

# **Any links between economic performance and institutional quality? Evidence from Vietnam provinces and cities**

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## **ABSTRACT**

This study aims at finding possible links between the economic performance and institutional quality of provinces and cities in Vietnam by using regression analysis. The economic performance is measured by Net revenue of all firms in each province or city. The institutional quality is representative with Provincial Competitiveness Index (PCI) of respective province or city. For regression models, while the dependent variable is economic performance of provinces, PCI is used as the key independent variable. Labor and capital are main production factors of the economic performance, so they are also included in the regression models. The data of the years 2012 and 2013 collected from sixty-three provinces and cities in Vietnam is used in the study. The study shows a link between the economic performance and the institutional quality of provinces and cities in Vietnam.

**Key words:** *economic performance, institutional quality, provincial competitiveness index (PCI), regression, Vietnam.*

## Introduction

Economic performance is an important standard to show the performance of an entity. In this sense, the entity can be a firm, a province or even a country. In a certain entity, economic performance is affected by inside factors such as labor force and capital. In addition, outside factors like political institutions, business environment, and legal system also influence on economic performance. Economic performance can be measured by a combination of economic growth of single indicators. At micro-economic level, economic performance can be measured by a single indicator like outputs, and profits. At macro-economic level, it can be measured by total production outputs of all industries. In reality, economic performance indicator can be represented by Gross Domestic Products (GDP) at provincial and national level. Many researches about economic performance by using GDP have been published like Tolo (2011) for the Philippines; Baro (1999) for Chile; Bobinaite, Juozapaviciene and Konstantinaviciute (2011) for Lithuania; Canh, Phong and Son (2011) for Vietnam. However, there have been critics of using GDP as an indicator of economic performance. Stiglits, Sen and Fitoussi (2008) called for the end of the dominant use of GDP in assessing economic performance, well-being, and quality of life. Le and Nguyen (2014) did not use GDP, but used Net revenue of all firms in province in a research about economic performance of provinces in Vietnam.

In the context of institution, scholars have been argued about its concept and definition within economics and across the social science (Nelson and Sampat, 2001). Jack (1992) defined “institution is a set of rules that structure social interactions in particular ways”. While Hodgson (2006) had the same definition when he defined institutions as durable systems of established and embedded social rules that structure social interactions. According to North (1990), an institution consists both informal constraints (sanctions, taboos, custom, traditions, and codes of conduct) and formal rules (constitutions, laws, property rights). However, Nelson and Sampat (2001) looked institutions as economists. Their definition emphasized the importance of linkage between the institutions and theory of production, theory of growth and economic performance. In general, institution can be viewed at local, provincial, and national level. Therefore, under economic perspectives, many scholars have been using Provincial Competitiveness Index (PCI) as a proxy to evaluate institutional quality at provincial level in Vietnam. PCI is used as a measure of leadership and business environment. Especially, originated from the idea of US Agency for International Development (USAID) and Vietnam Chamber of Commerce and Industry (VCCI) since 2005, it has been used as an index of governance quality evaluating the governance and leadership of provinces and cities in Vietnam.

The overall PCI comprises ten sub-indices, reflecting economic governance areas that affect private sector development. A province that is considered to perform well on the PCI is the one that satisfies (i) low entry costs for business start-up; (ii) easy access to land and

land use stability; (iii) transparent business environment and business information; (iv) low informal cost; (v) quick inspection, testing and implementation of regulations and administrative procedures; (vi) fair competitive environment; (vii) proactive and creative provincial leadership in solving business problems to support firms; (viii) high quality services to support firms development; (ix) good labor training policies; and (x) fair and effective procedures for solving business disputes. With above-mentioned multiple aspects of sub-indices included, PCI can be considered as a representation for institutional quality of provinces and cities. It is a mirror for provincial leaders to look at themselves to adjust their behaviors to create a business-friendly regulatory environment for private sector development. Furthermore, PCI help investors and enterprises select the location to settle their business and production.

Regarding the relationship between economic performance and institutional quality at national level, there have been many studies focusing on a perspective country. Dang (2013); Tran, Grafton and Kompas (2009); Malesky and Taussig (2009); Hartley (2014); Phan (2013); McCulloch, Malesky and Nguyen (2013); Thai and Le (2012) used Gross Domestic Products (GDP), GDP per capita, foreign direct investment as proxy of economic performance, and PCI as proxy of institutional quality to study about Vietnam. Similarly, Li, Lu and Wang (2016); Dong and Zhang (2016); Yildirim and Gokalp (2016) studied this relationship in China and other developing countries.

To sum up, economic performance and institutional quality are two important forces to appraise the effective performance of an economic entity. Any possible links between them have still been studied. In this study, we try to use Net revenue of all firms in a province as a new representation of economic performance because there are not enough data of GDP for all provinces and cities in Vietnam. In reality, Net revenue of all firms in a province is a key part to reflect GDP of a province or a city. Besides, we use PCI as a representation for institutional quality. We come to the research questions:

Is there a relationship between economic performance and institution quality in provinces and cities in Vietnam?

If Yes, does institution have positive or negative effect on economic performance?

## Methodology and data

### Methodology

Regression analysis will be used to fulfill the objective of the study. For regression analysis, the Cobb-Douglas production function is applied. Generally, the Cobb-Douglas function is:

$$Y = AX_i^{a_i}$$

Where,

Y is output of the production.

A is total factor productivity.

$X_i$ : Production factor  $i$ .

$a_i$ : Output elasticity coefficient of production factor  $i$ , respectively.

In this study, all variables used are presented in the Table 1.

Table 1.

Variable definitions and measurements

Variables	Definition and measurement
Provincial and city performance	Net revenue of all firms in the province, 2013
K	Average capital of firms, 2013
L	Total labor of firms, 2013
PCI 2012	Provincial Competitiveness Index 2012
PCI 2013	Provincial Competitiveness Index 2013

*Source: composed by authors*

Then the Cobb-Douglas function of the study is  $Y = AK^\alpha L^\beta PCI^\gamma$

In reality, the Cobb-Douglas function is usually used the logarithm form since this version has some advantages compared to the original version. Thus logarithm version of the Cobb-Douglas function used for this study is.

$$\ln Y = \ln A + \alpha \ln K + \beta \ln L + \gamma \ln PCI$$

And the econometric regression models can be expressed as follow:

Model 1:

$$\ln Y = \ln A + \alpha_1 \ln K + \beta_1 \ln L + \gamma_1 \ln PCI_{2012} + \varepsilon$$

Model 2

$$\ln Y = \ln A + \alpha_2 \ln K + \beta_2 \ln L + \gamma_2 \ln PCI_{2013} + \theta$$

### ***Data***

The data in this study was collected from two resources namely (i) Statistical Year Books of Vietnam (SYBV), 2014, and (ii) Vietnam Chamber of Commerce and Industry (VCCI) and US Agency for International Development (USAID), 2013. There are sixty three observations for sixty three provinces in Vietnam.

Data of all variables are clarified in details as follows:

Y or Net revenue of all firms is the total revenue of all firms of each province or city after deducting taxes (such as excise tax, export tax, value added tax) and subtracting the deductions (such as discounts, sales rebates, sales returns). Net revenue of all firms does not include revenue from financial activities (excluding equipment and machinery rental controlled by human) and extraordinary revenues (such as assets liquidation, fines for breach of contracts, bad debt collection). This data is measured in Billion Vietnam Dong, and was collected for the year 2013 from Statistical Year Books of Vietnam.

K or average capital of firms is calculated by the average capital of all firms at the beginning and the end of the year 2013. It is also measured in Billion Vietnam Dong, and was collected for the year 2013 from Statistical Year Books of Vietnam.

L or total labor force employed, used and paid by all firms till the end of year 2013. This indicator does not include these labors: (i) those who are in training time sent to firms from training centers/schools and the firms do not pay them; (ii) the employees of joint-ventures sent to firms and the firms do not pay them; (iii) those who receive firm materials to do at their houses (family labors). This variable is measured in number of labor and was collected for the year 2013 from Statistical Year Books of Vietnam.

PCI is the Provincial Competitiveness Index of the province or city where firms register for business operation. PCI consists of ten component indicators reflecting the areas of economic governance which has impact on the development of the private sector. This variable is an index and is measured in point; the higher point of a province is the best of its economic governance of development of private sector. This data was collected for the year 2012 and 2013 from Vietnam Chamber of Commerce and Industry (VCCI) and US Agency for International Development (USAID), 2013.

Table 2.

Descriptive statistics for variables in real data

<b>Variables</b>	<b>Y</b>	<b>K</b>	<b>L</b>	<b>PCI2012</b>	<b>PCI2013</b>
Mean	184,178	233,608.1	176,957.1	57.0	57.9
Median	61920	53585	71036	56.5	57.8
Maximum	2,905,917	4,742,943	2,400,510	63.8	66.5
Minimum	4,252	7,330	8,272	45.1	48.9
Std. Dev.	474,250.2	805,623.6	396,608.8	4.1	3.6
Skewness	4.7	5.2	4.6	-0.3	0.2
Kurtosis	25.2	28.4	23.8	2.8	2.9
Jarque-Bera	1,528.7	1,981.7	1,352.0	1.2	0.3
Probability	0	0	0	0.6	0.8
Observations	63	63	63	63	63

*Source: Y, K, L data is from SYBV, 2014 and PCI data is from VCCI and USAID, 2013*

Table 2 shows the significant difference of the maximum and minimum of the variables. For Net revenue of all firms in each province, while the maximum value is 2,905,917 billion VND, the minimum stands at 4,252 billion VND. This shows a remarkable gap between the maximum and minimum values and demonstrates a very big difference among provinces and cities regarding economic performance. The capital and labor show the same pattern. There is a diversity in size and business activities of provinces and cities. Ho Chi Minh City, Dong Nai and Binh Duong are the biggest entities with dynamic economic environment, while some mountainous and remote provinces as Son La or Lao Cai are small provinces with just few business activities. This shows high variation among the variables of Net revenue of all firms, and capital and labor.

On the topic of institutional quality, statistics of PCI 2012 and PCI 2013 are calculated. The mean of PCI variable in 2013 was higher than mean of PCI in 2012. As above mentioned, the higher value of the competitiveness index is equivalent to the improvement of business environment. The mean PCI increases almost 1 point from 2012 to 2013 showing the effort of all provinces and cities to create a better image of leadership and governance to attract investment and business. It is clearly a brighter picture of the year 2013 as compared to the year 2012 when we consider the minimum and maximum value of PCI variable. The Table 2 shows that both maximum and minimum PCI increased between 2012 and 2013, from 63.8 to 66.5 and 45.1 to 48.9, respectively.

Table 3.

Descriptive statistics for variables in logarithm form

<b>Variables</b>	<b>lnY</b>	<b>lnK</b>	<b>lnL</b>	<b>lnPCI2012</b>	<b>lnPCI2013</b>
Mean	11.03230	11.01316	11.26905	4.040707	4.056740
Median	11.03360	10.88902	11.17094	4.034241	4.057162
Maximum	14.88226	15.37217	14.69119	4.155596	4.196450
Minimum	8.355145	8.899731	9.020632	3.809326	3.891412
Std. Dev.	1.301378	1.269750	1.092952	0.074006	0.062026
Skewness	0.632272	1.250809	0.869906	-0.515590	-0.008668
Kurtosis	3.936452	5.475850	4.335978	3.201451	2.871427
Jarque-Bera	6.499532	32.51830	12.63093	2.897773	0.044183
Probability	0.038783	0.000000	0.001808	0.234832	0.978151
Observations	63	63	63	63	63

*Source: Composed and calculated by authors.*

Table 3 shows another way of looking all variables of Table 2 when they are transformed and calculated in logarithm form.

Table 4.

Correlation of variables in real form

	<b>Y</b>	<b>K</b>	<b>L</b>	<b>PCI12</b>	<b>PCI13</b>
Y	1.00				
K	0.98	1.00			
L	0.98	0.97	1.00		
PCI12	0.13	0.05	0.11	1.00	
PCI13	0.15	0.10	0.14	0.49	1.00

*Source: Calculated by authors*

Table 4 shows the correlation matrix of all variables. Y are the dependent variable of the regression models, and other variables are explanatory variables. Capital and Labor show a high correlation with Net revenue of all firms, while institutional quality variables of PCI 2012 and PCI 2013 have a low correlation with Net revenue of all firms.

Table 5.

Correlation of variables in logarithm form

	<b>lnY</b>	<b>lnK</b>	<b>lnL</b>	<b>lnPCI12</b>	<b>lnPCI13</b>
lnY	1.00				
lnK	0.93	1.00			
lnL	0.92	0.92	1.00		
lnPCI12	0.41	0.27	0.28	1.00	
lnPCI13	0.44	0.33	0.38	0.48	1.00

*Source: Calculated by authors*

Because the regression models are run in logarithm form, variables are hence calculated and presented in logarithm form in Table 5. Y is the dependent variable of the regression model, and the remaining variables are independent variables. Therefore, we need to pay attention on the correlation coefficients. The results of Table 5 show high correlation of capital and labor with economic performance variable. These correlation coefficients are 0.93 and 0.92, respectively. While variables of PCI 2012 and PCI 2013 have a medium correlation with economic performance variable when the correlation coefficients are 0.41 and 0.44, respectively.

### Estimated results and implications

Table 6.

Regression analysis of variables with lnY.

Variables	Model 1	Model 2
Intercept	-11.59008*	-9.876783*
lnK	0.604637*	0.625117*
lnL	0.390284*	0.370119*
lnPCI12	2.862193*	
lnPCI13		2.428966*
R-squared	0.920466	0.907487
Adjusted R-squared	0.916422	0.902783
Akaike info criterion	0.944135	1.095303
Durbin-Watson stat	1.488847	1.331236
Log likelihood	-25.74024	-30.50205
F-statistic	227.6079	192.9160
Prob(F-statistic)	0.000000	0.000000

*Note: \* Significant at the 0.01 level.**Source: Calculated by authors.*

The results show PCI 2012 and PCI 2013 are statistically significant in Model 1 and Model 2, respectively. Therefore, there is a relationship between the economic performance of the year 2013 and the institutional quality of the year 2012 (Model 1). For Model 1, the relationship between economic performance and institutional quality reveals a remarkable policy lag in implementation. There is also a relationship between the economic performance of year 2013 and institutional quality of year 2013 (Model 2). Furthermore, these relationships are positive. This positive relationship shows a pattern: increased PCI will boost economic performance up.

As emphasized previously, capital and labor are crucial production factor, so they are both included in the models. The results show that they are statistically significant. This means that they both have impact on economic performance, the net revenue of all firms of the provinces and cities.

## **Conclusions**

With the first publication in 2005, Provincial Competitiveness Index (PCI) has raised an important voice in Vietnam business community, especially to provincial leaders. PCI is not merely a table. It is a mirror for local leaders to look at themselves to test their leadership and abilities of making and running the policies. Furthermore, PCI is a measure of effectiveness and implementation of policies. As a result, it forces leaders to reform to make better business environment. For enterprises, PCI reports provide useful and objective information. Hence PCI was used as a representative of institutional quality for provinces.

While institutional quality of a province is represented by its Provincial Competitiveness Index, Net revenue of all firms in each province is used as a new indicator of economic performance in this study. The main reason behind this selection is Net revenue of all firms in a province is a key part to reflect GDP. The main objective of this study is to find the link between the economic performance and the institutional quality of sixty three provinces in Vietnam. By using the data of year 2012 and 2013, this paper found the possible links between the economic performance of the year 2013 with PCI 2012 and PCI 2013. Specifically, PCI 2012 has positive impact on Net revenue of all firms in 2013 (Model 1) and PCI 2013 also has a positive impact on Net revenue of all firms in 2013 (Model 2). This possible link means that the economic performance of a current year 2013 is not only affected by the institutional quality of the current year but also that of the previous year.

In short, this study finds the links between the institutional quality and economic performance of provinces in Vietnam by using data of years 2012 and 2013 only. However, these links should be examined over a long period of years across the provinces. It will shows a diversity of links in different countries. We do believe there will be another further researches on this topic.

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