive effects for most measurements of enterprises' performances;

viii) Regarding the legal procedures, it has positive impacts on revenues, before tax earnings, and added values of enterprises. This result is consistent with economic theory. And it does not affect the added value ratio of the business. According to the theory of economic institutions, the guarantee of enterprises' ownership and reduction of transaction costs will create incentives for enterprises to decide to invest in development. Thus, it also improves their performances;

ix) For business support services, it has positive impacts on before-tax earnings, added values and the added value ratio of enterprises but has the negative impact on revenues of enterprises. This may be because of the fact that these services are a preference of form over substance and enterprises, in order get support, may have to pay more time costs and financial costs.

Finally, the general PCI (composite PCI) index is used to replace the nine indicators. The results show that most regression coefficients are positive and significant at 1%, which means that economic institutions have a positive impact on enterprises' performances.

Next, the study will analyze the impact of economic institutions on enterprises' performances by type of enterprise. Specifically, the study using interactive variables which are the products of the composite PCI index with the enterprise types. The results of the estimation of the effects of economic institutions on the performances of different types of enterprises are shown in Table 5.4. According to the result, the majority of the regression coefficients on the interaction variables are statistically significant at 10%. This implies that as the quality of economic institutions improves, its effect on different types of

the enterprise will be different. In particular, improving the quality of economic institutions will help revenues and the added values of state-owned enterprises increase more strongly than FDI enterprises. Similarly, revenue of Non-State enterprises increases more strongly than that of FDI enterprises but their added value and added value ratio decrease more strongly. On the other hand, there is no difference in the effect of PCI across firm types in pre-tax earnings among types of enterprises.

Table 5. 4. Estimation of the impacts of economic institutions on the performances of different types of enterprise

<i>Variables</i>	Ln(Revenue)	Before-tax Earnings	Ln(Added Value)	Added Value Ratio
<i>LnL</i>	0.808***	1441.279***	0.647***	-222.913***
<i>LnK</i>	0.29***	1147.13***	0.461***	215.641***
<i>Enterprise Age</i>	0.111***	177.372***	0.019***	-4.577
<i>(Enterprise Age)²</i>	-0.002***	0.135	0.001***	0.272
<i>State-owned enterprise</i>	-2.207***	-25158.873	-1.67**	833.048
<i>Private enterprise</i>	-1.229***	-2776.678	3.023***	2423.512**
<i>Composite PCI</i>	0.008***	111.068*	0.054***	57.752***
<i>Composite PCI_State-owned enterprise</i>	0.031***	704.175	0.025***	-15.437
<i>Composite PCI_Non - State enterprise</i>	0.010***	-64.249	-0.061***	-45.723***
<i>Intercept</i>	2.973***	5873.149	-1.401***	-3989.362***
<i>Number of observations</i>	1001753	1011473	437672	437672
<i>Coefficient of determination</i>	0.495	0.32	0.7387	0.17
<i>Control variables for enterprise size</i>	Yes	Yes	Yes	Yes
<i>Control variables for business sector</i>	Yes	Yes	Yes	Yes
<i>Control variables for operation region</i>	Yes	Yes	Yes	Yes

Note: *, **, *** means that the coefficient is statistically significant at 10%, 5%, 1% level of significance respectively.

Sources: Calculated by the authors from GSO Enterprise Survey data and VCCI PCI data for the 2006 – 2014 period.

In Vietnam, state-owned enterprises receive much support and privilege that other enterprises do not have. State-owned enterprise can borrow with no collateral. Even when their businesses are unprofitable, their debts will be frozen, reduced or deferred. State-owned enterprises can also use land without paying land tax. Moreover, they are assigned

to perform State's big projects that definitely generate huge profits. Enterprises in the State sector are treated as they were "red princes". Similarly, FDI enterprises are always welcomed with "red carpet" with a series of land and tax incentives. On the contrary, enterprises in the non-state sector incur many difficulties such as little access to capital, land, and information, small size with outdated machines and equipment; as a result, their ability to compete is low. It is not so hard to understand why, in Vietnam, enterprises in the non-state sector are called the "red infants" (CIEM, 2016). Thus, improving the quality of economic institutions will help the performance of state-owned enterprises increase more strongly than that of FDI enterprises and performance of FDI enterprises increase more strongly than that of Non-State enterprises.

6. Conclusion and Policy Suggestions

Theoretical and empirical studies around the world have confirmed that economic institutions play an important role in the prosperity of an economy in general and in investment decision and business performance of an enterprise in particular. Recognizing the important role of economic institutions, Vietnam has been implementing many economic institutional reforms, namely reforms in the economic laws in the direction of forming a legal system that is consistent with a market economy. These reform efforts have initially achieved a number of achievements, especially the improvement of the business environment that encourages enterprises to invest and improve business performances.

Based on the findings of this study, the paper makes some recommendations to improve the quality of economic institutions by improving the indicators of economic institutions, creating a good business environment and improving the successes of firms. According to empirical research, economic institutional indicators have an important influence on the performances of enterprises. The improvement of some economic institutional indicators has positive impacts; however, some negatively affect enterprises' performances. For indicators that have a positive impact, local authorities should continue to maintain and improve to enhance the quality of these indicators. For indicators that have the opposite effect, local authorities should pay attention to the reflection of representatives of business associations, seriously accept feedback, and review the entire process to ensure good implementation of the directions from upper levels. Specifically:

First, as for land access and land use stability, in order to maintain and improve the quality of this index, local authorities should continuously ensure the accessibility of land and minimize the risks associated with the use of land. Particular attention should be paid to the equality of access to land and the stable use of land among different types of enterprise and enterprise sizes. On the other hand, further improvement of the land use planning system should be continued to improve the efficiency of this special and scarce

resource. Last but not least, improvement of the legal framework for resolving land disputes within the specific limits of ownership provided for by the Constitution and laws is also very important. This will definitely help enterprises to own and use land stably and effectively. As for enterprises, it is necessary to increase the understanding of the legal system related to access and use of land and take initiative in accessing information on land.

Secondly, as for market entry, in order to improve this indicator, local authorities should review and recommend to the higher levels the amendment of the Enterprise Law and the Investment Law and guiding documents in the following directions: i) The regulations on market access are guaranteed, the right to do business of people and investors are not restricted indirectly (for example, the requirement to register business codes under the National Code System should be removed); ii) Procedures for business registration and investment should continue to be shortened and simplified maximally (for example reduction of number of days, reduction of procedures through integration of procedures and coordination between the authorities, and the duplication of business registration and investment registration should be eliminated); iii) lists businesses with conditions must be finalized and controlled to ensure that this category is unique (all industries not included in this category are subject to absolute business freedom of the investors); iv) Strengthen dissemination of information on provinces' efforts in implementing administrative reforms, particularly the procedures for establishment of enterprises, tax registration and seal making. These procedures have been considerably shortened compared with the feeling of enterprises; v) To continue to improve the one-stop-shop mechanism in business establishment, tax registration, seal engraving and minimize the rate of late dossier returns; vi) To review all kinds of permits after the registration of enterprise establishment in the direction of simplifying the procedures and reducing the time in the spirit of the Investment Law and the amended Enterprise Law (effective July 1, 2015); to publicize the procedures and send it to a focal point for the guidance, reception and handling.

Thirdly, in the field of transparency and access to information, it is necessary to review, supplement, amend and promulgate relevant laws with the participation and counteraction of enterprises. Each business should also be proactive in accessing information timely. One issue of concern now is that the classification of documents as "confidential" tends to be abused in some administrative agencies at the district, departmental, and sectorial levels with no consistent regulations. Any documents that the sector or the local authorities do not want to expose will automatically classify as "confidential". This tag becomes the barrier preventing enterprises and people access to information. Therefore, it is necessary to review all relevant documents of the State

regulating the confidentiality and restriction of confidentiality of non-confidential information in order to create a transparent mechanism for enterprises' access to information and constrain the negative things such as "If you want to have information, you have to pay" (VCCI, 2015).

Fourthly, in the field of time costs to implement the regulations of the State, local authorities need to continue improving the administrative procedures and processes in a neat and light manner, minimizing the time to carry out administrative procedures so that firms can quickly start to do their businesses. In order to do so, it is necessary to i) Establish close coordination among sectors and levels in the province in dealing with administrative procedures related to taxation, business registration, land, and environment with the use of one-stop-shop mechanism; ii) Improve the quality of reviewing and evaluating administrative procedures of the province according to regulations; iii) Invest in working facilities and equipment which should be suitable for the bodies that receive and return dossiers, especially for commune-level units; iv) Strengthen coordination among sectors and levels in the process of elaborating, promulgating and implementing mechanisms, policies, regulations, and plans fully and promptly; v) To promptly commend and reward those officials and employees who well fulfill their assigned tasks; to handle those who are irresponsible and violating disciplines. In addition, there should be consistency and coordination between ministries, departments, and sectors in the inspection of enterprises to avoid overlapping inspections.

Fifthly, as for informal costs, this is one of the problems that raise big concerns of enterprises when operating in the market. To reduce unofficial costs, the tasks that need to be done are: i) To shorten time to deal with administrative procedures; ii) To reinforce administrative disciplines, improve the quality of the one-stop-shop agencies and control the administrative procedures of state agencies; iii) Commit to solving problems and suggestions for enterprises. When enterprises face difficulties or problems, they will meet directly with those who are in charge of the problems. This further raises concerns about the increase of unofficial costs. Hence, the specific mechanism of grasping difficulties and devotion in solving problems will contribute to the reduction of unofficial costs; iv) Raise the capacity to reflect, defend and protect the interests of enterprises and well organize business support activities.

Sixthly, the pro-activeness and creativeness of provincial leadership also need to be considered. The annual PCI report gives the impression of the dynamism of the authorities at all levels with the following statements: "When the central regulation is unclear, the provincial People Committee is very active and creative in solving new problems "; or "There are good initiatives at provincial level, but the implementation of departments is problematic." So far, although there have been a lot of reform initiatives, the effectiveness

of implementing them at lower levels, in particular departments and agencies, does not reflect the spirit of these initiatives. Therefore, in order to promote the positive influence of creative ideas from local leaders to enterprises, local authorities should pay attention to the feedbacks from representatives of business associations by seriously considering the feedbacks and reviewing the whole process to ensure proper implementation of directions from the higher level. It is essential to set up a hotline and publicize email addresses of leaders at all levels on the provincial web portal.

Seventhly, as for business support services, local authorities need to further strengthen trade promotion, improve the export efficiency of enterprises. At the same time, trade fairs need to be organized to promote and support businesses to consumer products. Local governments should also support enterprises in the province to participate in trade fairs in and outside the country to expand investment cooperation and search for new markets. Another task is to provide information and forecast on goods' supplies, demands, and market prices to help firms develop proper production plans. Particularly, small and medium-sized enterprises now face many difficulties in accessing land, which makes it difficult for them to access credit capital due to lack of collaterals. Thus, credit institutions also need to study and expand additional forms of mortgage lending for this type of enterprises. On the other hand, enterprises should actively seek out support services suitable to their needs and objectives and actively contribute ideas to improve business support services.

Eighthly, as for labor training, the quality of labor training is considered as one of the leading factors determining the ability to attract investments and affecting the future development of the economy. However, empirical research has not reflected this potential. Therefore, localities still need to make more efforts to improve the quality of labor resources for enterprises. Moreover, job exchange markets should be well organized to bridge the gap between enterprises and workers. In addition, enterprises also need to actively order local training centers to train a workforce in accordance with the requirements of their businesses.

Ninthly, as for legal institutions, the results show that the local legal environment has improved positively. In order to maintain and promote the achievement, local authorities need to ensure a more secure legal environment to protect enterprises' legal rights and at the same time strengthen the trust of enterprises to the local judicial system. In addition, measures should be taken to improve the capacity of institutions resolving civil and economic disputes. When disputes arise, enterprises should absolutely comply with laws using the court system.

Finally, according to the empirical analysis, institutional reform will bring the greatest benefits to the SOE sector, followed by those to the FDI sector and the non-state sector will receive the least advantage. Meanwhile, the non-state sector accounted for a large share of the economy (about 96%). As a result, the institutional reform process needs to focus on supporting and facilitating the non-state sector.

In the final analysis, in order to improve the quality of economic institutions, the improvement of the economic institutional indicators must be implemented synthetically in three aspects namely "rules of play", "players" and "enforcement mechanisms". In Vietnam, "enforcement mechanisms" needs special attention.

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APPENDICES

Appendix 1. GSO Enterprises and Co-operatives Survey

1. Name of the enterprise:

(By capital letters, not in brief)

Transaction name *(if any)*:

The tax code of the enterprise *(ten-digit number)*:

2. Address of the enterprise:

Province/Central City:

District:

Commune/ward/town:

Hamlet (house number, road, street):

Telephone number:

Fax number:

Email:

3. Operation Status:

1 Active

2 Stop for investment, technological innovation; stop due to seasonal factor

3 Suspended waiting for dissolution

4 Other (Please specify).....

4. Is the enterprise located in an industrial zone, a manufacturing zone, an economic zone, or a high-tech zone?

1. Yes, 1.1. Industrial zone

1.2. Manufacturing zone

1.3. Economic zone

1.4. High-tech zone

2. No

5. Type of enterprise

01 Central State Ltd. Co

02 Local State Ltd. Co

03 Joint-stock Co. having state capital > 50%

04 State-owned Enterprise

4.1. Central State

4.2. Local State

05 Collective/Co-operative

5.1. Co-operative

5.2. Collective 5.3. People's Credit Fund

06 Private enterprise

07 Collective name

08 Private Ltd. Co

09 Joint-stock Co. not having state capital

10 Joint-stock Co. having state capital \leq 50%

11 100% foreign capital

12 Joint venture between State & foreign

13 Joint venture between others & foreign

6. Does the enterprise have im-export in the year?

1. Yes

1.1 Direct export:

Direct import:

1.2 Indirect export:

Indirect import:

2. No

7. Does the enterprise have revenues and expenses from/for foreign services in 20_?

(The total amount of receivables/payables for foreign services and transaction-related expenses not including the value of goods)

1. Yes,

1.1. Revenue:

1.2. Expense:

2. No

8. Economic activities in the year

8.1. Main business activity:

Specify activity that creates most production value. If the production value cannot be determined, specify activity that generates the largest revenue for the enterprise (or use the largest amount of labor)

8.2 Other activities:

- Activity:.....

- Activity:.....

- Activity:.....

- Activity:.....

9. Labor in 20_:

9.1. Total labor at 01/01/20_: laborers

Of which: Female laborers

9.2. Total labor at 31/12/20_: laborers

Of which: Female laborers

10. Assets and Liabilities in 20_

Unit: million dongs

	Code	At the beginning of year	At the end of year
10.1. Total assets (01=02+08)	01		
A. Short-term assets	02		
<i>Of which:</i>			
- Short term receivable	03		
- Inventories:	04		
<i>Of inventories:</i>			
+ Works in Progress	05		
+ Finished products	06		
+ Consigned goods for sale	07		
B. Long-term assets	08		
<i>In which:</i>			
I. Long-term receivables	09		
II. Fixed assets			
- Original value of fixed assets	10		
- Accumulated depreciation	11		
- Costs of unfinished construction works	12		
Fixed assets by type			
I. Buildings			
- Original value	13		

- Accumulated depreciation	14		
- In-year Depreciation	15		
2. Machines and equipment			
- Original value	16		
- Accumulated depreciation	17		
- In-year Depreciation	18		
3. Means of transportation and transmission			
- Original value	19		
- Accumulated depreciation	20		
- In-year Depreciation	21		
4. Other fixed assets			
- Original value	22		
- Accumulated depreciation	23		
- In-year Depreciation	24		
10.2.Total capital sources (25=26+27)	25		
A. Liabilities	26		
B. Equity	27		

11. Business results in 20_

Unit: million dongs

	Code	Year 20_
11.1. Turnover of goods, services activities	01	
Of which: Production and business subsidies	02	
11.2. Reductions	03	
Of which:		
Tax (excise tax, export duties or fees, VAT paid directly)	04	
11.3. Net turnover of goods and services (05=01 - 03)	05	
Of which:		
- Net retail revenue (for manufacturing enterprises)	06	
- Net revenue from industrial services	07	
* Net turnover by economic activities:		
<i>(Report VSIC 2007 - degree 5)</i>		
Main activity:		
Other activities:		
Activity		

Activity		
Activity		
11.4. Costs of goods sold	08	
11.5. Gross profit from sales and services (09=05 - 08)	09	
11.6. Turnover from financial activities	10	
11.7. Financial costs	11	
Of which: Domestic interest paid	12	
Foreign interest paid	13	
11.8. Profit from financial activities (14=10 - 11)	14	
11.9. Business management cost (net cost plus additional items on credit side of Account 642)	15	
11.10. Sales cost (net cost plus additional items on credit side of Account 641)	16	
Of which: Transportation costs outsource	17	
11.11. Net profit from business activity (18=09+14 - 15 - 16)	18	
11. 12. Other income	19	
11.13. Another cost	20	
11.14. Other profit (21=19 - 20)	21	
11.15. Total pre-tax accounting profit (22=18+21)	22	
11.16. Income tax cost (including both current and suspended enterprise income tax)	23	
Of which: Current enterprise income tax	24	
11.17. After-tax profit (25=22 - 23)	25	

12. Performance of obligations to the State in 20_

Unit: million dong

	Code	Paid in the year
Total of taxes and other contributions to the State	01	
VAT tax on domestic goods		
Excise tax		

12. Implementation of legal capital share

(For FDI enterprises)

Unit: 1000USD

	Code	Capital by license up to 31/12/2014	Legal capital share in 20_	Cumulative capital up to 31/12/20_
Total (01=02+06)	01			
Vietnam Partner (02=03+04+05)	02			
<i>Of which:</i>				
State-owned enterprises	03			
Non state-owned enterprises	04			
Other partners	05			
Foreign Partner	06			
<i>Of which:</i>	<i>Code</i>			
Country.....				
Country.....				
Country.....				
Country.....				

Appendix 2. Detailed Description of Sub-Indices and Component Indicators

1. Entry Costs

- % of firms waiting over 01 months to start a business
- % of firms waiting over 03 months to start a business
- Effective land wait days (determined by government efforts, not supply/demand conditions)
- Length of business registration in days
- Length of business re-registration in days
- Number of licenses and permits required to operate
- % of firms having difficulty to obtain all licenses/permits to start a business

2. Access to land security of business premises

Land Access

- % of firms with LURCs or in the process of receiving them
- If land is easier to obtain, business would expand
- % of firms without LURCs that rent land from the state sector
- firm rating of provincial land conversion policies
- % of total land with LURCs*

Security of land tenure

- Risk of expropriation
- Perception of fair compensation values
- Risk of change in lease contract
- Perception of fair process for disputing changes in lease contracts
- Duration of tenure

3. Transparency

- Transparency #
 - ❖ Transparency of planning documents
 - ❖ Transparency of decisions and decrees
- Equity and consistency of application
 - ❖ Importance of “relationship” to get access to these provincial documents
 - ❖ Importance of family and friends when dealing with government officials
 - ❖ Negotiations with tax officials are an essential part of doing business

- Predictability and consistency
 - ❖ Predictability of local implementation of laws
 - ❖ Provinces discuss regulatory changes with firms
 - ❖ Quality of services provided by provincial public agencies on business consulting on regulatory information
- Openness: Assessment of provincial webpage. Note that this is worth 40% of the sub-index.

4. Time requirements for bureaucratic procedures and inspections

- Days reduced dealing with bureaucracy since the Enterprise Law
- % of firms spending over 10% of time dealing with bureaucracy
- Median number of inspections and median tax hours
- Decrease in inspections since the Enterprise Law

5. Informal Charges

- Informal charges are a major obstacle to doing business
- Firms in the same line of business make extra payments
- % of firms paying over 10% of revenue in informal charges
- Officials use compliance with local regulations to extract rents
- Informal charges delivered expected results

6. SOE Bias (Competition Environment)

- Perception of bias toward SOEs
 - ❖ Provincial government is biased toward SOEs
 - ❖ Provincial government is biased toward equitized companies
 - ❖ Provincial attitude toward the private sector
 - ❖ Attitude to the private sector is improving
 - ❖ Monetary contributions influence attitude toward the private sector
 - ❖ Firm rating of provincial equitization effort
- Hard indicators of bias toward SOEs
 - ❖ The ratio of local SOE share of liabilities to their share of revenue*
 - ❖ % change in number of SOEs (2000-2004)*
 - ❖ Average proportion of bank loans to state sector*

7. Proactiveness and creativeness of provincial leadership

- Province is good at working within central laws
- Province is creative and clever in solving problems confronting business community
- Good initiatives at provincial level but center frustrates

- No initiatives at provincial level

8. Business support services

- Perception of quality of services provided by provincial public agencies
 - ❖ Market information and trade promotion
 - ❖ Technology and technology-related services
 - ❖ Match-making for business partners
 - ❖ Export promotion and trade fairs
 - ❖ Industrial Zones
- Hard indicators of PSD activities
 - ❖ Trade fairs held by province (2004-2005)*

9. Labor Training and Development

- Education services provided by provincial public agencies
- Labor vocational training services provided by provincial public agencies
- Labor exchange services provided by provincial public agencies
- Number of vocational schools adjusted for provincial differences in population*

10. Legal procedures for dispute resolution

- Legal system provided mechanism for firms to appeal officials' corrupt behavior
- Firm confidence in legal institution
- Use of legal institutions as primary mode of dispute resolution
- Number of cases (where claimant was not an SOE or an FIE) per 100 active firms*

Note The first three soft indicators worth 60% of the sub-index and the last one hard indicator worth 40%.

Notes:

* denotes component uses only hard data

derived from factor analysis

In all sub-indices, each primary component is given equal weight unless otherwise noted

Source: The PCI 2006 Report

Appendix 3. Measure the added value

Value Added (VA) = Income of employees + Depreciation of fixed assets + Production tax payable + Income of the business.

In which,

Income of the business. = Net profit + Interest expenses - Income tax expense.

Production tax payable = Total tax and fees payable to the state - Value added tax for domestic goods - Excise tax

Source: GSO

Appendix 4. Lagrange test results (xttest0) choose between the POLS model and RE

	Ln(Revenue)	Before-tax earnings	Ln(Added values)	Ratio of added values over average capital force
Model use 9 component norms	Estimated results: Var sd = sqrt(Var) lnrevenue 5.441579 2.332719 .7629329 .8734603 2.099842 1.449083 Test: Var(u) = 0 chibar2(01) = 79902.96 Prob > chibar2 = 0.0000	Estimated results: Var sd = sqrt(Var) Beforetaxear 2.01e+10 141753.2 4.11e+09 64097.69 1.37e+10 117214.9 Test: Var(u) = 0 chibar2(01) = 5.4e+05 Prob > chibar2 = 0.0000	Estimated results: Var sd = sqrt(Var) lnva 2.41e+10 155109.7 1.38e+10 117286.3 5.63e+09 75038.91 Test: Var(u) = 0 chibar2(01) = 1.7e+05 Prob > chibar2 = 0.0000	Estimated results: Var sd = sqrt(Var) Ratiova 9.73e+07 9866.302 8295944 2880.268 9.59e+07 9790.743 Test: Var(u) = 0 chibar2(01) = 6.46 Prob > chibar2 = 0.0055
Model use composite PCI	Estimated results: Var sd = sqrt(Var) lnRevenue 5.441579 2.332719 .7698784 .8774272 2.11641 1.454789 Test: Var(u) = 0 chibar2(01) = 81270.17 Prob > chibar2 = 0.0000	Estimated results: Var sd = sqrt(Var) Beforetaxear 2.01e+10 141753.2 4.11e+09 64099.2 1.37e+10 117214.4 Test: Var(u) = 0 chibar2(01) = 5.4e+05 Prob > chibar2 = 0.0000	Estimated results: Var sd = sqrt(Var) lnva 2.41e+10 155109.7 1.38e+10 117280.4 5.63e+09 75055.33 Test: Var(u) = 0 chibar2(01) = 1.7e+05 Prob > chibar2 = 0.0000	Estimated results: Var sd = sqrt(Var) Ratiova 6.626592 2.574217 .8709555 .93325 2.376909 1.541723 Test: Var(u) = 0 chibar2(01) = 516.47 Prob > chibar2 = 0.0000
Model use Interactions between composite PCI and Business Type	Estimated results: Var sd = sqrt(Var) lnrevenue 5.441579 2.332719 .7697848 .8773738 2.116184 1.454711 Test: Var(u) = 0 chibar2(01) = 81166.53 Prob > chibar2 = 0.0000 Prob > chibar2 = 0.0000	Estimated results: Var sd = sqrt(Var) Beforetaxear 2.01e+10 141753.2 4.11e+09 64098.55 1.37e+10 117214.8 Test: Var(u) = 0 chibar2(01) = 5.4e+05 Prob > chibar2 = 0.0000 Prob > chibar2 = 0.0000	Estimated results: Var sd = sqrt(Var) lnva 2.41e+10 155109.7 1.38e+10 117276.3 5.62e+09 74973.12 Test: Var(u) = 0 chibar2(01) = 1.7e+05 Prob > chibar2 = 0.0000 Prob > chibar2 = 0.0000	Estimated results: Var sd = sqrt(Var) ratiova 9.73e+07 9866.302 8355519 2890.591 9.58e+07 9788.029 Test: Var(u) = 0 chibar2(01) = 6.48 Prob > chibar2 = 0.0055 Prob > chibar2 = 0.0055

Sources: Calculated by the authors from GSO Enterprise Survey data and VCCI PCI data for the 2006 – 2014 period

Appendix 5: Estimation of the model FE

Variable	Ln(Revenue)		Before-tax earnings		Ln(Added values)		Ratio of added values over average capital force	
<i>LnL</i>	0.497***	0.471***	812.935***	708.893**	0.542***	0.548***	-275.700***	-266.203***
<i>LnK</i>	0.099***	0.133***	-243.938	-149.907	0.416***	0.402***	120.646***	107.499***
<i>Enterprise Age</i>	-0.004**	0.041***	46.449	256.730**	-0.004	-0.029***	17.731	2.190
<i>(Enterprise Age)²</i>	0.001	-0.001***	0.466	-3.573	0.001***	0.001***	-0.364	-0.028
<i>State-owned Enterprise</i>	0.018	-0.137**	-15963.805***	-16519.269***	-0.232	-0.202	-268.736	-222.291
<i>Private enterprise</i>	0.024	-0.021	-5496.736*	-5699.929*	-0.163*	-0.165*	-105.959	-90.190
<i>Super small enterprise</i>	0.038	0.030	1471.212	1414.100	0.173***	0.144**	-92.593	-120.782
<i>Small-sized enterprise</i>	0.070***	0.051**	994.186	945.152	0.164***	0.155***	-88.279	-101.672
<i>Medium-sized enterprise</i>	0.030	0.024	3927.218**	3907.690**	0.075	0.067	-11.602	-27.837
<i>Agriculture, Forestry and Fishery</i>	0.030	0.008	-19568.168***	-19663.219***	-0.340	-0.348	-15.663	-10.787
<i>Mining</i>	-0.055	-0.077	-426.030	-535.743	0.108	0.086	231.138	261.476
<i>Industry</i>	0.117***	0.094***	-72.478	-181.192	0.088	0.101	58.046	78.562
<i>Construction</i>	0.142***	0.124***	264.316	225.183	0.032	0.033	48.884	47.787
<i>Retail</i>	0.237***	0.215***	842.569	764.576	-0.079	-0.075	-0.311	2.600
<i>Transportation</i>	0.029	0.020	265.679	242.460	-0.100	-0.095	-59.885	-52.775
<i>Service</i>	-0.049	-0.038	237.204	289.944	-0.344***	-0.359***	-12.329	-31.360
<i>Information</i>	0.059	0.050	785.876	714.730	-0.278***	-0.281***	101.861	101.877
<i>Finance</i>	-0.313***	-0.408***	-62.717	-353.379	-0.318**	-0.255*	32.355	104.001
<i>Real Estate</i>	-0.215***	-0.236***	1504.638	1483.018	-0.066	-0.076	132.789	118.448
<i>Science</i>	-0.002	-0.004	390.998	397.598	0.101	0.095	72.288	66.252

Appendix 5: Estimation of the model FE (cont.)

Variable	Ln(Revenue)		Before-tax earnings		Ln(Added values)		Ratio of added values over average capital force	
<i>Electricity production and distribution</i>	0.093	0.056	-6345.357	-6361.261	0.935*	0.949*	-22.906	-0.149
<i>Water Supplies</i>	0.024	0.012	-2351.343	-2429.155	0.351**	0.364**	88.127	109.926
<i>Red River Delta</i>	-0.059***	-0.087***	-544.898	-53.990	1.103	-0.309	1072.848	439.615
<i>Northern mountainous area</i>	-0.142***	-0.146***	-189.382	197.705	0.658	-0.100	117.759	45.576
<i>Central Coast</i>	-0.064***	-0.112***	-138.597	-75.749	0.103	-0.191	1058.758	234.897
<i>Central Highlands</i>	-0.040**	-0.140***	410.147	19.938				
<i>Southeast area</i>	-0.188***	-0.139***	-973.371	-371.149	-0.062	-0.238	1663.181	74.781
<i>Mekong River Delta</i>	-0.095***	-0.069***	-35.646	78.849	0.143	0.157***	-305.140	-80.222**
<i>Entry costs</i>	-0.022***		28.622		0.160*		34.575	
<i>Access to land</i>	-0.036***		368.645*		0.114		1071.342*	
<i>Transparency</i>	-0.036***		122.453		-0.114		2624.584**	
<i>Time costs</i>	0.051***		-5.821		0.017		-143.684	
<i>Informal costs</i>	0.007**		79.517		0.260**		-370.773	
<i>Proactiveness and creativeness</i>	-0.025***		-481.222***		0.029		-570.672	
<i>Labor training</i>	0.043***		-262.136		-0.468**		-672.917	
<i>Legal procedures</i>	0.013***		280.060*		-0.237		-172.878	
<i>Supporting services</i>	0.022***		381.744*		0.438***		1060.440*	
<i>Composite PCI</i>		0.005***		35.025		-0.016***		57.954***
<i>Intercept</i>	5.444***	4.901***	2101.518	2130.374	-0.069	3.098***	-18329.655***	-3434.583***
<i>Number of observation</i>	1001753	1001753	1011473	1011473	437672	437672	437672	437672
<i>Coefficient of determination</i>	0.089	0.080	0.000	0.000	0.260	0.256	0.010	0.002

Note: *, **, *** means that the coefficient is statistically significant at 10%, 5%, 1% level of significance respectively.

Sources: Calculated by the authors from GSO Enterprise Survey data and VCCI PCI data for the 2006 – 2014 period.

Appendix 5: Estimation of the model FE (cont.)

Variable	Ln(Revenue)	Before-tax earnings	Ln(Added values)	Ratio of added values over average capital force
<i>LnL</i>	0.471***	712.664**	0.548***	-266.600***
<i>LnK</i>	0.132***	-151.423	0.401***	107.899***
<i>Enterprise Age</i>	0.040***	265.128**	-0.029***	2.171
<i>(Enterprise Age)²</i>	-0.001***	-3.845	0.001***	-0.028
<i>State-owned enterprise</i>	-1.505***	-57661.093***	-2.073	-665.954
<i>Private enterprise</i>	-0.897***	-7475.726	-0.302	-1185.850
<i>Composite PCI</i>	-0.009***	-9.614	-0.018*	42.311
<i>Composite PCI_State-owned enterprise</i>	0.023***	729.148***	0.030	7.141
<i>Composite PCI_Non - State enterprise</i>	0.015***	28.927	0.002	17.751
<i>Intercept</i>	5.752***	4798.371	3.243***	-2464.857
<i>Number of observations</i>	1001753	1011473	437672	437672
<i>Coefficient of determination</i>	0.080	0.000	0.256	0.002
<i>Control variables for enterprise size</i>	yes	yes	yes	yes
<i>Control variables for business sector</i>	yes	yes	yes	yes
<i>Control variables for operation region</i>	yes	yes	yes	yes

Note: *,**,*** means that the coefficient is statistically significant at 10%, 5%, 1% level of significance respectively.

Sources: Calculated by the authors from GSO Enterprise Survey data and VCCI PCI data for the 2006 – 2014 period

Appendix 6. Hausman test results choose between the RE model and FE

	Ln(Revenue)	Before-tax earnings	Ln(Added values)	Ratio of added values over average capital force
<i>Model use 9 component norms</i>	chi2(36) = 44.60 Prob>chi2 = 0.1539	chi2(36) = 47.07 Prob>chi2 = 0.1024	chi2(35) = 15.51 Prob>chi2 = 0.9982	chi2(35) = 14.78 Prob>chi2 = 0.9989
<i>Model use composite PCI</i>	chi2(29) = 41.27 Prob>chi2 = 0.0652	chi2(29) = 0.00 Prob>chi2 = 1	chi2(27) = 18.69 Prob>chi2 = 0.8812	chi2(27) = 12.02 Prob>chi2 = 0.9942
<i>Model use Interactions between composite PCI and Business Type</i>	chi2(30) = 24.13 Prob>chi2 = 0.7661	chi2(30) = 25.71 Prob>chi2 = 0.6898	chi2(29) = 43.10 Prob>chi2 = 0.0823	chi2(29) = 22.90 Prob>chi2 = 7811

Sources: Calculated by the authors from GSO Enterprise Survey data and VCCI PCI data for the 2006 – 2014 period