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# Corruption and Firm Financial Performance: New Evidence from Vietnam

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***Abstract*:**

Using a nationwide survey of provincial institutional quality and a sample of private manufacturing small and medium scale enterprises (the SMEs), this paper is the first to examine the effects of corruption on financial performance of the Vietnamese private SMEs. Interestingly, contrary to previous findings, the study finds that corruption as measured by a dummy variable does not affect firms' financial performance after controlling for heterogeneity, simultaneity and dynamic endogeneity. However, we find that the intensity of bribe and many types of corruption have negative impacts on firms' financial performance. Thus, a typical approach using only a dummy variable of bribe might not adequately evaluate the impact of bribe intensity or even ignored negative impacts of some types of bribe on firms' financial performance. Our findings imply that anti-corruption measures are necessary to the development of the Vietnamese private SMEs.

**Keywords:** *corruption; financial performance; SMEs; institutional quality; Vietnam*

# 1. Introduction

The linkage between corruption and firm performance has been widely discussed in the literature (e.g., Fisman & Svensson (2007))**.** Theoretically, the effect of corruption on firm performance cannot be explained or predicted by a single extent theory. On the one hand, corruption may be harmful to firms in the long-term. For instance, the costs of corruption can include the erosion of critical resources such as the reputation and culture of firms, the efficient allocations of resources, and the motivation for firms' innovation (Hung, 2008; Lou, 2002). These costs may lower or drive profit away from firms, and result in talent, technology and innovation not being sufficiently valued. As pointed out by Murphy, Shleifer and Vishny (1993), firms are dis-incentivized to provide investment for growth and improve productivity. Corruption is considered as 'sand-in-the-machine' (Ades & Di Tella, 1996). In addition, some argue that corruption prevents the entry of new firms because incumbents tend to exploit their existing corrupt relationships, and corrupt officials try to delay transactions to extract more bribes from public service users (Rose-Ackerman, 1997). Consequently, public resources would be misallocated to those offer the highest bribes, not to who can offer best value for money for society (Jain, 2001).

Several imprical evidence supports the above view.

By contrast, the above-mentioned views have been challenged by other perspectives, which imply that corruption allows firms to achieve aims or to overcome bureaucratic processes and unclear or complex regulations (e.g., Lui, 1985). As a result, firms may save time and conduct business activities more speedy or "grease the wheels", all of which ultimately may promote growth and improve firms' financial performance (Vial & Hanoteau, 2010). Paying informal costs can be also considered as a type of investment in networks or social capital (De Jong, Tu, & Van Ees, 2012). And this investment, in turn, may help firms overcome the challenges of entering a new market, and facilitate firms' efforts to achieve higher financial performance.

In another approach, firms' corruption behavior is explained by institutional theory. This is considered as one of the most popular perspectives in transitional economies (e.g., Hoskisson, Eden, Lau, & Wright, 2000; Wright, Filatotchev, Hoskisson, & Peng, 2005). This approach indicates that corruption may not affect firm efficiency because paying bribe is simply an entry cost of firms to join an established game and facilitate their survival in their

environment (North, 1990). When neighbouring firms pay informal costs, this places the pressure on other firms to follow their behaviours. As a result, corruption may have little impact on their performance.

Preliminary studies of the effects of corruption on economic efficiency used cross country macro data (e.g., Pierre-Guillaumeméon & Sekkat, 2005). Nevertheless, using aggregated data cannot control for firm heterogeneity that can potentially affect firm performance (Kasahara & Rodrigue, 2008). Furthermore, Halpern, Koren and Szeidl (2005) show that the omitted variables and reserve causality bias are other problems for macro-economic level studies.

Recent research, using micro-level data, has emphasized the relation between corruption and growth at the firm level (e.g., Faruq, Webb, & Yi, 2013).

In light of the theoretical perspectives and discussions above, empirical research of this topic has been conducted in different countries, and findings are inconclusive. Some studies at the firm level provide different results of corruption effect, depending on how corruption is measured and country characteristics. For instance, De Rosa, Gooroochurn, and Gorg (2010) examined the effect of corruption ( defined as a " bribe tax" and a"time tax" imposed on firms by red tape) on firm productivity using a sample of 21 Central and Eastern Europe countries. Their research finds that for the whole sample, while the bribe tax has a negative effect on firm-level productivity, it is not the case for the time tax. However, when the sample is devided between EU members and non-EU members, the time tax is found to have a negative effect only in EU countries and the bribe tax only in non-EU countries. They also find that bribery is mor harmful for productiviy in countries where corruption is wide spread and the legal framework is weaker. Lau, Demir, and Bilgin (2013) investigated how "experience-based" corporate corruption influences stock market volatility in 14 emerging markets.[2] They find that countries with higher corruption tend to have less volatile stock markets, even after controlling for firm characteristics, liquidity and maturity of the markets and other economic variables.

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[2] The World Business Environment Survey interviewed managers from more than 9000 firms in 1999-2000. Respondents were asked: " is it commone for firms in your line of business to have to pay some irregular " additional payments" to gen things done?"

However, it is not clear if the benefits of corruption outweigh the costs or vice versa in terms of financial performance. This stems from the fact that while there are a large number of empirical studies about the effect of corruption on firm productivity and growth, little research has done about the effect of corruption on financial performance (Donadelli, Fasan, & Magnanelli, 2014). Furthermore, although a few studies on this general corruption topic have been conducted in Vietnam (e.g., Nguyen & Van Dijk, 2012), to the best of our knowledge, there is no empirical evidence on the impact of corruption on financial performance of the Vietnamese firms. Hence, our study is expected to provide the first evidence of the impact of corruption on firm financial performance in the Vietnamese market.

It is also noted that in most previous studies about the relationship between corruption and firm performance, bribe is often measured as a dummy variable which may not well capture the bribe intensity. Furthermore, different types of corruption can create various costs and benefits, and hence, have different effects on firm financial performance. In the current study, we go beyond the extant literature by examining the effect of bribe intensity and that of various types of corruption on firms' financial performance.

In terms of methodology, several empirical challenges arise when considering the linkage between corruption and firm financial performance. These include unobservable characteristics through firms, and the endogeneity of explanatory variables. More importantly, the consideration of the determinants of firm financial performance has been challenged in the recent literature by the presence of potential dynamic endogeneity. This can be understood as the past firms' financial performance affecting the current firms' financial performance (Wintoki et al., 2012). Following Wintoki et al. (2012), we overcome these problems by using the two-step system dynamic panel GMM models.

Interestingly, contrary to the many findings of previous studies, we find that corruption as measured by a dummy variable does not affect firms' financial performance after controlling for heterogeneity, simultaneity and dynamic endogeneity. This finding supports for the viewpoints of institutional theory and reflects the fact that corruption is widespread in Vietnam. Accordingly, engagement into corruption is considered as an entry fee and not related with firm financial performance. However, bribe intensity and the majority of various types of corruption have negative impacts on firms' financial performance.

The rest of this paper is structured as follows. The next section presents the background of the study. Data and methodology are presented in section 3, and section 4 displays empirical results. The last section contains conclusion and the summary of findings.

## 2. Background of the study

Over almost 30 years of implementing the renovation policy, the Vietnamese economy has advanced from a poor to middle-income country. Economic growth was high with an annual average GDP growth rate of 6.8% during the period 1986–2009 (Le, 2010). The GDP per capita growth of low and middle income countries was always lower than that in Vietnam during the period 1988–2006 (Markussen et al., 2012). Thanks to high success in economic growth and development, Vietnam has also been very successful in poverty reduction with a fall in the poverty rate from nearly 60% in the early 1990s to 20.7% in 2010 (World Bank, 2012).

It is noted that a higher economic growth often goes together with a lower level of corruption (Bai, Jayachandran, Malesky, & Olken, 2013). However, this may not be the case in Vietnam. In spite of the anti-corruption and anti-waste laws and various anti-corruption campaigns have been launched, several recent studies on corruption in Vietnam (e.g., Nguyen & Van Dijk, 2012) show that corruption remains widespread. Paying bribes to public officials still remains a major challenge when doing business insofar as both the frequency and size of bribes have remained at relatively high levels (Malesky, 2009). According to the Transparency International (TI), the Vietnamese ranking was very low at 123 out of 179 countries. Despite the government's anti-corruption efforts, Vietnam has made a very little progress in the corruption rankings. Indeed, the recent report in 2014 shows that Vietnam achieved a score of 3.1 out of 10 (or 116 out of 177 countries).

Also, for Vietnam, there are big gaps between formal institutions documented in laws and the enforcement capacity and compliance of the local authorities. This is because provinces are quite autonomous to practice policy reforms. As a result, they are free to implement and deploy central laws in their own ways (Malesky, 2004, 2008). Furthermore, the development in institutional quality across provinces has been uneven. For example, while several provinces lag behind, others witness a significant improvement in economic governance and business investment (Malesky, 2007). In fact, vast differences in initial

conditions and economic development seem to further enlarge the gaps. This situation makes Vietnam an interesting case to study.

## 3. Data Sources and methodology

### 3.1. Data sources

Data from two sources will be utilised in the current study. The first source is from the surveys of small and medium scale enterprise survey in Vietnam conducted every two years in 2005, 2007, 2009 and 2011, respectively. The surveys are the collaboration between the Institute of Labour Science and Social Affairs, the Central Institute for Economic Management and the University of Copenhagen. These surveys, sponsored by the Danish International Development Agency, used similar questionnaires and covered both new entries and "repeat" private manufacturing firms in ten provinces of three regions (South, Central and North) in Vietnam.

The surveys collected information on firms' activities including numerous indicators such as firm characteristics, location, industries, and especially detailed information about corruption activities at firm level. All types of private firms and mostly manufacturing sectors are covered in the sample through ten provinces of three regions in Vietnam. In order to create the panel dataset through the research period, the ID of firms is used for firm identifiers to append data (e.g. Rand & Tarp (2012); Vu, Holmes, Lim & Tran (2014)).

The second data source is the surveys of the Vietnam Provincial Competitiveness Index (PCI) in the corresponding years as in the first source (that is, 2005, 2007, 2009, and 2011, respectively). The PCI surveys were conducted by the Vietnam Competitiveness Initiative and the Vietnam Chamber of Commerce and Industry to evaluate institutional quality of provincial governments including nine indexes, namely: (i) entry costs; (ii) land access; (iii) transparency and access to information;(iv) time costs and regulatory compliance;(v) informal charges; (vi) bias toward state owned sector; (vii) private sector development services; (viii) labour training; and (ix) legal institutions. [3]

Then, a combination between the first and second sources has created a unique panel dataset (at both firm and provincial levels) that allows the study to evaluate not only the

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[3] The definitions of these sub-indicators are presented in Appendix 1

impact of corruption at firm level but also the effects of institutional quality at provincial level on firms' financial performance.

A common problem with time variant data is that it is often expressed in current prices. Therefore, our data on current variables are deflated to 1994 prices using the GDP deflators to avoid biases that might arise because of inflation. More specifically about the dataset, statistical description of the main variables in our regression estimations is displayed in Table 1. Table 1 displays a statistical summary of main variables in the regression models. The dependent variable is firm financial performance measured as ROA. As shown by Table 1, this index seems no change much through the research period. Corruption is the main variable of interest. The bribe incidence decreased considerably from 40.5% in 2005 to 26% in 2007. This is consistent with the decreasing trend for this period shown in Rand and Tarp (2012) and can be explained by the effect of anti-corruption law passed in 2005 and the establishment of the National Anti-Corruption Committee in 2006. However, the corruption index experiences a significant increase again through rest of the study period. Our data also provide information on what purposes of corruption are. As shown by the data, while the majority of paying bribe for different types of activities increases through the research period, firms use less money for paying bribes to gain contracts government, with the mean of variable was 6.2 % and 2.6% respectively in 2005 and 2011.

Among firm characteristic variables, while average labour experiences a slight decrease from 2.02 to 1.92, the age of firm increases in our sample in the same period. A decreasing trend is witnessed for innovative actives of firms in the period 2005–2011.

Regarding institutional factors at the provincial level, there are nine main sub-indexes reflecting through the research sample. Several indicators increase significantly through the sample period, while other indexes decrease slightly. For example, while entry costs increase significantly from 7.19 in 2005 to 8.2 in 2011, the index of labour training among provinces witness a slight decrease in the research period.

| Table 1: Summary statistics for the main variables in the model | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Variable | 2005[4] | | 2007 | | 2009 | | 2011 | |
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD |

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[4] Provincial level indexes in 2006 instead of 2005 are used in this research because of two reasons. First, our data are investigated in 10 provinces. However, PCI from 2005 does not survey from some provinces in our sample. In addition, firm-level survey in 2005 was conducted from late October onwards. Thus using CPI of 2006 does match quite well with firm-level data of 2005.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ROA | 0.203 | 0.297 | 0.237 | 0.32 | 0.236 | 0.313 | 0.211 | 0.295 |
| Bribe | 0.404 | 0.49 | 0.262 | 0.44 | 0.34 | 0.47 | 0.38 | 0.48 |
| Bribe intensity | 0.002 | 0.008 | 0.0017 | 0.015 | 0.0013 | 0.018 | 0.0011 | 0.004 |
| Paying bribe for getting connected with public services | 0.147 | 0.35 | 0.041 | 0.199 | 0.066 | 0.24 | 0.101 | 0.301 |
| Paying bribe for getting licenses and permits | 0.02 | 0.14 | 0.006 | 0.078 | 0.024 | 0.155 | 0.030 | 0.172 |
| Paying bribe for dealing with tax and tax collectors | 0.092 | 0.29 | 0.054 | 0.226 | 0.093 | 0.290 | 0.116 | 0.32 |
| Paying bribe for gaining contract governments | 0.062 | 0.241 | 0.041 | 0.20 | 0.036 | 0.186 | 0.026 | 0.159 |
| Paying bribe for dealing with customs | 0.013 | 0.114 | 0.010 | 0.102 | 0.02 | 0.14 | 0.014 | 0.118 |
| Paying bribe for other reasons | 0.067 | 0.25 | 0.108 | 0.311 | 0.101 | 0.301 | 0.093 | 0.291 |
| Firm age (log) | 2.176 | 0.765 | 2.35 | 0.711 | 2.428 | 0.728 | 2.38 | 0.675 |
| Firm size (log) | 2.02 | 1.104 | 2.05 | 1.11 | 2.05 | 1.13 | 1.92 | 1.12 |
| Innovation | 0.667 | 0.471 | 0.481 | 0.49 | 0.448 | 0.497 | 0.441 | 0.496 |
| Leverage | 0.112 | 0.337 | 0.104 | 0.227 | 0.10 | 0.237 | 0.076 | 0.176 |
| Institutional quality at province level | | | | | | | | |
| Entry cost | 7.18 | 0.825 | 7.62 | 0.716 | 8.22 | 0.354 | 8.62 | 0.29 |
| Land access | 5.32 | 0.783 | 5.75 | 0.802 | 5.55 | 0.682 | 5.69 | 0.879 |
| Transparency | 5.805 | 0.843 | 6.07 | 0.792 | 5.9 | 0.333 | 5.95 | 0.43 |
| Time cost | 4.79 | 0.417 | 6.58 | 0.829 | 6.10 | 0.523 | 6.11 | 0.68 |
| Informal charge | 5.83 | 0.539 | 6.15 | 0.608 | 5.33 | 0.549 | 6.3 | 0.903 |
| Proactive | 4.75 | 1.27 | 4.96 | 1.24 | 3.76 | 0.837 | 4.19 | 0.987 |
| Private act | 5.64 | 1.38 | 5.87 | 1.93 | 6.29 | 1.21 | 5.67 | 1.37 |
| Worker training | 5.64 | 1.42 | 5.27 | 1.02 | 4.87 | 0.84 | 5.19 | 0.46 |
| Legal framework | 3.81 | 0.808 | 3.99 | 0.714 | 5.21 | 0.536 | 5.789 | 0.34 |
| PCI | 53.69 | 7.13 | 56.73 | 5.604 | 56.57 | 3.66 | 59.43 | 3.24 |
| Observations | 2578 | | 2442 | | 2499 | | 2405 | |

Table 2 provides partial correlation matrix, considering the unconditional relationships among variables. Initial evidence shows that there is a negative relationship between financial performance of firms and corruption and this tentatively supports for the argument of the sand the wheel of corruption.[5] In addition, firm characteristics factors such as innovation and leverage are also found to have a statically significant correlation with firm financial performance. While correlation coefficients for innovation is 0.075, this coefficient for leverage is higher with 0, 08 at the 5% level of significance.

**Table 2: Correlation matrix between corruption and firm financial performance**

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[5]Replacing bribe by bribe intensity or types of corruption, negative and significant relationships between bribe intensity or types of corruption with firms' financial performance are also observed.

| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1.ROA | 1.00 | | | | | | | |
| 2. Bribe | -0.123* | 1.00 | | | | | | |
| 3.Firm size in log | -0.195* | 0.365* | 1.00 | | | | | |
| 4. Firm age in log | -0.033* | -0.132* | -0.151* | 1.00 | | | | |
| 5. Leverage | 0.082* | 0.075* | 0.185* | -0.092* | 1.00 | | | |
| 6. Innovation | -0.075* | 0.188* | 0.282* | -0.107* | 0.068* | 1.000 | | |
| 7. Lag ROA | 0.169* | -0.072* | -0.136* | -0.00 | -0.002 | -0.056* | 1.00 | |
| 8. PCI | -0.024* | 0.037* | 0.069* | -0.057* | 0.017 | -0.080* | -0.008 | 1.00 |

*Note:* * significant at the 5% level or better

## 3.2. Methodology and estimation issues

Applying a dynamic panel modelling approach to deal with the dynamic nature of economic processes is becoming increasingly important in recent years (Flannery & Hankins, 2013). Wintoki, Linck, and Netter (2012), for example, document that corporate governance–firm financial performance relationship is dynamic in nature, that is, the current firm performance and other firm-specific characteristics are driven by past performance. This dynamic nature is considered as a potential source of endogeneity which makes traditional static models problematic (Flannery & Hankins, 2013; Wintoki, et al., 2012). To control for the "dynamic endogeneity", empirical models using firm performance as a dependent variable must be examined in a dynamic framework in which lagged dependent variable(s) are employed as explanatory variable(s) (Wintoki, et al., 2012).

Technically, the inclusion lagged dependent variable(s) on the right-hand side of the empirical models allows empiricists to control for unobserved historical factors which have potential influences on current firm performance, thus reducing omitted variable bias (Wooldridge, 2009). Moreover, even if the estimated coefficient(s) on lagged dependent variable(s) are not of direct interest of the empiricists, "allowing for dynamics in the underlying process may be crucial for recovering consistent estimates of other paramaters" (Bond,2002, p.142). Hence, in order to allow comparison, this study's empirical specification is built upon previous studies (e.g.,Wintoki, et al., 2012) and specified as below:

$$Y_{it} = \alpha_0 + \sum_{s=1}^{k} a_s Y_{it-s} + \delta_m Corruption_{,it} + \beta_k Z_{k,it} + year\ dummies + industry\ dummies + \vartheta_{it} \quad (1)$$

Where $\vartheta_{it} = \mu_i + \omega_t + \varepsilon_{it}$

Where: $Y_{it}$ is the financial performance (as measured by ROA) of firm $i$ in year $t$; $a_s$ is the estimated coefficient on lagged dependent variables; Corruption is widely defined as the abuse of power by public officials for private gains (Svensson, 2005). This is the main interest

variable in the model. In this study, following Rand and Tarp (2012), we measure corruption as a set of variables. First, it is measured as a dummy based on the question if firms have to pay informal payments. In addition, while bribe intensity is measured as the ratio between the amounts of informal payment to total revenue, the types of bribe are measured on the basis of question what are the purposes of bribe payment or communication fee.

$Z$ is a vector of firm-level explanatory variables (firm size, firm age, innovation and leverage) used in the model as guided by previous studies (e.g., Donadelli et.al, 2014; Fisman & Svensson, 2007). We also control for potential influences arising from differences across industries through the use of dummy variables for industry classification. $\mu_i$ represents time-invariant unobserved firm characteristics; $\omega_t$ denotes time-specific effects which are time-variant and common to all firms. These time-specific effects are captured by year dummy variables; $\varepsilon_{it}$ is the classical error term.

Following prior studies on firm performance (e.g., Nguyen, Locke, & Reddy, 2014; Wintoki et.al (2012)), the information from the past can be captured sufficiently by two lags of the dependent variable. To explore this, we ran a specification in which the current financial performance is a dependent variable regressed on two lags of past performance, and other covariates as in equation (1). Using this formulation, an insignificant effect of $Y_{it-2}$ on current firm financial performance was found. Hence, this suggests that one-year lagged dependent variable as an explanatory variable in a first-order autoregressive [AR(1)] structure is enough to control for the potential dynamic endogeneity. This is in line with Zhou, Faff, and Alpert (2014) who argue that an AR(1) structure appears to be unavoidable when almost all panel datasets used in corporate finance research are short. The AR(1) panel model specification is displayed in detail as follows..

$$Y_{it} = \alpha_0 + \alpha_1 Y_{i,t-1} + \delta_m Corruption_{,it} + \beta_k Z_{k,it} + year\ dummies + industry\ dummie$$
$$+ \vartheta_{it} \qquad\qquad (2)$$

Furthermore, failing the consideration of institutional quality factors may bias the impact of corruption on firm performance (Frauq, Webb & Yi (2013); Halkos &Tzeremes (2010)). Corruption can "grease or sand the wheel" if the institutional quality is good or bad (Méon and Weill (2010)). Hence, indexes of institutional quality at provincial level ($P_{m,jt}$) are controlled for in the model.

$$Y_{it} = \alpha_0 + \alpha_1 Y_{i,t-1} + \delta_m Corruption_{,it} + \beta_k Z_{k,it} + \gamma_m P_{m,jt} + year\ dummies + industry\ dummies$$
$$+ \vartheta_{it} \qquad\qquad (3)$$

Regarding estimation approach, in the presence of the AR(1) structure in equation (2), the pooled OLS (OLS) and the OLS with fixed-effects (FE) methods will provide inconsistent estimations (Flannery & Hankins, 2013; Nickell, 1981; Wintoki, et al., 2012). Some studies use traditional IV approach. However, findings of a set of external instrumental variables seem infeasible when almost all independent variables are considered to be not exogenous. In order to correct for this inconsistency and these challenges, we use the two-step system generalised method of moments estimator (System GMM) proposed by Blundell and Bond (1998). This estimator is superior to the OLS or FE in controlling for time-invariant unobserved heterogeneity across firms, simultaneity, and dynamic endogeneity (Blundell & Bond, 1998; Wintoki, et al., 2012).

## 4. Results and discussions

As a benchmark, preliminary regression results are obtained by using the OLS approach for pooled data. Column 1 of Table 3 shows a negative significant linkage between bribe and firm financial performance at the 1% level of significance. The estimated coefficient tells us that firms with corruption behaviour have a lower financial performance than those without. This finding is in line with recent findings by Donadelli et.al (2014) on European firms, but in contrast to the results from East Asian studies where corruption has a positive effect (e.g., Wang & You (2012) for Chinese firms). Such mixed results imply that our initial investigation by the OLS can be biased as a consequence of unobservable factors or the potential endogeneity problem of corruption and other variables.

With attempts to control for time-invariant unobserved features and overcome the above challenges, we conduct the system GMM as guided by Wintoki et.al (2012). It is noted that the OLS and FE methods may gain more efficient estimations than the system GMM if explanatory variables are not endogenous. Hence, a Durbin-Wu-Hausman test is implemented for all independent variables as a group to examine if they are actually endogenous. Following Schultz, Tan and Walsh (2010), the test is conducted on the levels equation of firm performance and corruption. One-year lagged differences of explained covariates such as $\Delta lnY_{it-1}$, $\Delta lnsize_{it-1}$, $\Delta bribe_{it-1}$, and $\Delta leverage_{it-1}$, are considered as instrumental variables with year dummies, industries dummies and lnage considered as exogenous

variables. The results of the test show that the null hypothesis is rejected at traditional level of significance (1%). The endogeneity of regressors is of concern, and hence it is necessary to apply the system GMM estimator in this study. We also carry out the validity of the system GMM estimation by a test of Hansen-J test for over identification. The results are displayed in the last row of Table 3. The P-values of Hansen-Jest are 0.135, 0.211 and 0.117 respectively, suggesting that instrumental variables employed in our models are valid.

As reported in column 2 of Table 3, the impact of corruption on firm financial performance becomes insignificant after controlling for unobservable characteristics and dynamic endogeneity. This finding provides support for the institutional theory's perspective and reflects the fact that corruption is widespread among firms in Vietnam and hence, participation in corruption activities does not provide financial efficiency for firms.

However, as discussed previously, measuring bribe as a dummy does not capture the level of corruption well. Hence, we replace bribe by bribe intensity. As shown by column 3 of Table 3, bribe intensity has a negative effect on firms' financial performance regardless of which model is used. Specifically, when bribe intensity increases 1%, the firm financial efficiency decreases 0.147%, keeping other factors constant. This finding implies that previous studies using bribe as a dummy variable can mask the real impact of corruption on firm performance.

Looking more closely, we explore the effects of different types of corruption on firms' financial performance. Our results show that while some types of corruption do not affect firms' financial performance, we find that costs come from both the payment to public official to obtain licences and permits as well as informal payment for tax collectors are main contributors to the negative impacts of level of corruption on firms' financial efficiency. However, interestingly, paying informal costs for public services has a positive impact on firm financial performance. This may be because paying informal costs for public services helps enterprises save time and costs in solving public administration, and hence ensures them gaining financial efficiency.

In terms of firm-level characteristics, as expected, innovation has a positive impact on firm financial performance. For example, column 2 of Table 3 shows that innovators have 2.3% higher financial performance than non-innovators, keeping other things constant. The results are consistent with most findings in the literature (e.g., Koellinger, 2008). In addition,

while firm size and firm age have an insignificant impact on firm financial performance, leverage, as measured by the ratio between total debts over total assets, witnesses a positive association with firms' financial performance regardless of which model is used. It may be that firms with higher leverage face higher pressure. Hence, they are under higher pressure to improve efficiency to gain higher productivity, and improve the financial performance of firms. This finding also supports the argument of González (2013) who said that a firm with higher financial debt can force managers to value-maximising decisions.

Regarding the role of past firm financial performance, the estimated results show a significant and positive impact on current performance regardless of which model is used. This finding is in line with recent studies (e.g., Wintoki, et al., 2012). These results also imply that past firm financial performance is a vital variable in considering the dynamic nature of the factors affecting firm financial performance; ignoring this variable in the model can result in researchers fail to capture the real impacts of corruption on firms' financial performance.

When conducting the system GMM estimation, we follow the recommendation by Roodman (2009) and apply the difference-in-Hansen tests to the instrumental variable subsets to make sure that they are all exogenous. The null hypothesis of the tests is that a specific instrument subset is jointly valid. To be precise, we test the validity of four instruments subsets used in all three models 1, 2, and 3, namely: (i) all the GMM-type instruments for the levels equation as a group; (ii) the GMM-type instruments for the transformed equation based on lagged levels of dependent variable; (iii) the GMM-type instruments for the levels equation based on lagged differences of dependent variable; and (iv) standard instrumental variables. The results reported in Table 4 indicate that all the subsets of instrumental variables are econometrically exogenous.

**Table 3:Dynamic models of corruption and firm financial performance**

| VARIABLES | Model 1 | | Model 2 | | Model 3 | |
|---|---|---|---|---|---|---|
| | Pooled OLS | GMM | Pooled OLS | GMM | Pooled OLS | GMM |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| lagROA | 0.0596** | 0.0685* | 0.0603** | 0.0678* | 0.0597** | 0.0692* |
| | (0.020) | (0.030) | (0.020) | (0.030) | (0.020) | (0.030) |
| Bribe | -0.0352** | -0.0015 | | | | |
| | (0.008) | (0.010) | | | | |
| Bribe intensity | | | -0.4018** | -0.1474* | | |
| | | | (0.131) | (0.070) | | |
| Bribe for public services | | | | | -0.0227 | 0.0271+ |
| | | | | | (0.014) | (0.016) |
| Bribe for licenses and permits | | | | | -0.0671** | -0.0662** |
| | | | | | (0.020) | (0.024) |
| Bribe for tax and tax collectors | | | | | -0.0627** | -0.0297* |
| | | | | | (0.011) | (0.013) |
| Bribe for contract government | | | | | -0.0334* | -0.0098 |
| | | | | | (0.017) | (0.022) |
| Bribe for dealing with customs | | | | | 0.0605+ | -0.0325 |
| | | | | | (0.036) | (0.040) |
| Bribe for other reasons | | | | | -0.0233+ | 0.0001 |
| | | | | | (0.012) | (0.014) |
| Firm size in log | -0.0400** | -0.0028 | -0.0446** | -0.0021 | -0.0420** | -0.0103 |
| | (0.005) | (0.011) | (0.005) | (0.011) | (0.005) | (0.009) |
| Firm age in log | -0.0239** | -0.0077 | -0.0230** | -0.0062 | -0.0238** | -0.0057 |
| | (0.006) | (0.008) | (0.006) | (0.008) | (0.006) | (0.008) |
| Leverage | 0.1484** | 0.1347** | 0.1482** | 0.1242* | 0.1463** | 0.1428** |
| | (0.026) | (0.049) | (0.026) | (0.050) | (0.026) | (0.047) |
| Innovation | 0.0004 | 0.0232* | -0.0008 | 0.0253* | 0.0019 | 0.0231* |
| | (0.008) | (0.010) | (0.008) | (0.011) | (0.008) | (0.010) |
| Constant | 0.4020** | 0.2310** | 0.4013** | 0.2141** | 0.4039** | 0.2175** |
| | (0.024) | (0.055) | (0.024) | (0.056) | (0.024) | (0.048) |
| Observations | 6,031 | 6,031 | 6,031 | 6,031 | 6,031 | 6,031 |
| R-squared | 0.083 | | 0.081 | | 0.085 | |
| Durbin-Wu-Hausman test for endogeneity of repressors (*p*-value) | | 0.0005 | | 0.0004 | | 0.0026 |
| Hansen-J test of over-identification (*p*-value) | | 0.135 | | 0.211 | | 0.117 |

*Notes:* Models include industry dummies, year dummies and firm fixed-effects; Asterisks indicate significance at 10% (+), 5% (*), and 1% (**). Robust standard errors in parenthesis. The number of observations is 6,031. Following Schultz, et al., (2010) and Wintoki, et al., (2014), firm age and year dummies are considered to be exogenous.

**Table 4 : Difference-in-Hansen tests of exogeneity of instrumental variable subsets**

| Tested instrument subsets | Test statistics (Chi-squared) | Degrees of freedom | P-value |
|---|---|---|---|
| *Panel A: Model 1* | | | |
| All the GMM-type instruments for the levels equation as a group | 62 | 68 | 0.682 |
| The GMM-type instruments for the transformed equation based on lagged levels of ROA | 3.12 | 3 | 0.373 |
| The GMM-type instruments for the levels equation based on lagged differences of ROA | 1.42 | 2 | 0.491 |
| Standard instruments | 5.01 | 3 | 0.171 |
| *Panel A: Model 2* | | | |
| All the GMM-type instruments for the levels equation as a group | 53.44 | 68 | 0.902 |
| The GMM-type instruments for the transformed equation based on lagged levels of ROA | 2.57 | 3 | 0.464 |
| The GMM-type instruments for the levels equation based on lagged differences of ROA | 1.5 | 2 | 0.472 |
| Standard instruments | 4.84 | 3 | 0.184 |
| *Panel A: Model 3* | | | |
| All the GMM-type instruments for the levels equation as a group | 85.41 | 83 | 0.406 |
| The GMM-type instruments for the transformed equation based on lagged levels of ROA | 4.14 | 3 | 0.247 |
| The GMM-type instruments for the levels equation based on lagged differences of ROA | 0.82 | 2 | 0.663 |
| Standard instruments | 8.52 | 3 | 0.036 |
| | | | |

As a final step, we check the robustness of results by posing several scenarios. First, our results can be biased by ignoring institutional quality at the province level. Hence, in further regressions, provincial institutional quality indexes are added and the results are reported in Appendix 2. Second, we replace aggregated institutional quality index at provincial level by the sub-indicators to evaluate institutional quality in detail. However, the negative effects of bribe intensity and types of corruption on firms' financial performance are still recorded and the results are available on requests. Finally, we have further estimation by dropping of innovation variable with arguing that innovation may be endogenous and hence, controlling for this can bias the results. Although the estimated coefficient changes slightly, the results do not change much in quality.

## 5. Conclusion

As a contribution to the small but rising evidence of the effect of corruption on firm financial performance, this study considers for the first time the impact of corruption on firm financial performance at both the firm and provincial levels in Vietnam. In contrast to the findings of many previous studies, we found that the incidence of bribe do not affect firm financial performance but the bribe intensity negatively affect firm financial performance, when the dynamic endogeneity and unobservable characteristics are controlled for. Hence, a typical approach using only a dummy variable of bribe might not adequately evaluate the impact of bribe intensity. In addition, this paper provides additional evidence on the impacts of various types of corruption. While some kinds of corruption do not affect firm financial performance, firms paying informal costs to obtain licences and government contracts have negative impacts on the financial performance of enterprises. However, firms paying bribes for public services have a higher financial performance compared to their counterparts without doing so. These results imply that the various types of corruption have different impacts on firms' financial performance and various anti-corruption measures should be also given to such types of corruptions.

Regarding traditional firm characteristics factors, the empirical results are generally consistent with other international empirical studies. For example, past performance is found to have positive effect on firm financial performance, suggesting that the link between corruption and firm financial performance should be investigated in a dynamic framework. In addition, while firms with more years in business do not have a higher financial performance than their counterparts, leverage has a positive association with firm financial performance. Furthermore, it is not surprised that innovators who have flexible policies are able to respond quickly to market demand and are marked by higher financial performance non-innovators.

In terms of policy implication, the majority of types of corruptions have negative impacts on the financial performance of firms. In addition, a decrease in corruption level is accompanied by an improvement in the efficiency of finance for private firms in Vietnam. Hence, bribe-combating actions are necessary such as a legal framework that is clear, consistent and equal for all economic sectors.

Although this study has contributed to the understanding of corruption's effects on the financial performance of non-state manufacturing SMEs, it still has several limitations that

offer opportunities for future study. For example, this study focuses only on domestic non-state manufacturing SMEs in Vietnam. Given the availability of comparable data, future work could consider large firms, firms in other ownership categories such as SOEs and FIEs, and firms in other economic sectors such as services or agriculture in order to provide a broader understanding of the impact of corruption, types of corruption on financial performance of the Vietnamese enterprises.

# Appendices

**Appendix 1: Definition and measurement of variables included in the models**

| Explanatory variables | Definition | Measurement |
|---|---|---|
| ROA | The ratio between net profit and total assets | Ratio |
| Bribe | Whether or not firms pay informal costs | 1= yes; 0= otherwise |
| Bribe intensity | The ratio between payment amount and total revenue | Ratio |
| Paying bribe for getting connected with public services | Whether or not firms pay bribe for getting connected with public services | 1= yes; 0= otherwise |
| Paying bribe for getting licences and permits | Whether or not firms pay bribe for getting licences and permits | 1= yes; 0= otherwise |
| Paying bribe for dealing with tax and tax collectors | Whether or not firms pay bribe for dealing with tax and tax collectors | 1= yes; 0= otherwise |
| Paying bribe for gaining contract governments | Whether or not firms pay bribe for gaining contract governments | 1= yes; 0= otherwise |
| Paying bribe for dealing with customs | Whether or not firms pay bribe for dealing with customs | 1= yes; 0= otherwise |
| Paying bribe for other reasons | Whether or not firms pay bribe for other reasons | 1= yes; 0= otherwise |
| Firm age | The number of years since firms have been established | Year(s) |
| Firm size | Total number of labourers of firms | Number of labours |
| Innovation | Whether or not firms have innovative activities | 1= yes; 0= otherwise |
| Leverage | The ratio between total debt and total assets | Ratio |
| Entry cost | The measurement of time a firm takes to register and acquire land as well as the time to receive all the necessary licenses needed to start a business | Number |
| Land access | The measurement of the ability to access land and the security of business premises after land is acquired | Number |
| Transparency | The measurement of firms' ability in access to proper planning and legal documents for running their business labour and training as well as whether those documents are equitably available, whether new policies and laws are communicated to firms and predictably implemented | Number |
| Time cost | The measurement of how much time firms spending on bureaucratic compliance or decisions to implement local policy indices | Number |
| Informal charge | The measures firm perceptions of the corruption of provincial officials | Number |
| Proactive | Bias toward State Owned Sector evaluates bias in terms of incentives, policy, and access to capital of provincial governments toward state-owned enterprises, equitized | Number |
| Private act | development services design their own initiatives for private sector development and have provincial services for private sector trade promotion, provision of regulatory information to firms, business partner matchmaking, provision of industrial zones | Number |
| Worker training | evaluates efforts by provincial authorities to promote vocational | Number |

| | training and skills development for local industries | |
|---|---|---|
| Legal framework | legal institutions measure the faith that firms have that provincial courts will enforce contracts | Number |
| PCI | The aggregated index of measurement of ranking of economic governance in Vietnam's by VCCI | Number |

**Appendix 2: Dynamic models controlled for institutional quality at provincial level**

| VARIABLES | Pooled OLS | GMM | Pooled OLS | GMM | Pooled OLS | GMM |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| lagROA | 0.0597** | 0.0687* | 0.0603** | 0.0678* | 0.0597** | 0.0694* |
| | (0.020) | (0.030) | (0.020) | (0.030) | (0.020) | (0.030) |
| Bribe | -0.0350** | -0.0021 | | | | |
| | (0.008) | (0.010) | | | | |
| Bribe intensity | | | -0.4007** | -0.1517* | | |
| | | | (0.127) | (0.071) | | |
| Bribe for public services | | | | | -0.0229+ | 0.0255 |
| | | | | | (0.014) | (0.016) |
| Bribe for licenses and permits | | | | | -0.0659** | -0.0648** |
| | | | | | (0.020) | (0.024) |
| Bribe for tax and tax collectors | | | | | -0.0642** | -0.0322* |
| | | | | | (0.011) | (0.013) |
| Bribe for contract government | | | | | -0.0327+ | -0.0105 |
| | | | | | (0.017) | (0.022) |
| Bribe for dealing with customs | | | | | 0.0608+ | -0.0337 |
| | | | | | (0.036) | (0.040) |
| Bribe for other reasons | | | | | -0.0215+ | 0.0005 |
| | | | | | (0.012) | (0.014) |
| Firm size in log | -0.0395** | -0.0025 | -0.0440** | -0.0015 | -0.0415** | -0.0103 |
| | (0.005) | (0.011) | (0.005) | (0.011) | (0.005) | (0.009) |
| Firm age in log | -0.0242** | -0.0084 | -0.0233** | -0.0068 | -0.0241** | -0.0064 |
| | (0.006) | (0.008) | (0.006) | (0.008) | (0.006) | (0.008) |
| Leverage | 0.1479** | 0.1361** | 0.1477** | 0.1247* | 0.1458** | 0.1450** |
| | (0.027) | (0.049) | (0.026) | (0.049) | (0.026) | (0.047) |
| Innovation | -0.0003 | 0.0225* | -0.0016 | 0.0246* | 0.0011 | 0.0223* |
| | (0.008) | (0.010) | (0.008) | (0.011) | (0.008) | (0.010) |
| PCI | -0.0021* | -0.0011 | -0.0022* | -0.0011 | -0.0023* | -0.0012 |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| Constant | 0.5219** | 0.2987** | 0.5234** | 0.2825** | 0.5309** | 0.2910** |
| | (0.062) | (0.079) | (0.062) | (0.080) | (0.062) | (0.076) |
| Observations | 6,031 | 6,031 | 6,031 | 6,031 | 6,031 | 6,031 |
| R-squared | 0.084 | | 0.082 | | 0.086 | |
| Hansen-J test of over-identification (*p*-value) | | 0.132 | | 0.219 | | 0.115 |

*Notes:* Models include industry dummies, year dummies and firm fixed-effects; Asterisks indicate significance at 10% (+), 5% (*), and 1% (**). Robust standard errors in parenthesis. The number of observations is 6,031. Firm age, PCI and year dummies are considered to be exogenous.

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