Corporate Governance and Taxation

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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 impact the size of private benefits managers are able to extract. A higher tax rate increases the amount of income a manager would divert, while stronger tax enforcement reduces it and, in so doing, can raise the stock market value of a company in spite of the increase in the tax burden. Firm and market reactions to tax enforcement changes in Russia provide evidence that is consistent with this prediction. We also show that the corporate governance system affects the level and sensitivity of tax revenues to tax changes. When the corporate governance system is ineffective (i.e., when it is easy to divert income) or when ownership concentration levels are high, an increase in the tax rate can reduce tax revenues generating a corporate version of the Laffer-curve. We test the Laffer-curve predictions 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 ownership is more concentrated and corporate governance is weaker.

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 investors' protections (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 investors (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) and Hassett and Hubbard (1999)).

In this paper, we provide a simple reason for why the analysis of corporate governance and taxation should be integrated. Any transaction that does not have a substantive economic purpose and is designed solely to avoid taxes risks legal challenge and penalties. As a result, corporations are often induced to mischaracterize the purpose of many transactions aimed at reducing their tax burden. These forms of concealment involved in sheltering make a company's financial affairs more opaque to outside investors. This opacity, in turn, makes it harder for outside investors to control insiders. As a consequence, tax systems that induce sheltering can worsen corporate governance. The converse is also true. Better corporate governance implies more transparency and this transparency makes it more difficult to shelter income. Hence, better corporate governance can reduce tax sheltering.

More generally, the interaction between corporate governance and taxes can be seen as a game among three parties – the state, firm insiders, and outside shareholders. Our claim is simply that bilateral interactions have important spillover effects on the third party: the way the State designs and enforces taxes influences the relationship between insiders and outside shareholders, while the nature of the relationship between insiders and outside shareholders (corporate governance) influences the working of the corporate taxation system.

We assume the existence of a standard corporate tax system and then study the effects this system has on the amount of income diverted by insiders. Our key assumption is that tax sheltering – defined as any decision that if noted by the tax authority would be challenged –

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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 decisions (e.g. Graham (2003)).

makes corporate accounts more opaque and, consequently, makes it easier to divert corporate resources. We validate this assumption by investigating an environment – Russia – where both tax avoidance and managerial diversion are more macroscopic. Based on this assumption, we build a simple model where the decision maker is an insider (a controlling shareholder or a manager) that must choose the optimal level of sheltering given that sheltering is costly because managers that are caught avoiding corporate taxes are fined or jailed.[2]

Within this simple framework we analyze how the corporate tax system affects the level of tax sheltering and managerial diversion. We show that a higher tax rate increases the level of diversion, while stronger tax enforcement reduces it. Not surprisingly, a higher tax rate increases the return to tax avoidance strategies and hence the amount of sheltered income. More interestingly, this rate increase will also lead to an increase in the amount of private benefits, since insiders can more easily appropriate sheltered income. By contrast, increased levels of tax enforcement reduce the return to sheltering income and, by the same logic, reduce the amount of private benefits. Most interestingly, for low levels of statutory tax rates in weak corporate governance environments, an increase in the extent of tax enforcement increases the amount outside shareholders will receive (even accounting for the higher amount of taxes paid). Hence, for a given tax rate, an increase in tax enforcement can increase (rather than decrease) the stock market value of a company.

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 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-backed relation between corporate tax rates and corporate tax revenues – a corporate version of the Laffer-curve. By contrast, when it is difficult to divert income, there is a more direct relation between tax rates and tax revenues, mitigating the Laffer-curve effect. The reason is 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. This effect exacerbates the reduction in reported corporate income in response to a rate increase. The same is true for a high level of ownership concentration. When insiders own a large fraction of the cash flow rights, then they internalize more of the benefit of

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[2] Clearly, some degree of income sheltering is legal. In such cases, the cost we have in mind is an effort cost. More

tax sheltering, increasing the equilibrium level of sheltering and the responsiveness of sheltering to tax increases (and hence the shape of the corporate Laffer curve).

Finally, we show that there exists an interaction between ownership concentration, the corporate governance system, and the equilibrium level of tax avoidance. In poor corporate governance environments, a controlling shareholder with little equity ownership will have too strong incentives to shelter income from the tax authorities from the point of view of outside investors, because he can steal more from the sheltered income. By contrast, in a good corporate governance environment, a controlling shareholder with little equity ownership will have too little incentive to shelter income, from the point of view of outside investors, because he takes some personal risk in sheltering income but benefits very little from it.

We then test the corporate governance and tax policy implications of our model. To test the corporate governance implications of taxes, we focus on Russia, an environment where both managerial diversion and tax evasion are manifest. We study the effect of the increase in tax enforcement that followed Putin's election on stock prices and the value of control (a proxy for the amount of managerial diversion). As predicted by our 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. The increased tax enforcement also 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 using a panel of countries that vary with respect to their ownership concentration and corporate governance rules. In particular, we test the corporate Laffer curve implications 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 and higher levels of ownership concentration. In particular, the empirical estimates suggest that corporate tax rate increases lead to corporate tax revenue increases only in countries with very small controlling blocks and/or strong corporate governance. As protection of outside shareholders weakens and as ownership concentration increases, these tax revenue increases are offset and ultimately outweighed by increased evasion. The inclusion of other

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aggressive income sheltering, however, is legally dubious and can result in such penalties.

control variables associated with the institutional environment – such as rule of law and measures of tax compliance – does not alter this result.

Analyzing taxes from a corporate governance point of view also helps explain why the typical U.S. company (which operates in a good corporate governance environment with little degree of ownership concentration) exploits too few sheltering opportunities (Weisbach (2002)). It also explains why tax sheltering increases with an increase in ownership concentration or an increase in pay-per performance sensitivity (Desai, Dharmapala and Park (2003)). Finally, this view is able to explain why firms are willing to pay taxes on fraudulently reported earnings in order to keep the IRS from monitoring them, as Erickson et al. (2003) show.

Finally, our results have implications for the design of tax systems. They suggest that the fiscal effects of any corporate tax reform cannot be assessed without looking at the pre-existing corporate governance situation and prevailing levels of ownership concentration. They also suggest a clear direction for reforms in emerging markets. An increase in tax enforcement can provide payoffs to both governments and outside shareholders, as it generates greater revenue and higher share values.

Our paper explores only one dimension of the interaction between corporate governance and taxation. Arlen and Weiss (1995) emphasize the impact of taxes on the agency problem between managers and shareholders - taxes favor retention, exacerbating the agency problem. Others have suggested that taxation of intercorporate dividends affects the use of holding structures in the US, and suggested that this discourages monitoring (Roe (1991)) or alternatively could limit diversion by reducing stock pyramiding (Morck (2003)).

The rest of the paper proceeds as follows. Section 2 provides a clinical study of Sibneft, a Russian oil company, that illustrates the links between corporate tax avoidance and private benefits of control in a setting where both phenomena are manifest. Section 3 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 4 tests the corporate governance implications of tax enforcement changes using recent changes in Russia, while Section 5 tests the effects of corporate governance and ownership concentration on the impact of corporate tax changes in a panel of countries. Section 6 discusses how this corporate governance view of corporate taxation

provides a rationale for the existence of a separate tax rate on corporate profits with many (but not all) of the features of the existing U.S. corporate tax system. Section 7 concludes.

2.   *Tax Sheltering and Managerial Malfeasance*

Both tax avoidance and managerial diversion are phenomena that are difficult to document. In fact, enormous effort is undertaken to ensure that these phenomena are not easily observable. As a result, we employ various types of empirical analysis – a case study and analysis of variation at the firm, industry and country level – that taken together paint a consistent picture of a relationship between taxation and governance.

To understand how sheltering and diversion can interact, we begin with a case study of an oil company in Russia, a setting where managerial diversion and tax sheltering are more macroscopic. We choose Sibneft, the 5th largest Russian integrated oil company, as it was one of the first companies to be indicted for tax evasion. While subject to the inherent limitations of a case study, this focus on a single company allows us to investigate the organizational responses associated with sheltering and diversion after a change in tax enforcement.

While we choose to illustrate the links between tax avoidance and managerial diversion in Russia, where both phenomena are more macroscopic, we do not think this interaction exists only in emerging markets. The indictments of executives at Tyco Incorporated and the Joint Committee on Taxation (2003) investigation of Enron suggest strongly that tax sheltering vehicles, including special purpose vehicles, were used by managers to facilitate self-enrichment.[3]

2.1.   *High tax rates, high sheltering and diversion*

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 even exceed profits.[4] Company executives were not shy about

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[3] An in-depth analysis of Tyco's case is available from the authors. In addition to the relevance for the U.S., Desai, Foley and Hines (forthcoming) demonstrate the congruence of minority shareholder and government interests in the multinational firm setting. Specifically, they show that multinational firms transfer price profits out of countries less when they are constrained by local partners.

[4] 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.

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."[5]

A popular device to reduce taxes 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.[6] Consistently, company financials reveal an effective corporate tax rate of just 2.6%, far below the statutory rate of 30%. While firms described such activity as 'tax optimization' and emphasized its legality,[7] First Deputy Finance Minister Ignativev, in a widely circulated memorandum, used different words: "it appears that several companies actively use special tax-evasion schemes, by using front companies registered in domestic and foreign offshore zones, and by manipulating prices."[8]

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, most, if not all, profits have to be shifted to an intermediary located in an offshore or onshore tax haven. In the case of Sibneft, for "tax and cash flow optimization purposes, the Company uses third party intermediaries in its refining and distribution process." Sibneft's primary intermediary was the export trading company Runicom, which accounted for nearly all of Sibneft's foreign sales through 2000.[9] 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.

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

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

[7] See *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.

[8] Jeanne Whalen and Guy Chazan, "Russia Considers Probe Into Oil Industry's Taxes – Official Accuses Companies of Evading Payments," *Asian Wall Street Journal*, July 31, 2000, pg. A24 Recognizing this difference in interpretation, companies identified potential challenges to tax practices as a risk that could have a material impact on operations.

[9] 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.

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.[10] Runicom was also a significant Sibneft shareholder,[11] but not vice-versa, as would have made sense if the goal was to equitably share the benefits of tax sheltering.

2.2.   Can higher tax enforcement lead to higher stock prices?

If tax sheltering increases the opportunities for managerial diversion, higher tax enforcement should reduce them, benefiting outside shareholders. Sibneft provides some evidence in this respect.

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 of 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.[12]

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

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[10] 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.*
[11] 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.
[12] 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.

jumped from 2.6% to 10.4%. More interestingly, coincident with this pressure from government officials, Sibneft announced that it would no longer be trading with Runicom but would do trading with a newly created subsidiary SibOil whose results would be reported in their consolidated income statements.[13] 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.[14] 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.[15]

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 a dividend: $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. Additionally, Sibneft's share price rose well in excess of industry trends. Ass many other factors may be driving returns, it is difficult to establish a direct causal link. Having said that, this evidence does suggest that an increase in enforcement did not impede 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. The link between increased enforcement and greater returns was evident to some of the more astute local observers. As Dominic Gualtieri, head of equities for Alfa Bank stated, "As investors, we felt that when these guys were subject to review it was good for us. We didn't fear the tax take. We saw the government as an ally imposing greater transparency, accountability and predictability. In the end it translates into a benefit for us."[16] Echoing such sentiments, the *Financial Times* reported that companies like Sibneft "have begun

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[13] 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"

[14] "CorporateGovernance Actions," Troika Dialog, *Weekly Bulletin #113*, July 13, 2001, pg. 6.

[15] 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."

[16] Interview with the authors, May 30, 2003.

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."[17]

To illustrate how such a surprising result – that an increase in the effective tax rate could lead to an *increase* in stock prices—may arise, we provide a simple numerical example in Figure 1. We focus on the possibility of using transfer pricing to avoid a 20% tax imposed on production profits at oil extracting companies, a feature of the Russian tax code at that time. When tax enforcement is low, a firm can have its production subsidiary sell oil at cost to an export-trading arm. In this way, the 20% tax at the production level is completely avoided as depicted in the left hand side of Panel A of Figure1.

When tax enforcement increases, the traditional view of taxes, which ignores managerial diversion, has an unequivocal prediction: the share price will decrease. To see this result, compare the left and the right hand side of Panel A of Figure 1. An increase in enforcement stops artificial transfer pricing and forces the production entity to sell oil at $13 a barrel rather than at $2. As expected, income will go up, but so will taxes. As a direct consequence of the increased tax payment, the value of a share will drop, from $15.40 to $12.30.

Once we consider the interaction between tax sheltering and managerial diversion – an approach we label a 'governance view of taxes' – the outcome can be reversed. Tax enforcement (a move from the left to the right hand side of Panel B) again forces the production entity to sell at market prices and tax payments increase. But, as a result of the reduced tax sheltering, the amount appropriated by insiders will also go down. Hence, outside shareholders on the one hand see the value of their claim reduced by higher taxes, on the other hand see it increased by less diversion. The final outcome obviously depends upon the relative magnitude of the tax imposed by the government relative to the "tax" imposed by insiders. As our example illustrates, in an environment characterized by rampant diversion, the value of outside shareholders' claims can increase with greater enforcement.[18]

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[17] Andrew Jack, *Financial Times*, September 17, 2001.
[18] For this example, we choose a basic diversion rate of 10 percent with additional incremental diversion from sheltered income of 20 percent.

3.   *A Simple Model of Tax Evasion and Managerial Diversion*

The Sibneft case illustrates a simple point: income sheltered from the tax authority can be more easily appropriated by managers. This point has not been formally analyzed in the growing literature on optimal tax sheltering (e.g., Chen and Chu (2003) and Crocker and Slemrod (2003)).[19] This section formalizes such a link and derives implications both for the overall corporate governance system and for the effect of corporate taxes.

In order to do so, we need an operative definition of sheltering. Unfortunately, there is little consensus in the legal and economic literature on what sheltering precisely is.[20] For our purposes, we will define it as any activity that lowers taxable income and, if noted by the tax authority, would be challenged. According to this definition, a non-aggressive use of a standard tax shield, debt for instance, is not sheltering. But an aggressive use of the same tax shield, i.e., a special purpose vehicles used to reduce taxes that could be challenged by the IRS, would constitute sheltering. If we accept this definition, sheltering requires concealment. At the very least, a company would need to disguise in its official documents the real nature of such sheltering or it could be challenged. These concealed activities create more opportunities for managerial diversion.

3.1.   *Model setup*

Let $s \in [0,1]$ be the proportion of income that is sheltered from tax authorities. The benefit of income sheltering is that sheltered income avoids corporate taxes, while non-sheltered income is taxed at rate t. We assume income sheltering is costly to insiders, as they have to exert effort to do so and, more importantly, because they run a personal risk if their strategy is deemed illegal. We model this cost with the following quadratic function:

$$C(s) = \frac{a}{2} s^2$$

where a is a parameter that captures the quality of the tax enforcement regime. The higher the enforcement, the more likely it is that insiders are accused of illegal tax sheltering and thus the

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[19] In their empirical study of private benefits of control, Dyck and Zingales (2003) document the effect of better tax enforcement on private benefits. They do not, however, formally analyze the relation between the two. Slemrod and Yitzhaki (2002) review the literature on tax evasion but this is largely concerned with individual tax evasion.
[20] Both Shaviro (2000) and Weisbach (2002) detail alternative rationales for classifying and defining sheltering. Most commentators agree, as Weisbach (2002) notes, that "there is no *a priori* definition of shelters."

higher is their personal penalty.[21] As Crocker and Slemrod (2003) argue, there are laws providing for both criminal and civil penalties for tax evasion in the United States, with public attention in tax cases introducing additional reputational penalties for managers. While criminal sanctions in tax evasion cases are rare in the US, they are far more common abroad.

The model relies critically on the assumption that sheltered income can be more easily appropriated by insiders. As the Sibneft example illustrates, the ambiguity over the true nature of sheltered income facilitates greater diversion out of those amounts. We capture this idea by assuming that insiders divert a higher fraction of the sheltered income than of the income declared to tax authorities. If g is the fraction of non-sheltered income appropriated by insiders, then the fraction of sheltered income appropriated will be $b = g + d$, with $d > 0$. Since the larger g is, the worse corporate governance is, $(1 - g)$ is an index of the quality of corporate governance and d is a measure of the degree to which sheltered income is more easily diverted relative to non-sheltered income.

Without loss of generality, we normalize the company's true profit (pre-tax, pre-sheltering, and pre-diversion) to 1. Then, an insider who owns a fraction l of the shares obtains a payoff of

(1) $$V^C = l[(1 - s)(1 - t)(1 - g) + s(1 - b)] + (1 - s)(1 - t)g + bs - \frac{a}{2}s^2 .$$

The first term in square bracket is the value an insider obtains *qua* shareholder. The second and third terms, by contrast, are the amount she expropriates thanks to her controlling position. The last term is her personal cost of sheltering.

Outside shareholders collectively get

(2) $$V^M = (1 - l)[(1 - s)(1 - t)(1 - g) + s(1 - b)]$$

as they do not receive diverted income and also do not bear the costs of sheltering.

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[21] Of course, sheltering income also imposes a cost on the company. For simplicity, however, we abstract from this aspect, since it does not change the flavor of our results.

3.2.   *The optimal level of tax sheltering*

Given the concavity of equation (1), the optimal amount of sheltering for the insiders, s^*, can be derived from the first order condition. Assuming an interior solution, we have

$$s^* = \frac{[b + l(1-b)] - (1-t)[g + l(1-g)]}{a}$$

Note that in choosing the optimal level of sheltering, insiders will only look at their own benefits (equation 1) ignoring the impact on outside shareholders. This level of sheltering can be too much or too little with respect to what outside shareholders would like.[22]

From an outside shareholders' perspective, the optimal level of income sheltering trades off expropriation by the government through the tax system and expropriation by insiders. Any dollar of income that is sheltered avoids the corporate tax, but is "taxed" (expropriated) more heavily by insiders, and this additional expropriation can exceed the cost of the corporate tax. In order to illustrate this further, it is useful to define a threshold level of the tax rate:

$$\hat{t} = \frac{b-g}{1-g} = \frac{d}{1-g}$$

If $t < \hat{t}$, additional expropriation by insiders made possible by the sheltering of the income offsets any gains from reduced taxes and outside shareholders are better off when there is no sheltering. By contrast, when $t > \hat{t}$, the burden of corporate taxes is greater than the additional expropriation insiders impose on sheltered income, so sheltering benefits outside shareholders.

It is critical to note that $\hat{t}$ is a function of the underlying corporate governance system. In a world where corporate governance is perfect ($b = g = 0$, $\hat{t} = 0$), outside shareholders unambiguously benefit from sheltering since they bear no cost of sheltering and reap all the benefits. Clearly, the result would be less extreme if they bear some cost of the sheltering, but the fundamental tension between the interest of insiders and that of the outside shareholder remains. Indeed, this is the common intuition of how shareholders benefit from increased tax sheltering. At the other extreme, if the corporate governance system is weak and insiders are able to appropriate all the sheltered income $(b = 1)$, then outside shareholders would like no

sheltering of income. Similarly, the degree to which sheltered income is more easily diverted (d) also matters critically for the preferences of outside shareholders over sheltering activity.

More generally, it is clear that the optimal level of sheltering depends critically on the available diversionary technology.

Result 1: The optimal amount of tax sheltering increases in the tax rate, t, and decreases in the level of corporate governance $(1 - g)$, tax enforcement a , and, if $t < \hat{t}$, insider ownership l . By contrast, if $t > \hat{t}$ the optimal amount of tax sheltering increases in the level of insider ownership l .

Proof: $\dfrac{ds^*}{dt} = \dfrac{g + l(1-g)}{a} > 0.$ Substituting $b = g + d$, we have $\dfrac{ds^*}{dg} = \dfrac{t(1-l)}{a} > 0.$

$$\frac{ds^*}{da} = -\frac{[b + l(1-b)] - (1-t)[g + l(1-g)]}{a^2} < 0\,;$$

$$\frac{ds^*}{dl} = (1-b) - (1-t)(1-g) < 0 \ \text{if} \ t < \hat{t} \ \text{and} > 0 \ \text{if} \ t > \hat{t}.$$

The first result is obvious: a higher tax rate makes tax sheltering more advantageous and this will lead to a higher amount of diversion. The second result is more interesting in so much as it identifies an interaction between the incentives to shelter and the quality of the corporate governance system. A controlling shareholder captures only a fraction of the tax benefit of sheltering (while in our model she bears the entire cost). The worse the corporate governance system (and thus the more she can expropriate), the more she will internalize the benefit of tax sheltering, and hence the more she will shelter income. We return to this point below. The third result is more straightforward. If the personal cost borne by the manager to shelter income goes up (i.e., there is increased enforcement), the level of income sheltered goes down. The fourth result indicates that the relative importance of taxation versus expropriation drives the interaction between ownership and tax sheltering. A higher controlling stake makes insiders internalize more the value distributed to all shareholders relative to the value of his private benefits. If $t < \hat{t}$

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[22] The outside shareholder optimal level does not coincide with the first best level either. In considering the trade off, they ignore the cost of sheltering borne by the managers.

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the value distributed to all shareholders decreases with sheltered income, hence insiders will shelter less when she owns more stock. The opposite is true, if $t > \hat{t}$.

Result 2: The impact of insider ownership on the optimal amount of tax sheltering increases in the level of corporate governance $(1 - \boldsymbol{g})$.

Proof: Substituting $\boldsymbol{b} = \boldsymbol{g} + \boldsymbol{d}$, we have

$$\frac{d^2 s^*}{d\boldsymbol{l}\, d(1 - \boldsymbol{g})} = (1 - t) > 0$$

Greater insider ownership induces insiders to internalize more of the security benefits and hence the interest of outside shareholders. In good corporate governance regimes, outside shareholders like sheltering because the government is more rapacious (i.e., takes a bigger cut) than insiders. And the better the corporate governance system is (the higher the $(1 - \boldsymbol{g})$), the more appealing sheltering is. Hence, the more cash flow rights controlling shareholders own, the more they want to shelter income.

By contrast, in countries where the corporate governance system is bad, majority shareholders are more rapacious and, thus, from the outside shareholders' point of view sheltering becomes less appealing. Hence, the more cash flow rights insiders own, the more they will think as outside shareholders and the weaker are their incentives to shelter. In fact, if $t < \hat{t}$ (i.e., the government is less rapacious than the majority shareholders) the amount of tax sheltering decreases in the level of insider ownership. If we consider the United States as having a relatively good corporate governance system, this evidence is consistent with Desai, Dharmapala and Park (2003), who find that in the United States sheltering increases with an increase in ownership concentration or an increase in pay-per performance sensitivity.

3.3.   The effect of the tax system on the value of outside shares and on the value of control

These results on the optimal level of sheltering and the preferences of outside investors over sheltering readily translate into results concerning the effect of changes in enforcement.

Result 3: If $t < \hat{t}$, the market value of a company increases when tax enforcement increases.

Proof: The market value of shares reflects the value of outside shares. Hence,

$$\frac{dV^m}{d\boldsymbol{a}} = \frac{\partial V^m}{\partial s}\frac{ds}{d\boldsymbol{a}} > 0 \text{ because } \frac{\partial V^m}{\partial s} = -(1-t)(1-\boldsymbol{g}) + (1-\boldsymbol{b}) < 0, \text{ if } t < \hat{t} \text{ and}$$

$$\frac{ds}{d\boldsymbol{a}} = -\frac{[\boldsymbol{b} + \boldsymbol{l}(1-\boldsymbol{b})] - (1-t)[\boldsymbol{g} + \boldsymbol{l}(1-\boldsymbol{g})]}{\boldsymbol{a}^2} < 0. \text{ Hence, the result follows.}$$

Result 3 is nothing more than a formalization of the example illustrated in Figure 1, which we discussed in section 2.2. In the traditional view of corporate taxes (where the effect of taxes on managerial dilution is not considered), an increase in tax enforcement necessarily leads to a decrease in stock prices, since companies will be forced to pay more taxes and hence they will be worth less. Once we take into account the effects of tax enforcement on managerial diversion (what we call a corporate governance view of taxes), this conclusion can be overturned. By reducing the amount of tax sheltering, an increase in tax enforcement not only increases the amount of taxes paid to the Government, but also reduces the amount appropriated by the majority shareholder. If $t < \hat{t}$, the taxes paid on declared income are less than the additional income expropriated by insiders. Hence, outside shareholders are better off. Since the market value of shares reflects the value outside shareholders receive, stock market value can increase with greater enforcement.

These results also carry implications for control premia. Following Dyck and Zingales (2003), 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:

$$CP = \frac{\boldsymbol{l}[\dfrac{V^C}{\boldsymbol{l}} - \dfrac{V^M}{1-\boldsymbol{l}}]}{\dfrac{V^M}{1-\boldsymbol{l}}} = (1-\boldsymbol{l})\frac{V^C}{V^M} - \boldsymbol{l} \ .$$

Accordingly, we have

Corollary 1: If $t < \hat{t}$, the relative control premium declines with the level of tax enforcement.

Proof: $\frac{\partial CP}{\partial \boldsymbol{a}} = \frac{(1-\boldsymbol{l})}{(V^m)^2}[\frac{dV^C}{d\boldsymbol{a}}V^m - V^C\frac{dV^m}{d\boldsymbol{a}}]$. By using the envelope theorem

$\frac{dV^C}{d\boldsymbol{a}} = \frac{\partial V^C}{\partial \boldsymbol{a}} = -\boldsymbol{a}s < 0$. Since by Result 1 $\frac{dV^m}{d\boldsymbol{a}} = \frac{\partial V^m}{\partial s}\frac{ds}{d\boldsymbol{a}} > 0$, the result follows.

The result is fairly intuitive. Higher tax enforcement increases the cost of sheltering income. This reduces the payoff of controlling shareholders (V^C) and if $t < \overset{\$}{t}$ increases the payoff of outside shareholders (V^m). Hence, the control premium will drop.

In addition to these results on the effects of enforcement on share values, it is possible to consider the effects of tax rates on share values.

Result 4: An increase in the tax rate t reduces both the value of outside shareholders (V^m) and the value of controlling shareholders (V^C). The effect on the control premium is ambiguous.

Proof: By using the envelope theorem $\frac{dV^C}{dt} = \frac{\partial V^C}{\partial t} = -[\boldsymbol{g} + \boldsymbol{l}(1-\boldsymbol{g})] < 0$.

$\frac{dV^m}{dt} = \frac{\partial V^m}{\partial t} + \frac{\partial V^m}{\partial s}\frac{ds}{dt}$, where $\frac{\partial V^m}{\partial t} = -(1-\boldsymbol{l})(1-s)(1-\boldsymbol{g}) < 0$, $\frac{\partial V^m}{\partial s} < 0$, and

$\frac{ds}{dt} = \frac{\boldsymbol{g} + \boldsymbol{l}(1-\boldsymbol{g})}{\boldsymbol{a}} > 0$. $\frac{\partial CP}{\partial t} = \frac{(1-\boldsymbol{l})}{(V^m)^2}[\frac{dV^C}{dt}V^m - V^C\frac{dV^m}{dt}] = $

$\frac{(1-\boldsymbol{l})}{(V^m)^2}\{-V^m[\boldsymbol{g} + \boldsymbol{l}(1-\boldsymbol{g})] - V^C[-(1-\boldsymbol{l})(1-s)(1-\boldsymbol{g}) + [(1-\boldsymbol{b}) - (1-t)(1-\boldsymbol{g})]\frac{\boldsymbol{g} + \boldsymbol{l}(1-\boldsymbol{g})}{\boldsymbol{a}}]\}$.

3.4.   The effect of the tax system on tax revenues – The corporate Laffer Curve

Our simple model of tax sheltering has, as a natural consequence, the possibility that corporate tax revenues will decrease when corporate tax rates increase. Given the strong analogy with the "Laffer" effect in income tax revenue, we will refer to this phenomenon as the corporate Laffer curve.

Result 5: For intermediate levels of tax enforcement, there is a Laffer curve for corporate tax revenues.

Proof: Corporate tax revenues (CTR) are given by $t(1-s)$. Differentiating this with respect to t we obtain

$$\frac{\partial CTR}{\partial t} = (1-s) - t\frac{ds}{dt} = (1-s) - t\frac{g+l(1-g)}{a} = \frac{1}{a}[a - [b + l(1-b)] + (1-t)[g + l(1-g)] - t[g + l(1-g)] =$$

$$\frac{1}{a}[a - [b + l(1-b)] + (1-2t)[g + l(1-g)]. \text{ If } a > [b + l(1-b)] - [g + l(1-g)] > 0, \text{ the}$$

derivative is positive at t=0. If $a < [b + l(1-b)] + [g + l(1-g)]$, then the derivative is

negative at t=1.

Not only does Result 5 establish the possibility of a Laffer curve, but it also suggests it

may occur for parameter values that are consistent with international evidence on taxation. For

example, with insider ownership of 50%, diversion of taxable income equal to 10%, and

diversion of sheltered income equal to 30%, the level of tax enforcement a should be between

0.1 and 1.2 for the Laffer curve to arise. A value of a equal to 0.1 means that the expected

marginal cost of stealing one dollar is 10 cents, while a value of 1.2 means that the expected

marginal cost of stealing one dollar is 1 dollar and 20 cents. This appears to be a reasonable

range.

The most interesting aspect of the corporate governance view of taxes, however, is not

the existence of a Laffer curve *per se*, but the link between the shape of the Laffer curve and two

keys indicators of the a corporate governance system: the level of ownership concentration l

and the amount of feasible diversion g . These parameters, as in the empirical work that

follows, should be interpreted as referring to the representative firm in a country.

Corollary 2: A higher level of insider ownership and a lower level of corporate governance
(higher level of g) reduce the revenue maximizing tax rate. A higher level of tax
enforcement increases the revenue maximizing tax rate.

Proof: The revenue maximizing level of taxation is given by $t = \frac{1}{2} + \frac{a - [b + l(1-b)]}{2[g + l(1-g)]}$.

Differentiating this term with respect to l, g, a and remembering that $b = g + d$, delivers the

results.

The two panels of Figure 2 illustrate the effect of the corporate governance system and

ownership concentration on the corporate Laffer curve.   Panel A examines the relationship

between tax revenues and tax rates as a function of the size of insiders' block size.[23] When there is no large shareholder there is no Laffer curve, as revenues are always increasing in tax rates. However, as the size of the controlling block increases, the typical Laffer effect appears. The revenue-maximizing tax rate, then, starts to decrease in the controlling block size.

This result also depends upon the level of corporate governance. In Panel A, $g = 0.1$ so this chart should be interpreted as applying to countries with reasonably good corporate governance systems. Panel B of Figure 2 shows the same graph for a worse level of corporate governance ($g = 0.7$). In such settings, the situation is reversed. The revenue maximizing level of the corporate tax rate increases with the level of insider ownership.

Panel A of Figure 3 shows that for a given level of insider ownership the shape of the Laffer curve also depends on the quality of the governance system.[24] Specifically, as governance deteriorates the revenue-maximizing tax rates decreases for the reasons discussed above. Finally, Panel B of Figure 3 traces the effects of changes in enforcement on the revenue-maximizing rate. Again, as enforcement decreases, the revenue-maximizing tax rate also decreases. These results suggest that in environments characterized by imperfect tax enforcement and potential diversion by controlling shareholders, the revenue-maximizing rates may be considerably lower than anticipated, due to the interaction between tax sheltering and managerial diversion.

3.5. *The effect of personal taxes*

Thus far, we have not factored in the analysis of personal taxes. Of course, both controlling and outside shareholders care about their after-tax income. The effect of a personal income tax, however, depends upon which income is subject to personal taxes. We assume that all the income distributed to shareholders is taxed at t_p, while the remaining income, which is diverted by the manager, is not taxed. This captures the idea that diverted income is channeled through tax havens and as such is not subject to income taxes, while dividends distributed to all shareholders cannot avoid taxation. Then, the payoff to insiders and to the outside shareholders becomes

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[23] In this simulation, alpha is held at 0.7, gamma is 0.1, and delta is 0.2.
[24] In this simulation, alpha is held at 0.7 and the controlling block size is held at 0.5.

(1*) $V^C = (1-t_p)\textbf{\textit{l}}\,[(1-s)(1-t)(1-\textbf{\textit{g}}) + s(1-\textbf{\textit{b}})] + (1-s)(1-t)\textbf{\textit{g}} + \textbf{\textit{b}}\,s - \dfrac{\textbf{\textit{a}}}{2}s^2$

and

(2*) $V^M = (1-\textbf{\textit{l}})(1-t_p)\,[(1-s)(1-t)(1-\textbf{\textit{g}}) + s(1-\textbf{\textit{b}})]$.

Accordingly, the optimal amount of sheltering then becomes

$$s^{*\,\prime} = \frac{[\textbf{\textit{b}} + \textbf{\textit{l}}(1-t_p)(1-\textbf{\textit{b}})] - (1-t)[\textbf{\textit{g}} + \textbf{\textit{l}}(1-t_p)(1-\textbf{\textit{g}})]}{\textbf{\textit{a}}}$$

The effect of personal taxes is to decrease the effective ownership by insiders. Where in s^* the insider ownership was $\textbf{\textit{l}}$ in $s^{*\,\prime}$ the effective insider ownership is $\textbf{\textit{l}}(1-t_p)$. Hence, from *Corollary 2* we derive

> *Corollary 3:* If $t < \hat{t}$, the amount of tax sheltering increases in the personal tax rate and hence corporate tax revenues decrease in the personal tax rate. The opposite is true if $t > \hat{t}$.

This result suggests that the shape of the corporate Laffer curve is affected not only by ownership concentration and corporate governance, but also by the level of personal tax rates. Furthermore, this interaction is affected by the quality of the corporate governance system and by the level of ownership concentration itself. In fact, we can reinterpret Figure 2 in terms of personal tax rate. Since in our model an increase in the personal tax rate is equal to a decrease in insider ownership, Panel A of Figure 2 suggests that when corporate governance is good high personal tax rates lead to higher corporate tax revenues, while lower personal tax rates lead to lower corporate tax revenues. The opposite is true when corporate governance is poor as in Panel B of Figure 2. Hence, in a country such as Russia a reduction in the personal tax rate should lead to an increase in corporate revenues, while in the United States the opposite should be true.

3.6.   Robustness and Limitations of the Model

The interaction between corporate governance and taxes can be seen as a game among three parties – the state, the insiders, and the outside shareholders. The externality we have emphasized is that the way the State designs and enforces taxes impacts the relation between insiders and outsiders, while the terms of the relation between insiders and outsiders (corporate

governance) impact the working of the corporate taxation system. Of course, bilateral contracts can try to minimize these externalities.

The State, for instance, can demand higher payments from insiders in the form of bribes, in exchange for allowing a company to become more opaque (rather than less) to outsiders. While this might seem a remote possibility in the United States, it is not inconceivable in countries like Russia. In the absence of complete, binding bilateral contracts, our results still go through. Such binding contracts are unlikely because of two problems. First, nothing guarantees that after paying its bribe a company is not subject to additional requests for bribes. The advantage of taxes is that the State can commit not to harass a company twice. Second, the State faces an agency problem in its collection of taxes. If it accepts bribes instead of official tax payments, it finds it difficult to limit the skimming of the proceeds done by its delegated agents. Hence, collusion between the State and insiders at the expenses of outsiders has its own disadvantages.

Complete, binding bilateral contracts between insiders and outsiders to reduce their tax burden is also unlikely, because outsiders are dispersed. Such an outcome is more likely in privately held corporations where coordination and bilateral monitoring are easier.

In the model, we assume that outsiders have no power over insiders. While this might be an appropriate characterization of some situations (for example a majority shareholder), it is not general. Incorporating the fact that outsiders may have some power, however, will not significantly change the results. In our model, in fact, outsiders do like some degree of tax sheltering. Hence, they will not oppose all mechanisms to avoid taxes, even if these mechanisms come at the expense of greater opacity, which might worsen their ability to monitor. In the Enron case, for example, outside board members approved the creation of special purpose entities (SPE) convinced that these would benefit outside shareholders. Nevertheless, the opacity created by these SPEs facilitated –according to court documents—misappropriation by insiders. Hence, while the level of tax sheltering (and thus of managerial diversion) crucially depends upon the structure of the bargaining process between insiders and outsides, higher taxes would always lead to more tax sheltering and more enforcement to less, regardless of outside shareholders' bargaining power.

In the model, there is also no connection between the level of tax enforcement, *a* , and the level of the tax rate, *t*. In practice, however, the two parameters might be related. A zero tax rate does not encourage much enforcement as it does not generate any revenue to justify the effort. For moderate levels of taxes, higher rates, which generate higher revenues, are likely to engender more support for enforcement. At extremely high tax rates, support for enforcement dissipates as these rates are often perceived as confiscatory. This nonmonotonic relation complicates our comparative static on the effect of a tax rate change, but not the predictions of the effects of changes in enforcement. Higher enforcement will always lead to less sheltering and less diversion.

In the model, we also ignore the possibility of corruption of tax enforcement agents. If this possibility exists, the model's comparative static with respect to changes in the tax rates is substantially unchanged. Higher tax rates increase tax payments but also the bribe to avoid paying taxes. Again, managerial diversion would increase with increased tax rates.[25] To discuss the comparative static with respect to enforcement, we need to define what it means to have higher enforcement in a world where tax agents are corrupt. If we mean *bona fide* enforcement (i.e. effective monitoring), then the comparative static will remain unchanged. If, by contrast, higher enforcement means only a broader mandate for tax officers to harass companies, then the results are more ambiguous. Higher enforcement might mean higher bribes to avoid being caught, which should decrease the level of tax sheltering and thus of managerial diversion. But high enforcement might also mean that more corporations have to pay bribes to silence tax inspectors, at which point they are free to do whatever they want, including massively diverting income from minority shareholders.

If we introduce the possibility of corruption, however, there is another reason why our model is relevant. In countries where bribes are a common business practice, the inability to pay them represents a severe disadvantage. But if bribes have to be paid, where does the money come from? While some countries allow explicit accounting (and deductibility) for bribes paid in foreign countries (e.g. Germany), we are not aware of any country that allows explicit accounting of domestic bribes. Hence, absent using their own money, insiders need access to

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[25] In fact, in the case of corruption the effect might be more macroscopic because once the increase in taxes makes it worthwhile to bribe the tax inspector, then there is no threat of monitoring left and the degree of dilution might rise dramatically.

hidden slush funds. As a result, the need to pay bribes generates even more opacity in companies' balance sheets, making it easier for insiders to appropriate some of this hidden value. Thus, corruption also favors misappropriation by insiders through this channel.

Finally, we have talked about the model in terms of taxation, but this is not the only interaction between the State and insiders that affects minority shareholders. The threat of nationalization (or renationalization, as in the Russian case) has similar effects. The greater the threat of nationalization, the higher is the expected tax rate, and the more insiders are tempted to dilute.

4.   Corporate Governance Implications

The corporate governance view of taxes has implications both for corporate governance and for corporate taxation. We test the former in this section and the latter in the next section.

Testing the corporate governance implications is more problematic. The prediction that is easiest to test (i.e., that an increase in the tax rates reduces stock prices) is not unique to this approach: 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 (2003) exploit cross-country variation in tax enforcement and control premia to show that -- consistent with Corollary 1 -- 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. As the case study of Sibneft presented in section 1 suggests, the election of Putin represents a turning point in the level of tax enforcement, especially in the oil and gas industry. As Figure 4 demonstrates, this increase in enforcement is followed by an increase in stock prices, especially in the most affected industry (i.e., oil and gas), while there is no discernable change in integrated oil and gas companies outside of Russia.

While interesting, this evidence alone is unconvincing given that so many changes were taking place in Russia at the same time. 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, control premia should drop more in the oil and gas industry than in the other industries during this period. We can infer control premia from the difference in voting and nonvoting stock (see Zingales (1994), (1995)). This approach has the advantage of controlling for any variation in the fundamental value of these companies. Second, we look within the oil and gas industry and test if oil and gas companies that avoided taxes the most exhibited higher returns around the major enforcement dates – a prediction that follows from Result 1.

4.1. *Voting Premia*

The ideal method to measure the value of control relies on control block sales.[26] Given the limited number of such transactions surrounding the enforcement period, this method is not feasible. Instead, we employ 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. 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.[27]

To conduct this test, we collect a sample of all 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 thereby limiting our sample further to 59 firms.

Consistent with Corollary 1, Panel A of Table 2 shows a decline in voting premium during the period of increased tax enforcement, from 57 percent to 46 percent. Given that the composition of the sample changes, 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 column 1 of

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[26] For a discussion of the alternative methods see Dyck and Zingales (2003).

[27] 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 this is true, changes in the voting premium over

Panel B. It shows a decline in the voting premium of 7.8 percentage points, which is significant at the 5 percent level.

Why did the control premia decline? If this decline is associated with increased tax enforcement, then it should be more pronounced in the companies that were targeted most by this enforcement. Since Putin targeted the oil & gas and mineral extraction industries, 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 corporate governance situation, which would have affected all companies similarly. Only something that differentially affected the two set of industries, such as tax enforcement, could have caused it.

4.2   *Within-oil-industry comparisons*

An increase in tax enforcement need not affect all oil & gas companies in the same way. Specifically, if some companies were sheltering more beforehand, then they should be more affected by the increased enforcement if the corporate governance view of taxes is operative. 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 the filings of firms. Komineft, a subsidiary of KomiTEK, sells 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 Result 3 is correct, companies that were selling their oil at very low prices (i.e., were engaged in massive tax sheltering) should experience a greater price appreciation during this period of enhanced 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 industry as discussed above. 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

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short time periods are a reasonable indicator of changes in the degree majority shareholders take advantage of their position at the expense of outside ones.

RTS index (the rouble index when security quoted in roubles and the dollar index when the share price quoted in dollars). We regress these announcement returns 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 increase in 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 avoidance. Unfortunately, the intersection between the companies for which we have the average 1999 selling price per barrel and the companies for which we have 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 is in contradiction with 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 our corporate governance view.

To expand the sample, we pool together estimates of the selling price based on the entire year and estimates based on the sole month of August (first and second column 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, oil companies that were more aggressive tax avoiders experience greater returns, when tax enforcement increases.

5.   *Corporate Tax Implications*

The corporate governance view of taxes also has implications for the responsiveness of tax revenues to changes in the tax rate. These are the implications we test in this section.

5.1.   *The traditional Laffer-curve and the corporate Laffer-curve*

The intuition that income tax revenues might decline in response to increases in the tax rate is popularly known as a Laffer-curve.[28] While initial investigations relied on the intuition that labor supply responsiveness to individual income tax schedules could lead to such effects, Lindsey (1987) and Feldstein (1995) expanded the underlying mechanism contributing to Laffer-curve effects beyond labor supply. In particular, they focus on the flexibility high-earners have on the forms of compensation they take, reducing the effectiveness of tax increases. Finally, compliance might suffer with higher tax rates leading to further reductions in taxable income as rates rise.[29] In addition to these studies that employ micro data of individual tax returns, a few studies have focused on the revenue consequences at the aggregate level by investigating the response of aggregate tax revenues to income tax rate changes through case studies of countries enacting tax reforms.[30]

Our model identifies the possibility of a *corporate* Laffer-curve and suggests that the slope of such curves will depend on the corporate governance environment and levels of ownership concentration. While we are not aware of any explicit discussion of a *corporate* Laffer curve, its basic idea is not dissimilar from the initial motivations for the empirical investigations of a Laffer curve with respect to individual tax rates.[31] In particular, the degree to which an individual might reclassify compensation or evade taxes has an obvious analogue in our model of how a majority shareholder might shelter and divert in response to tax rate changes.

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[28] While associated with Arthur Laffer the idea goes back to, at least, Adam Smith. Interestingly, Smith's interpretation of such effects hinges, in part, on the notion of theft much as our model does. In *The Wealth of Nations*, he states, "High taxes, sometimes by diminishing the consumption of the item taxed and sometimes by encouraging smuggling, frequently afford a smaller revenue to government than what might be drawn from more modest taxes." Book V, chapter 2, paragraph 178.

[29] See Goolsbee (1999) for a recent effort that emphasizes high-income earners and the distinction between temporary and permanent responses to tax rate changes.

[30] In particular, Ebrill (1987) finds limited evidence of revenue increases following tax reforms in Jamaica and India in th 1980s, IMF (2002) explores the possibility of Laffer effects in Russia following individual income tax reforms and is inconclusive regarding their presence and Irwin (1998) finds that the tariff reductions widely debated in the U.S. in 1888 would have led to revenue decreases counter to some political claims at the time of Laffer-like effects. See also the works profiled in IMF (2002) and the edited volume, Gandhi (1987).

[31] A notable exception to this is Hines and Rice (1994). This examination of profit-shifting by multinational firms uses measured elasticities from regression evidence to calculate revenue-maximizing rates for countries. This evidence is, of course, only related to the sensitivities exhibited by multinational firms.

A key difference in the corporate setting is the presence of outside shareholders and the divergence of interest between the optimal level of sheltering from the point of view of majority and outside shareholders. In this respect, the contribution of our model is not so much in raising the possibility of a corporate Laffer curve, but in establishing its policy relevance at reasonable tax rate levels and, most importantly, in showing how the responsiveness of tax revenues to tax rate changes is affected by the level of ownership concentration and by the quality of the corporate governance system.

5.2.   The Data

The predictions about the effect of corporate governance on tax collection invite an exploration of data across a sample of countries. Accordingly, 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 University of Michigan.[32] 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).[33] 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 the major oil-producing countries given the distinctive dynamics of corporate tax revenues in these settings.[34]

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

[33] 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.

[34] 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.

As a measure of ownership concentration we use the average percentage of common shares owned by the three largest shareholders in the 10 largest non-financial, privately owned domestic firms in a given country as computed by La Porta et al. (1998). 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 capture the amount of private benefits extracted by insiders.

To check whether the effects we find for ownership concentration and private benefits merely reflect weakness in the state on other dimensions, we also use three additional measures of the institutional environment: "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 GNP per capita .[35]

Table 5 summarizes these variables for the countries in the sample. The top panel 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 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 middle panel summarizes the data collapsed by country. In addition to the raw data, we also report country-specific Laffer-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 bottom panel provides a correlation matrix of the institutional variables.

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 and ownership concentration influence the slope of this relation. Since the slope of the Laffer curve is estimated using within-country variation, it is important to have a sense of the magnitude and the direction of these variations. Figure 5 plots the changes in corporate tax rates in the countries in the OTPR dataset 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 Laffer curve.

Our interest, however, is not on the average slope of the Laffer curve, but on how this slope changes with ownership concentration and protection of outside investors. 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-countries results should not be affected by the inability to measure base broadening in a systematic way.[36]

5.3.   Results

Our maintained assumption is that after controlling for the level of GDP, every country faces the same relation between corporate tax revenues and corporate tax rates, except for the differences coming from the ownership concentration and the corporate governance. Since the corporate sector represents a different share of the economy in each country, we allow for country-specific relationships between tax revenues and GDP by using country fixed effects. Our basic specification, then, is as follows:

$$Log\left(Corporate\ Tax\ Revenues_{it}\right) = \hat{a}_i + Log\left(GDP_{it}\right) + \varsigma \hat{o}_{it} + \mathring{a}_{it} + \epsilon_{it}$$

where i indexes countries, t is a time subscript and $\hat{o}$ is the top marginal corporate tax rate. ς provides the slope of the corporate Laffer-curve. Both tax revenues and GDP are measured in unit of local currency. Since we are estimating in logarithms, however, differences in the dimensionality are fully absorbed by the country fixed effects. The standard errors are adjusted for potential clustering of the residuals at the country level.

Column 1 of Table 6 reports estimates of this basic specification. 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

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

[36] 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.

average effect, however, is not statistically different from zero. This average effect is likely to be downward biased as most of the changes in this period have been tax reductions associated with base broadening.

Corollary 2, however, has specific predictions on how the shape of the corporate Laffer curve will differ across countries. The first prediction regards the effect of ownership concentration. A higher level of insider ownership should reduce the revenue maximizing tax rate. Hence, in countries with a higher level of ownership concentration the coefficient on the tax rate should be more negative. We test this prediction by interacting the tax rate with the level of ownership concentration as measured by the percentage owned by the three largest shareholders.

As suggested by the model, the coefficient on this interaction is negative and highly statistically significant (column 2). Taken literally, this coefficient suggests that, in the absence of controlling blocs, a 10% tax rate increase would result in a 31% increase in corporate tax revenues. As the size of controlling block increases, however, this effect is diminished. In particular, when the three largest shareholders on average own 45% of the stock, increases in the tax rate no longer generate any increase in revenues [3.1+(.45)(-6.92)=0]. Finally, when controlling blocks are above 45%, tax rate increases are associated with decreases in corporate tax revenues. Hence, ownership concentration appears to be an important determinant of the shape of the Laffer curve as predicted by the model.

The coefficient on ownership concentration interacted with 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 Laffer curve. If countries with low tax enforcement are also countries with high ownership concentration, we might have a spurious effect. To exclude this possibility we insert in the regression an interaction between the tax rate and other measures of effectiveness of the institutional environment. In column 3 we use the law and order tradition of a country. Countries with a stronger law and order tradition have a more sloped Laffer curve, this effect, however, is not statistically significant. More importantly, the effect of ownership concentration, while slightly reduced in magnitude remains statistically significant. Similarly, in column 4 we insert the interaction

between the tax rate and our measure of tax compliance. Surprisingly, countries where tax compliance is higher have a less steep Laffer curve, but once again this effect is not statistically significant. By contrast, our main effect is larger and remains statistically highly significant.[37] In column 5, we include an interaction between the tax rate and log GNP per capita, and again find our results remain statistically significant.

We arrive at the same conclusion if, instead of interacting tax rates and ownership concentration, we re-estimate the basic specification in two subsamples with varying levels of ownership concentration (columns 6 and 7). In countries with low (below the median) ownership concentration, the coefficient on tax rates is positive, while the coefficient on tax rates is negative and marginally significant for countries with high (above the median) ownership concentration suggesting distinctive dynamics for tax revenues in countries characterized by low and high ownership concentrations. To verify the robustness of these results, we re-estimate the same specification using the ratio of corporate tax revenue to GDP as the dependent variable. This is nothing but a special case of the previous regression, where we impose the coefficient of log GDP to be equal to one. Not surprisingly the results are similar, even if coefficients are less precisely estimated. Nevertheless, the interaction coefficient between tax rates and ownership concentration is still statistically significant at the 10% level.

Obviously, changes in the corporate tax rate do not happen in a vacuum and it is conceivable that changes in tax rates are accompanied by changes in tax enforcement or by other changes in the fiscal structure, which might conflate these results. To try and address this problem we scale corporate tax revenues by total tax revenues. We then repeat all the previous regressions using this dependent variable (columns 10 and 11 of Table 6). The results are consistent with the results presented in columns 2 and 9, as the interaction of tax rates and ownership concentration carries a negative and statistically significant coefficient. According to these estimates, an increase in tax rates starts to have no effect on tax revenues when the size of the controlling shareholder reaches 36%.

Corollary 2 also has implications in terms of the levels of corporate governance: worse levels of corporate governance (higher levels of g) reduce the revenue maximizing tax rate. We can test this prediction directly by using the Dyck and Zingales (2003) estimates of control

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

premia in different countries as a measure of corporate governance. Since it is a measure of how much controlling shareholders appropriate for themselves, it is directly related to g.

Column 1 of Table 7 presents the estimates of our basic specification, where we have inserted the interaction between corporate tax rates and the level of control premium. As in the previous case, the standard errors are adjusted for potential clustering of the residuals at the country level. As predicted by the model, 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. In this case, the threshold level of the control premium for a revenue-neutral relationship between corporate tax rates and corporate tax revenues is 20%. As in Table 6, inclusion of interactions between measures of the rule of law and the tax rate, between tax evasion and the tax rate and between log GNP and the tax rate (in columns 2 to 4 of Table 7) do not change the basic result on private benefits. In columns 5 and 6 we divide the sample on the basis of the median level of control premium. As predicted by the model, in countries where 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 negative, albeit not statistically different from zero.

The model predicts that for low levels of corporate governance (high levels of control premium) the relation between corporate tax revenues and corporate tax rates might turn negative. It does not say, however, at what specific levels of corporate governance this relationship begins to have particular relevance. In particular, there is no reason (except symmetry) to divide the sample according to the median level. Given that the median level of control premium (7%) is quite low, it is useful to consider alternative partitioning of the sample to emphasize the effects of control premia more clearly.

For this reason, we experiment by dividing the sample at a higher threshold of control premium (10%), which still leaves sufficient observations in the set of countries with high control premia. As columns 7 and 8 of Table 7 show, the difference in the slope of the Laffer curve is much greater between the two samples, not only in statistical terms, but also in economic terms. The coefficients have the same order of magnitude, but the opposite sign. Column 9 repeats the same exercise with the ratio of corporate tax revenues to GDP. As before, the results are similar, but statistically slightly weaker. Finally, in column 10 we re-estimate the

same regression using the ratio of corporate tax revenues to total tax revenues as a dependent variable. In this specification, the coefficient is no longer statistically significant.

The preceding analysis constrains the slope of the Laffer curve to be identical across all the countries (but for the effect of ownership concentration or corporate governance). Now, we redo our analysis estimating 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 8 analyzes the relation between country-specific Laffer-curve slopes and ownership concentration (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 both the level of ownership and the value of control premia are negatively related to the slope of the Laffer-curve estimated using the logarithm of corporate tax revenues as a dependent variable (columns 1 and 2), albeit the coefficient is significant only for the control premia. In column 3 of Table 8, both the level of ownership concentration and the value of control premia are included as explanatory variables.[38] Not surprisingly, including both measures increases the standard errors. It also decreases the coefficient on ownership concentration, which becomes insignificantly different from zero.

In columns 4 to 6 we redo the same analysis using as a dependent variable the slope of the Laffer curve estimated using the ratio of corporate tax revenue and GDP, while in columns 7 to 9 the share of corporate tax revenues to total revenues. The results are qualitatively similar with the coefficient on private benefits being negative and significant when entered singly in columns 5 and 8. Given the small sample and the inefficiency of the country-by-country approach, it is not surprising that the statistical significance of the results is weaker. Overall, however, these results support the predictions of the model: the relation between corporate tax revenues and corporate tax rates is deeply influenced by levels of ownership concentration and by the degree of protection of outside investors.

6.   *Extensions*

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[38] Given the limited number of observations, the high degree of correlation between the variables, and the noisiness of the estimated country-specific slopes, this is asking for a tremendous amount from the data.

6.1.   The Optimal Tax System From a Governance Perspective

In our model the existence of a positive tax rate increases the incentive to hide income, increasing the amount of managerial diversion, while the existence of tax enforcement reduces the willingness to hide income and, hence, the level of insiders' private benefits. Hence, one would be tempted to conclude that, from a corporate governance perspective, the optimal tax rate is zero.

While in the context of our model this conclusion is technically correct, it is practically wrong as it ignores the interdependence between tax rates and enforcement. What restrains managers from sheltering all income, and in so doing diverting a bigger fraction of it to their own benefit, is the expected cost of being caught, which we model in reduced form as a . This expected cost exists mainly because there exists a tax authority interested in assessing income. The monitoring role of the tax authority is so important that managers are willing to pay taxes they do not owe in order to reduce the likelihood that the IRS will question them (see Erickson, Hanlon, and Maydew (2003)).

The government's interest in verifying income, however, is sustained by its ability to collect revenues on the income it verifies. Without any corporate tax (or with an extremely low tax rate), the verification of corporate income (and the enforcement of penalties in case of false statements) would be left completely in the hands of the non-controlling shareholders, who suffer from a chronic free rider problem. Each one of them has to pay the full cost for monitoring, but reaps only a small fraction (equal to their proportional stake in the company) of the benefits. Hence, without a corporate tax, a would be close to zero and outside shareholders would be provided no additional protection by the expected oversight of company reporting by tax authorities.

An example that fits the logic of the model are non-profits. Financial accounts of non-profits are scrutinized by the IRS. In fact, this is the only form of oversight non-profits are subject to. Interestingly, the characteristics of this situation are exactly those predicted by our model. Non-profits face a zero tax rate in equilibrium, but a positive tax rate out of equilibrium: if certain rules are not followed a non-profit looses its tax exemption and it becomes subject to corporate taxation. Hence, the IRS retains a monetary interest in monitoring non-profits, but the distortionary effect associated with a positive tax rate is eliminated. This suggests an interesting

implication for the optimal corporate tax rate from a corporate governance point of view. It should be a low tax rate that is increased if violations of certain corporate governance rules are detected.

6.2. *Explaining Variation in Tax Enforcement*

The corporate governance view of taxes has implications on the efficient level of enforcement across countries. Since higher ownership concentrationsare associated with a greater incentive to avoid taxes, enforcement should be stronger in countries with higher ownership concentration. The same is true for corporate governance. In countries with poor corporate governance, the incentive to avoid taxes is stronger and enforcement should be stronger to prevent that.

These *normative* predictions are not supported by the data. La Porta et al (1999) find that countries with a civil law system (which have poor protection for outside investors and high ownership concentration) also tend to have higher marginal tax rates and poor tax enforcement. These stylized facts, however, are perfectly consistent with the *positive* implications of a corporate governance view of taxes that allows corporate insiders to have political power. For a given level of fiscal pressure, insiders are better off with higher tax rates and lower enforcement, because both these conditions will lead to higher diversion and hence higher private benefits. To the extent corporate insiders have greater political power, they will pressure for lower enforcement and they will be more willing to settle for higher taxes. Similarly, in countries where corporate governance is worse, insiders with political influence will push for lower tax enforcement and higher tax rates. Note that where ownership is highly concentrated insiders naturally have more political power, because they do not face a free rider problem in lobbying. Hence, the corporate governance view of taxes is able to explain the stylized facts identified by La Porta et al (1999) if one incorporates these political economy considerations.

7. *Conclusion*

This paper analyzes the interaction between corporate governance and corporate taxation. As our analysis of managerial malfeasance at Sibneft suggests, this interaction arises because the opacity in financial accounts required for effective sheltering facilitates managerial diversion. Based on this assumption, our simple model shows how the characteristics of the corporate

taxation system affect corporate governance and the valuation of firms. It also shows how the characteristics of the corporate governance system affect the responsiveness of tax revenues to changes in tax rates, generating a corporate version of the Laffer curve. Consistent with the model's predictions, we provide evidence that tax enforcement positively affects valuation and that ownership concentration and corporate governance play an important role in determining how tax rate changes translate into revenue changes.

If further research confirms the empirical relevance of our theoretical results, several implications follow. First, our analysis suggests that improving the corporate tax system – through simplification and increased enforcement – may well substantially improve overall corporate governance. This new approach to improving corporate governance is particularly appealing in light of the difficulties associated with the current alternative: a major overhaul of the legal system.

Second, our model highlights the existence of a corporate Laffer curve, the shape of which depends critically on corporate governance and ownership concentration. In particular, we show that the revenue-maximizing level of corporate tax rates decreases in the level of ownership concentration and in the size of the control premia. Given that imperfect corporate governance and high ownership concentration are widespread, these results carry implications for the formulation of corporate tax policy in most countries around the world.

Finally, our results provide a rationale for a corporate tax that reflects the logic employed during the introduction of a corporate tax in the United States. When this was introduced in 1909, President Taft said:

> 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.[39]

Unlike 1909, however, today there are many alternative mechanisms to certify corporate income (such as mandatory disclosure and external auditing). Nevertheless, we think that tax authorities do retain a role, albeit reduced, in verifying corporate income even today. That managers were willing to pay taxes on false earnings to keep the IRS off their case (Erickson, Hanlon, and Maydew (2003)) suggests that the IRS provides an additional level of monitoring on top of the one provided by the SEC (to which all the companies in the Erickson et al. sample were subject to).

Our conjecture is that this additional efficacy comes from a political economy calculus across different governmental agencies. Agencies that raise revenues are better funded and carry greater political clout than agencies that do not raise revenues. Hence, an essential difference about the certification role of the corporate income tax is its ability to generate revenues. While this rationale for corporate taxes may not be as important for the United States today, notwithstanding the examples of Enron and Tyco, it is certainly important in developing countries and was important in the United States in 1909 when corporate taxation was first introduced.

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[39] William H. Taft, President of the United States, June 16, 1909, "Defense of introduction of the first US federal corporate excise tax". See Kornhauser (1990) for a discussion of the motivations behind the introduction of the corporate tax. As noted in Lenter, Shackelford and Slemrod (2003), the debate on the publicity feature of the U.S tax system remains a central question, particularly so given the growing divergence between book and tax income analyzed in Desai (2003).

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Panel A: The Traditional View (no diversion)

Low Enforcement Regime

High Enforcement Regime
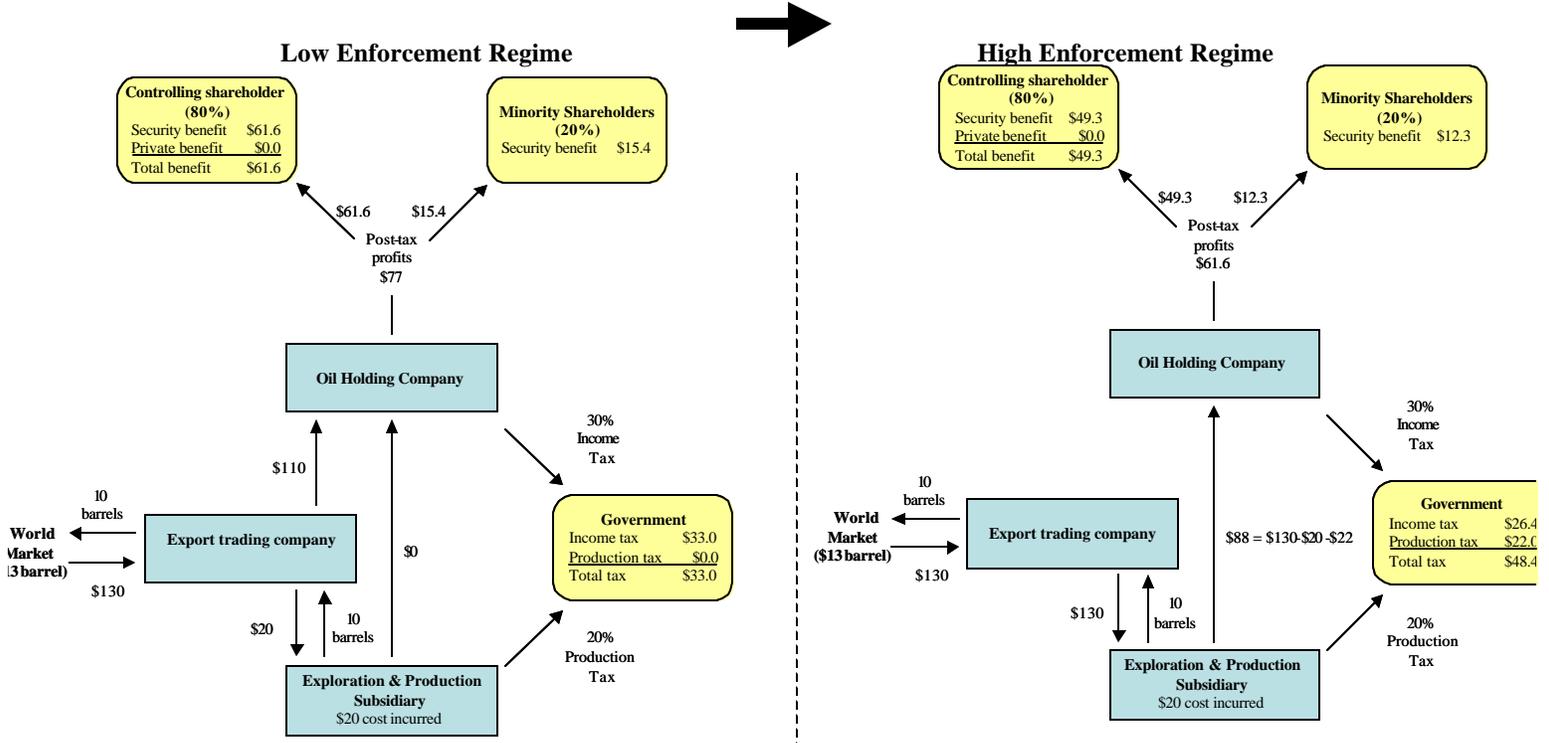
Panel B: The Corporate Governance View (with diversion)
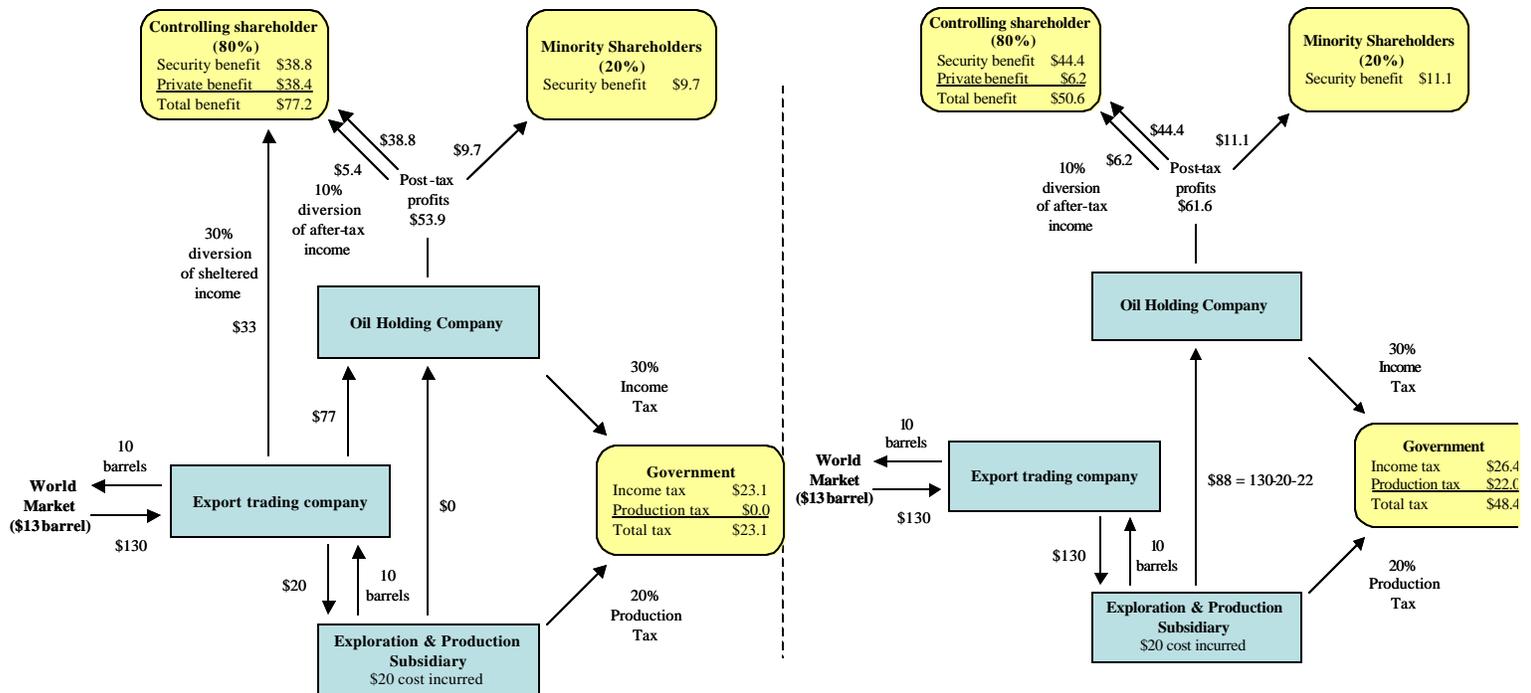
Figure 2: Corporate Laffer Curves: The Relationship between Tax Rates and Tax Revenues With Varying Controlling Block Size Under Different Corporate Governance Environments

Panel A: The Relationship Between Tax Revenues, Tax Rates and
Controlling Block Size Under Good Corporate Governance
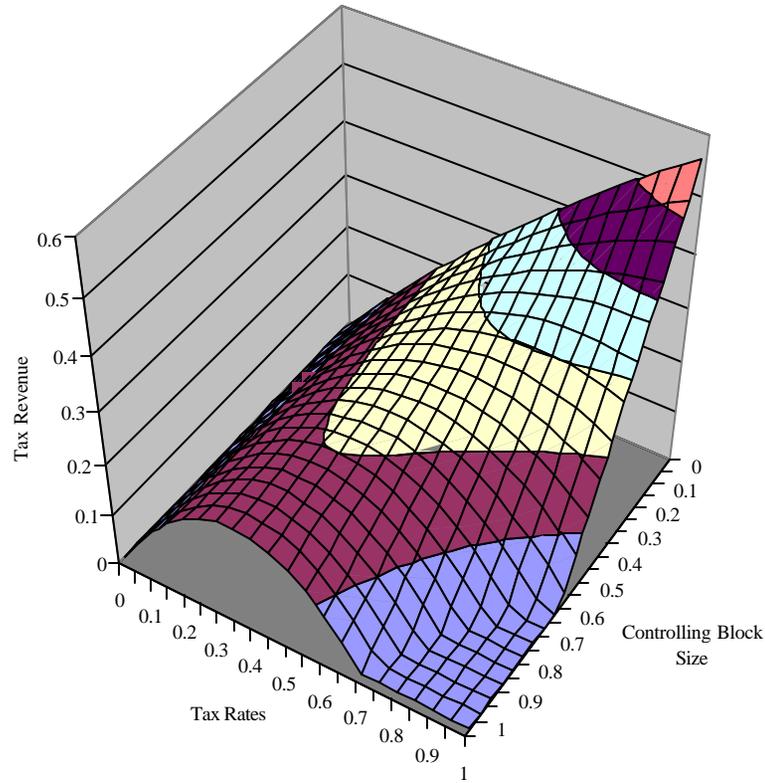
Panel B: The Relationship Between Tax Revenue, Tax Rates and
Controlling Block Size Under Poor Corporate Governance
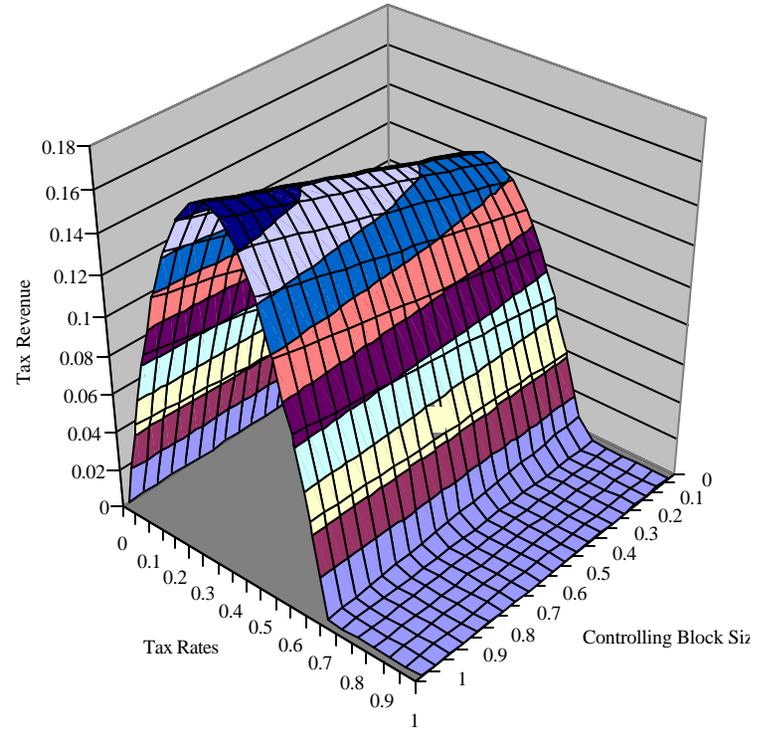
Note: The two panels of this figure depict the relationship between tax rates and tax revenues for varying levels of controlling block sizes under good corporate governance [(1- gamma) is 0.9] (Panel A) and under poor corporate governance [(1- gamma) is 0.3] (Panel B) based on a simulation of the model presented in the paper. For both panels, the enforcement parameter (alpha) is 0.7.

Figure 3: Corporate Laffer Curves: The Relationship between Tax Rates and Tax Revenues With Varying Corporate Governance and Tax Enforcement

Panel A: The Relationship Between Tax Revenues, Tax Rates and Governance
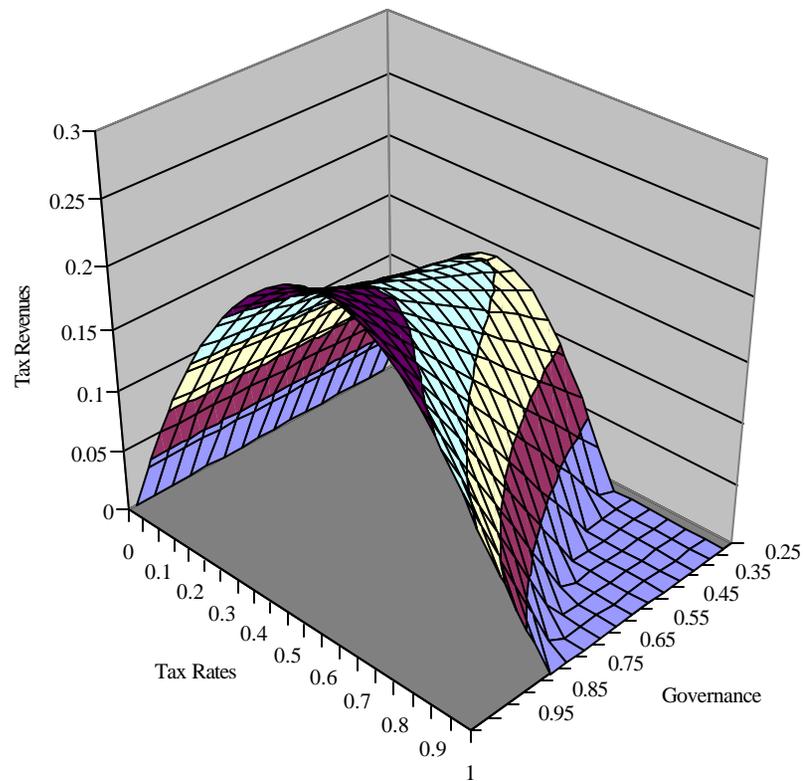
Panel B: The Relationship Between Tax Revenues, Tax Rates and Tax Enforcement
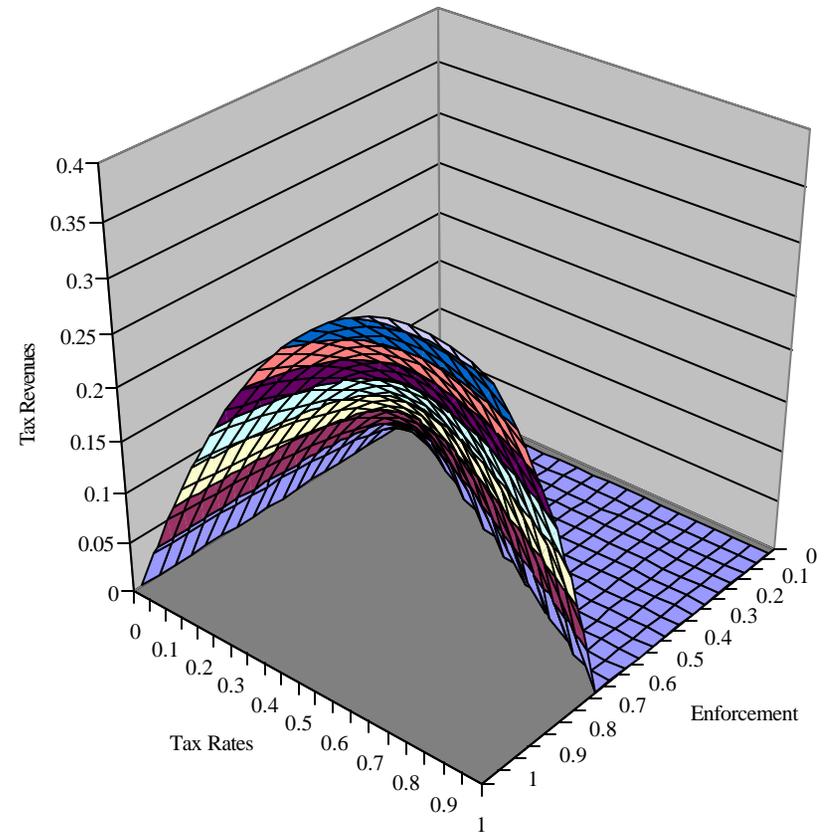
Note: The two panels of this figure depict the relationship between tax rates and tax revenues for varying levels of the measure of corporate governance (Panel A) and for alternative measures of the tax enforcement parameter (Panel B) based on a simulation of the model presented in the paper. For Panel A, the enforcement parameter (alpha) is 0.7 and the controlling block size (lambda) is 0.5. For Panel B, the governance index (1- gamma) is 0.9 and the controlling block size (lambda) is 0.5.

Figure 4: World Oil Index, Russian Oil& Gas Index, and Russian Market Excluding Oil & Gas Industry, April 2000 - September 2001
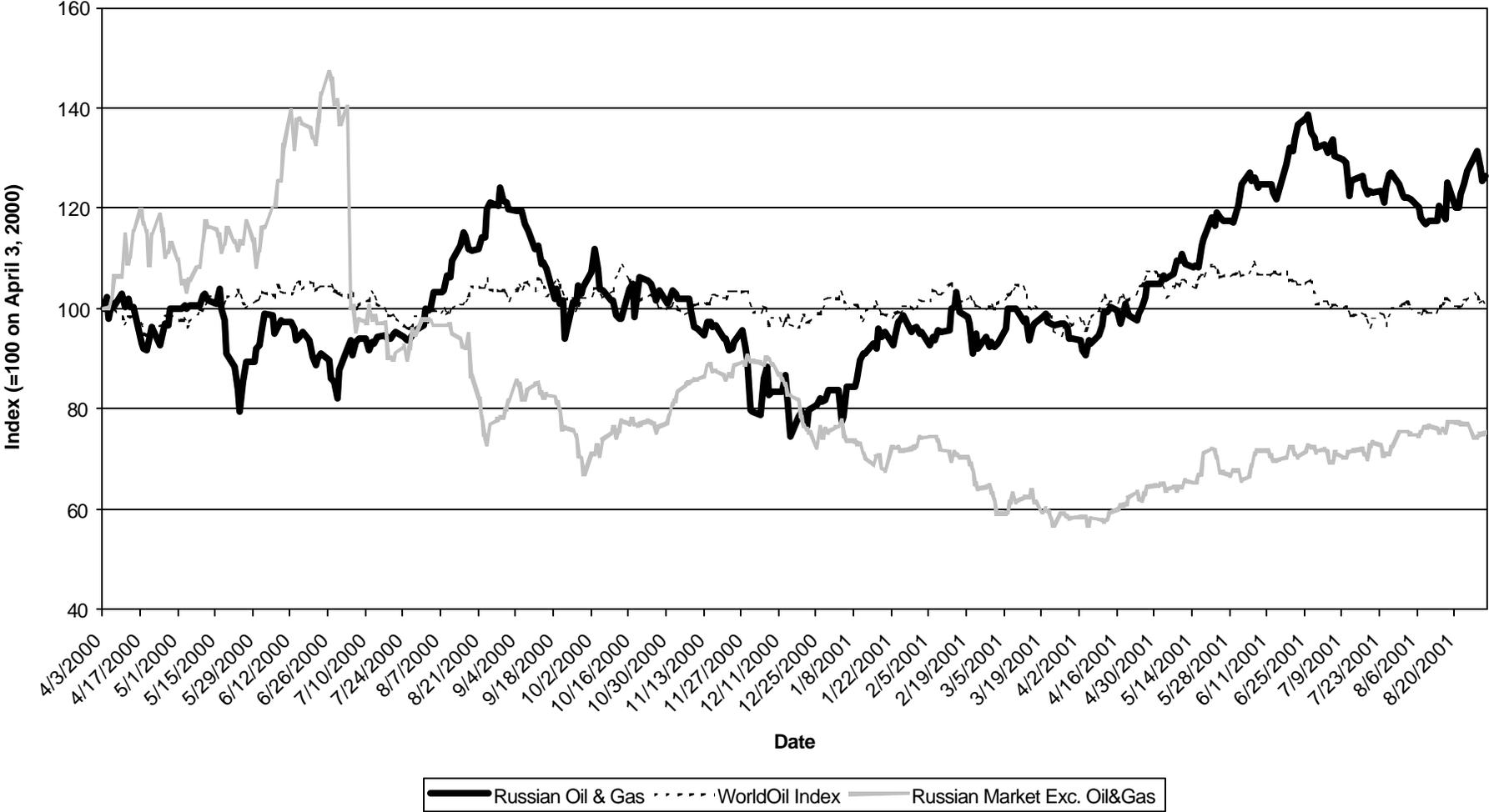
Figure 5: Corporate Tax Rates, 1979-1997

corporate tax rates
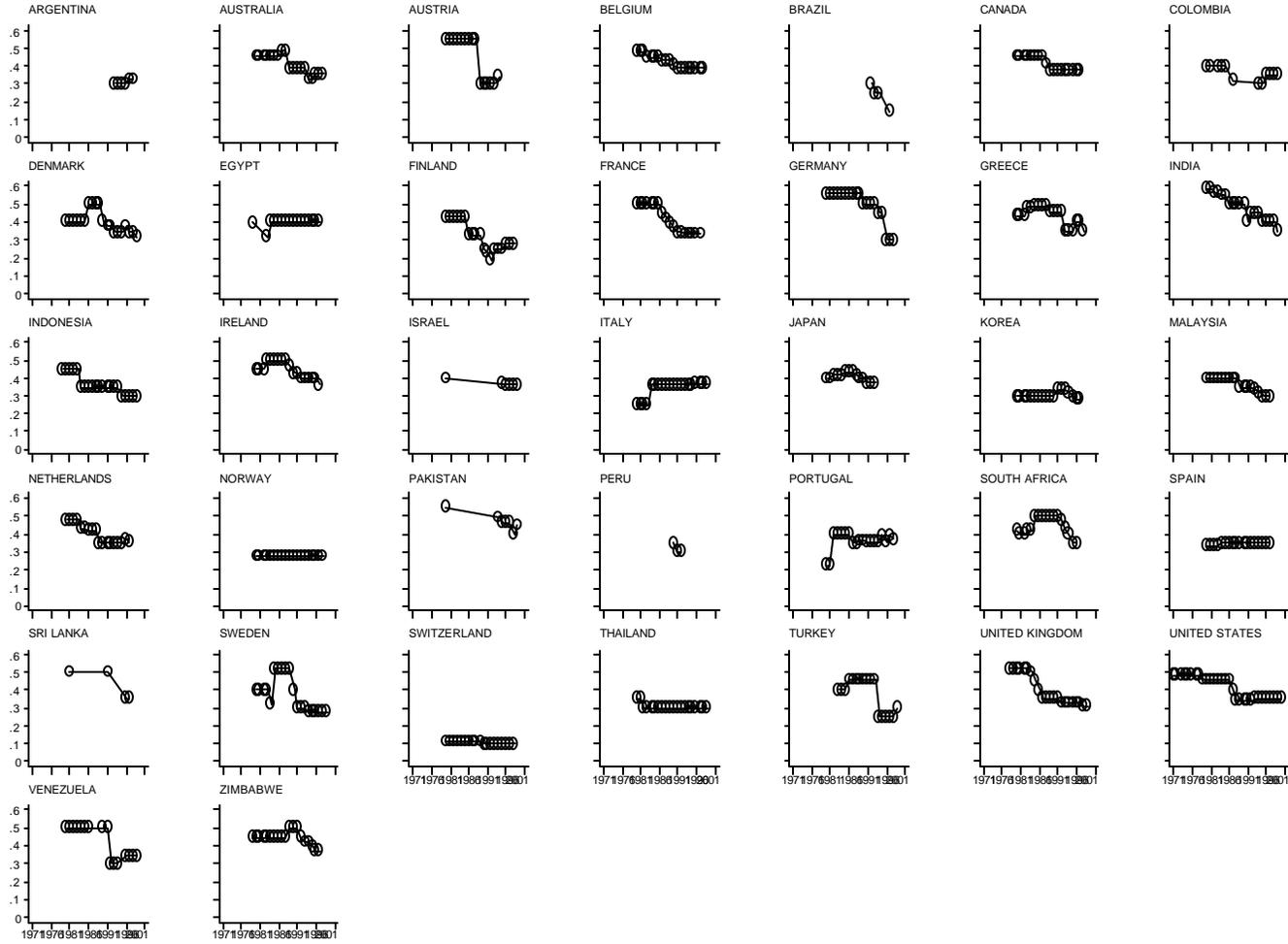
Table 1: Tax Enforcement actions and Returns for Sibneft

Event date	Event description	Cumulative excess return (t-1 to t+9) using last price on RTS
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 - standard deviation for overlapping 10 day windows for Sibneft, Jan 1, 2000 - December 2001 is .074 with mean of 0.007.

Table 2: Change in Voting Premia during Increased Enforcement Period (June 2000 - February 2001)

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.

Panel A - Summary Statistics of the Voting Premia Prior and Post Enforcement Actions				
	Mean	Median	Standard Deviation	Number of companies
Average level of the voting premia as a percentage of the company equity value *prior* to enforcement actions (average over four months March - June, 2000)	0.57	0.6	0.19	45
Average level of the voting premia *post* enforcement actions (average over four months 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**	
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. Standard errors are reported in parentheses. ** indicates significant at 5 percent, * indicates significant at 10 percent

Table 3: Russian Oil Companies and Tax Optimisation

Holding Company (1)	Primary Production subsidiaries (a) (2)	Investment Bank produced indicators of tax optimization 1999		
		Average 1999 crude net selling price ($/bbl) (b,c) (3)	August 1999 internal net selling price ($/bbl) (c,d) (4)	1999 production bpd (b,e) (5)
Sibneft				326,500
	Noyabrskneftegaz	2.2	2.2	325,562
Slavneft (f)				238,600
	Megionneftegaz	3.5	2.1	237,350
TNK				513,600
	Tyumeneftegaz	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 (f)				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 (f)				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 (f)	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)   "Oil Production Subsidiaries," *Troika Dialog Research*, February 2000.

Average export price, net of export costs and excise in 1999 was $13.50. Average domestic price net of taxes was

(c) $7.20

(d)   Estimated from graph, "Oil Sector Report," Troika Dialog Research, March 2000, p. 29.

(e)   "Oil Sector Report," *Troika Dialog Research,* March 2000.

(f)   Owned and/or controlled by government.

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

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 July2000- 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 security 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 analysts. The first regression uses the average $1999 selling price. The second regression uses the August 1999 $ value in case the average $1999 selling price is missing. Data are from 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.

Dependent Variable	10 day excess returns around enforcement actions	
Tax avoidance indicator (average $/barrel selling price 1999)	-0.0795	
	(.0278)**	
Tax avoidance indicator (average $/barrel selling price for 1999 if available August 1999 otherwise)		-0.0235
		(.0122)*
Event dummies for four events noted in panel A	yes	yes
Number of observations	9	18
Adjusted r-squared	0.62	0.18

Note. Standard errors are reported in parentheses. ** indicates significant at 5 percent, * indicates significant at 10 percent

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
Ownership Concentration	32	0.4559	0.5100	0.1390	0.1800	0.6700
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/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

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: Corporate Laffer Curves For Ownership Concentration

Dependent Variable:	Log of Corporate Tax Revenues							Corporate Tax Revenues/GDP		Corporate Tax Revenues/Total Tax Revenues	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
						Low Ownership Concentration Countries	High Ownership Concentration Countries				
	All Countries	All Countries	All Countries	All Countries	All Countries			All Countries	All Countries	All Countries	All Countries
Marginal Tax Rates	0.1033 (0.5446)	3.1494 (1.2814)	0.6822 (2.1660)	5.4670 (2.9616)	-1.8881 (3.1181)	0.8330 (0.6357)	-0.9326 (0.5094)	-0.0022 (0.0083)	0.0432 (0.0216)	-0.0423 (0.0359)	0.1994 (0.1351)
Marginal Tax Rates Interacted with Ownership Concentration		-6.9244 (2.4679)	-5.0904 (2.6155)	-8.5898 (2.6701)	-5.0451 (2.5827)				-0.1033 (0.0462)		-0.5470 (0.2764)
Marginal Tax Rates Interacted with Rule of Law			0.2008 (0.1525)								
Marginal Tax Rates Interacted with Tax Evasion				-0.4912 (0.6622)							
Marginal Tax Rates Interacted with Log GNP per capita					0.4753 (0.2709)						
Country Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Log GDP Interactions with Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Number of Countries	35	35	35	33	33	17	18	35	35	35	35
No Obs.	545	545	545	521	521	309	236	545	545	540	540
R-Squared	0.9593	0.9606	0.9609	0.9597	0.9597	0.9034	0.9806	0.5171	0.5231	0.6764	0.6824

Note: The dependent variable in columns 1-5 is the log of corporate tax revenues. The dependent variable in columns 6 and 7 is the ratio of corporate tax revenues to GDP. The dependent variable in columns 8 and 9 is the ratio of corporate tax revenues to total tax revenues. "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 Ownership Concentration" is the product of the tax rate and 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 "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. Columns 1-4 and 5-8 employ the full sample and columns 3 and 4 partition the sample into subsamples based on the measure of ownership concentration. Standard errors are presented in parentheses and correct for clustering of residuals at the country level.

Table 7: Corporate Laffer Curves For Corporate Governance

Dependent Variable:	Log of Corporate Tax Revenues								Corporate Tax Revenues/ GDP	Corporate Tax Revenues/ Total Tax Revenues
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	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
Marginal Tax Rates	1.2627	-1.0706	1.3285	-4.9446	1.2438	-0.4072	1.0444	-0.9598	0.0137	0.0182
	(0.5756)	(1.1913)	(1.9587)	(3.7902)	(0.5249)	(0.5539)	(0.4798)	(0.5281)	(0.0098)	(0.0569)
Marginal Tax Rates Interacted with Measure of Private Benefits	-6.0502	-5.4275	-6.0930	-4.7807					-0.0698	-0.2866
	(2.2017)	(1.9341)	(1.7814)	(1.9633)					(0.0386)	(0.2492)
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
Log GDP Interactions with Fixed Effects?	Y	Y		Y	Y	Y	Y	Y	Y	Y
Number of Countries	31	31		31	16	15	18	13	31	31
No Obs.	458	458		458	270	188	309	149	458	453
R-Squared	0.9588	0.9593		0.9588	0.8810	0.9796	0.8687	0.9861	0.5599	0.6929

Note: The dependent variables are: the log of corporate tax revenues (columns 1-8), 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. Standard errors are presented in parentheses and correct for clustering of residuals at the country level.

Table 8: The Importance of Corporate Governance and Ownership Concentration for Country-Specific Laffer Curve Slopes

	Dependent Variable: Country Specific Laffer Curve Slopes using Log of Corporate Tax Revenues			Dependent Variable: Country Specific Laffer Curve Slopes using Corporate Tax Revenues/GDP			Dependent Variable: Country Specific Laffer Curve Slopes using Corporate Tax Revenues/Total Tax Revenues		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	0.7423	0.6958	0.8237	0.0196	0.0108	0.0221	0.0369	0.0139	0.0575
	1.6150	(0.4673)	(1.6805)	(0.0215)	(0.0065)	(0.0220)	(0.1046)	(0.0180)	(0.0706)
Ownership Concentration	-2.3521		-0.7355	-0.0481		-0.0348	-0.1206		-0.1134
	(2.8291)		(3.6352)	(0.0377)		(0.0517)	(0.1869)		(0.1771)
Measure of Private Benefits		-3.4626	-2.6458		-0.0479	-0.0244		-0.1020	-0.0417
		(1.4096)	(1.7441)		(0.0174)	(0.0263)		(0.0488)	(0.1005)
No Obs.	32	28	26	32	28	26	32	28	26
Weighted by the Inverse of the Variance of the Measured Slope?	Y	Y	Y	Y	Y	Y	Y	Y	Y
R-Squared	0.0214	0.1332	0.1141	0.0367	0.1370	0.1381	0.0134	0.0507	0.0633

Note: The dependent variable in columns 1-3 is the country-specific Laffer-curve slope generated by regressing the log of corporate tax revenues on log GDP and the corporate statutory rates. The dependent variable in columns 4-6 is the country-specific Laffer-curve slope generated by regressing the ratio of corporate tax revenues in GDP on log GDP and the corporate statutory rates. The dependent variable in columns 7-9 is the country-specific Laffer-curve slope generated by regressing the rateio of corporate tax revenues to total tax revenues on log GDP and the corporate statutory rates. "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 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.