Theft and Taxes

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Abstract

This paper analyzes the interaction between corporate taxes and corporate governance. We show that the characteristics of a taxation system affect the extraction of private benefits by company insiders. A higher tax rate increases the amount of income insiders divert and thus worsens governance outcomes. In contrast, stronger tax enforcement reduces diversion and, in so doing, can raise the stock market value of a company in spite of the increase in the tax burden. We also show that the corporate governance system affects the level of tax revenues and the sensitivity of tax revenues to tax changes. When the corporate governance system is ineffective (i.e., when it is easy to divert income), an increase in the tax rate can reduce tax revenues. We test this prediction in a panel of countries. Consistent with the model, we find that corporate tax rate increases have smaller (in fact, negative) effects on revenues when corporate governance is weaker. Finally, this approach provides a novel justification for the existence of a separate corporate tax based on profits.

1.   *Introduction*

The state, thanks to its tax claim on cash flows, is *de facto* the largest minority shareholder in almost all corporations. Yet, the state's actions are not part of the standard analysis of corporate governance, which has typically emphasized legal protections for outside investors (as in La Porta et al. (1998) and Shleifer and Wolfenzon (2002)), the role of boards (e.g., Hermalin and Weisbach (1998)), and the presence of large shareholders (Morck, Shleifer and Vishny (1988)).[1] At the same time, the public finance literature on taxation typically ignores any effects of governance on the functioning of the corporate tax system (see Auerbach (2002), Hassett and Hubbard (1999), and Slemrod andYitzhaki (2002)).

In this paper, we provide a simple reason for why the analysis of corporate governance and taxation should be integrated. Most transactions aimed at diverting corporate value toward controlling shareholders also reduce corporate tax liabilities. Similarly, many procedures aimed at enforcing a corporate tax liability make it more difficult for controlling shareholders to divert corporate value to their own advantage. More generally, the level of diversion and the amount of taxes paid are determined in a game that involves three parties – the state, insiders, and outside shareholders. Our claim is simply that each bilateral interaction has important spillover effects on the third party. How the state designs and enforces taxes influences the relationship between insiders and outside shareholders and the nature of the relationship between insiders and outside shareholders (corporate governance) influences the corporate taxation system.

In a model that adopts this simple insight, we analyze how the corporate tax system affects the level of managerial diversion. A higher tax rate increases the return to stealing by controlling shareholders and worsens governance outcomes. By contrast, increased tax enforcement reduces the amount of private benefits these shareholders can enjoy. Most interestingly, an increase in tax enforcement can increase the amount outside shareholders will receive, even accounting for increased levels of taxation. Accordingly, for a given tax rate, an increase in tax enforcement can increase (rather than decrease) the stock market value of a company.

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[1] This absence is even more remarkable, given that corporate taxes are an integral part of the literature on corporate financing and investment decisions (e.g. Graham (2003)).

Much as the structure of taxation affects corporate governance, the model introduced in the paper also demonstrates that corporate governance affects the working of the tax system. When it is difficult to divert income, we derive the standard result of a relatively direct relation between tax rates and tax revenues. By contrast, when the corporate governance system is ineffective (i.e., when it is easy to divert income) an increase in the tax rate can reduce tax revenues, generating a hump-shaped relationship between corporate tax rates and corporate tax revenues. This arises for the simple reason that when it is easy to divert income, the manager will behave as a residual claimant, accentuating his incentive to shelter income to avoid taxation. As a result, the revenue maximizing tax rate is higher in countries with a better corporate governance system.

This *corporate governance view of taxes* provides a novel justification for the existence of a corporate tax. A separate tax on corporate profits generates an incentive for the government to verify income, ameliorating the agency problem between insiders and outside shareholders. This rationale for the corporate tax is also able to explain why interest payments are tax deductible: being in cash, interest payments do not need any additional certification by the government, and hence have no reason to be subject to a "certification" tax.

We then test the corporate governance and tax policy predictions of our model. To test the corporate governance implications, we focus on Russia, an environment where both managerial diversion and tax evasion are manifest. We study the effect that an increase in tax enforcement (which followed Putin's election) had on stock prices and the value of control (a proxy for the amount of managerial diversion). As predicted by the model, the stock market values of companies targeted by enforcement actions increase and the voting premium for these stocks decrease after the increase in tax enforcement. We also document that increased tax enforcement leads to substantial organizational changes in the targeted companies, changes that make managerial diversion more difficult.

We then test the corporate tax implications of our model by using a panel of countries that vary with respect to their corporate governance rules. In particular, we test the model prediction that the relationship between tax rates and tax revenues will depend upon the underlying corporate governance relationship between inside and outside shareholders. We do this by investigating the revenue consequences of corporate tax rate changes from 1979-1997. Consistent with the model, we find that corporate tax rate increases have a lower impact on tax revenues in countries characterized by weaker

corporate governance. In particular, the empirical estimates suggest that corporate tax rate increases lead to corporate tax revenue increases only in countries with very strong corporate governance. As protection of outside shareholders weakens, we find that the rate increases are associated with lower revenue – consistent with the model implication that rate increases encourage diversion that hides revenue from the tax authorities. This result is robust to a potential endogeneity of the tax rate, since we instrument for it with the ideology of the party in power. Hoping to isolate the impact of the governance environment from other factors that vary across countries, we also include control variables associated with the institutional environment – such as rule of law and measures of tax compliance – and find that these factors do not alter this result.

This corporate governance view of taxes has important implications for the design of tax systems. It suggests that the fiscal effects of any corporate tax reform cannot be assessed without looking at the pre-existing corporate governance situation. This view also suggests a clear direction for reforms in emerging markets. By lowering the tax rate, governments can improve their governance outcomes, with particular gains where governance is weak to begin with. An increase in tax enforcement can provide payoffs to both governments and outside shareholders, as it generates greater revenue and higher outside share values.

Our paper explores only one dimension of the interaction between corporate governance and taxation. Other papers suggest additional costs and benefits of taxes on governance outcomes. Arlen and Weiss (1995) emphasize how taxes, by favoring income retention, can exacerbate the agency problem between managers and shareholders. Roe (1991) claims that in the United States, taxes penalize ownership structures that facilitate monitoring. Morck (2003), in contrast, suggests a possible benefit of the double taxation of dividends in reducing the use of pyramidal ownership structures and Desai and Dharmapala (2004) consider how ownership by managers influences tax sheltering decisions in the U.S. setting.

The rest of the paper proceeds as follows. Section 2 presents a model of the relationship between the tax system and corporate governance that generates several predictions on how corporate taxation affects corporate governance and how corporate governance affects corporate taxation. Section 3 analyzes the normative predictions of this approach and Section 4 elaborates on this new rationale for the existence of a separate corporate tax. Section 5 tests the corporate governance implications of tax

enforcement changes using recent changes in Russia, while Section 6 tests the effects of corporate governance on the impact of corporate tax changes in a panel of countries. Section 7 concludes.

2. *A Simple Model of Tax Evasion and Managerial Diversion[2]*

To examine the relationship between tax systems and corporate governance we start with a relatively standard model of governance to identify a core level of diversion. We then introduce a corporate income tax and explore the influence of the tax on governance outcomes, as well as the impact of the governance environment on tax outcomes. Finally, we explore the robustness of these results to alternative assumptions.

2.1. *The optimal level of diversion*

Let $d \in [0,1]$ be the proportion of income that insiders divert. If insiders own a fraction λ of the company, then, in the absence of any corporate income tax, the payoff to insiders is

$$\lambda(1-d)+d$$

Diverting, however, is costly because insiders can be caught and pay a penalty. We model this cost with the following quadratic function:

$$C(d) = \frac{\gamma}{2}d^2$$

where γ is a parameter that captures the quality of the corporate governance system with a higher γ indicating a better governance system. Hence, in the absence of taxes, the optimal amount of diversion is

(1)
$$d^* = \min(\frac{1-\lambda}{\gamma},1).$$

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[2] For models of tax sheltering that emphasize dynamics within firms but not diversion, see Chen and Chu (2003) and Crocker and Slemrod (2003).

2.2.   *The effect of a corporate income tax*

We now introduce a third player, the government, and analyze how its actions affect the level of diversion. We characterize the tax system through two parameters – the tax rate and the level of enforcement of its tax claim. The tax system affects the choice of the optimal level of diversion in two ways. First, the presence of tax rates makes diversion more likely, as it increases the costs of *not* diverting income (if the income is left with the company, the owner will not receive his per share benefit but a lower amount as a result of taxes). Second, both the government and minority shareholders share an interest in detecting diversion. Hence, the corporate tax introduces an additional monitor (the tax authority), which increases the probability diversion will be detected and, hence, increases the expected cost of diversion.

We model this cost insiders consider when diverting and hiding income from the tax authorities in an analogous way to the cost associated with shareholder oversight. The parameter that captures the quality of enforcement in this case is α.[3] Thus, in the presence of corporate taxation, the total payoff to insiders becomes

$$\lambda(1-d)(1-t) + d - \frac{\alpha + \gamma}{2}d^2 .$$

Hence, the optimal amount of diversion is

(2) $$d^{**} = \min(\frac{1 - \lambda(1-t)}{\alpha + \gamma}, 1) .$$

Comparing the optimal amount of diversion with and without taxation yields the following:

Result 1: Ceteris paribus, countries with a higher tax rate will have higher levels of diversion. This effect is stronger where tax enforcement is weaker.

Proof: $\dfrac{\partial d}{\partial t} = \dfrac{\lambda}{\alpha + \gamma} > 0; \dfrac{\partial^2 d}{\partial t \partial \alpha} = -\dfrac{\lambda}{(\alpha + \gamma)^2} < 0.$

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[3] In the interests of simplicity we focus on the personal cost insiders' face if they are caught and exposed as having engaged in tax avoidance, as opposed to focusing on the possible financial penalties that might be imposed upon the firm.

In our framework this is an obvious point, but it suggests an important channel through which the tax system can worsen governance outcomes. Ceteris paribus, higher tax rate will lead to worse corporate governance outcomes, because they increase the return from diverting.

Result 1 looks at the effect of a higher tax rate, keeping all the other dimensions constant. But this is not the right comparative static if we want to study the effects of the introduction of a corporate income tax. A corporate income tax not only introduces a positive t, but also a positive α. Hence, we have

Corollary 1: The introduction of a corporate tax improves corporate governance (i.e., reduces the amount of diversion) if and only if the level of tax enforcement exceeds a critical level defined as follows

$$\alpha > \frac{\lambda \gamma t}{(1-\lambda)}.$$

Proof: It follows by comparing (2) with (1).

The effect of the introduction of a corporate tax system on diversion is twofold. The fact that the government takes a fraction of profits increases the incentive to divert, while the additional monitoring provided by the tax authorities reduces it. The overall effect depends on the relative strength of the two forces.

Corollary 2: For a given monitoring ability of the tax authorities (α), the introduction of a corporate tax is more likely to reduce diversion (and improve corporate governance) when

i)   The corporate governance system is weaker (lower γ);
ii)   Ownership is less concentrated (lower λ);
iii)   The tax rate is lower.

While obvious, this Corollary has important implications. Countries with a poor record of tax enforcement cannot introduce steep corporate tax rates without causing a worsening of the amount of diversion, with the well-know effect on the functioning of capital markets (e.g., La Porta et al, (1997) and Dyck and Zingales (2004)).

2.3. The effect of taxes on the value of outside shares and on the value of control

Having analyzed how different characteristics of the tax system affect the optimal amount of diversion, we can derive how taxes influence the market value of a company.

Result 2: The market value of a company increases with tax enforcement and decreases with the tax rate.

Proof: The market value is driven by the value minority shareholders can capture, which in turn is given by $V^m = (1-d)(1-t)$. Since $\dfrac{\partial V^m}{\partial d^{**}} < 0$ and $\dfrac{\partial d^{**}}{\partial \alpha} = -\dfrac{1-\lambda(1-t)}{(\alpha+\gamma)^2} < 0$, then $\dfrac{dV^m}{d\alpha} > 0$. Since $\dfrac{\partial V^m}{\partial t} < 0$ and

$\dfrac{\partial V^m}{\partial d} < 0$ and $\dfrac{\partial d^{**}}{\partial t} = \dfrac{\lambda}{(\alpha+\gamma)} > 0$, then $\dfrac{dV^m}{dt} < 0.$

An increase in the tax rate has two negative effects on minority shareholders. The direct effect is that the state takes a larger fraction of profits, reducing the value left to minority shareholders. This is the cost associated with the traditional view of taxes. The indirect effect is that a higher tax rate induces more diversion, reducing the value of claims held by minority shareholders. This is an additional cost we introduce by adopting a corporate governance view of taxes. Since both effects go in the same direction, the result is unambiguous.

The governance view of taxes also requires us to consider the effect of enforcement on diversion and the price of equity. The effect of enforcement is ambiguous: greater enforcement leads to more taxes paid but also less diversion. Which effect dominates? In the model presented here, the effect is unambiguously positive, because the state gets only a fraction of the income, while insiders, when they divert, get 100%.[4] More generally, the result holds as long as, on the margin, the fraction of pretax income appropriated by the state is less than the fraction appropriated by insiders.

For our empirical analysis, it is also useful to derive the following two corollaries:

Corollary 3:   Following an increase in enforcement, companies that were previously diverting more will experience a larger increase in price.

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[4] Another way to view this problem, elaborated in a previous version of this paper, is to consider sheltering and diversion decision decisions separately, with income sheltered from tax authorities split between insiders and outside shareholders. This modification leads to similar results so long as the fraction of income diverted by insiders exceeds the tax rate. Our results on company value impact of tax reforms differs when the diversion of returns by the tax authorities exceeds that by the controlling shareholder out of sheltered income.

Proof:

$$\frac{\frac{dV^m}{d\alpha}}{V^m} = \frac{(1-t)\frac{1-\lambda(1-t)}{(\alpha+\gamma)^2}}{(1-t)(1-\frac{1-\lambda(1-t)}{\alpha+\gamma})} > 0 \,.$$

Following Dyck and Zingales (2004), let us define the control premium (CP) as the difference between the per share payoff controlling shareholders receive and that outside shareholders receive, normalized by the total value of the company computed at the price of non-controlling shares:

$$CP = \frac{\lambda[\frac{V^i}{\lambda} - \frac{V^m}{1-\lambda}]}{\frac{V^m}{1-\lambda}} = (1-\lambda)\frac{V^i}{V^m} - \lambda \,.$$

Accordingly, we have

Corollary 4: The value of control decreases with tax enforcement.

Proof: $\frac{\partial CP}{\partial \alpha} = \frac{(1-\lambda)}{(V^m)^2}[\frac{dV^i}{d\alpha}V^m - V^i\frac{dV^m}{d\alpha}]$. By using the envelope theorem $\frac{dV^i}{d\alpha} = \frac{\partial V^i}{\partial d}\frac{\partial d}{\partial \alpha} = 0$. Since by

Result 2 $\frac{dV^m}{d\alpha} = \frac{\partial V^m}{\partial d}\frac{\partial d}{\partial \alpha} > 0$, the result follows.

Since tax enforcement reduces the amount of income diverted, this reduces the value of control and increase the value of minority shareholders. Hence, the control premium should decline. Below we focus on this empirical prediction associated with changes in enforcement because this prediction is unique to the governance view of taxes. We do not focus on the prediction of the relationship between tax rates and the value of claims held by minority shareholder since both the traditional view of taxes and the governance view of taxes generate the same implication.

2.4. *The effect of the corporate governance environment on the tax system*

The corporate governance view of taxes also has implications for public finance. In particular, this model provides a framework to analyze how the response of corporate tax revenues to changes in

corporate tax rates is influenced by the institutional environment, particularly the quality of the corporate governance system.

First, our simple model produces a hump-shaped relation between corporate tax revenues and corporate tax rates.

Result 3: If $0 < \dfrac{\alpha + \gamma + \lambda - 1}{2\lambda} < 1$, then corporate tax revenues as a function of corporate tax rates are hump-shaped.

Proof: Corporate tax revenues (CTR) are given by $t(1-d) = t - t[\dfrac{1 - \lambda(1-t)}{\alpha + \gamma}]$. Differentiating this with respect to t we obtain $\dfrac{\partial CTR}{\partial t} = 1 - \dfrac{1 - \lambda + 2\lambda t}{\alpha + \gamma}$, which reaches an interior optimum for $t \in [0,1]$ if $\dfrac{\alpha + \gamma + \lambda - 1}{2\lambda} < 1$.

The intuition for this result is straightforward. An increase in corporate tax rates increases the amount of diversion, which in turn reduces taxable income. The net effect can be a decline in tax revenues. The intensity of this behavioral response is driven by the size of the expected cost of diversion ($\alpha + \gamma$). It is also driven by the extent of ownership concentration (λ), which makes insiders internalize the benefits of diversion more. If the expected cost of diversion or the level of insider ownership is not sufficiently high, then the behavioral response to increases in the tax rates is sufficiently strong that these increases in rates will not yield additional revenue.

The most interesting aspect of the corporate governance view of taxes, however, is not the existence of a range where corporate tax revenues decline with tax rate increases *per se*, but the link between the shape of this relationship and two keys indicators of a corporate governance system: the quality of the corporate governance system γ and the level of ownership concentration λ.

Corollary 5: The sensitivity of tax revenues to tax rate changes increases with the quality of the corporate governance system γ.

Proof: $\dfrac{d^2CTR}{dtd\gamma} = \dfrac{1-\lambda+2\lambda t}{(\alpha+\gamma)^2} > 0.$

Corollary 5 simply states that better corporate governance increases the sensitivity of tax revenues to tax changes. In fact, better corporate governance reduces both the equilibrium amount of diversion and the sensitivity of diversion to changes in the tax rate. If the behavioral response to tax changes is more limited, then, *ceteris paribus*, an increase in tax rates will lead to greater revenues.

A similar effect holds for ownership concentration.

Corollary 6: The sensitivity of tax revenues to tax rate changes increases with ownership for tax rates below 50%. For tax rates above that, it decreases with ownership.

Proof: $\dfrac{d^2CTR}{dtd\lambda} = -\dfrac{2t-1}{\alpha+\gamma} > 0$ if $t < 0.5$.

2.5. Robustness and Limitations of the Model

One limitation of the model is the assumption that outsiders have no negotiating power in the setting of the level of diversion. This is clearly an extreme: outsiders may have some ability to restrain insiders even if they face significant costs of coordinating their actions. Introducing this possibility, however, does not substantially change the model. In fact, the power of outside shareholders can be subsumed in the framework introduced earlier in a company-specific γ. Where outsiders have more power, γ will be higher, and insiders will divert less.

A second limitation is the narrow focus on tax policy as this is not the only interaction between the State and insiders that affects outside shareholders. Another worry of insiders is the threat of nationalization (or renationalization, as in the Russian case). This concern can also be seen in the context of our model for threats of nationalization are analogous to a higher expected tax rate and have similar effects on insiders who are tempted to divert more. This factor may help explain the egregious examples of diversion that occurred in Russia during the Yeltsin presidency.

A third potential limitation is that we have considered a game involving three parties – the state, the insiders, and the outside shareholders – and have only explored how bilateral interactions have

spillovers for the third party without allowing for side deals. For example, we have not allowed insiders and outsider to coordinate their actions to reduce the corporate tax liability. And we have not allowed for insiders and the state to coordinate their actions at the expense of outside shareholders.

There is an easy rationale for not allowing insiders and outsiders to coordinate to evade taxes: there are significant transaction costs for outside shareholders to arrive at any decision, and even greater costs to coordinate with insiders. In fact, these added transaction costs are a primary difference between publicly traded companies and privately held ones. In privately held companies shareholders often reach an agreement to minimize their collective tax liability through mechanisms such as charging fictitious expenses. They, then, redistribute their tax savings among themselves with side contracts. This is considerably more complicated when there are outside dispersed shareholders.

Collusion is more likely between the state and insiders. The state, for instance, can demand higher payments from insiders (e.g. bribes) in exchange for overlooking diversion from outside shareholders. While this might seem a remote possibility in the United States, it is not inconceivable in a variety of countries, including Russia. Such a strategy, however, does encounter two problems. First, nothing guarantees that insiders who bribe will not be subject to additional requests for bribes. The advantage of taxes is that the state can commit not to harass a company repeatedly. Second, the state faces an agency problem in its collection of taxes. If it accepts bribes instead of official tax payments, it may find it difficult to limit the skimming of proceeds by its delegated agents. Hence, collusion between the state and insiders at the expenses of outsiders has its own disadvantages and our model is more relevant where these disadvantages are sizable.

3.   *Optimal Tax Rates*

Within this corporate governance view of taxes, what is the optimal tax rate? First, we address this question by considering a benevolent social planner who sets either just the tax rate or jointly the tax rate and the level of enforcement. Then, we consider the optimal tax rate when corporate insiders dominate the political agenda as in Rajan and Zingales (2003).

3.1   *The Benevolent Social Planner Case*

The optimal tax rate in this framework obviously depends upon the government's objective function. In general, we can assume that the government cares about both revenues and diversion. While diversion has no efficiency costs in this model (because it is mere redistribution from the shareholders to insiders), there are at least two reasons why the government may want to limit diversion. First, as shown both theoretically (e.g., Zingales 1995a) and empirically (Dyck and Zingales, 2004), higher diversion hampers the ability to raise external funds and, thus, the development of the equity market. A government that cares about this objective will put some negative weight on diversion. Second, in reality many of the tactics used to divert generate large deadweight costs.

Hence, it is reasonable to assume that the government's objective function should weight both tax revenues and diversion and we model this as

$$t(1-d) - \psi d \ ,$$

where ψ is the weight attributed to the goal of reducing diversion relative to the goal of raising revenues.

Result 4: If $0 < \dfrac{\alpha + \gamma + \lambda - 1}{2\lambda} < 1$, then the optimal tax rate is $t = \max(\dfrac{\alpha + \gamma + \lambda - 1}{2\lambda} - \dfrac{\psi}{2}, 0)$, which is increasing in

i)   the quality of the corporate governance system (γ),
ii)   the quality of the additional monitoring provided by the tax authorities (α), and
iii)   the level of insiders' ownership (λ) if $\alpha + \gamma < 1$.

By contrast, the optimal tax rate is decreasing in

i)   the social weight puts on diversion (ψ), and
ii)   the level of insiders' ownership (λ) if $\alpha + \gamma > 1$.

Proof: Differentiating with respect to _t_ we obtain the optimal tax rate. From this the comparative statics with respect to the various parameters follows directly.

The message contained in result 4 is important. It implies that countries should pay attention to their corporate governance environment and the prevailing level of insider ownership in setting tax rates. Countries with better corporate governance can afford to have a higher corporate tax rates, as the negative effects of corporate taxes on diversion is reduced. The same is true for insider ownership if

$\alpha + \gamma < 1$. When $\alpha + \gamma < 1$, the expected cost of being caught alone cannot refrain insiders from diverting. In this case if insider ownership is zero, the optimal amount of diversion is 1. Hence, higher levels of insider ownership decrease the level of diversion and allow for a higher tax rate.

Under many circumstances it is reasonable to consider, as we have just done, that the government sets only the level of the corporate tax rate. Other times, however, the government might consider a more systemic tax reform, which involves a simultaneous decision to set tax rates and choose the level of enforcement. Interestingly, this does not change the relation between optimal tax rate and quality of corporate governance (and tax enforcement).

Suppose the government simultaneously sets the tax rate and the quality of the tax enforcement (or, analogously, the tax rate and the quality of the corporate governance system).[5] Of course, we have to introduce a cost of the government of improving tax (or corporate governance) enforcement. For simplicity, we assume this cost to be quadratic

$$C(\alpha) = \frac{\mu}{2}\alpha^2,$$

where μ is a parameter affecting the cost of better enforcement. For example, in the La Porta et al (1999) framework, civil law countries have higher costs of better enforcement, i.e., higher μ. Then, the Government objective function becomes

$$Max_{t,\alpha} t(1 - d^{**}) - \psi d^{**} - \frac{\mu}{2}\alpha^2,$$

where d^{**} is the optimal level of diversion set by insiders as in equation (2).

Result 5: Both the optimal level of monitoring and the optimal tax rate decreases with the costs of better enforcement μ.

Proof: See Appendix.

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[5] Since the quality of the corporate governance system (γ) and the intensity of the additional monitoring provided by the tax authorities (α) enter in the same way, the comparative statics with respect to one is identical to the comparative static with respect to the other. For space consideration, we report only the one with respect to α.

The first part of the result is obvious: in countries where increasing enforcement is more costly to the government budget, the government will do less of it. The second part is also quite intuitive: when it is more costly to increase enforcement, the negative effects of a higher tax rate will be stronger and the government will choose a lower tax rate.

Thus, when we endogenize the choice of the level of monitoring provided by the tax authority (or the level of corporate governance), we obtain the same prediction as before: when a benevolent social planner will set higher tax rate in countries with better tax enforcement (and/or better corporate governance).

3.2 The optimal tax rate when insiders dominate the state

The results presented above are derived under the assumption that governments are run by benevolent dictators that maximize social welfare. In reality, government actions are driven by political goals and shaped by influential constituencies. To explore the setting of the optimal tax rate when – as it is likely - corporate insiders have a disproportionate power in setting tax rates, we assume that they will set t to maximize the value of their stake, subject to satisfying a revenue constraint. Formally, they will maximize

$$\lambda(1-d^{**})(1-t)+d^{**}-\frac{\alpha+\gamma}{2}d^{**2}$$

with respect to t, subject to a minimum tax revenue constraint *(K)*:

$$t(1-d^{**})\geq K ,$$

where d^{**} is the optimal level of diversion set by insiders as in equation (2).

Since the corporate insiders objective function is decreasing in t and convex, it will be maximized at the minimum level of t that satisfies the tax revenue constraint. Hence, we can obtain the relation between optimal tax rates and corporate governance by using the implicit function theorem on the budget constraint. Hence, we have

Result 6: If $t<\dfrac{\alpha+\gamma+\lambda-1}{2\lambda}$, then the optimal tax rate is decreasing in the level of corporate governance.

Proof: $\dfrac{dt}{d\gamma} = -\dfrac{t(1-\lambda(1-t))/(\alpha+\gamma)^2}{1 - \dfrac{1-\lambda(1-t)}{\alpha+\gamma} - t\dfrac{\lambda}{\alpha+\gamma}}$, which is negative if the denominator is negative. This condition

is satisfied for $t < \dfrac{\alpha+\gamma+\lambda-1}{2\lambda}$.

When the goal is only to produce a minimum level of tax revenues, a decrease in the quality of the corporate governance has to be matched by an increase in the tax rate to meet the revenue target. Hence, the model predicts that when insiders dominate the state countries where corporate governance and tax enforcement are weak, like many civil law countries, should have higher tax rates.

4.   *A Rationale for Corporate Taxes?*

Thus far, we have assumed the existence of a tax on corporate income and studied how the way it is designed affects corporate governance. A more fundamental question, however, is whether the impact that corporate taxes have on corporate governance can justify the very existence of a separate tax on corporate income.

At the very least, the governance effects can help explain the *introduction* of corporate taxation in the United States. In 1909, when a corporate tax was first introduced in the United States, President Taft supported its introduction by saying:

> *Another merit of this tax [the federal corporate excise tax] is the federal supervision which must be exercised in order to make the law effective over the annual accounts and business transactions of all corporations. While the faculty of assuming a corporate form has been of the utmost utility in the business world, it is also true that substantially all of the abuses and all of the evils which have aroused the public to the necessity of reform were made possible by the use of this very faculty. If now, by a perfectly legitimate and effective system of taxation, we are incidentally able to possess the Government and the stockholders and the public of the knowledge of the real business transactions and the gains and profits of every corporation in the country, we have made a long step toward that supervisory control of corporations which may prevent a further abuse of power.[6]*

This was not just wishful thinking. The introduction of this tax increased the publicly available information on corporate profitability (back then corporate tax filings were public records) and increased

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[6] William H. Taft, President of the United States, June 16, 1909, "Defense of introduction of the first US federal corporate excise tax".

the reliability of all the information provided, since tax returns were audited. In fact, the tax generated a need for a standard definition of income and other accounting variables, prompting the development of uniform accounting standards, introduced in 1914. Hence, the introduction of a corporate income tax improved corporate governance.[7]

4.1 What Is the Comparative Advantage of Tax Enforcers?

That corporate governance considerations might have driven the *introduction* of a corporate taxation system does not necessarily imply that governance considerations justify the *existence* of corporate taxation today. Why should tax enforcers, such as the IRS, be better (i.e., more effective) at monitoring corporate insiders than other Government agencies specifically designed for this purpose, such as the Security and Exchange Commission?

One reason, which applies mostly to developing countries, is economies of scope. Every country has a Government agency specialized in collecting revenues. It is much easier, faster, and more effective to extend the tasks of these experts, than to create another ad hoc agency. For example, in Russia when the local securities and exchange commission wanted to improve enforcement, they asked the tax police for assistance as they were the only ones with the appropriate expertise.[8]

This explanation may be less compelling for a country like the United States, where an agency solely dedicated to security law enforcement has been in place for the last seventy years. In such cases, the more compelling argument in favor of the comparative advantage of tax authorities is the distinctive revenue implications of actions by the IRS versus the SEC. The IRS enjoys more political clout (and a better budget) because it generates more revenues for the Government, while the SEC heavily relies on annual appropriations unrelated to its enforcement actions.[9] And even if the SEC generates revenues through its enforcement actions, there is a fundamental difference between the two. By increasing

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[7] All of this took place against the backdrop of a lack of national securities regulation and weak and unreliable enforcement of listing standards in the nation's stock exchanges.

8 "For a long time, FSC [Federal Securities Commission] has been planning to apply to the law enforcement structures for more efficient control over the stock market: this idea was in the plans of the first chair of FSC, Dmitri Vasilyev. This wish is quite understandable: until recently, FSC could do nothing but lodged complains to the prosecutor's office and imposed symbolic fines on violators". *Banking and Exchanges Weekly*, Oct 25, 2000.

[9] The lack of relation between SEC-related revenues and budget was seen dramatically in 1995 where despite being a strong revenue generator - collecting $588 million in fees, and driving defendants to make payments of $730 million to the treasury, with costs of just $266 million – the SEC was under severe pressure to have its budget frozen or reduced. See Roger Lowenstein, "House Aims to Fix Securities Laws, But, Indeed, Is the System Broke?" ***Wall Street Journal, August 10, 1995, C1.***

enforcement, the IRS increases revenues not only from the company investigated, but also from all other companies, which are not investigated but improve their compliance out of fear. By contrast, by increasing enforcement, the SEC raises revenues only from the company investigated, while losing them from other companies, which would be more compliant and hence pay fewer fines.

Finally, the existence of two independent sources of enforcement increases the probability diversion is caught. Revealed preference suggests that even in the United States this additional monitoring has some bite. For example, Erickson, Hanlon, and Maydew (2003) show that managers were willing to pay taxes on false earnings in order to ensure that the IRS did not detect their fraudulent activities.

4.2 Optimal tax rate with endogenous enforcement

If the tax enforcement agency has a comparative advantage in monitoring corporate insiders, can we justify the *existence* of a corporate tax solely on corporate governance considerations? On the one hand, this seems the ultimate Pigouvian tax. While shareholders face a free rider problem in monitoring, the tax authority does not. In fact, by aggressively prosecuting a company the government sets an example that induces other firms to behave. Because of the spillover effect enforcement has on the behavior of all the other companies, the tax authority has an incentive to certify income and enforce its rights even in individual cases where the cost of doing so is higher than the payoff it can derive. Hence, the corporate income tax can be constructed as a certification tax.

On the other hand, we have seen that the existence of a corporate tax may exacerbate diversion, rather than reducing it. So, if we want to justify the existence of a corporate tax solely on corporate governance considerations we need to show that in order to minimize diversion it is optimal to have a positive tax rate, in spite of the negative direct effect tax rates have on diversion.

To prove this result we drop any revenue consideration from the Government objective function and we formally introduce a link, as per our discussion above, between quality of enforcement and revenue considerations, i.e., we assume $\alpha(t) = \alpha_0 + \frac{\delta}{2}t^2$, where α_0 (possibly zero) is the expected cost of the IRS monitoring in the absence of any revenue consideration, and δ, which is positive, is the sensitivity of the enforcement to the tax revenues considerations.

Then, the optimal tax rate will be the one that minimizes diversion, i.e. the solution of

$$\min_t d^{**} = \frac{1 - \lambda(1 - t)}{\gamma + \alpha_0 + \frac{\delta}{2} t^2}$$

It follows that:

Result 7: If $-1 < -\frac{1}{\lambda} + \sqrt{(\frac{1}{\lambda} - 1)^2 + \frac{1}{\delta}(\gamma + \alpha_0)} < 0$, the optimal tax rate from a governance point of view

is positive and equal to

$$t^* = 1 - \frac{1}{\lambda} + \sqrt{(\frac{1}{\lambda} - 1)^2 + \frac{1}{\delta}(\gamma + \alpha_0)} \ .$$

Proof: It follows from differentiating $\dfrac{1 - \lambda(1 - t)}{\gamma + \alpha_0 + \frac{\delta}{2} t^2}$ with respect to t.

Result 7 states that there exists a range of parameter values such that the optimal tax rate is positive even in the absence of any revenue goals.

For example, if the expected cost of diversion (γ) is 30 cents on the dollar, and the parameters for tax enforcement α e δ are equal respectively to 0 and 0.5 (which corresponds to an extra two cents of expected cost for every dollar of revenue diverted), and insiders' ownership equal 50%, then the optimal tax rate is positive and equals 26%. Thus, in spite of the direct negative effects of tax rate on diversion, a positive tax rate reduces diversion because of the additional monitoring it generates. This example is only meant to illustrate that the existence result obtained in Result 7 is not empty. We make no claim (neither can we make any) that the level of the corporate tax rate justifiable using a governance perspective is close to the prevailing level today.

From this result we can easily derive the following comparative static:

Corollary 7: The optimal tax rate increases with

i)   corporate governance (γ);

ii)	the quality of monitoring independent of revenues (α_0);

iii)	insider ownership (λ);

and decreases with

i)	the sensitivity of enforcement to tax revenues (δ).

Proof: See Appendix.

The most important result of Corollary 7 is that the optimal tax rate is a complement to, not a substitute for, other corporate governance mechanisms. Thus, higher corporate governance (γ) and higher insider ownership (λ) increases the level of the optimal tax rate. The reason is that when other corporate governance mechanisms function better, the direct effect of taxes on diversion is reduced, and hence the indirect effect (through its incentives on higher monitoring) becomes more important. It also suggests that it is not true that the tax system is an effective mechanism to reduce diversion only in developing countries. In fact, in countries with better governance we expect a more aggressive use of it. Consistent with this prediction, when corporate taxation was introduced in the United States in 1909 (and the quality of the corporate governance system was poor), the tax rate was only 1 percent.

*4.3.	Is this rationale consistent with the standard features of the corporate tax code?*

The above discussion suggests that corporate governance considerations alone can explain the existence of a separate tax on corporate income. But can they explain the peculiar way in which the corporate taxation is usually designed? By and large, the answer is positive.

First, our approach is able to explain why interest expenses are deductible, and thus not subject to double taxation. The income paid in interest is certified by the fact it is paid out in cash to a third party. Hence, it does not require external certification and thus should not be subject to a "certification tax."[10]

Second, our new rationale can explain why other legal entities, such as the limited liability corporation and the subchapter S corporation, are not subject to double taxation of earnings: they are less prone to managerial agency problems. In fact, these entities are exempted from entity level taxation

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[10] Of course, the same argument would imply the exemptions of dividends. In fact, in many countries dividends are partially or totally exempted from corporate taxes.

only if they meet conditions (such as a limited number of investors), which ensure the free-rider problem in monitoring is reduced. Hence, the features of the tax are directly linked to the need for outside monitoring.

Finally, our new rationale can explain why corporate taxes are based on income rather than cash flow, sales, assets or other bases (as Meade (1978) and many others have proposed). If the *raison d'etre* of the corporate tax is to certify the value of minority shareholders' claims, it makes sense to use the value of their claim, i.e. profits, as a base.

5. *Tests - Corporate Governance Implications*

Looking jointly at taxation and corporate governance, an approach we have called a *corporate governance view of taxes* (CGVT)*, carries implications both for corporate governance and for corporate taxation.

Testing the corporate governance implications of the CGVT is more difficult. The prediction that is easiest to test (i.e., that an increase in tax rates reduces stock prices) is not unique to this approach as the same implication also follows from a traditional view of taxes. By contrast, the predictions that are unique to this approach (the effect of enforcement on stock prices and control premia) require us to measure variables that are difficult to quantify (tax enforcement) or even to observe in a systematic way (control premia). Dyck and Zingales (2004) exploit cross-country variation in tax enforcement and control premia to show that -- consistent with Corollary 4 -- higher levels of tax enforcement lead to lower control premia, even controlling for national differences in legal protections for investors.

In this context, however, we want to provide more disaggregated, within country, evidence. For this reason, we focus on Russia, a country where both tax avoidance and managerial diversion are extreme. The substantial increase in tax enforcement following Putin's election in 2000, which occurred without an immediate change in tax rates, provides a natural experiment to test these predictions.

5.1. *A Case Study*

To understand how tax evasion and diversion can interact, we begin with a case study of an oil company in Russia. We choose Sibneft, the 5th largest Russian integrated oil company, as it was one of the first companies to be indicted for tax evasion.

Under President Yeltsin, high tax rates and low levels of tax enforcement encouraged Russian firms to shelter income aggressively. Multiple taxes from different levels of government meant that tax obligations could exceed profits.[11] Company executives were not shy about how this tax burden affected their behavior. As Yukos Oil CEO Khodorkovsky argued, "As long as the tax regime is unjust, I will try to find a way around it."[12]

A popular scheme to evade taxes and expropriate minority shareholders was to sell oil at below-market prices to outside trading companies. To get a sense of the magnitude of the manipulation in transfer pricing, analyst reports indicate that Sibneft's production subsidiary was selling oil at just $2.20/ barrel, considerably below the average export price (net of export costs and excise taxes) of $13.50, and the average domestic price (net of taxes) of $7.20/ barrel.[13] Unsurprisingly, company financial reports revealed an effective corporate tax rate of just 2.6%, far below the statutory rate of 30%.[14]

The use of 'third party intermediaries' to shelter income also provided controlling shareholders with sizable opportunities for self-enrichment at the expense of outside shareholders. To shelter income from tax authorities, most if not all the profits have to be shifted to an intermediary located in an offshore or onshore tax haven. In the case of Sibneft, the primary intermediary was the export trading company Runicom, which accounted for the vast majority of Sibneft's foreign sales through 2000.[15] Shifting profits to Runicom benefits Runicom shareholders at the expense of the shareholders of Sibneft and its separately listed production and refining subsidiaries. Since the controlling management of Sibneft can choose the intermediary to trade with, there are obvious opportunities for them to take advantage of the situation and channel the profits toward a company they personally own. This opportunity is enhanced by the opacity in the ownership structure of Russian companies, which makes it difficult to establish whether this is indeed the case. In this particular case, for example, Runicom was associated with Roman Abramovich, who was reported to control Sibneft.[16] Runicom was also a

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[11] In the oil industry, taxes included not only the traditional value-added and corporate profit taxes, but also excise taxes, export duties and specific geology and royalty taxes on net income at production subsidiaries.

[12] Quoted in Simon Pirani, "Oligarch? No, I'm just an oil magnate," *Observer*, Sunday June 4, 2000.

[13] "Oil Production Subsidiaries," *Troika Dialog Research Report*, February 2000.

[14] Sibneft acknowledges in public filings, for example, that for "tax and cash flow optimization purposes, the Company uses third party intermediaries in its refining and distribution process." *Sibneft Bond OfferingProspectus*, March 1, 2002, pg. F-8 "These arrangements have primarily comprised of using certain trading companies in certain Russian regions and, taken together, have reduced the amount of taxable income Sibneft reports" *Sibneft Bond Offering Prospectus*, December 3, 2002, pp. 16-17.

[15] For example, company financials identify 38 (40) percent of all sales in 1999 (2000) being conducted through Runicom. Prior to 1998, the primary company was Runicom SA registered in the tax haven of Switzerland and in 1999 and 2000, Runicom ltd, registered in the tax haven of Gibraltar.

[16] The controlling stake of top management exceeded 80 percent, with a personal stake rumored to exceed 40 percent, "Sibneft's Owners Nation's Worst-Kept Secret". By Valeria Korchagina. 11 April 2000, *The Moscow Times*.

significant Sibneft shareholder[17], but not *vice versa*, as would have made sense if the goal was to equitably share the benefits of tax sheltering.

Following Putin's election in 2000, tax enforcement in Russia increased without any immediate change in tax rates. One of the first actions that signaled Putin's intention was the release of a memorandum with a list of the worst corporate tax offenders (July 28, 2000). Sibneft was singled out as paying the lowest tax rate in the oil industry. In August, the tax police raided the offices of Sibneft and of its export trading arm, leading to criminal charges against the company. In November, the tax police announced proposals aimed at closing channels for tax avoidance by oil companies, including a threat to reduce oil company revenues by auctioning space on government-owned pipelines (rather than allocating them at a price that covered costs). On January 25, 2001, President Vladimir Putin met with oligarchs to discuss ending tax avoidance schemes and the passage of new tax laws designed to shut off such schemes. Sibneft remained a target of government action, with the filing of additional criminal and civil actions in the spring and summer of 2001.[18]

Not surprisingly, this increase in enforcement targeted at the oil industry in general, and Sibneft in particular, coincided with a dramatic increase in tax payments by Sibneft. Production-based taxes increased ten fold and the reported effective corporate tax rate for Sibneft as a whole jumped from 2.6% to 10.4%. More interestingly, following the pressure from government officials, Sibneft announced that it would no longer be trading with Runicom but would trade with a newly created subsidiary, SibOil, whose results would be reported in the holdings consolidated income statements.[19] Furthermore, in July of 2001 the company announced that it would acquire two previously undisclosed intermediaries located in Russian domestic tax havens, Vester and Olivesta, that reported profits of $300 million in 2000, for a mere $1,800 in Sibneft stock.[20] Shortly thereafter, Sibneft announced the closing of yet more subsidiaries and a commitment to market oil through fully owned subsidiaries not located in these tax havens.[21]

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[17] Runicom bought a 12.22% stake in Sibneft in 1996, and held 27 % of Sibneft's shares at the end of 2000, "EBRD Slams Russian Courts In Loan Dispute With Oil Firm --- Lender Says Case Will Test Putin's Pledge to Strengthen Legal System --- The Rule of Law vs. the Rule of `Oligarchs' "By Andrew Higgins, 11 February 2000, *Wall Street Journal Europe*, p. 2.
[18] We focus on these enforcement actions that appeared to be targeted on increasing government revenue rather than some other events that involved tax police that commentary at the time suggested was more politically than economically motivated.
[19] Lukoil, Tyumen Oil Co and Yukos made similar announcements in December of plans to increase transparency by shifting exports from trading companies controlled by controlling shareholders to major trading companies. See, for example, *NEFTE Compass*, December 21, 2000" Umbrella – Yukos Blends Offshore Trading Arms into One"
[20] "CorporateGovernance Actions," Troika Dialog, *Weekly Bulletin #113*, July 13, 2001, pg. 6.
[21] For example, Sibneft later purchased Terra in a deal reported to have roughly the same effect of increasing reported income by $300 million NEFTE Compass, October 11, 2001, "Terra Firma – Sibneft Brings its Profits Back Home."

Most importantly – from our point of view — these enforcement actions coincided with an improved return for outside shareholders. Reported company income soared and, for the first time, Sibneft paid dividends: $53 million in November 2000 and close to $1 billion in 2001, an amount equal to 67 percent of the total market capitalization of Sibneft before the increase in enforcement. Consequently, Sibneft's share price rose well in excess of industry trends. Although such returns cannot be interpreted as causal, since many other factors may be driving returns aside from changes in tax policy, they do suggest that tax changes have not impeded returns for minority investors.

By narrowing the time period, and focusing specifically on a few notable tax enforcement events, we can control for some of these other factors. Table 1 reports Sibneft excess returns in the days surrounding the most crucial enforcement events. In all cases but one, Sibneft stock outperformed the Russian Index and, in spite of the very high volatility of Russian excess returns, in a few instances these excess returns are more than two standard deviations away from zero. The more astute local observers were quick to draw a causal link between increased tax enforcement and greater shareholder returns. As the *Financial Times* reported, companies like Sibneft "have begun closing offshore subsidiaries and consolidating their operations within Russia. To comply with the law, they have to declare higher profits and pay higher taxes. They must also show the true extent of their financial operations to outside shareholders, who are just as keen to have a share of the proceeds as the tax inspector."[22]

5.2.   Cross industry test

Sibneft's experience is not altogether unique. As Figure 1 shows, the increase in enforcement under Putin is followed by an increase in stock prices, especially in the most affected industry (i.e., Oil and Gas). Of course, this evidence alone is unconvincing. Many changes were taking place in Russia at the same time making it hard to pinpoint a single cause for these changes. For this reason, we rely on two subtler tests. First, we look at the difference in voting premia across industries. Since tax enforcement affected the oil and gas industry disproportionately, during this period control premia should drop more in the oil and gas industry than in the other industries. We can infer control premia from the difference in voting and nonvoting stock (see Zingales 1994, 1995b). This approach has the advantage of controlling for any variation in the fundamental value of these companies. Second, we look

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[22] Andrew Jack, *Financial Times*, September 17, 2001.

within the oil and gas industry and test whether oil and gas companies that avoided taxes the most exhibited higher returns around the major enforcement dates – as predicted by Corollary 3.

The ideal method to measure the value of control relies on control block sales.[23] Unfortunately, in Russia there is not a sufficient number of such transactions surrounding the enforcement change to use this method. Alternatively, one can use the price differential between voting and nonvoting shares (i.e., the value of a vote). The value of a vote is related to the value of control through the probability a vote will be pivotal (see Zingales (1994, 1995b)). If this probability, which is a function of the existing ownership structure, remains relatively constant over time, we can infer changes in the value of control from changes in the voting premia.[24]

To conduct this test, we collect a sample of all the companies in Russia having two classes of stocks with differential voting rights from the Datastream sample of Russian securities (124 firms). To obtain meaningful voting premia, we restrict our attention to companies having some trading in both classes in event windows prior to and following what we view to be the most important indicators of increased tax enforcement (59 firms).

Consistent with Corollary 4, Panel A of Table 2 shows a decline in voting premium during the period of increased tax enforcement, from 57 percent to 46 percent. The composition of the sample, however, changes. Thus, a more appropriate comparison, limited to companies that were traded both at the beginning and at the end of the sample period, is provided in Panel B, column 1. It shows a decline in the voting premium of 7.8 percentage points, which is significant at the 5 percent level.

Why did it decline? If, as we think, this decline is associated with increased tax enforcement, then it should be more pronounced in the companies that were targeted the most by this enforcement. Since Putin's actions were targeted at the oil & gas industry and mineral extraction industry, we examine how much of this decline is concentrated in these industries. As column 2 of panel B shows, the entire decline is concentrated in these extractive industries. There is no significant decline in other industries. The observed decline, thus, cannot be explained by a general improvement in the Russian

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[23] For a discussion of the different methods see Dyck and Zingales (2003).
[24] Goetzman et al. (2002) claim that in Russia this voting premium is too high to be justifiable solely on the value of control. They attribute it more broadly to the risk that nonvoting stock could be discriminated against in future corporate transactions (a corporate governance discount). Even if we accept this interpretation, changes in the voting premium over short time periods are a pretty reliable indicator of changes in the degree majority shareholders take advantage of their position at the expense of outside ones.

corporate governance situation, which would have affected all companies similarly. Only something that differentially affected extractive industries, such as tax enforcement, could have caused it.

5.3.   *Within -industry comparisons*

The increase in tax enforcement would not have affected all oil & gas companies in the same way. Specifically, if some companies were sheltering more previously, then they should be more affected by the increased enforcement. In the oil industry, a common indicator of tax sheltering activity is revenue per barrel of oil.

Table 3 presents evidence on the enormous variation in revenue per barrel of oil, as reported by investment analysts based on filings of firms during 1999. Komineft, a subsidiary of KomiTEK, sold its oil at an average price of $7.6 a barrel, while Tomskneft (a subsidiary of Yukos) at only $1.1 a barrel! These reports of aggressive tax avoidance correlate strongly with government evaluations of levels of tax avoidance across the integrated oil companies in Russia.

If Corollary 4 is correct, companies that were selling their oil at very low prices (i.e., were engaging in massive diversion) should experience a greater price appreciation during this period of increased tax enforcement than companies that were selling their oil closer to market prices. We focus on a panel of four notable enforcement actions taken between July 2000 and January 2001, which affected the whole industry as discussed above.[25] For announcement returns, we use excess returns (defined as the cumulative excess return) over a ten day window (t-1, to t+9) surrounding the announced enforcement action. In our excess return calculations, we use the RTS index (the ruble index when security quoted in rubles and the dollar index when the share price quoted in dollars). These announcement returns are regressed on indicators of tax avoidance. As an indicator of tax avoidance, we use the average selling price per barrel of oil in 1999, a period prior to the increased enforcement actions.

As Table 3 shows, we have two such measures: the average 1999 selling price and the average price during the month of August 1999. In the first column of Table 4, we use the first datum as an indicator of tax cheating. Unfortunately, the overlap between companies with average 1999 selling

prices and companies with market prices reduces the sample to only 9 observations. Nevertheless, as column 1 of Table 4 shows, we find companies that were avoiding taxes the least (and hence had higher selling prices) had lower market returns around the announcement of higher tax enforcement, and the difference is significant at the 5 percent level. This evidence contradicts the traditional view of taxes (companies that pay more taxes to begin with should be less affected by tax enforcement and hence should have higher returns) but is consistent with the corporate governance view of taxes.

To expand the sample, we pool together estimates of the selling price based on the entire year and estimates based on the month of August (first and second columns of Table 3). As column 2 of Table 4 shows, the previous results are confirmed in this larger sample. Not surprisingly, the magnitude of the coefficient has dropped, since this is a more noisy measure of tax avoidance due to monthly fluctuations of oil prices. Nevertheless, the average selling price has a negative and statistically significant effect on the stock market reaction to the announcements of greater tax enforcements.

These results, although limited by the underlying availability of data, are consistent with the corporate governance view of taxes. Private benefits of control, as measured using dual class voting shares, not only decline when tax enforcement increases, but they decline by a greater amount in extractive industries relative to other Russian industries. Similarly, the oil companies that were more aggressive tax shelterers experience greater returns when tax enforcement increases.

6.   Tests - Corporate Tax Implications

The CGVT also has implications for the responsiveness of tax revenues to changes in the tax rate. To test these implications, we need changes in tax rates in countries with both strong and weak corporate governance. A natural setting is a cross-country panel dataset.

6.1.   The Data

We construct a panel data set that combines information on corporate tax revenues, top corporate marginal rates, ownership concentration, and a measure of corporate governance. For corporate tax rate information, we utilize the data recently assembled by the Office of Tax Policy Research (OTPR) at the

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[25] To emphasize, we are focusing on those enforcement actions focused on the industry as a whole, rather than more recent enforcement actions targeted at a specific company, such as Yukos, where political factors are important in singling out this firm for action.

University of Michigan.[26] From the IMF, we obtain data on corporate tax revenues, total tax revenues (available from the *Government Finance Statistics* yearbook) and nominal GDP (from the *International Finance Statistics* yearbook*)*.[27] The data on tax rates are available for a large cross section of countries only after 1979. Thus, our sample starts in 1979 and ends in 1997, the last year for which this information was available. From the original set of countries in our sample, we exclude major oil-producing countries given the distinctive dynamics of corporate tax revenues in these settings.[28]

As a measure of corporate governance, we use the control premium in negotiated control block sales, as computed by Dyck and Zingales (2003). Consistent with the spirit of our model, the Dyck and Zingales measure captures the amount of private benefits extracted by insiders. When we examine ownership concentration we use the average percentage of common shares owned by the three largest shareholders in the 10 largest nonfinancial, privately owned, domestic firms as computed by La Porta et al. (1998).

To explore whether we have identified the governance impact on the relationship between tax rates and revenues rather than some other institutional factor that might covary with governance across countries and also drive tax revenues, we employ a variety of institutional measures as control variables: "rule of law" (an index from 0 to 10 that measures the strength of a country's law and order tradition as developed by International Country Risk, a country risk rating agency); tax compliance (an index from 0 to 6 developed by the World Competitiveness Report, which assesses the level of tax compliance), and log of gdp per capita.[29]

The top panel of Table 5 summarizes the data from the entire panel. The average ratio of corporate tax revenues to total tax revenues is 10.3% and the average top marginal rate over the sample

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[26] This data is available at www.otpr.org.

[27] Specifically, data on corporate tax revenues are provided as variable g8h1aa in the GFS database and total tax revenues as variable g8h1y in the GFS database. Several countries that have variables from the Dyck and Zingales (2003) and LLSV (1998) databases do not provide corporate tax revenues collection statistics further narrowing the relevant sample. These countries include Chile, Hong Kong, Mexico, New Zealand, Nigeria, Philippines, Singapore, Taiwan, and Venezuela. For countries with data on tax rates but no data on corporate tax revenues we conducted additional data searches of country sources (including the finance ministry, tax authorities, IMF Article IV statistical appendices and other sources) and these searches produced additional data for Hong Kong and Taiwan. The electronic version of the GFS variables currently available are not yet updated past 1997.

[28] The countries excluded are the major oil exporting countries defined as (a) OPEC members, (b) affiliated non-members Oman and Angola and (c) non-OPEC members in the list of the top 10 oil exporting countries. This last requirement, which excludes Norway, Mexico and Russia, actually only eliminates Norway, as corporate tax revenues for Mexico and Russia are not in our ownership or private benefit samples. In these oil-rich countries, corporate tax revenues are typically not income taxes and corporate tax revenues fluctuate with the world price of oil conflating the analysis.

[29] These measures of the rule of law and tax evasion are taken from La Porta et al. (1998, 1999).

is 38.1%. The governance and ownership variables vary considerably by country: ownership concentration averages 44.8% with a standard deviation of 13.9%. Similarly, the measure of private benefits averages 13.5% with a standard deviation of 16.0%. The bottom panel summarizes the data collapsed by country. In addition to the raw data, we also report country-specific curve slopes. As described below, these slopes have been obtained by regressing the logarithm of corporate tax revenues on the logarithm of the GDP and the level of the corporate tax rate.

The panel structure of the sample is useful because we can use within-country variability over time to estimate the slope of the relation between corporate tax revenues and corporate tax rates and the cross-country variation to identify how corporate governance influence the slope of this relation. Since the slope of the curve is estimated using within-country variation, it is important to have a sense of the magnitude and the direction of these variations. Figure 2 plots the changes in corporate tax rates during our sample period. In this period, most of the changes, but not all, are tax rate reductions. Furthermore, most, if not all, of these reductions have been accompanied by a broadening of the tax base. Unfortunately, in the regressions we will be unable to control for base broadening. Thus, our sample is biased toward finding a negative-sloped curve. Our interest, however, is not on the average slope of this curve, but on how this slope changes with the quality of the corporate governance system. Since the coupling of base broadening and tax rate reductions appears to be widespread and not unique to countries with high ownership concentration or large private benefits, our cross-country results should not be affected by the inability to measure base broadening in a systematic way.[30]

6.2.   Results

In our base specification we regress a measure of tax revenues on the corporate tax rate employing a number of other variables to capture factors that might influence revenues. Specifically, our primary specification is as follows:

$$Log\left(Corporate\ Tax\ Revenues_{it}\right) = \alpha_i + \beta_i\left(Log\ GDP_{it}\right) + \eta\tau_{it} + \varepsilon_{it}$$

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[30] For surveys of the nature of tax reform during this period, see Cummins, Hassett and Hubbard (1996) for the OECD and Thirsk (1997) for developing countries. There is no evidence, from such sources, that the likelihood of base broadenings being coupled with tax rate changes is correlated with income or ownerships concentration or corporate governance. In fact, from a political economy point of view, we believe the link is more likely to bias against finding results consistent with the corporate governance view of taxes. In countries with higher ownership concentration, owners should be more effective in lobbying against a base broadening that accompanies a tax rate reduction.

where i indexes countries, t is a time subscript and τ is the top marginal corporate tax rate. η provides the average slope of the corporate tax revenues curve. We include log gdp to capture the fact that tax revenues are influenced by profitability which is highly correlated with the business cycle. We also include country fixed effects and interact fixed effects with the business cycle to capture both that countries differ in the size of the corporate sector and that the sensitivity to business cycle factors likely varies across country. We cluster standard errors at the country level.

To examine the effect of governance on the relationship between rates and revenues we include an additional interaction term that is the product of a measure of corporate governance, (the Dyck and Zingales (2004) estimates of control premia in different countries) and the corporate tax rate. Since this is a measure of how much controlling shareholders appropriate for themselves, it is directly related to γ.

Column 1 of Table 6 reports our results. In this specification, the coefficient on the tax rate can be interpreted as the effect of tax rates on revenues in the absence of any private benefits of control. On average a tax increase raises corporate tax revenues, but by a minimal amount: a 10 percentage point increase in the tax rates (from 15% to 25%, for example) increases corporate revenues by 1%. The average effect, however, is not statistically different from zero. As we warned, this average effect is likely to be downward biased, because in this period most of the changes have been tax reductions associated with base broadening. Since Corollary 5 predicts a positive relationship between the sensitivity of tax revenues to changes in the tax rate and quality of corporate governance, we expect the coefficient of the interaction between tax rates and corporate measure of private benefits to be negative (because higher private benefits are an indicator of worse corporate governance). As expected, the interaction term is negative and statistically significant, i.e., countries with worse corporate governance have a lower sensitivity of tax revenues to tax increases. The threshold level of the control premium for a revenue-neutral relationship between corporate tax rates and corporate tax revenues is approximately 20%. Stated differently, corporate tax rate increases in countries where the private benefits of control are above 20% generate a sufficient behavioral response to negate, and overcome, any additional revenue generated by the higher rate.

The coefficient of the interaction between corporate governance and tax rates might reflect other attributes of the institutional environment that would dictate the responsiveness of tax revenues to rate changes. In a country where there is no enforcement of taxes, for instance, changes in the tax rates

might have very little effect on tax revenues, reducing the slope of the tax revenue curve. If countries with low tax enforcement are also countries with worse corporate governance, the results might reflect this spurious effect. To examine this possibility, we include in columns 2 through 4 interactions between the tax rate and other measures of the institutional environment. In column 2, we use the law and order tradition of a country. Countries with a stronger law and order tradition have a more sloped curve, but this effect is not statistically significant. More importantly, the effect of corporate governance, while slightly reduced in magnitude remains statistically significant. Similarly, in column 3 we insert the interaction between the tax rate and our measure of tax compliance. This interaction is insignificant and, by contrast, our main effect remains highly statistically significant.[31] Finally, in column 4, we incorporate an interaction with log GNP per capita as the broadest measure of institutional weakness. Again, the results on the interaction of corporate governance and tax rates remains highly significant.

In columns 5 through 8 of Table 6, we simply split the sample by the measure of governance to provide a clearer sense of where these effects are more pronounced. In columns 5 and 6, we divide the sample on the basis of the median level of control premium and in columns 7 and 8 we divide the sample based on a control premia of 10%, to highlight the differences in countries with more extreme governance difficulties. As predicted by the model, in countries where the control premium is below the median the coefficient of the tax rate is positive, while in countries where the control premium is above the median, the coefficient of the tax rate is less and in fact negative. This effect is more pronounced the more severe are the governance difficulties, as seen in comparing column 6 and 8.

In columns 9 and 10 we repeat this analysis using alternative measures of tax revenues. In column 9 we normalize tax revenues by taking the ratio of corporate tax revenues to GDP, and in column 10 we normalize tax revenues by taking the ratio of corporate tax revenues to GDP. These alternative specifications produce qualitatively similar results.

A potential concern with the approach we have taken so far is that we have treated these changes in tax rates as exogenous. This, in a sense, runs counter to the approach we took in the theoretical section where we consider governments optimally choosing the level of their tax rates. To address this problem we instrument the tax rate with the ideological orientation of the chief executive. Ideology may push government to suboptimal tax rates. Hence, ideology provides the exogenous variation that allows

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[31] As another test we used the log GDP per capita and find identical results.

us to identify the true sensitivity of tax revenues to tax rates. We draw our data on the ideological orientation of the chief executive from the Database of Political Institutions (Beck et. al. (2001)). They classify this orientation in four categories: left, right, center, and other. In our sample we have 32% of country-years with left-wing chief executives, 43% of country-years with right-wing governments and 25% of country-years with other types of executives. As instruments for the tax rate we use two dummies: a dummy for left-wing chief executives and a dummy for right-wing chief executives. The F-test of the joint significance of the coefficients is significant at the 1% level.

In column 11 of Table 6 we report the results of our regressions where we have use these instruments. Our main result does not change: the interaction of private benefits with tax rates comes in negative and highly significant.

Finally, the predictions on the effects of ownership on the tax revenue sensitivity to tax rate changes are more nuanced (Corollary 6). The sign of the coefficient depends upon the level of the tax rate. Furthermore, at an aggregate level, ownership concentration is highly correlated with private benefits, so when we put them both in the regression (not reported) it is impossible to distinguish the effect of one from the effect of the other.

The preceding analysis constrains the tax revenue curve to be identical across all the countries (with the exception of the effect of corporate governance). In order to confirm the strength of our findings, we estimate country-specific slopes by employing the same specification country-by-country. Such a procedure, of course, comes at considerable cost since we estimate many more parameters with the same number of observations. Table 7 analyzes the relation between country-specific tax revenue slopes and governance levels weighting each observation by the precision of each estimate (the inverse of the variance of the estimated slope). As predicted by the model, the value of control premia is negatively related to the sensitivity of tax revenues to tax rates estimated using the logarithm of corporate tax revenues as a dependent variable (columns 1) and this finding is robust to the inclusion of ownership concentration as another variable.

7. *Conclusion*

This paper begins with the simple observation that tax authorities and outside shareholders have a common goal: reducing managerial diversion. By focusing on this natural alignment of interests, we provide a new way of looking at corporate taxation. This approach delivers three main insights.

First, the characteristics of the corporate tax system affect the amount of diversion that takes place in a country and the valuation of firms: higher tax rates worsen corporate governance, while a strong enforcement of tax claims can strengthen it. We provide evidence consistent with these predictions: increased tax enforcement in Russia enhanced the value of targeted companies and reduced their control premia. As predicted by the model, the magnitude of these changes in value and control premia is a function of prior levels of diversion.

Second, as corporate taxation influences corporate governance, the quality of corporate governance plays an important role in determining the sensitivity of tax revenues changes to tax rate changes. Consistent with this prediction, we find that the relationship between tax rates and revenues depends upon the underlying governance environment, with a greater responsiveness to rate changes in good governance environments, and a lower (in fact, negative) relationship in bad governance countries.

Third, this approach is also able to provide a new rationale for the existence of a separate tax rate on corporate income. The function of this tax is to certify the income to minority shareholders and to provide the incentives for the enforcement of this certification. This rationale is consistent with the supporting arguments used when the corporate tax was first introduced in the United States in 1909 and is able to explain a number of the features of the current tax system. This certification role of corporate taxes has not necessarily disappeared with the development of other mechanisms to monitor corporate insiders (external auditors, SEC, etc). In fact, the model suggests that that the level of the tax rate is complementary to the quality of the corporate governance. Hence, countries with better governance can use taxes more aggressively to further improve corporate governance, while countries with poor governance to begin with should be leery of using taxes to improve governance, because this might backfire.

Appendix

Proof of Result 5:

Substituting in the optimal level of diversion under a corporate income tax yields the two following FOCs:

$$\alpha + \gamma + \lambda - \psi\lambda - 1 - 2t\lambda = 0$$

$$\left[1 - \lambda(1-t)\right]\left[t + \psi\right] - \mu\alpha(\alpha+\gamma)^2 = 0$$

To check the SOCs, note that the matrix is negative semi-definite

$$\begin{pmatrix} -2\lambda & 1 \\ 1 - \lambda + 2t\lambda + \psi\lambda & -\mu(\alpha+\gamma)^2 - \mu\alpha(2\alpha + 2\gamma) \end{pmatrix}$$

Applying Cramer's Rule, the relationship between optimal tax rates, levels of enforcement and costs of enforcement are given by the signs:

$$sign \; \frac{dt}{d\mu} = \begin{vmatrix} 0 & 1 \\ \alpha(\alpha+\gamma)^2 & -\mu(\alpha+\gamma)^2 - \mu\alpha(2\alpha+2\gamma) \end{vmatrix} < 0$$

$$sign \; \frac{d\alpha}{d\mu} = \begin{vmatrix} -2\lambda & 0 \\ 1 - \lambda + 2t\lambda + \psi\lambda & \alpha(\alpha+\gamma)^2 \end{vmatrix} < 0 .$$

Proof of Corollary 7: Differentiating t^* with respect to γ we have

$$\frac{dt^*}{d\gamma} = \frac{\lambda^2\delta[\delta^2(1-\lambda)^2 + \lambda^2\delta(\gamma+\alpha_0)]^{-\frac{1}{2}}}{\delta\lambda} > 0 ; \text{ differentiating } t^* \text{ with respect to } \alpha_0 \text{ we have}$$

$$\frac{dt^*}{d\alpha_0} = \frac{\lambda^2\delta[\delta^2(1-\lambda)^2 + \lambda^2\delta(\gamma+\alpha_0)]^{-\frac{1}{2}}}{\delta\lambda} > 0 ; \text{ differentiating } t^* \text{ with respect to } \lambda \text{ we have}$$

$$\frac{dt^*}{d\lambda} = \frac{1}{\lambda^2} + \frac{1}{2}[\frac{1}{\lambda^2} - \frac{2}{\lambda} + 1 + \frac{1}{\delta}(\gamma+\alpha_0)]^{-1/2}(-\frac{2}{\lambda^3} + \frac{2}{\lambda^2}) > 0, \text{ differentiating } t^* \text{ with respect to } \delta \text{ we have}$$

$$\frac{dt^*}{d\delta} = \frac{1}{2}[\frac{1}{\lambda^2} - \frac{2}{\lambda} + 1 + \frac{1}{\delta}(\gamma+\alpha_0)]^{-1/2}(-\frac{1}{\delta^2}(\gamma+\alpha_0)) < 0.$$

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Figure 1: Returns for the World Oil & Gas Index, the Russian Oil& Gas Index, and the Russian Market (Excluding the Oil & Gas Industry), April 2000 - September 2001

This graph plots the index returns for the World Oil & Gas Index, the Russian Oil & Gas Index and the Russian Market Index Excluding Oil & Gas Firms from April 1, 2000 to September 30, 2001.
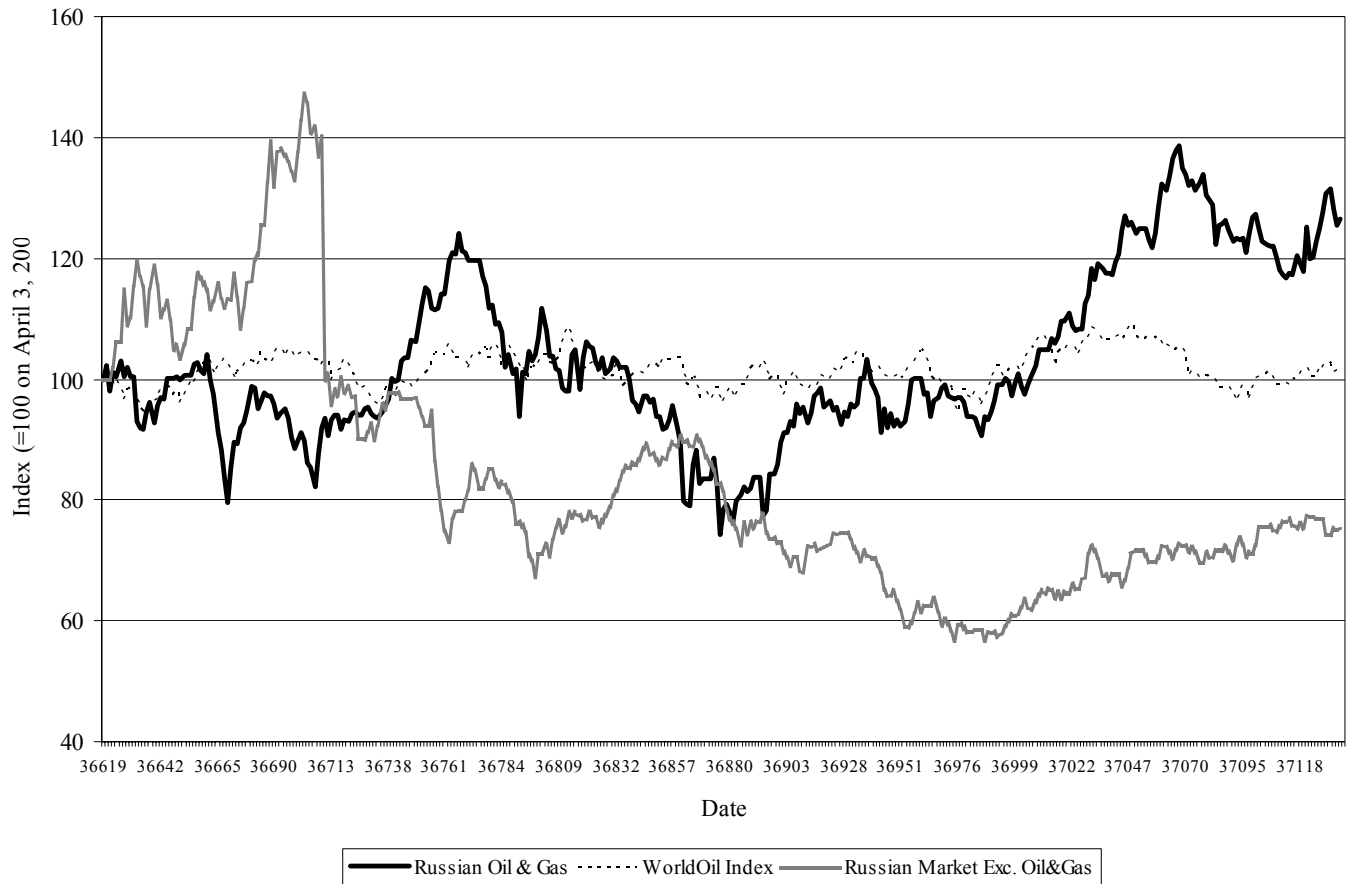
Figure 2: The Evolution of Top Marginal Corporate Tax Rates, 1979-1997

The figure depicts, by country, the evolution of top corporate marginal tax rates from 1979 to 1997 as provided in the University of Michigan Office of Tax Policy Research database.

corporate tax rates

year

Graphs by upname
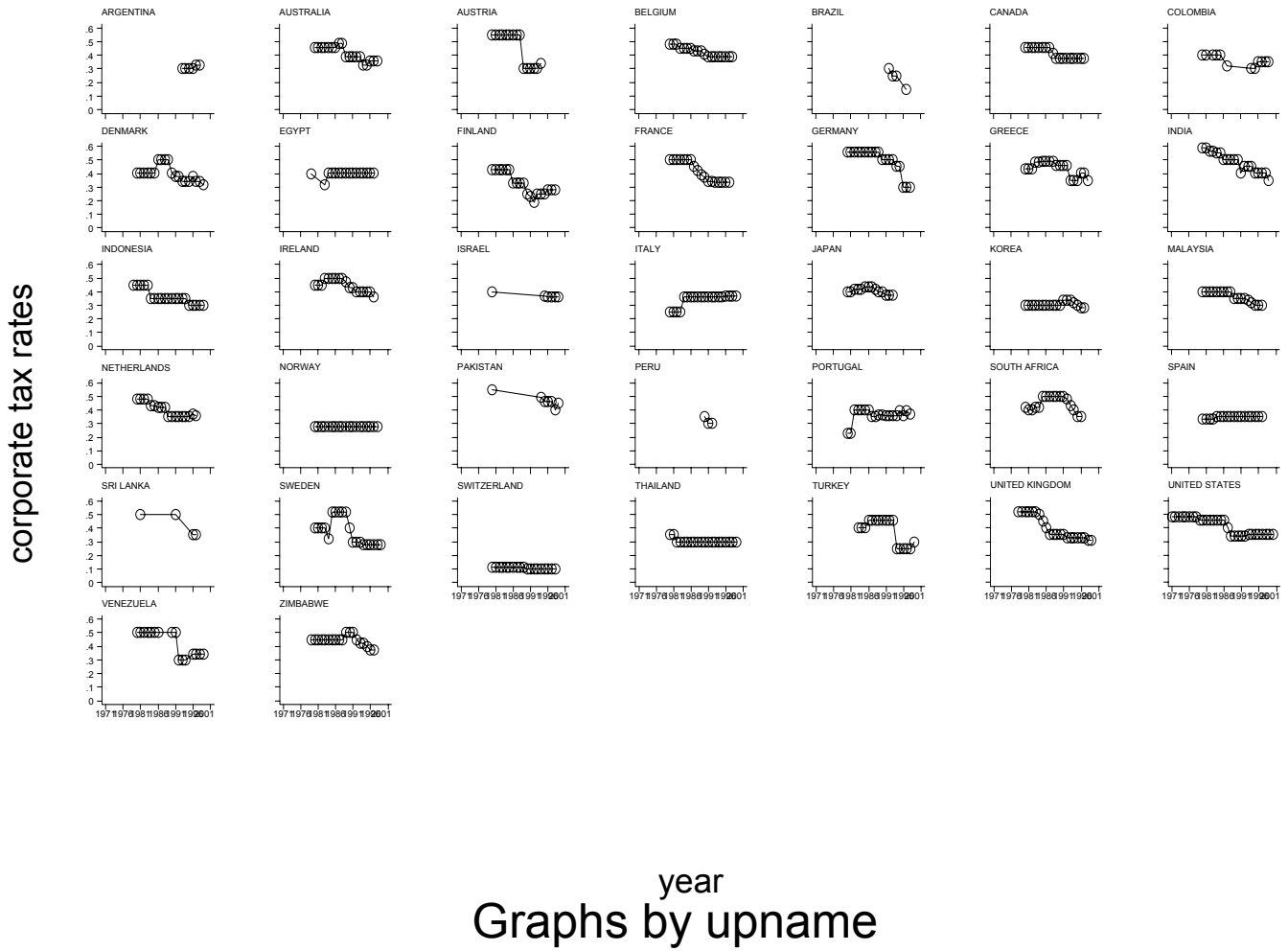
Table 1: Major Russian Tax Enforcement Actions and Excess Returns for Sibneft

Event date	Event description	Ten day cumulative excess return for Sibneft
12-Jul-00	Public raid by tax police of four companies controlled by oligarchs and announcement of criminal investigations. Coincides with public statements that challenge oligarchs and demand increased tax payments.	-0.054
28-Jul-00	Putin meeting with oligarchs. Leaked finance ministry memorandum showing low tax payments by energy firms. Memorandum provides first mention of Sibneft as a low tax payer.	0.114
10-Aug-00	Tax Police remove documents from Sibneft. Swiss police raid offices of Runicom, export trading arm of Sibneft.	0.092
25-Nov-00	Government announces further crackdown on tax avoidance in oil sector, including proposal to auction space on Transneft pipeline. In days publishes perceived lost revenue of more than $9 billion annually.	0.035
25-Jan-01	Putin meets with large oil company executives, revealing deep knowledge of types of oil tax avoidance, and suggesting that this behavior must be curtailed	0.017

Note: Ten day cumulative exess returns for Sibneft are measured from one day prior to and nine days after the event date. The standard deviation for excess returns for overlapping 10 day windows for Sibneft from Jan 1, 2000 to December 31, 2001 is .074 with mean of 0.007.

Table 2: Changes in Russian Voting Premia during Increased Enforcement Period

Panel A - Summary Statistics of the Voting Premia Prior to and After Tax Enforcement Actions

	Mean	Median	Standard Deviation	Number of companies
Average level of the voting premia prior to enforcement actions (average over March - June, 2000)	0.57	0.6	0.19	45
Average level of the voting premia after enforcement actions (averaged over February - May 2001)	0.46	0.47	0.23	44

Panel B - Differences Across Industries in Change in Voting Premia

	Dependent Variable: Change in Voting Premia	
	(1)	(2)
Constant	-0.078	-0.026
	(0.029)	(0.035)
Extractive industry dummy		-0.111
		(0.051)
Number of companies in extractive industries	7	7
Total Number of companies	15	15
Adjusted r-squared		0.207

Note: Panel A reports the average level of control premia for the unbalanced sample prior to the period of increased enforcement and after the enforcement period (in both instances reporting the company average over a four month period to capture the largest number of securities).The sample includes all russian equities in Datastream with two classes of stock (124 companies) where there is movement in the price of both voting and non-voting shares within five days (59 companies). The voting premia, expressed as a percentage of the equity value of the company, is defined as the difference in price between the voting and non-voting shares multiplied by the number of voting shares divided by the total equity value of the company. Panel B reports a regression of the change in the voting premia on a constant and a dummy variable for firms in extractive industries (oil and minerals) that were the focus of enforcement actions. This regression restricts attention to the more liquid securities that had trading volume both prior and after enforcement, using the average of the immediate month preceding and following the enforcement action
Standard errors are reported in parentheses.

Table 3: Russian Oil Companies and Tax Optimisation

Holding Company	Primary Production subsidiaries (a)	Investment Bank produced indicators of tax optimization 1999		
		Average 1999 crude net selling price ($/bbl) (a,b)	August 1999 internal net selling price ($/bbl) (b,c)	1999 production bpd (a,d)
(1)	(2)	(3)	(4)	(5)
Sibneft				326,500
	Noyabrskneftegaz	2.2	2.2	325,562
Slavneft (e)				238,600
	Megionneftegaz	3.5	2.1	237,350
TNK				513,600
	Tyummeneftegaz	2.5	na	36,981
	Nizhnevartovskneftegaz	2.5	2.2	363,125
Yukos				894,300
	Tomskneft	1.1	~1.0	205,421
	Samaraneftegaz	1.8	~1.0	153,418
	Yuganskneftegaz	1.8	~1.0	522,788
LUKoil	various subsidiaries	na	2.8	1,443,700
	Permneft	na	2.0	na
Rosneft (e)				251,000
	Krasnodarneftegaz	na	na	21,940
	Purneftegaz	3.9	3.0	163,743
	Sakhalinmorneftegaz	11.0	6.8	28,995
	Stavropolneftegaz	na	4.2	na
Onaco (e)				159,100
	Orenburgneft	8.6	3.0	148,900
Sidanco				250,300
	Chernogorneft	5.8	3.9	126,136
	Saratovneftegaz	6.7	3.8	27,265
	Udmurtneft	6.7	3.8	106,708
	Varioganneftegaz	4.3	3.8	49,690
Surgutneftegaz	Surgutneftegaz	na	7.0	751,500
Bashneft	Bashneft	na	2.6	245,200
Tatneft (e)	Tatneft	na	na	481,300
KomiTEK	Komineft	7.6	na	72,378
Others				1,916,000

(a) "Oil Production Subsidiaries," *Troika Dialog Research*, February 2000.
(b) Average export price, net of export costs and excise in 1999 was $13.50. Average domestic price net of taxes was $7.20
(c) Estimated from graph, "Oil Sector Report," Troika Dialog Research, March 2000, p. 29.
(d) "Oil Sector Report," *Troika Dialog Research,* March 2000.
(e) Owned and/or controlled by government.

Table 4: Tax Enforcement Actions and Short-Window Excess Returns Within the Oil Industry

Dependent Variable:	10 day excess returns around enforcement actions	
Tax avoidance indicator (average $/barrel selling price 1999)	-0.0795	
	(0.028)	
Tax avoidance indicator (average $/barrel selling price for 1999 if available August 1999 otherwise)		-0.0235
		(0.012)
Event dummies for four events noted in panel A	Y	Y
Number of firms	9	18
Adjusted r-squared	0.62	0.18

Note: This table examines whether the market response to announced enforcement actions depends upon how aggressive firms have been in avoiding tax payments. We focus on the four notable enforcement actions taken July 2000- January 2001 introduced in Table 1 (excluding Sibneft specific enforcement action). The table reports the results of a regression of short window excess returns (defined as the cumulative excess return in the ten day window (t-1, to t+9) surrounding the announced enforcement action) on indicators of tax avoidance. In our excess return calculations we use the RTS index, using the rouble index when the security is quoted in roubles and the $ index when the share price quoted in dollars. For indicators of tax avoidance, we use the selling price for oil by company in 1999 reported by investment the average $1999 selling price is missing. Data are from the RTS daily archive, using the last price reported. Companies are excluded if there is no trading volume and no reported change in last price over the relevant event window. Standard errors are in parentheses.

Table 5: Descriptive Statistics for Corporate Laffer Curve Specifications

	No of Obs.	Mean	Median	Std. Dev.	Min	Max
Panel Variables						
Log Corporate Tax Revenues	545	3.6965	3.0782	2.8979	-5.2983	14.4093
Corporate Tax Revenues/Total Tax Revenues	540	0.1141	0.0879	0.0897	0.0093	0.4357
Corporate Tax Revenues/GDP	545	0.0241	0.0205	0.0150	0.0030	0.0910
Marginal Tax Rates	545	0.3781	0.3800	0.0972	0.0980	0.6000
Ownership Concentration	545	0.4370	0.4700	0.1386	0.1800	0.6700
Measure of Private Benefits	458	0.1137	0.0629	0.1403	-0.0430	0.6495
Rule of Law	545	7.7174	8.5700	2.3818	1.9000	10.0000
Tax Evasion	521	3.3043	3.4100	0.9020	1.7700	4.6700
Maximum Within-Country Difference in Marginal Tax Rates	545	0.1615	0.1670	0.0740	0.0200	0.3100
Cross-Sectional Variables						
Country-Specific Laffer Slopes Using Log Corporate Tax Revenues	32	0.9731	-0.1183	5.6650	-7.2815	23.2709
Country-Specific Laffer Slopes Using Corporate Tax Revenue to Total Revenue Shares	32	0.0510	-0.0025	0.4961	-1.0454	1.7917
Country-Specific Laffer Slopes Using Corporate Tax Revenue to GDP Shares	32	0.0244	0.0003	0.1716	-0.3528	0.7774
Measure of Private Benefits	28	0.1504	0.0731	0.1809	-0.0430	0.6495

Correlation matrix for institutional variables

	Control premia	Ownership concentration	Rule of law	Measure of tax compliance	Log GNP per capita
Control premia	1.000				
Ownership concentration	0.537	1.000			
Rule of law	-0.348	-0.518	1.000		
Measure of tax compliance	-0.562	-0.486	0.547	1.000	
Log GNP/capita	-0.323	-0.530	0.868	0.475	1.000

Notes: The table provides descriptive statistics for variables employed in Tables 6 to 8. The top panel provides descriptive statistics for variables form the unbalanced panel while the bottom panel provides variables from the cross-section of country when the Laffer equations are run country-by-country. "Log Corporate Tax Revenues" is the natural log of corporate tax revenues as measured in local currency and as provided in the Government Finance Statistics (GFS) electronic database. "Corporate Tax Revenues/Total Tax Revenues" is the ratio of corporate tax revenues to total tax revenues as provided in GFS and as described in text. "Corporate Tax Revenues/GDP" is the ratio of corporate tax revenues to GDP as provided in GFS and IFS and as described in text. "Marginal Tax Rates" are the top corporate statutory rates as provided in the OTPR database and as described in the text. "Ownership Concentration" is the average percentage of common shares owned by the three largest shareholders in the 10 largest nonfinancial, privately owned domestic firms in a given country as computed by La Porta et al. (1998). The "Measure of Private Benefits" is the control premium in negotiated control block sales, as computed by Dyck and Zingales (2003). "Rule of Law" is a measure of the law and order tradition as reported in the International Country Risk Guide and reported in La Porta et al. (1998). "Tax Evasion" is a measure of tax compliance reported in the Global Competitiveness Report for 1995 as reported in La Porta et al. (1999). "Maximum Within-Country Difference in Marginal Tax Rates" is the maximum difference between tax rates for a given country during the panel. Log GNP per capita is the average of 1970-1995, from the World Bank.

Table 6: Effect of Corporate Governance On the sensitivity of Tax Revenues to Tax Rates

Dependent Variable:	Log of Corporate Tax Revenues								Corporate Tax Revenues/ GDP	Corporate Tax Revenues/ Total Tax Revenues	Log of Corporate Tax Revenues (IV)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	All Countries	All Countries	All Countries	All Countries	Low Private Benefit Countries (<7.5%)	High Private Benefit Countries (>7.5%)	Lower Private Benefit Countries (<10.0%)	Higher Private Benefit Countries (>10.0%)	All Countries	All Countries	All Countries
Marginal Tax Rates	1.2627	-1.0706	1.3285	-4.9446	1.2438	-0.4072	1.0444	-0.9598	0.0137	0.0182	6.8097
	(0.5756)	(1.1913)	(1.9587)	(3.7902)	(0.5249)	(0.5539)	(0.4798)	(0.5281)	(0.0098)	(0.0569)	(1.4333)
Marginal Tax Rates Interacted with Measure of Private Benefits	-6.0502	-5.4275	-6.0930	-4.7807					-0.0698	-0.2866	-36.5611
	(2.2017)	(1.9341)	(1.7814)	(1.9633)					(0.0386)	(0.2492)	(13.9816)
Marginal Tax Rates Interacted with Rule of Law		0.2586									
		(0.1339)									
Marginal Tax Rates Interacted with Tax Evasion			-0.0184								
			(0.5607)								
Marginal Tax Rates Interacted with Log GNP per capita				0.6669							
				(0.4165)							
Country Fixed Effects?	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y
Log GDP Interactions with	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y
Number of Countries	31	31	31	31	16	15	18	13	31	31	29
No Obs.	458	458	458	458	270	188	309	149	458	453	422
R-Squared	0.9588	0.9593	0.9590	0.9588	0.8810	0.9796	0.8687	0.9861	0.5599	0.6929	0.9926

The dependent variables are: the log of corporate tax revenues (columns 1-8,11), the ratio of corporate tax revenues to GDP (column 9), the ratio of corporate tax revenues to total tax revenues (column 10). "Marginal Tax Rates" are the top corporate statutory rate as provided in the OTPR database and as described in the text. The "Marginal Tax Rate Interacted with Measure of Private Benefits" is the product of the tax rate and the control premium in negotiated control block sales, as computed by Dyck and Zingales (2003). The "Marginal Tax Rate Interacted with Rule of Law" is the product of the tax rate and a measure of the law and order tradition as reported in the International Country Risk Guide and reported in La Porta et al. (1998). The "Marginal Tax Rate Interacted with Tax Evasion" is the product of the tax rate and a measure of tax compliance reported in the Global Competitiveness Report for 1995 as reported in La Porta et al. (1999). The "Marginal Tax Rate Interacted with Log GNP Per Capita" is the product of the tax rate and log GNP per capita (average 1970-1995) from the World Bank as reported in La Porta et al. (1999). All specifications employ country fixed effects and the interactions of those country fixed effects with log GDP. In column 11, we instrument for marginal tax rates and for the interaction of tax rates with private benefits with ideological orientation of the chief executive, and the ideological orientation interacted with private benefits. Standard errors are presented in parentheses and correct for clustering of residuals at the country level.

Table 7: The Importance of Corporate Governance and Ownership Concentration for Country-Specific Slopes

Dependent Variable:	Country Specific Slopes using Log of Corporate Tax Revenues	Country Specific Slopes using Corporate Tax Revenues/GDP	Country Specific Slopes using Corporate Tax Revenues/Total Tax Revenues
	(1)	(2)	(3)
Constant	0.6958	0.0108	0.0139
	(0.4673)	(0.0065)	(0.0180)
Measure of Private Benefits	-3.4626	-0.0479	-0.1020
	(1.4096)	(0.0174)	(0.0488)
No Obs.	28	28	28
Weighted by the Inverse of the Variance of the Measured Slope?	Y	Y	Y
R-Squared	0.1332	0.1370	0.0507

Note: The dependent variable in column 1 is the country-specific slope generated by regressing the log of corporate tax revenues on log GDP and the corporate statutory rates. The dependent variable in column 2 is the country-specific slope generated by regressing the ratio of corporate tax revenues in GDP on log GDP and the corporate statutory rates. The dependent variable in column 3 is the country-specific slope generated by regressing the ratio of corporate tax revenues to total tax revenues on log GDP and the corporate statutory rates. The "Measure of Private Benefits" is control premium in negotiated control block sales, as computed by Dyck and Zingales (2003). All specifications are weighted least squares regressions where observations are weighted by the inverse of the variance of the measured slopes from country-specific regressions.