

# Taxability, Elections, and Government Support of Business

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## **Abstract**

Politicians care about tax revenues in part because they pay for transfers or public goods which are important to voters, and which are thus important for the politician's reelection. When economic sectors differ in their taxability, i.e. the degree to which tax revenues can be extracted by the state, politicians will thus have an incentive to allocate their support for business activity unevenly across sectors. Formalization of this idea shows that politicians will be more inclined to favor high-taxability sectors when transfers or public goods are highly valued by voters, but less likely to do so when a country's overall tax capacity is high. Further, the allocation of support will depend on the relative size of the low- and high-taxability sectors, but not on the number of recipients of government transfers. Drawing upon a survey of firms in twenty-three postcommunist countries - where overall tax capacity is in many places quite low, differences in taxability across sectors is typically high, and government support for business is often lacking - the model's predictions are shown to hold generally in countries with well-developed political rights and civil liberties, but only partially in the rest of the postcommunist world. Politicians in more democratic countries seem to be motivated by the electoral concerns central to this paper, while their counterparts in less democratic states appear to be motivated by revenue considerations for nonelectoral reasons.

## 1. Introduction

In many parts of the world, business activity is difficult without active political support. In such environments, poor protection of property rights, petty corruption, and bureaucratic inefficiency is the norm, and only the active intervention of senior politicians can assure treatment by lower-level government officials conducive to business development.

The question of who receives such support, and who does not, has been of particular concern to scholars of postcommunist political economy. Throughout most of postcommunist Europe and Asia, business development has been hampered by insecure property rights and the absence of an impartial, honest, and efficient bureaucracy. Corruption (Scheppelle 1999; Treisman 2002; Shelley 2000), protection rackets (Frye and Zhuravskaya 2000; Volkov 2000; Gustafson 1999), ineffective legal institutions (Sachs and Pistor 1997; Lambert-Mogiliansky, Sonin, and Zhuravskaya 2000; however, see Hendley, Murrell, and Ryterman 2001), and the “time tax” imposed by overregulation (EBRD 1999) have all contributed to the generally disappointing economic performance of postcommunist countries. Indeed, Johnson, McMillan, and Woodruff (2000) find such obstacles to be the principal constraint to business development in five postcommunist countries, outweighing such factors as access to bank finance.

At the same time, such impediments are not constant across firms or countries. Small firms are disproportionately burdened by overregulation and corruption, while firms in eastern Europe generally face fewer obstacles than those in the former Soviet Union (World Bank 2002; Hellman, Jones, and Kaufmann 2000; Frye and Shleifer 1997), a pair of observations

that is further developed in the empirical work presented in Section 3 below.<sup>1</sup> An emerging literature traces this variation in part to the character of incentives facing (often local) politicians (Shleifer 1997), including the nature of fiscal-federalist arrangements (Oi 1992; Qian and Weingast 1996; Zhuravskaya 2000), the availability of revenues from raw-materials extraction (Fish 1998), and the extent to which politicians are constitutionally obligated to face the judgement of voters (Hellman 1998).

This paper and its companion (Gehlbach 2002) extend and complement this literature by emphasizing that the degree of government support for business development is determined in part by the *taxability* of economic activity, i.e. the extent to which the state can extract revenues from economic agents. (Unlike tax rates, taxability is not a choice variable of the politician.) Behind this general argument are three premises: that politicians are interested in tax revenues, that it is easier for the state to extract revenues from some economic agents than from others, and that political support is important to business development. Put succinctly, the taxability argument says that the following two statements, often heard in conversations with entrepreneurs in postcommunist countries, are not unrelated:

- 1) “Corruption and overregulation are killing my business.”
- 2) “Good entrepreneurs know how to avoid paying taxes.”

The idea that states are interested in tax revenues is not new: North (1981), for example,

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<sup>1</sup>Bureaucratic obstacles and political support also vary *within* countries. See, e.g., Stoner-Weiss (1997) for evidence from four Russian regions in the early 1990s, and CEFIR and World Bank (2002) for recent survey evidence from twenty Russian regions.

bases his analysis of economic history on the premise that states are interested in maximizing revenues, while Tilly (1990) argues that the imperative of raising revenues to fight wars was instrumental in the development of the modern state. Moreover, the importance of tax revenues plays a role in many existing studies of business-government relations, including the literatures on fiscal federalism, hybrid ownership forms in China, the “resource curse,” and colonialism.<sup>2</sup>

However, most analyses do not give joint emphasis to the twin facts that a) sectors differ in their taxability, and b) countries differ in their *tax capacity* (the degree to which governments can extract revenues from all sectors, holding constant any differences in taxability across sectors). Gehlbach (2002) shows that when governments are interested in maximizing tax revenues and factors of production are mobile across sectors, (a) and (b) together suggest that countries will sort themselves into two groups: those where government support and resources are concentrated in the low-taxability sector, and those where they are concentrated in the high-taxability sector. If one takes the low-taxability sector to be new or small firms (a point established in Section 3 below), this is a fair characterization of the “great divide” (Berglof and Bolton 2002) separating eastern Europe from the former Soviet Union.

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<sup>2</sup>The literature of fiscal federalism is referenced above. On township-village enterprises and the impact of local-government retention of revenues, see, e.g., Che and Qian (1998) and Gordon and Li (1997). With respect to the resource curse, Shafer (1994) argues that countries with large natural-resource sectors or similar “inflexible leading sectors” will develop “specialized tax authorities to tap the huge, concentrated revenue streams such sectors produce, and specialized agencies to monitor, regulate, and promote the activities of these few critical firms” (p. 13). On colonialism, Acemoglu, Johnson, and Robinson (2002) suggest that the choice of institutions by European colonial powers was influenced by the degree of taxability of existing, pre-colonial economies.

This paper, in contrast, takes factor allocation as given but develops a more nuanced view of political behavior. Rather than simply assuming that politicians are interested in tax revenue, the model presented in Section 2 examines the electoral motive for raising taxes. Taxes can be used to redistribute resources from one sector of the population to another (Subsections 2.1-2.3) or to pay for public goods (Subsection 2.4). In either case, a politician's probability of reelection depends on his competence in producing tax revenues, which in this model means his competence in supporting (taxable) economic activity. Political support is costly (bureaucrats must be monitored, rents passed up from lower-level officials must be foregone), so the allocation of support across sectors depends on the electoral return from supporting those sectors.

Formally, the model follows Holmstrom's (1982) formalization of the idea that "career concerns" can motivate managers to exert effort in an attempt to appear more competent.<sup>3</sup> Here, political support plays the role of effort, and elections replace labor markets. Similar applications of career-concerns models to electoral politics can be found in Persson and Tabellini (2000, chs. 4, 9, and 16) and Lohmann (1998), though in those models effort is unidimensional. Dewatripont, Jewitt, and Tirole (1999a, 1999b) consider multidimensional effort, but in a nonelectoral setting. Further, the model in this paper is unusual in that it involves conflicts of interest among voters (principals).

Beyond reinforcing the general proposition that differences in taxability result in unequal

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<sup>3</sup>More generally, career-concerns models belong to a class of "signal-jamming models." See Fudenberg and Tirole (1986).

allocation of political support across economic sectors, the model in this paper produces a number of more subtle theoretical results. First, it is not always the case that it is the high-taxability sector which receives more support. Which of the two sectors is favored depends on the degree to which the politics of redistribution is salient relative to other issues for different segments of the voting population, or on the degree to which the public good is valued by voters. When (some) voters care more about taxes paid than (others do) about the benefits those taxes provide, politicians will have an incentive to support the low-taxability sector. Second, when taxes are used as a means of redistribution, the allocation of political support across sectors is independent of the size of the population being redistributed to. Countries with more recipients but equivalent tax capacity will merely have less to go around, meaning that any individual recipient will be less likely to base her voting decision on a politician's competence in providing transfers. Third, politicians will be more inclined to support the low-taxability sector when the government's overall tax capacity is high: any temptation to support the high-taxability sector because transfers or public goods are politically important will be tempered, while any incentive to support the low-taxability sector because of the political salience of post-tax profits will be exaggerated. Thus, for example, if the low-taxability sector is populated by small firms, "big" governments will be more supportive of small-business activity.

Section 3 examines the empirical predictions of this model using firm-level data on business-government relations from twenty-two postcommunist countries. Across postcom-

munist Europe and Asia, firms receive better treatment from government officials the more they report revenues to tax authorities, a result consistent with this model but also with models in which politicians are interested in raising revenue for non-electoral reasons. More specific to this model, the degree to which high-taxability firms are favored depends negatively on the overall tax capacity of the country in which the firm resides, but only for the subset of postcommunist countries with well-developed political rights and civil liberties, suggesting that the electoral model of this paper best fits reality in countries with more-or-less “normal” democratic politics.

## **2. Theory**

### **2.1. Model With Redistributive Transfers**

Consider an environment in which a politician chooses what level of support to provide to each of two different economic sectors. This support is not the provision of subsidies to one industry or another, but rather the creation of an environment in which business can flourish. Political support increases the profitability of a sector, but at some expense to the politician. Thus, in contrast to subsidies, whose cost is borne by taxpayers and whose provision precludes other uses of government funds, political support is costly to the politician providing it, and may benefit individuals other than those in the supported sector through any subsequent increase in tax revenues.

The most obvious interpretation of this costly support, and one consistent with the

empirical work presented in Section 3, is that the politician is engaged in a principal-agent relationship with lower-level bureaucrats, who in turn interact directly with economic agents. In many parts of the world, entrepreneurs and business managers are obliged by these bureaucrats to pay bribes, to spend time dealing with excessive regulation, etc.<sup>4</sup> However, by various means - an explicit instruction to “lay off” certain sectors, foregoing a share of the rents passed up from subordinates<sup>5</sup> - the politician can reduce the level of bureaucratic interference. This is the “political support” of this model. Critically, this support is costly: monitoring to assure instructions are followed takes time and energy, foregoing rents has an opportunity cost, etc. To keep the focus on the politician’s electoral incentives to support one sector or another, we do not model the politician-bureaucrat relationship explicitly, but simply assume that at some cost the politician can increase the profitability of a sector.

An alternative interpretation, albeit one not considered explicitly in the subsequent empirical work, is that a sector needs a legal framework of some sort to thrive.<sup>6</sup> Thus, for example, the expansion of internet commerce in the U.S. was facilitated by the passage of legislation allowing for the recognition of electronic signatures. In the postcommunist world, the development of private commerce depended critically on price liberalization and the decriminalization of entrepreneurial activity. Given limitations of political capital and of space on the legislative calendar, opting to support business activity involves an opportunity cost

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<sup>4</sup>Guriev (2002) develops a model to show how corruption can lead to more “red tape.”

<sup>5</sup>Waller, Verdier, and Gardner (2000) provide a model of a corrupt politician sharing rents with a number of lower-level bureaucrats.

<sup>6</sup>Drawing on the experience of advanced industrial economies, Steven Vogel (1996) has argued that “freer markets” sometimes demand “more rules.”

in that other issues important to the politician may receive less attention.

Critically, the two economic sectors needful of political support differ in their exogenous *taxability*, i.e. the degree to which their profits are taxable by the state, though are identical in other respects. This difference implies possibly different levels of support for the two sectors. As will be seen below, firms in postcommunist countries vary systematically (across countries, sectors, and firm size) in the degree to which they report revenues to tax authorities.

Implicit in the premise of exogenous differences in taxability is the assumption that the politician observes the tax performance only of sectors, and not of individual taxpayers. For the firms considered in the empirical work below, all of whom have 1000 employees or fewer, this is almost certainly the case. Consequently, if the number of taxpayers in a sector is large, no individual taxpayer has an incentive to pay more taxes in order to garner more political support. Such self-interested tax compliance would merely serve to transfer money out of the taxpayer's pocket without providing any benefit in return. Thus, each taxpayer pays only what she must, and no more. Of course, some taxpayers can get away with paying less than others: their size or the nature of their business activity makes it easier for them to hide revenues from tax authorities. In what follows, we will refer to the sector that finds it easier to hide revenues as the *low-taxability sector*, and the other sector as the *high-taxability sector*.

It is worth stressing that taxability is not a tax rate, and is not chosen by the politician:

it is the degree to which revenues can be extracted from economic agents. It is perhaps best to think of the politician in this model as a regional politician who takes tax rates chosen by the central government as given, but who has the ability to determine the nature of the local business environment. Since firms differ in their taxability, economic output will be taxed at differential levels even if the tax rate is constant across sectors. Alternatively, one can think of the politician in the model as choosing tax rates based on the Laffer curve for each sector: the more taxable a sector, the higher its tax rate.

In this paper, taxes collected by the state can be used either as a means of redistribution from one sector of the population to another, or to fund production of a public good valued by all members of the population. In this subsection we consider the redistribution motive; below we modify the model to incorporate public goods. As will be shown, the model yields qualitatively similar results regardless of the use of tax revenues, despite the fact that redistributive transfers involve sharper conflicts of interest between voter groups.

Formally, consider three groups of risk-neutral individuals: a group of voter/entrepreneurs active in the low-taxability sector, a group active in the high-taxability sector, and a group of recipients who receive redistributive transfers from the government. Normalize the size of the population to 1, and let the size of the three groups be  $N_L$ ,  $N_H$ , and  $N_R$ , respectively, so that  $(N_L + N_H + N_R) = 1$ .

In addition to voters, there is an incumbent politician who decides how much support  $e_{st}$  to provide to both the low-taxability ( $s = L$ ) and high-taxability ( $s = H$ ) sector in

period 1 and, possibly, period 2. At the conclusion of period 1, an election takes place, determining whether or not the incumbent politician remains in power and makes support decisions in period 2. If the incumbent politician is defeated, the challenger takes power and makes support decisions in period 2.. There is no election in the second period. Providing support is costly for either politician, with convex cost of support  $c(e_{st})$ . Each period that a politician is in power he receive exogenous rents  $R$ , which can represent either the pursuit of policies important to the politician but unimportant to voters, or perks of the office. In what follows, the term “politician” will refer to the incumbent politician in period 1 unless otherwise noted.

Each member of an active sector produces profits  $\pi_{ist} = e_{st} + \theta_s$ , where  $\theta_s$  is a mean-zero random variable expressing the “competence” of the politician in power in supporting sector  $s$ .<sup>7</sup> (For simplicity, we subscript  $\theta$  only by sector  $s$ , but it should be remembered that  $\theta_s$  refers to the competence of the politician in power in that period.) Generally speaking, this can be thought of as the support a politician provides to a sector if he puts in a normal day’s work without bearing the extra cost of monitoring bureaucrats, foregoing rents, etc. Since the skills required to support one sector (e.g., large former state-owned enterprises) may be different from those required to support another (e.g., small *de novo* enterprises),  $\theta_L$  does not necessarily equal  $\theta_H$ . Specifically, assume competence  $\theta_s$  to be independently

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<sup>7</sup>The assumption that the economic benefit of political support does not persist from the first period to the second is unimportant, so long as the degree to which the benefit persists is independent of whether or not the incumbent is reelected. Also, note that if we want to assure that profits are strictly positive for all individuals in both periods, we can generalize the profit function as  $\pi_{ist} = v_s + e_{st} + \theta_s$ , where  $v_s$  is an exogenous variable arbitrarily large. The analysis is identical.

and identically distributed across sectors  $s = \{L, H\}$  and across politicians, with density function  $f(\cdot)$  and distribution function  $F(\cdot)$  defined over a limited support.

As in other career-concern models of this variety, we will assume that there is no information asymmetry between the politician and voters with respect to the politician's competence, and that all parties concerned are uncertain *a priori* about the politician's competence in supporting each of the two sectors. This might reflect the politician's inexperience in dealing with economic challenges which differ across sectors. For simplicity, assume that  $\theta_s$  is completely unknown to both politician and voters prior to the politician's choosing his level of support; more generally, we might assume that there is both a known and an unknown component to  $\theta_s$ , so long as the politician knows no more than voters do.

Critically, voters cannot observe either  $e_{st}$  or  $\theta_s$  individually, but prior to voting in period 1 do observe the sum  $k_{s1} \equiv (e_{s1} + \theta_s)$  for each sector. As will be shown, voters can impute  $\theta_s$  from their beliefs about the politician's behavior, and use that imputed value in deciding whether or not to vote for reelection. (The relevance of the model relies to some extent on the assumption that active-sector voters are no more able to observe competence than are recipient voters.) If reelected, the incumbent politician's competence persists from the first period to the second. Thus, voters have an interest in reelecting politicians whom they perceive to be competent. If defeated, the challenger takes power, with  $E(\theta_L) = E(\theta_H) = 0$ .

Proportion  $T_s$  of the profits of each member of the active population is extracted as taxes, so that active-sector voters receive after-tax returns of  $(1 - T_s)(e_{st} + \theta_s)$ . Obviously, given

notation,  $T_L < T_H$ . Assume that the government budget constraint is binding in each period, so that all taxes collected are paid out as redistributive transfers to the recipient sector. Thus, letting  $g_t$  be total government transfers per recipient in period  $t$ , the government budget constraint is:

$$N_R \cdot g_t = N_L T_L (e_{Lt} + \theta_L) + N_H T_H (e_{Ht} + \theta_H) \quad (2.1)$$

Finally, in addition to their material concerns (which are identical for all individuals in a given sector), voters have idiosyncratic “ideological” preferences which cause them to support the incumbent politician to a greater or lesser degree. Let  $\delta_i$  refer to voter  $i$ ’s ideological preference for the *challenger*, so that a voter will support the incumbent for reelection if:

$$\begin{aligned} & E(\text{transfers/post-tax profits} \mid \text{incumbent reelected}) \\ & \geq \delta_i + E(\text{transfers/post-tax profits} \mid \text{challenger elected}) \end{aligned} \quad (2.2)$$

The politician knows the distribution of  $\delta_i$ , but does not observe it for any individual voter. A common interpretation of this term in electoral-competition models is that  $\delta_i$  represents preferences over policies with which politicians have little freedom of maneuver. Thus,  $\delta_i$  might capture the degree to which voters support a position held by a candidate (or party) for long enough that any change in policy would result in a loss of credibility. Alternatively,  $\delta_i$  could represent voters’ preferences over issues of supreme importance to party chieftains

or funders, and thus over which candidates have little autonomy.

Assume  $\delta_i$  to be distributed uniformly and independently across sectors over the interval  $[-\frac{1}{2\gamma_s}, \frac{1}{2\gamma_s}]$ , where the  $\gamma_s$ 's are sufficiently large (relative to the support of  $\theta_L$  and  $\theta_H$ ) to insure that the incumbent's vote share always falls strictly between 0 and 1. The parameters  $\gamma_s$  thus capture the degree to which voters value the material concerns at the center of this model over other issues: a large  $\gamma_s$  implies that voters differ little according to their "ideological" preferences, so that a politician's competence in supporting business activity (and thus producing tax revenues) has great relative importance in the voting decision.

While preference heterogeneity is the standard definition of  $\gamma_s$  in electoral-competition models of this type, there is an alternative interpretation which may be more familiar to many political scientists. Assume that  $\delta_i$  is distributed uniformly along  $[-\frac{1}{2}, \frac{1}{2}]$  rather than along  $[-\frac{1}{2\gamma_s}, \frac{1}{2\gamma_s}]$ , but that voters in different groups attach different levels of importance to government support of firms (and thus tax revenues) relative to other issues. Let  $\gamma_s$  be a "salience" parameter that captures the degree to which post-tax profits or transfers are important relative to the issues represented in the preference term  $\delta_i$ , so that a voter in sector  $s$  will support an incumbent for reelection if:

$$\begin{aligned} & \gamma_s E(\text{transfers/post-tax profits} \mid \text{incumbent reelected}) \\ \geq & \delta_i + \gamma_s E(\text{transfers/post-tax profits} \mid \text{challenger elected}) \end{aligned} \tag{2.3}$$

For example, if redistributive transfers represent pension payments critical to the recipient population, one might expect  $\gamma_R$  to be large relative to  $\gamma_L$  and  $\gamma_H$ , so that non-pension considerations matter less for recipients on election day than they do for taxpayers. The analysis is identical. In what follows,  $\gamma_s$  will sometimes be referred to as the “importance” or the “salience” of profits or transfers relative to other issues, language consistent with this alternative interpretation. For simplicity, we will assume that  $\gamma_s$  is identical for the two active sectors, so that  $\gamma_L = \gamma_H = \gamma$ , but that  $\gamma_R$  is possibly different from  $\gamma$ .<sup>8</sup>

Note that, unlike in many models of electoral competition, there is no uncertainty about the distribution of ideological preferences. The source of electoral uncertainty in this model is that the politician does not know the realization of  $\theta_L$  and  $\theta_H$  when he chooses the level of support for each sector in period 1. The incumbent wins reelection if one half or more of voters vote to reelect after observing  $k_{L1}$  and  $k_{H1}$  and imputing  $\theta_L$  and  $\theta_H$ .

The timing of events is illustrated in Figure 1.

## 2.2. Model With Redistributive Transfers: Equilibrium

We look for a perfect Bayesian equilibrium in pure strategies, where our primary focus is the equilibrium level of support in period 1. We begin by considering what happens in period 2.

Whether the incumbent or the challenger from period 1 is in power, the politician in period

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<sup>8</sup>The comparative-statics results below will be qualitatively similar so long as  $\gamma_H$  and  $\gamma_L$  are “close enough.” For example, if  $\gamma_H \neq \gamma_L$ , support for the low-taxability sector will still be increasing in overall tax capacity (Proposition 6) so long as  $\gamma_R(\gamma_L - \gamma_H) - (T_H - T_L)(\gamma_R - \gamma_H)(\gamma_R - \gamma_L) < 0$ .

2 solves the following problem:

$$\max_{e_{L2}, e_{H2}} R - c(e_{L2}) - c(e_{H2}) \quad (2.4)$$

Clearly, the solution to this problem is  $e_{L2}^* = e_{H2}^* = 0$ . Without the discipline of an upcoming election, the politician in period 2 provides no costly political support to either sector. Period-2 profits (and hence tax revenues and redistribution) are determined entirely by the competence of the politician in power after the election:  $\pi_{is2} = \theta_s$ . Thus, voters have an interest in returning competent incumbents to power. What distinguishes this model from similar electoral-competition models is that the politician's competence is multidimensional, and that voters differ in the weights they put on competence in supporting each of the two sectors.

Rather than directly observing the incumbent's competence, however, voters observe only the incumbent's overall performance, which is the sum of competence and support in period 1,  $k_{s1} \equiv (e_{s1} + \theta_s)$ . Thus, the incumbent has an incentive to engage in costly political support in an attempt to appear more competent and increase his chances of reelection. Formally, the incumbent politician in period 1 solves:

$$\max_{e_{L1}, e_{H1}} R - c(e_{L2}) - c(e_{H2}) + \Pr(\text{win} \mid e_{L1}, e_{H1})R \quad (2.5)$$

The key to the model is deriving an expression for  $\Pr(\text{win} \mid e_{L1}, e_{H1})$ . Bygones are bygones,

so that voters vote for the incumbent only if they expect good things from him in the future, but past performance is a guide to future performance.

Establish notation such that variables with tildas refer to voters' beliefs. Thus,  $\tilde{\theta}_L$  refers to the value of  $\theta_L$  imputed by voters based on observed performance  $k_{L1}$  and their beliefs about what action has been taken by the incumbent,  $\tilde{e}_{L1}$ , i.e.  $\tilde{\theta}_L = k_{L1} - \tilde{e}_{L1}$ . Similarly,  $\tilde{\theta}_H = k_{H1} - \tilde{e}_{H1}$ .

To determine  $\Pr(\text{win} \mid e_{L1}, e_{H1})$ , we must derive the voting rule for voters in all three groups. Begin by focusing on voters in the low-taxability sector. Voters in this group expect profits in period 2 of  $(1 - T_L)(e_{L2}^* + \tilde{\theta}_L)$  if the incumbent is reelected, vs.  $(1 - T_L)(e_{L2}^*)$  should the challenger win, as the challenger is untested and has  $E(\theta_L) = E(\theta_H) = 0$ . Taking into account ideological considerations, a voter in sector  $L$  will vote to reelect the incumbent if:

$$(1 - T_L)(e_{L2}^* + \tilde{\theta}_L) \geq \delta_i + (1 - T_L)(e_{L2}^*) \quad (2.6)$$

Expected post-tax profits from reelecting the incumbent must be sufficiently greater than profits from reelecting the challenger to offset any ideological bias in favor of the challenger. Recalling that  $e_{L2}^* = e_{H2}^* = 0$ , we have the following condition for a voter in sector  $L$  to vote to reelect the incumbent:

$$\delta_i \leq (1 - T_L)\tilde{\theta}_L \quad (2.7)$$

The more the incumbent's perceived competence, the more a voter must be inherently biased

against the incumbent to vote against him. But the more that voters in sector  $L$  anticipate giving up their profits in the form of taxes, the less important is this perceived competence relative to other (“ideological”) considerations.

Given that  $\delta_i$  is uniformly distributed along  $[-\frac{1}{2\gamma}, \frac{1}{2\gamma}]$ , we can derive the proportion of voters in sector  $L$  supporting the incumbent as:

$$\frac{1}{2} + \gamma(1 - T_L)\tilde{\theta}_L \tag{2.8}$$

The incumbent will receive a majority of the votes in sector  $L$  if his perceived competence is greater than the expected competence of the challenger, i.e.  $\tilde{\theta}_L > 0$ . However, the size of that majority will depend on the responsiveness of voters in the low-taxability sector to competence concerns. If any gains from competence are simply taxed away, voters in sector  $L$  will instead base their voting decision on their preferences over other issues, i.e. on  $\delta_i$ . In contrast, the more homogenous is the population of sector  $L$  with respect to their preferences over these other issues, i.e. the higher is  $\gamma$ , the more competence matters in determining the proportion of voters supporting the incumbent for reelection.

Similarly, we can derive the condition for a voter in sector  $H$  to vote to reelect the incumbent as:

$$\delta_i \leq (1 - T_H)\tilde{\theta}_H \tag{2.9}$$

implying that the proportion of voters in sector  $H$  supporting the incumbent is:

$$\frac{1}{2} + \gamma(1 - T_H)\tilde{\theta}_H \quad (2.10)$$

In contrast to voters in active economic sectors, who care only about competence in supporting their own economic activity, recipients of redistributive transfers take into consideration the incumbent's skill in raising tax revenues overall, which depends on competence in both sectors. Given the government budget constraint (2.1), recipient voters anticipate period-2 transfers of  $\frac{1}{N_R}[N_L T_L(e_{Lt}^* + \tilde{\theta}_L) + N_H T_H(e_{Ht}^* + \tilde{\theta}_H)]$  should the incumbent win, and transfers of  $\frac{1}{N_R}[N_L T_L(e_{Lt}^*) + N_H T_H(e_{Ht}^*)]$  should the challenger win. As with other voters, recipients vary in their inherent bias towards the challenger, and anticipate that neither incumbent nor challenger will engage in costly support in period 2. Thus, the decision rule for a recipient voter is to vote for the incumbent if:

$$\delta_i \leq \frac{1}{N_R}(N_L T_L \tilde{\theta}_L + N_H T_H \tilde{\theta}_H)$$

The higher is the incumbent's perceived competence in supporting either sector, the more predisposed towards the challenger a recipient voter must be to vote against the incumbent. However, the degree to which competence in supporting a sector matters depends on the contribution of that sector to tax revenues: recipients of government transfers will tend to discount skill in supporting a sector if that sector's small size or low taxability means

it contributes little to budget coffers. Integrating across all recipient voters, we have the proportion of the recipient population voting for the incumbent as:

$$\frac{1}{2} + \frac{\gamma_R}{N_R}(N_L T_L \tilde{\theta}_L + N_H T_H \tilde{\theta}_H) \quad (2.11)$$

where we recall that the responsiveness of recipient voters to material concerns is in general different from that of voters in active economic sectors, i.e.  $\gamma_R \neq \gamma$ .

Multiplying the proportion of voters in all three groups (2.8), (2.10), and (2.11) by the fraction of voters in each group, we arrive at the total number of voters supporting the incumbent given the imputed values  $\tilde{\theta}_L$  and  $\tilde{\theta}_H$ :

$$\frac{1}{2} + [\gamma + T_L(\gamma_R - \gamma)]N_L \tilde{\theta}_L + [\gamma + T_H(\gamma_R - \gamma)]N_H \tilde{\theta}_H \quad (2.12)$$

For given perceptions of competence in supporting an economic sector, a politician will receive more votes, the larger that sector. Size matters for two reasons: there are more voters in large sectors than in small sectors, and large sectors contribute more to the budget for redistributive transfers. In a sense, what is good for Gazprom is good for Russia, or at least more of Russia than just Gazprom: large companies not only employ many individuals, but through their tax payments provide for pensions and other redistributive transfers.

The relationship between taxability of a sector and a politician's competence in supporting it is more subtle. An increase in taxability makes the politician's vote share more

sensitive to competence in supporting that sector only if  $\gamma_R > \gamma$ , i.e. only if recipients are more homogenous in their preferences over other issues than are individuals active in that sector. Recall that an increase in taxability makes voters in active sectors less responsive to performance relative to other issues - any increased profits are simply taxed away - while the same increase in taxability makes recipients more responsive, since a larger share of profits is passed along to them in the form of transfers. Recipients have to care more about the transfers they receive than do taxpayers about the taxes they give up for an increase in taxability to translate into an increased incentive to support a sector.

We can now derive  $\Pr(\text{win} \mid e_{L1}, e_{H1})$  in the incumbent politician's problem (2.5). For notational simplicity, define the new variable  $Z_s = [\gamma + T_s(\gamma_R - \gamma)]$ , so that the number of voters supporting the incumbent is  $\frac{1}{2} + Z_L N_L \tilde{\theta}_L + Z_H N_H \tilde{\theta}_H$ . Recall that  $\tilde{\theta}_L$  and  $\tilde{\theta}_H$  are random variables, dependent on the realization of the random variables  $\theta_L$  and  $\theta_H$  (since  $\tilde{\theta}_s = k_{s1} - \tilde{e}_{s1}$ , where  $k_{s1}$  is a random variable equal to  $e_{s1} + \theta_s$ ). Thus, the probability that the incumbent wins, which is the probability that his vote share is at least  $\frac{1}{2}$ , is

$$\begin{aligned} \Pr\left[\frac{1}{2} + (Z_L N_L \tilde{\theta}_L + Z_H N_H \tilde{\theta}_H) \geq \frac{1}{2}\right] &= \Pr(Z_L N_L \tilde{\theta}_L + Z_H N_H \tilde{\theta}_H \geq 0) \\ &= \Pr[Z_L N_L (e_{L1} - \tilde{e}_{L1} + \theta_L) + Z_H N_H (e_{H1} - \tilde{e}_{H1} + \theta_H) \geq 0] \end{aligned} \quad (2.13)$$

The incumbent seeks to increase his probability of winning by providing support to the two active sectors in an attempt to raise voters' estimates of his competence,  $\tilde{\theta}_L$  and  $\tilde{\theta}_H$ .

In essence, he hopes to make voters believe he is more competent than he actually is by providing more support than they believe he has provided. Of course, in equilibrium voters' beliefs will be correct, i.e.  $e_{s1} = \tilde{e}_{s1}$ , meaning that the politician cannot fool the voters into thinking him more competent. But he nonetheless wants to provide support, since to fail to do so would suggest incompetence: “[H]e is trapped in supplying the equilibrium level that is expected of him, because, as in a rat race, a lower [level of support] will bias the evaluation process against him” (Holmstrom 1982, p. 172).

Before solving for the equilibrium level of support for each of the two sectors in period 1, we introduce some notation:

$$\bar{f}(c) \equiv \int_{-\infty}^{\infty} f(cx)f(x)dx \quad (2.14)$$

It is worth emphasizing that  $\bar{f}(c)$  is always greater than zero, since it is simply a sort of “average density” of a random variable.

**Proposition 1.** *In period 1, the optimal level of support is:*

$$\begin{aligned} c'(e_{L1}^*) &= \bar{f}\left(-\frac{Z_H N_H}{Z_L N_L}\right)R \\ c'(e_{R1}^*) &= \bar{f}\left(-\frac{Z_L N_L}{Z_H N_H}\right)R \end{aligned} \quad (2.15)$$

**Proof.** See appendix. ■

Interpretation of Proposition 1 is left primarily to the following section, but two results

are immediately apparent: the equilibrium level of support in each sector in period 1 is greater than zero, i.e. greater than the level of support in period 2, and is increasing in  $R$ . In other words, politicians provide more support during election periods than during off-election periods because of their desire to get reelected; the more important is reelection to them, the more support they provide.

### 2.3. Model With Redistributive Transfers: Comparative Statics

To develop more interesting comparative-statics results, we must put some structure on the distribution of the random variables  $\theta_L$  and  $\theta_H$ . In particular, assume:

**Assumption 1:**  $\frac{\partial \bar{f}(c)}{\partial c} = \int (x)f'(cx)f(x)dx > 0$  if  $c < 0$

A sufficient (but not necessary) condition for Assumption 1 to hold is that  $f(x)$  is a single-peaked distribution centered on zero, as for  $x$  to the left of zero,  $x < 0$  and  $f'(cx) \leq 0$ , while to the right of zero the opposite is true. In the present context, Assumption 1 says that  $e_{L1}$  and  $e_{R1}$  are gross substitutes: an increase in  $e_{L1}$  decreases the marginal electoral return to  $e_{R1}$ , and vice-versa. Perhaps the only plausible distribution which does not satisfy Assumption 1 is the uniform distribution: if  $\theta_s$  is distributed uniformly the marginal electoral return to support is constant, i.e. independent of the level of support in either sector. A U-shaped distribution would not satisfy Assumption 1, but it seems empirically unlikely that extreme competence would be more common than average competence.

All propositions in this subsection are simple implications of Proposition 1 and Assump-

tion 1, where we recall that  $\frac{Z_H N_H}{Z_L N_L} = \frac{[\gamma + T_H(\gamma_R - \gamma)] N_H}{[\gamma + T_L(\gamma_R - \gamma)] N_L}$ . For reasons of space, proofs are omitted.

“Support” refers to support in period 1.

**Proposition 2.** *Support for the low-taxability sector is decreasing in  $\gamma_R$ , while support for the high-taxability sector is increasing in  $\gamma_R$ . Support for the low-taxability sector is increasing in  $\gamma$ , while support for the high-taxability sector is decreasing in  $\gamma$ .*

The parameter  $\gamma_R$  captures the degree to which transfers are important to recipients (relative to other issues), while  $\gamma$  reflects the extent to which post-tax profits are important to active-sector voters. If transfers are important ( $\gamma_R$  is high), then the politician will try to win votes by increasing tax revenues, which is easiest if he supports the high-taxability sector. In contrast, if post-tax profits are important ( $\gamma$  is high), then the politician will attempt to increase his chances of reelection by pleasing active-sector voters, which is easier if he supports the low-taxability sector (high-taxability voters discount government performance since higher profits are taxed away).

This result – that the degree to which the high-taxability sector is favored depends on the value that taxpayers and recipients place on government performance vs. other issues – is not obvious from simple arguments that the government is more likely to favor sectors that are easy to tax. As the following proposition shows, if  $\gamma_R < \gamma$ , greater taxability actually results in *less* government support: active-sector voters are more inclined to reward performance than are recipients, but do so less, the more the profits from that performance are taxed away.

**Proposition 3.** *Support is increasing in own-sector taxability, i.e.  $\frac{\partial e_{s1}^*}{\partial T_s} > 0$ , if  $\gamma_R > \gamma$ ; is decreasing if  $\gamma_R < \gamma$ ; and is constant if  $\gamma_R = \gamma$ .*

Nonetheless, a reasonable guess is that in many political-economic contexts recipients care more about transfers than do taxpayers about post-tax profits, i.e.  $\gamma_R > \gamma$ . Pensioners and other recipients of government transfers may be particularly dependent on government performance for their standard of living, and thus particularly likely to reward or punish politicians based on their ability to provide those transfers. The enduring image of Dan Rostenkowski under physical assault by AARP members is a potent reminder of the salience of redistributive transfers to those who rely on them most.

**Proposition 4.** *Support for the low-taxability sector is increasing in the ratio of the size of the low- and high-taxability sectors,  $\frac{N_L}{N_H}$ , while support for the high-taxability sector is decreasing in this ratio.*

As discussed above, there are two reasons a sector is more likely to receive a politician's attention if it is large: there are many voters in that sector, and the sector accounts for a large share of government revenues. The dilemma of firms stuck in the smaller sector is captured in the following statement by a representative of the Russian information-technology industry:

Our country's primary misfortune is its enormous quantity of natural resources, which allow the government to practically ignore all other branches of

the economy, which together are only a meager fraction of the size of the natural-resource sector.<sup>9</sup>

Proposition 4, while reasonable, is not too surprising. The following proposition is initially more counterintuitive:

**Proposition 5.** *The level of support for each sector is independent of the size of the recipient population,  $N_R$ .*

At first blush, this seems implausible: more recipients should drive greater demand for tax revenues, which should encourage the government to support the high-taxability sector. But Proposition 5 refers to a shift in  $N_R$  for a given  $T_L$  and  $T_H$ . Holding taxability in each sector constant, an increase in the number of recipients simply results in less to go around. While more individuals base their vote on the politician's competence in providing transfers, each such voter attaches less weight to competence and more to other issues, since competence means less when the number of recipients is large.

In this model, it is the government's "power to tax" (Brennan and Buchanan 1980) –  $T_L$  and  $T_H$  – rather than the size of the recipient population that drives the politics of redistribution. Countries where little tax revenue can be extracted from economic agents should find their politics dominated by other considerations. One might expect governments in those countries to thus be less likely to favor economic activity simply because it is highly taxable. In fact, the following proposition shows that the opposite result holds.

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<sup>9</sup>Karachinskii (2001, p. 47). Author's translation from the Russian.

**Proposition 6.** Define  $T \equiv \frac{T_L + T_H}{2}$ ,  $\Delta \equiv T_H - T_L$ .<sup>10</sup> So long as  $\gamma_R \neq \gamma$ , support for the low-taxability sector is increasing in  $T$ , while support for the high-taxability sector is decreasing in  $T$ . If  $\gamma_R = \gamma$ , support for each sector is independent of  $T$ .

Holding constant the difference in taxability between the two sectors, an increase in the overall tax capacity of the government results in a reallocation of government support away from the high-taxability sector towards the low-taxability sector. To see why this is the case, recall from Proposition 3 that  $\gamma_R > \gamma$  implies that the politician will *more* be inclined to support a sector if it is more taxable. That result holds for both sectors, but it matters more (in elasticity terms) for the low-taxability sector since  $[\gamma + T_L(\gamma_R - \gamma)] < [\gamma + T_H(\gamma_R - \gamma)]$ . In contrast, if  $\gamma_R < \gamma$ , a politician will be *less* inclined to support a sector if it is more taxable. Again, that result holds for both sectors, but with  $\gamma_R < \gamma$  it matters more for the high-taxability sector, since now it is true that  $[\gamma + T_L(\gamma_R - \gamma)] > [\gamma + T_H(\gamma_R - \gamma)]$ . More concisely, an increase in overall tax capacity affects the low-taxability sector more when taxability translates into increased political support, and affects the high-taxability sector more when taxability translates into decreased political support. Only when  $\gamma_R = \gamma$ , i.e. when by Proposition 3 taxability does not matter at all, does overall tax capacity have no effect. As we will see in Section 3, it is in fact the case that differences in taxability matter less in postcommunist countries the more the government extracts in tax revenues, though

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<sup>10</sup>Note that it does not matter where we “anchor” overall tax capacity, i.e. we can choose any  $T$  between  $T_L$  and  $T_H$ , since this comparative-static result is with respect to a common change in the level of  $T_L$  and  $T_H$ , holding the difference between  $T_L$  and  $T_H$  constant.

only for those countries with well-developed political rights and civil liberties.

**Proposition 7.** *Support for the low-taxability sector is decreasing in  $\Delta$  if  $\gamma_R > \gamma$ , increasing if  $\gamma_R < \gamma$ , and constant if  $\gamma_R = \gamma$ . Conversely, support for the high-taxability sector is increasing in  $\Delta$  if  $\gamma_R > \gamma$ , decreasing if  $\gamma_R < \gamma$ , and constant if  $\gamma_R = \gamma$*

Proposition 7 is closely related to Proposition 3: holding the overall level of taxability constant, an increase in the “taxability gap” results in more support for the high-taxability sector (and less for the low-taxability sector) only if  $\gamma_R > \gamma$ . Politicians are more inclined to support highly taxable activity when they are rewarded for producing government transfers. They are more likely to support less-taxable activity when they are rewarded for producing post-tax profits.

## 2.4. Model With Public Good

In addition to redistributive transfers, taxes can be used to pay for public goods. In this subsection we modify the model above so that there is no recipient sector, with taxes paying for a public good consumed by all members of the active population. As will be seen, the same qualitative results hold in this alternative formulation, despite the fact that redistributive transfers and public goods differ in the nature of the conflicts of interest they generate.

Since there are no recipients of redistributive transfers,  $(N_L + N_H) = 1$ . Denote per-capita

consumption of the public good as  $g_t$ . The government budget constraint then implies:

$$g_t = (N_L + N_H)g_t = N_L T_L(e_{Lt} + \theta_L) + N_H T_H(e_{Ht} + \theta_H) \quad (2.16)$$

Assume that all individuals receive utility from consumption of the public good of  $\alpha g_t$ .

Then an individual in sector  $L$  will vote for the incumbent if:

$$\begin{aligned} & (1 - T_L)(e_{L2}^* + \tilde{\theta}_L) + \alpha[N_L T_L(e_{Lt}^* + \tilde{\theta}_L) + N_H T_H(e_{Ht}^* + \tilde{\theta}_H)] \\ \geq & \delta_i + (1 - T_L)(e_{L2}^*) + \alpha[N_L T_L(e_{Lt}^*) + N_H T_H(e_{Ht}^*)] \end{aligned} \quad (2.17)$$

i.e., if:

$$\delta_i \leq (1 - T_L)\tilde{\theta}_L + \alpha(N_L T_L \tilde{\theta}_L + N_H T_H \tilde{\theta}_H) \quad (2.18)$$

This implies that the proportion of voters in sector  $L$  supporting the incumbent is:

$$\frac{1}{2} + \gamma[(1 - T_L)\tilde{\theta}_L + \alpha(N_L T_L \tilde{\theta}_L + N_H T_H \tilde{\theta}_H)] \quad (2.19)$$

A similar expression can be found for the proportion of voters in sector  $H$  supporting the incumbent. Summing across all voters, the total vote for the incumbent is:

$$\frac{1}{2} + [1 + T_L(\alpha - 1)]\gamma N_L \tilde{\theta}_L + [1 + T_H(\alpha - 1)]\gamma N_H \tilde{\theta}_H \quad (2.20)$$

Defining  $z_s = [1 + T_s(\alpha - 1)]$ , the probability the incumbent wins is then:

$$\Pr\left[\frac{1}{2} + \gamma(z_L N_L \tilde{\theta}_L + z_H N_H \tilde{\theta}_H) \geq \frac{1}{2}\right] = \Pr(z_L N_L \tilde{\theta}_L + z_H N_H \tilde{\theta}_H \geq 0) \quad (2.21)$$

which is exactly analogous to the second term in (2.13). Thus, the equilibrium in the public-goods model is isomorphic to that in the redistributive-transfers model, and comparative-statics results are similar, where the terms in  $z_s$  replace those in  $Z_s$ . These similarities can be captured in the following two propositions:

**Proposition 8.** *(Proposition 2 analogue.) In the public-goods model, support for the low-taxability sector is decreasing, and support for the high-taxability sector is increasing, in the degree to which individuals value the public good,  $\alpha$ .*

**Proposition 9.** *In the public goods model, Propositions 3, 4, 6, and 7 hold, where the condition  $\gamma_R \gtrless \gamma$  is replaced by the condition  $\alpha \gtrless 1$ .*

Proposition 5 is obviously irrelevant in the public-goods model, as there is no recipient population. In this model, every voter is both taxpayer and consumer of public goods, implying that conflicts of interest between groups are muted, but that each voter must weigh the desire for public goods against their cost. As Propositions 8 and 9 show, the qualitative result is the same. The more individuals value the public good, the greater the incentive of the government to obtain tax revenues to provide that good, which it can best do by supporting the high-taxability sector. If the public good is provided such that

marginal social benefit is greater than marginal social cost (ignoring the cost of government support), i.e.  $\alpha > 1$ , then an increase in taxability encourages greater government support. As before, an increase in the overall tax capacity of the government, i.e. an increase in  $T \equiv \frac{T_L + T_H}{2}$  holding  $\Delta \equiv T_H - T_L$  constant, encourages the government to provide more support to the low-taxability sector.

### **3. Empirical Evidence - Government Support of Business in Post-communist States**

Taxability of economic activity is a major issue for postcommunist states. Under communism, tax revenues were collected primarily from state enterprises through profit, turnover, and payroll taxes (see, e.g., Martinez-Vazquez and McNab 2000). This concentration of taxes in a relatively small number of state enterprises, plus the fact that funds were channeled primarily through the state banking system, meant that tax compliance in socialist states was quite high by world standards (Kodrzycki and Zolt 1994, Tanzi and Tsibouris 2000). Liberalization of economic activity and privatization meant that states had to reform tax policy, replacing turnover taxes with a VAT and reforming existing profit, payroll, and personal-income taxes (Hemming, Cheasty, and Lahiri 1995). No less importantly, states were obligated to fundamentally restructure their systems of tax administration, a task hindered by state collapse and civil strife in much of the postcommunist world (Ebrill

and Havrylyshyn 1999).<sup>11</sup> Finally, the degree to which new tax systems could be effective was dependent on progress in modernizing corporate accounting systems, to this day an incomplete process in many postcommunist countries (see, e.g., Gorsky 2001). In the absence of complete tax reform, an entire economy has been built around tax evasion in much of the postcommunist world, with by-now well-established procedures for evading taxes at little cost (Yakovlev 2000).

Table 1 shows that the challenge of collecting tax revenues has been greater in some states than others.<sup>12</sup> Overall, the high-reform states of eastern Europe and the Baltics have done a better job of reforming their tax systems and maintaining tax capacity, as well as pursuing economic and political reforms more generally. Among the former Soviet republics, Belarus is the exception that proves the rule: having engaged in essentially no economic or political reform, it has been able to continue extracting taxes from the economy in a way that other postsoviet states have not.

This section examines the impact of taxability on government support for firms in postcommunist countries, using data from the World Bank/EBRD Business Environment and Enterprise Performance Survey (BEEPS). Through the BEEPS project, a total of 4104 firms in twenty-six countries were surveyed in 1999.<sup>13</sup> The empirical work in this paper uses

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<sup>11</sup>Russia's federal system has also created perverse incentives to undercollect taxes. See Treisman (1999).

<sup>12</sup>Effective tax rates have been studied in a more systematic way by Schaffer and Turley (2000), who compare yields for various taxes across postcommunist countries, and Ivanenko (2001), who focuses on Russia.

<sup>13</sup>For details about the survey and its implementation, see Hellman, Jones, Kaufmann, and Schankerman (2000).

data from twenty-three of those twenty-six countries. Firms in Bosnia-Herzegovina and the semi-autonomous Serb Republic in Bosnia were not included since the long war in those two entities makes comparisons with other postcommunist countries difficult, while Turkey was dropped because it is not a postcommunist country. In all, the dataset comprises 3762 firms in the twenty-three postcommunist countries listed in Table 1.

Table 2 presents summary statistics for the firms in the sample. The businesses interviewed are not large: all have 1000 employees or fewer, and mean employment is 144. A majority (56 percent) are *de novo* enterprises, 29 percent are privatized companies, and 16 percent are state enterprises. Manufacturing enterprises make up a plurality of all firms interviewed, accounting for 30 percent of the total, but other sectors are well represented.

The BEEPS questionnaire contains a wide range of questions on business-state relations in postcommunist countries, including revenue reporting to tax authorities. Table 3 displays the responses of firms interviewed to those questions most closely related to the topic of this paper. On average, firms replied that firms “like theirs” reported 80 percent of their revenues to tax authorities, though variation in responses is quite large.<sup>14</sup> In the empirical work below, we use revenue reporting as a proxy for the taxability of the firm, implicitly

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<sup>14</sup>For this question, and the bribe and time-tax questions used as dependent variables in the OLS regressions, respondents were allowed to choose from a number of percentage ranges (e.g. “2-9.99 percent”) rather than asked to name a number between 0 and 100. These questions were reconstructed as continuous variables due to the large number of possible responses, the inherently continuous (and linear) nature of the underlying variables, the need to interact revenue reporting with other variables, and the desire to construct a variable that excluded bribe payments to tax authorities. Responses were coded as the midpoint of the range for the category chosen (e.g. “2-9.99 percent” is recorded as 6 percent), except for responses such as “more than 50 percent,” which were coded as the low end of the range (i.e. 50 percent).

assuming that tax rates are roughly the same across postcommunist countries. Recall from the discussion in Section 2 that a key assumption of the model is that the tax behavior of individual firms is not observed by politicians making support decisions, meaning that firms will hide all they can get away with given the probability of (and punishment for) being caught underreporting. Thus, taxability will be the proportion of revenues firms feel they must report, times the tax rate.<sup>15</sup>

In all, six separate variables are used as indicators of government support for business activity. All variables are scaled such that a higher response indicates less support. Three of the six variables measure bribe payment: a quantitative measure of the percent of revenues (not profits) paid as bribes to public officials; a similar measure where the proportion of bribes paid to tax or customs officials has been subtracted out, since our key independent variable is revenue reporting and firms might pay bribes to avoid tax payments; and a qualitative measure of the necessity of paying bribes. Other variables capture other elements of government-business relations: the percent of management time spent with government officials, whether contracts or property rights are (not) enforced, and a subjective measure of the degree to which local governments are (not) helpful. As can be seen from Table 3, across all six measures, firms report widely varying levels of political support.

Table 4 provides micro-level evidence of the revenue-collection problems summarized in

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<sup>15</sup>One possible objection to the regressions reported below is that countries with higher tax rates might have both lower revenue reporting and less supportive governments. In fact, revenue reporting remains a precisely estimated predictor of government performance when country dummies are included in place of the EBRD transition indicator (high collinearity rules out including both simultaneously), reinforcing the conclusion that politicians discriminate against those sectors which produce less revenue.

the cross-country statistics in Table 1. Controlling for a variety of firm characteristics, enterprises in high-reform countries report hiding substantially less revenue from tax authorities than enterprises in low-reform countries.<sup>16</sup> Further, the magnitude of this effect doubles once firms in Belarus are dropped from the sample, as the virtual absence of reform in that country has allowed the state to maintain the high level of tax collection associated with socialist regimes. To avoid dealing with this no-reform effect by introducing a quadratic term for reform or a country dummy for Belarus (which would be especially cumbersome when interacting reform with revenue reporting in the regressions reported in Tables 6 and 7), firms in Belarus are excluded from the sample in all subsequent regressions.

Revenue reporting is also influenced by a variety of firm characteristics. Most notably, small firms are considerably more likely to hide revenues than large firms: on average, an enterprise with 1000 employees reports 17 percentage points more of its revenues to tax authorities than a firm with only one employee. There are various reasons small firms might report less of their revenues, including the likely fact that a larger proportion of their transactions are cash-based and thus easy to hide, a factor which could also explain the greater inclination of firms in the personal-service and transportation sectors to hide revenues. Wholesale firms also report hiding more, while firms in the finance sector report hiding less. Finally, control rights and information asymmetries might explain why state enterprises report more of their revenues to tax authorities than do privatized enterprises,

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<sup>16</sup>In these and all subsequent regressions, robust standard errors are reported due to substantial heteroscedasticity in the data.

which in turn report more than do *de novo* firms, though the estimated coefficients on those terms are not precisely estimated.<sup>17</sup>

Table 5 examines the first of two key implications of the model presented in Section 2. When individuals in the recipient sector attach greater political salience to government transfers than do individuals in active sectors to post-tax profits ( $\gamma_R > \gamma$ ), or when a public good is provided such that its marginal social benefit is greater than its marginal social cost ( $\alpha > 1$ ), politicians will have an incentive to disproportionately support high-taxability sectors. A reasonable guess is that these two conditions are met, and Table 5 shows that firms reporting more revenues are indeed systematically favored over those reporting less. Controlling for a variety of country and firm characteristics in OLS and ordered-probit regressions, firms reporting more revenues pay less in bribes, spend less time with government officials, are more likely to have their contracts and property rights enforced, and are more likely to say that local governments are helpful. This effect is very precisely estimated for all six measures of government support, and marginal effects (roughly observable in the case of ordered-probit regressions by comparing the magnitude of the coefficients to the difference in the cutpoints) are large.

While consistent with the model discussed above, the prediction that the government will discriminate against less-taxable firms can also be derived from a simpler model of a revenue-maximizing politician (see, e.g., Gehlbach 2002). More specific to the model in this

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<sup>17</sup>On the role of control rights in determining revenue hiding, see Che and Qian (1998) and Roland and Verdier (1999).

paper is the argument that the degree to which high-taxability firms are favored is decreasing in the overall level tax capacity of a country, a prediction which does not necessarily follow from a revenue-maximization model. Tables 6 and 7 report the results of regressions where this proposition is tested, interacting the percent of revenues reported by the firm to tax authorities with the percent of GDP collected as taxes by all levels of government of the country in which the firm resides. (Revenue reporting is also interacted with the EBRD transition indicator to control for the possibility that revenue hiding matters less in high-tax countries simply because those countries are more likely to have implemented economic reforms.)

As can be seen from Tables 6 and 7, the proposition that high-taxability firms will be less likely to be favored in high-tax countries fares quite well for the subsample of firms in countries rated as “free” according to their political rights and civil liberties by the non-governmental organization Freedom House (Table 6), but not for firms located in countries rated as “partially free” or “not free” (Table 7). For five of the six measures of government support, the degree to which revenue reporting is a predictor of government support is decreasing in the percent of GDP collected as tax revenues by all levels of government, and for four of those five measures the estimated coefficient on the interaction term is statistically significant from zero at the five percent level. Only for the qualitative measure of bribe payment are the estimated coefficients on revenue reporting and its interaction with tax

capacity inconsistent with the theory in Section 2.<sup>18</sup>

In contrast, the effect of country tax capacity on the degree to which revenue reporting matters as a determinant of government support is imprecisely estimated for five of the six regressions reported in Section 7, and for the sixth the sign on the coefficient is inconsistent with the theory being tested. Nonetheless, when the interaction term is dropped and government support is simply regressed on revenue reporting and covariates as in Table 5, one obtains the same result for the subsample of firms in “partially free” or “not free” countries as for the whole sample: the more a firm reports hiding revenues from tax authorities, the less support it receives from government officials. In other words, for those countries with poorly developed political rights and civil liberties, the empirical results of this section are inconsistent with the electoral-competition model presented in Section 2, but are consistent with a simpler model of a revenue-maximizing politician who discriminates between sectors

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<sup>18</sup>The model in Section 2 suggests two possible sources of omitted-variable bias in these regressions. First, it is possible that public goods or redistributive transfers are valued less in high-tax countries, i.e. that  $\alpha$  or  $\gamma_R$  are lower in countries collecting more tax revenues. Obviously, these variables are difficult to observe directly, but there seems little reason *a priori* to suspect that they vary systematically across countries. If anything, it is plausible that in the postcommunist world public goods and transfers are provided with less waste (and thus more valued) in countries with more capacity to collect tax revenues, since those countries will have generally effective state institutions.

Second, it is conceivable that the ratio of high-taxability to low-taxability firms,  $\frac{N_H}{N_L}$ , is smaller in countries with high tax capacity; according to Proposition 4, this would encourage more support for low-taxability firms in those countries. In principle, we could control for this effect by interacting revenue reporting with the ratio of employment in firms more likely to report revenues to that in firms less likely to do so, e.g. the ratio of employment in large vs. small enterprises. In practice, such data are not collected in every country, and (especially with respect to small-enterprise employment) where collected do not always use the same definitions. World Bank (2002, p. 41) reports share of employment in small enterprises for nine postcommunist countries, five of which are rated “free” by Freedom House. For the nine countries reported, variation within “freedom” group is in fact very small, while variation across groups is large. Moreover, the correlation between small-enterprise employment and tax capacity within the “free” group is *negative*, not positive as would need to be the case for omission of the variable  $\frac{N_H}{N_L}$  to bias results in the observed direction.

based on their taxability. In a sense, this is not surprising: the electoral-competition model of this paper assumes that democratic politics function in more-or-less “normal” fashion. To the extent that this assumption fails to hold (as it likely does in countries with incomplete political rights and civil liberties), one should not expect the model’s predictions to necessarily accord with empirical reality. Politicians in less democratic countries may be motivated by revenue concerns for nonelectoral reasons, while the desire to be reelected may dominate the calculus of support for politicians in more democratic states.

#### **4. Conclusion**

This paper has stressed the electoral incentives of politicians to support business activity in an environment in which economic sectors differ according to their taxability. In so doing, a number of simplifying assumptions were made. Most significantly, factors of production were assumed not to be mobile across sectors. In fact, as shown in Gehlbach (2002), factor mobility can exaggerate the impact of differences in taxability, as the size and taxability of a sector encourage government support, which in turn encourages factors to migrate to that sector, etc. A natural extension of the model in this paper would be to consider the impact of factor mobility in the present electoral context.

Second, the empirical results in Section 3 suggest that the model might be generalized to allow for differences in the degree to which elections are important to political survival. Such a generalization could demonstrate more precisely when one would expect the electoral

incentives in the current model to dominate.

Finally, the model might be extended to include nonelectoral incentives to increase tax revenues, including the desire to use government funds for personal use or aggrandizement. Such incentives may interact in subtle ways with the electoral pressures present in this model, as the availability of government funds for personal use decreases the importance voters attach to competence (much as taxability does for active-sector voters in this paper), while simultaneously increasing the desire of politicians to be reelected.

## 5. Appendix

### Proof of Proposition 1:

To find the optimal level of support, we must derive  $\frac{\partial \Pr(\text{win}|e_{L1}, e_{H1})}{\partial e_{L1}}$  and  $\frac{\partial \Pr(\text{win}|e_{L1}, e_{H1})}{\partial e_{H1}}$ .

Concentrating first on  $\frac{\partial \Pr(\text{win}|e_{L1}, e_{H1})}{\partial e_{L1}}$ , we can rewrite (2.13) as:

$$\Pr[\theta_L \geq (\tilde{e}_{L1} - e_{L1}) + \frac{Z_H N_H}{Z_L N_L} (\tilde{e}_{H1} - e_{H1} - \theta_H)] \quad (5.1)$$

Given our assumptions about the distribution of  $\theta_s$ , this is equivalent to:

$$\begin{aligned} & \int_{-a}^a \int_{(\tilde{e}_{L1} - e_{L1}) + \frac{Z_H N_H}{Z_L N_L} (\tilde{e}_{H1} - e_{H1} - \theta_H)}^a f(\theta_L) d\theta_L \cdot f(\theta_H) d\theta_H \\ &= \int_{-a}^a [1 - F((\tilde{e}_{L1} - e_{L1}) + \frac{Z_H N_H}{Z_L N_L} (\tilde{e}_{H1} - e_{H1} - \theta_H))] f(\theta_H) d\theta_H \end{aligned} \quad (5.2)$$

where without loss of generality we define the support of  $\theta_s$  as  $[-a, a]$ . Thus,

$$\frac{\partial \Pr(\text{win} | e_{L1}, e_{H1})}{\partial e_{L1}} = \int_{-a}^a f((\tilde{e}_{L1} - e_{L1}) + \frac{Z_H N_H}{Z_L N_L} (\tilde{e}_{H1} - e_{H1} - \theta_H)) f(\theta_H) d\theta_H \quad (5.3)$$

In equilibrium,  $\tilde{e}_{s1} = e_{s1}$ , so this is equivalent to

$$\int_{-a}^a f(-\frac{Z_H N_H}{Z_L N_L} \theta_H) f(\theta_H) d\theta_H = \bar{f}(-\frac{Z_H N_H}{Z_L N_L})$$

The optimal level of support for the low-taxability sector immediately follows.

To derive  $\frac{\partial \Pr(\text{win}|e_{L1}, e_{H1})}{\partial e_{H1}}$ , it is easier if we rewrite (2.13) as:

$$\Pr[\theta_H \geq (\tilde{e}_{H1} - e_{H1}) + \frac{Z_L N_L}{Z_H N_H} (\tilde{e}_{L1} - e_{L1} - \theta_L)] \quad (5.4)$$

Taking the derivative of this with respect to  $e_{H1}$  gives us  $\bar{f}(-\frac{Z_L N_L}{Z_H N_H})$ , and the optimal level of support for the high-taxability sector follows.

■

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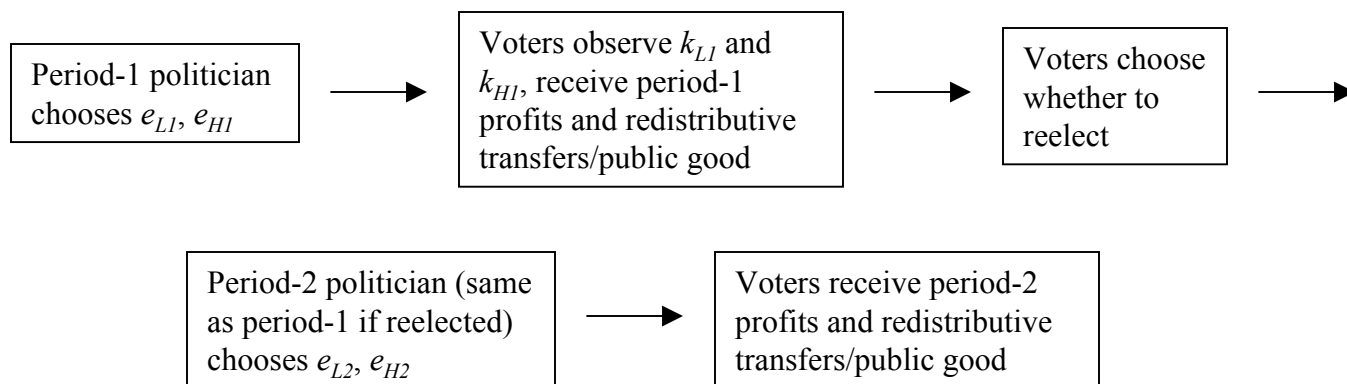
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Figure 1: Timing of Events



**Table 1: Tax Capacity and Reform Progress in Postcommunist Countries**

	<b>1999 General Government Revenue as Percent of GDP</b>	<b>1999 EBRD Average Transition Indicator</b>	<b>1999 Freedom House Rating</b>	<b>Firms in BEEPS Sample</b>
<b><u>Eastern Europe and Baltics</u></b>				
Albania	21.3	2.5	Partially Free	163
Bulgaria	39.8	2.9	Free	130
Croatia	42.8	3.0	Partially Free	127
Czech Republic	38.7	3.4	Free	149
Estonia	36.4	3.5	Free	132
Hungary	39.1	3.7	Free	147
Latvia	40.1	3.1	Free	166
Lithuania	31.7	3.1	Free	112
Macedonia	38.0	2.8	Partially Free	136
Poland	40.2	3.5	Free	246
Romania	33.3	2.8	Free	125
Slovakia	39.7	3.3	Free	138
Slovenia	43.6	3.3	Free	125
<b>Average EE and Baltics</b>	<b>37.3</b>	<b>3.1</b>		
<b><u>CIS</u></b>				
Armenia	20.3	2.7	Partially Free	125
Azerbaijan	18.9	2.2	Partially Free	137
Belarus	45.7	1.5	Not Free	132
Georgia	15.4	2.5	Partially Free	129
Kazakhstan	17.4	2.7	Not Free	147
Kyrgyzstan	24.0	2.8	Partially Free	132
Moldova	27.4	2.8	Partially Free	139
Russia	35.1	2.5	Partially Free	552
Ukraine	33.7	2.4	Partially Free	247
Uzbekistan	30.4	2.1	Not Free	126
<b>Average CIS</b>	<b>26.8</b>	<b>2.4</b>		

Notes: Countries included are those represented in the BEEPS dataset (less Turkey, Bosnia-Herzegovina, and the Serb Republic in Bosnia). Government revenue figures are imputed from expenditure and balance data in EBRD (2001). EBRD transition indicators are from EBRD (1999). Freedom House ratings are from Freedom House (2002).

**Table 2: Firm Characteristics**

<u>Variable</u>	<u>Mean/proportion</u>
Employment	144 (174)
State	0.16
Privatized	0.29
De novo	0.56
Manufacturing sector	0.30
Resource sector	0.13
Construction sector	0.09
Wholesale sector	0.14
Retail sector	0.14
Transportation sector	0.06
Finance sector	0.02
Personal-service sector	0.06
Business-service sector	0.06
Other sector	0.02

Note: Standard deviation of employment reported in parentheses.

**Table 3: Business-State Relations in Postcommunist Countries**

Variable Name	Question on Survey	Responses					
		Mean	Standard deviation				
<b>A. Revenue Reporting</b>							
Percent of revenues reported	“What percentage of sales of a typical firm in your area of activity would you estimate is reported to the tax authorities, bearing in mind difficulties in complying with taxes and other regulations?”	80.0	24.8				
<b>B. Dependent Variables in OLS Regressions</b>		Mean	Standard deviation				
Bribe payments as percent of revenues	“On average, what percent of revenues do firms like yours typically pay per annum in unofficial payments to public officials?”	2.6	4.8				
Non-tax bribe payments as percent of revenues	Previous question, subtracting out that proportion of unofficial payments spent “to deal with taxes and tax collection” and “to deal with customs/imports.”	1.7	3.3				
Percent of management time spent with government officials	“What percentage of senior management’s time per year is spent dealing with government officials about the application and interpretation of laws and regulations?”	9.9	12.7				
<b>C. Dependent Variables in Ordered-Probit Regressions</b>							
		Never	Seldom	Sometimes	Frequently	Usually	Always
Common to pay bribes to get things done	“Thinking about officials, would you say the following statement is always, usually, frequently, sometimes, seldom, or never true? ‘It is common for firms in my line of business to pay some irregular ‘additional payments’ to get things done.’”	1116 32.8%	481 14.2%	729 21.5%	440 13.0%	421 12.4%	211 6.2%
		Fully agree	Agree in most cases	Tend to agree	Tend to disagree	Disagree in most cases	Strongly disagree
Contracts and property rights not enforced*	“To what degree do you agree with this statement? ‘I am confident the legal system will uphold my contract and property rights in business disputes.’”	237 6.4%	577 15.5%	1057 28.3%	929 24.9%	568 15.2%	366 9.8%
		Very helpful	Mildly helpful	Neutral	Mildly unhelpful	Very unhelpful	
Local government not helpful*	“How helpful do you find local/regional governments towards businesses like yours?”	165 4.5%	677 18.5%	1040 28.4%	646 17.7%	1132 30.9%	

Note: Exact wording of questions in quotation marks. For those variables marked with asterisk, response ordering reversed (and variable name revised) so that “higher” response consistently reflects less government support.

**Table 4: Determinants of Revenue Reporting - OLS Regressions**  
(Significance levels: 10% - \*; 5% - \*\*; 1% - \*\*\*)

	Percent of Revenues Reported (Full Sample)		Percent of Revenues Reported (Firms in Belarus Excluded)	
	<u>Estimated coefficient</u>	<u>Robust std. error</u>	<u>Estimated coefficient</u>	<u>Robust std. error</u>
Country reform	3.88***	0.87	8.56***	1.00
Employment (100s)	1.92***	0.29	1.72***	0.30
State	1.66	1.35	1.50	1.38
Denovo	-1.52	1.10	-1.58	1.12
Resource sector	0.60	1.41	0.28	1.46
Construction sector	-0.07	1.63	-0.18	1.67
Wholesale sector	-2.80*	1.41	-2.93**	1.43
Retail sector	-1.88	1.39	-2.31	1.42
Transportation sector	-4.78**	1.91	-5.19**	1.94
Finance sector	8.84***	3.41	7.92***	3.42
Personal-service sector	-4.75**	1.93	-4.88**	1.94
Business-service sector	1.08	1.91	0.78	1.92
Other sector	0.14	3.67	0.34	3.76
Constant	67.96***	2.65	54.49***	3.02
N		.043		.055
R <sup>2</sup>		3399		3276

Note: Omitted categories for dummy variables: privatized and manufacturing firms. Country reform is EBRD average transition indicator for 1999.

**Table 5: Effect of Revenue Reporting on Government Support**  
(Significance levels: 10% - \*; 5% - \*\*; 1% - \*\*\*)

**OLS Regressions**

	<b><u>Bribe Payments as Percent of Revenues</u></b>		<b><u>Non-Tax Bribe Payments as Percent of Revenues</u></b>		<b><u>Percent of Management Time Spent with Government Officials</u></b>	
	<b><u>Estimated coefficient</u></b>	<b><u>Robust std. error</u></b>	<b><u>Estimated coefficient</u></b>	<b><u>Robust std. error</u></b>	<b><u>Estimated coefficient</u></b>	<b><u>Robust std. error</u></b>
<b>Percent of revenues reported</b>	-0.027***	0.004	-0.020***	0.003	-0.022**	0.010
Country tax capacity	-0.08***	0.02	-0.01	0.01	-0.04	0.04
Country reform	-1.08***	0.25	-0.70***	0.2	-3.55***	0.66
Employment (100s)	-0.17***	0.05	-0.15***	0.04	0.18	0.17
N		2575		2307		2980
R <sup>2</sup>		.103		.079		.037

**Ordered-Probit Regressions**

	<b><u>Common to Pay Bribes To Get Things Done</u></b>		<b><u>Contracts and Property Rights Not Enforced</u></b>		<b><u>Local Government Not Helpful</u></b>	
	<b><u>Estimated coefficient</u></b>	<b><u>Robust std. error</u></b>	<b><u>Estimated coefficient</u></b>	<b><u>Robust std. error</u></b>	<b><u>Estimated coefficient</u></b>	<b><u>Robust std. error</u></b>
<b>Percent of revenues reported</b>	-0.008***	0.001	-0.002***	0.001	-0.003***	0.001
Country tax capacity	-0.02***	0.00	0.01***	0.00	0.004	0.003
Country reform	-0.16***	0.06	-0.47***	0.06	-0.25***	0.06
Employment (100s)	-0.04***	0.01	-0.03***	0.01	-0.07***	0.01
Cutpoint 1	-2.08	0.15	-2.88	0.15	-2.70	0.15
Cutpoint 2	-1.68	0.15	-2.12	0.15	-1.69	0.14
Cutpoint 3	-1.08	0.15	-1.29	0.14	-0.87	0.14
Cutpoint 4	-0.63	0.15	-0.60	0.14	-0.39	0.14
Cutpoint 5	0.08	0.15	0.05	0.14		
N		2987		3260		3189
Maximized log likelihood		-4846.08		-5360.03		-4588.66
Chi-squared statistic		358.77		222.98		214.25

Notes: Ownership and sector dummies (listed in Table 4) included in all regressions. Firms in Belarus excluded. Country tax capacity is general government revenue as percent of GDP for 1999. Country reform is EBRD average transition indicator for 1999.

**Table 6: Interaction of Revenue-Reporting and Tax-Capacity Effects (“Free” Countries)**

(Significance levels: 10% - \*; 5% - \*\*; 1% - \*\*\*)

**OLS Regressions**

	<b><u>Bribe Payments as Percent of Revenues</u></b>		<b><u>Non-Tax Bribe Payments as Percent of Revenues</u></b>		<b><u>Percent of Management Time Spent with Government Officials</u></b>	
	<b><u>Estimated coefficient</u></b>	<b><u>Robust std. error</u></b>	<b><u>Estimated coefficient</u></b>	<b><u>Robust std. error</u></b>	<b><u>Estimated coefficient</u></b>	<b><u>Robust std. error</u></b>
Percent of revenues reported	-0.26**	0.12	-0.13	0.09	-0.60*	0.37
Revenues reported*tax capacity	0.007***	0.003	0.004**	0.002	0.006	0.007
Revenues reported*reform	-0.01	0.02	-0.01	0.01	0.10	0.07
Country tax capacity	-0.71***	0.24	-0.37**	0.18	-0.96	0.63
Country reform	-0.17	1.35	-0.08	1.34	-7.16	5.90
Employment (100s)	-0.25***	0.05	-0.19***	0.05	0.09	0.20
N		966		864		1155
R <sup>2</sup>		.104		.102		.026

**Ordered-Probit Regressions**

	<b><u>Common to Pay Bribes To Get Things Done</u></b>		<b><u>Contracts and Property Rights Not Enforced</u></b>		<b><u>Local Government Not Helpful</u></b>	
	<b><u>Estimated coefficient</u></b>	<b><u>Robust std. error</u></b>	<b><u>Estimated coefficient</u></b>	<b><u>Robust std. error</u></b>	<b><u>Estimated coefficient</u></b>	<b><u>Robust std. error</u></b>
Percent of revenues reported	0.007	0.029	-0.06***	0.02	-0.11***	0.03
Revenues reported*tax capacity	0.00	0.00	0.001**	0.000	0.002**	0.001
Revenues reported*reform	-0.00	0.01	0.01	0.01	0.011*	0.006
Country tax capacity	-0.01	0.05	-0.09**	0.04	-0.14**	0.06
Country reform	-0.17	0.48	-1.16**	0.46	-2.19***	0.52
Employment (100s)	-0.04	0.02	-0.02	0.02	-0.07***	0.02
Cutpoint 1	-2.14	2.52	-9.20	1.92	-15.30	2.87
Cutpoint 2	-1.65	2.52	-8.42	1.92	-14.23	2.87
Cutpoint 3	-1.06	2.52	-7.43	1.91	-13.17	2.86
Cutpoint 4	-0.50	2.52	-6.76	1.91	-12.65	2.86
Cutpoint 5	0.16	2.52	-6.12	1.91		
N		1165		1286		1241
Maximized log likelihood		-1832.45		-2027.99		-1685.70
Chi-squared statistic		147.32		132.96		212.44

Notes: Ownership and sector dummies (listed in Table 4) included in all regressions. Country tax capacity is general government revenue as percent of GDP for 1999. Country reform is EBRD average transition indicator for 1999. Freedom House ratings are from Freedom House (2002).

**Table 7: Interaction of Revenue-Reporting and Tax-Capacity Effects (“Partially Free” and “Not Free” Countries)**

(Significance levels: 10% - \*; 5% - \*\*; 1% - \*\*\*)

**OLS Regressions**

	<b><u>Bribe Payments as Percent of Revenues</u></b>		<b><u>Non-Tax Bribe Payments as Percent of Revenues</u></b>		<b><u>Percent of Management Time Spent with Government Officials</u></b>	
	<b><u>Estimated coefficient</u></b>	<b><u>Robust std. error</u></b>	<b><u>Estimated coefficient</u></b>	<b><u>Robust std. error</u></b>	<b><u>Estimated coefficient</u></b>	<b><u>Robust std. error</u></b>
Percent of revenues reported	-0.14**	0.06	-0.08*	0.05	0.18	0.14
Revenues reported*tax capacity	0.000	0.001	0.00	0.00	-0.005***	0.001
Revenues reported*reform	0.04	0.03	0.02	0.02	-0.02	0.06
Country tax capacity	-0.08	0.06	-0.02	0.04	0.39***	0.11
Country reform	-4.52*	2.46	-2.80	1.80	-3.56	5.12
Employment (100s)	-0.11	0.07	-0.11**	0.05	0.21	0.24
N	1609		1443		1825	
R <sup>2</sup>	.095		.081		.040	

**Ordered-Probit Regressions**

	<b><u>Common to Pay Bribes To Get Things Done</u></b>		<b><u>Contracts and Property Rights Not Enforced</u></b>		<b><u>Local Government Not Helpful</u></b>	
	<b><u>Estimated coefficient</u></b>	<b><u>Robust std. error</u></b>	<b><u>Estimated coefficient</u></b>	<b><u>Robust std. error</u></b>	<b><u>Estimated coefficient</u></b>	<b><u>Robust std. error</u></b>
Percent of revenues reported	-0.05***	0.01	-0.01	0.01	-0.01	0.01
Revenues reported*tax capacity	0.00	0.00	0.00	0.00	0.00	0.00
Revenues reported*reform	0.02***	0.00	0.01	0.00	0.00	0.00
Country tax capacity	-0.01	0.01	0.03***	0.01	0.00	0.01
Country reform	-1.65***	0.39	-0.07	0.37	0.20	0.37
Employment (100s)	-0.04**	0.02	-0.05***	0.02	-0.07***	0.02
Cutpoint 1	-5.70	0.99	-1.34	0.87	-1.47	0.89
Cutpoint 2	-5.35	0.98	-0.55	0.88	-0.46	0.89
Cutpoint 3	-4.73	0.98	0.19	0.88	0.25	0.89
Cutpoint 4	-4.34	0.98	0.92	0.88	0.73	0.89
Cutpoint 5	-3.59	0.98	1.59	0.88		
N	1822		1974		1948	
Maximized log likelihood	-2976.02		-3252.28		-2811.18	
Chi-squared statistic	222.52		127.62		126.28	

Notes: Ownership and sector dummies (listed in Table 4) included in all regressions. Firms in Belarus excluded. Country tax capacity is general government revenue as percent of GDP for 1999. Country reform is EBRD average transition indicator for 1999. Freedom House ratings are from Freedom House (2002).