

Political Influence in Transition Economies: Firm Level Evidence

Raj M. Desai* Anders Olofsgard†

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Abstract

Arrangements by which influential firms receive economic favors, has been documented in numerous case studies but rarely formalized or analyzed quantitatively. We offer a formal voting model in which political influence is modeled as a contract by which politicians deliver a more preferential business environment to favored firms who, in exchange, protect politicians from the political consequences of high unemployment. From this perspective, cronyism simultaneously lowers a firm's fixed costs while raising its variable wage costs. Testing several of the implications of the model on firm-level data from 26 transition countries, we find that more influential firms face fewer administrative and regulatory obstacles and carry bloated payrolls, but they also invest and innovate less. These results do not change when using propensity-score matching to adjust for the fact that influence is not randomly assigned.

**Address:* School of Foreign Service, Georgetown University, and the Wolfensohn Center for Development, Brookings Institution. *E-mail:* desair@georgetown.edu.

†*Address:* The Economics Department and School of Foreign Service, Georgetown University, and SITE, Stockholm School of Economics. *E-mail:* afo2@georgetown.edu.

1 Introduction

The countries of the former Soviet Union and Eastern and Central Europe have come a long way since the onset of the transition from communism. Progress, though clearly uneven, has been evident in both the economic and political spheres in most countries. As part of this, the extent of state intervention in markets has been scaled down, as witnessed by the often rapid pace of privatization during the 1990's (e.g. Roland 2000, Shleifer and Triesman 2000). However, privatization hasn't necessarily implied a severance of ties between political elites and commercial interests, and recent events, in particular in Russia, suggest that state intervention may actually be increasing.

The existing literature has offered several different descriptive (non-formal) models of the modes and motivations for state intervention during transition. The "Grabbing hand" model (e.g. Frye and Shleifer 1997) emphasizes that bureaucrats and politicians prey on vulnerable private firms threatening retaliation unless bribes are paid or other political benefits delivered. The "State capture" model (e.g. Hellman et al. 2003, Slinko et al. 2005). has instead focused on the ability of powerful private interests to capture the legislative process, and its implementation, in order to generate select benefits to a narrow economic elite at the cost of the rest of society. Finally, the "Elite exchange" model (e.g. Frye 2002, Stoner-Weiss 2006) suggests a middle way, in which political elites offer economic elites a favorable business environment in exchange for political benefits.

In this paper we develop a formal model of an elite exchange and then test the predictions of the model on firm-level data across 26 countries in the former Soviet Union and Eastern and Central Europe. Our model features an election in which politicians differ in their ability to mitigate the macroeconomic consequences of economic shocks. In particular, a political incumbent may find she is unable to prevent substantial job destruction in times of a crisis. Letting this play out may be political costly, though, if voters associate high unemployment with incompetence. It follows that the incumbent will have incentives to boost employment levels through hidden means in order to conceal her inability. This is achieved in our model through an "influence contract" whereby a firm employs extra labor in exchange for special privileges or favors.

Our theoretical contribution is twofold. We suggest a specific channel (employment) through which politicians benefit from engaging in cronyism, and we offer an explanation for the political salience of employment, something that is typically just assumed (e.g. Shleifer and Vishny, 1994). Additionally, we highlight a mechanism by which the exchange of favors between firms and politicians affects firm productivity. In the corridors of some economic ministries, cronyism is occasionally defended as a crude form of industrial policy that boosts enterprise performance. We demonstrate, however, that where cronyism lowers the fixed costs of doing business, the incentives for firms to innovate and invest may be diluted, if the firms, in exchange for lowered administrative and regulatory barriers, face higher variable costs from a bloated payroll.

Our framework suggests three separate but connected implications for po-

politically influential firms; they should encounter fewer administrative and regulatory burdens; they should carry excess labor; and they should invest and innovate less and be less productive. We test these predictions using firm-level data from the World Bank's Enterprise Surveys. We find that politically influential firms do indeed face a more favorable business environment than their non-influential counterparts. Influential firms also tend to carry bloated payrolls. Influential firms, finally, are also less likely to open new product lines or production facilities, or to close obsolete ones, and they report lower real growth in sales, less spending on research and development and generally lower productivity. These results hold up to different specifications of our empirical model, including propensity-score matching to adjust for the fact that influence is not randomly assigned. Overall, the evidence overwhelmingly suggests that influence hurts rather than help firm productivity, implying that politically connected firms face a trade-off between short run profits and long run viability. This also suggests that these selective favors hurt welfare not only by undermining competitiveness of non-influential firms, but also by distorting long run incentives of the influential firms.

Our model emphasizes the political benefit of high employment levels. That unemployment carries a potential political prize is true for democracies across the world, but there are also reasons why this should be particularly true in the countries we consider. First of all, a cornerstone of the communist economic policy was full employment. Secondly, in the communist system, firms often provided not only a salary, but also housing, day care, schools, health care and other utilities. In the absence of publicly provided social safety nets, losing ones job therefore typically had very dramatic consequences.

The political importance of employment is also backed up by both theoretical and empirical research, some of it specifically looking at transition economies. Shleifer and Vishny (1994) argue that influential firms receiving public subsidies, in return, would cede part of their control rights over employment decisions to politicians benefiting politically from low unemployment rates. Robinson and Verdier (2002) also emphasize the political benefit of having control over employment decisions. They argue that politicians can create political support groups by selective job offers that are contingent on the regime's survival. As long as these jobs pay better than the market rate, these groups have a joint stake in keeping the current regime in power. Choi and Thum (2007) offer a similar model in which politicians offer selected firms economic benefits, while the firms in exchange invest in some generic way in stabilizing the regime. Mach and Jackson (2006), looking at voting behavior in Polish elections, find that the total level of job creation within voters' regions is a very strong predictor of support for a reform agenda (stronger than the voters' individual employment status). Fidrmuc (2000a, 2000b), looking at a cross-section of transition economies, finds that there is persistence in the levels of support for different parties, but that support is based primarily on the delivered level of employment, in particular among swing voters. Finally, Bertrand et al (2004), looking at the case of France, find that politically connected business leaders generate "re-election favors" to incumbent politicians by creating more jobs, in particular

in politically more contested areas and around election years.

Our paper also ties into a broader literature on the causes and consequences of political connections among firms. In the US, for example, the political weight of firms and industries using campaign finance, political action committees, and the “revolving door” between lobbying firms and congressional staff offices has been extensively examined (e.g. Agrawal and Knoeber 2001; Ang and Boyer 2000, Krozner and Stratmann 1998). An analysis of the benefits to firms from the seniority system in the US Senate showed that the sudden death of Senator Henry “Scoop” Jackson in 1983 led to an abnormal drop in stock prices of firms contributing to his re-election campaign (Roberts, 1990). At the same time, firms connected to his successor as ranking member of the Senate Armed Services Committee, Senator Sam Nunn, benefited from an unexpected rise in stock prices. Similarly, in Brazil, Claessens, Feijen, and Laeven (2007) found that firms that provided contributions to (elected) federal deputies experienced higher stock returns around election years.

In other developing nations, political influence is usually obtained through a combination of kinship ties, political alliances, ethnic solidarity, or financial dealings between owners and political elites. Fisman (2001) showed that firms connected to the Suharto family in Indonesia experienced a negative shock to their stock values when rumors circulated that Suharto was experiencing serious health problems. Similar rewards have also been documented for Malaysia (Johnson and Mitton 2003), and Pakistan, where Khwaja and Mian (2005) estimate that the cost of politically-motivated lending amounts to 0.3 to 1.9 percent of GDP. Faccio (2006) found that the phenomenon of current and former controlling shareholders holding seats in legislatures or positions in national government is not confined to the developing world; in OECD countries politically-connected firms often represent significant portions of market capitalization.

The paper is organized as follows. In Section 2 we present our model, and in Section 3 we characterize a partially pooling equilibrium of the game. In Section 4 we present the data and the empirical strategy. In Section 5 we present our results, and we conclude in Section 6.

2 The Model

We develop a simple two-period private information voting model with three sets of players; politicians, firms and voters. There is a continuum of firms of measure one. The firms operate in different markets and they face the following downward sloping inverse demand curves

$$p(y) = \phi - y. \tag{1}$$

Peak demand, ϕ , depends on an exogenous factor $\psi \in \{d, D\}$ (world market conditions), where $d < D$, as well as the ability of the incumbent government to deal with unfavorable market conditions at the macro level. This competence is not necessarily known by the incumbent ex ante, but is revealed to him when trying to handle the unfavorable market conditions. What is important

for our argument, though, is that voters interpret the handling of the current crisis as a signal of the incumbent’s ability to handle a future crisis. That is, at least in the perception of the voters, there is an element of competence in governing the economy, and this competence is correlated over time. To keep the analysis simple, we assume that there are two levels of competence, $\lambda \in \{\delta \text{ (less competent)}, 1 \text{ (more competent)}\}$ where $\delta < 1$, and that individual competence doesn’t change over time. Overall peak demand is

$$\phi = \begin{cases} D & \text{if } \psi = D \\ d\lambda & \text{if } \psi = d \end{cases} \quad (2)$$

The probability that $\psi = d$ is given by $\eta \in (0, 1)$ in both periods.

We assume a simple production technology in which output depends linearly on the input of labour (l), and the productivity of the technology.

$$y = \frac{l}{\gamma} \quad (3)$$

The unit labor cost is assumed to be fixed and given by w . Firms start out with a given technology, but they have the option to upgrade by making an investment. The investment decision is given by γ , and $\gamma \in \{1, \tilde{\gamma}\}$ where $\tilde{\gamma} < 1$ corresponds to the upgraded technology. To make the investment is costly, and the firm specific cost is given by k_j , where subscript j denotes the particular firm. The distribution of investment costs is assumed to be uniform with full support between $[0, \bar{k}]$. This investment can be thought of as a new production technology, the opening of a new plant, or the switching of production to a new product line for which labour is more productive.

In addition the firms also face a fixed administrative and regulatory cost of doing business, corresponding to the costs associated with onerous start-up procedures and other barriers, delays in being granted licenses and permits, corruption or harassment by police or inspectors, and other methods potentially used by public officials to extract rents from businesses.¹ This cost is set to $c \in [0, \bar{c}]$, and it depends on government action and may vary across different firms.

Voters care about consumption. We abstract from saving and borrowing, so utility depends only on current income. Income, in turn, is earned through an inelastic supply of labor in case of employment, while income is normalized to zero in case of unemployment. A voter’s expected income thus depends on the probability of her holding a job (since wages are fixed), something we assume to

¹Since 2004, the World Bank has benchmarked these costs in its annual series of *Doing Business* reports.

depend on the total demand for labor in the economy, given by L .² To capture other dimensions of voting behavior, we also include a valence characteristic capturing ideology, or charisma, into voters' preferences. That is, we use a probabilistic voting model in which we assume that each voter's relative preference for the current incumbent also depends on an individual specific term, b_i , distributed across the population according to a uniform density function $f(b)$ with support on $[-1, 1]$, and a common factor, z , drawn from a uniform distribution $g(z)$ with support on $[-\frac{1}{2}, \frac{1}{2}]$. This yields the following specification of a voter's utility of retaining the current incumbent

$$u(L_2(\cdot)) + b_i + z, \quad (4)$$

where $L_2(\cdot)$ is the actual (ex post) aggregate level of employment in period 2.

As mentioned above, politicians can be of two types, $\lambda \in \{1, \delta\}$, differing in their ability to keep up demand in the presence of a negative economic shock. We assume that all politicians are drawn from a common pool, with the probability p of getting $\lambda = 1$. Politicians care about the rents from being in office, R . These rents are assumed to be increasing with the total fixed costs of doing business, denoted by C , i.e. $R(C)$ with $R'(C) > 0$ and $R''(C) < 0$. There are two ways to motivate this assumption. The first interpretation is to think of the costs of doing business as being the costs of bribes, something that directly benefits the politician. The second interpretation is that providing high quality public services and properly regulated markets requires effort, time and funds on behalf of the government, all which have an opportunity cost. The preferences of the political incumbent can therefore be represented by

$$R(C_1) + \mu(\cdot) R(C_2), \quad (5)$$

where subscripts stand for periods 1 and 2, and $\mu(\cdot)$ is the endogenously determined probability of getting reelected. To simplify the model, we also follow

²We implicitly assume that the number of capital owners is small enough relative to the number of workers in order to disregard the capital owners' votes when calculating the outcome of the elections. Think of a small number of capital owners each controlling a fraction of the measure of firms and employing a large number of workers.

the assumption of Besley and Burgess (2002) and assume that more competent politicians do not act strategically, which in this case implies that they always set $c = \bar{c}$ for all firms. This means that we are exclusively focusing on the incentives of the less competent politician to mimic the behavior of the more competent type, disregarding the incentives of the more competent type to separate himself. Note though, that incorporating those incentives would not alter the main result of the model. It would only imply that there may also exist separating equilibria in which it is the more competent, rather than the less competent, type that boosts employment levels to increase her chances of reelection. One can thus think of this assumption as an admittedly ad hoc argument of equilibrium selection in a more general model that can have also a separating equilibrium.

There are several sources of incomplete information in the model. The incumbent government does not know the realization of the common shock to the preferences of the voting population. It follows that the government faces uncertainty with respect to the mapping between its actions and the outcome of the election, it only knows in which direction an action influences its probability of winning. More importantly, though, the incumbent government's type is private information. Voters can only observe the realization of ψ and the aggregate employment level, L . This would be enough, though, to tell the type if the government had no ability to affect firms' employment decisions, since firms' optimal employment levels will depend on aggregate demand which, in turn, depends on ψ and λ . However, a key assumption in the model is that the government can offer a subset (Γ) of firms a lower fixed cost of doing business, i.e. $c_j < \bar{c}$, in exchange for the firm carrying a larger than optimal workforce. More specifically, we assume that these firms have to carry an additional workforce proportional to their optimal level of employees. That is, if l^* is the optimal workforce when managers have all the control rights, then these firms need to employ $(1 + \alpha_j)l^*$, where $\alpha_j > 0$. We think of this deal as an "influence contract" where the firms' costs of additional employees are compensated for by a lower burden of regula-

tion, better provision of public services, and lower levels of required bribes.³ The more firms that are under this contract, the higher is the level of employment. If these contracts are unobservable by voters, then less competent governments will have incentives to use this tool to mimic the outcome of more competent governments, and thereby increase their chances of reelection. We follow the assumptions of Besley and Burgess (2002) that only a share of the voters observe the employment level. These voters will update their beliefs according to $\tilde{p} = 0$ whenever $L(\cdot) \neq L(\lambda = 1)$. We also assume that the size of informed voters is increasing as the gap between the current employment level, and that expected from a more competent politician is increasing.⁴ To be more specific, we assume that the share of informed voters is $\sigma(L(\lambda = 1) - L(\cdot))$, where $L(\lambda = 1)$ is the employment level expected when a more competent politician is in office, while $L(\cdot)$ is the observed employment level. We also assume that $\sigma(\cdot | L(\cdot) \leq L(\lambda = \delta, C = \bar{c})) = 1$, $\sigma(\cdot | L(\cdot) \geq L(\lambda = 1)) = 0$, $\frac{\partial \sigma(\cdot)}{\partial L(\cdot)} \leq 0$, and that $\frac{\partial^2 \sigma(\cdot)}{\partial^2 L(\cdot)} \geq 0$. Note that the share of informed voters is equal to zero when $L(\cdot) = L(\lambda = 1)$, so we do not need to specify expectations of informed voters in this case. However, we need to specify that uninformed voters base their decisions on their priors, so $\tilde{p} = p$ in this case.

The politician's strategy is thus a vector, $\{\Gamma, \alpha_j, c_j\}$. In principle a certain level of employment can be achieved through many variations of the number of influential firms and the extra labor requirement, giving rise to many potential equilibria. We do assume, though, that there is a fixed cost for the politician of writing a contract, and that this cost is high enough to make the politician prefer to sign contracts with as few firms as possible. It follows that the contracts will maximize employment within each firm, which is achieved by setting $c = 0$ (the lower bound).

The timing of events is as follows. In the beginning of period 1, nature draws the demand for the firms' products, $\psi \in \{D, d\}$. If $\psi = d$, then the

³We are giving the government all the bargaining power here, but in principle one could think of a bargaining game between the firms and the government determining the allocation of the common surplus from the deal. This would not change any of the results, though.

⁴This can be motivated by the increased publicity given to unemployment figures when they are perceived as high relative to expectations.

incumbent, and only the incumbent, observes his ability to deal with the shock, and based on that determines the terms and coverage of eventual influence contracts, $\{\Gamma, \alpha_j, c_j\}$. After that firms decide whether to make the investment in the new technology or not, and how much labour to employ and how much to produce, $\{y_j, \gamma_j, l_j\}$. Informed voters then update their beliefs about the type of the incumbent based on ψ and L , and cast their vote sincerely. In the second period there is no election, so only the first three events are repeated before utility is realized. We solve the game for a perfect Bayesian equilibrium.

3 A Partially Pooling Equilibrium

In this section we characterize an equilibrium of the game in which a less competent period 1 incumbent offer influence-contracts to reduce the unemployment level and thereby increase his chances of reelection. The case we focus on is thus the one in which $\psi_1 = d$ and $\lambda_1 = \delta$. We refer to this equilibrium as partially pooling since, following our assumptions of voters' information, the less competent type will not necessarily fully mimic the employment level of the more competent type. Before defining an equilibrium, the following notation is introduced to simplify the exposition.

$$\pi_{\Delta}(\tilde{\gamma}, \psi, \lambda) \equiv \frac{(\phi_t - \tilde{\gamma}w)^2}{4} - \frac{(\phi_t - w)^2}{4} \quad (6)$$

$$U_{\Delta}(\delta | d) \equiv U(L(d, 1)) - U(L(d, \delta)) \quad (7)$$

Equation 6 defines the increase in variable profits (short of the investment cost) from making the investment, i.e. the benefit of the higher productivity. Equation 7 defines the gain in utility from having a more rather than less competent politician when $\psi = d$.

Definition. There exists a *partially pooling perfect Bayesian equilibrium* with the following strategies and beliefs if $\tilde{\gamma} \geq \frac{\phi_t}{2w}$.

i) Firms maximize their profits by setting

$$\begin{aligned} l_{jt}^* &= (1 + \alpha_{jt}) \gamma_{jt} \left(\frac{\phi_t - \gamma_{jt} w}{2} \right) \\ y_{jt}^* &= (1 + \alpha_{jt}) \left(\frac{\phi_t - \gamma_{jt} w}{2} \right) \\ \gamma_{jt}^* &= \begin{cases} 1 & \text{if } k_j > (1 - (\alpha_{jt})^2) \pi_\Delta(\tilde{\gamma}, \psi, \lambda) \\ \tilde{\gamma} & \text{if } k_j \leq (1 - (\alpha_{jt})^2) \pi_\Delta(\tilde{\gamma}, \psi, \lambda) \end{cases} \end{aligned}$$

ii) The politicians choose their policy vectors according to

$$\begin{aligned} \alpha_{jt}^* &= \begin{cases} \frac{2\sqrt{\bar{c}}}{(\phi_t - \gamma_{jt} w)} & \text{if } j \in \Gamma_t \\ 0 & \text{otherwise} \end{cases} \\ c_{jt}^* &= \begin{cases} 0 & \text{if } j \in \Gamma_t \\ \bar{c} & \text{otherwise} \end{cases} \\ \Gamma^* &= \begin{cases} \arg \max_{\Gamma} R((1 - \Gamma) \bar{c}) + \left(\frac{1}{2} - \eta p U_\Delta(\delta | d) \sigma(L(1) - L(\cdot | \delta)) \right) R(\bar{c}) & \text{if } t = 1 \\ \emptyset & \text{if } t = 2 \end{cases} \end{aligned}$$

iii) Voters vote to reelect the incumbent iff

$$\begin{aligned} b_i &\geq \eta p U_\Delta(\delta | d) - z && \text{if informed} \\ b_i &\geq -z && \text{if uninformed} \end{aligned}$$

iv) The voters update their beliefs according to

$$\tilde{p} = \begin{cases} 0 & \text{if } L(\cdot) \neq L(\lambda = 1) \text{ is observed} \\ p & \text{otherwise} \end{cases}$$

To see why this is an equilibrium, we solve the model by backward induction. The purpose of the influence contracts is to boost employment prior to elections. There are no elections in period 2, so irrespective of the type of government, the share of firms offered influence contracts (Γ) is set to zero, and $c_{j2}^* = \bar{c}$ and $\alpha_{j2}^* = 0 \forall j$.

The firms' cost functions are given by

$$w \gamma_{jt} y_{jt} + c_{jt} + k_j, \tag{8}$$

where $k_j = 0$ if $\gamma_j = 1$. A firm's optimal quantity and labour input are therefore given by the following maximization

$$\underset{y_{jt}}{\text{Max}} (\phi_t - y_{jt}) y_{jt} - w\gamma_{jt}y_{jt} - c_{jt} - k_j. \quad (9)$$

This yields the following results for period 2

$$\begin{aligned} y_{j2}^* &= \frac{(\phi_2 - \gamma_{j2}w)}{2}, \quad l_{j2}^* = \frac{\gamma_{j2}(\phi_2 - \gamma_{j2}w)}{2} \\ \pi_{j2}^* &= \frac{(\phi_2 - \gamma_{j2}w)^2}{4} - \bar{c} - k_j \end{aligned} \quad (10)$$

What can be noted from these results are that the expected quantities produced as well as the expected level of employment, and thereby consumer utility, depend on the type of the politician through its impact on ϕ . This is what drives forward-looking voters in period 1 to condition their voting behavior on their perceptions of the type of the period 1 incumbent.

A firm will choose to invest in period 2 if the productivity gains from doing so exceed the direct costs. This condition is given by

$$\frac{(\phi_2 - \tilde{\gamma}w)^2}{4} - \bar{c} - k_j \geq \frac{(\phi_t - w)^2}{4} - \bar{c}. \quad (11)$$

Solving for k_j and using the definition in equation (6) yields

$$k_j \leq \tilde{k}(\lambda) = \pi_\Delta(\tilde{\gamma}, \psi, \lambda) \quad (12)$$

There are two groups of voters in period 1, informed and uninformed. Informed voters observe the actual employment level and realize that any $L(\cdot) \neq L(\lambda = 1)$ implies that the incumbent must be less competent, so updated beliefs are given by $\tilde{p} = 0$. Based on these beliefs, the informed voters will vote on the candidate that yields them the highest expected utility in period 2. An informed voter will vote to reelect the current incumbent if and only if

$$\begin{aligned} &(1 - \eta)u(L(D)) + \eta u(L(d, \delta)) + b_i + z \\ &\geq (1 - \eta)u(L(D)) + \eta(pu(L(d, 1)) + (1 - p)u(L(d, \delta))). \end{aligned} \quad (13)$$

This can be simplified as

$$b_i \geq \eta p U_\Delta(\delta | d) - z, \quad (14)$$

where $U_{\Delta}(\delta | d)$ is defined in equation (7). It follows that the share of informed voters supporting the current incumbent is given by⁵

$$\frac{1 - \eta p U_{\Delta}(\delta | d) + z}{2} \quad (15)$$

Uninformed voters do not have any information on which to update their beliefs about the period 1 incumbent, so the incumbent and the opponent are expected to generate the same level of employment in period 2. The uninformed will thus base their voting only on the valence characteristics. The share of uninformed voters that support the less competent incumbent is therefore

$$\frac{1 + z}{2}. \quad (16)$$

The total support is thus

$$\sigma(L(\lambda = 1) - L(\cdot)) \frac{1 - \eta p U_{\Delta}(\delta | d) + z}{2} + (1 - \sigma(L(\lambda = 1) - L(\cdot))) \frac{1 + z}{2}, \quad (17)$$

which can be simplified as

$$\frac{1 + z}{2} - \sigma(L(\lambda = 1) - L(\cdot)) \frac{\eta p U_{\Delta}(\delta | d)}{2}. \quad (18)$$

The probability that the incumbent wins the election is then given by the probability that this vote share is greater than 1/2, which is

$$\mu(\cdot) = \frac{1}{2} - \sigma(L(\lambda = 1) - L(\cdot)) \eta p U_{\Delta}(\delta | d). \quad (19)$$

Note that the probability of winning the election is increasing in $L(\cdot)$.

Firms maximize profits based on the constraints they face. Firms that are not bounded by an influence contract will solve the same problem as all firms face in period 2. This yields the same outcomes as shown in equation (10), except that ϕ_2 can be replaced by δd . Firms bounded by an influence contract benefit from zero fixed costs of doing business, but on the other hand have to

⁵We do throughout assume that parameter values are such that any expressions of probabilities fall within the open set $(0, 1)$, i.e. that $\eta p U_{\Delta}(\delta | d) < \frac{1}{2}$.

take on a suboptimal number of employees. Profit maximization yields

$$\begin{aligned} y_{j1}^* &= (1 + \alpha) \frac{(\delta d - \gamma_{j1} w)}{2}, \quad l_{j1}^* = (1 + \alpha) \frac{\gamma_{j1} (\delta d - \gamma_{j1} w)}{2} \\ \pi_{j2}^* &= \left(1 - (\alpha)^2\right) \frac{(\delta d - \gamma_{j1} w)^2}{4} - k_j \end{aligned}, \quad (20)$$

and firm j will invest if

$$k_j \leq \tilde{k}(\alpha, \lambda) = \left(1 - (\alpha_{jt})^2\right) \pi_{\Delta}(\tilde{\gamma}, d, \delta). \quad (21)$$

Equation (21), in comparison with equation (12) yields the main result of the model: $\tilde{k}(\alpha, \lambda) < \tilde{k}(\lambda)$, i.e. a randomly drawn influential firm is less likely to make an investment than a non-influential firm.

The period 1 incumbent sets $\{\alpha_{j1}, c_{j1}, \Gamma_1\}$ to maximize his expected utility, as given by period 1 rents plus the probability that he wins the elections times period 2 rents. The assumption that there is a high cost of writing a contract implies that $c_j = 0 \forall j \in \Gamma_1$, whereas $c_j = \bar{c} \forall j \notin \Gamma_1$. The incumbent will then set α_j for influential firms such that they just accept the contract, i.e. such that they are just as well off with as without a contract. This implies that

$$\left(1 - (\alpha_j)^2\right) \frac{(\delta d - \gamma_{j1} w)^2}{4} - k_j = \frac{(\delta d - \gamma_{j1} w)^2}{4} - k_j - \bar{c}. \quad (22)$$

Solving for α_j yields

$$\alpha_{j1} = \begin{cases} \frac{2\sqrt{\bar{c}}}{(\delta d - \gamma_{j1} w)} & \forall j \in \Gamma_1 \\ 0 & \forall j \notin \Gamma_1 \end{cases} \quad (23)$$

Finally, the incumbent sets Γ to trade off the period 1 losses from a larger share of influential firms against the gains from an increased probability of reelection.

$$\arg \max_{\Gamma} R((1 - \Gamma) \bar{c}) + \left(\frac{1}{2} - \eta p U_{\Delta}(\delta | d) \sigma(L(\lambda = 1) - L(\alpha_{1j}, \Gamma | \lambda = \delta))\right) R(\bar{c}) \quad (24)$$

Following the previous assumptions, what remains to guarantee the existence of a unique max-point is to show that total employment in period 1, $L(\alpha_{1j}, \Gamma | \lambda = \delta)$, is weakly increasing in Γ and that $U_{\Delta}(\delta | d) > 0$. Total employment in period

1 is given by

$$\begin{aligned}
L = & \Gamma \left[\int_0^{\bar{k}(\alpha, \lambda)} (1 + \alpha) \frac{\tilde{\gamma}(\delta d - \tilde{\gamma}w)}{2} f(k) dk + \int_{\bar{k}(\alpha, \lambda)}^{\bar{k}} (1 + \alpha) \frac{(\delta d - w)}{2} f(k) dk \right] \\
& + (1 - \Gamma) \left[\int_0^{\bar{k}(\lambda)} \frac{\tilde{\gamma}(\delta d - \tilde{\gamma}w)}{2} f(k) dk + \int_{\bar{k}(\lambda)}^{\bar{k}} \frac{(\delta d - w)}{2} f(k) dk \right] \quad (25)
\end{aligned}$$

This expression is increasing in Γ as long as the first bracket, representing employment within influential firms, is larger than the second bracket, representing employment within non-influential firms. This is not necessarily true, despite the extra employment condition, because fewer influential firms will choose to invest. It follows that if employment is higher in firms choosing not to invest then the overall difference in employment is uncertain. However, a sufficient condition to guarantee that the expression in the first bracket is greater than that in the second bracket is that employment within investing firms is not lower than that in non-investing firms. This condition requires that

$$l^*(\tilde{\gamma}) = \frac{\tilde{\gamma}(\delta d - \tilde{\gamma}w)}{2} \geq \frac{(\delta d - w)}{2} = l^*(1). \quad (26)$$

Note first that $l^*(\tilde{\gamma}) = l^*(1)$ when $\tilde{\gamma} = 1$. It is straightforward to show that $l^*(\tilde{\gamma})$ is concave in γ with a max-point at $\gamma^* = \delta d/2w$. Thus, $l^*(\tilde{\gamma})$ is strictly decreasing as γ is increasing beyond this point. It follows that as long as $\tilde{\gamma} \geq \delta d/2w$ then $l^*(\tilde{\gamma}) > l^*(1)$. This is the condition given in Definition 1. Note that this is a sufficient but not a necessary condition. There exists an equilibrium as defined above also when $l^*(\tilde{\gamma}) < l^*(1)$ for some parametrizations of the other variables, but not necessarily for all.

The condition $U_\Delta(\delta | d) > 0$ requires that $L(d, 1) > L(d, \delta)$, or

$$\begin{aligned}
& \int_0^{\bar{k}(1)} \frac{\tilde{\gamma}(d - \tilde{\gamma}w)}{2} f(k) dk + \int_{\bar{k}(1)}^{\bar{k}} \frac{(d - w)}{2} f(k) dk \\
> & \int_0^{\bar{k}(\delta)} \frac{\tilde{\gamma}(\delta d - \tilde{\gamma}w)}{2} f(k) dk + \int_{\bar{k}(\delta)}^{\bar{k}} \frac{(\delta d - w)}{2} f(k) dk. \quad (27)
\end{aligned}$$

Once again this is not generally true, because more firms will choose to invest with a more competent politician in power. If investing firms hire fewer workers,

then it is possible that that effect dominates the positive overall effect on hiring from increased demand. However, under the assumption above, investing firms will hire at least as many workers as non-investing, and the inequality above holds. This concludes the proof of the definition above.

The game we have presented offers a potential theory of cronyism, built around an elite exchange in which the political incumbent provides favoured firms with a better business environment in exchange for some control rights over employment decisions. The main result of the model is that more influential firms are less likely to invest in a new technology, new plant or production line that increases labour productivity. However, this result obviously relies on the particular structure of the model developed to capture the logic of the elite exchange. To more seriously test our model we therefore bring the following three hypotheses to the data. More influential firms will; i) face a better business environment, ii) enroll an excessive number of employees, iii) invest and innovate less. The first two of these more closely correspond to key assumptions, whereas the third hypotheses is a result.

4 Data and Methodology

The preceding section hypothesized that greater political influence among firms should produce three outcomes of interest. First, influential firms are less likely to face the types of constraints to, and costs of, doing business that their less-influential counterparts would normally face. Second, influential firms are more likely to serve as a source of politically valuable benefits, in particular in the form of employment. Third, influential firms are less likely to invest and innovate than non-influential firms.

To determine whether these hypotheses are empirically justified we rely on the World Bank's Enterprise Surveys (formerly the Productivity and Investment Climate Surveys), which in total has collected data from approximately 50,000 manufacturing and service firms in over 60 developing countries conducted since 2000. For our purpose, we focus on 26 countries in the former Soviet Union and

Central and Eastern Europe. This data set, expansive in its cross-country coverage, does not contain the type of information that would allow us to measure actual political connections, namely, detailed information on owners or officers that could be used to assess their political identities. Instead, the Enterprise Surveys contains several perception-based questions about the political influence of firms in shaping national policies affecting their businesses. Moreover, questions on political influence were dropped from the core questionnaire after 2005. The subset of this total sample of firms who have coded responses for questions of political influence, therefore, is smaller—less than 5,000 firms in our set of countries between 2000 and 2005.

4.1 Measuring Firm-Level Characteristics with Subjective Data

The problems of comparability when respondents are asked to use ordinal response categories are well known. Different respondents may interpret concepts such as “influence” in vastly different ways based on unobservable characteristics (“culture,” socialization, etc.). Ordinal scales may mean different things to different respondents based on idiosyncratic factors such as mood or overall optimism. Sometimes referred to in educational testing as “differential item functioning” (DIF), the problem is particularly acute in measurements of political efficacy, where the actual level of efficacy may differ from the reported level due to individual-specific proclivities (King and Wand 2007). Firm-level perceptions of influence would similarly be affected by DIF where identical firms may have unequal probabilities of answering questions about their own political influence in the same way.

Explicit “anchoring vignettes” or other hypothetical questions to establish baselines that could normally correct survey responses for inter-firm incomparability, however, are not included in the Enterprise Surveys core questionnaire. We rely, then, on two corrections. First, to measure influence we use four related categories to a perception-based question from the core questionnaire:

How much influence do you think the following groups actually had on recently enacted national laws and regulations that have a substantial impact on your business? A: your firm; B: other domestic firms; C: dominant firms or conglomerates in key sectors of the economy; D: individuals or firms with close personal ties to political leaders.

Each answer ranges from 0 (no impact) to 4 (decisive influence). We take the sum of the differences between the self-assessment A and the assessments of other groups, i.e., $A - (B + C + D)/3$, which yields a measure of the perceived influence “gap” between the responding firm and other types of firms.⁶ Our measure of influence ranges from -4 to +4. As with survey “anchors”, assessments of others are subject to less inter-firm variation than self-assessments, and thus we use responses to questions about other groups to subtract off the DIF from the self-assessment question.

This is, of course, an imperfect solution to the problem of potential incomparability when other variables with ordinal-response categories are being regressed on our measure of influence. In cases where our outcome of interest is perception-based, our second solution is to include among the regressors a proxy for firm-specific systematic bias. Previous analyses of business environment constraints using Enterprise Surveys data have shown that the interpretation of (subjective) outcomes is complicated by the fact that some managers simply tend to have a high propensity to complain, regardless of the actual constraints their businesses may face (Carlin, Shaffer, and Seabright 2006). Inclusion of a variable among regressors that proxies this propensity, then, can correct for incomparability in perception-based outcomes. For this purpose we use responses by managers to questions about the degree to which their firms’ activity is constrained by two things: the macroeconomic environment and economic policy uncertainty. We assume that firms within the same country and the same in-

⁶We difference firms’ self perceptions with their average perceptions regarding three other groups (other firms, other conglomerates, and other politically-connected firms) rather than simply “other domestic firms” to reduce the effect of biased perceptions towards any particular category of firms.

dustry are likely to face, objectively, a very similar macroeconomic environment as well as policy uncertainty. The distribution of responses to these questions should therefore closely proxy the distribution of the propensity to complain among the management within our sample. The range for each question is 0 (no obstacle) to 4 (very severe obstacle). Our proxy for firm-specific systemic bias is the sum of these responses.

4.2 Specification and Methods

Our basic specifications take the following form:

$$R_j = f(\chi_\omega \omega_j, \chi_\theta \theta_j, \chi_x \mathbf{x}_j) \quad (28)$$

where R is the hypothesized “crony” outcome for firm j specified in the preceding section (firm j faces better business environment; firm j provides politically valuable benefits; firm j invest or innovate less), ω is our measure of the relative influence of firm j , θ is the firm-specific systematic bias of firm j as described above, \mathbf{x} is a vector of firm-specific control variables, and χ are vectors of coefficients. The firm-specific characteristics we include are: the age of the firm (in years), the number of permanent employees (log scale, lagged one year), dummy variables identifying whether the firm is an exporter, whether the firm is majority owned by a domestic company or individual (vs. a foreign entity), and whether the firm is a state-owned enterprise. In addition, we include the following sets of dummies in all specifications (though their results are not reported in the tables): a legal-status effect (identifying whether the firm is publicly listed, privately held, a cooperative, sole proprietorship, or partnership), a location effect (identifying whether the firm is located in the capital city, in a city with more than 1 million, 250,000 to 1 million, 50,000 to 250,000, or less than 50,000 in resident population), industry dummies (ISIC 2-digit), survey-year dummies, and country dummies. All estimations also include a trend. Summary statistics for all variables used in our analysis are in table 1.⁷

⁷We have also tested if including a dummy specifying whether the firms have ever been publicly owned makes a difference. The motivation is that newly privatized firms may maintain

Our basic specifications are estimated using OLS or logit regressions depending on whether the outcome of interest is continuous or binary. Estimates of the causal effects of firm-level political influence, however, may be affected by selection bias due to the non-random character of “influential” vs. “non-influential” firms, whereby the distribution of covariates ω , θ , and \mathbf{x} , may be very different for firms depending on their level of political influence. We therefore correct for observable differences between influential/non-influential firms by pre-processing our data with matching methods, then re-running our parametric analyses on the matched sub-sample of the data as recommended by Ho et al. (2007), and similar to the parametric bias-adjustment for matching by Abadie and Imbens (2006). We compute coefficients on all independent variables after matching rather than reporting the simple difference in means without controlling for potential confounding variables. The purpose of matching here, of course, is to ensure that influential firms are as close as possible to non-influential firms in terms of relevant covariates, a method analogous to severing the links between explanatory covariates and likelihood of “treatment” in observational data.

We rely on exact matching based on the following model

$$\Pr(\textit{Influence} = 1) = \Phi\left(\hat{\beta}_\theta\theta_j + \hat{\beta}_x\mathbf{x}_j + \hat{\beta}_L\textit{Lobby}_j\right), \quad (29)$$

where $\textit{Influence} = 1$ [$\textit{Influence} = 0$] occurs when a firm is [is not] able to influence national policies affecting its business. We designate firms as influential if their influence score as calculated above is greater than zero. Φ is the standard normal distribution function, θ is the firm-specific bias, and \mathbf{x} is a vector of firm-specific indicators—age of the firm, number of permanent workers, legal-, location-, sector-, year-, and country-dummies, as well as additional dummies specifying whether the firm is an exporter, domestically-owned, or state-owned. To this we add an additional dummy not used in our other regressions: whether, in the past two years, the firm has sought to lobby the government or otherwise

close political connections, while struggling with the legacy of public ownership in terms of bloated payrolls and inefficient business practices. Including this dummy does not change any of our results, though.

influence the content of laws or regulations affecting the firm’s business.

Tests of matching balance are shown in table 2. We perform exact matching using a propensity score derived from a logit regression of (29), which generates a conditional “treatment” probability—in this case, the conditional probability of being an influential firm. As mentioned above, propensity score matching adjusts for pre-treatment observable differences between treated and control samples. Without matching, the means of influential and non-influential samples of firms are distinct as seen in T-tests. After matching, however, we can no longer reject the null hypothesis of equality of means between influential and non-influential firms, suggesting that propensity-score matching reduces imbalance between these samples.

5 Results

Before showing regression results, some summary statistics are given in Table 1, whereas Figure 1 displays the means and variances of influence across the 26 countries. The most meaningful measure is the variance, a higher variance suggesting that there are more firms perceiving themselves as being very influential/non-influential in relative terms. As shown in Figure 1 there is some variation both in means and in the variance across the sample. We calculated the mean in variance in the group of former Soviet-Union countries and compared that to the mean in variance for the other countries, on the assumption that unequal influence is more of an issue in the former. The variance is indeed slightly higher on average in the former Soviet Union countries, and the difference is statistically significant, but it is quite small.

5.1 Evidence for an elite exchange

To look at evidence in favor of the elite exchange we look at benefits to influential firms, and indications that influential firms carry bloated payrolls. There is a certain asymmetry in our results in that we have much more evidence for the

first part, but this is entirely driven by data availability. Table 3 examines two costs typically imposed on businesses in transition countries: bribes, and theft. Columns (1) to (4) examine bribes, both in total as a percentage of sales, and specifically for government contracts as a percentage of contract value. For each outcome we present, first the results from basic OLS regressions using the full sample, and then using only the matched sample of observations. In each specification, influential firms pay less in bribes both in general and for government contracts. With less consistency, we also find that older firms, state-owned companies, and foreign companies are better protected from bribe-collectors. We also include workers in quadratic form, and find that firms with more employees pay more in bribes (for government contracts) but the effect is diminishing. We include, but do not report legal status, location, industry, time, and country dummies.⁸ In columns (5) and (6) we examine the effect of political influence on losses from theft, robbery, arson, or vandalism. In this case we find no significant difference, indicating that crime take a toll on the politically-connected and ordinary in roughly similar ways.

In table 4 we turn to firms' subjective rankings of business constraints. Our dependent variables are averages of responses to questions about the severity of five categories of constraints: infrastructure (telecommunications, electricity, and transportation), taxation (both rates and the administration of), regulations (including customs, licensing, and permits), finance (cost and access), and the legal system (anti-competitive practices, crime, and the efficacy of the legal system). In each case we coded these variables 1 if the obstacle was considered "major" or "severe," 0 otherwise. To these five indicators we add a sixth, based on firm responses to a question of how customers would respond were the firm to raise prices of their main product or service by 10%. We code this outcome 1 if firms state that there would be no change in customer behavior, 0 otherwise.⁹

⁸It is always possible that influential firms pay more bribes because they have more extensive dealings with public officials than non-influential firms. We find no evidence for this disparity. We estimated the percentage of "senior management's time spent in dealing with requirements imposed by government regulations" based on the benchmark specification in table 3, and find that influence has no statistically significant effect.

⁹Firms were given four choices of responses: A: customers would continue to buy at the same quantities; B: customers would continue to buy but at slightly lower quantities; C:

The results of logit regressions are summarized in table 4. For simplicity we only report the coefficient on influence across estimations. All outcomes, however, were estimated using the full specification in (28), including firm-specific systematic bias, on both unmatched and matched samples. We also report pseudo R^2 and $prob. > \chi^2$ values from the full estimations. Infrastructural constraints actually affect influential firms slightly more, though the results are significant only at the ten percent level. But all other constraints are decidedly more severe for non-influential firms. Influential firms are also more likely to face a situation where price hikes do not change their customers' behavior. This suggests that another benefit of influence over laws and regulations is that influential firms get shielded from competition.

As mentioned previously, the allocation of credit to privileged firms on “soft” terms is considered one of the central instruments of crony capitalism. In table 5 we investigate whether influential firms have easier access to credit. As with the previous table, we estimated our full model on both unmatched and matched samples, but we only report the coefficients and standard errors for the influence variable. Here we examine four outcomes: (i) whether collateral was required for the most recent loan (for firms that obtained loans); (ii) the cost of the collateral (as a percentage of loan value); and the percentage of (iii) working capital and (iv) new investments financed by “informal sources” (money-lenders or other informal financial institutions). For the first outcome—the collateral requirement—we use logit regressions, while for all others we rely on OLS. Consistently, influential firms appear to have easier access to credit. Unsurprisingly, influential firms are less likely to be asked to collateralize loans by lenders. Among firms that do provide collateral or a deposit for their financing, the more influential firms typically have to cover less of their loans than less influential firms. And influential firms are less entwined in the informal financial sector.

As mentioned in the introduction, an inordinate amount of attention has

customers would continue to buy but at much lower quantities; and D: customers would stop buying.

focused on the benefits of political influence that accrue to the firms themselves, while far less is understood in terms of the specific types of rents or political rewards politicians can extract from cronyism. In table 6 we examine evidence of the high-employment guarantees implicit in the firm-politician relationship. Recall that in the partially-pooling equilibrium, political leaders who find themselves less able to handle negative economic shocks rely instead on influence contracts, a component of which involves firms keeping excess labor in exchange for lowered costs of business. Columns (1) and (2) present logit results for unmatched and matched samples, respectively, of estimating the effect of political influence on excess employment. Firms were asked, if they could change the number of full-time workers without restriction or punishment, whether they would shrink their payrolls. We code responses 1 or 0 depending on whether firms reported they would lay off workers. In columns (1) and (2), in addition to the variables included in the basic specification, we also include firms' capacity utilization, on the assumption that use of installed productive capacity can affect firm managers' preferences regarding optimal employment levels. We find that influential firms are more likely to maintain excess labor than non-influential firms.

5.2 Consequences of political connections

Our last set of results addresses the question, indirectly, of enterprise dynamism and performance. Rewards in the form of lowered costs of business, monopoly rents, and other benefits are often justified by developing country governments as a de facto form of targeted industrial policy, on the assumption that most politically-connected firms use these benefits to invest and innovate, and that these influential firms are also the most dynamic. However, our model suggests that the opposite may be true; more influential firms are less likely to invest and innovate if the price for influence is to give up control rights over employment decisions. We examine this relationship in table 5.

Firms were asked a series of questions on their restructuring activities and

innovation. Table 7 shows the results of estimations in which the dependent variables are a set of innovation/restructuring outcomes: whether, in the past three years, the firm opened a new plant, introduced a new product line, closed an old plant, or closed an obsolete product line. While there are valid concerns regarding the comparability of "newness" or "obsolescence" across firms in different countries and in different industries, the inclusion of industry and country dummies should correct for these differences. As in table 4, we only report coefficients and standard errors for the influence variable, for estimations using both unmatched and matched samples. Once again, influential firms display a certain consistency: they are less likely to open a new facility, or to introduce or close out product lines. In the regression on the probability of closing an old facility, influence has the expected sign, but is not statistically significant.

6 Conclusions

We argue that cronyism in business-government dealings in transition economies takes a specific form: an influence contract between firms and politicians whereby the former relinquish a portion of control rights over employment decisions in exchange for a more favorable business environment. This exchange affects firms' costs of doing business as well as certain operating decisions. In particular, we suggest that privileged firms benefit through lower fixed costs, while also facing higher variable costs through increased payrolls. The important consequence of that is that influential firms are less likely to make investments that increase labour productivity because they are unable to reap all the benefits from it.

Our model is generally supported by evidence from approximately 5,000 firms in 26 countries in the former Soviet Union and central and Eastern Europe. We find that influential firms pay smaller bribes, enjoy regulatory forbearance, monopoly rights, and preferential access to credit, and face weaker obstacles to doing business than less-influential firms. In return, influential firms provide politicians with political benefits in the form of higher employment, through overstaffing. Finally, and most importantly, the influential firms are less likely

to open new product lines or production facilities or close obsolete ones, suggesting that influence, though beneficial in the short run, may inhibit long run dynamism and productivity.

Our results thus refute the claim, occasionally repeated in commercial or economic development ministries in developing countries, that selective industrial policy typically is an efficient instrument to promote innovation, technological progress and productivity in developing countries (e.g. Khan 2000). In practice, the lack of competitive pressure and the meddling of political considerations in management decisions (in particular employment) create more disincentives, than the otherwise favorable business environment creates incentives, for innovation and long-term investments. This is important since it suggests that cronyism carries a welfare cost not only by distorting competition and eroding trust in the fairness and honesty of the political system, but also by hampering the long run development even of the firms that stand to gain in the short run.

Our results also argue against the view that bribes are an instrument of influence-peddling by private sector elites. Rather, our findings suggest that bribe taxes are used by the public sector to extort payments from weak or vulnerable enterprises. This is consistent with a bargaining framework for bribe-paying in which political connectedness can increase firms' relative bargaining power in dealing with public officials (Svensson 2003). High-level connections shield firms from predatory behavior by rank and file administrators. These findings suggest a need to make a clear distinction between cronyism and administrative corruption in the literature; they serve different purposes and involve different segments of the public and private sectors.

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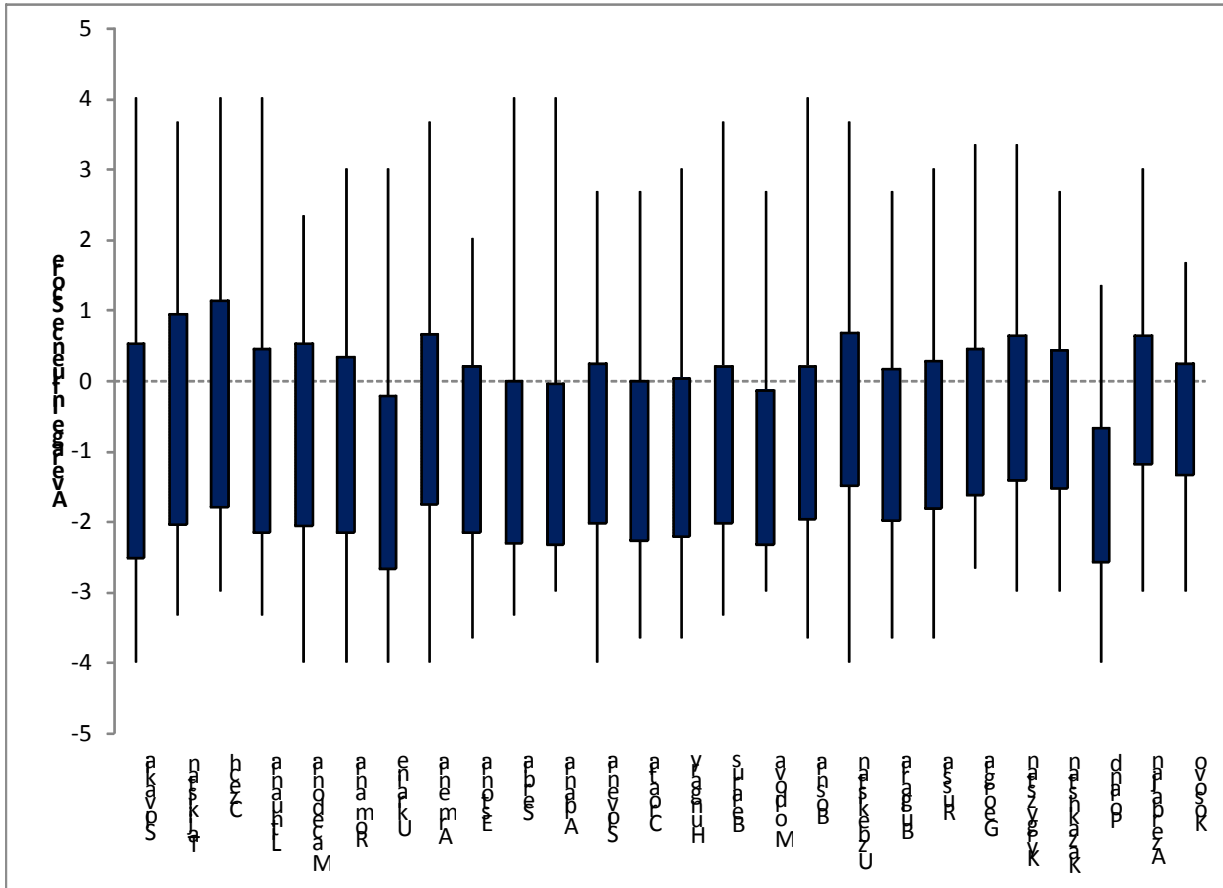
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Figure 1: Variance of influence



Notes: Graph shows countries ordered by dispersion of the average influence score; top and bottom of boxes are means plus and minus one standard deviation, respectively. Top and bottom of lines are country maxima and minima, respectively.

Table 1: Summary Statistics

<i>Variable</i>	<i>Obs</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
Influence	4889	-0.95	1.20	-4	4
Age	4889	18.39	18.28	4	206
Exporter	4889	0.19	0.39	0	1
Domestic	4889	0.84	0.37	0	1
State-owned	4889	0.11	0.31	0	1
Bias	4889	3.70	2.00	0	8
Lobby	4877	0.24	0.43	0	1
Workers	4889	3.24	1.74	0.69	9.21
Capacity Utilization	4799	79.37	20.38	3	100
Bribes (% sales)	4516	1.67	3.35	0	50
Bribes for Government Contracts (% of contract value)	4483	1.96	4.66	0	50
Theft Losses (% sales)	4508	1.02	4.41	0	95
Opened New Plans	4857	0.15	0.36	0	1
Opened New Product	4865	0.40	0.49	0	1
Closed Old Plant	4852	0.12	0.32	0	1
Closed Old Product	4858	0.22	0.42	0	1
Excess Labor	3695	0.56	0.50	0	1
Infrastructure	4828	0.04	0.20	0	1
Taxation	4889	0.33	0.47	0	1
Regulation	4551	0.14	0.34	0	1
Finance	4662	0.26	0.44	0	1
Legal System	4555	0.12	0.33	0	1
Monopoly Rights	4850	0.20	0.40	0	1
Collateral	2059	0.81	0.39	0	1
Cost of Collateral (% of loan)	1507	144.74	81.38	1	900
Informal Finance (% of working capital)	4800	1.18	7.48	0	100
Informal Finance (% of new investments)	3487	0.90	6.71	0	100

Table 2: Balance Testing for Matched and Unmatched Covariates

<i>Variable</i>	<i>Sample</i>	<i>Influential</i>	<i>Non-influential</i>	<i>T-test</i>
Age	Unmatched →	23.26	18.57	0.00
	Matched →	23.07	24.09	0.50
export		0.23	0.18	0.01
		0.24	0.25	0.72
domestic		0.83	0.85	0.09
		0.82	0.85	0.28
state		0.21	0.10	0.00
		0.21	0.20	0.82
bias2		3.24	3.83	0.00
		3.22	3.34	0.35
lobby		0.53	0.19	0.00
		0.55	0.55	0.95

Notes: Results generated from exact propensity score matching using logit regression with legal-status, location, industry, time, and country dummies (not reported). Figures in italics are for the matched sub-sample. T-tests are of equality of means between non-influential and influential firms.

Table 3

	(1)	(2)	(3)	(4)	(5)	(6)
	Bribes (% of sales)		Bribes for government contracts (% of contract value)		Theft losses (% sales)	
Influence	-0.205*** (0.042)	-0.209*** (0.042)	-0.353*** (0.059)	-0.355*** (0.059)	-0.034 (0.057)	-0.038 (0.058)
Age (years)	-0.001 (0.003)	-0.001 (0.003)	-0.009** (0.004)	-0.009** (0.004)	-0.003 (0.004)	-0.002 (0.004)
Exporter	-0.102 (0.136)	-0.104 (0.138)	0.071 (0.193)	0.064 (0.195)	0.061 (0.187)	0.095 (0.189)
Domestic	0.443*** (0.139)	0.455*** (0.141)	0.299 (0.198)	0.316 (0.199)	0.397** (0.190)	0.411** (0.193)
State-owned	-0.611** (0.271)	-0.619** (0.277)	-0.957** (0.385)	-1.044*** (0.392)	0.091 (0.374)	0.049 (0.384)
Workers	-0.016 (0.111)	-0.030 (0.113)	0.282* (0.159)	0.278* (0.160)	-0.076 (0.152)	-0.095 (0.155)
Workers ²	-0.015 (0.014)	-0.013 (0.014)	-0.050** (0.020)	-0.049** (0.020)	0.001 (0.019)	0.004 (0.020)
(Adjusted) R ²	0.087	0.101	0.097	0.100	0.030	0.030
Observations	4717	4597	4681	4564	4716	4593

Notes: Results from OLS and 3SLS regressions, with legal-status, location, industry, time, and country dummies (not reported). Columns (1), (3), and (5) are OLS regressions on the unmatched sample. Columns (2), (4), and (6) are OLS regressions on the matched sample of observations. Exact matching is performed using a conditional propensity score.

*** p < 0.01

** p < 0.05

* p < 0.10.

Table 4

	<i>Dep. variable</i>	<i>Coefficient</i>	<i>Std. error</i>	<i>Observations</i>
(1)	Infrastructure	0.126*	0.067	4659
(2)		<i>0.120*</i>	<i>0.067</i>	<i>4647</i>
(3)	Taxation	-0.195***	0.032	4889
(4)		<i>-0.194***</i>	<i>0.032</i>	<i>4877</i>
(5)	Regulations	-0.218***	0.043	4451
(6)		<i>-0.215***</i>	<i>0.044</i>	<i>4439</i>
(7)	Finance	-0.111***	0.033	4739
(8)		<i>-0.111***</i>	<i>0.033</i>	<i>4727</i>
(9)	Legal	-0.155***	0.047	4545
(10)		<i>-0.153***</i>	<i>0.047</i>	<i>4533</i>
(11)	Monopoly	0.146***	0.033	4926
(12)		<i>0.148***</i>	<i>0.033</i>	<i>4914</i>

Notes: Coefficients and standard errors on “influence” are reported. All regressions include, in addition to influence, the following variables: age of firm, exporter dummy, domestic dummy, workers (linear and quadratic), firm-specific bias, time trend, legal-status, location, industry, time, and country dummies. Figures in italics are for matched data using propensity-score matching based on logit model.

*** p < 0.01

** p < 0.05

* p < 0.10

Table 5

	<i>Dep. variable</i>	<i>Coefficient</i>	<i>Std. error</i>	<i>Observations</i>	<i>R-squared</i>
(1)	Collateral required	-0.166***	(0.055)	2134	0.164
(2)		-0.159***	(0.056)	2082	0.166
(3)	Cost of collateral (% of loan value)	-3.451*	(1.814)	1564	0.160
(4)		-3.106*	(1.827)	1529	0.160
(5)	Informal finance (% of working capital)	-0.178*	(0.095)	5009	0.024
(6)		-0.169*	(0.097)	4884	0.025
(7)	Informal finance (% of new investments)	-0.176*	(0.100)	3615	0.020
(8)		-0.180*	(0.101)	3545	0.020

Notes: Coefficients and standard errors on “influence” are reported. All regressions include, in addition to influence, the following variables: age of firm, exporter dummy, domestic dummy, workers (linear and quadratic), firm-specific bias, time trend, legal-status, location, industry, time, and country dummies. Figures in italics are for matched data using propensity-score matching based on logit model. Equations (1) and (2) show results from logit regressions, all other equations are OLS.

*** $p < 0.01$

** $p < 0.05$

* $p < 0.10$.

Table 6:

	(1)	(2)
	Excess Labor	
Influence	0.106*** (0.033)	0.107*** (0.033)
Age (years)	-0.001 (0.003)	-0.001 (0.003)
Exporter	0.031 (0.105)	0.040 (0.105)
Domestic	0.076 (0.103)	0.075 (0.103)
State-owned	0.242 (0.229)	0.224 (0.231)
Bias	0.033* (0.019)	0.033* (0.019)
Workers	0.123 (0.085)	0.118 (0.086)
Workers ²	-0.021* (0.011)	-0.021* (0.011)
Capacity Utilization	-0.000 (0.002)	-0.000 (0.002)
Observations	3675	3667
R ²	0.067	0.067

Notes: Results from OLS regressions, with legal-status, location, industry, time, and country dummies (not reported). Column (1) is an OLS regression on the unmatched sample, (2) is on the matched sample. Exact matching is performed using a conditional propensity score.

*** p < 0.01

** p < 0.05

* p < 0.10.

Table 7

	<i>Dep. variable</i>	<i>Coefficient</i>	<i>Std. error</i>	<i>Observations</i>
(1)	New product	-0.059**	0.029	4879
(2)		<i>-0.060**</i>	<i>0.029</i>	<i>4867</i>
(3)	New plant	-0.139***	0.040	4872
(4)		<i>-0.137***</i>	<i>0.040</i>	<i>4860</i>
(5)	Closed product	-0.148***	0.034	4873
(6)		<i>-0.145***</i>	<i>0.034</i>	<i>4861</i>
(7)	Closed plant	-0.034	0.042	4859
(8)		<i>-0.033</i>	<i>0.042</i>	<i>4847</i>

Notes: Coefficients and standard errors on “influence” are reported. All regressions include, in addition to influence, the following variables: age of firm, exporter dummy, domestic dummy, workers (linear and quadratic), time trend, legal-status, location, industry, time, and country dummies. Equations (1) – (8) also include firm-specific systemic bias. Figures in italics are for matched data using propensity-score matching based on a logit model. Estimation is by logit regressions.

*** $p < 0.01$

** $p < 0.05$

* $p < 0.10$.