Corporate Governance and Taxation

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Abstract

This paper analyzes corporate taxes from a corporate governance perspective. 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 increase the stock market value of a company in spite of the increase in the tax burden. We also show that the corporate governance system affects the level 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 worse.

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We start by assuming the existence of a standard corporate tax system and we study the effects this system has on the amount of income diverted by the controlling shareholder. Our key assumption is that tax sheltering makes corporate income more opaque and, consequently, easier to divert. We motivate this assumption through an analysis of the recent events at Tyco, a company where managerial diversion is documented in legal documents and where tax avoidance was manifest. The analysis suggests that active tax management strategies employed by Tyco enhanced the ability of managers to divert funds for their personal benefit.

Based on this assumption, we build a simple model of optimal income sheltering, where the income that is sheltered becomes less visible to outsiders and thus more easily appropriable by the controlling shareholder. Income sheltering, however, is costly because managers that are caught avoiding corporate taxes are fined or jailed.¹ 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. The intuition is fairly straight-forward. A higher tax rate increases the return to tax avoidance strategies and hence the amount of sheltered income. Since controlling shareholders can more easily appropriate sheltered income, this will also lead to an increase in the amount of private benefits. By contrast, increased levels of tax enforcement reduce the return to sheltering income and, by the same logic, it will reduce the amount of private benefits. Most interestingly, for low levels of statutory tax rates, an increase in the extent of tax enforcement increases the amount of taxes paid). Hence, an increase in tax enforcement can increase (rather than decrease) the stock market value of a company.

¹ Clearly, some degree of income sheltering is legal. In such cases, the cost we have in mind is an effort cost. More aggressive income sheltering, however, is legally dubious and can result in such penalties.

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, i.e., a corporate version of the Laffer-curve. By contrast, when corporate governance is effective such a possibility does not arise. 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 corporate income in response to a rate increase. The same is true for a high level of ownership concentration. When the controlling shareholder owns a large fraction of the cash flow rights, then she internalizes more of the benefit of 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, 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 minority 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 minority investors, because he takes some personal risk in sheltering income but benefits very little from it.

Dyck and Zingales (2003) present evidence consistent with the corporate governance implications of this model: countries with better tax enforcement have lower private benefits. In a separate paper (Desai, Dyck, and Zingales (2003)) we conduct a clinical study of the valuation implications of our model in an environment (Russia) where both managerial diversion and tax evasion are rampant. We study the effect of an increase in tax enforcement following the election of Vladimir Putin on corporate valuations and on control premia. As predicted by our model, the stock market value of companies targeted by the enforcement actions increases and the voting premium for these stocks decreases in a manner that is consistent with the model. Furthermore, our detailed analysis of Sibneft, one of the worst tax evaders, suggests that increased tax enforcement led to substantial organizational changes that made managerial diversion more difficult.

In this paper, we test the corporate Laffer curve implication of this model by using corporate tax revenues data from 1979-1997 in a panel of countries that differ with respect to their ownership concentration and corporate governance rules. 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 no controlling blocks and/or strong corporate governance. These tax revenue increases, however, are offset and ultimately outweighed by increased evasion as protection of minority shareholders weakens and as ownership concentration increases.

If the desire to avoid corporate taxes worsens the agency problem between controlling shareholder and minority investors, should we conclude that the optimal tax rate is zero? Not necessarily. While a higher tax rate "subsidizes" managerial diversion, effective tax enforcement makes hiding and diverting profits more difficult. In fact, we argue that our corporate governance view of taxes provides a novel justification for the existence of a low, well-enforced corporate tax. A separate rate on corporate profits generates an incentive for the government to verify the income produced, ameliorating the agency problem between insiders and outside shareholders. We discuss in the paper why we think the same objective cannot be achieved simply through mandatory disclosure or private auditing.

Not only is this corporate governance view of taxation able to explain why a corporate tax exists, it also explains why it is designed so to make interest payments tax deductible. Since interest payments do not need any additional certification by the government, they have no reason to be subject to this "certification" tax. This corporate governance view of taxes is also consistent with the observed patterns of tax sheltering in the United States. It explains why the typical U.S. company uses too few sheltering opportunities (Weisbach (2002)) and why tax sheltering increases with an increase in ownership concentration or an increase in pay-per performance sensitivity (Desai, Dharmapala, Jenter and Park (2003)).

Finally, our results have important 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 minority shareholders, as it generates greater revenue and higher minority share values.²

The rest of the paper proceeds as follows. Section 2 discusses the Tyco example to illustrate the links between corporate tax avoidance and managerial diversion. 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 effects of corporate governance and ownership concentration on the impact of corporate tax changes in a panel of countries. Section 5 discusses how the corporate governance view of corporate taxation provides a rationale for the peculiar system of corporate taxation. Section 6 concludes.

2. Tax Sheltering and Managerial Malfeasance at Tyco

Both tax avoidance and managerial diversion are phenomena difficult to document. In fact, enormous efforts are undertaken to ensure that they are not easily observable. As a result, to get a sense of how sheltering and diversion interact, we rely on a case study of a company, Tyco International, an aggressive "tax optimizer," where court documents provide evidence of managerial diversion.³

 $^{^{2}}$ The coincidence of interests between minority shareholders and tax authorities is also evident in Desai, Foley and Hines (2002). In the multinational firm setting, it is shown that local minority shareholders deter aggressive transfer pricing practices of majority multinational firms in a way that advances their interests and those of the state.

³ Interestingly, Tyco is also one of a handful of companies that chose to expatriate from the U.S. and reincorporate in Bermuda to minimize its tax liability. As we argue below, these two phenomena are not unrelated, as corporate tax avoidance activities enhanced the scope for managerial diversion.

2. 1. Tax avoidance strategies at Tyco

Tyco International, a diversified U.S. company with annual revenues of \$34 billion dollars in 2001,⁴ elected to become a Bermuda company in 1997.⁵ In doing so, nothing material changed at the operational level as the worldwide operations of the company, including those in the U.S., were left unchanged. Furthermore, reporting requirements did not change, since the firm remained listed on the NYSE, subject to SEC regulation. One thing that did change, and the likely motivation of such a reincorporation (also known as an inversion or expatriation), was the tax treatment of Tyco income. Prior to reincorporation, U.S. tax authorities taxed Tyco on its worldwide income whereas the reincorporated entity would only face U.S. taxes, and U.S. tax supervision, for the U.S. portion of the worldwide operations.

As Figure 1 demonstrates, the effect of Tyco's inversion was a dramatic reduction in its average tax rate, which dropped from above 30% to nearly 12%. How was this reduction achieved? As Desai and Hines (2002) note, there are two potential sources of reduced taxes stemming from an inversion. First, the inverting firm avoids U.S. tax treatment on its worldwide income. The avoidance of this treatment has two relevant components – avoidance of U.S. taxes on repatriated income and the ability to fully realize deductions, such as interest payments, that would otherwise have been worthless given allocation rules. Given the magnitudes of foreign operations, overall interest expenses, and average foreign tax rates, it is difficult, if not impossible, to reconcile the dramatic reduction in the average tax rate with such sources.⁶

The second potential source of tax savings for inverting firms is the aggressive transfer of income from high tax jurisdictions, including the U.S., to lower tax jurisdictions. Previously, the U.S. tax treatment of worldwide income reduced the returns to such income shifting as a result of the foreign tax credit. The evidence suggests that the bulk of the benefits arose from such

⁴ Tyco International's major business units include Electronics (40% of 2001 revenue), Healthcare & Specialty Products (26%), Fire & Security Services (22%), and Engineered Products & Services (12%). The company employs over 250,000 people and operates in more than 100 countries.

⁵ When Tyco acquired ADT Security Systems, a Bermuda-based corporation, in 1997, the transaction was structured as a reverse merger so that Tyco acquired the status of Bermuda company.

⁶ Given the high average foreign tax rates reported in Figure 1, U.S. tax obligations on repatriated income, given foreign tax credits, could not account for the changed overall tax rate. Given the limited amount of foreign income, even dramatic assumptions (such as a 0% foreign tax rate) cannot be associated with large changes in the overall tax burden. Similarly, obviating allocation rules for interest expenses would have a relatively small impact given the amount of debt and the amount of allocation given the limited foreign exposure.

shifting of worldwide income. As Figure 1 demonstrates, while the ratio of foreign revenues to worldwide revenues is fairly constant throughout the period, the ratio of non-U.S. pretax income to worldwide pretax income rose dramatically from 10% to 82% in three years. Apparently, most of this income was reallocated to low tax locations, as shown by the fact that the average foreign tax rate dropped from 50% to 19%. In short, Tyco dramatically reduced its overall tax burden by relocating large amounts of income from higher-tax jurisdictions, including the U.S., to very low-tax jurisdictions immediately after the inversion as evidenced in Figure 1.

Two primary mechanisms were employed to facilitate this tax avoidance. First, a web of intercompany loans relocated profits from high tax countries to tax havens. As outlined in Figure 2, the holding company structure allowed for the relocation of profits from the operating subsidiaries to financial subsidiaries through intercompany loans, particularly through a subsidiary named Tyco International Group (TIG) located in Luxembourg, known for its bank secrecy laws and its low corporate tax rates. Figure 2, drawn from an analyst report extolling Tyco's active tax management strategies, demonstrates that TIG would borrow from the broader capital markets and operating subsidiaries would borrow from TIG. As described by the analyst, "the subsidiaries are highly levered and incur interest expense that reduces their taxable income in countries with high income tax rates...In effect, this structure allows the company to shift income from high-tax countries to countries with no income taxes."⁷⁷ Second, transfer pricing profits out of high tax jurisdictions to tax havens was also employed by Tyco after the inversion. Prior to the inversion, Tyco had one subsidiary in a tax haven representing less than one percent of all their foreign subsidiaries. By 2001, Tyco had 165 subsidiaries in tax havens representing almost ten percent of all foreign subsidiaries.⁸

⁷ In 2001, more than 15% of operating income of the operating subsidiaries was paid as intercompany interest and, by 2002, more than \$21 billion in intercompany loans were used by Tyco to relocate profits from operating subsidiaries to TIG. The full extent of these intercompany loans were not clearly and fully disclosed until the 2002 10-K which fully elaborates the scope of these transactions.

⁸ While both the use of intercompany loans and transfer pricing profits out of high-tax jurisdictions to tax havens could have been employed prior to the inversion, the inversion increased the returns to transfer pricing by removing any residual taxation on repatriated profits and by reducing the scope for scrutiny of these transactions by U.S. tax authorities. Transfer pricing profits obviously could have occurred to other low-tax jurisdictions other than tax havens. Without access to proprietary data on subsidiary profits, it is impossible to attribute precise amounts of the overall tax reduction to either the intercompany loans or to transfer pricing.

2. 2. The links between corporate tax avoidance and managerial malfeasance at $Tyco^9$

Allegations of managerial malfeasance at Tyco read as a litany of abuses. The various indictments suggest that the pattern of diversion by CEO Dennis Kozlowski and CFO Mark Swartz began in earnest after the inversion in late 1997.¹⁰ In fact, prior to the inversion, Dennis Kozlowski was presented by the Wall Street Journal as an example of good corporate governance. These accounts suggest several different types of diversion¹¹ - i) abuse of corporate funds for personal purposes, ii) abuse of loan programs, iii) unauthorized compensation, iv) a variety of transactions between Tyco subsidiaries and its top managers at generous prices, particularly with regard to real estate in Florida and New York; v) failure to disclose sale of Tyco stock by insiders, particularly at a time when they claimed not to be selling any.¹²

The active tax management strategies Tyco employed at the corporate levels appear to have enhanced the ability of managers to divert funds in at least four distinct ways. First, the complexity created by the tax avoidance strategies -- the total number of subsidiaries went from 154 in 1996 to 1,750 in 2001 -- made it impossible for all but a handful of individuals to understand the working of Tyco. As the indictments make clear, Kozlowski and Swartz used this

⁹ This section relies on three primary sources: the 8-K filed by Tyco on September 20, 2002 also know as the Boies Report that is the firms own investigation of the malfeasance; the indictment by the District Attorney of New York filed on September 12, 2002; and the indictment by the State of New Jersey filed on November 7, 2002. The indictments are not legal findings but allegations and the Boies report relies on the internal investigation of the new management at Tyco.

¹⁰ There is only one transgression cited prior to the inversion. Specifically, it is alleged that Koslowski instituted a generous relocation program in 1995 to facilitate moving to New York. Unlike later abuses, this allegation is not related to the abuse of that program for unrelated uses but simply for its generosity.

 ¹¹ In order to focus on the primary misdoings of Tyco executives, this discussion does not cover the allegations against board member Frank Walsh and Chief Counsel Mark Belnick.
 ¹² First, the use of corporate funds for personal purposes included lavish expenditures on various living expenses and

¹² First, the use of corporate funds for personal purposes included lavish expenditures on various living expenses and the authorization of up to \$100 million of Tyco funds in donations to charitable organizations, much of which was provided in Kozlowski's name. Second, the abuse of loan programs involved two relocation loan programs and the Key Employee Loan (KEL) program that was meant to assist employees with the tax obligations associated with the vesting of shares. Kozlowski and Swartz received up to \$95 million in relocation loans and close to \$300 million in KEL loans largely for purposes not associated with the intent of these programs. Third, Kozlowski and Swartz authorized the forgiveness of various parts of these loans. In addition to this form of unauthorized compensation, Kozlowski and Swartz designed three special bonus programs – the TyCom Forgiveness Program, the ADT Automotive Bonus, and accelerated vesting through the Flag transaction – that cost Tyco more than \$167 million resulting in income to Kozlowski of more than \$67 million in twelve months alone. In each of these cases, corporate transactions such as an equity offering or a merger were used to facilitate the concealment of transfers of funds to senior managers. Fourth, a variety of Tyco subsidiaries transacted with Kozlowski and Swartz at distorted prices, particularly with regard to real estate in Florida and New York. Finally, Kozlowski and Swartz failed to disclose a variety of trading in Tyco stock particularly at a time when they claimed not to be selling any Tyco stock.

complexity to their advantage in obscuring and in gaining authorization for a variety of transactions.

The second link is that the opacity of Tyco's tax obligations allowed another degree of freedom for managers to obscure their own diversion. In particular, as illustrated in Figure 1, the precise amount of income attributed to foreign sources moved wildly from 1998 to 2001 (from 38% to 82% to 52% to 77%) while the revenue share was relatively constant. The ability to "manufacture" post-tax profits at relatively low cost through pretax profit shifting to foreign sources obscured true underlying business profitability and allowed Kozlowski and Swartz to divert funds without appearing to have compromised operational performance. One specific example of the advantages of this ambiguity was the use of the balance sheet item "Accrued Federal Income Taxes" – otherwise used as a reserve account for taxes owed to U.S. tax authorities – to facilitate the concealment of \$41 million paid to executives as part of the TyCom bonus scheme.¹³

While the previous two links between corporate tax avoidance and managerial diversion are somewhat indirect, the third link is that the exact vehicles employed to accomplish corporate tax avoidance were directly used by Kozlowski and Swartz to obscure their dealings from shareholders. Specifically, the sales of Tyco stock by Kozlowski and Swartz during Tyco's 2001 fiscal year amounted to more than \$100 million and were made while, according to the indictment by the State of New Jersey, "Kozlowski was falsely touting his supposed practice of retaining nearly all of his Tyco stock...[he] stated in December 2000 that 'I'm paid in Tyco stock...We, the board, everybody feel the best way to keep management's interests aligned with shareholders is to keep 100 percent of our net worth in Tyco's stock.''' The link to the corporate tax avoidance strategies employed by Tyco stems from the fact that "Kozlowski and Swartz made a significant portion of those sales to Tyco subsidiaries based in bank secrecy jurisdictions such as the Jersey Islands and the Bahamas. Because of that unusual characteristic of the sales made by Kozlowski and Swartz, they were able to conceal those sales from investors until year-end, a fact that advanced the ability of Kozlowski and Swartz to conceal their fraudulent conduct

¹³ Specifically, of the \$97.4 million used in the TyCom bonus scheme, \$44.6 was improperly marked as part of offering expenses for the TyCom offering, \$41 million was charged improperly against the reserve account of accrued federal income taxes, and \$12 million was charged improperly against the reserve account of accrued G&A expenses.

from investors." The same offshore subsidiaries that shielded Tyco's corporate profits facilitated the concealment of insider sales by managers.

Finally, the elimination of IRS supervision of a large fraction of Tyco operations made it easier for Tyco executives to carry through their deals without being caught. We do not think it is a coincidence that the Tyco scandal was triggered by an IRS investigation on Kozlowski's personal income taxes. That IRS monitoring facilitates the uncovering of accounting frauds is also proven by the fact that companies that overstate their earnings choose to pay taxes on the false earnings in order to reduce the likelihood of being caught (Erickson, Hanlon, and Maydew (2003)). This link between taxes and managerial diversion is also not unique to Tyco. The detailed investigation of Enron in Joint Committee on Taxation (2003) describes how the special purpose vehicles created to reduce taxes were also used by top managers to enrich themselves.

3. A Simple Model of Tax Evasion and Managerial Diversion

The Tyco 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)).¹⁴ 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, an operative definition of sheltering is required. Unfortunately, there is little consensus in the legal or economic literature on what sheltering precisely is.¹⁵ For our purposes, we will define it as any activity that lowers taxable income and, if noted by the tax authority, would be challenged. The use of the standard debt tax shield, for instance, is not sheltering within this definition while the use of intercompany loans to relocate profits to tax havens without any business purpose would be.

3.1 Model setup

¹⁴ 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.

¹⁵ 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."

Let $s \in [0,1]$ be the proportion of income that is sheltered from tax authorities. We assume income sheltering is costly to the controlling shareholder, as she has to exert effort to do so and, more importantly, because she runs a personal risk if her strategy is deemed illegal. We model this cost with the following quadratic function:

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

where α is a parameter that captures the quality of the tax enforcement regime. The higher the enforcement, the more likely it is that a controlling shareholder is caught in excessive tax sheltering and thus the higher is the personal penalty for her.¹⁶ The benefit of income sheltering is that sheltered income avoids corporate taxes, while non-sheltered income is taxed at rate *t*.

The model relies critically on the assumption that sheltered income can be more easily appropriated by the controlling shareholder. As the Tyco 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 the controlling shareholder diverts a higher fraction of the sheltered income than of the income declared to tax authorities. If γ is the fraction of non-sheltered income appropriated by the controlling shareholder, then the fraction of sheltered income appropriated will be $\beta = \gamma + \delta$, with $\delta > 0$. Since the larger γ is, the worse corporate governance is, $(1 - \gamma)$ is an index of the quality of corporate governance and δ 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, presheltering, and pre-diversion) to 1. Then, a controlling shareholder who owns a fraction λ of the shares obtains a payoff of

(1)
$$V^{C} = \lambda[(1-s)(1-t)(1-\gamma) + s(1-\beta)] + (1-s)(1-t)\gamma + \beta s - \frac{\alpha}{2}s^{2}.$$

¹⁶ 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.

The first term in square bracket is the value a controlling shareholder obtains as a 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.

The minority shareholders collectively get

(2)
$$V^{M} = (1 - \lambda)[(1 - s)(1 - t)(1 - \gamma) + s(1 - \beta)]$$

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

3.2 The optimal level of tax sheltering

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

$$s^* = \frac{[\beta + \lambda(1-\beta)] - (1-t)[\gamma + \lambda(1-\gamma)]}{\alpha}$$

Note that in choosing the optimal level of sheltering the controlling shareholder will only look at her own benefits (equation 1) ignoring the impact on minority shareholders. This level of sheltering can be too much or too little with respect to what the minority shareholders would like.¹⁷

From a minority shareholders' point of view the optimal level of income sheltering trades off expropriation by the government through the tax system and expropriation by controlling shareholders through diversionary technologies. Any dollar of income that is sheltered avoids the corporate tax, but is "taxed" (expropriated) more heavily by the majority shareholder, 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:

$$\hat{t} = \frac{\beta - \gamma}{1 - \gamma} = \frac{\delta}{1 - \gamma}$$

¹⁷ The minority 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.

If $t < \hat{t}$, additional expropriation by controlling shareholders made possible by the sheltering of the income offsets any gains from reduced taxes and minority 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 the controlling shareholder enjoys on sheltered income, so sheltering benefits minority 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 ($\beta = \gamma = 0$, $\hat{t} = 0$), minority 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 the controlling shareholder and that of the minority 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 poor and the controlling shareholder is able to appropriate all the sheltered income ($\beta = 1$), then minority shareholders would like no sheltering of income. Similarly, the degree to which sheltered income is more easily diverted (δ) also matters critically for the preferences of minority shareholders over sheltering activity.

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

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

Proof:
$$\frac{ds^*}{dt} = \frac{\gamma + \lambda(1 - \gamma)}{\alpha} > 0$$
. Substituting $\beta = \gamma + \delta$, we have $\frac{ds^*}{d\gamma} = \frac{t(1 - \lambda)}{\alpha} > 0$.

$$\frac{ds^*}{d\alpha} = -\frac{[\beta + \lambda(1-\beta)] - (1-t)[\gamma + \lambda(1-\gamma)]}{\alpha^2} < 0$$

$$\frac{ds^*}{d\lambda} = (1-\beta) - (1-t)(1-\gamma) < 0 \text{ if } t < \hat{t} \text{ and } >0 \text{ if } t > \hat{t}.$$

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

<u>*Result 2:*</u> The impact of insider ownership on the optimal amount of tax sheltering increases in the level of corporate governance $(1 - \gamma)$.

<u>*Proof:*</u> Substituting $\beta = \gamma + \delta$, we have

$$\frac{d^2s^*}{d\lambda d(1-\gamma)} = (1-t) > 0$$

Greater insider ownership induces the controlling shareholder to internalize more of the security benefits and hence the interest of minority shareholders. In good corporate governance regimes, minority shareholders like sheltering because the government is more rapacious (i.e., takes a bigger cut) than the controlling shareholder. And the better the corporate governance system is (the higher the $(1 - \gamma)$), 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 minority shareholders' point of view sheltering becomes less appealing. Hence, the more cash flow rights insiders own, the more they will think as minority 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, Jenter 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 minority shares and on the value of control

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

<u>*Result 3:*</u> 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 minority shares. Hence,

$$\frac{dV^m}{d\alpha} = \frac{\partial V^m}{\partial s} \frac{ds}{d\alpha} > 0 \text{ because } \frac{\partial V^m}{\partial s} = -(1-t)(1-\gamma) + (1-\beta) < 0, \text{ if } t < \hat{t} \text{ and}$$
$$\frac{ds}{d\alpha} = -\frac{[\beta + \lambda(1-\beta)] - (1-t)[\gamma + \lambda(1-\gamma)]}{\alpha^2} < 0. \text{ Hence, the result follows.}$$

In the traditional view of corporate taxes, where the effect of taxes on managerial dilution is not considered, an increase in tax enforcement leads necessarily to a decrease in stock value, since companies will be forced to pay more taxes and hence they will be worth less. This conclusion can be overturned, if we espouse a corporate governance view of taxes, where the effect of taxes on managerial dilution is considered. 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 the controlling shareholder. Hence, minority shareholders are better off. Since the market value of shares reflects the value minority shareholders receive, stock market value can increase with greater enforcement. To illustrate this point, Figure 3 presents a numerical example of the effects of an increase in tax enforcement according to the traditional and corporate governance views of taxation. According to both views, the controlling shareholder will choose a level of sheltering based on the probability of being caught and the penalty she faces in that instance. We assume that when enforcement is low she will shelter 50% of the income and when enforcement is high she will not shelter any income.

In the traditional view of corporate taxes, minority shareholders receive their proportion of after tax income. When tax enforcement is high, tax sheltering is low and so is after tax income, hence minority shareholders receive less (\$34 vs. \$28 in the example). In the corporate governance view of taxes, the reduction in after tax income due to an increase in tax payment can be more than compensated by a reduction in managerial dilution. In the example, we assume that the manager can divert 50% of sheltered income and none of the reported income. As a result, the payoff to the minority shareholder is \$24 in a regime of low enforcement and \$28 in a regime of high enforcement. Hence, the increase in tax enforcement leads to an increase in the return to minority shareholders of \$4 as higher enforcement eliminates tax sheltering and reduces the amount of managerial diversion. As long as the increase in taxes paid is less than the decrease in managerial diversion, the value of minority shareholders will rise as embedded in the condition $t < \hat{t}$.

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 minority shareholders receive, normalized by the total value of the company computed at the price of minority shares:

$$CP = \frac{\lambda \left[\frac{V^{C}}{\lambda} - \frac{V^{M}}{1 - \lambda}\right]}{\frac{V^{M}}{1 - \lambda}} = (1 - \lambda) \frac{V^{C}}{V^{M}} - \lambda .$$

Accordingly, we have

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

Proof:
$$\frac{\partial CP}{\partial \alpha} = \frac{(1-\lambda)}{(V^m)^2} \left[\frac{dV^C}{d\alpha} V^m - V^C \frac{dV^m}{d\alpha} \right]$$
. By using the envelope theorem
 $\frac{dV^C}{d\alpha} = \frac{\partial V^C}{\partial \alpha} = -\alpha s < 0$. Since by Result $1 \frac{dV^m}{d\alpha} = \frac{\partial V^m}{\partial s} \frac{ds}{d\alpha} > 0$, 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 $t < \hat{t}$ increases the payoff of minority 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.

<u>*Result 4:*</u> An increase in the tax rate *t* reduces both the value of minority 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
$$\frac{dV^{C}}{dt} = \frac{\partial V^{C}}{\partial t} = -[\gamma + \lambda(1-\gamma)] < 0.$$
$$\frac{dV^{m}}{dt} = \frac{\partial V^{m}}{\partial t} + \frac{\partial V^{m}}{\partial s} \frac{ds}{dt} , \text{ where } \frac{\partial V^{m}}{\partial t} = -(1-\lambda)(1-s)(1-\gamma) < 0, \quad \frac{\partial V^{m}}{\partial s} < 0, \text{ and}$$
$$\frac{ds}{dt} = \frac{\gamma + \lambda(1-\gamma)}{\alpha} > 0. \quad \frac{\partial CP}{\partial t} = \frac{(1-\lambda)}{(V^{m})^{2}} \left[\frac{dV^{C}}{dt} V^{m} - V^{C} \frac{dV^{m}}{dt} \right] =$$
$$\frac{(1-\lambda)}{(V^{m})^{2}} \left\{ -V^{m}[\gamma + \lambda(1-\gamma)] - V^{C}[-(1-\lambda)(1-s)(1-\gamma) + [(1-\beta) - (1-t)(1-\gamma)] \frac{\gamma + \lambda(1-\gamma)}{\alpha}] \right\}$$

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 it as the corporate Laffer curve.

<u>*Result 5:*</u> For intermediate levels of tax enforcement, there is a Laffer curve for corporate tax revenues.

<u>*Proof:*</u> Corporate tax revenues (CTR) are given by t(1-s). Differentiating this with respect to *t* we obtain

$$\frac{\partial CTR}{\partial t} = (1-s) - t \frac{ds}{dt} = (1-s) - t \frac{\gamma + \lambda(1-\gamma)}{\alpha} = \frac{1}{\alpha} [\alpha - [\beta + \lambda(1-\beta)] + (1-t)[\gamma + \lambda(1-\gamma)] - t[\gamma + \lambda(1-\gamma)] = \frac{1}{\alpha} [\alpha - [\beta + \lambda(1-\beta)] + (1-2t)[\gamma + \lambda(1-\gamma)].$$
 If $\alpha > [\beta + \lambda(1-\beta)] - [\gamma + \lambda(1-\gamma)] > 0$, the derivative is positive at $t=0$. If $\alpha < [\beta + \lambda(1-\beta)] + [\gamma + \lambda(1-\gamma)]$, 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 α should be between 0.1 and 1.2 for the Laffer curve to arise. A value of α 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 λ and the amount of feasible diversion γ . These parameters, as in the empirical work that follows, should be interpreted as referring to the representative firm in a country.

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

<u>*Proof:*</u> The revenue maximizing level of taxation is given by $t = \frac{1}{2} + \frac{\alpha - [\beta + \lambda(1 - \beta)]}{2[\gamma + \lambda(1 - \gamma)]}$. Differentiating this term with respect to λ, γ, α and remembering that $\beta = \gamma + \delta$, delivers the results. The two plots in Figure 4 illustrate the effect of the corporate governance system and ownership concentration on the corporate Laffer curve. The left plot examines the relationship between tax revenues and tax rates as a function of the size of the controlling shareholder's block size.¹⁸ 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. Since in the plot we have chosen $\gamma = 0.1$, this plot should be interpreted as applying to countries with reasonably good corporate governance systems. The right plot in Figure 4 shows the same graph for a worse level of corporate governance ($\gamma = 0.7$). In such settings, the situation is reversed. The revenue maximizing level of the corporate tax rate increases with the level of insider ownership.

The left plot in Figure 5 shows that for a given level of insider ownership the shape of the Laffer curve depends also on the quality of the governance system.¹⁹ Specifically, as governance deteriorates the revenue-maximizing tax rates decreases for the reason discussed above. Finally, the right plot of Figure 5 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 minority 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

 $^{^{18}}$ In this simulation, alpha is held at 0.7, gamma is 0.1, and delta is 0.2.

shareholders cannot avoid taxation. Then, the payoff to the controlling shareholder and to the minority shareholders becomes

(1*)
$$V^{C} = (1-t_{p})\lambda[(1-s)(1-t)(1-\gamma) + s(1-\beta)] + (1-s)(1-t)\gamma + \beta s - \frac{\alpha}{2}s^{2}$$

and

(2*)
$$V^{M} = (1-\lambda)(1-t_{p})[(1-s)(1-t)(1-\gamma)+s(1-\beta)].$$

Accordingly, the optimal amount of sheltering then becomes

$$s^* = \frac{[\beta + \lambda(1 - t_p)(1 - \beta)] - (1 - t)[\gamma + \lambda(1 - t_p)(1 - \gamma)]}{\alpha}$$

The effect of personal taxes is to decrease the effective ownership by insiders. Where in s^* the insider ownership was λ in s^* ' the effective insider ownership is $\lambda(1-t_p)$. Hence, from *Corollary 2* we derive

<u>Corollary 3:</u> 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 4 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, the left panel of Figure 4 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 the right panel of Figure 4. 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.

¹⁹ In this simulation, alpha is held at 0.7 and the controlling block size is held at 0.5.

4. Evidence on the Corporate Governance View of Corporate Taxes

The corporate governance view of taxes has implications both for corporate governance and for corporate taxation. This view delivers predictions on how the characteristics of the corporate taxation system affect the amount of managerial diversion and, consequently, company valuation. This view also delivers predictions on how the characteristics of the corporate governance system affect the responsiveness of tax revenues to changes in tax rates (a corporate version of the Laffer curve).

The first set of predictions are more difficult to test as managerial diversion is difficult to measure in a large sample of companies and the implications in terms of valuation are either not unique to this approach (i.e., that an increase in the tax rates reduces stock prices) or they require estimates of changes in the level of tax enforcement, which are generally difficult to measure. For this reason, in Desai, Dyck, and Zingales (2003) we analyze these implications in a clinical study of Russia, where both sheltering and managerial diversion are large and visible. In particular, we focus on the increase in tax enforcement instigated by Putin after his election. We show that this increase in tax enforcement raised the value of shares and reduced the control premia, particularly in companies that were evading taxes the most, as predicted by our model. This result complements the finding of Dyck and Zingales (2003) that exploit cross-sectional variation in tax enforcement and find that private benefits are lower in countries with a higher level of tax enforcement, even controlling for national differences in legal protections for investors. The second set of predictions allow for more systematic tests. Hence, in the rest of this paper we focus on testing the tax implications of the corporate governance view of taxes.

4.1 *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.²⁰ While initial investigations relied on the intuition that labor supply responsiveness to individual income tax schedules could lead to such effects,

²⁰ 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.

Lindsey (1987) and Feldstein (1995) expanded the underlying mechanism contributing to Laffercurve 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.²¹ 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.²²

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.²³ 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. A key difference in the corporate setting is the presence of minority shareholders and the divergence of interest between the optimal level of sheltering from the majority shareholder point of view and from the minority shareholder's one.

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 to tax revenues to tax rate changes is affected by the level of ownership concentration and by the quality of the corporate governance system.

²¹ See Goolsbee (1999) for a recent effort that emphasizes high-income earners and the distinction between temporary and permanent responses to tax rate changes.

²² 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).

²³ 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.

4.2 The Data

These 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.²⁴ 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).²⁵ 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.²⁶

As a measure of ownership concentration we use the average percentage of common shares owned by the three largest shareholders in the 10 largest nonfinancial, privately owned domestic firms 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 the controlling shareholder.

²⁴ This data is available at www.otpr.org.

²⁵ 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.

²⁶ The countries excluded are the major oil exporting countries defined as (a) OPEC members, (b) affiliated nonmembers 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.

Table 1 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 bottom 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 panel structure of the sample is useful because we can use the within country variability 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 6 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. Our interest, however, is not in establishing an average Laffer curve effect but in investigating how the slope of this curve changes with ownership concentration and the protection of minority 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, we are confident that our results will not be affected by our inability to measure base broadening in a systematic way.²⁷

²⁷ 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.

4.3 Results

The underlying assumption in our analysis is that, except for our theorized differences, every country faces the same relation between corporate tax revenues and corporate tax rates, after controlling for the level of GDP. 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. Our basic specification, then, is as follows:

where *i* indexes countries, *t* is a time subscript and τ is the top marginal corporate tax rate. η 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 one of Table 2 reports estimates of this basic specification. On average a tax increase raises corporate tax revenues, but not by much: a 10 percentage point increase in the tax rates (from 15% to 25%, for example) increases corporate revenues by 1%. The average effect, however, is not statistically different from zero. 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 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. 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 blocs 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, where

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.

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 3 and 4). In countries with low (below the median) ownership concentration, the coefficient on tax rates is positive and statistically significant, while the coefficient on tax rates is negative and statistically significant for countries with high (above the median) ownership concentration. The difference is statistically different from zero, 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 5 through 8 of Table 2). The results are consistent with the results presented in columns 1 through 4, 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 bloc reaches 36%. This effect is still evident when we divide the sample according to the levels of ownership concentration. In countries with low ownership concentration the coefficient of the tax rate is positive albeit not statistically significant, while in countries with high ownership concentration, the coefficient is negative and statistically different

from zero. The difference between the coefficients in the two samples is also statistically different from zero.

Corollary 2 also has implications in terms of the levels of corporate governance: worse levels of corporate governance (higher level of γ) reduce the revenue maximizing tax rate. We can test this prediction directly by using the Dyck and Zingales (2003) estimates of control premia in different countries as a measure of corporate governance. Since it is a measure of how much controlling shareholders appropriates for themselves, it is directly related to γ .

Column 1 of Table 3 presents the estimate of our basic specification, where we have inserted the interaction between corporate tax rate and 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%. In columns 2 and 3 we divide the sample on the basis of the median level of control premium. As predicted by the model, in countries where the control premium is above the median, the coefficient of the tax rate is positive, 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 4 and 5 of Table 3 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. Columns 6 to 8 repeat the same exercise with the ratio of corporate tax revenues to GDP. As before, the results are similar, but statistically weaker. Finally, in columns 9 to 11 we re-estimate the same regressions using the ratio of corporate tax revenues to total tax revenues as a dependent variable. The results are qualitatively similar, although the level of statistical significance drops.

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 have to estimate many more parameters with the same number of observations. Table 4 looks at 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.

Thus far we only looked at one effect at the time, while the model predicts that both effects should be present simultaneously. Thus, in column 3 we insert both the level of ownership and the value of control premia as explanatory power. Given the limited number of observations, the high degree of correlation between the variables and the country-specific slope measurement procedure, this is asking for a tremendous amount from the data. Including both measures increases the standard errors and decreases the coefficient of ownership concentration, which is 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 8 the share of corporate tax revenues to total revenues. The results are qualitatively similar, but have lower statistical significance. 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, even 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 minority investors.

5. A New Rationale for the Corporate Income Tax

In our model the incentive to shelter income, which is created by the existence of a corporate tax, increases the amount of managerial diversion. Hence, one would be tempted to conclude that from a corporate governance point of view the optimal tax rate is zero.

This conclusion, however, is wrong because it considers only one aspect of the tax code, the rate, while ignoring enforcement. What restrains managers from sheltering all the 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 α . This expected cost exists mainly because there exists a tax authority interested in assessing income. As Erickson, Hanlon, and Maydew (2003) show, managers are willing to pay taxes they do not owe in order to reduce the likelihood that the IRS will catch them. Hence, IRS monitoring represents a real threat for them.

This 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, α would be close to zero and minority shareholders would be minimally protected.

Why does the tax authority succeed where shareholders fail? In contrast to other shareholders, the tax authority does not face a free rider problem in monitoring and enforcing its rights. In fact, by aggressively prosecuting a company the government sets an example that induces other firms to behave. Thus, because of the spillover effect it has on the behavior of all the other companies, the tax authority has an incentive to certify income and enforce its rights

even when the cost of doing so is higher than the payoff it can derive. Furthermore, the tax authority has the benefit of disciplinary powers – including criminal penalties - that are unavailable to other parties.

The same result could not be achieved through a mandatory system of disclosure, because without a revenue purpose the incentive of any Government agency to enforce this mandate would be limited. External auditors are not a perfect substitute either. As recent events have shown, there is a fundamental conflict of interest in the appointment of these auditors, which undermines their credibility. Hence, even in a world with external auditors there is a role left for the tax authority in verifying income.

Far from prescribing a zero tax rate, the corporate governance approach to taxes provides a rationale for the existence of a separate tax on corporate income: as a source of revenues that will entice the government to verify the accuracy of corporate income in a manner that only the government can.

As far as we know, this is a new rationale for the corporate income tax. Existing theories explain the existence of a corporate tax as compensation for the provision of the benefit of limited liability (Meade (1978) and Bird (1996)), as an efficient tax on rents (Mintz (1995)), or as an efficient collection device that provides a backstop for the personal income tax.²⁸ Legal scholars, instead, have emphasized other rationales for the peculiar nature of the corporate tax systems. Kanda and Levmore (1991) argue that the presence of a two-tier system of corporate tax helps align the tax preferences of managers and shareholders, thereby mitigating an agency problem created by different personal tax incentives. While not providing a distinct rationale for the corporate income tax, Arlen and Weiss (1995) argue that the persistence of a two-tier tax relates to the differential preferences, and consequent lobbying efforts, of managers and shareholders over tax policy.²⁹

²⁸ See Slemrod (2001) for an excellent survey of this literature and its shortcomings.

²⁹ These discussions sidestep political rationales for a corporate income tax. As Vickrey (1991) notes, the corporate income tax "has developed largely without any clear economic rationale, other than possibly Colbert's cynical principle of getting the most feathers from the goose with the least squawking...." In a related vein, Meade (1978) tersely lists a final reason for using a corporate income tax – "The corporation tax already exists" – reflecting the adage that "an old tax is a good tax." In her analysis of the original logic of the corporate excise tax in the U.S., Kornhauser (1991) also emphasizes that the corporate tax was motivated by the desire to regulate big business by ensuring publicity of their income.

Our explanation provides a new rationale for the existence of taxation of corporate income and is also able to account for several features of the peculiar way the corporate tax is imposed. First, it is able to explain why interest expenses are tax deductible, and thus not subject to double taxation. The income paid in interest is certified by the fact it is paid out in cash to a third party. Hence, it does not require external certification and thus should not be subject to a "certification tax."³⁰

Second, our new rationale can explain why other legal entities, such as the limited liability corporation and the subchapter S corporation, are not subject to double taxation of earnings: they are less prone to managerial agency problems. In fact, these entities are exempted from double taxation only if they pass tests (such as a limited number of investors), which ensure that the free-rider problem in monitoring is reduced. Hence, the features of the tax are directly linked to the need for outside monitoring.

Finally, our new rationale can explain why corporate taxes are based on income and not on a variety of other possible bases including cash flow, sales, or assets.³¹ If the *raison d'etre* of the corporate tax is to certify the value of minority shareholders' claims, it makes sense to use the value of their claim, i.e. profits, as a base.

6. Conclusion

This paper analyzes the interaction between corporate governance and corporate taxation. As our analysis of managerial malfeasance at Tyco suggests, this interaction arises because income that is sheltered in tax havens or in opaque special purpose entities is more easily diverted by managers. 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 ownership concentration and

³⁰ A related argument would imply that earnings paid out as dividends should similarly be deductible as shareholders can verify these earnings. Indeed, in many countries partial or complete relief is provided for earnings paid out as dividends.

³¹ See Meade (1978) for a discussion of alternative bases and their merits.

corporate governance play an important role in determining how tax rate changes translate into revenue changes.

While we regard this evidence as encouraging, we are conscious of the need for additional validation by testing the corporate governance implications of corporate taxation. These implications, however, are more difficult to test given the difficulties in measuring tax sheltering, diversion, and levels of tax enforcement. Some evidence in this direction is provided in Dyck and Zingales (2003). They document that countries with better tax enforcement have lower private benefits. Similarly, Desai, Dyck and Zingales (2003) provides confirmatory, if anecdotal, evidence from an environment, Russia, where both tax sheltering and managerial diversion are prevalent and where the election of Putin brought a dramatic and sudden change in the level of tax enforcement.

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. At the same time, 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 large shareholders characterize many settings today, these results carry implications for the formulation of corporate tax policy.

Finally, our results suggest an alternative explanation for the very existence of a corporate tax. While traditional explanations focus on the corporate tax as a backstop to the personal income tax or as compensation for the limited liability form, this analysis suggests that the corporate tax is a *certification tax*, helping minority shareholders ascertain the value created by their company and, thus, helping them claim a fraction of it. Interestingly, what matters is not just the disclosure forced by the tax system, but also the incentives for the state to certify the figure disclosed, which is embedded in a corporate tax system. This argument provides a

rationale for a low, well-enforced corporate tax. As the current U.S. debate on the benefits of forced reconciliation between book and tax accounting suggests, this argument is not limited to developing countries with weak corporate governance mechanisms.³² If corporate tax systems provide certification benefits, then rules that prevent shareholders from reconciling income reported to shareholders and tax authorities (e.g. departures from book-tax conformity), undercut these very certification benefits.

³² Desai (forthcoming) demonstrates that the late 1990s were characterized by a decoupling of the income reported to shareholders and tax authorities just as instances of corporate malfeasance became more and more widespread. Lenter, Shackelford and Slemrod (2003) details the historical concerns over disclosure of tax returns in the U.S. from legal, accounting and economic perspectives.

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Figure 1: Tyco's Gobal Operations and Tax Avoidance Strategies, 1990-2001

Notes: The figure depicts the evolution of four financial and operational ratios for Tyco from 1990 to 2001 based on several years of Tyco 10-K reports. The "Share of Revenue from Foreign Sources" is the ratio of non-U.S. revenue to worldwide revenue. The "Share of Pretax Income from Foreign Sources" is the ratio of non-U.S. pretax income to worldwide pretax income. The "Average Foreign Tax Rate" is the ratio of foreign taxes paid to foreign pretax income. The "Average Overall Tax Rate" is the average rate of taxation, as measured by the current provision for taxes, on overall income.



Figure 2: Intercompany Transactions at Tyco, Corporate Structure

Source: Banc of America Securities research report, 2000.

Note: In detailing this corporate structure, the BoA analyst outlined the following interpretation of the ways in which Tyco avoided taxes. "Tyco's incorporation in Bermuda allows the company to take advantage of certain financial and tax benefits. In the diagram below, we illustrate the basic corporate mechanism that allows Tyco to take advantage of financial and tax benefits available to companies incorporated in Bermuda. As shown is the table above, Tyco issues debt through TIG, a Luxembourg corporation, which lends money to Tyco's subsidiaries. We believe the subsidiaries are highly levered and incur interest expense that reduces their taxable income in countries with high income tax rates. TIG earns interest income in Luxembourg, which has a favorable tax treaty with Bermuda. Tyco eliminates the intercompany interest income and expense in the corporate-level consolidation. In effect, this structure allows the company to shift income from high-tax countries to countries with no income taxes."

Figure 3: 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 4: 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 5: Can Tax Enforcement Increase Returns for Minority Shareholders?

Figure 6: Corporate Tax Rate Changes, 1979-1997

Notes: The figure depicts the top marginal corporate tax rates for the panel of countries used in the empirical work that follows.

Table 1: Descriptive Statistics for Corporate Laffer Curve Specifications

	No of Obs.	Mean	Median	Std. Dev.	Min	Max
Panel Variables						
Log Corporate Tax Revenues Corporate Tax Revenues/Total Tax	545	3.6965	3.0782	2.8979	-5.2983	14.4093
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
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

Notes: The table provides descriptive statistics for variables employed in the regressions in Tables 4 to 6. The top panel of the table 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 as described in text. "Marginal Tax Rates" are the top corporate statutory rates as provided in the OTPR database and as described in the text. "Ownership Concentration" is the average percentage of common shares owned by the three largest shareholders in the 10 largest nonfinancial, privately owned domestic firms in a given country as computed by La Porta et al. (1998). The "Measure of Private Benefits" is the control premium in negotiated control block sales, as computed by Dyck and Zingales (2003). "Maximum Within-Country Difference in Marginal Tax Rates" is the maximum difference between tax rates for a given country during the panel.

	Depende	ent Variabl Tax Ba	e: Log of C	orporate	Dependent Variable: Corporate Tax Revenues/GDP				Dependent Variable: Corporate Tax Revenues/Total Tax Revenues				
			evenues										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
	All Countries	All Countries	Low Ownership Concentration Countries	High Ownership Concentration Countries	All Countries	All Countries	Low Ownership Concentration Countries	High Ownership Concentration Countries	All Countries	All Countries	Low Ownership Concentration Countries	High Ownership Concentration Countries	
Marginal Tax Rates	0.1033	3.1494	0.8330	-0.9326	-0.0022	0.0432	0.0089	-0.0179	-0.0423	0.1994	0.0183	-0.1272	
C	(0.5446)	(1.2814)	(0.6357)	(0.5094)	(0.0083)	(0.0216)	(0.0095)	(0.0114)	(0.0359)	(0.1351)	(0.0422)	(0.0439)	
Marginal Tax Rates Interacted with Ownership Concentration		-6.9244 (2.4679)				-0.1033 (0.0462)				-0.5470 (0.2764)			
Country Fixed Effects?	Y	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	Y	
Number of Countries	35	35	17	18	35	35	17	18	35	35	17	18	
No Obs.	545	545	309	236	545	545	309	236	540	540	304	236	
R-Squared	0.9593	0.9606	0.9034	0.9806	0.5171	0.5231	0.4625	0.5561	0.6764	0.6824	0.4399	0.7960	

Table 2: Corporate Laffer Curves For Ownership Concentration

Note: The dependent variable in columns 1-4 is the log of corporate tax revenues. The dependent variable in columns 5-8 is the ratio of corporate tax revenues to GDP. The dependent variable in columns 9-12 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). All specifications employ country fixed effects and the interactions of those country fixed effects with log GDP. Columns 1-2, 5-6 and 9-10 employ the full sample and the remaining columns 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.

	Depen	dent Variable	: Log of Corp	oorate Tax Rev	venues	Dependent]	Variable: Cor Revenues/GDI	porate Tax	Dependent Variable: Corporate Tax Revenues/Total Tax Revenues			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
	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	Lower Private Benefit Countries (<10.0%)	Higher Private Benefit Countries (>10.0%)	All Countries	Lower Private Benefit Countries (<10.0%)	Higher Private Benefit Countries (>10.0%)	
Marginal Tax Rates	1.2627 (0.5756)	1.2438 (0.5249)	-0.4072 (0.5539)	1.0444 (0.4798)	-0.9598 (0.5281)	0.0137	0.0110	-0.0114	0.0182	0.0020 (0.0415)	-0.0736 (0.0497)	
Marginal Tax Rates Interacted with Measure of Private Benefits	-6.0502 (2.2017)					-0.0698 (0.0386)			-0.2866 (0.2492)			
Country Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Log GDP Interactions with	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Number of Countr	31	16	15	18	13	31	18	13	31	18	13	
No Obs. R-Squared	458 0.9588	270 0.8810	188 0.9796	309 0.8687	149 0.9861	458 0.5599	309 0.4525	149 0.7541	453 0.6929	304 0.5531	149 0.8293	

 Table 3: Corporate Laffer Curves For Corporate Governance

Note: The dependent variable in columns 1-5 is the log of corporate tax revenues. The dependent variable in columns 6-8 is the ratio of corporate tax revenues to GDP. The dependent variable in columns 9-11 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 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). All specifications employ country fixed effects and the interactions of those country fixed effects with log GDP. Columns 1, 6 and 9 employ the full sample and the remaining columns partition the sample into subsamples based on the measure of private benefits. Standard errors are presented in parentheses and correct for clustering of residuals at the country level.

	Dependen Specific Laff Log of Cor	t Variable: C fer Curve Slo porate Tax F	Country opes using Revenues	Dependen Specific Laff Corporate	t Variable: C čer Curve Slo Tax Revenu	Country pes using es/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 1.6150	0.6958 (0.4673)	0.8237 (1.6805)	0.0196 (0.0215)	0.0108 (0.0065)	0.0221 (0.0220)	0.0369 (0.1046)	0.0139 (0.0180)	0.0575 (0.0706)	
Ownership Concentration	-2.3521 (2.8291)		-0.7355 (3.6352)	-0.0481 (0.0377)		-0.0348 (0.0517)	-0.1206 (0.1869)		-0.1134 (0.1771)	
Measure of Private Benefits		-3.4626 (1.4096)	-2.6458 (1.7441)		-0.0479 (0.0174)	-0.0244 (0.0263)		-0.1020 (0.0488)	-0.0417 (0.1005)	
No Obs. Weighted by the Inverse of the Variance of the	32	28	26	32	28	26	32	28	26	
Measured Slope? R-Squared	Y 0.0214	Y 0.1332	Y 0.1141	Y 0.0367	Y 0.1370	Y 0.1381	Y 0.0134	Y 0.0507	Y 0.0633	

Table 4: The Importance of Corporate Governance and Ownership Concentration for Country-Specific Laffer Curve Slopes

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.