# Does Local Democratization Reduce Corruption?[1]

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Abstract: Indonesia has a tradition of corruption among local officials who harass and collect bribes from firms. Corruption flourished in the Suharto, pre-democracy era. This paper asks whether local democratization that occurred after Suharto reduced corruption, and whether specific local politics, over and above the effects of local tastes/culture of voters, affect corruption. We have a data set for 2001 that benchmarks bribing activity and harassment at the time when both Megawati becomes President and decentralization under local democracy occurs, with Indonesia decentralizing key major responsibilities to local (county) governments. We have a second data set for 2004 on corruption at the end of the first democratic election cycle. We find that, overall, corruption declines with democratization between these time periods. But specific politics matter. Islamic parties in Indonesia are perceived as being anti-corruption. In the first democratic election, localities that voted in legislatures dominated by secular parties, including Megawati's party, experienced significant relative increases in corruption. [But in the recent elections, in those localities, they "threw the bums out of office."] Overall the assessment of the impact of democratization is cautiously optimistic.

In 1999 Indonesia democratized; and in 2001, with fiscal decentralization, local democracy took full flight. Democratization was imposed on a very corrupt, long term regime under Suharto, where Indonesia in the late 1990's is ranked consistently as one of the most corrupt countries in the world, with accompanying welfare losses (Bardhan, 1997 and Mocan, 2004). The big question is whether politics matters: can democratization reduce corruption per se, and does specific politics such as legislature composition and party stances on corruption matter? With democratization, corruption in Indonesia has become a commanding political issue, manifested in exposes in the press, indictments and political campaigns (McLeod, 2005). In this paper, we tackle aspects of these questions, focusing on democratization and corruption at the local level. If local politics can significantly reduce local government corruption that is a very positive aspect of democratization; moreover, as we will argue, it may provide optimism for the impact of democratization on national government corruption in the longer term.

Indonesia has a tradition of corruption among local government officials, who collect bribes to supplement their salaries. Firms pay bribes to reduce harassment by local officials and the impact of locally imposed regulations, or red tape. Corruption at the local level is substantial:

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for example, at time of local democratization in 2001, our data indicate that bribes paid to local officials average 6% of costs for manufacturing firms. This paper investigates three sets of issues, starting with a look at the nature of local corruption: how does red tape lead to harassment of firms by local officials and how do both lead to bribes to ameliorate harassment? Then we turn to the two big questions. Does a switch in regime to local democracy reduce (or increase) corruption per se? Do specific politics matter; in particular does local legislature composition between anti-corruption parties and others affect the degree of local corruption?

In determining these effects, what can we identify from the timing of political events in Indonesia; and can we separate and identify the effects of specific politics, or legislature composition, from the effects of local culture and economic conditions? To explore these questions we give background on both the Indonesian situation and our surveys. In 1999 Indonesia elects local assemblies, where the share of representatives of each party in local assemblies is proportional to the share of vote in local elections. While local assemblies are elected in 1999, based upon national legislation in that year, full decentralization only occurs in 2001 when key governmental functions, such as education and administration of many national regulations, are turned over to the local district (kabupaten) governments, bypassing provincial governments. Kabupaten in Indonesia are like USA counties.

In terms of political parties, from the constitution, all local parties are also national parties. In 1999 there are 5 (out of a total of 40) major political parties, 2 of which are secular—Suharto's GOLKAR party and Megawati's PDIP party. Other significant parties have Islamic roots and are viewed as less corrupt, or even anti-corruption compared to the secular parties. Among the Islamic parties, the major one is PKB. While PKB has not made corruption a platform issue at the national level, our fieldwork suggests that it is viewed as substantially less corrupt at the local level than secular parties. Another Islamic party (PKS) emerged as an additional major party in 2004 on the anti-corruption platform: "we are the clean party and we are going to clean the government". The 1999 national elections led initially to a coalition government between Megawati's secular party, PDIP, and the main Islamic party, PKB, with the first President, Abdurachman Wahid, drawn from PKB.

Our first survey takes place in the Fall 2001. The survey benchmarks the degree of corruption at the dawn of decentralization, or full local democratization (Kuncoro, 2003, World Bank, 2003). Besides the advent of decentralization, 2001 marks when the national coalition between PKB and Megawati falls apart, with Megawati taking over as President. Her party breaks away from that alliance; and, at the local level, often aligns with the other major secular party, GOLKAR, as Indonesia enters the Megawati period. We look at the extent to which the level of

corruption changes from 2001 to our second survey carried out in early 2005, which covers information for 2004. The year 2004 marks the end of the Megawati period, with the second round of national and local elections. We look first at effects of the regime switch (joint event of decentralization and Megawati assuming power nationally) on local corruption; but note that we don't know for certain what happened between the fall of Suharto in 1998 with democratization in 1999 and our identified regime switch in 2001. A prevailing view is that it was "business as usual" during the period 1998 to 2001 (Kuncoro, 2003, World Bank, 2003). But all we can infer from our data per se is that, between 2001 and 2004, there is a substantial drop in local corruption. Given this ambiguity from timing of events as well as the usual general problem in identifying effects of regime switches per se from changes in other accompanying conditions, much of the focus is on the effects of specific local politics—the impacts on corruption of local political competition and legislature composition.

How do we conceptualize the effects of a regime switch? While legislative measures can potentially affect corruption (Olken, 2005), in Indonesia there haven't been significant new legislative measures (World Bank 2003, Chapter 3). The issue is the enforcement of existing laws, in a context where corruption is now a major political issue. In the new, democratic era, under a freer press, newspapers write exposes (Brunetti and Wider, 2003); young ambitious local prosecutors can make reputations through official investigations and indictments; local chambers of commerce (KADIN) as well as firms can lobby legislators to protect firms from harassment and to discipline local officials; and local political parties may gain votes with anti-corruption stances. As part of this process the national government has created several anti-corruption agencies and commissions. In terms of regime switches, the economics literature discusses the notion of multiple equilibria under corruption (Cadot 1987, Andvig and Moene, 1991, Tirole 1996, Bardham 1997), based on information asymmetries, intergenerational reputation modeling, or punishments versus rewards when corrupt officials are few versus many. However, our notions are more in line with Mookerjee and Png (1995), who analyze the effects of increasing punishments of corrupt local officials. A small increase in punishment may increase bribes, because the expected punishment costs are capitalized into increased bribe amounts. However a large increase in punishment will deter bribe solicitation. In Indonesia bribe amounts may be additionally affected by the fact that the firms being solicited are those that would turn officials in. With opportunities for redress having expanded, officials may reduce bribe demands, so firms find it cheaper to pay the bribe, than making the effort to seek redress. A further element is that with decentralization, public officials may pay more attention to issues of inter-jurisdictional competition for firms where one element of competition is to reduce corruption to attract more

investment (Brueckner and Saavendra, 2001, Henderson and Kuncoro, 2004). Fisman and Gatti (2002) and Mocan (2005) find fiscal competition and federalism reduce corruption.

While democratization may induce a regime change, specific politics matter. In Indonesia, the opportunities for redress are related to whether local assembly representatives are sympathetic to corruption reduction. The notion that legislature composition matters in policy determination is demonstrated for Sweden in Pettersson-Lidbom (2003). For Indonesia, in term of legislature composition, we are going to argue that "punishment" costs rise and the level of corruption declines as district representatives are more from Islamic parties. While the cross-country literature argues that Islamic countries are more corrupt (e.g., Mocan, 2004), that is difficult to disentangle from the fact that they are generally also much less democratic, with a less developed "rule of law"; and it says little about within country effects of religious differences across regions. Within Indonesia, our fieldwork suggests devout Muslims are distinctly less willing to pay bribes and bribing is less in devout areas. But, if devoutness does matter, as opposed to, say, Islamic parties simply taking anti-corruption stances as strategic political choices, that makes the role of party voting and legislature composition more difficult to assess. Democratization may encourage expression of local culture in devout areas with greater public scrutiny of illicit activity, devout firm owners increasingly refusing to pay bribes, and devout local officials acting more in accordance with their own scruples. This ascribing any greater corruption reduction in areas voting more heavily for Islamic parties compared to secular ones is difficult, because local "tastes", or devoutness, combined with general democratization may lead to declines in corruption per se—the empowerment to say no by the devout-- rather than the legislature composition and changes in implicit local policies. We will rely primarily on an instrumental variable strategy detailed below to try to sort out effects; and we will also experiment with adding as controls measures of local devoutness.

Our surveys are constructed to elicit information about bribing activity concerning local officials. The paper and surveys are not focused on the other major forms of corruption—bribes paid to reduce corporate income tax liabilities, issuance of FDI or export/import licenses for large firms, and police extortion. All these involve national, not local officials.

## 1. Red Tape, Harassment, and Bribes

We start by discussing the interaction between firms and local officials and then turn to how we view the political side empirically. In Indonesia firms pay bribes to local officials to reduce harassment, and the impact of regulations. In terms of regulations, local firms are required

to obtain a variety of licenses and "retributions", the quantity and nature of which are set locally. Officials from the local Ministry of Industry then monitor firms to make sure they have the full array of licenses with all licenses up-to-date. Officials from the local Ministry of Labor also inspect licenses and equipment in connection with safety regulation. Bribes are demanded by officials who visit plants; where the basic form of harassment is visits, which detract from the entrepreneur's time. The creation of red tape through licensing has a long history in Indonesia, with efforts in the mid-1990's by the central government (at World Bank urging) to curtail the array of licenses in order to encourage foreign and domestic investment. However immediately following the national decentralization legislation in 1999, localities in anticipation of decentralization in 2001 felt empowered to create a greater array of licenses and retributions, with sharper limits on the time licenses are valid before needing renewal.

Firms pay bribes for several reasons. First, when a license is up for renewal, bribes are paid to reduce the waiting time to renewal and harassment during the period of time when a license has expired. Bribes are paid to get officials out of the plant who are there in the guise of inspecting licenses and ensuring equipment safety. Similarly bribes are paid to placate officials, who are claim a plant needs a license that in fact is not required. Since 2001, empowered by a national "pro-labor" ministerial directive issued under Megawati which greatly strengthened the application of pro-labor laws, other bribes (which we record separately) to local labor officials are paid by firms to help resolve disputes in their favor over severance and overtime pay and to have strikes declared illegal (albeit in an open shop environment). While this is a separate source of bribe activity, it feeds into the first, since inspection of licenses and equipment safety allows labor officials to sniff around plants for hints of labor troubles.

One could categorize this bribe activity to reduce the harassment from regulations, under the efficient grease hypothesis (Liu 1985, Becker and Maher 1986, Bardhan 1997, and Cai, Fang, and Xu 2005), with the caveat, however, that localities are imposing regulations, so local officials can demand bribes (e.g., Banerjee, 1994, and Kaufman and Wei, 1998). Bribes are costly because they take up the entrepreneur and her managers' time (Kaufman and Wei, 1999, Svennson, 2003, and Henderson and Kuncoro, 2004). In Henderson and Kuncoro (2004) we argue that, on the eve of decentralization in 2001, bribes were part of compensation packages of local officials. Corruption was greater in localities that had limited fiscal resources, with bribes being a form of indirect taxation to supplement the salaries of local officials and bring them up to competitive market wages.

Both before and after decentralization, localities received most of their revenues as transfers from the central government, with localities having little de facto independent means of

raising revenue. The fiscal situations are detailed in Henderson and Kuncoro (2004). Since decentralization, the fiscal situation is in flux, with new spending responsibilities of local governments, new sources of transfers with formulas undergoing on-going adjustment, and new developing sources of local revenues, in particular a sales tax. Moreover the imposition of local democracy and the development of local anti-corruption campaigns have changed the whole environment, as discussed above.

To motivate the empirical analysis to follow we specify a very simple model. It consists of a firm's optimization problem and that of local officials who harass firms. Firms seek to maximize profits where

$$\begin{aligned} &\max_{X,b} \Pi_i = p_j y(X_i, h(v_{ij}, l_{ij}, b_i, \theta_{ij})) - W_j X_i - b_i \\ &\text{where } y_X > 0;\ y_h < 0;\ h_v, h_l > 0;\ h_b < 0. \end{aligned} \tag{1}$$

In equation (1), firm $i$ faces a price, $p_j$, for its product sold in locality *j*. Its output *y* is produced with inputs chosen by the firm, $X_i$, at prices, $W_j$ in district *j*; but output is reduced by harassment, $h(\cdot)$, experienced by the firm, which takes up the entrepreneur's time and may create discontent in the factory. $h(\cdot)$ is specified as a "black-box" process that involves some underlying game (Henderson and Kuncoro, 2004) . But the outcome, $h(\cdot)$, is declining in bribes, $b_i$, offered by the firm to make officials leave and is increasing in (costly) visits, $v_{ij}$, by officials in district *j* to firm *i*. Harassment is increasing in red tape, or licenses and retributions, $l_{ij}$, required by district *j* of firm *i*. Finally there is a vector of observed and unobserved items affecting harassment, $\theta_{ij}$, such as how adept the entrepreneur is at dealing with local officials, idiosyncratic greed of the specific local officials the firm draws, religious convictions of the entrepreneur, socio-political climate in the district, and redress available to firms that face bribe demands.

From the first order condition, we can solve for the level of bribes offered by the entrepreneur. Bribes are censored at zero if $y_h(\cdot)h_b(\cdot) < 1$ at $b_i = 0$; and bribes are given by the implicit function from $y_h(\cdot)h_b(\cdot) - 1 = 0$ so that

$$b = b(p_j, X_i, l_{ij}, v_{ij}, \theta_{ij}). \tag{2}$$

We expect the level of bribes to be increasing in $v$ and $l$; but ensuring that in the model requires restrictions on the functions such as $y_{hh}, h_{bb} \geq 0$, $h_{bl}, h_{bv} \leq 0$.

For local officials, their choice of number of visits is given by the optimization problem

$$\max_{v} \; E[b(\cdot)] - c(v_{ij}, l_{ij}, d_{ij}, e_i, \varepsilon_{ij}), \qquad (3)$$

for $b(\cdot)$ given in (2). $d_{ij}$ is vector of items affecting the cost of officials' visits such as the distance from the officials' location in jurisdiction *j* (the district capital) to firm *i*; $e_i$ is any characteristics of the firm (over and above $l_{ij}$) which legitimately require officials to visit the firm; and $\varepsilon_{ij}$ are other aspects that affect the costs of visits, such as censure from local legislators concerning harassment or the extent to which local officials "are expected" to make up salary deficits from competitive wages through bribes. From the first order condition $E[b_v(\cdot)] - c_v(\cdot) = 0$, we can solve for a visit equation

$$v_{ij} = v(l_{ij}, d_{ij}, e_i, X_i, \varepsilon_{ij}, \theta_{ij}). \qquad (4)$$

We will estimate equations based on (2) and (4). Econometrically, one issue is what firm characteristics can be treated as exogenous, if any. It is clear in (2), that from (4), $v_{ij}$ is endogenous, where potentially either $d_{ij}$ or elements of $e_i$ not in $X_i$ in (4) can be used as instruments in estimation of (2). However, what about $l_{ij}$, or even $X_i$? We have several versions discussed later; in one, we treat the $l_i$ as pre-determined, where most red tape is set in place in 1999 and 2000 and many firm characteristics are determined before the regime switch in 2001. But for us the main econometric issue concerns how to identify the role of politics, aspects of which are observed, separate from the local culture of corruption, which is largely unobserved. We discuss identification after we discuss our data and the context in more detail.

## 2. Data, Specifications, and Econometric Issues.

We utilize two surveys. In the first conducted in late 2001, a team under Ari Kuncoro chose a random sample of enterprises in 64 districts spread over all of Indonesia. 1808 firms were surveyed about corruption. The survey environment was carefully constructed, using locals as

interviewers (dialect and culture issues).[2] The key questions concerned the fraction of costs devoted to bribes paid to local officials to "smooth business operations" and the main forms of red tape, in particular the number of business licenses (locally set and issued) required of each firm in their particular district. Licenses are required to start a business, export, make noise, create congestion, pollute in different dimensions, operate particular kinds of machinery, and so on. The mean number of licenses per firm (including service and retail firms) was 5.8 and the standard deviation 5. There were a number of qualitative questions. One concerned the difficulties firms have with "retributions and levies" required to operate an escalator, water pump, generator, and the like. Another concerned a then relatively new phenomenon—difficulties with labor troubles. On firm characteristics, fieldwork strongly indicates that firms are cagey, willing to reveal bribe information under appropriate interview circumstances, but unwilling at the same time to then reveal detailed economic information. In the first survey, firm size was measured by sales in discrete categories. These data are analyzed in Henderson and Kuncoro (2004).

For this paper, as noted, the 2001 survey provides a benchmark on the degree of corruption in the year (1) decentralization is occurring and (2) Megawati takes over as President. In early 2005 we then conducted a second survey to assess the effects of the 2001 events. The second survey differs from the first in both sample design and questions. First it only covers manufacturing firms and second it is only on Java. 2707 firms are interviewed. While there are 105 districts in Java, 2 are essentially national parks and 6 have almost no manufacturing. These second 6 are integrated into surrounding areas to define 97 districts that we look at. In terms of overlap with the first survey, we overlap in 37 districts and for 178 firms (in 24 of those districts). Finally the second survey is not entirely a random sample. We over-sample in districts with low populations of firms in order to have a minimum of at least 20 responses per district[3] and we over-sample in 3-4 districts with large numbers of original firms, in order to increase sample overlap.

In terms of questions, this survey asks more specifically about other forms of red tape, in particular the number of "levies and retributions" a firm faces (mean of 2.6), as well as the number of licenses (mean of 6.4). Besides bribes to local officials "to smooth business

[2] In the Indonesian political context, in more remote areas, the team sometimes recruited a representative from the (non-governmental) local chamber of commerce to accompany surveyors to interviews to help stimulate an Indonesian "conversation among friends", so firms were more forthcoming in revealing bribe information. Local chambers of commerce in the Suharto era played a complex role. Apart from a primary function of promoting local business, another was to provide an outlet for local political discontent among business owners, concerning government policy and practices. On Java, where the current work is focused, less use was made of these representatives in 2001 compared to other parts of Indonesia, and little use was made in the 2004 survey work.

[3] The lowest number in one of our 97 districts is 16.

operations" in connection with the licenses and retributions by officials from, for example, the local Ministries of Industry and of Labor, we asked a second bribe question about bribes paid to local labor officials in dealing with strikes, severance terms, minimum wages, and over time pay. As we will see, the first type of bribe declines greatly between 2001 and 2004, while the second (which is presumed to be a new phenomenon since 2001) makes up some portion of the difference. One could interpret this in Shleifer and Vishny (1993) framework as competition between labor and industry ministry officials leading to some division of bribes associated with industrial activities, although firms view labor regulation as a separate and new source of red tape, generating its own harassment and bribes.

In the second survey we ask more detailed economic data, getting "exact" firm employment and recording sales and capital stock information in interval form. In asking bribe questions, we worked with the surveyors to try to distinguish between firms who truly paid zero bribes, versus firms who were uncomfortable providing an answer (only 73 out of 2707 firms). Finally in 2005 we asked more detailed information on harassment. In both surveys we asked the amount of time management spent with local officials smoothing business operations, in 6 categories. But in 2005 we asked the "exact" number of visits made by local officials to the plant in 2004, a variable we interpret as the key form of harassment.

**Specifications and econometric issues**

In estimation, we focus on two relationships—bribes which firms decide to pay and visits which local officials decide to make. There is also the amount of red tape the firm faces; but we initially treat that as "exogenous", being mostly predetermined by (1) the industry the firm is in (2) regulations enacted in districts in late 1999 and 2000 and (3) firm size at the time these regulations were introduced. We will return to this issue of what is pre-determined repeatedly. For bribes, our measure is bribes as a share of costs—in principle equation (2) divided by the cost function for the firm. Experimentation suggested a very simple form to this equation:

$$\text{bribe/costs} = C(X_i) + \beta_1 \ln(\text{no. licenses+retributions}) + \beta_2 \ln(\text{no. of visits}) + P(Z_j) + \tilde{\theta}_{ij} \qquad (5)$$

The $C(X_i)$ function captures cost effects and any firm-specific bribe related characteristics (such as whether the owner is a Chinese Indonesian and traditionally subject to more harassment). The $P(Z_j)$ relates to measures of political conditions which might signal resistance to making bribes or unwillingness to press for them, in part because of political recourse. $\tilde{\theta}_{ij}$ represents unmeasured components of local tastes, the political process, local officials, and entrepreneurs

which affect bribes. Note in (5) we lump the count of licenses and retributions together; separately they give similar results. The visits equation has a similar form as we will see later; but the issues for estimation of the two are similar.

In general we estimate equation (5) by a Tobit specification, treating the zero bribe phenomenon as a censoring problem. Given the variety of specifications we have, this seemed the simplest and a commonly accepted approach. We will also report 2SLS results on key specifications; and later in the section on robustness we report separate discrete-continuous choice results. The key issues in estimation concern (i) what is exogenous or predetermined in (5); (ii) instruments for endogenous variables; and (iii) how to specify and interpret the $P(Z_j)$ function. Apart from political variables, visits are obviously endogenous, since they are directly related to bribe activity. The $v(\cdot)$ function in (4) suggests instruments for visits, such as variables representing the costs to local officials of visiting the plant. We work with these but they turn out to be fairly weak instruments.

While we start by treating red tape as predetermined, there are three problems. First, regulations governing licenses may adjust with changes in the unobserved local, corruption "environment", which could also affect bribes paid (how hard local officials press in a given visit), despite the notion that most license regulations were set in 1999 and 2000. Second, firms may pay bribes to avoid valid license requirements, although fieldwork suggests this is typically not what bribing deals with. Third required licenses are a function of firm characteristics such as size and complexity, capital intensity, and so on; and these characteristics may respond to the bribe environment. Then either certain types of firms may avoid areas with corruption reputations (selection) or firms in an area may alter firm characteristics as a way of reducing harassment. This last issue suggests most of the $X_i$ in $C(X_i)$ are potentially endogenous. Our problem is that we do not have strong instruments to predict firm characteristics.

As a practical matter we estimate four versions of (5): (i) one where, apart from political variables, just visits are endogenous (ii) a reduced form where we substitute (4) into (5) to solve out visits and also solve out for licenses, leaving just political variables as endogenous, and (iii) a completely reduced form version where we treat most firm characteristics as well as red tape and harassment as endogenous. In doing so, in all cases we ignore issues of selectivity in location decisions: the effect of corruption on where firms choose to locate. For example, firms adept at dealing with local officials or immune to them (devout Muslims) may be more willing to choose corrupt areas. We do not have the data to deal with selection per se but we believe selection is not an issue. In our data, the 2001 regime switch leaves relative bribing activity in districts in 2001

and 2004 uncorrelated (see later). That would suggest most firm locations, characteristics, and license requirements are determined prior to the conditions driving 2004 harassment-bribe activity in districts. Only 5% of our firms were born after 2001 (and dropping them does not change results).

**Political Variables.**

Mostly crucially in terms of econometric issues are political variables. We hypothesize that greater local assembly shares of representatives for the secular parties PDIP and GOLKAR in the Megawati era directly affect bribing. Having more representatives from PDIP-GOLKAR presents both fewer possibilities for lobbying for redress and enhances a culture of corruption in the local bureaucracy. But greater representation from PDIP-GOLKAR may represent both "the operation of politics" per se in a district and a statement about underlying preferences of voters and the initial local culture of corruption. For example in more devout areas, people may vote more heavily for Islamic parties. But apart from politics, business owners may be less willing, as "beliefs/tastes", to pay bribes; local officials may be more inhibited about asking for bribes; and local social (as opposed to political) sanctions against corrupt behavior may be more severe. One perhaps odd unobservable is the "local culture of corruption" that existed in 1999, at the time of voting, presumably affecting voters' expectations about future corruption. As we will see below, areas which voted more heavily for PDIP-GOLKAR in 1999 tended to have initially relatively *lower* levels of corruption. It may be that in less corrupt areas, people were more willing in 1999 to vote for secular parties, not perceiving corruption as such an issue. Voters in these areas were then were subsequently "surprised" by an increase in corruption relative to other areas, once Megawati assumes power. We will further argue that voters who "were cheated on" or experienced increases in corruption then subsequently voted against these secular parties in 2004. Given a potential whole host of reasons why PDIP-GOLKAR vote shares are endogenous in the corruption equation we need to instrument for this variable.

Instruments draw upon aspects of Java history and culture (Liddle, 1999 and Vatikiotis, 1998). The clearest instrument concerns views on the role of Islam in politics, which affect party vote, but are separable from devoutness and attitude towards corruption. On Java, there are abangan and santri Muslims, both of whom may be equally devout (i.e., potentially opposed to corruption). But abangan are less traditional and orthodox, historically having incorporated in home practices aspects from Buddhism and Hinduism (two religions that at different times dominated parts of Java). The distinction in terms of religious practices and identification of who is santri versus abangan is blurred today with an general increase in personal religiosity over the last 30 years; and decades ago santri Muslims effectively broke into two groups: traditional (more

rural) and reform, where the latter favored a more individual interpretation of the Quran. For us there are two key distinctions: (i) abangan Muslims are more averse to there being Islamic parties per se and to incorporating Islam into politics and (ii) they tend to live in non-coastal areas, more in the center of Java where Buddhism and Hinduism once flourished. So the first instrument for vote share is the fraction of population in a district living in villages that are on the coast (noting Java is a long, narrow island), indicating populations that are more willing to vote for Islamic parties, independent of the local culture of corruption.

For other instruments, one of the secular parties, GOLKAR, draws strength from (mostly former) government employees, who worked for the Suharto regime in, say, 1990 and out of loyalty tend still to vote for GOLKAR. This very small fraction (1.9%) of the population who were government employees in 1990 is a strong instrument for GOLKAR. Finally PDIP is partially an outgrowth of an amalgam of parties forced in the Suharto era, which included the traditional Christian parties. While the numbers are small (average 4.3%), the fraction of the population that is Christian in 1995 is a strong instrument for PDIP vote share in 1999. The fraction of the population that was government employees in 1990 seems corruption neutral, meaning (i) that it is not correlated with bribing (is not a significant regressor on its own, does not significantly affect the coefficient on the PDIP-GOLKAR variable, and has a simple correlation coefficient with bribe activity of .056)[4] and (ii) specification tests on orthogonality of residuals to instruments pass readily. The fraction Christian seems more questionable, noticeably raising Sargan values in specification tests on certain formulations or appearing as a significant covariate in some ordinary Tobit formulations, noticeably affecting the coefficient on PDIP-GOLKAR variable. In general we rely on just the first two instruments.

As we will detail later in the section on robustness, we have measures of local devoutness, which could be entered as controls for local tastes as well. These turn out to not be important, so we don't focus on them here. But there is one element of the local political process we haven't discussed. That is the selection of local leaders. After democratization, the local district premiers, or bupati's, start to be elected by the local assemblies in time staggered elections (over a 5 year horizon across districts). Before that bupati's were bureaucrats appointed by the center. Starting in late 2004, bupatis as their staggered terms come up are now elected by

[4] In the basic ordinary Tobit result in Table 5, column 5 below, the PDIP-GOLKAR coefficient (standard error) in an ordinary Tobit (with clustered errors) is .101 (.0344). Adding in the two instruments, changes the PDIP-GOLKAR coefficient to .0827 (.0417) with coefficients (standard errors) on the percent government employee and percent coastal variables of .628 (.418) and -.0316 (.0639) respectively. In the basic IV Tobit result in Table 5, column 4, the PDIP-GOLKAR coefficient (standard error) is .199 (.0897). If we drop the percent government employee as an instrument so the model is just identified the coefficient rises to .231 (.0904).

direct popular vote. But in the time period we are looking at, they are elected by the assemblies. We know the sponsoring party in each assembly of the elected bupati. Some bupati's are the same bureaucrats as held the job before and some are new to the position. We think of the position being much like a city manager in the USA appointed by a local city council. Some are professionals and some are political figures. From simple probit analysis, the chances that a selected bupati will be sponsored by the PDID or GOLGAR is increasing in the PDID-GOLKAR vote share in 1999. However there is absolutely no discontinuity in the selection process—as, for example, when one or both parties top 50% of the vote or attain a plurality. Moreover in the basic corruption formulations below, controlling for PDIP-GOLKAR vote share, which party sponsors the bupati seems to have no affect on corruption per se. Indonesian politics is strongly affected by the notion of "consensus". For bupati selection the notion of consensus holds, as often may be the case in the USA in appointing a city manager. So while we had hoped that bupati selection might prove to be an important element in corruption and allow for a regression discontinuity analysis (van der Klaauw, 1999), this possibility did not bear fruit.

The notion of consensus is important. PDI-GOLKAR has over 50% of the vote in 71% of our districts, although a single party only holds the majority in 11% of districts. In 29% of districts, PDIP-GOLKAR has over 60% of the vote and in 13% under 40%. We are going to argue that effects are linear in vote share, with no discontinuity at 50% or any other number. The climate of corruption just gets increasingly worse continuously as the secular parties' combined vote shares rise and they increasingly dominate the "consensus".

Finally we note that, in examining political effects, we do not have recorded vote shares for all districts. The capital city of Jakarta with its 5 districts does not have local assemblies. Second, in 7 other of our 97 districts, votes were not published; generally there was some controversy about the voting in those districts. While numbers were released informally at the time to determine legislative shares, these shares are not recorded and so far we have been unable to uncover them. Thus identification of legislature composition effects is based on 85 districts.

### 3. Results: The Effect of Democratization on Corruption, 2001 versus 2004.

We start with two over-time comparisons. One is for 178 firms which overlap in our two time periods: 2001 at the time of decentralization and Megawati's ascension to power, and 2004 at the end of the first episode of democratization-decentralization and also Megawati's rule. Second we have 37 districts in which we sampled for 2001 and 2004 information on corruption. We pool manufacturing firms in the two samples, to compare 2001 and 2004 behaviors.

**Individual Firm Differences over Time.**

Table 1 shows tabulations for the 178 firms which overlap samples. In Table 1 first we look at bribing activity connected with red tape. In the comparison, in 2001, people reluctant to answer the bribe question were given a zero while for 2004 they are a given a missing value. So in the first row we know that a maximum of 128 firms paid bribes in 2004, while in 2001 a minimum of 136 paid bribes. The second line is even more revealing. For those reporting bribes, bribes as a share of costs fall dramatically from a mean of 8.0 to 4.5. Continuing down the rows, red tape seems to have declined modestly (noting in 2001, given the wording of the question many firms did not count their license to operate a business per se in the license total). Median time spent with local public officials has also fallen. However we have a new category and new type of bribe in 2004—bribes for labor relations that develop because of the national pro-labor ministerial directive issued in 2001. While relatively fewer firms pay these, for those that do, the bribes are large. Overall, to be consistent with 2001 if we count missing values as zeros in 2004, the average bribe ratio of 6.1 in 2001 declines modestly to 5.8 in 2004, when labor bribes are included[5] . We tried a crude weighting by sales size (using mid-points of size categories) to get a weighted average which indicates no change. It is clear bribing for red tape has declined, but there is now a new source of local bribes, potentially restoring much of the difference. To get a better sense of what has happened, we turn to some partial correlations in the data.

Among our 178 firms, 50 who paid red tape bribes in 2001 report absolutely zero bribes in 2004, while 30 firms which paid no red tape bribes in 2001 report bribes in 2004. For firms reporting bribes in both periods no significant OLS or fixed effect results on bribe amounts emerge in statistical analysis although the time effect is noticeably negative. Fixed effect Tobits with just two observations per firm are strongly biased. However a "conditional" or fixed effects logit identified by firms who switch status suggests some interesting patterns. Results are given in Table 2, where we separate results for just red tape bribes (columns 1 and 2) and then those for red tape and labor bribes combined (columns 3 and 4). Results are very similar. Controlling for firm fixed effects, (changes in) size variables don't seem to matter (see below). However export activity may affect bribes and certainly changes in the number of licenses do.

The key results concern time effects and political parties, where firms in four districts have no recorded political votes and that is controlled for with a dummy variable (here interacted with time, as the vote share is). In columns (1) and (3) a time dummy for 2004 is negative indicating, ceteris paribus, the likelihood of paying bribes declines between the two time periods.

[5] If we exclude missing values in 2004 (but not in 2001 since we can't distinguish) the average rises to 6.33 in 2004.

We are going to argue more below that this is a democratization effect. In columns 2 and 4, this time effect is significantly less in districts which voted more for PDIP-GOLKAR, implying legislature composition is correlated with changing bribe activity. While the regime switch reduces the probability of paying bribes overall, point estimates suggest that effect could reverse in districts with a heavy majority. By 65% vote share for PDIP-GOLKAR, the likelihood of bribe activity starts to increase overall between time periods.

How robust is this PDIP-GOLKAR time effect? Throughout we conduct a variety of robustness checks, although these are done in more detail in later sections when samples are larger. Here we focus on two key ones. The first is to make sure results aren't explained by correlated changes in economic conditions, where perhaps districts that do better economically pay more or less bribes, with economic changes potentially being correlated with vote shares. Second bribe responses (as opposed to actual activity) could be correlated with firms' perceptions of the local government, where for example if firms are more positive in a district they are less willing to "complain" (i.e., report bribes), and perceptions and outcomes may also be related to vote shares. For changes in economic conditions we look at GDP per capita in a district, assigning 1999 values to 2001 and 2003 values to 2004. For perceptions, we ask respondents on a scale of 1 (best) to 6 (worst) how they rate the efficiency of local government provision of basic services before and after regional autonomy. Here we look at the change in individual responses, assigning to 2001 firms' perceptions before regional autonomy and to 2004 their perceptions after regional autonomy, both covered in the 2004 survey. Results for the logit are in columns 1 and 2 of Table 4, for the Table 2, column 4 formulation, where, given this is a fixed effects logit, we are assessing the effect of time changes in covariates. Increases in income and decreases in inefficiency (lowering the value of the covariate) are both insignificantly associated with decreases in reported bribes. For each, the Table 2 time-PDIP-GOLKAR coefficient of .0830 is little changed at .0965 and .0871 respectively. We experimented with other attitudinal questions, changes in district average attitudinal responses, and other specifications.[6] The results presented are as strong as any, in terms of effects on the PDIP-GOLKAR variable.

These logit results are suggestive but the sample size is small and magnitudes from fixed effect logit coefficients are difficult to interpret. While the Table 2, column 3 result suggests that if the probability of a firm paying a bribe in 2001 is .7, by 2004 that has fallen to .5 with the

[6] For example, results are similar if we enter a time dummy multiplied by the change in the district average efficiency rating in 2001 versus 2004. Then the PDIP-GOLKAR coefficient (standard error) is .0783 (.0294), while the effect on the time dummy of the average attitudinal change is 2.07 (1.37). For income done in this fashion (time dummy interacted with the percent change in GDP p.c.), the PDIP-GOLKAR coefficient is .0951 (.0314), while the income coefficient is -1.65 (1.53).

regime switch, we can't anchor initial probabilities. The estimation also assumes that size and license effects are constant over time, which will turn out to be questionable. To enrich the analysis and expand the sample size for over-time comparisons, we pool all manufacturing firms in 2001 and 2004 which were surveyed in the 37 overlapping districts.

**District Level Time Differences**

For the pooled sample of 1677 firms (679 from 2001), results on a Tobit specification to equation (5) are given in Table 3. The results in Table 3 are for all bribes: red tape bribes in 2001 and red tape and labor bribes in 2004. So any time changes downward are a minimum, based on assuming labor bribes in 2001 are zero everywhere. In the pooled sample we allow for overall effects and then for how effects of covariates change between 2001 and 2004. Column 1 reports without political variables. There, firm size effects change dramatically over time. In 2001 bribes as a fraction of costs decline with firm size, while in 2004 no such pattern exists, suggesting officials start to harass bigger firms relatively more. In 2001 exporters pay more bribes; by 2004 that effect seems to disappear. Only the marginal license effect is unchanged over time.

What about the effect of the regime switch? In Table 3, a time dummy for 2004 is negative suggesting a 5.3 drop in bribes as a percent share of costs. In columns 2-5 we explore the political aspects. In column 2, we add in the vote/legislature share of PDIP-GOLKAR and that variable interacted with the 2004 time dummy. The base coefficient of -.14 suggests (under a non-"marginal" interpretation of Tobit coefficients) that in 2001 a 10% increase in PDIP-GOLKAR vote share *reduces* the percent bribe ratio by 1.4. However the .30 coefficient on vote share interacted with time suggests that the net effect in 2004 is reversed and that a 10% vote share increase then *leads* to a 1.6 percent bribe ratio increase in 2004. In columns 3-5 we attempt to correct for issues of simultaneity, although with the small sample of districts in Table 3, we don't have the same focus on IV strategies that we will in the next section. First we estimate a reduced form bribe equation, where we treat licenses as endogenous, determined by firm characteristics and politics and remove them as a covariate. Second we instrument as explained earlier for PDIP-GOLKAR vote share. Column 3 contains 2-step IV Tobit results[7] ; column 4 2SLS results, and column 5 ordinary Tobit results for the reduced form specification. Note the base PDIP-GOLKAR coefficient is now insignificant, which is convenient, since there should be no causal effect of initial vote on corruption. For the 2-step Tobit the net effect increases from the .16 effect in column 2 to .19 (and more in the ordinary Tobit in column 5). This number, .19, corresponds to the number, .20, we get for reduced form IV Tobit specifications for the later cross-sectional analysis. In general as expected, 2SLS coefficients are lower all-round compared

[7] The MLE version in this case did not converge, unlike in the rest of the paper.

to Tobit ones. Note the instruments are strong; the Sargan test in column 4 is excellent; but the Wald test in column 3 fails to reject exogeneity of all covariates, a general issue we will discuss later.

Overall the results are suggestive. Pure time effects are always strongly negative, indicating a role for pure democratization at the local level. Local democratization per se increases the forums for people to protest corrupt behavior and empowers people to say no. Part of the reason we think occurs because of the dramatic shifts across districts in corruption, depending on vote shares in 1999. In Table 4 we again explore robustness of results. In columns 3 and 4 of Table 4, to the Table 3, column 5 formulation, we add respectively the district perceived average level of local government inefficiency in each time period (as assessed by firms in 2004) and the district ln(GDP p.c.), as well as each interacted with the time dummy. The average efficiency variable interacted with time is significant suggesting that inefficiency in 2004 is associated with higher bribes. But in both cases the PDIP-GOLKAR effects are little changed, netting at .20 and .21, compared to the column 5, Table 3 net effect of .22.[8]

To emphasize the effect of vote shares, it is helpful to look at the raw data. For the 30 districts with vote shares recorded, Figure 1a shows that the average (including zeros) bribe ratio in 2001 declines with base PDIP-GOLKAR vote, but rises in 2004. Correspondingly (which holds for all figures to follow), in Figure 1b the fraction of firms paying bribes mirrors these same vote-time patterns. If, for these 30 districts, we regress the change in average bribe ratio on PDIP-GOLKAR vote share in 1999, the coefficient (standard error) is .0966 (.0438), indicating how in net bribes change between the time periods in response to vote shares. Adding on either the percent change in district ln(GDP p.c.) or the change in perceived district level government inefficiency leaves the PDIP-GOLKAR effect unchanged and significant, and both coefficients of these added variables are insignificant. Figure 2 shows that the 2004 pattern continues over to all our 85 districts: the average bribe ratio in 2004 rises sharply with PDIP-GOLKAR vote share in 1999. Figure 3 shows something else that is also critical to our thinking, that decentralization and Megawati's assent to Presidency is a regime switch. Figure 3 plots district bribe activity in 2001 versus 2004: rather than there being a 45 degree regression line, there is virtually a horizontal one.

[8] Entering these effects as simply one variable, either the change in district attitudes or change in income each interacted with a time dummy produces similar results (no effect on PDIP-GOLKAR effects). We also explored controlling for local culture and devoutness, as detailed in later sections, by adding in a variable, the ratio of Islamic to state elementary schools in 1990. That control has no effect here: the base school ratio coefficient (standard error) is -3.85 (4.37) and the ratio interacted with time has a coefficient of 3.62 (6.08), implying in 2004 its net effect is zero. And its insertion raises the PDIP-GOLKAR net effect to .27.

Finally Figure 4 shows what might be a punishment effect. In Figure 4a, we look at the 30 districts with overlapping data and plot the 2004-2001 average bribe ratio change against the 2004-1999 vote change. In the second wave of elections, districts that experienced high increases in corruption then vote big reductions in PDIP-GOLKAR vote shares. In a footnote to the Figure, we show this correlation is not due to some pattern of mean reversion in voting behavior. After accounting for 1999 vote share levels, increases in bribe activity are associated with declines in vote shares for PDIP-GOLKAR (and adding in the percent change in GDP p.c. has no effect on the result). In addition, from Figure 3 we know 2001 and 2004 bribe activity is virtually uncorrelated across districts. Thus the same type of relationship should exist if we plot 2004 vote share levels against the PDIP-GOLKAR vote share change. We do this for all districts on Java. Figure 4b shows that districts with low 2004 bribe activity saw little or no change in PDIP-GOLKAR vote shares, while those with high bribe activity saw big secular party vote share reductions. This is an intriguing sharp correlation in the data. There is the question asked earlier of why districts in 2001 with less corruption voted more for PDIP-GOLKAR. As noted above, it may be that voters in some districts got swept up in the specifics of local candidates as well as the national politics and voted more for PDIP-GOLKAR locally. But in the next election, they punished those parties in 2004 if they misbehaved after 2001, as Figure 4 suggests.

## 4. Results: The Anatomy of Bribing in 2004

In Table 5, we present results on the basic version of equation (5) for 2004 firms. We start by estimating the "structural" model for the original type of bribes for which it is designed—those dealing with red tape, and resulting inspections for licenses, retributions, and plant safety. In the next table we will add in labor bribes as well, to look at total bribe activity. Before proceeding a number of comments are in order. First the final specification we utilize is very simple. Apart from political variables, controlling for visits and licenses, bribes as a fraction of costs are unrelated to most firm characteristics—industry, export activity, FDI investment, capital stock and the like. As we will see later these items definitely create red tape and visits, but controlling for these the bribe ratio is only related to overall scale which takes a quadratic form in employment. The bribe ratio seems also unrelated to firm cost and demand conditions such as the wage rate in the district and a measure of district market potential (see later); arguably these could affect bribes and costs in the same proportion leaving the ratio unchanged. We have a control for Chinese ethnicity of the owner, where Chinese Indonesians have faced a history of harassment.

While that variable is always positive, in this table it is statistically insignificant although in later tables it is significant.

In Table 5 in columns 1 and 2 we present IV Tobit (MLE) and ordinary Tobit estimates, where in column 1 visits are treated as endogenous, which they surely are. As instruments for visits, we start with two travel cost conditions facing officials visiting a firm. For each firm we know its sub-district (kecamaten) location. We can calculate a population weighted average of distances from villages in the sub-district to the district capital, as a proxy for travel costs of officials (coming from the capital) to visit the firm. Second, coastal areas are viewed as more inaccessible, so we use the fraction of the population in a sub-district living in coastal villages as a second instrument. Finally whether a firm is in "high tech" activity (machinery, electronics, transport, and instruments (other) or is an exporter seems to draw more excuses for visits, although not more bribes conditional on visits. Later when we look at estimation of visit equations we will see the impact of these variables, but all in all they are weak instruments. Their partial-F in first stage regressions for column 1 is 5.2; and that is the best it gets. That gives us a fundamental dilemma in estimation. We have weak instruments for visits; and trying to instrument for say licenses and/or employment at the same time (with equally weak instruments) produces unstable and mostly non-credible results. So in this first table we present results assuming firm conditions such as size and licenses are predetermined, largely in 1999 and 2000, before the regime switch in corruption activity in 2001.

In column 1, a one standard deviation increase in the number of visits (9.9) from the mean (6.6) increases the red tape bribe ratio by 2.4, where the mean red tape bribe ratio is 1.8 for the estimating sample. That coefficient in IV estimation is imprecisely estimated, although IV and ordinary Tobit results are quite similar. Increasing the number of licenses and retributions by one standard deviation (5.7) from the mean (8.1) raises the bribe ratio by 1.2, again a large effect. The bribe ratio peaks at a firm employment level of 26. The peak point varies across the table, but in general it is at or below that of median size, 40, and then declines thereafter. The results suggest the bribe ratio generally starts to fall with firm size beyond some size at or below the median.

In Table 5, in columns 2-4, we introduce politics: the influence in a district of having voted for PDIP-GOLKAR in 1999. Results, given the simultaneous attempt to instrument for visits, suggest positive effects on the political variables in column 3 that are much larger than ordinary Tobit effects in column 4, although the coefficient in column 3 is insignificant. Standard errors for MLE Tobit are based on clustering, enlarging the standard errors. But the problem with an MLE specification is that there is no ready way to allow for heteroscedasticity. In contrast the robust standard errors for 2SLS for the same equation that are clustered allowing for

heteroscedasticity are relatively much smaller. And the 2SLS coefficient is strongly significant, as reported in square brackets in the table. In general, this is a pattern throughout: the PDIP-GOLKAR coefficient under 2SLS tends to have a much higher level of significance than under MLE Tobit. And both IV estimates are usually at least twice as large as their corresponding non-IV ones. But why would IV estimates of political effects be much greater than non-IV ones? One unobserved aspect of the bribe relationship is the traditional, local "culture of corruption", which would act to increase bribe levels. Figure 1 suggests that, if 2001 bribes reflect the tradition of corruption in a locality, this is *negatively* correlated with PDIP-GOLKAR 1999 vote share, biasing that coefficient downward in 2004.

Overall in Table 5, the instruments for visits are weak, although for PDIP-GOLKAR share they are strong. The Wald test can't reject exogeneity of variables, consistent with the insignificant correlation coefficients on errors in the main bribe equation and the instrumental variable equations. Given the difficulty in instrumenting for visits and the issue of licenses potentially being endogeneous, we proceed to a reduced form specification and our main results on political variables in Table 6.

## 5. The Overall Effects of Politics on Local Corruption

As just noted Table 5 results face the issue that licenses and retributions may be endogenous and we have weak instruments. In section 6 below we show that visits and licenses are largely driven by firm characteristics. In Table 6 we present results for a reduced form specification, where we substitute in firm characteristics which help determine licenses and visits, with an additional control for transport costs of visits by local officials discussed earlier, treating firm characteristics as exogenous. Our focus is on the vote share variable.

In Table 6, in columns 1-3 we run the specification for the red tape bribes modeled in Table 5. In column 1 we show the IV Tobit (MLE) results for red tape; and, for readers who are interested, in column 2 present a full array of 2SLS results. 2SLS results have smaller coefficients as expected but display the same patterns. Column 3 shows ordinary Tobit results. After that, we switch to look at overall corruption since that is the prime concern, adding in bribes for labor troubles to those for red tape. In columns 4-5 in Table 6 and in the following tables the focus is on the effect of politics on total bribes.

In Table 6 for firm characteristics, there is a common pattern. The red tape bribe ratio increases with firm employment up to about 120 employees (median 40; mean 168) and increases over all ranges for the total bribe ratio. The bribe ratio increases initially with capital stock but

peaks before the biggest firms, with bigger increases for total than red tape bribes. Labor bribes tend to affect bigger firms more. Being an exporter or having FDI has a weak positive effect on bribes. In these reduced form equations, Chinese entrepreneurs who face discrimination in general pay significantly more bribes, with the bribe ratio rising by 1.2 for red tape and a whopping 2.6 for overall bribes. Industry dummies generally don't matter. In the estimation we have a cost of visit variable—distance from the plant's sub-district to the district capital. This variable has a weak effects here and later in explaining visits.

The pattern of effects of legislature composition on bribing is consistent across columns. In columns 1 and 3, the IV coefficients are .15 and .20 for red tape and total bribes respectively and are 2-2.5 times as large as the ordinary Tobit coefficients. Note, again, the .20 coefficient corresponds to the point estimates in the over-time comparisons in Table 3. Based on IV results and a (non-marginal interpretation to Tobit coefficients), a 10% increase in secular party assembly composition raises the total bribe ratio by 2.0% (given a mean overall bribe ratio of 3.4). The marginal Tobit effect is about 1.2, accounting for the probability of paying a bribe corresponds to the 2SLS effect of 1.3. These are large effects and constitute our basic result. Moreover for red tape bribes the effects in going from Table 5 to 6 almost double given it is now a net combined effect: the direct effect of politics on bribing and the indirect effect of politics through changes in harassment and red tape. Political effects are viewed as varying continuously with vote shares (see Figure 2). A quadratic specification on total bribes produces completely insignificant IV coefficients with point estimates suggesting effects peak at 60% vote share, while ordinary Tobits suggest the opposite shape with vote share effects increasing continuously after a vote share of 34%. Experimentation with discontinuities produced no significant or suggestive results.

In terms of tests of the specification, while Wald-tests still can't reject exogeneity of covariates overall, the p-value is not large. But t-tests also can't reject equality of ordinary and IV Tobit coefficients for the political variable alone (with t-values of 1.3 and 1.4 respectively for red tape and all bribe comparisons). However our perspective is that clustering may excessively blow-up standard errors in Tobits where heteroscedasticity is not accounted for. For linear formulations, we performed a basic Hausman (1978) t-test in an OLS bribe equation on the coefficient of the usual added term: the residuals from the first stage regression of PDIP-GOLKAR on exogenous variables and instruments. That coefficient is always negative, consistent with our priors. For the all bribe equation, as formulated in Table 6, the t-statistic is -1.3; but for red tape bribes it is -3.13. Also if we are less conservative in our instrumenting and add the percent Christian in the population of 1995 as a third instrument, in the IV Tobit

formulation, Wald p-values now hover around .05; and, with greater precision in estimation, t-tests reject equality of IV and ordinary Tobit estimates. For this less conservative instrumenting approach, in the specifications in Table 6, Sargan values in 2SLS either stay the same (all bribes) or actually rise (red tape bribes). Given our priors that we should instrument, we tend to rely on the IV results. Of course ordinary Tobit results also show non-trivial and significant effects.

**Robustness**

In Table 7, we conduct three types of robustness tests. For these we report just the ones for all bribes (for basic cases we examined, red tape bribes results are similar). In the first set in Table 7a, we look at robustness of the Table 6 results to sample weights, specifications, and other considerations. In Table 7b, we look at the effect of adding in other covariates, representing a variety of district economic and political conditions. In Table 7c, we look at the effect of adding as covariates measures of controls for local devoutness, indicating potentially local tastes for corruption and the local corruption environment.

**Alternative specifications.** Earlier we noted that our sample of 2004 firms is non-random with over-sampling of firms in smaller districts and in 3-4 districts that overlap in sampling with 2001. We don't know the relevant population of firms in 2004, to create exact weights. We draw on the census bureau's [BPS] list of medium and large size firms (most firms over about 12 employees) in 2003 to construct our basic sample. But in over-sampling in districts with few firms, surveyors sometimes extended the sample into smaller size firms. We can't construct accurate weights overall, but we try two things. First, from the 2000 PODES, we have an inventory of all village activity including a count of all manufacturing enterprises as reported by village heads; these include some very small, "informal" sector firms that are well below our horizon. Nevertheless, based upon this count, we estimate weighted IV Tobits. In column 1, for these PODES weights, the coefficient in Table 5 of .199 falls to .153. Then we tried another set of, we think, more plausible weights. We restrict the estimating sample to all firms over 12 employees (2272 of 2474) and use as weights our sample count relative to the BPS count in 2003 for each district. Doing so raises the PDIP-GOLKAR coefficient to .25.

In column 3, we treat firm size variables and FDI and export status as also endogenous, substituting in controls for local economic conditions that should determine firm size—a measure of market potential, average employee compensation from the annual survey of manufacturers, indirect taxes (which are mostly local property taxes) over capital stock as a proxy for the local cost of capital, and the number of own industry enterprises as a source of local scale externalities. The first variable is from 1994 and the next three from 1997, with the use of historical variables to mitigate issues of correlation with contemporaneous errors terms. Market potential is the

distance discounted sum of GDP of the own and all other districts on Java.[9] The first three variables are entered as a second order expansion. While scale externalities clearly matter, the variables in the second order expansion generally are very weak statistically. Regardless, in column 3, now the IV vote share coefficient is .21, which is little different from the .20 in Table 6. This suggests the indirect effects of corruption through firm size effects are minimal.

Then we turn to the issue that, in the political process, we have lumped PDIP and GOLKAR together, in part because we believe it is the total that matters. In column 4 we split the vote out and add a third instrument: the percent of the population that is Christian in 1995. In the split the PDIP coefficient is larger at .26 and much more precisely estimated than the GOLKAR coefficient at .17. But for the same model run for red tape bribes alone, the PDIP and GOLKAR respective coefficients (standard errors) are .135 (.0573) and .200 (.116). The only conclusion we draw is that the PDIP effect seems to be more precisely estimated.

Finally, we turn to the issue that we have estimated a Tobit, imposing a common functional form on the decision about whether to bribe or not, and if so what ratio of bribes to pay, treating the problem as a simple censoring one. In column 5 of Table 7a, we show the results for the bribe equation for the sample where bribes are positive, estimated by 2SLS with a Heckman selection term based on a reduced form Probit. As in the rest of the table we focus just on the vote share coefficient, which is .115, consistent with the marginal effect of .12 on expected bribing activity in the Tobit framework. The selection coefficient is statistically significant. To get convergence in the bribe equation we had to drop industry, export and FDI dummies (which are never significant in continuous bribe formulations). In the (reduced form) selection equation we have the full set of firm characteristics as well as our instruments to control for politics.

**Other covariates.** In Table 7b, we look at the effect of adding in other covariates. While we treat the added covariates as endogenous, results differ little if they are treated as exogenous, in the sense that PDIP-GOLKAR coefficients still hover around .20 and the added covariates remain insignificant. First we look at the effect of "political competition"—how concentrated vote shares are. It could be that in districts where votes are more spread across parties, there is a greater degree of "competition" which induces, say, less corruption, because the governing coalition is more responsive to voters in its attempt to retain office. The degree of vote concentration is

[9] In the sum, GDP in each district is discounted by $Ad_{ij}^{.8}$, where $d_{ij}$ is distance in 100's of miles from the capital of the own district, *i*, to that of *j*. The .8 exponent is taken from Au and Henderson (2005). The *A* is given a value such that $Ad_{ij}^{.8}$ is normalized to be one for the smallest own district. For the own district, following standard empirical practices the distance, $d_{ii}$, is 2/3 radius of the district, where that is the average distance "commuted" by any firm to the center (if all firms were uniformly spread over a circular district).

measured by a standard Hirschman-Herfindahl index: the sum of squared vote shares of each of the 40 parties. The higher the index the more votes are concentrated. In column 1 this variable is positive as expected but insignificant and only serves to raise the PDIP-GOLKAR coefficient. In column 2, we add in average profitability of manufacturing firms from the Annual Survey of Medium and Large Size Firms in 2001, where profitability could raise bribes firms are willing to pay, and could be correlated with vote shares. That variable is also insignificant, with no effect on the PDIP-GOLKAR coefficient. In column 3 we add in the count of manufacturing firms in the 2001 annual survey just noted. That count could reduce the cost of traveling to collect bribes or could better reflect long term productivity and local economic conditions. While that coefficient is positive, the PDIP-GOLKAR coefficient again is unaffected. Finally we add in the perceived district average efficiency in 2004 and ln(GDP p.c.) in 2003, variables used in Table 4 above. Again there are no significant effects. We also experimented with adding in the percent change in GDP p.c. from 1999 to 2003 and the change in district average inefficiency. The change in income has an insignificant negative sign and the change in inefficiency a positive insignificant one, with respective PDIP-GOLKAR coefficients (standard error) of .234 (.0953) and .194 (.0768).[10]

**Local tastes for corruption.** In Table 7c, we attempt to control for local "tastes" concerning corruption based on the notion that devout Muslims find corruption offensive. We don't know devoutness of our owners, but we have districts characteristics that reflect local devoutness. One is the ratio of Islamic elementary schools to government schools in the district and the other is the ratio of small prayer houses to larger mosques in the district. The former is more self-explanatory, reflecting inculcation of religious practices. The latter has to do with praying. In more devout areas, people want to do daily devotions at a religious site. Mosques are typically in a village center, requiring people to commute to the center for devotions. In devout areas, in addition to the mosque, villagers build smaller prayer houses nearer to their base location to avoid these commuting costs. Both variables are recorded for 1990 reflecting the conditions voters grew up under. We add these controls both separately and together. We experimented with the schools variable alone and then in a cubic form and the same for prayer-houses. The former on their own are much more significant in ordinary Tobits; although neither in any form is significant in IV estimation. We also introduce the two together in a second order expansion, where some terms in the expansion are significant in IV estimation. Once we control for tastes we add our third instrument: percent Christian.

[10] Here when we instrument for the change in income from 1999-2003 we replace GDP p.c. 94 as an instrument with the percent change in GDP p.c. from 1994-1999 (partial F of 149).

In Table 7c we report on the formulations with schools, schools cubed and the second order expansion in schools and prayer-houses. The main effect of the taste controls is to raise the clustered standard errors in the IV Tobit (with less effect on 2SLS standard errors). Coefficients are little affected, although in the second order expansion there is a 14% drop in the Tobit coefficient, although none for the 2SLS. The last column shows results for just red tape bribes for the second order expansion—coefficients are unaffected by the introduction of these taste controls. Our conclusion is that the IV estimates in Table 6 capture the effects of politics, over and above that of local tastes for corruption per se. The results on tastes as footnoted in the table suggest that at mean values of prayer-house and school ratios, the marginal school effect is strongly negative, so increased devoutness reduces corruption, but the pray-house effect only becomes negative at large prayer-house values.

## 6. Harassment and Red Tape

In this section we look first at the second part of our corruption model: what determines the degree of harassment as measured by number of visits in equation (4). We estimate a "structural" version where licenses and retributions are treated as exogenous (instrumenting for this variable with omitted firm characteristics has no effect on its coefficient). Visits are determined by firm employment size, licenses and retributions, whether the firm exports, whether it is in a high tech industry, and cost of visit variables. Other firm characteristics seem to play no role in determining the number of visits. For the cost of visit variables, besides the population weighted average of distance from villages in the firm's sub-district to the district capital used earlier, we added in the proportion of the population living in coastal areas in the sub-district (as raising transport costs) and a variable representing the ease of visiting multiple local plants, the ratio of total manufacturing establishments to land in the sub-district based on the PODES (an annual inventory of village characteristics). After examining the structural relationship, we turn to the reduced form version where we add in firm characteristics that additionally determine licenses and retributions such as a more detailed industry breakdown, capital stock, and FDI status.

Columns 1 and 2 of Table 8 report results on the structural form version, with column 1 being the IV results when we instrument for party vote shares. IV and ordinary Tobit results are virtually identical. Visits increase with the number of licenses, being a high tech industry, being an exporter, and with firm size up to 150 (about mean size and way above median size). The cost of visit variables have the correct signs throughout the table, but only the variable measuring the density of local manufacturing establishments is ever significant at a 10% level. This reveals our

problem with weak instruments in Table 5 above. Finally for the key variable, PDIP-GOLKAR vote shares, while the IV coefficient says that an increase in vote share of 10 points increases visits by .7 (from a mean of 7.4), the effect is not significant.

In columns 3-4 when we remove the license variable in columns 1 and 2 and add in more firm characteristics, we see that capital stock size and being Chinese additionally significantly affect visits, indirectly through license requirements. Again IV and ordinary Tobit results are virtually the same. Now the vote share coefficient is a little larger (.09 versus .07) and is significant at a 10% level in the ordinary Tobit estimates. The Wald test on exogeneity of covariates is far from rejecting exogeneity. Regardless, we can see why in Table 5 versus 6, the effect of vote shares on bribes rises when we move to the reduced form and add in indirect effects of politics on visits and licenses, even though the vote share variable is not statistically strong.

Finally in Table 9 we turn to licenses and retributions, with the determinants estimated by OLS and 2SLS. Requirements increase monotonically with firm employment and capital stock size. Being Chinese or an exporter, or having FDI increases licenses and retributions firms face. The Chinese effect is surely a discrimination effect: Chinese are "intimidated" into subscribing to licenses that other firms typically would not be required to hold. Here again the need for instrumenting is questionable and PDIP-GOLKAR vote share coefficients while positive are not significant. From these results it would appear that license requirements depend on firm characteristics per se; and the effect of politics is at best small.

## 7. Conclusions

In Indonesia the introduction of local democracy decreased local corruption. However specific politics, separate from local tastes and the traditional local culture of corruption, matter. Corruption is less in areas which vote more heavily for Islamic parties. As local vote shares and hence local legislature seat shares of secular parties rise, the relative degree of corruption rises. The baseline results suggest a secular party vote share increase of 10% raises the bribe ratio by 1.2 (marginal Tobit effect), where the mean ratio is 3.4. But an interesting aspect is that it appears voters in what became corrupt districts initially did not associate voting for secular parties with corruption. They were "fooled" in the first election cycle, but then responded by changing their votes towards Islamic parties in the next cycle.

These results based on local politics may provide optimism for reduction of corruption at the national level, in the long term. First, a change in local corruption environments surely impacts corruption at the national level per se. But the potential ability of Islamic parties to garner

political support based on anti-corruption stances raises the stakes at the national level. If secular parties over time do not clean house at the national level, then one or more of the Islamic parties may have enhanced chances of regaining dominance of the national political scene. There is no question that the current government has a focus on corruption reduction at the national level. However the immediate prospects for substantial improvement are dim: corruption still serves to fund national political party activities almost regardless of party and national bureaucrats still rely on corruption proceeds to supplement their salaries to meet market compensatory pay.

## References


Andvig, J.C. and K.O. Moene (1990), "How Corruption May Corrupt," Journal of Economic Behavior and Organization, 13, 63-76

Banerjee, A. (1994), "A Theory of Misgovernance," MIT working paper.

Bardhan, P. (1997), "Corruption and Development: A Review of Issues," Journal of Economic Literature, 35, 1320-1346.

Beck, P.J. and M.W. Maher (1986), "A Comparison of Bribing and Bidding in Thin Markets," Economics Letters, 20, 1-5.

Besley, T. and A. Case (1995), "Incumbent Behavior: Vote Seeking, Tax-Setting, and Yardstick Competition," American Economic Review, 85, 25-45.

Brueckner, J.K. and L.A. Saavendra (2001), "Do Local Governments Engage in Strategic Competition," National Tax Journal, 54, 202-229.

Brunetti, A. and B. Weder (2003), "A Free Press is Bad News for Corruption," Journal of Public Economics, 87, 1801-1824.

Cadot, O. (1987), "Corruption as a Gamble," Journal of Public Economics, 33, 223-244.

Cai, H, H. Fang, and L.C. Yu (2005), "Eat, Drink, Firms, and Government: An Investigation of Corruption From Entertainment and Travel Costs of Chinese Firms," NBER Working Paper # 11592.

Case, A.C., H.S. Rosen and J.R. Hines (1993), *"Budget Spillovers and Fiscal Policy Interdependence,"* Journal of Public Economics, 52, 285-307.

Fisman, R. and G. Roberta (2002), "Decentralization and Corruption: Evidence Across Countries," Journal of Public Economics, 83, 325-345

Henderson, J.V. and A. Kuncoro (2004), "Corruption in Indonesia," NBER Working Paper # 10674.

Kaufman, D. and J. Wei (1999), "Does 'Grease Money' Speed Up the Wheels of Commerce," NBER Working Paper No. 7093

Kuncoro, A. (2003), "Bribery at the Local Government Level in Indonesia: A Preliminary Descriptive Analysis," University of Indonesia mimeo.

Lee, L-F., G.S. Maddala and R.P. Trost (1980), "Asymptotic Covariance Matrices of Two-Stage Probit and Two-Stage Tobit Methods for Simultaneous Equations Models with Selectivity," Econometrica, 48, 491-504.

Liddle, R.W. (1999), "The Islamic Turn in Indonesia: A Political Explanation", in Religion, Globalization, And Political Culture in the Third World, J. Haynes (ed.) N.Y.: St, Martins Press.

Lui, F. (1985), "An Equilibrium Queuing Model of Bribery," Journal of Political Economy, 93, 760-781.

Mauro, P. (1995), "Corruption and Growth," Quarterly Journal of Economics, 110, 681-712.

McLeod, R.H. (2005), "Survey of Recent Developments", Bulletin of Indonesian Economic Studies, 41, 133-57.

Mocan, N. (2004), "What Determines Corruption? International Evidence from Micro Data," NBER

Working Paper No. 10460.

Mookherjee, D. and J.P.L. Png (1995), "Corruptible Law Enforcers: How Should They be Compensated," Economic Journal, 105, 145-159.

Olsen B (2005), "Monitoring Corruption: Evidence from a Field Experiment in Indonesia," NBER Working Paper # 11753.

Pettersson-Lidbom, P. (2003), "Do Parties Matter for Fiscal Choices? A Regression-Discontinuity Approach," Working Paper No. 15, Stockholm University.

Rasmusen E. and J.M. Ramseyer (1994), "Cheap Bribes and the Corruption Ban: A Co-ordination Game Among Rational Legislators," Public Choice, 78, 305-327.

Rose-Ackerman, S. (1978), Corruption: A study in political economy, New York Academic Press (1994).

_____ "Reducing Bribery in the Public Sector," in Corruption and democracy, D.V. Trang (ed.), Budapest Institute for Constitutional and Legislative Policy.

Sah, R. (1988), "Persistence and Pervasiveness of Corruption: New Perspectives," Yale Economic Growth Center Discusser Paper 560.

Shleifer, A. and R.W. Vishny (1993), "Corruption," Quarterly Journal of Economics, 108, 599-617.

Svensson, J. (2003), "Who Must Pay Bribes and How Much?: Evidence From a Cross-Section of Firms," Quarterly Journal of Economics, 118, 207-230.

Tirole, J. (1996), "A Theory of Collective Reputations," Review of Economic Studies, 63, 1-22.

Van der Klaaw, W (2003), "Estimating the Effect of Financial Aid Offers on College Enrollments: A Regression Discontinuity Approach," International Economic Review, 43.

Vatikiotis, M.R.J. (1998), Indonesian Politics under Suharto (3rd edition), N.Y.: Routledge.

World Bank (2003), "Combating Corruption in Indonesia: Enhancing Accountability For Development," East Asia Poverty Reduction and Economic Management.

**Table 1. The 2001 and 2004 comparison: 178 firms**

| | 2001 | 2004 |
|---|---|---|
| No. (out of 178) paying bribe for red tape | 136 | 116 [12 missing] |
| If pay, bribe as % of costs: mean<br>median | **8.04**<br>**5** | **4.53**<br>**2** |
| No. of licenses | 10.94 [lower bound] | 10.56 |
| Median time with local officials [Scale: 1 (0-5%), 2 (5-15%),.6 (>75%)] | 2 | 1 |
| % paying labor bribes | n.a. | 57 [8 missing] |
| If pay, labor bribe as % of costs mean<br>median | n.a.<br>n.a. | 5.2<br>1.2 |
| (Unweighted) Avg. total bribe as % of costs, overall | **6.14** | **5.79** |
| Crude weighted avg. total bribes as share of total costs | 5.6 | 5.7 |

**Table 2. Bribe or not, 2001 versus 2004. "Fixed effects" logit; repeat firms (178) in 24 districts.**

| | **Red tape bribe, or not** | **Red tape bribe, or not** | **Red tape+ labor bribe, or not** | **Red tape + labor bribe, or not** |
|---|---|---|---|---|
| **Small-medium size (500m -1b)** | .00924<br>(.565) | -.143<br>(.655) | -.204<br>(.627) | -.320<br>(.651) |
| **Medium size (1b – 5b)** | -.0975<br>(.714) | (.0413<br>(.755) | -.212<br>(.736) | .286<br>(.844) |
| **Large size (>5b)** | -.0549<br>(.776) | -.137<br>(.854) | -.225<br>(.789) | -.501<br>(.954) |
| **Dummy: export or not** | 1.13*<br>(.635) | .970<br>(.667) | 1.17<br>(.726) | 1.10**<br>(.378) |
| **Ln (no. of licenses)** | .481**<br>(.231) | .592**<br>(.286) | .872**<br>(.292) | 1.05**<br>(.378) |
| **Time Dummy, 2004 [D2004]** | **-.967****<br>(.347) | **-4.52****<br>(1.52) | **-.831****<br>(.362) | **-5.35****<br>(1.72) |
| **D2004* share '99 PDIP-Golkar vote** | | **.0652****<br>(.0257) | | **.0830****<br>(.0290) |
| **Control: no recorded '99 vote** | | yes | | yes |
| **N [no. firms] {bribe '01 & no bribe '04}** | 160 [80]<br>{50} | 160 [80]<br>{50} | 140 [70]<br>{40} | 140 [70]<br>{40} |

**Table 3. Pooled sample, 2001 and 2004, manufacturing firms in 37 districts on Java[a]**

| | Tobit | Tobit | IV Tobit (2-step) | 2SLS | Tobit |
|---|---|---|---|---|---|
| **Small-medium size** | .741<br>(1.46) | .634<br>(1.43) | 1.53<br>(1.43) | .841<br>(1.49) | 1.53<br>(1.80) |
| ***D2004** | .597<br>(1.89) | .814<br>(1.93) | 1.13<br>(1.91) | .436<br>(1.49) | 1.12<br>(2.02) |
| **Medium size** | -5.12**<br>(1.79) | -5.13**<br>(1.86) | -4.24**<br>(1.45) | -3.15**<br>(1.55) | -4.24**<br>(2.27) |
| ***D2004** | **6.83**<br>(2.31) | 7.20**<br>(2.44) | 8.51**<br>(1.89) | 4.85**<br>(1.77) | 8.51**<br>(2.75) |
| **Large size** | -6.03**<br>(2.07) | -6.05**<br>(1.96) | -6.20**<br>(1.54) | -4.43**<br>(1.62) | -6.06**<br>(2.17) |
| ***D2004** | **6.35**<br>(2.83) | 6.55**<br>(2.80) | 10.7**<br>(1.96) | 5.93**<br>(1.59) | 10.5**<br>(2.74) |
| **Export or not** | 3.65**<br>(1.43) | 2.88**<br>(1.42) | 4.91**<br>(1.14) | 3.79**<br>(1.16) | 4.65**<br>(1.49) |
| ***D2004** | **-3.07**<br>(1.91) | -1.63<br>(1.94) | -2.79*<br>(1.52) | -2.73*<br>(1.13) | -2.48<br>(1.59) |
| **Ln (no. licenses)** | 5.67**<br>(1.59) | 6.47**<br>(1.64) | n.a. | n.a. | n.a. |
| ***D2004** | -.459<br>(1.55) | -1.86<br>(1.69) | n.a. | n.a. | n.a. |
| **Time Dummy, 2004** | **-5.30***<br>(3.12) | **-18.8****<br>(4.76) | **-16.9****<br>(6.29) | **-12.4****<br>(4.23) | **-21.5****<br>(4.22) |
| **% share pdip & golkar vote '99** | | **-.136****<br>(.0416) | **.00721**<br>(.0741) | **.0467**<br>(.0809) | **-.0620**<br>(.0684) |
| ***D2004** | | **.301****<br>(.0590) | **.200***<br>(.115) | **.171****<br>(.0823) | **.285****<br>(.0709) |
| **Variance $\sigma^2$ [ρ]** | 12.0**<br>(.967) | 11.9**<br>(.978) | | | 13.0**<br>(1.18) |
| **Control: no vote areas** | | Yes | Yes | Yes | Yes |
| **N [districts] {zeros}** | 1677 [37]<br>{484} | 1677 [37]<br>{484} | 1862 [37]<br>{582} | 1862 [37]<br>{582} | 1862 [37] |
| **Wald-test: p-value** | | | .84 | | |
| **Sargan p-value** | | | | .97 | |
| **Partial F's** | | | 175, 119 | 175, 119 | |
| **$R^2$** | | | | .28 | |

a. In the covariates, a dummy is used to control for districts with no votes. From the discussion in the text, instruments are %government workers 1990 and fraction villages on coast, each interacted with this dummy for no votes. Then there is a second set of instrumental variables which is the first additionally interacted with the time dummy. Standard errors for Tobits are based on clustering (except in 2-step results) and for 2SLS standard errors are robust ones accounting for clustering. One asterisk indicates a 10% significance level and two a 5% level.

**Table 4. Overtime models: robustness to other covariates**

| | Fixed effect logit (Table 2, col. 4) | Fixed effect logit (Table 2, col. 4) | Tobit: Pooled '01-'04 districts (Table 3, col. 5) | Tobit: Pooled '01 –'04 districts (Table 3, col. 5) |
|---|---|---|---|---|
| **PDIP-GOLKAR99** | | | -.0627<br>(.0708) | -.0650<br>(.0684) |
| **D2004* PDIP-GOLKAR99** | .0871**<br>(.0300) | .0965**<br>(.0314) | .261**<br>(.0731) | .276**<br>(.0686) |
| **Inefficiency (t)** | .242<br>(.218) | | -1.08<br>(2.73) | |
| **D2004* inefficiency(t)** | | | 7.31**<br>(3.12) | |
| **lnGDP p.c. (t)** | | -2.04<br>(1.36) | | .282<br>(1.72) |
| **D2004* lnGDP p.c. (t)** | | | | .392<br>(1.77) |
| **N** | 140 | 140 | 1862 | 1862 |

Standard errors for Tobits are based on clustering. One asterisk indicates a 10% significance level and two a 5% level.

**Table 5. "Structural form" bribe equations: red tape bribes**

| | IV Tobit MLE[a] | Tobit | IV Tobit (MLE)[b] | Tobit |
|---|---|---|---|---|
| **Ln (no. of visits)** | 2.68[(1)]<br>(.185) | 1.90**<br>(.166) | 2.53[(1)]<br>(2.81) | 1.88**<br>(.244) |
| **Ln (no. licenses & retributions** | 2.19**<br>(1.05) | 2.62**<br>(.294) | 3.00**<br>(1.49) | 2.56**<br>(.377) |
| **Ln(employ)** | 1.28<br>(.869) | 1.56**<br>(.578) | 1.36<br>(1.09) | 1.55**<br>(.608) |
| **Ln (employ) sq** | -.197**<br>(.0816) | -.220**<br>(.0618) | -.200**<br>(.0964) | -.216**<br>(.0639) |
| **Share PDIP-GOLKAR 1999 vote [2SLS]** | | | .0802[(2)] [.0704**]<br>(.0598) [(.0278)] | .0334*<br>(.0178) |
| **Dummy Chinese** | .558<br>(.420) | .587<br>(.413) | .426<br>(.463) | .549<br>(.456) |
| **Controls: no vote** | | | Yes[c] | Yes |
| **N [zeros]** | 2517 [1126] | 2517 [1126] | 2517 [1126] | 2517 [1126] |
| **Wald test: p-value** | .67 | | .52 | |
| **Variance $\sigma^2$ [ρ's]** | 6.18 [-.787]<br>(.122) [(1.85)] | 6.18<br>(.122) | 6.20 [-.875, -.076]<br>(.490) [(.818) (.318)] | 6.16**<br>(.549) |
| **Partial F's: 1st stage regs.** | 5.18[(1)] | | 3.46[(1)]<br>90.6[(2)] | |

a. Instruments are (population weighted) avg. distance from villages in sub-district to district capital, % pop. in sub-district living in coastal villages, dummy export firm, dummy high tech firm.
b. Instruments are those in (a) and % government workers 1990 and fraction villages on coast in district each interacted with the dummy for no vote areas. In this column under [ρ's], we list the correlation of the error terms between the main bribe equation and the equation for vote share first and then next that for the main equation and the equation for visits.
c. The no vote dummy has a coefficient of 4.03 (3.46) and the Jakarta dummy adds to that -.897 (.946).

Standard errors for Tobits are based on clustering and for 2SLS standard errors are robust ones accounting for clustering. One asterisk indicates a 10% significance level and two a 5% level.

**Table 6. "Reduced form" models on bribes**

| | IV Tobit [MLE]; red tape bribes | 2SLS; Red tape bribes | Tobit: Red tape bribes | IV Tobit [MLE]: All bribes | Tobit: all bribes |
|---|---|---|---|---|---|
| **'99 vote : PDIP-GOLKAR [2SLS]** | .146** (.0708) | .104** (.0346) | .0597** (.0205) | .199** [.130**] (.0897) [(.0493)] | .0842** (.0369) |
| **Ln (employ)** | 2.53** (.633) | .808** (.346) | 2.50** (.622) | 2.68** (1.33) | 2.71** (1.32) |
| **Ln (employ) sq.** | -.263** (.0721) | -.100** (.0391) | -.255** (.0694) | -.175** (.145) | -.175** (.141) |
| **Dummy: rent capital** | .535 (.663) | .184 (.307) | .379 (.622) | .994 (1.29) | .868 (1.26) |
| **Capital size: 500m-1b** | 1.18** (.429) | .518** (.266) | 1.22** (.402) | 2.46** (.872) | 2.35** (.837) |
| **Capital size: 1b-5b** | 3.08** (.829) | 2.02** (.580) | 3.05** (.814) | 4.21** (1.22) | 4.06** (1.24) |
| **Capital size: 5b-20b** | 1.59** (.548) | .543 (.356) | 1.67** (.528) | 3.06** (.924) | 3.47** (1.00) |
| **Capital size: over 20b** | 1.27 (.850) | .523 (.511) | 1.29* (.762) | 1.02 (1.36) | 1.79 (1.40) |
| **Dummy FDI** | .767 (.783) | .607 (.647) | .838 (.821) | .831 (1.18) | 1.24 (1.26) |
| **Dummy export** | .540 (.551) | .151 (.373) | .249 (.503) | .596 (.971) | .108 (.872) |
| **Dummy Chinese** | 1.17** (.528) | .539* (.294) | 1.34** (.484) | 2.61** (1.26) | 2.81** (1.04) |
| **Controls: no vote, ind. dummy, visit cost** | Yes[ab] | Yes | Yes | Yes[c] | Yes |
| **N [zeros]** | 2582 [1160] | 2582 [1160] | 2582 [1160] | 2474 [932] | 2474 [932] |
| **Variance $\sigma^2$ [ρ]** | 6.34** [-.101] (.505) [(.0731)] | | 6.36 (.552) | 11.0 [-.116] (.751) [(.108)] | 10.9 (.812) |
| **Wald test: p-value** | .16 | | | .28 | |
| **Partial F's: 1st stage** | 245 | 245 | | 245 | |
| **Sargan p-value** | | .41 | | [.84] | |
| **$R^2$** | | .16 | | [.195] | |

a. There are 8 categories of industries. None of the 7 dummy variables have coefficients that are significant at 10% or better level in column 1.
b. From visit equation in Table 7, the control is avg. distance from villages in sub-district to district capital. The coefficient is always insignificant.
c. Here wood [3.77 (1.93] is significant.

Standard errors for Tobits are based on clustering; and, for 2SLS, standard errors are robust ones accounting for clustering. One asterisk indicates a 10% significance level and two a 5% level.

**Table 7. Robustness: all bribes**

**a. Alternative specifications**

| | IV Tobit (MLE): PODES weighted sample | IV Tobit (MLE): BPS weighted sample | IV Tobit [MLE][a] (fully reduced form) | IV Tobit (2-step) : Vote split | 2SLS: Bribes>0, with selection correction |
|---|---|---|---|---|---|
| **Share '99 vote PDIP-GOLKAR** | .153<br>(.107) | .253**<br>(.114) | .210**<br>[(.0718)] | | .115**<br>(.0541) |
| **Share '99 vote: PDIP** | | | | .264**<br>(.0992) | |
| **Share '99 vote GOLKAR** | | | | .166<br>(.167) | |
| **Dummies: industry** | Yes | Yes | Yes | Yes | No |
| **Visit cost control** | Yes | Yes | Yes | Yes | No |
| **Dummies: FDI, export** | Yes | Yes | No | Yes | No |
| **Firm labor and capital variables** | Yes | Yes | No | Yes | Yes |
| **Dummy: Chinese** | Yes | Yes | Yes | Yes | Yes |
| **District econ. controls** | No | No | Yes | No | No |
| **Variance $\sigma^2$ [ρ]** | 10.4 [-.0738]<br>(.777) [(.120)] | 12.2 [-.183]<br>(1.08) [(.131)] | 11.0 [-.0510]<br>(.807) [(.096)] | 11.1 [-1.11, -.251]<br>(.609) [(.701),( .482)] | |
| **N [zeros]** | 2474 [932] | 2272 [817] | 2477 [935] | 2474 [932] | 1511 |
| **Wald test p-value** | .54 | .16 | .37 | .28 | |
| **Selection λ:** | | | | | -4.87**<br>(1.81) |

a. The controls with coefficients (standard errors) are .946 (.562) ln (no. firms in own industry in district '97) -29.5 (34.2) ln (MP: market potential '94) -33.6 (39.9) ln (wage97)+ 6387 (5777) prop. tax rate '97 +.396 (.871) ln (MP)sq +.237 (.487) ln (wage) sq. -15261 (20072) tax rate sq. +1.30 (1.76) ln (MP)*ln (wage) -206 (276) ln (MP)*tax rate -119 (208) ln (wage)*tax rate. The mean (standard deviation) of ln (wage), ln (MP), and tax rate are respectively 8.53 (.858), 24.0 (.542), and .00465 (.00369).

Standard errors for Tobits are based on clustering; and, for 2SLS, standard errors are robust ones accounting for clustering. One asterisk indicates a 10% significance level and two a 5% level.

**Table 7. Robustness: all bribes (continued)**

**a) Other covariates (added to Table 6, column 4 formulation)**
**Terms in square brackets are outcomes when the added covariate is assumed exogenous[a]**

| | IV Tobit MLE | IV Tobit MLE | IV Tobit MLE | IV Tobit MLE | IV Tobit MLE |
|---|---|---|---|---|---|
| **Share '99 vote PDIP-GOLKAR** | .265** (.0949) | .207** (.0824) | .197** (.0774) | .224** (.0947) | .180** (.0780) |
| **Political competition: HHI of vote shares** | 18.6 (25.3) | | | | |
| **Avg. profit: manu. firms in district, 2001** | | .182 (.462) | | | |
| **Ln (No. manu firms in district 2001)** | | | .829 (1.22) | | |
| **Perceived inefficiency dist. average** | | | | -3.44 (5.76) | |
| **ln (GDP p.c.)** | | | | | .945 (.692) |
| **Wald {Sargan (2SLS)}:p-values** | .19 {.64} | .38 {.76} | .40 {.70} | .34 {.69} | .52 {.88} |
| **Partial F, on added covariate** | 89.8 | 25.5 | 73.9 | 26.8 | 3708 |

a. When added covariate is treated as endogenous, the instruments for column (1) are % population living in coastal villages 2001, % pop Christian in 1995, and % population government employees 1990. For columns (2) – (5), ln(dist. to Jakarta) and ln(GDP p.c. 1994) are added as instruments.

Standard errors for Tobits are based on clustering; and, for 2SLS, standard errors are robust ones accounting for clustering. One asterisk indicates a 10% significance level and two a 5% level.

**Table 7. Robustness: all bribes (continued)**

**c) Controls for tastes, added to Table 6, column 4 formulation**

| | IV Tobit MLE | IV Tobit MLE | IV Tobit MLE | IV Tobit MLE Red tape bribes |
|---|---|---|---|---|
| **Share 99 vote PDIP-GOLKAR [2SLS]** | .196* [.145**] (.118) [(.0602)] | .203 [.161**] (.140) [(.0715)] | .172 [.129*] (.129) [(.0686)] | .144 [.103**] (.0992) [.0513)] |
| **Ratio: Islamic private to state elementary schools** | -.564 (5.37) | | | |
| **Schools ratio cubed** | | Yes[a] | | |
| **Quadratic in school ratio and ratio of small prayer-houses to mosques** | | | Yes[b] | Yes[c] |
| **Wald [Saragn]: p-value** | .35 [.47] | .36 [.31] | .51 [.69] | .31 [.66] |

a. The coefficients (s.e.'s) are .736 (28.8), 3.92 (93.2), and -9.46 (94.3).
b. The coefficients (s.e.'s) are -5.18 (9.25) school ratio – 21.3 ( 14.9) school ratio squared -1.35* (.712) pray/mosq. ratio- .00108 (.0221) pray/mosq. ratio squared + 4.96** (1.36) school ratio*pray/mosq. ratio. The ratio of Islamic to state primary schools has a mean .26 and s.d. .15 and the ratio of pray houses to mosques has a mean 3.9 and s.d. 2.7
c. The coefficients (s.e.'s) are -6.36* (3.45) school ratio + 5.19 ( 4.11) school ratio squared -.174 (.200) pray/mosq. ratio - .00297 (.00692) pray/mosq. ratio squared + 1.06** (.460) school ratio*pray/mosq. ratio.

Standard errors for Tobits are based on clustering; and, for 2SLS, standard errors are robust ones accounting for clustering. One asterisk indicates a 10% significance level and two a 5% level.

**Table 8. The number of visits**

| | IV Tobit (MLE) | Tobit | IV Tobit (MLE) | Tobit |
|---|---|---|---|---|
| **'99 vote share: PDIP-GOLKAR** | .0681<br>(.0720) | .0343<br>(.0270) | .0904<br>(.0829) | .0518*<br>(.0230) |
| **Ln (employ)** | 3.94**<br>(.848) | 3.90**<br>(.833) | 3.68**<br>(.874) | 3.63**<br>(.884) |
| **Ln (employ) sq.** | -.392**<br>(.0925) | -.387**<br>(.0910) | -.280**<br>(.0995) | -.272**<br>(.101) |
| **No. of licenses and retributions** | .562**<br>(.0671) | .568**<br>(.0675) | n.a. | n.a. |
| **Dummy: rent capital** | n.a. | n.a. | -.0127<br>(1.17) | -.0950<br>(1.13) |
| **Capital size: 500m-1b** | n.a. | n.a. | 2.41**<br>(.617) | 2.43**<br>(.620) |
| **Capital size: 1b-5b** | n.a. | n.a. | 3.21**<br>(.993) | 3.19**<br>(.957) |
| **Capital size: 5b-20b** | n.a. | n.a. | 3.34**<br>(1.15) | 3.34**<br>(1.17) |
| **Capital size: over 20b** | n.a. | n.a. | 1.74<br>(1.33) | 1.69<br>(1.43) |
| **Dummy: Chinese** | .739<br>(.773) | .799<br>(.878) | 1.18**<br>(.946) | 1.26**<br>(.975) |
| **Avg. distance from sub-dist. To capital** | -.0136<br>(.0155) | -.0153<br>(.0152) | -.00873<br>(.0181) | -.0105<br>(.0168) |
| **% pop in sub-district on coast** | -1.05<br>(3.78) | -1.58<br>(3.16) | -1.62<br>(4.44) | -2.24<br>(3.86) |
| **District manu. enterprises/land** | 1.61*<br>(.915) | 1.47*<br>(.848) | 1.11<br>(.965) | .942<br>(.903) |
| **Dummy: high tech** | 2.69**<br>(1.24) | 2.69**<br>(1.22) | n.a. | n.a. |
| **Dummy: export** | 1.26*<br>(.757) | 1.15<br>(.712) | 2.07**<br>(.809) | 1.96**<br>(.756) |
| **Dummy: FDI** | n.a. | n.a. | -.254<br>(1.22) | -.190<br>(1.19) |
| **No vote controls** | Yes | Yes | Yes | Yes |
| **Industry dummies** | no | No | Yes | Yes |
| **Variance $\sigma^2$ [ρ]** | 10.0 [-.0395]<br>(.779) [(.0744)] | 10.0<br>(.847) | 10.2 [-.0447]<br>(.779) [(.0822)] | 10.2<br>(.850) |
| **N [zeros]** | 2574 [303] | 2574 [303] | 2632 [309] | 2631 [309] |
| **Wald test: p-value** | 0.60 | | .61 | |

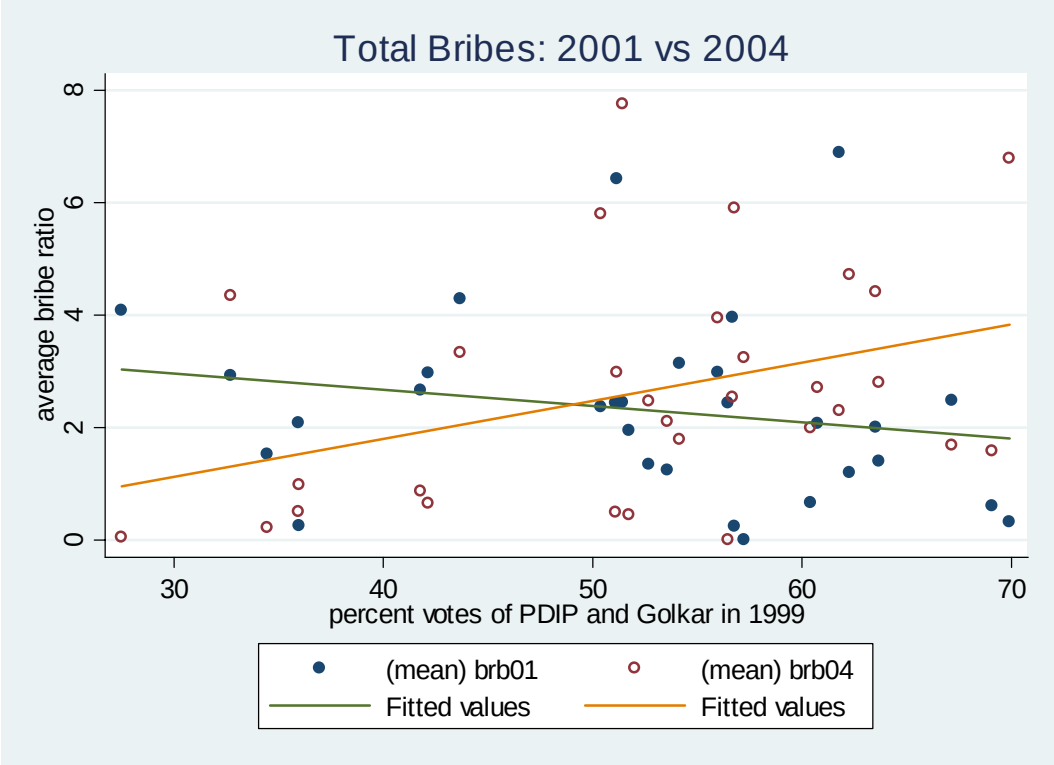
Standard errors for Tobits are based on clustering; and, for 2SLS, standard errors are robust ones accounting for clustering. One asterisk indicates a 10% significance level and two a 5% level.

**Table 9. Number of licenses and retributions**

| | 2SLS | OLS |
|---|---|---|
| **'99 vote share: PDIP-GOLKAR** | .0506<br>(.0429) | .0252<br>(.0172) |
| **Ln (employ)** | .744<br>(.499) | .506<br>(.495) |
| **Ln (employ) sq.** | .0618<br>(.0594) | .0657<br>(.0602) |
| **Dummy: rent capital** | 1.44**<br>(.531) | 1.42**<br>(.531) |
| **Capital size: 500m-1b** | 2.06**<br>(.279) | 2.07**<br>(.279) |
| **Capital size: 1b-5b** | 3.42**<br>(.405) | 3.42**<br>(.408) |
| **Capital size: 5b-20b** | 4.38**<br>(.700) | 4.40**<br>(.699) |
| **Capital size: over 20b** | 6.00**<br>(.604) | 6.00**<br>(.614) |
| **Dummy: Chinese** | 1.15**<br>(.471) | 1.20**<br>(.482) |
| **Dummy: export** | 1.13**<br>(.298) | 1.05**<br>(.293) |
| **Dummy: FDI** | 1.87**<br>(.669) | 1.88**<br>(.666) |
| **Taste controls** | Yes | Yes |
| **No vote controls** | Yes | Yes |
| **Industry dummies** | Yes | Yes |
| **N** | 2540 | 2540 |
| **Sargan p-value** | .996 | |
| **Partial F: 1st stage reg.** | 241 | |
| **$R^2$** | .494 | .496 |

For 2SLS, standard errors are robust ones accounting for clustering. One asterisk indicates a 10% significance level and two a 5% level.

**Figure 1. Bribe patterns in 2001 versus 2004: PDIP-Golkar vote share in 1999**
**a) (Unweighted) avg of bribes as % of costs by district versus vote share**




**b) Fraction of firms paying bribes by district versus PDIP-Golkar vote share**

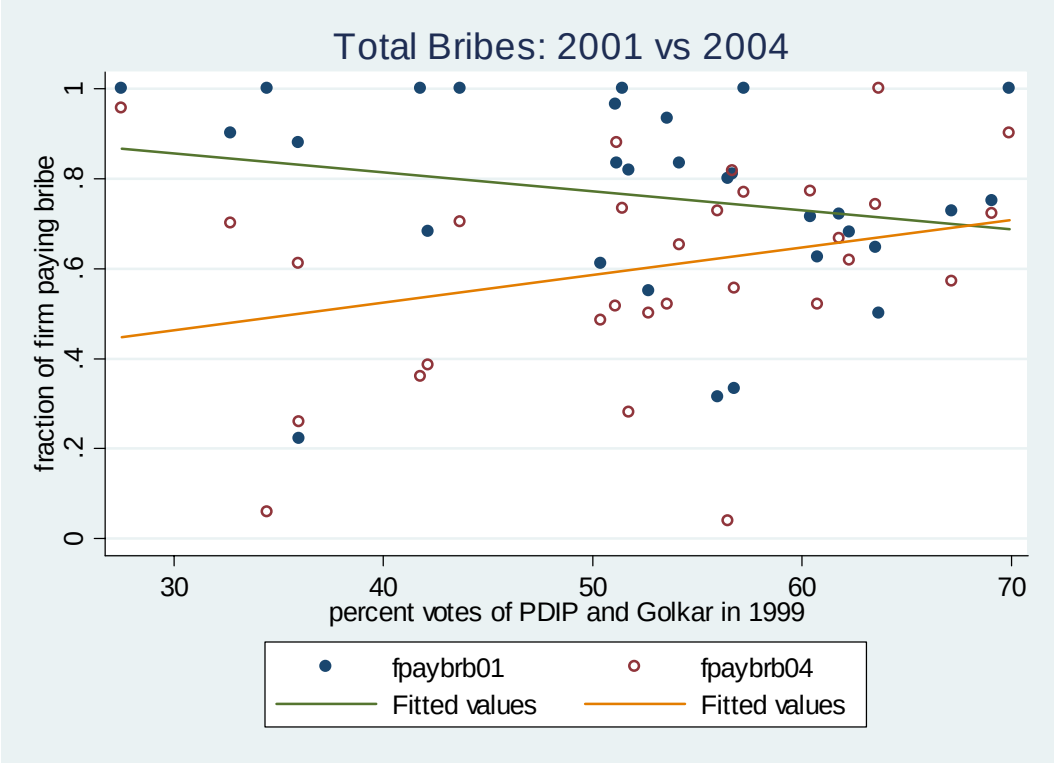


**Figure 2. 2004 Avg. bribe ratio by district versus PDIP-GOLKAR vote share in 1999**

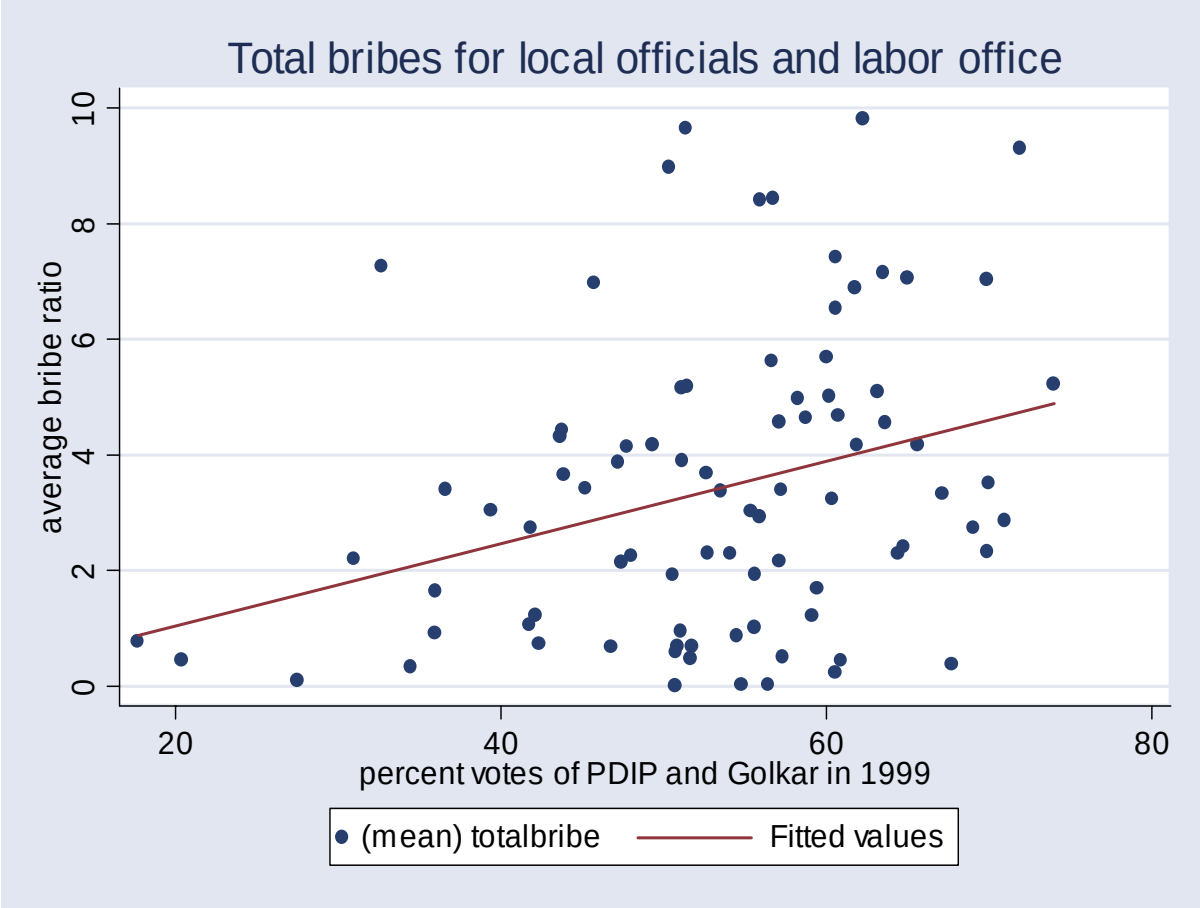


**Figure 3. Bribe activity in 2001 versus 2004 by district**

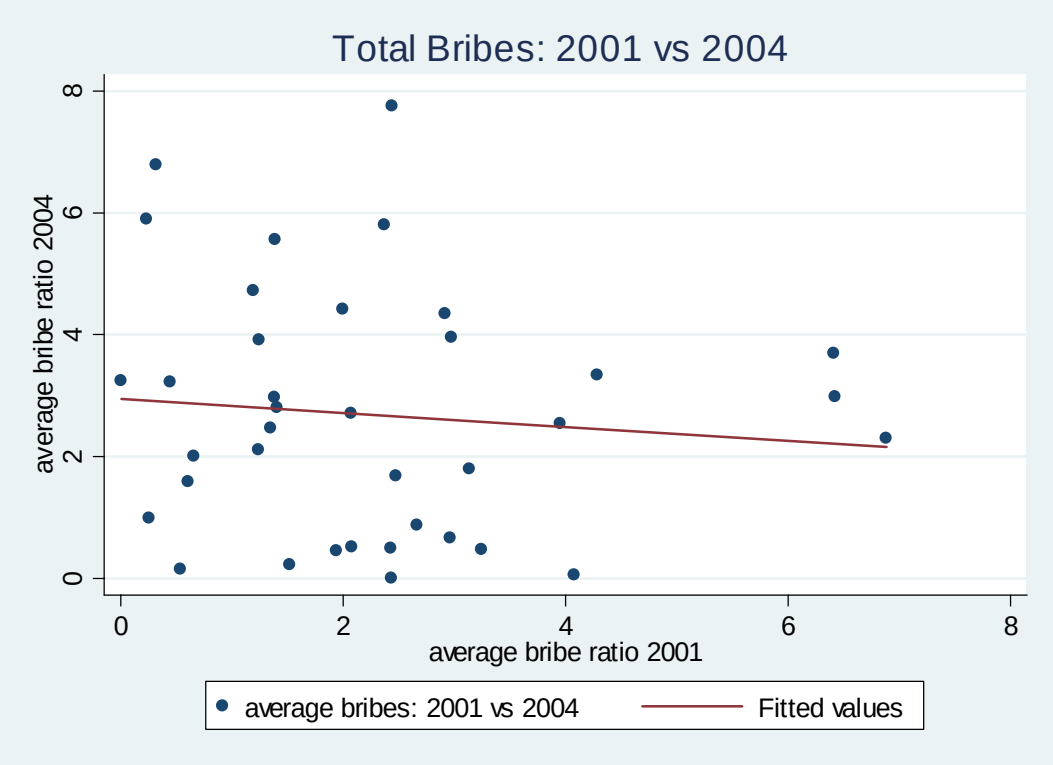
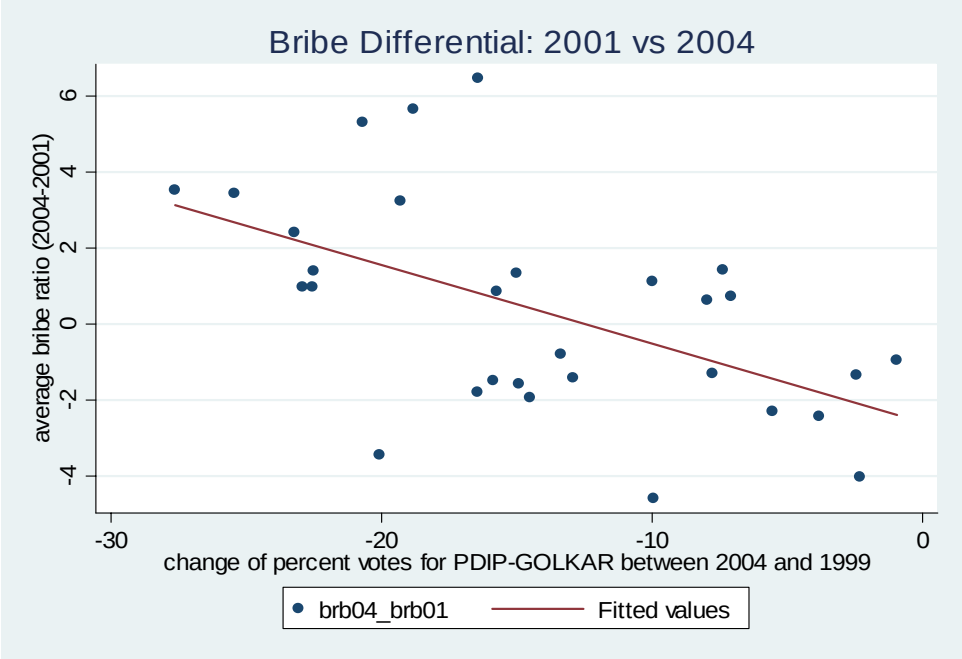


**Figure 4. Change in PDIP-GOLKAR support and bribe activity**

**a) Change in bribe activity, 30 districts**[a]




a. To check that relationship is not is simply reflecting mean reversion (in voting) or changing economic conditions, we report the following regression (with an $R^2 = .36$). Δ share PDIP-GOLKAR 04-99 = -1.87 - 1.08** Δ (bribe ratio 04-99) - .265** share PDIP-GOLKAR 99 + 7.26 % change GDP p.c.
(.425) (.112) (6.40)

**b) 2004 bribe, activity all Java districts**