Economics and Finance in Indonesia

Volume 66
Number 2 *December 2020*

Article 4

12-31-2020

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Recommended Citation

Kurniawan, Irfan (2020) "Should I Bribe? Re-Examining the Greasing-the-Wheels Hypothesis in Democratic Post-Soeharto Indonesia," *Economics and Finance in Indonesia*: Vol. 66: No. 2, Article 4.
DOI: 10.47291/efi.v66i2.792
Available at: https://scholarhub.ui.ac.id/efi/vol66/iss2/4

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Economics and Finance in Indonesia
Vol. 66 No. 2, December 2020 : 123–140
p-ISSN 0126-155X; e-ISSN 2442-9260

Should I Bribe? Re-Examining the Greasing-the-Wheels Hypothesis in Democratic Post-Soeharto Indonesia

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Manuscript Received: 9 November 2020; Revised: 18 December 2020; Accepted: 24 December 2020

Abstract

During the Soeharto Era corruption was considered to grease the wheels of growth in Indonesia, a country once considered to be the most corrupt country in the world. Indonesia began to experience instantaneous decentralization and democratization after the Soeharto Era abruptly ended. While vastly celebrated, these episodes have their unintended consequence: coercive regulation. We employed the extensive firm-level Large and Medium Manufacturing (*Industri Besar Sedang*/IBS) census data combined with the Indonesian Democracy Index (*Indeks Demokrasi Indonesia*/IDI) at provincial level spanning from 2009 to 2015 and found that bribery hampered Indonesian firm output and productivity growth by 9.8% and 12.6%, respectively. These results suggest that the greasing effect has now diminished. Interestingly, we also found that firms located in a province with a better democracy index may experience less damaging effects of corruption. In other words, two firms paying the same value of bribe may obtain different effects depending on where they are located.

Keywords: bribery; greasing-the-wheels hypothesis; firm performance; democracy; decentralization

JEL classifications: D72; D73; O14

1. Introduction

What happens if the strongman of a country falls? Qadhafi's reign ended in 2011 when the Arab Springs came to Libya. Libya soon fell into a total disarray, and economic activities mostly halted (Darendeli & Hill 2016). Dininio & Orttung (2005) describe that the collapse of the Soviet Union led to extensive decentralization in Russia. People directly elected governors from the mid-1990s until the end of 2004 in regions within Russia, resulting in divergence in political and economic regimes. In 1998, Indonesia's ruler of three decades, Soeharto, stepped down from power amid economic catastrophe and a massive corruption scandal. Soeharto's fall, followed by democratization and decentralization in Indonesia, allowed regions to travel divergent paths both politically and economically.

Doing business and corruption in an autocratic regime is relatively simpler, as it is always clear who needs to be bribed and how much is involved (Shleifer & Vishny 1993). In Libya during Qadhafi's regime, for multi-national companies (MNEs) with close ties to Qadhafi, the arrangements and costs were rather predictable and manageable. All knew what one 'had to do' (Darendeli & Hill 2016). While in Russia during the Soviet Union era, bribes were channeled through local communist party offices and any deviation would be punished by the party's system, resulting in very few deviations (Shleifer & Vishny 1993). These practices are somehow similar to Indonesia under Soeharto, when corruption tended to be centralized and predictable (Bardhan

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1997; McLeod 2000). Soeharto managed a better level of corruption by always taking the long-term view (McLeod 2000). Therefore, undoubtedly corruption in this era benefitted firm performance in Indonesia (Rock & Bonnett 2004; Vial & Hanoteau 2010).

The fall of Soeharto was followed by massive democratization and decentralization. The democratization process was marked by the direct election for president in 2004 and governors and mayors and regents in 2005. In 1999 there were 26 provinces and 293 districts (*Kabupaten/Kota*), while now there are 34 provinces and 514 districts. Decentralization and the local democratic process enable officials to regulate their region by issuing regional regulations (*Perda*). The *Perda* itself has been found to be coercive. A study in 2017 found up to 71% of *Perda* suffered time, cost, and procedure haziness, while 64% brought about negative economic effects (KPPOD 2017). Therefore, it is necessary to investigate the impact of corruption on firm performance during this timeframe given the paucity of such research.

Our main research objective is to re-examine the impact of corruption on firm performance in Indonesia in the post-Soeharto context. In the post-Qadhafi era, firms that have strong ties with local leaders and bureaucrats are likely to survive (Darendeli & Hill 2016). In Indonesia, it is predicted that the official number of bribe-takers will tend to increase and corruption will be more detrimental to economic efficiency (McLeod 2000). Kuncoro (2006) argues decentralization in Indonesia exacerbates bribe collection system as the fragmentation and uncertainty escalate.

Corruption is universally condemned, but criticism that is based on simply moralizing-explicit or latent self-interest, or ideology, can be an obstacle to rational analysis (Leff 1964). Empirically, there are two competing findings on corruption impact that strongly depict an ambivalent relationship between the private sector (firms) and the government. Firms detest corruption as it sands their performance. Studies have found negative effects of corruption on the economy and business in many countries around the world (e.g., Bbaale & Okumu 2018; Fisman & Svensson 2007; Jain 2020; Kaufmann & Wei 2000; Lambsdorff 2003; Mauro 1995; McArthur & Teal 2002; Rose-Ackerman 2004; Seker & Yang 2012). However, corruption remains a common practice in doing business (Cuervo-Cazurra 2006,2016; Rose-Ackerman 2004). Corruption can help firms especially those operating in areas with low government institution quality (Jiang & Nie 2014; Krammer 2019; Méon & Weill 2010; Rock & Bonnett 2004; Vial & Hanoteau 2010).

Previous studies on the impact of corruption generally focus on inter-country comparison. Few studies have focused on the impact of corruption on inter-jurisdiction within a country, especially after a political transition. Our study aims to fill this gap using the Indonesian context. This article aims to explore how local institution may affect the impact of corruption. North (1991) postulated that institution and standard economic constraints determine transaction and production costs and hence the profitability and feasibility of engaging in economic activity. The literature on corruption suggests that the net effect of corruption depends on institution quality (De Vaal & Ebben 2011; Huntington 1968; Méon & Sekkat 2005; Méon & Weill 2010). Decentralization has allowed each region in Indonesia to operate as a unit of an entire democratic institution. The dynamics of the instantaneous decentralization approach have created variable performance in different provinces as a result of variations in the institutional establishment, leadership, and political culture (Gismar 2011). Accordingly, this study aims to explore the interaction of the quality of local democracy and corruption and their impact on firm performance. This subject in the Indonesian context, to our best knowledge, remains underexplored.

This study builds on Vial & Hanoteau's (2010) findings stating that corruption has a positive and statistically significant effect on firm growth in Indonesia during the Soeharto Era. We aim to re-examine the hypothesis using firm-level data after the Soeharto Era ended and political institutions

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DOI: 10.47291/efi.v66i2.792

Kurniawan: Should I Bribe? Re-Examining the Greasing-the-Wheels Hypothesis i

radically changed. Our analysis of corruption in the decentralization setting is based on Shleifer & Vishny (1993) and Henderson & Kuncoro (2004). Therefore, our study shares the same logic of inquiry as previous studies examining the relationship of corruption and firm performance (e.g., McArthur & Teal 2002; Fisman & Svensson 2007; Méon & Weill 2010; Seker & Yang 2012; Bbaale & Okumu 2018; Cuervo-Cazurra 2016; Krammer 2019; Jain 2020).

Understanding a wide range of definitions of corruption is our first challenging task. Rose-Ackerman (2008, p. 551) defines corruption as "the misuse of public office for private gain" while Transparency International (2020) proposes a broader definition: "the abuse of entrusted power for private gain." Oxford Dictionary of English (Oxford Languages 2018) defines corruption as "dishonest or fraudulent conduct by those in power, typically involving bribery." In this article, we focus on bribery as the most common form of corruption involving firms and officials. Accordingly, the term corruption refers to bribery in the remainder of this article. We do not especially focus on high-profile bribery cases; rather we are interested in the common practice of bribery – grassroot bribery.

Transparency International ranked Indonesia as the country with the highest corruptions perception index in 1995. Since then, Indonesia has been through many major episodes of democratization. However, corruption remains a salient feature the Indonesian economy. For businesses, corruption remains to be the most problematic factor in doing business (WEF 2018). At the same time, the manufacturing sector in Indonesia suffers some signs of deindustrialization, including a decline in manufacturing output and export, and labor productivity (Hastiadi & Nurunnisa 2017).

This article is organized as follows. The next section, Section 2, presents a review of relevant theories and previous studies. Section 3 describes the data and methodology used in the study. Section 4 discusses the findings, and the final section presents the conclusion.

2. Literature Review

2.1. Theories of Bribery

To understand corruption within a relatively new decentralization and local democracy in Indonesia, the theory by Shleifer & Vishny (1993) is deemed suitable. According to this theory, the government is the purveyor of government goods (e.g., permits, licenses) and firms are the buyer. Within this setup, the government has the power to monopolize the goods. This setting is applicable in old monarchies or communist regimes, akin to the New Order Era; the buyers always knew whom to bribe and how much they wanted. As the bribe was handed, the buyer received the goods. The chance of not securing the goods was very slim due to the strong control by the regime. However, in many countries, many agencies or local government can create laws and regulations which allow them to extract rents. This setup often leads to the failure of collusion between the monopolists resulting in more uncertainty and bribery can not be sustained (Kuncoro 2006; McLeod 2000).

The above illustration depicts Indonesia's institutional setting in the Reformation Era. The New Order collapse has enabled decentralization and democracies to flourish to varying degrees. Henderson & Kuncoro (2004) conducted a seminal study on corruption in Indonesia in the decentralization setting. In their model, they argue that there is a correspondence between bribe and regulation burden. A firm will bribe local officials to lessen harassment and red tape and will negotiate with them in the process. The firm has to deal with the uncertainty of the promised service delivery. When there are too many officials or agencies who can determine the outcome, the bribery system is highly uncertain. The firm's willingness to pay bribes is a function of government-related harassment or red tape and uncertainty besides the firm's characteristics, such as firm size, ownership, sector, and location.

Henderson & Kuncoro (2004) extended the model

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by introducing inter-jurisdiction competition, which states that high bribes tend to repel firms from a region. They argue that bribe demand by government officials is a function of some proxy attitude towards businesses. If officials have a longer-term outlook, they would tend to value long-term income since they see businesses as profitable enterprise (Kuncoro 2006). In this setting, bribe demand may not be too excessive and relatively predictable. On the contrary, if officials choose a short-sighted strategy, bribes tend to be excessively high yet with highly uncertain outcomes. The positive relationship between red tape and bribe ratio indicates local officials' effort to extract rents by the means of regulations. This also increases the time needed by the firm to deal with the local officials to get things done.

2.2. Bribery Effects: Beneficial Grease or Harmful Sand?

Previous studies on the effects bribery revealed an ambivalent relationship between firms and the government. Findings on whether corruption (bribery) has positive (greasing) or negative (sanding) effects on the economy and business remain inconclusive. Leff (1964) argues that corruption can incentivize officials and induce the government to take a more favorable stand on economic activity. Breton (1974) and Huntington (1968) agree that corruption can serve as the second-best strategy to mitigate coercion or cumbersome regulations. Huntington (1968) added that in a political transition and poor institutions corruption tends to increase. The nuance of the bribe's positive effect strongly depends on institutional quality. De Vaal & Ebben (2011) support this hypothesis, and according to their model, in the institutional vacuum setting corruption tends to bring about negative impact. However, when the institutional setting is taken into account, the destructive effect of corruption only starts to emerge above a certain threshold. This implies that in a relatively low quality institution, corruption may serve as a grease.

In another line of research, several studies focused on firm-level impact. Williams, Martinez-Perez & Kedir (2016) analyzed data from more than 100,000 firms from 132 developing countries and found that bribes did enhance firm performance. Jiang & Nie (2014) show that corruption helps private firms circumvent regulations and score more profit in China. Krammer (2019) argues that bribery may help firms overcome bureaucratic obstacles during the introduction of new products as a result of bureaucratic obstacles and uncertainty, especially when they exhibit a lack of political affiliation.

The greasing hypothesis, however, does not remain uncontested. Fisman & Svensson (2007) show that bribery is negatively correlated with firm growth. Other studies also argue that corruption is hampering firm productivity (Bbaale & Okumu 2018; McArthur & Teal 2002). The extent of the negative effect of corruption on firm growth varies. Each percent increase in bribe correlates with a 3% lower firm growth in Uganda (Fisman & Svensson 2007), and a 24% sales decrease in Latin America and the Caribbean region (Seker & Yang 2012). Moreover, corruption has been found to be more detrimental to smaller firms (Jain 2020; Seker & Yang 2012; Zhou & Peng 2012).

In the Indonesian context, Vial & Hanoteau's (2010) findings support the greasing hypothesis. During the Soeharto era, bribery was sustained because it was followed by long-standing trust relations. Bribes paid off, as firms received service and secured access to productive resources for which they they bribed. This supports McLeod's (2000) claim that the Soeharto regime extracted rents while keeping the economy growing so that the 'tax base' increased and therefore kept him in power.

2.3. Local Democracy and Corruption

A firm may use financial incentives including committing bribery as business political strategies to influence political stakeholders' actions (Hillman & Hitt 1999; Holtbrügge, Berg & Puck 2007). This is certainly not a novel practice. In the long past mer-

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DOI: 10.47291/efi.v66i2.792

Kurniawan: Should I Bribe? Re-Examining the Greasing-the-Wheels Hypothesis i

chants paid protection money to the local prince or even local coercive group (North 1991).

There is a strong view that decentralization and local democracy is negatively correlated with corruption because politicians can be directly held accountable for their actions since they are closer to their constituents (Fisman & Gatti 2002; Treisman 2000). Democracy as a political institution has a mechanism that enables people to change leaders through an election. This setting allows the corrupt leader to be removed from power as a disciplining effect mechanism (Aidt, Dutta & Sena 2008). Such disciplining effect is arguably the most important feature in democracy and has been found in Indonesia. During the second wave of elections in the Reformasi Era (2004), districts that experienced a spike in corruption punished the secular party by a massive vote loss (Henderson & Kuncoro 2011).

3. Method

3.1. The Model

Several previous studies treat bribe payment as an endogenous variable (e.g., Fisman & Svensson 2007; Mauro 1995; Shleifer & Vishny 1993). Better performing or fast-growing firms may become targets of harassment or red tape, while at the same time those firms are more likely to have a higher willingness to pay bribes. The firm's manager may also choose bribery as a strategy to deter competitors or achieve a higher profit or growth. There is also the possibility of omitted variable bias from unobservable firm characteristics such as corporate culture.

This study follows Fisman & Svensson (2007) who pioneered the use of a two-stage estimation using industry-location average bribes as an instrument variable. This strategy has been employed by numerous studies (e.g., Bbaale & Okumu 2018; Jain 2020; Jiang & Nie 2014; Krammer 2019; Vial & Hanoteau 2010).

The firm's decision and the amount of bribe payment (bijt) are assumed to be determined by two aspects, the firm characteristics and external factors related to the industry sector and location (industry-location cluster).

$$\mathrm{b_{ijt}} = \mathrm{B_{ijt}} + \mathrm{B_{jt}} \tag{1}$$

$\mathrm{B_{ijt}}$ is the bribe payment component idiosyncratic to firm i within industry-location cluster j and year t. $\mathrm{B_{jt}}$ is the bribe payment component justified by industry-location specific such as local regulation, infrastructure dependency, local culture, official behavior, and other local conditions.

The value of $\mathrm{b_{ijt}}$ (*fitted value*) is generated from the first-stage estimation using the equation below:

$$\begin{aligned}\mathrm{b_{ijt}} &= \alpha_0 + \alpha_1 \mathrm{BAvg_{jt}} + \alpha_2 \mathrm{BStd_{jt}} \\ &\quad + \alpha_3 \mathrm{Kwh_{ijt}} + \alpha \mathrm{X_{ijt}} + \varepsilon_{\mathrm{ijt}}\end{aligned} \tag{2}$$

$\mathrm{BAvg_{jt}}$ is the average bribe payment industry-location cluster j year t, and $\mathrm{BStd_{jt}}$ is the deviation of bribe payment industry-location cluster j year t. As it will be plausible to assume that firm bribe payment is exogenously affected by bribe customary (average) and uncertainty (deviation) within the location or industry sector, we add $\mathrm{Kwh_{ijt}}$ as another excluded instrument to have two overidentifying IVs. Following Fisman & Svensson (2007) and Vial & Hanoteau (2010), $\mathrm{Kwh_{ijt}}$ is a variable measuring electricity sold by a firm, indicating the quality of its infrastructure. $\mathrm{X_{ijt}}$ is the control variable of firm characteristics such as firm size and the presence of foreign investment.

Our second stage or empirical model becomes:

$$\mathrm{Y_{ijt}} = \beta_0 + \beta_1 \hat{\mathrm{b}}_{\mathrm{ijt}} + \beta \mathrm{X_{ijt}} + \varepsilon_{\mathrm{ijt}} \tag{3}$$

Yijt is the performance measure (output growth and productivity growth) estimated using fitted values that capture the exogenous bribe payment. We created an alternative specification to capture the interaction effect of bribe payment and quality of democracy. Our specification becomes:

$$\mathrm{Y_{ijt}} = \beta_0 + \beta_1 \hat{\mathrm{b}}_{\mathrm{ijt}} + \beta_2 \hat{\mathrm{b}}_{\mathrm{ijt}} * \mathrm{IDI_{jt}} + \beta \mathrm{X_{ijt}} + \varepsilon_{\mathrm{ijt}} \tag{4}$$

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We estimated the above specification using Panel Data – Two-Stage Least Square IV regression method.

3.2. Data and Variables

3.2.1. Data

Any study on corruption is subject to issues related to reliable data collection. It is extremely difficult to collect corruption data as the activity is illicit and confidential. It deters the respondent from providing data or answers because they could face legal implications (Fisman & Svensson 2007; Henderson & Kuncoro 2004; Heredia et al. 2020). Therefore, studies normally resort to a proxy or an indirect question to measure corruption.

We use the 2009–2015 Large and Medium Manufacturing Statistics (*Statistik Industri Besar Sedang*, hereafter IBS). IBS is a firm-level data collected annually by the Indonesian Bureau of Statistics (BPS) that enumerates manufacturing firms with a minimum of 20 employees. The census is anonymous to increase the accuracy of the data and firms' willingness to share information. We use the variable that falls under questions related to expenses for gifts, charitable contributions, and donations as proxy for bribery measurement. We argue this is appropriate as bribe relationship in Indonesia is usually disguised under the pretext of gift exchange between colleagues or among "friends" rather than to be seen as a fraudulent practice (Henderson & Kuncoro 2004, p. 5). This proxy is in line with the empirical model that predicts the firm's decision and amount of gift or donation are motivated by other firms' behavior within the same sector and location. However, it is fair to mention that assuming all firms that reported this item cost as corrupt is not fully accurate as some of them may have in fact been genuine gifts.

The same proxy is also employed by Behrman & Deolalikar (1989) and Vial & Hanoteau (2010). The proxy is also compatible with the Indonesian anti-corruption law (i.e., Law number 31 of 1999 and the amendment) that includes three types of giving, namely gratuities, bribery and facilitation payments, and extortion.

The second data source is the Indonesian Democracy Index (*Indeks Demokrasi Indonesia*, hereafter IDI) at the provincial level, the smallest level currently available. IDI is an objective and empirical measurement of democracy (Rauf et al. 2011) and designed to be sensitive to changes in aspects of democracy (BPS 2016). IDI consists of three main aspects, namely civil liberties (ten indicators), political rights (seven indicators), and the institution of democracy (eleven indicators). IDI indicators are inspired by the conception and operationalization of democratic indicators used by Freedom House (Amri & Pasha 2020). IDI score is calculated from four data sources, local newspaper review, regulation review (e.g., *Perda*, *Pergub*), focus group discussion, and in-depth interview. We combined IBS data with IDI to compile our panel dataset and managed to collate a dataset spanning from 2009 (the starting year of IDI) to 2015.

3.2.2. Variables

We measured firm performance using two variables, namely output growth and labor productivity, obtained from IBS. Both variables are generated by differenciating (t minus t-1) log value of output and productivity (total output per worker). The use of this firm performance variable is common in studies investigating the effects of corruption (see Bai et al. 2019; Bbaale & Okumu 2018; Cuervo-Cazurra 2016; Fisman & Svensson 2007; Jain 2020; Okumu & Mawejje 2020).

Our main interest predictors are bribe payment and IDI score as a proxy for institutional quality, specifically the quality of local democracy. Bribe payment is a bribe to value-added ratio. We centered the IDI score to the mean value to get more logical and interpretable coefficients.

We followed Vial & Hanoteau (2010) by adding three control variables in our estimation, namely firm size (calculated by total worker log value), nonproduction wage ratio (representing white col-

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DOI: 10.47291/efi.v66i2.792

Kurniawan: Should I Bribe? Re-Examining the Greasing-the-Wheels Hypothesis i

lar/management service cost), and foreign ownership (dummy value 1 if foreign ownership is more than 50%). By doing so, we obtained a comparable estimation result of the corruption effect during and after the Soeharto Era.

4. Result

4.1. Summary Statistics

IBS observations varied each year as a result of firm entry and firm exit. There were 24,468 firms in 2009; 23,345 in 2010; 23,370 in 2011; 23,592 in 2012; 23,698 in 2013; 24,529 in 2014; and 26,322 in 2015. The initial panel data consisted of 169.329 observations. After deleting irrational outliers and missing values we retained 146,044 observations derived from 28,861 firms.

The descriptive statistics show a declining trend of bribe payment over time in terms of average payment, especially within firms that reported positive bribe as shown in Figure 1. This phenomenon is consistent with Kuncoro's (2006) finding, showing that increasing uncertainty decreases bribes, and confirms the generally accepted theory that democratization correlates to lower corruption (Svensson 2005; Treisman 2000). The firms that reported positive bribe also declined during the 2009–2013 period but increased again in 2014 and 2015. We speculate that the 2014 general election might have contributed to this phenomenon.

Our data shows promising correlations between our main variables of interest as shown in Table 2. First, it shows that bribe payment correlates negatively with output and productivity growth. We observe a significant positive correlation between the quality of democracy and firm performance, but it negatively correlates with bribe payments. This finding resonates with prior studies that found that democracy is a conducive ground for economic activity (Acemoglu et al. 2008) and suppresses corruption (Fisman & Gatti 2002; Treisman 2000). We also found a negative and significant relationship between firm size and bribes payment, indicating that smaller firms are extorted more since the value of bribes is relatively constant for all firms, a finding consistent with Henderson & Kuncoro's (2004). Lastly, we found an insignificant negative correlation between FDI and bribes payment, which contradicts Henderson & Kuncoro's (2004) finding. One possible explanation is because foreign investors enjoy more protection from the government.

Our empirical strategy utilizes bribe payment average and standard deviation within the industry-location cluster as an instrumental variable. We set up an industry-location cluster based on 766 five-digit ISIC code and 445 districts within our dataset. We were then able to obtain yearly bribes average and standard deviation of payment. We excluded the value of the observed firm when calculating the average to increase the exogeneity, a step also employed in previous studies (e.g., Bbaale & Okumu 2018; Fisman & Svensson 2007; Jain 2020; Krammer 2019; Vial & Hanoteau 2010). Therefore, there were two other firms within the cluster, so we had to drop cluster observation with fewer than three members. We also dropped singleton (i.e., observations that only appeared in one year). After all of these steps, we retained 97,852 observations and were ready to perform the industry-location robust estimation.

4.2. Estimation Results

Table 3 displays the results of our first stage regression based on Equation (2). Firm bribes payment was regressed upon instrument variables and control variables. Instruments' validity test result displayed in Appendix B supports our strategy. The instruments are not considered weak according to Stock & Yogo (2005) critical value criteria.

The results show that a higher bribes payment average from the neighboring-same industry firms leads to a higher observed firm's payment. Conversely, a deviation in bribes payment is also negatively related to an individual firm's payment. When uncertainty is high, firms draw away from bribes negotiation (Kuncoro 2006). Electricity sold that represents

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Table 1. Descriptive Statistics

Variable	N	Mean	SD	Min	Max
Output growth	146044	0.119	1.009	-16.324	18.644
Productivity growth	146044	0.125	0.977	-16.306	18.801
Bribes payment (ratio to value added)	146044	0.004	0.019	0.000	0.991
IDI score (centered)	146044	0.000	7.216	-13.892	18.818
Firm size (log)	146044	4.227	1.203	2.996	10.958
Non production wage (ratio to total wage)	146044	0.195	0.196	0.000	1.000
Foreign ownership (dummy)	146044	0.087	0.282	0.000	1.000

Source: Authors' calculation

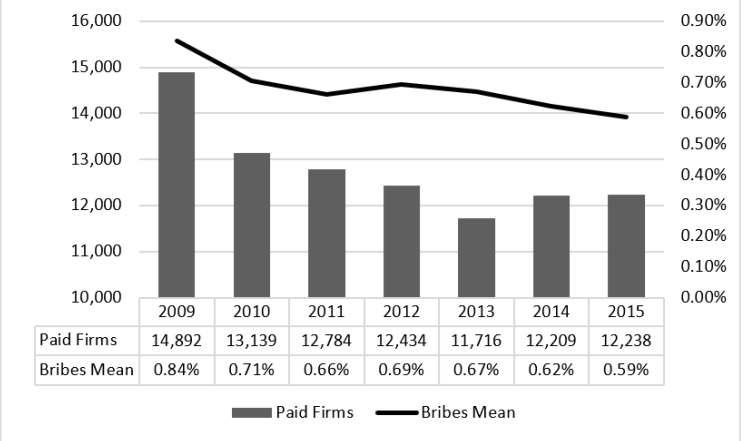

Figure 1. Bribes Payment 2009–2015
Source: Calculated from Statistik Industri Besar Sedang – BPS-Statistics Indonesia

Table 2. Pairwise Correlation Matrix

	Output growth	Productivity growth	Bribes payment	IDI score	Firm size	Non Production Wage	Foreign Ownership
Output growth	1.0000						
Productivity growth	0.9182**	1.0000					
Bribes payment	-0.0528**	-0.0433**	1.0000				
IDI score	0.0134**	0.0191**	-0.0133**	1.0000			
Firm size	0.0437**	-0.0310**	-0.0492**	0.0507**	1.0000		
Non Production Wage	-0.0099**	-0.0130**	0.0035	0.0314**	0.1691**	1.0000	
Foreign Ownership	-0.0101**	-0.0073**	-0.0027	0.0383**	0.2939**	0.1168**	1.0000

Note: (**) represents 5% significance level;
Source: Authors' calculation

infrastructure dependency also shows a negative relation to bribes payment made by an individual firm. The less dependent a firm is, the less they will pay bribes. Those relationships are statistically significant and seem intuitive, confirming the general theory.

Table 4 presents the main estimation results. This study estimates two dependent variables (output and productivity growth) using the base specification shown in Equation (3) and alternative specification which accounts for the interaction term as expressed in Equation (4), the results are labeled (1) and (2), respectively. OLS results are provided in Appendix B.

Both the OLS and IV-TSLS results clearly show that bribes payment hamper firm performance. In the OLS estimation, the coefficients are around -3.5%. The IV-TSLS estimation magnifies the result; one

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DOI: 10.47291/efi.v66i2.792

Kurniawan: Should I Bribe? Re-Examining the Greasing-the-Wheels Hypothesis i

Table 3. First stage IV regression results

	Bribes payment
Bribes payment mean	0.28235***
	(0.0561)
Bribes payment standard deviation	-0.07908***
	(0.0209)
Sold Electricity (Kwh)	-4.99e-06*
	2.82E-06
IDI Score (centered)	-2.55E-06
	(0.0000183)
Firm size	-0.00146***
	(0.0002)
Non Production Wage	0.00106
	(0.0009)
Foreign ownership	0.00257
	(0.0016)
Year control	YES
Observations	97.852

Note: Standard errors in parentheses. (*), (**) and (***) represent p<0.10, p<0.05 and p<0.01, respectively.
Source: Authors' calculation

percent increase in bribes payment causes the firm to fail to grow by 9.5% to 9.8% higher and to lower its productivity growth by around 12.6%. That payment does not return in beneficial feedback; rather it diverts resources away from productive use. The effect is worsened by the endogeneity nature of corruption; regulatory burden and delay are chosen by bribe-extracting bureaucrats, and firms that pay more in bribes are also likely to spend more management time and face a higher cost of capital (Kaufmann & Wei 2000). This validates the KPPOD finding on the muddy and harmful regional regulations for economic activity. The coefficients are larger than Fisman & Svensson's (2007) findings in Uganda (-4.17 in the base model and -7.87 when outliers were excluded), similar to Zhou & Peng's (2012) findings in the intercountry study (-9.23 to -10.51), and smaller than Seker & Yang's (2012) findings in Latin America and the Caribbean (-24% lower sales growth).

Our findings contradict Vial & Hanoteau's (2010). While they found bribes benefitted firms during the Soeharto Era, we found that it is harmful in the Reformasi Era. Firms' bribes payment average across observations is 0.4%. Using the estimation coefficient (9.8 for output growth and 12.6 for productivity growth), we calculated that on average, corruption penalized firm growth by 3.92%, and productivity growth by 5.04% during our observation period.

The variable of IDI score delivers mixed results. It predicts a positive relationship with firm performance but only statistically significant in productivity growth. It is not a strong predictor for output growth. When we take the interaction term between IDI score and bribes payment, it turns to a negative significant result, even with a very small coefficient. Several possible explanations could be offered. First, as better education is strongly correlated with the quality of democracy in Indonesia (Amri & Pasha 2020), more skilled workers may deliver better productivity. However, the relationship between the quality of democracy and manufacturing firm performance remains puzzling. On the other hand, Amri & Pasha (2020) reported that manufacturing sector share within locality appears weakly significant in the negative direction with the quality of democracy, contrary to expectations under the modernization thesis.

The interaction term between bribes payment and democracy score delivers an interesting result. It is only positive and statistically significant for output growth. It appears, while bribe does damage growth, firms located in more democratic provinces are less negatively affected. We use the mean to center the IDI score, so the mean also acts as a threshold. One-point increase from the mean in IDI score – holding bribes payment constant, will neutralize the negative impact of the bribe by around 2.03%. Conversely, one-point decrease from the mean in IDI score will increase the harm.

To better understand the estimation results, the following illustration is provided. The province with the closest IDI score to the mean is Kepulauan Riau in 2013 at 66.5 points. The effect of bribe payment to output growth – holding other variables constant, in Kepulauan Riau would be -9.84 (obtained from -9.84 + 2.03*0, as Kepulauan Riau IDI centered score was 0). In the same year, Banten Province IDI score was 69.79, so the effect of bribe payment would be -3.16 (obtained from -9.84 + 2.03*3.29). A higher effect of bribe payment is expected in a province with a lower IDI score. For example, Cen-

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Table 4. TSLS - IV regression results of bribes payment effect to firm performance, fixed effect

	Output Growth		Productivity Growth	
	(1)	(2)	(1)	(2)
Bribes payment (fitted value)	-9.50358**	-9.84125**	-12.59843***	-12.56610***
	(3.7270)	(4.0949)	(3.9933)	(3.9803)
IDI Score	0.00138	-0.00694***	0.00179*	0.00226
	(0.0010)	(0.0016)	(0.0010)	(0.0014)
Bribes payment * IDI Score (fitted value)		2.03431***		-0.11698
		(0.2822)		(0.2538)
Firm size	0.36184***	0.35892***	-0.15849***	-0.15830***
	(0.0128)	(0.0130)	(0.0121)	(0.0121)
Non Production Wage	-0.01354	-0.01686	-0.02696	-0.02679
	(0.0369)	(0.0370)	(0.0374)	(0.0374)
Foreign ownership	0.00994	0.00690	0.02541	0.02556
	(0.0437)	(0.0441)	(0.0454)	(0.0454)
Constant	-1.3904***	-1.3764***	0.8126***	0.8117***
	(0.0623)	(0.0660)	(0.0623)	(0.0622)
Year control	YES	YES	YES	YES
Observations	97.852	97.852	97.852	97.852

Note: Standard errors in parentheses. (*), (**) and (***) represent p<0.10, p<0.05 and p<0.01, respectively.
Source: Authors' calculation

tral Java Province IDI score in 2013 was 60.84, so the bribes payment effect would be -21.33 (obtained from -9.8 + 2.03*-5.66).

Using the above elasticity we can illustrate the effect on firm bribes payment in different localities. Suppose three firms paid the same 0.4% (our bribe mean value) of bribes in those three different provinces. The first firm in Kepulauan Riau province would experience a reduction in growth by 3.94%, while the second firm in Banten would undergo a growth reduction of only 1.26%. Another firm located in the worst scoring province, Central Java, would suffer more in growth reduction by 8.5%. This is a generalization from our predictive coefficient and average value. The real effect on each firm would certainly vary.

One may wonder why when interacted with bribe payment, different levels of democratic quality may produce different results, more specifically why better democratic quality mitigates the negative effect of bribes and vice versa. We try to offer some possible explanations. First, the theory postulates that firms bribe to reduce harassment or hedge against bad policy. It has been validated in the Indonesian context, cumbersome regulations (e.g., red tape, harassment) are a strong predictor of bribery or corruption (Henderson & Kuncoro 2004; Riyanto et al. 2008). The formula of cumbersome regulations is low participation, low transparency, and dysfunctional democracy institution, both legislative and executive (Riyanto et al. 2008). IDI score is built as an antithesis of those. Better public participation, transparency in decision making, and functioning democratic institution will ensure better quality of democracy and IDI scores. Therefore, in a relatively good quality of democracy, firms are less harassed by bad regulations and able to operate more smoothly. In this setting, bribes may act only as "gift relationship" to maintain firm legitimacy and good relation with bureaucrats and local politicians. This may be less harmful since there is an established institution to prevent extortion or harrasment by means of combersome regulations which are more pervalent in regions with low democratic quality.

Our second explanation is related to the disciplining effect, the main feature of democracy. In a functioning democracy, public control and political competition are relatively tighter (Fisman & Gatti 2002). Therefore, it is logical to placate the business sector by delivering the promised service and reducing harassment.

The last possible explanation concerns the initial firm location decision and inter-jurisdiction competi-

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DOI: 10.47291/efi.v66i2.792

Kurniawan: Should I Bribe? Re-Examining the Greasing-the-Wheels Hypothesis i

tion. The firm is rational; as long as the degree of uncertainty is manageable and the net benefit is positive, they will proceed with the bribing (Kuncoro 2006). A high level of corruption does not always deter investors. Some investors who have been exposed to bribery before may seek localities where corruption is prevalent because they have already developed the art to best deal with bribery (Cuervo-Cazurra 2006).

Related to selection bias, on the next step we dropped extreme values. Since we could not find any justification for outliers, we used Stata to help us identify extreme values. We dropped observations with output growth above or below 500%. The estimation results show a very slight difference compared to our base estimation. We then added control variables (export share, industrial park location, and government ownership) which may explain firm output and productivity growth. Doing so results in an even bigger magnitude of bribery impact (estimation results presented in Appendix C).

The use of IDI score bears some issues. It is a composite index constructed from many other variables and may contain measurement error. To remedy this error, referring to Gujarati (2004, p. 527) we predict IDI variables using proxy variables. We use literacy rate (literacy rate for the population aged 15 and over) and urbanization (% population living in urban area) as these two are strong predictors of IDI based on Amri & Pasha (2020). However, this strategy yielded no fruitful results since the coefficient produced is far beyond meaningful results, while the negative direction remains consistent (estimation results presented in Appendix C).

Therefore, this study assumes that the measurement error is random and the estimation result is unbiased and consistent. We rely on the fact that IDI aggregate score and trend pattern are relatively consistent compared to other international indices such as V-Dem (Amri & Pasha 2020). Furthermore, there may be some criticisms of IDI reliability and potential bias (see Amri & Pasha 2020 for further discussion). However for now, we use the IDI score since there are no better alternatives of local democracy measurement available in Indonesia and acknowledge this as one of the limitations of our study.

5. Conclusion

We have shown how corruption is harmful to manufacturing firms in Indonesia, notably signaling that the greasing effect once it had during the Soeharto Era has now diminished. Using robust estimation, our estimation displays the detrimental effect of bribery on the growth and productivity of manufacturing firms. Given the average firm growth during the observation period of 11.9%, brought about by corruption, Indonesian manufacturing firms missed the potential to grow over 20%.

Indonesia is in a critical condition and must act to solve its long-standing corruption issue. As many previous studies have argued, red tape and cumbersome regulations are the main cause of corruption; therefore, efforts to eradicate corruption should target this area. President Joko Widodo appears to be well aware of this. In 2016 he formed a task force aimed to exterminate bribery and illegal levies, known as *Satgas Sapu Bersih Pungutan Liar – Saber Pungli*, which translates to Illegal Levies Eradication Task Force. While one can contest the Task Force's effectiveness, this problem acknowledgment is an important start.

Furthermore, Indonesia could take another route to address this issue. Improving the quality of local democracy is a potentially effective strategy according to our findings. Having better local democracy may kill two birds with one stone. First, as many studies suggest, better democracy correlates with lower corruption. Second, when corruption still occurs, we argue it appears less harmful to firms. This action can be translated into improving transparency and public participation since these two are an important aspect of democracy that correlates to regulation quality (Riyanto et al. 2008).

Our novel contribution lies in the use of micro-level data on corruption, which has rarely been a feature in previous studies. We combine more than 28,000

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firms and yearly data on the quality of local democracy. This allows us to analyze the inter-jurisdictions corruption effect. Our novel finding also contributes to the literature that concerns the relationship between democracy or institutional quality and corruption. However, our work has several limitations. First, this study relies on IDI which potentially contains carry-over errors in the construction process. Second, this study employs a proxy to measure bribes payment, which has to be used with caution.

Furthermore, some of the phenomena are still subject to further explorations. The effect of democracy on firm performance appears to be somewhat still puzzling. The result requires careful interpretion since there are many possible connections. The threshold effect of bribes can also be approached using other methods. Some other local characteristics such as norms and culture may also contribute to the effect of bribery, and these can be further explored in future studies.

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DOI: 10.47291/efi.v66i2.792

Appendices

Appendix A. Descriptive Statistics

Table A1. IDI score 2009–2015
Sorted Largest to Smallest by Mean

PROVINCE	MEAN	S.DEV	2015	2014	2013	2012	2011	2010	2009
KALIMANTAN UTARA*	80.16	0.00	80.16	-	-	-	-	-	-
DKI JAKARTA	78.30	4.80	85.32	84.70	71.18	77.72	77.81	77.44	73.91
DI YOGYAKARTA	74.97	5.41	83.19	82.71	72.36	72.96	71.67	74.33	67.55
SULAWESI UTARA	74.43	5.55	79.40	83.94	73.11	76.50	71.19	65.94	70.94
BALI	73.85	2.99	79.83	76.13	72.22	71.75	74.20	72.44	70.35
KALIMANTAN TIMUR	72.87	4.81	81.24	77.77	68.13	71.23	66.37	73.04	72.31
NUSA TENGGARA TIMUR	72.75	2.68	78.47	68.81	73.29	72.67	72.34	72.05	71.64
SUMATERA SELATAN	72.72	3.97	79.81	74.82	67.12	73.17	67.92	73.65	72.52
KALIMANTAN TENGAH	72.49	5.35	73.46	79.00	64.15	65.78	76.28	71.10	77.63
KALIMANTAN BARAT	72.35	4.95	76.40	80.58	67.52	65.38	74.86	69.32	72.38
RIAU	69.65	3.11	65.83	68.40	68.37	67.00	70.65	71.45	75.85
KEP. BANGKA BELITUNG	69.41	3.09	72.31	75.32	68.79	69.37	67.13	65.94	67.01
JAMBI	68.91	2.52	70.68	71.15	64.41	68.81	70.46	65.88	71.00
LAMPUNG	68.90	3.60	65.95	71.62	63.13	72.26	74.08	67.80	67.47
GORONTALO	68.34	6.00	76.77	73.82	67.21	59.37	62.77	64.97	73.50
KEP. RIAU	68.29	3.34	70.26	68.39	66.50	65.61	70.78	62.89	73.61
SULAWESI TENGAH	68.16	4.76	76.67	74.36	64.50	64.97	64.00	66.63	66.02
SULAWESI BARAT	67.97	4.03	68.25	76.69	64.02	63.65	66.36	68.82	67.99
BANTEN	67.86	4.18	68.46	75.50	69.79	65.29	67.37	60.60	67.98
KALIMANTAN SELATAN	67.78	4.34	74.76	70.84	63.71	61.13	66.47	70.94	66.63
BENGKULU	67.58	5.22	73.60	71.70	59.17	61.70	71.36	70.78	64.76
MALUKU	67.36	3.77	65.90	72.72	66.23	59.68	68.38	69.51	69.07
JAWA TENGAH	66.75	5.06	69.75	77.44	60.84	63.79	65.59	63.42	66.45
JAWA BARAT	66.21	5.73	73.04	71.52	65.18	57.05	66.18	59.41	71.07
SULAWESI SELATAN	65.77	5.41	67.90	75.30	65.20	68.55	65.31	56.67	61.48
MALUKU UTARA	63.80	3.37	61.52	67.90	64.06	66.83	59.17	59.92	67.21
ACEH	63.55	6.10	67.78	72.29	63.56	54.02	55.54	65.36	66.29
PAPUA BARAT	63.52	2.70	59.97	65.65	60.70	65.70	61.78	67.75	63.06
SUMATERA UTARA	63.45	4.07	69.01	68.02	58.80	58.51	66.15	63.45	60.20
JAWA TIMUR	62.17	7.85	76.90	70.36	59.32	54.99	55.98	55.12	62.49
SUMATERA BARAT	62.10	3.97	67.46	63.99	54.11	60.82	65.02	63.04	60.29
SULAWESI TENGGARA	60.87	6.55	69.44	70.13	52.61	57.26	57.56	54.79	64.29
PAPUA	60.63	1.87	57.55	62.15	60.92	60.71	59.05	60.26	63.80
NUSA TENGGARA BARAT	59.09	3.30	65.08	62.62	57.22	57.97	54.49	58.13	58.12

Appendix B. OLS Result and IV Validity Test

Table B1. OLS Result, Fixed Effect

	Output Growth		Productivity Growth	
	(1)	(2)	(1)	(2)
Bribes payment	-3.57868***	-3.66230***	-3.54824***	-3.59427***
	(0.4526)	(0.4428)	(0.4424)	(0.4267)
IDI Score	0.00138	0.00098	0.00179*	0.00157
	(0.0010)	(0.0010)	(0.0010)	(0.0010)
Bribes payment * IDI Score		0.10653*		0.05865
		(0.0577)		(0.0631)
Firm size	0.37064***	0.37031***	-0.14506***	-0.14523***
	(0.0103)	(0.0103)	(0.0093)	(0.0093)
Non Production Wage	-0.01987	-0.0201	-0.03664	-0.03676
	(0.0337)	(0.0336)	(0.0333)	(0.0333)
Foreign ownership	-0.00492	-0.00625	0.00271	0.00198
	(0.0372)	(0.0372)	(0.0364)	(0.0364)
Constant	-1.45848***	-1.45646***	0.70862***	0.70973***
	(0.0447)	(0.0447)	(0.0406)	(0.0406)
Year control	YES	YES	YES	YES
Observations	97,852	97,852	97,852	97,852

Source: Authors' calculation

Table B2. IV Validity Test

		Specification			
		(1)	(2)	(3)	(4)
1	Under identification test				
	(Kleibergen-Paap rk LM statistic):	35.516	35.795	35.516	35.795
	Chi-sq(3) P-val:	0.0000	0.0000	0.0000	0.0000
2	Weak identification test				
	(Cragg-Donald Wald F statistic):	130.577	131.255	130.577	131.255
	Stock-Yogo weak ID test critical values:				
	10% maximal IV size				
	15% maximal IV size	22.30	22.30	22.30	22.30
	20% maximal IV size	12.83	12.83	12.83	12.83
	25% maximal IV size	9.54	9.54	9.54	9.54
		7.80	7.80	7.80	7.8 0

Source: Authors' calculation

https://scholarhub.ui.ac.id/efi/vol66/iss2/4
DOI: 10.47291/efi.v66i2.792

Kurniawan: Should I Bribe? Re-Examining the Greasing-the-Wheels Hypothesis i

Appendix C. Robustness Check

Table C1. TSLS - IV Regression Results, Extreme Values Excluded

	Output Growth		Productivity Growth	
	(1)	(2)	(1)	(2)
Bribes payment	-9.08992***	-9.43963**	-12.29427***	-12.25981***
	(3.4711)	(3.8142)	(3.7204)	(3.7038)
IDI Score	0.00077	-0.00706***	0.00118	0.00176
	(0.0009)	(0.0014)	(0.0009)	(0.0013)
Bribes payment * IDI Score		1.91345***		-0.14105
		(0.2619)		(0.2361)
Firm size	0.33862***	0.33593***	-0.17412***	-0.17390***
	(0.0120)	(0.0121)	(0.0114)	(0.0114)
Non Production Wage	-0.02354	-0.02664	-0.03440	-0.03418
	(0.0351)	(0.0352)	(0.0357)	(0.0357)
Foreign ownership	0.00443	0.00165	0.01880	0.01898
	(0.0401)	(0.0405)	(0.0421)	(0.0421)
Year control	YES	YES	YES	YES
N	97601	97601	97601	97601

Note: Robust standard errors in parentheses. (*), (**) and (***) represent p<0.10, p<0.05 and p<0.01, respectively.
Source: Authors' calculation

Table C2. TSLS - IV Regression Results, Control Variable Added

	Output Growth		Productivity Growth	
	(1)	(2)	(1)	(2)
Bribes payment	-15.05397***	-15.24026***	-17.58115***	-17.35855***
	(4.8939)	(4.9160)	(5.1237)	(5.0270)
IDI Score	0.00299*	0.00100	0.00397**	0.00575**
	(0.0015)	(0.0023)	(0.0015)	(0.0023)
Bribes payment * IDI Score		0.50442		-0.44831
		(0.4211)		(0.4211)
Firm size	0.23538***	0.23444***	-0.16979***	-0.16887***
	(0.0164)	(0.0164)	(0.0166)	(0.0165)
Non Production Wage	-0.04399	-0.04399	-0.04079	-0.04094
	(0.0524)	(0.0525)	(0.0536)	(0.0535)
Foreign ownership	-0.00289	-0.00340	0.01084	0.01125
	(0.0513)	(0.0514)	(0.0530)	(0.0529)
Export Output	-0.00000	-0.00000	0.00001	0.00001
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Government Share	0.12659	0.12749	0.17656**	0.17573**
	(0.0840)	(0.0839)	(0.0834)	(0.0833)
Located in Industrial Park	-0.07780***	-0.07601***	-0.07905***	-0.08067***
	(0.0173)	(0.0173)	(0.0173)	(0.0173)
Year control	YES	YES	YES	YES
N	50751	50751	50751	50751

Note: Robust standard errors in parentheses. (*), (**) and (***) represent p<0.10, p<0.05 and p<0.01, respectively.
Source: Authors' calculation

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Table C3. IV-TSLS Estimation Result, IDI Score Instrumented

	Output Growth		Productivity Growth	
	(1)	(2)	(1)	(2)
Bribes payment	-46.04859**	-48.92128**	-60.04273**	-57.36684**
	(22.8037)	(21.1725)	(28.1162)	(23.5699)
Instrumented IDI Score	0.00840***	0.00617**	0.00787***	0.00954***
	(0.0022)	(0.0029)	(0.0024)	(0.0032)
Bribes payment * Instrumented IDI Score		0.39636		-0.29274
		(0.4943)		(0.5591)
Firm size	0.33467***	0.33052***	-0.24989***	-0.24595***
	(0.0395)	(0.0375)	(0.0477)	(0.0412)
Non Production Wage	0.01188	0.01449	0.00723	0.00465
	(0.0650)	(0.0662)	(0.0766)	(0.0729)
Foreign ownership	0.14473	0.14976	0.20861	0.20301
	(0.1123)	(0.1151)	(0.1383)	(0.1298)
Year control	YES	YES	YES	YES
N	82959	82959	82959	82959

Note: Robust standard errors in parentheses. (*), (**) and (***) represent p<0.10, p<0.05 and p<0.01, respectively.
Source: Authors' calculation

Table C4. First Stage IDI Estimation Result

Dependent Variables	IDI Score
Urban population	-0.237***
	(0.0095)
Literacy	4.456***
	(0.0220)
_cons	-338.56752***
	(1.7228)
N	84198
r2	0.51219

Note: Robust standard errors in parentheses. (*), (**) and (***) represent p<0.10, p<0.05 and p<0.01, respectively.
Source: Authors' calculation

https://scholarhub.ui.ac.id/efi/vol66/iss2/4
DOI: 10.47291/efi.v66i2.792