Local governance, private investment and economic growth: The case of Vietnamese provinces

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ARTICLE INFO	ABSTRACT
	The study examines the role of local governance in the relationship between private investment and economic growth at provincial level in Vietnam. The study data consists of 63 Vietnamese provinces in the period of 2005-2013. Provincial Competitiveness Index (PCI) is a proxy for local governance. Estimated by two-step System Generalized Methods of Moments, the study shows interesting results. First, local governance and private investment have significant effects on economic growth. Second, the growth effect of private investment is strengthened when interacted with the high level of PCI. Third, interacting PCI sub-indices with private investment, the results show that some aspects of PCI are still barriers to the growth effect of private investment, namely entry cost, time cost, informal charges, and policy biases. Our findings suggest that local governments should make local governance better to improve the growth effect of private investment.

1. Introduction

Institutions are the rule of game in a society and imposes market rules or constraints on human behaviors (North, 1990; North & Thomas, 1973). Public governance refers to how public policies are made in the framework of institutions (Kaufmann & Kraay, 2002). Public governance affects economic performance because it is related to asymmetric information, transaction cost, and risk. Various recent studies have investigated the relationships among governance and economic growth (Aguirre, 2017; Kloosterman & Schotter, 2016; Yıldırım & Gökalp, 2016; Putterman, 2013; Marangos, 2008). However, most these studies ignore private sector as a channel to transmit governance effect to economic performance. Second, the literature on the growth effects of private investment in terms of governance is quite large and complicated in nature and needs to be further clarified. Third, studies observing the growth effects through the relationships between governance and private investment at provincial level in a country are scarce.

The economic reforms originated from the late 1986s have directed to meliorate governance and augment opportunities for private sector development. Up to now, Vietnam has moved closer to ASEAN countries and international communities through its integration into regional and global economy (Gates, 2000; Schmidt, 2004). The main content of these reforms has focused on building a democratic, strong, clean, professional, modernized, effective and efficient public administrative system (Vasakui et al., 2009; UNDP, 2009). As a result, Vietnam's private sector has become progressively momentous to economic growth. For example, according to Vietnam' GSO, Vietnam's private sector has a significant contribution to nearly 40% GDP and 30% of total budget revenue in

2016. However, there remain continual challenges that limit the role of Vietnamese government in support of private sector. Private sector performance and institutions seem be fragmented, leading an efficiency loss in resource allocation. Underlying market economy institutions related to fair legal implementation, corruption control, transparency are still barriers to private investment (ADB, 2005; Schaumburg-Müller, 2005; Anh et al., 2016; Tromme, 2016).

It is assumed that Vietnamese local government has played a critical role in supporting private sector and promoting local economic growth. Our motivations are twofold. First, previous studies have examined the relationship between institutions or private investment and economic growth (see Tridico, 2007; Tavares, 2004; de Haan, 2007; Glaeser et al., 2004; Yıldırım & Gökalp, 2016). However, most previous studies have ignored the role of governance in the growth effects of private investment. In addition, the nexus of governance and private sector development in Vietnam is still controversy. Han and Baumgarte (2000) document that Vietnamese private sector has reservations about business environment, especially legal institutions and administrative reforms. Nguyen and van Dijk (2012) find that weakness in local governance, especially corruption is still a barrier to the growth of private investment. In this vein, Tran et al. (2009) show that public administration deficiency and judiary system are detriment to private sector development. In contrast with these studies, Nguyen et al. (2013) shows local governance reforms have a significant contribution to improve Vietnamese firms' performance. This study investigates the role of local governance in affecting the growth effect of its interaction term with private investment. Provincial Competitiveness Index (PCI) is a proxy for provincial governance. PCI is assumed to be

linked to the efforts of provincial public administration reforms in assessing a various aspect of provincial dynamic and public services delivery. It is expected that better PCI makes its effect on private investment being positive. Second, the study uses PCI sub-indices to detect the growth effects of private investment at provincial level. The study considers interaction terms of PCI sub-indices with private investment are helpful to better understand the kinds of incentives and costs that are required to improve provincial governance in order to increase the growth effect of private investment. PCI sub-indices include several dimensions of provincial economic governance: entry cost for new firms, land access, transparency, time costs of regulatory compliance, informal charges, proactivity of provincial leadership, policy bias, labor training and legal institution.

This study applies the two-step system generalized methods of moments estimation to a dynamic panel data set of 63 Vietnamese provinces for the period of 2003–2013. The strategy for this research is as follows. First, the study investigates the growth effects of PCI and private investment. The study uses the average level of the whole PCI sample as criteria to classify provincial governance quality into low level (PCI_1) and high level (PCI_2). Second, the study interacts PCI (including PCI_1 and PCI_2) with private investment to predict the role of PCI in promoting economic growth. Third, the study also examines the growth effects of interacting PCI sub-indices with private investment. The research findings contribute to the literature by highlighting the roles of local governance in promoting economic growth.

The remainder of the paper is organized as follows. Section 2 provides a literature review on the relationship between public governance, private investment and economic growth. The research model is presented in section 3. The research data are described in section 4. The

methodology is mentioned in section 5. The empirical results are analyzed in section 6. Section 7 outlines conclusions.

2. Literature review

The institutions are defined as game rules in a society (North, 1990a), which can set constraints on human behavior (North, 1981; Acemoglu & Robinson, 2008). Institutional theory emphasizes that institution as fundamental determinants of long-run growth, which explains the residual differences in economic growth between countries based on differences in human capital, physical capital, technological progress, and other economic factors (Acemoglu & Robinson, 2008; Branch, 2014; Busse & Hefeker, 2007; Duncan, 2014). Institutional quality reduces asymmetric information problems, transaction cost, and risk, while it increases market efficiency and asset allocations, and protects property rights (Williamson, 1981; Cohen et al., 1983; Ho & Michaely, 1988). Public institution is generically the so-called public governance that determines how government and public agents run a country (Kaufmann et al., 2000; North, 1990b; Brousseau et al., 2011). Public governance, thus, is critical for improving the efficiency of government activities because it could change incentives for economic agents in allocating public resources. Measuring public governance is relatively complicated. Governance quality can be measured via six institutional indicators: (1) voice and accountability, (2) political stability and absence of violence/terrorism, (3) government effectiveness, (4) regulatory quality, (5) rule of law, and (6) control of corruption (Kaufmann et al., 2004; Cooray, 2009; Kaufmann et al., 2011). Governance quality can also be measured by the level of democracy (Barro & Sala-i-Martin, 1992; Acemoglu et al., 2008).

In the existing literature, studies on the relationship between governance and economic growth have increasingly developed. The impacts of the total level of governance and governance components on economic growth performance are investigated in existing empirical studies (see Olson et al., 2000; Gerry et al., 2010; Sarker & Rahman, 2007; Markus & Mendelski, 2015; Wilson, 2016; Rajkumar & Swaroop, 2008; Cooray, 2009; Attila, 2009). Rajkumar and Swaroop (2008) find that poor quality of governance cannot improve economic performance in 91 countries over three years (1990, 1997, 2003). Cooray (2009) undertakes an empirical study of 71 countries from 1996 to 2003 and indicates that the quality of governance plays an important role in economic growth. Attila (2009) shows that while corruption may encourage economic growth, it also has a negative impact on the tax rate; however, in the long term, corruption can be harmful to economic growth in 90 countries from 1980 to 2002. Economists seek to explore the possible channels via combining public spending and governance to explain their impacts on economic performance (see Butkiewicz & Yanikkaya, 2011; d'Agostino et al., 2016; Dzhumashev, 2014; Cooray, 2009; Farag et al., 2013; Aizenman & Glick, 2006; Devarajan et al., 1996). Aizenman and Glick (2006) employ the interaction of government quality and military spending and find that it changes the impact of military expenses on economic growth. Cooray (2009) uses the interaction between the governance quality dummy variable and government expenditure to evaluate the growth effect of governance quality and government expenditure. In addition, d'Agostino et al. (2016) analyze the interaction between corruption and government spending to explain the extension of the production function based on the arguments of Barro (1990) and Devarajan et al. (1996).

The role of governance in promoting private

investment is widely recognized in the academic literature and policy practices (Kshetri & Dholakia, 2011). Since private firms suffer some risks in their investment and businesses, the government must support and share risks. Governance with property rights protection and transaction cost reduction is important for private investment growth (Kshetri & Dholakia, 2011; Peev, 2015; Krasniqi & Desai, 2016). Good governance helps build trust and provide rules and stability that are necessary for firms to develop their businesses in the long run. Moreover, it creates productive interaction between government, public agents and firms and then the Nash equilibrium is achieved in offering the highest social welfare (Kousky et al., 2006). On the contrary, weak governance deteriorates investment environment and increases risks related to private investment decisions. Barro, (1991) indicates a negative linkage between political violence and private investment. Morrissey and Udomkerdmongkol (2012) find that corruption and political instability are the main cause of being harmful to private investment. Percoco (2014) emphasizes that better institution, related to civil freedom, better regulatory framework, and lower corruption, increase private participation in private–public partnerships. Jiang et al. (2015) present that multinational enterprise investments in emerging countries depend on host government's governance structure. Braga Tadeu and Moreira Silva (2013) highlight that economic stability and government's credibility are determinants of long run private investment growth in Brazil. Ng and Yu (2014) show that weak proper rights institutions are among main causes to diminish firm productivity in China. Acknowledging these issues, we believe that governance is expected to enhance economic growth by promoting private investment's marginal productivity.

For Vietnam, the relationship between

$$GPPG_{it} = LGPP_{it} - LGPP_{it-1} = \alpha_1 LGPP_{it-1} + \alpha_2 DPI_{it} + \alpha_3 PCI_{it} + \alpha_4 (DPI_{it} \times PCI_{it})$$
$$+ \alpha_5 Z_{it} + (\gamma_i + \varepsilon_{it}) \tag{1}$$

institutions and firm's performance at provincial level has received much attention from empirical studies. Using PCI 2006, Tran et al. (2009) indicate that improvements in providing market information, land access and labor training impact positively firm performance. However, defectiveness in the judiciary system and administrative services are detriment to private firm development. By using some aspects of PCI (such as the costs of new business entry, land access, and private sector development policies), Nguyen and van Dijk (2012) provide evidence that provincial economic governance only favors state own enterprises, but a main cause of corruption that distorts business environment. Dang (2016) adds that corruption affects negatively private investment, employment and per capita income in Vietnamese provinces. Using PCI 2005–2006, Nguyen et al. (2013) and Tran et al. (2009) show that PCI sub-indices moderate export strategy and firm performance, particularly encouraging domestic firms toward their business strategy innovations in order to be more effective in competing with foreign firms. Malesky and Taussig (2009) find that PCI is positively related to foreign direct investment in Vietnamese provinces. However, the role of PCI in improving economic performance at the provincial level seems still ambiguous. McCulloch et al. (2013) argue that there are hardly any significant relations between almost all aspects of PCI and private investment. ADB (2005) and Schaumburg-Müller (2005) argue that the legal and regulatory framework for doing business lacks reliable mechanisms for resolution of commercial disputes. Vietnam's private sector has limited access to key resources and the market protections.

3.　Empirical model, data and methodology

3.1.　Empirical model

To estimate the growth effect of local governance and private investment, the dynamic regression is given by: where: i is for the province, t is for the time period, γ is a vector of provincial fixed effect specific, ε is the error term, $\varepsilon_{it} \sim i.i.d(0, \sigma_{\varepsilon})$.

Provincial economic growth (*GPPG*): This is calculated by the difference of *LGPP*, in which *LGPP* is the logarithm of gross provincial product (*GPP*).

Provincial domestic private investment growth *(DPI):* This is measured by the logarithm of provincial domestic private investment. Private investment is hypothesized as a function of growth; thus an economy with a higher income per capital growth is associated with higher private investment growth (Greene and Villanueva, 1991; Oshikoya, 1994). Several empirical studies find that private investment rate is positively related to real GDP and income per capital (Sineviciene and Railiene, 2015; Morrissey and Udomkerdmongkol, 2012; Oshikoya, 1994; Greene and Villanueva, 1991). Mallick (2013) shows that private investment has a positive impact on regional development in India, whereas Luo (2007) argues that private sector has no direct effect on economic growth in China.

Provincial competitiveness index *(PCI):* This is used as a proxy for provincial economic governance with sub-indices: entry cost for new

firms (*ENTRYCOST*); land access (*LANDACCESS*); transparency (*TRANSPA*); time costs of regulatory compliance (*TIMECOST*); informal charges (*INFORMALCHARGES*); pro-activity of provincial leadership (*PROACT*); policy bias (*POLICYBIAS*); labor training (*LABORTRAIN*); and legal institutions (*LEGAL*). There are many empirical studies using PCI as a proxy for institutions in Vietnam (see Tran et al., 2009; Nguyen and van Dijk, 2012).

A set of control variables (Z), including: (i) The growth of total provincial labor force (*LABOR*): Measured by logarithm of total provincial labor force; (ii) Provincial foreign direct investment growth *(FDI)* measured by the logarithm of provincial foreign direct investment; (iii) Provincial public spending (*GOVSP*); (iv) the growth of provincial human capital stock (*HC*) that is measured by logarithm of provincial annual college and university enrollment; (v) provincial infrastructure development (*INFRA*) that is a proxy for the logarithm of provincial telephone lines per 1000 population; (vi) the growth of provincial exports (*EX*) that is measured by logarithm of provincial exports; (vii) provincial inflation rate (*INF*) is measured by provincial consumer price index. These variables are tested in empirical studies to identify determinants of private investment and economic growth performance (see Greene and Villanueva, 1991; Oshikoya, 1994; Braga Tadeu and Moreira Silva, 2013; Jongwanich and Kohpaiboon, 2008; Villaverde and Maza, 2012; Gould and Ruffin, 1995).

3.2. Data

Regarding Vietnam's governance reforms, the Vietnamese government has initiated Public Administrative Reforms (PAR) Master Program in the phase 2001–2010 and in the phase 2011–2020 ongoing. The tasks of PAR are (i) institutional

reform; (ii) reform of administrative procedures; (iii) development of civil servant quality; (iv) public finance reform; and (v) modernization of public administration. In the context of PAR progress, under the support of United States Agency for International Development (USAID), Vietnam Chamber of Commerce and Industry (VCCI) has developed Provincial Competitiveness Index (PCI) as a measurement of economic governance to provide assessment feedback of the private sector on how provincial government performs. PCI was first introduced in 2005, and employed for ranking 47 provinces. From 2006 ongoing, 63 provinces of Vietnam have been included in the ranking list. The overall PCI score is calculated by a weighted sum of sub-indices, in which weights are determined by the importance of each sub-index in assessing various aspects of firm performance governance in each province (USAID/VNCI-VCCI 2005, 2009). The 2005 PCI only comprised 8 sub-indices to explain differences in economic development between provinces (USAID/VNCI-VCCI, 2005). After that, the sub-indices of the PCI have been adjusted and updated in order to meet changes in Vietnam's business environment. The 2009 PCI has nine sub-indices (USAID/VNCI-VCCI, 2009). The 2013 PCI is conducted based on ten sub-indices (USAID/VNCI-VCCI, 2013), in which nine sub-indices of the 2009 PCI is replicated. For this reason, the study uses nine unified sub-indices to estimate effects of economic governance on provincial economic growth.

Data for this study are panel data on 63 provinces for the period of 2005–2013. Cross-sections and time series are chosen to accommodate data availability from General Statistics Office of Vietnam. We define and calculate the variables in our estimations, which are summarized in Table (1). For main variables, the average growth of gross provincial product (*LGPP*) is 9.78; overall weighted average PCI is 56,706%; the average growth of private investment is 8.223%.

Table 1

Definitions and descriptive statistics of variables

Variables	Definition, description, and source	Obs	Mean	Std. Dev.	Min	Max
Provincial economic growth (*GPPG*)	Difference of log of gross provincial product, from GSO in Vietnam	567	9.792	1.041	6.964	13.547
Provincial domestic private investment (*DPI*)	Log of provincial domestic private investment, from GSO in Vietnam	567	8.223	1.061	4.425	12.054
Provincial foreign direct investment (*FDI*)	Log of provincial foreign direct investment, from GSO in Vietnam	518	5.665	2.655	-0.3772	10.559
Provincial public spending (*GOVSP %*)	Total provincial government expenditures (including investment expenditure and current expenditure that are financed from provincial assigned revenue) as a percentage of GPP, from GSO in Vietnam	567	8.997	5.768	0.190	40.514
Provincial government employees size (*GOVLABORSIZE* %)	Total provincial government employees as a percentage of total provincial labor forces, from GSO in Vietnam	567	5.668	1.724	2.102	15.208
Provincial competitiveness index (*PCI*)	The Provincial Competitiveness Index is a proxy for the public governance quality of provincial government, from Vietnam Chamber of Commerce and Industry (VCCI). PCI is measured by a weighted combination of sub-indices as follows:	545	56.706	6.611	35.390	77.197
	Entry cost (*ENTRYCOST*) measures the time it takes firms to register a and receive necessary licenses to start a business	545	7.701	1.051	3.641	9.598

Variables	Definition, description, and source	Obs	Mean	Std. Dev.	Min	Max
	Land access (*LANDACCESS*) measures the access to land for firms (easy and security)	545	6.379	0.911	3.036	8.841
	Transparency (*TRANSPA*) measures whether firms have access to necessary planning and legal documents to run their business	545	5.688	0.987	2.154	8.854
	Time cost (*TIMECOST*) measures time requirements for bureaucratic procedures and inspections; the time it takes firms to travel many trips to obtain stamps and signatures time	545	5.939	1.167	2.638	8.928
	Informal charges (*INFORMALCHARGES*) measures how much firms have to pay for informal charges	545	6.463	0.881	3.375	8.942
	Pro-activity of provincial leadership (*PROACT*) measures the pro-activity of provincial leadership in implementing policy and promoting private sector development within national legal work frame	545	5.156	1.448	1.387	9.388
	Policy bias (*POLICYBIAS*) measures bias toward State – Owned Enterprises in regard to policy, credit, land, administrative procedures	545	5.563	1.468	1.753	8.771
	Labor training (*LABORTRAIN)* measures the provision of labor exchange services, the ratio of trained labor forces and satisfaction with labor	504	5.018	0.975	1.842	9.596
	Legal institutions *(LEGAL)* measures the implementation of legal system by provincial court judge and firm confidence in legal system	504	4.723	1.170	1.995	7.340
Provincial labor force (*LABOR*)	Log of total provincial labor force, from GSO in Vietnam	567	6.432	0.563	5.088	8.290

Variables	Definition, description, and source	Obs	Mean	Std. Dev.	Min	Max
Provincial human capital stock (*HC*)	Log of provincial annual college and university enrollment, from GSO in Vietnam	554	8.781	1.575	4.875	13.444
Provincial infrastructure development (*INFRA*)	Log of provincial telephone lines per 1000 population, from GSO in Vietnam	567	5.173	0.788	2.302	7.822
Provincial exports (*EX*)	Log of provincial exports, from GSO in Vietnam	565	12.276	1.940	5.529	17.157
Provincial inflation rate (INF)	Provincial consumer price index, from GSO in Vietnam	567	111.217	6.081	99.18	140

3.3. Methodology

When estimating Eq (1), there are some serious difficulties with fixed effects model, leading to biased results. First, most variables on the right side of Eq (1) may be endogenous. The literature on the role of government in economic growth shows that government spending and governance are endogenous (Law et al., 2013; Abu-Bader & Abu-Qarn, 2003). Other variables (such as *DPI, FDI, INF, and EX)* are likely to endure causality bias (Fayissa & Grill, 2016). Second, in the context of a dynamic panel data model with a lagged dependent variable ($LGPP_{it-1}$), since $LGPP_{it-1}$ is a function of γ_i , it follows that $GPPG_{it-1}$ is also a function of γ_i . Therefore, the variable $LGPP_{it-1}$ is correlated with the error term. Nickell (1981) shows that with a technical consequence of the within transformation *N*, the lagged dependent variable ($LGPP_{it-1}$) increase standard errors. The resulting correlation creates a large-sample bias when estimating the coefficient of the lagged dependent variable, which may be not mitigated by increasing *N* (Nickell, 1981). If the regressors are correlated with the lagged dependent variable to some degree, their coefficients may be seriously biased. Moreover, there is especially problematic in the case of data with a small time dimension. Cross-section estimates would produce a bias that is caused by the correlation between the lagged dependent variable with the unobserved individual effects because the present value of the dependent variable would itself be dependent on the individual effects, which may disappear in samples with a large time dimension. The alternative would use any type of fixed effect technique, eliminating time-independent effects by taking some kind of difference (for example first differences, within-group transformations,

etc.). By first differencing the fixed individual effect is removed because it does not vary with time. In this case, however, the error term would have some lags and therefore will be correlated with the lagged dependent variable, leading to biased estimates. Several methods have been proposed in the literature (see Anderson & Hsiao, 1982; Arellano & Bond, 1991; Blundell & Bond, 1998).

Arellano and Bond (1991) propose difference GMM estimator that is more efficient than the Anderson and Hsiao (1982) estimator. GMM estimator deals better with endogeneity, heteroscedasticity, and serial correction because it is specifically designed to capture the joint endogeneity of some explanatory variables through the creation of a weight matrix of internal instruments, which accounts for serial correlation and heteroscedasticity. GMM estimator requires one set of instruments to handle endogeneity and another set to deal with the correlation between lagged dependent variable and the error term. The instruments include suitable lags of the endogenous variables and the strictly exogenous regressors. This estimator technique easily generates many instruments, since by period *T* all lags prior to might be individually considered as instruments. However, a big problem of the Arellano-Bond difference GMM estimator is that the variance of the estimates may increase asymptotically and create considerable bias. Blundell and Bond (1998) and Blundell et al. (2000) show that estimation in first differences has a large bias and low precision, even in studies with a large number of individuals (N). The poor performance of difference GMM estimator can be worse with the degree of persistence of series because as persistence increases, lagged levels can be less correlated with current first differences, so they become weak instruments (Soto, 2009). The system GMM estimator is likely to present the best features in term of a

small sample. Provided that series are moderately or highly persistent, system GMM estimator will display the lowest bias and highest precision (Soto, 2009).

The system GMM estimator requires moment conditions, which are specified on the regression errors. Moment conditions are assumed that the instruments are exogenous. For this, the moments of the errors with the instruments equal to zero. In system GMM estimator, the choice of instruments and regressors in each equation should be carefully considered. Since an equation may be under-identified, exactly identified and over-identified depending on whether the number of instruments in that equation are respectively less than, equal to or greater the regressors to be estimated. For the two-step system GMM, this estimator is more asymptotically efficient than one-step estimator due to using a suboptimal weighting matrix, but it produces the bias of uncorrected standard errors when instrument count is high. In this respect, Roodman (2009) provides a rule of thumb that the number of instruments should be

4. Empirical results

First, we examine the nexus of PCI, private investment and economic growth. Second, we take account of the overall *PCI* in affecting the growth effect of private investment. Last, we examine the growth effects of *PCI* sub-indices and their interaction with private investment.

4.1. The nexus of PCI, private investment and economic growth

In this part, we first focus on testing the growth effects of PCI and private investment. Then, this study uses the mean of PCI of the whole sample as criteria to classify high level or low level of local governance to examine its effects on economic growth. Provinces with below median scores are ranked into the low performing tier; other provinces are in the high performing tier. Table (1) shows that mean *PCI* score (μ) is 56.70 in the period of 2005–2013. The two *PCI* dummy variables are identified:

$$GPPG_{pci1} = \alpha_0 + \alpha_1 LGPP_{it-1} + \alpha_2 DPI_{it} + \alpha_3 PCI_1 + \alpha_4 Z_{it} + (\gamma_i + \varepsilon_{it}), \qquad PCI_1 < \mu \quad (2a)$$

$$GPPG_{pci2} = \alpha_0 + \alpha_1 LGPP_{it-1} + \alpha_2 DPI_{it} + \alpha_3 PCI_2 + \alpha_4 Z_{it} + (\gamma_i + \varepsilon_{it}), \qquad PCI_2 \geq \mu \quad (2b)$$

less than the individual dimension (N).

In system GMM estimation, Hansen test shows that instruments are robust but weakened. Therefore, following up Roodman (2009), the p-value of Hansen statistic is not over 0.700 to accept these instruments. The Arellano-Bond test for autocorrelation has a null hypothesis of no autocorrelation and is applied to differenced error terms. The test for AR(2) process in the first differences usually rejects the null hypothesis. The test for AR(2) is more important since it detects autocorrelation in levels.

$PCI_1 \leq 56.7$ low governance, taking 1, otherwise 0

$PCI_2 > 56.7$ high governance, taking 1, otherwise 0

The following Eq (1) is given by:

The estimated results are shown in Table (2). Model (1) is estimated with *PCI* and *DPI*. Model (2) incorporates *PCI₁* and *DPI*, and Model (3) incorporates *PCI₂* and *DPI*. The growth effect of overall PCI is positive and significant (Model 1). The coefficient on *PCI₁* is negative and significant, while the coefficient on *PCI₂* is

positive and significant (Model 2 and 3). These findings indicate that economic governance has a negative impact on economic growth for provinces with below mean *PCI* scores, whereas it has a positive impact for provinces with above mean *PCI* scores, suggesting that provinces with below mean *PCI* scores should make great efforts to obtain a higher position in *PCI* ranking for economic growth. These observations support the idea that better economic governance reduces asymmetric information, transaction costs and risks, and therefore has a significant contribution to improve business doing and economic performance. Furthermore, the coefficient on DPI is positive and significant in all specifications, suggesting that private investment has positive effect on economic growth. The estimated results for *LGPP(-i), GOVSP, FDI, HC, INFRA, EX*, *INDUS,* and *INF* are still consistent in all specifications. Hansen test and AR(2) test show that the estimated results are reliable.

4.2.   *Local governance affecting the growth effect of private investment*

Although overall PCI has the positive growth effect, it can matter economic growth when interacted with private investment. We now examine the role of PCI in the relationship between private investment and economic growth. The idea is to test whether provinces with higher PCI improve the growth effect of private investment or do not. Based on the mean of PCI, we generate interaction terms DPI*PCI$_1$ and DPI*PCI$_2$.

The estimated results are presented in Table (3). Model (1) and (2) incorporate DPI*PCI$_1$ and DPI*PCI$_2$, respectively. Except for HC and INFRA, the results for LGPP(-i), GOVSP, LABOUR, EX, INDUS, and INF are consistent in all specifications. Hansen test and AR(2) test show that the estimated results are reliable and

robust.

Considering Model (1) and Model (2), the coefficient on DPI*PCI$_1$ is insignificant, while the coefficient on DPI*PCI$_2$ is positive and significant. These results show that the quality of local governance is critical for improving the growth effect of private investment. A higher level of PCI is strongly associated with a higher growth effect of private investment. This result is different from the finding of McCulloch et al. (2013), who show that provincial governance is not associated with provincial economic growth in Vietnam.

4.3.   *Interaction effects of PCI sub-indices*

We now examine the role of PCI sub-indices in the growth effects of private investment. We focus on interaction terms between nine PCI sub-indices and private investment. In comparison with private investment, interaction terms between PCI sub-indices and FDI also are considered.

Table 4 indicates the growth effects of DPI and nine PCI sub-indices variables. Model (1) is estimated with DPI*ENTRYCOST. Model (2) incorporates DPI*LANDACESS. Model (3) incorporates DPI*TRANSPA. Model (4) incorporates DPI*TIMECOST. Model (5) incorporates DPI*INFORMALCHARGES. Model (6) incorporates DPI*PROACT. Model (7) incorporates DPI*POLICYBIAS. Model (8) incorporates DPI*LABOTRAIN, and Model (9) incorporates DPI*LEGAL. What PCI sub-indices are significantly influential in domestic investment? The results show that DPI is associated with TIMECOST, INFORMALCHARGES, LANDACESS, TRANSPA and LEGAL, respectively. DPI interacted with TIMECOST and INFORMALCHARGES has a negative growth effect (Model 4 and 5), whereas the growth effect of DPI is strengthened when interacted with LANDACESS, TRANSPA and LEGAL (Model 2, 3 and 9).

Table 2

The nexus of *PCI, DPI* and economic growth: Two-step GMM, 2005–2013

(Dependent variable: Provincial economic growth rate, *LGPP - LGPP(-1)*)

Variables	(1)		(2)		(3)	
	Coef	*p-value*	*Coef*	*p-value*	*Coef*	*p-value*
Log of GPP(-1)	-0.093	0.000***	-0.091	0.000***	-0.091	0.000***
Foreign direct investment (FDI)	0.005	0.000***	0.002	0.021**	0.002	0.028**
Labour (LABOR)	0.037	0.000***	0.023	0.000***	0.023	0.000***
Human capital (HC)	0.005	0.004***	0.005	0.000***	0.005	0.000***
Infrastructure (INF)	0.003	0.381	0.005	0.033**	0.005	0.044**
Export (EX)	0.008	0.000***	0.012	0.000***	0.012	0.000***
Industry (INDUS)	0.001	0.000***	0.001	0.000***	0.001	0.000***
Inflation (INF)	0.831	0.000***	0.807	0.000***	0.811	0.000***
Public spending (GOVSP)	0.001	0.000***	0.0007	0.026**	0.0007	0.000***
Private investment (DPI)	0.038	0.000***	0.041	0.000***	0.041	0.000***
PCI	0.002	0.000***				
PCI_1 (PCI<=56.7)			-0.0002	0.000***		
PCI_2 (PCI>56.7)					0.0002	0.000***

Variables	(1)		(2)		(3)	
	Coef	*p-value*	*Coef*	*p-value*	*Coef*	*p-value*
Obs	382		382		382	
Instruments	59		62		62	
AR(2) test	0.143		0.142		0.144	
Hansen test	0.585		0.425		0.435	

Notes: (*), (**), (***) indicate significant at 10%, 5% and 1%, respectively.

Table 3

The growth effects of interactions between PCI and private investment: Two-step GMM, 2005–2013
(Dependent variable: Provincial economic growth rate, LGPP- LGPP(-1))

Variables	Model (1)		Model (2)	
	Coef	P-value	Coef	P-value
Log of GPP (-1)	-0.084	0.000***	-0.070	0.000***
Foreign direct investment (FDI)	0.003	0.000***	0.002	0.010**
Labour (LABOR)	0.028	0.000***	0.033	0.000***
Human capital (HC)	0.003	0.001**	0.003	0.050**
Infrastructure (INF)	0.005	0.081*	0.007	0.018**
Export (EX)	0.010	0.000***	0.007	0.000***
Industry (INDUS)	0.001	0.000***	0.0009	0.000***
Inflation (INF)	0.854	0.000***	0.962	0.000***
Public spending (GOVSP)	0.0008	0.0038**	0.002	0.000***
Domestic private investment (DPI)	0.033	0.005***	0.015	0.001***
PCI	0.003	0.000***	0.001	0.009***
DPI*PCI$_1$	0.00001	0.147		
DPI*PCI$_2$			0.00004	0.011**
Obs	382		381	
Instruments	60		61	
AR(2) test	0.137		0.184	
Hansen test	0.464		0.645	

Notes: (*), (**), (***) indicate significant at 10%, 5% and 1%, respectively.

Table 4

The interaction effects of private investment and *PCI* sub-indices on provincial economic growth: Two-step GMM, 2005–2013

(Dependent variable: Provincial economic growth rate, *LGPP- LGPP(-1)*)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Entrycost	Landaccess	Transpa	Timecost	Informalcharges	Proact	Policybias	Labotrain	Legal
Log of GPP (-1)	-0.097***	-0.054***	-0.074***	-0.070***	-0.073***	-0.099***	-0.099***	-0.094***	-0.100***
Foreign direct investment (FDI)	0.004***	0.002**	0.004***	0.003***	0.003***	0.004***	0.002**	0.003***	0.004***
Labour (LABOR)	0.026***	0.018***	0.029***	0.018***	0.019***	0.034***	0.032***	0.017***	0.030***
Human capital (HC)	0.005***	0.004***	0.005**	0.005***	0.003***	0.005***	0.007***	0.006***	0.005***
Infrastructure (INF)	-0.023***	-0.002	-0.031***	-0.012***	-0.008**	-0.018***	-0.004	-0.003	-0.011***
Export (EX)	0.012***	0.011***	0.017***	0.009***	0.012***	0.014***	0.019***	0.023***	0.016***
Industry (INDUS)	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.002***	0.001***
Inflation (INF)	0.897***	0.975***	0.910***	0.922***	0.880***	0.873***	0.668***	0.636***	0.845***
Public spending (GOVSP)	0.0004**	0.0009***	0.0009***	0.0006***	0.001***	0.0009***	0.0008**	0.001**	0.0008**
Domestic private investment (DPI)	0.045**	-0.055**	-0.114***	0.122***	0.133***	0.062**	0.053**	0.056**	0.027***
PCI sub-indices	-0.075	-0.373***	-0.719***	0.406***	0.472***	0.030	0.082	0.027	-0.128**
DPI PCI sub-indices*	0.009	0.041***	0.093***	-0.046***	-0.051***	-0.003	0.010	0.010	0.017**
Obs	372	381	372	384	420	384	383	381	383
Instruments	60	57	59	57	57	57	51	56	58
AR(2) test	0.202	0.102	0.206	0.274	0130	0.158	0.100	0.120	0134
Hansen test	0.670	0.337	0.401	0.698	0.317	0.321	0.359	0.180	0.588

Notes: (*), (**), (***) indicate significant at 10%, 5% and 1%, respectively.

Table 5 indicates the growth effects of *FDI* and PCI sub-indices. Model (1) is estimated with *FDI*ENTRYCOST*. Model (2) incorporates *FDI*LANDACESS*. Model (3) incorporates *FDI*TRANSPA*. Model (4) incorporates *FDI*TIMECOST*. Model (5) incorporates *FDI*INFORMALCHARGES*. Model (6) incorporates *FDI*PROACT*. Model (7) incorporates *FDI*POLICYBIAS*. Model (8) incorporates *FDI*LABOTRAIN*, and model (9) incorporates *FDI*LEGAL*. All these interaction terms are statistically significant. This shows that FDI is strongly associated with all PCI sub-indices. However, the effect signs of FDI are various, depending on the nature of each PCI sub-indices. For example, FDI in association with *ENTRYCOST, TIMECOST, INFORMALCHARGES* and *POLICYBIAS*, respectively, has a significantly negative effect on economic growth (Model 1, 4, 5 and 7). Therefore, under high entry cost for new firms, times cost of regulatory compliance, informal charges, and policy bias, the effect sign of FDI is negative. The reason is, Vietnamese legal system is still not adequate and integrity so that this could lead to confusion and unfairness for the investors. Another aspect of the legal system is a bureaucracy in provincial authorization agencies. It may raise foreign investors' costs of doing business. Therefore, taking account of the growth effect of FDI, Vietnam's provincial governments make economic governance better by reducing entry cost, time cost, informal charges, and policy bias.

Interestingly, FDI in association with *LANDACESS, TRANSPA, PROACT, LABOTRAIN* and *LEGAL*, respectively, has a significantly positive effect on economic growth (Model 2, 3, 6, 8 and 9). The more predictable easy access to land, transparency, proactivity of local leadership, sound labor training and fair legal implementation are, the more foreign investments are made and the higher economic growth is. These results are important. In attempting to attract more foreign investors, provincial governments make efforts to improve the business environment. Therefore, policy arenas such as land access, policy transparency, proactivity of leadership, labor training, and legal implementation become decisive factors in provincial FDI attraction and economic growth at Vietnamese provincial level as found by Tran et al. (2009). Policy implication of these results is that foreign investors expand their projects when local authorities have a positive view towards the favorable business environment and make economic governance better.

These results make a good deal of sense. Domestic investors are less sensitive to the quality of provincial economic governance than foreign investors are. Regarding negative effect, foreign investors are significantly affected by entry cost, times cost, informal charges and policy bias, whereas domestic investors are only influenced by time cost and informal charges. As for the positive effect, improving the land access, policy transparency and legal implementation is decisive for both foreign and domestic investors. Interestingly, leadership proactivity, and labor training are positive significant for foreign investors, but insignificant for domestic investors. In short, these findings show that FDI may be a crucial driver in strongly pushing public governance reforms compared to domestic sector in Vietnam as suggested by Dang (2013) and Schaumburg-Müller (2005).

Notably, with the exception of *INFRA*, the estimated results for all of the variables *(LGPP (-1), HC, EX, INDUS* and *INF* are consistent in all specifications. First, the growth effect of INFRA is inconsistent. This is because that infrastructure needs much time to be in stable effect of improving growth in very long run. Second, *LGPP (-1)* has a significant and negative effect, which may be interpreted as suggesting that there may be convergence in economic

growth among provinces in Vietnam. Third, *HC* has a positive impact on provincial economic growth, suggesting that human capital is an important factor in determining provincial economic growth. Fourth, exports have also been a significant driver of economic growth in the provinces. This effect on growth *EX* has a positive and significant impact on provincial economic growth, supporting the view that exports are an important source of scale economies and real productivity gains that help to promote economic growth. Fifth, *INDUS* has a positive and significant impact on provincial economic growth, suggesting that an increase in the share of industry in gross provincial product has a direct effect on economic growth in the provinces. Sixth, *GOVSP* positively affects economic growth, implying that government spending has significant contribution to improving provincial economic performance. Lastly, the estimated coefficient for *INF* is positive and significant, indicating a positive association between inflation and growth during the period under consideration.

5. Conclusions

This paper' aim is to contribute to the existing literature on the relationship between local governance, private investment and economic growth. It is conducted based on the context of Vietnam at the provincial level. Data for the study covers 63 provinces in the period 2004-2013. This study has interesting findings.

First, PCI as a proxy for provincial local governance has a significant effect on economic growth. As indicated by the low and high level of PCI, the study finds that provinces with low PCI have the negative effect on provincial economic growth, whereas provinces with high PCI have the positive effect on provincial economic growth. Moreover, the growth effect of private investment is strengthened when interacted with the high level of PCI, and vice versa. Similarly, the results of FDI are enhanced in the presence of the high level of PCI. Therefore, this study suggests that improving local governance leads to increasing the growth effect of incorporating domestic investment. This is to say, local governance plays a critical role in driving private sector resources into economic growth. Therefore, this implies that provincial governments should focus on improving the quality of local governance because it is at the center of public administration reforms taking place in Vietnam.

Second, to find appropriate measures for improving the growth effect of PCI, the study utilizes interaction terms of PCI sub-indices with private investment and FDI. The estimation results are interesting. Private investment in association with time cost and informal charges, respectively is a significantly negative impact on economic growth. Domestic investment in association with land access, policy transparency, and fair legal implementation, respectively is a significantly positive impact on economic growth. Meanwhile, FDI in association with entry cost, time cost, informal charges and policy biases, respectively is a significantly negative impact on economic growth. FDI in association with easy access to land, policy transparency, proactivity of leadership, sound labor training and fair legal implementation, respectively is a significantly positive impact on economic growth.

Table 5

The interaction effects of FDI and *PCI* sub-indices on provincial economic growth: Two-step GMM, 2005–2013

(Dependent variable: Provincial economic growth rate, *LGPP- LGPP(-1)*)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Entrycost	Landaccess	Transpa	Timecost	Informalcharges	Proact	Policybias	Labotrain	Legal
Log of GPP (-1)	-0.074***	-0.091***	-0.100***	-0.100***	-0.108***	-0.090***	-0.096***	-0.102***	-0.100***
Labour (LABOR)	0.021***	0.056***	0.026**	0.065***	0.036***	0.055***	0.062***	0.058***	0.041***
Human capital (HC)	0.008***	0.008***	0.004**	0.007***	0.006***	0.007***	0.005***	0.011***	0.006***
Infrastructure (INF)	-0.013***	-0.031***	-0.005	-0.023***	-0.022***	-0.019**	-0.011**	-0.033***	-0.008
Export (EX)	0.012***	0.017***	0.013***	0.017***	0.017***	0.016***	0.016***	0.019***	0.016***
Industry (INDUS)	0.001***	0.0008***	0.001***	0.001***	0.001***	0.001***	0.001***	0.002***	0.0008***
Inflation (INF)	0.910***	0.894***	0.872***	0.859***	0.815***	0.859***	0.797***	0.688***	0.875***
Public spending (GOVSP)	0.0007**	0.002***	0.001**	0.002***	0.001***	0.002***	0.002***	0.001***	0.002***
Domestic private investment (DPI)	0.040***	0.039***	0.061***	0.026***	0.060***	0.027***	0.030***	0.030***	0.045***
Foreign direct investment (FDI)	0.023**	-0.003***	-0.049***	0.045***	0.051***	-0.018***	0.020**	-0.050***	-0.017**
PCI sub-indices	0.060	-0.182***	-0.199***	0.199***	0.226**	-0.083***	0.046	-0.231***	0.040
FDI PCI sub-indices*	-0.011**	0.027***	0.030***	-0.024***	-0.026**	0.012***	-0.010**	0.032***	0.010**
Obs	398	361	384	319	366	361	384	324	398
Instruments	56	56	55	52	56	49	51	52	50
AR(2) test	0.153	0.140	0.245	0.125	0.172	0.171	0.161	0.175	0.137
Hansen test	0.360	0.260	0.546	0.533	0.444	0.140	0.445	0.273	0.537

Notes: (*), (**), (***) indicate significant at 10%, 5% and 1%, respectively.

These results show that foreign investors are more sensitive to the quality of provincial economic governance than domestic investors are. Overall, the study provides evidence on the role of PCI in affecting the growth effect of private investment. It is clear from empirical evidence that improving PCI is crucial for improving the growth effect of private investment. Some aspects of PCI sub-indices when interacted with private investment have negative effects on economic growth. It is imperative that provincial governments make economic governance better to promote private investment development∎

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