

Income Diversion, Corporate Governance and Firm Value

Juan-Pedro Gómez and Maxim Mironov*

Abstract

We empirically analyze the link between corporate governance and the appropriation of private rents by managers and/or controlling shareholders in Russia. Not all governance policies interact with income diversion in the same way. Auditing by an internationally reputed consulting firm, board size and board composition, although related to firm value, are shown to be unrelated to income diversion. External governance improvements, such as public or cross-listing in the US as an ADR, are significantly correlated with lower income diversion. Our results shed light on which governance instruments may contribute to create firm value in emerging markets through curbing income diversion.

Keywords: income diversion, firm value, corporate governance

JEL Codes: D73, G30, G38, H11, H26

* IE Business School, María de Molina 12, 28006, Madrid. Corresponding author Juan-Pedro Gomez. Email: juanp.gomez@ie.edu; Voice: +34 917 821 326; Fax:+34 915 636 859. Maxim thanks the members of his dissertation committee: Gary Becker, Atif Mian, Per Stromberg, and Luigi Zingales. We also thank Marianne Bertrand, Salvador Carmona, Alexander Dyck, Sergey Guriev, Garen Markarian, Juan Santaló, Aleh Tsyvinski, Ekaterina Zhuravskaya, and seminar participants at CEMFI, the University of Chicago, the Chicago Graduate School of Business, New Economic School, the University of Oxford, the Said Business School, Bocconi University, IE Business School, INSEAD, and Universidad Torcuato Di Tella for helpful comments and suggestions. We thank the Spanish Ministry of Science and Innovation Research for its financial support through grants #ECO2010-17625 and # ECO2011-26384. The Spanish Ministry of Science had no role in the study design, in the collection, analysis and interpretation of data.

1. Introduction

The literature has accumulated extensive evidence on the relation between corporate governance and firm value (e.g., Yermack (1996), Gompers, Ishii, and Metrick (2003), Cremers and Nair (2005), Chhaoccaria and Grinstein (2007)). Provided that a particular corporate governance mechanism is positively correlated with firm value, we may wonder through which channel this relation works. In particular, is it associated with a decrease in income diversion by insiders (controlling shareholders and/or managers), which is then transferred to minority shareholders? Or is the increase in firm value correlated with governance changes from which both insiders and minority shareholders profit without necessarily decreasing income diversion?

In this paper, we investigate the relationship between several instruments of corporate governance and income diversion by firm insiders. We postulate that external governance institutions, arguably more independent from the firm's management, are more likely to be associated with lower income diversion and, consequently, higher firm value. Our findings support this hypothesis. Of the six governance institutions considered, both internal and external, only external governance improvements, such as listing in a public stock exchange or cross-listing in the US as an ADR, are significantly correlated with lower income diversion.

We make three contributions. Our first contribution is to quantify income diversion directly.¹ Our method is based on the identification of special purpose entities called

¹ The literature offers three methods to proxy income diversion indirectly by measuring the private benefits of control. The first method, pioneered by Lease, McConnell, and Mikkelsen (1983), relies on differences in prices between voting and non-voting shares that have the same or similar dividend rights. The second method, first applied by Barclay and Holderness (1989), is based on differences between the negotiated prices of controlling blocks of publicly traded companies and the market prices of shares. The third method, developed by Bertrand, Mehta, and Mullainathan (2002), focuses on the tunneling of resources from firms

“spacemen”: short-lived firms created for diversion purposes through the artificial inflation of firm costs that are typically registered in the names of persons who have lost their IDs. The method is introduced in Mironov (2013) to study income diversion among privately held Russian companies in the 2003-2004 period. In this paper, we use this method to estimate income diversion in publicly held Russian companies during the years 1999 through 2004. The closest reference to our approach is Desai, Dyck, and Zingales (2007), who report evidence consistent with sizeable income diversion by leading Russian oil corporations via affiliated traders. Our approach is different, however. We focus on activities related to the artificial inflation of firm costs and its relation with corporate governance. Desai, Dyck, and Zingales (2007), on the other side, analyze the effect of tax enforcement on a different measure of income diversion: underreporting of company revenues (transfer pricing). Moreover, our data cover six consecutive years, increasing the robustness of our findings.

Second, we contribute to the literature that analyzes the frictions caused by the diversion of corporate resources to private interests (e.g., Shleifer and Vishny (1997)) and the institutions that may help reduce it.² In this paper, we focus on a particular institution: corporate governance. Some papers have used a corporate governance index (e.g., Black, 2001; Gompers, Ishi and Metrick, 2003; Durnev and Kim, 2005). One may argue, however, that not all corporate institutions have the same impact on income diversion. We are interested in testing this conjecture. We construct six corporate governance variables at the firm level: listing in a public stock exchange, cross-listing as an ADR in the US, being

where controlling parties have low cash flow rights to firms where controlling parties have high cash flow rights.

² The extant literature has focused on factors such as debt discipline (Jensen and Meckling, 1976), the legal environment (La Porta, Lopez de Silanes, Shleifer, and Vishny, 1998, 2000; Nenova, 2003; Dyck and Zingales, 2004), the level of investor protection (Nenova, 2003; Dyck and Zingales 2004), product market competition (Guadalupe and Perez-González, 2010), and increased public opinion pressure (Dyck and Zingales, 2004).

audited by one of the ‘Big 5’ international consulting firms, and three variables related to the company’s board: whether a foreigner serves on the company’s board, the size of the board and whether the CEO has a seat on the board. These firm specific variables allow us to study how different corporate governance mechanisms, external and internal, interact with income diversion and company value.

Finally, we also contribute to the literature that studies the decision of firms (many of them in emerging markets) to cross-list in developed, better regulated equity markets (e.g., Karolyi (1998)). Cross-listing has been suggested to work as a “bonding” mechanism to either signal that the company has good corporate governance in place (e.g., Doidge et al., (2004)) or as the outcome of managers’ optimal tradeoff between their private interests and the market value of their equity share in the company (e.g., Doidge et al, (2009)). In the first case, the underlying assumption is that cross-listing in a developed market is a credible signal against income diversion. In the second case, the assumption is that cross-listing significantly reduces the private benefits that controlling shareholders can extract from the firm they control. We cannot distinguish empirically between these two possible interpretations. Nevertheless, our results show that, whether a signal or a discipline mechanism, cross-listing in the US is indeed correlated with lower income diversion.

We begin by documenting the relation between corporate governance and firm value, represented by Tobin’s Q . We find that firms audited by a Big 5 consulting company (Arthur Andersen,³ Deloitte, Ernst & Young, KPMG, or Price Waterhouse Coopers (PWC henceforth)) have a Q value 27% higher than the average listed firm’s Q . Firms in which a foreigner serves on the board have a Q value 39% higher than the average Q for listed firms. Both results are significant at the 1% level. The other two variables associated with the board

³ Because the sample period starts in 1999, Arthur Andersen was still one of “Big 5” accounting firms.

composition, size of the board and whether the CEO seats on the board, have the predicted (negative) sign. In particular, a one standard deviation increase in board size is associated with a decrease of 0.07 in Q (equivalently, 8% lower than the average Q). Having a CEO seated on the board is associated with a Q approximately 10% lower than the average value. These results are marginally significant at the 13% level. Finally, listing as an ADR in the US has no statistically significant relation with firm value. It is important to note that the decision to go public, list in a foreign, more developed stock market and/or apply one or another corporate governance mechanism is not random. Therefore, lacking an exogenous shock on the implementation of corporate governance measures, our results cannot be interpreted as indicative of causal effects of the different governance mechanisms on firm value.

After this, we document the magnitude of income diversion in our sample. To construct our income diversion metric, we use a unique set of Russian banking transaction data from the 1999-2004 period. Leaked to the public from the Russian Central Bank in 2005, the dataset contains 513 million transactions of 1.7 million firms and covers 75%-80% of all banking transactions that occurred in Russia in 1999-2004.⁴

Following Mironov (2013), we define a “spaceman” as a firm that pays either zero or infinitesimal taxes relative to its turnover. According to the Russian tax system, even a loss-generating firm must pay value added taxes (VAT), social security taxes (SST), and property taxes, identification criteria that guarantee that such a firm cannot survive even a simple examination by tax authorities. Because a chief executive found guilty of tax evasion is subject to significant fines or even imprisonment, spacemen are typically registered in the

⁴ Each transaction has a detailed description. For example, one record indicates that on January 26th, 2004, Gaztaged, a 100% subsidiary of Gazprom, the largest Russian company, paid 538 million rubles (\$18 million) to Trubniy Torgoviy Dom for pipes for YamalGazInvest. In another example, Rosneft, one of the largest oil producers in Russia, paid a rent of 637 rubles (\$21) on September 7th, 2003, to Selivanovskaya Voda for a water cooler.

names of persons who have lost their IDs or homeless people. We identify 99,925 spacemen in the 1999-2004 period.

Using this methodology, we estimate the cash flow diversion of 156 large Russian corporations. We construct three measures of diversion: net transfers to spacemen as a percentage of total payments; net transfers to spacemen as a percentage of revenue; and net transfers to spacemen as a percentage of assets. We find that income diversion among public firms is sizeable and significant, although smaller in magnitude than the effect documented by Mironov (2013) for private firms. According to our data, a company on average diverts 2.7% of its total payments, 1.8% of its revenue, or 1.7% of its assets per year.

After documenting both the relation between our corporate governance variables and firm value and the magnitude of income diversion in our sample, we are in a position to investigate the relation between each corporate governance institution and income diversion. One channel through which firm market value increases after corporate governance improves is the transfer of private wealth from insiders to minority shareholders. Our direct measure of income diversion allows us to test this prediction for each corporate governance variable independently. At the same time, lower income diversion is mechanically correlated with higher operating margin: given our measure of income diversion, other things equal, if diversion decreases, production costs will be accounted at their true price, hence increasing EBITDA. Thus, we should expect a higher operating margin associated with corporate governance variables negatively correlated with income diversion.

Alternatively, better corporate governance may still be associated with a higher Tobin's Q independently of income diversion. Better governance may result, for instance, in higher operating performance (higher EBITDA Margin), increasing value both for minority and controlling shareholders without any redistribution of value between parties.

According to our results, publicly traded companies divert approximately 0.6% less revenue to spacemen than their non-traded peers (an average company diverts 1.8% of its revenue). When we consider cross-listing in the US jointly with the rest of corporate governance variables, firms trading as ADRs in the US divert 0.77% less revenue to spacemen than their non-cross-listed peers. Both results are significant at the 5% level. These results have two possible interpretations. On the one side, they may be interpreted as evidence of a casual effect of listing and cross-listing, which impose stricter corporate governance standards on the company, hence curbing the ability of insiders to extract private rents; alternatively, listing and, particularly, cross-listing may be a signal used by companies that already have a good corporate governance system in place and exhibit low income diversion. Although we cannot distinguish between these two possible interpretations, our results show that listed companies and companies cross-traded in more developed stock markets are associated with lower income diversion. We also observe that companies cross-listing in the US show, on average, a significantly higher EBITDA Margin: there is an increase of up to 13% (significant at the 1% level) relative to the other firms.

Auditing by a Big 5 accounting firm is uncorrelated with cash flow diversion. On the other side, firms audited by one of the Big 5 consulting companies have an EBITDA Margin up to 8.6% higher than the rest of the firms in our sample. This result is significant at the 1% level. This finding supports the alternative hypothesis: auditing by a reputed international company is positively associated with market value, yet this is not associated with a decrease in income diversion but rather an increase in operating efficiency.

All the variables pertaining to the board and its composition are uncorrelated with income diversion and EBITDA Margin. These results lend support to the alternative hypothesis: a foreigner serving on the company's board, smaller boards or CEOs who do not sit on the board are associated with higher firm value. However, this increase in value is not a

reflection of lower income appropriation by the insiders (management or controlling shareholders).

Our results indicate that various instruments of corporate governance have a different impact on income diversion. The failure of auditing and board composition in curbing income diversion is consistent with management keeping, to a large degree, control over the board size and composition and the information given to the auditor. This limits the potential of these internal mechanisms to curb income diversion, which is supported by our results. On the other side, firm management has no control on listing rules and/or SEC regulation. Our tests show that these governance mechanisms, upon which the management has less leverage or control, are strongly associated with lower income diversion.

The remainder of the paper is structured as follows. Section 2 presents the analytical framework of the paper and develops the hypotheses. Section 3 describes the data used in the analysis. Section 4 presents our empirical results. We present conclusions in Section 5.

2. Analytical Framework

2.1 Formulation of hypotheses

The theory and the extensive empirical evidence reviewed in the following subsection support the positive link between firm value and corporate governance. In this paper, we want to investigate a particular channel through which this value increase may materialize: lower income diversion. More specifically, provided that better corporate governance is associated with an increase in firm value, represented by a higher Tobin's Q , is this correlated with a decrease in income diversion by insiders (controlling shareholders and/or managers), which is then transferred to minority shareholders? Alternatively, is the increase in firm value

correlated with governance changes from which both insiders and minority shareholders profit without necessarily decreasing income diversion?

Regarding the relation between governance and firm value, we cannot identify the direction of causality in our data. In other words, our tests do not allow us to sort out whether good governance standards *cause* firm value to increase or whether more valuable companies choose higher governance standards to *signal* their quality, or a combination of both. Either way, we claim that good governance and firm value should be positively related.

Our data allow us to test this prediction for each corporate governance variable *independently*. This allows us to differentiate across several governance mechanisms, which, arguably, may have different impacts on firm value as well as income diversion. In particular, we expect that those mechanisms upon which the manager has higher control or discretion (such as the size of the board and its composition or the choice of the firm's auditor) will have a lower effect on income diversion (they will be less effective) than those governance institutions truly independent from the manager (such as listing and cross-listing).

Note that we cannot test directly whether income diversion is negatively related to firm market value without controlling for the channel. For instance, Mironov (2013) shows that private Russian firms that experienced positive economic shocks, such as increases in revenues, assets, or employment, exhibited larger income diversion. Obviously, we cannot conclude from this result that minority shareholders profit from an increase in income diversion.

Our approach is, instead, indirect. We test two implications of lower income diversion induced by better governance. Share prices are the trading prices for minority shares. As our first test, we postulate that, in equilibrium, an increase in share prices associated with better corporate governance should be correlated with a decrease in income diversion by the company's insiders: wealth is transferred from them to minority shareholders. The increase in

the market value of insiders' shareholdings compensates them for their forgone private benefits. Our direct measure of income diversion allows us to test this prediction for each corporate governance variable independently.⁵

At the same time, lower income diversion is mechanically correlated with higher operating margin: other things equal, if income diversion decreases, production costs will be accounted at their true price, hence increasing EBITDA. Thus, as our second prediction, we should expect a higher operating margin associated with corporate governance variables negatively correlated with income diversion. We summarize these predictions in our "null" hypothesis:

H0: Better governance is positively associated with higher firm market value through the total or partial transfer of the private income deviated by controlling shareholders and/or managers to minority shareholders. In this scenario, value-enhancing governance mechanisms are negatively correlated with income diversion and, simultaneously, positively correlated with the firm's operating margin.

Note that *H0* does *not* imply that lower income diversion is the *only* channel through which market value may increase. There could exist a combination of wealth transfer and net value creation unrelated to income diversion. *H0* simply states that one of the channels that

⁵ Income diversion likely includes bribes, which, one may argue, may have a positive net present value for the firm's minority shareholders. Obviously, such activities are not reported and, therefore, cannot be controlled by minority shareholders. For example, if a CEO or a major shareholder needs to pay a \$100 bribe, there is no control mechanism that prevents him from transferring more than \$100 to spacemen. It is likely that the manager will transfer to spacemen as much as he can as long as the marginal benefits of diversion are greater than the marginal costs.

may lead to an increase of firm market value is wealth transfer from insiders to minority shareholders.

The alternative hypothesis is that firm value increases *only* through other mechanisms associated with better corporate governance such as, for instance, lower cost of capital and/or higher operating efficiency (which, incidentally, would also result in higher operating margin) without necessarily decreasing insiders' private benefits.

H1: Better governance is positively associated with higher firm market value through channels unrelated to the mitigation of income diversion. In this scenario, value-enhancing governance mechanisms are uncorrelated with income diversion and, possibly, positively correlated with the firm's operating margin.

Figure 1 graphically represents both hypotheses. Panel A represents the “null” hypothesis, *H0*. To the left is the original firm. To the right is the firm after applying the value enhancing corporate governance improvements. The shadowed area represents the private wealth of the firm insiders. Corporate governance increases value by transferring wealth (i.e., curbing income diversion) by 10 units from private insiders to public shareholders. Simultaneously, better corporate governance increases the public firm value by another 10 units up to a total (private plus public) firm value of 110. In Panel B, we present the “alternative” hypothesis, *H1*. After applying the corporate governance measures, firm public value increases to 90. The total firm value is, as in Panel A, 110. However, there has been no decrease in income diversion.

To test our hypotheses, we identify in the first place which governance variables conform to our study and how each of them is supposed to affect both firm value in general

and income diversion in particular. After that, we construct a direct measure of income diversion at the firm level.

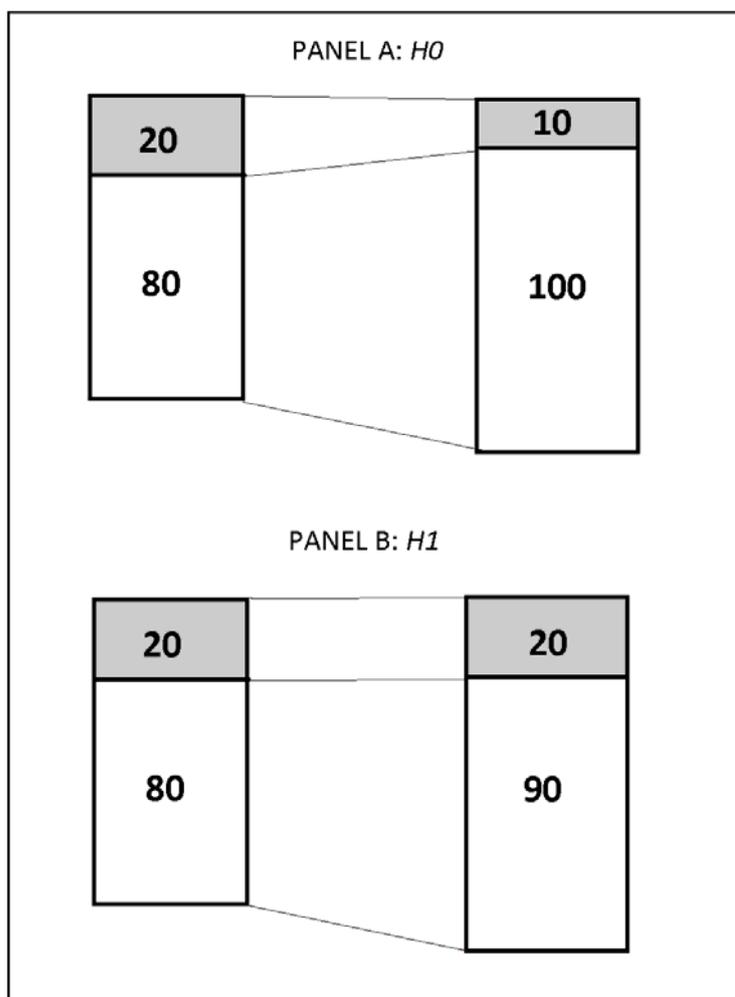


Figure 1: Panel A graphically represents the “null” hypothesis, H_0 . To the left is the original firm. To the right is the firm after applying the value enhancing corporate governance improvements. The shadowed area represents the private wealth of the firm insiders. Corporate governance increases market value by transferring wealth by a value of 10 from private insiders to public shareholders and, simultaneously, increasing public firm value by another 10 up to a total (private plus public) firm value of 110. In Panel B, we present the “alternative” hypothesis, H_1 . After applying the corporate governance measures, firm public value increases to 90. Total

firm value is, as in Panel A, 110. However, there has been no decrease in income diversion.

2.2 Corporate Governance Variables

Which institutions help increase firm value and, possibly, reduce the diversion of corporate resources by management and/or controlling shareholders? In this paper, we study the following corporate governance variables:⁶

2.2.1 *Listing*

A number of arguments have been proposed to explain why listing is associated with higher firm value. Expanding the shareholder base relative to privately held firms reduces the risk premium companies must pay on their equity (Merton, 1987). Listing also reduces the liquidity premium (Amihud and Mendelson, 1986). Listed companies are subject to stricter monitoring, supervision and disclosure requirements (Chhaoccaria and Grinstein, 2007). All these arguments predict a higher Tobin's Q for listed firms, relative to their privately held counterparts.

To the extent that supervision and regulation in stock markets is effective, we would also expect that listed companies are less engaged in cash flow diversion than non-listed companies. In equilibrium, this should yield a higher Tobin's Q .

We therefore expect a higher Tobin's Q and a lower income diversion for listed firms relative to non-listed firms.

2.2.2 *Cross-listing*

⁶ Other corporate variables that have been studied include the threat of dismissal measured by CEO turnover, ownership concentration and shareholder activism (e.g., Dyck, Volchkova and Zingales, 2008).

Several papers in the literature (see Doidge, Karolyi, and Stulz (2004) for an extensive review of references) argue that cross-listing in a more developed and more tightly regulated exchange increases firm value. The reasons coincide, to a large extent, with the value-enhancing arguments mentioned for *Listing*: lower cost of capital and loosening of credit constraints; enhanced stock liquidity; higher information disclosure; and more efficient monitoring of management. These arguments may *cause* Tobin's Q to increase. The causality, nevertheless, may run in the opposite direction. In a signaling model of incomplete or asymmetric information, for instance, only value creating companies decide to cross-list as a *signal* of their quality (e.g., Coffee, 2002; Reese and Weisbach, 2002)

Stricter monitoring may have a direct impact on the company's performance. Lal and Miller (2008), for instance, find that companies from weak investor protection regimes cross-listed on major U.S. stock exchanges are more likely to terminate poorly performing CEOs than non-cross listed companies. This discipline effect may induce higher operating performance (measured, for instance, by EBITDA/Revenues) in companies cross-listed in the U.S. even if income diversion does not decrease.

Doidge, Karolyi, and Stulz (2004) associate cross-listing with the private benefits of insiders. By listing in the U.S., the argument goes, a foreign firm from a country with poorer corporate governance standards increases the rights of its investors, especially of its minority shareholders, and constrains the majority shareholder in his ability to extract private benefits from control. According to this model, managers and/or controlling shareholders who decide to cross-list in the U.S. transfer (totally or partially) their private benefits to minority shareholders, decreasing income diversion and increasing the firm's Q .

In summary, we expect a higher Tobin's Q and a lower income diversion for firms cross-listed in the U.S.

2.2.3 Auditing

An important role of auditors is to certify and analyze companies' financial statements. It is commonly believed that auditors should protect shareholders from management fraud. By diverting income, management harms the interests of shareholders in two ways. First, such practices divert current cash flow that would otherwise be available to shareholders. Second, they decrease future expected cash flow by making the company liable for tax evasion associated with income diversion activities - if the government discovers and proves the existence of income diversion schemes, then the company may have to pay all evaded taxes plus penalties. Because auditors have full access to a firm's detailed financial information, including contracts, invoices, payments, and business correspondence, an audit may be a powerful tool for restricting cash flow diversion and protecting the interests of minority shareholders. On the other side, the auditor, although formally voted in the shareholders meeting, is first "shortlisted" or directly suggested by the company's management. This implies a mixed nature, half-internal, half-external, for this governance variable.

As with cross-listing, the causality may also work in the reverse direction. In a signaling model of incomplete information, choosing a prestigious, internationally reputed auditor signals lower income diversion and better governance practices.

Regardless of the direction in which the causality runs, we expect lower income diversion in companies audited by internationally reputed consulting firms.

2.2.4 Foreigner serves on board

The institution of independent directors is an important instrument of corporate governance. Many corporations, mainly in developing markets, invite reputable foreigners to serve on their boards. Arguably, these directors are less subject to agency conflicts and,

hence, should be more efficient in monitoring company CEOs. Additionally, the evidence shows that ties to foreign capital and labor positively affect the earnings reporting transparency of Russian firms (Braguinsky and Mityakov, 2013).

On the other hand, foreign board members may fit in the “managerial quality hypothesis” of Byrd and Hickman (1992), whereby CEOs of companies characterized by high income diversion ‘dress up their firms’ boards with independent directors to please shareholders through the illusion of active monitoring, implying a positive relationship between foreign CEOs and income diversion. Finally, we must mention that, as with most governance variables, board composition (including independent directors) is an endogenous variable (e.g., Hermalin and Weisbach, 2003; Harris and Raviv, 2008). This complicates any inference on causality.

We conclude that the relationship between the presence of foreign directors on company boards and income diversion is, ex-ante, unclear. The net effect is, therefore, an empirical question.

2.2.5 Board size

As noted by John and Senbet (1998), while a board's capacity for monitoring increases as more directors are added, the benefit may be outweighed by the incremental cost of poorer communication and decision-making associated with larger groups. Such a viewpoint was introduced by Lipton and Lorsch (1992), endorsed by Jensen (1993) and tested, on a set of US firms, by Yermack (1996), who finds strong evidence of a negative relationship between firm value and board size. There is also evidence that CEOs are more frequently subject to compensation-based incentives and the threat of dismissal in companies with small boards.

We thus expect that companies with smaller boards are characterized by lower income diversion.

2.2.6 CEO on board

The extent to which boards are truly independent of CEOs is key to the credibility of the monitoring role of board members and the limitation of agency conflicts. We include a dummy variable that takes a value of one if the CEO serves on the board and zero otherwise. We expect more active monitoring and, consequently, lower income diversion in those firms where the CEO does not serve on the board.

2.2.7 CEO ownership

One well-studied mechanism that alleviates agency problems is managerial ownership. In their seminal paper, Jensen and Meckling (1976) argue that “as the manager’s ownership claim falls, his incentive to devote significant effort to creative activities such as searching out new profitable ventures falls.”

We expect then that as CEO ownership increases, the alignment of interests between the CEO and shareholders should increase as well. This should increase Tobin’s Q and decrease the magnitude of income diversion.

2.3 Income Diversion Using Spacemen

To illustrate the method we use to directly estimate income diversion and test its implications on value and operating profit, consider the following example. Firm A wants to divert \$X of income. It therefore makes a deal with firm B whereby firm B renders to firm A goods or services worth \$100 but for which firm A pays firm B \$100 + \$X. Firm B pays \$100

to a real supplier (firm C) that delivers goods or services, and Firm B returns \$X to firm A's manager or owner in the form of cash. This diversion hurts firm A's minority shareholders in two ways. First, mechanically, the company's EBITDA decreases by \$X. As a consequence, several of the company's performance and financial ratios, including its Interest Coverage Ratio, are negatively affected. Ultimately, firm market value decreases (for instance, through an increase in the company's cost of capital). Second, cash is removed from the company. This immediately reduces the market value of equity and jeopardizes the firm's ability to grow in the future. Obviously, this affects the firm's market value directly.

Firm B is a fly-by-night firm called a *spaceman*: it appears to come out of nowhere, does not perform any real activities, pays almost no taxes, and disappears ("flies into space") within 0.5 to 2 years. Because \$X can be large, "spaceman" schemes require the collaboration of bank officials. As the *Wall Street Journal* reports, "In the West, most business payments are made by bank transfer, and cash withdrawals of even a few thousand dollars can raise eyebrows. In Russia, cash is king. Companies—both criminal and outwardly legitimate—often use it to pay salaries, and so avoid onerous payroll taxes... To get their hands on that money, businesses must navigate strict rules barring banks from dispensing large amounts of cash. Luckily for them there are dozens of small, fly-by-night banks ready to use legal loopholes—and a panoply of complex financial scams—to get around the rules. For the banks, which charge fees of as much as 5% for customers to withdraw cash, it is a lucrative business."⁷ Mironov (2013) identifies 42,483 spacemen and estimates income diversion to be as large as 11.4%–13.1% of Russia's GDP during the 2003–2004 period.

Specifically, a firm is defined as a spaceman if it satisfies the following criteria: (a) the ratio of taxes paid to the difference in cash inflows and outflows (net tax rate) is less than

⁷ *The Wall Street Journal*, 2006, Blood money: Murdered regulator in Russia made plenty of enemies targeting illegal cash flows, Andrei Kozlov became the bane of shady bankers, September 22.

0.1%; (b) the firm pays less than \$7.2 in Social Security Taxes (SST) per month, an amount that approximately corresponds to social security taxes paid on one minimum wage; and (c) the firm's cash inflows exceed its outflows. According to the Russian tax system, even a firm with a loss must pay VAT, SST, and property taxes; hence, these criteria guarantee that such a firm cannot survive even a simple examination by tax authorities. Based on these criteria, we identify 99,925 spacemen for the period 1999-2004.

Next, we calculate income diversion at the company level as the sum of net transfers to spacemen by all company affiliates. In most cases, large Russian corporations do not send funds directly to spacemen but use affiliated entities that in turn interact with spacemen. Consider an example associated with Gazprom, a company that used its affiliates, "Gaztaged", "Laingaz", and "Provaigaz" (100% subsidiaries of Gazprom), and other entities for these purposes. For instance, in 2003-2004, "Gaztaged" sent \$992M to the spaceman "Trubniy Torgoviy Dom," and "Laingaz" transferred \$267M to the spaceman "Energosintez-M." Hence, in calculating the diversion of large Russian corporations, we aggregate net transfers to spacemen of a main firm and all its affiliates.⁸

This approach to the measurement of diversion does not capture all private benefits of control. For example, it does not capture diversion related to transfer pricing, which Desai, Dyck, and Zingales (2007) document to be enormous in Russia. It does not capture diversion via consumption of perks (e.g., a private jet plane, membership to an exclusive club, privileged retirement plan or health insurance). Our measures of cash flow diversion, therefore, may significantly underestimate the total private benefits enjoyed by managers and/or controlling parties.

⁸ Affiliate firms are firms in which the main company has at least a 20% ownership stake. Replacing the 20% with a 50% threshold does not affect the results.

2.4 Control variables

Together with the aforementioned governance variables, we include a number of controls also present in previous studies (see, for instance, Doidge et al., 2009). In particular, we include the following control variables:

2.4.1 *Government ownership*

Through its taxing authority, the government is de facto a large minority shareholder in every corporation. Desai, Dyck, and Zingales (2007) show that increased tax enforcement can significantly decrease income diversion and benefit outside shareholders. Direct ownership of a large stake in a company should further increase the incentives of government to decrease cash flow diversion because a reduction in income diversion leads not only to higher tax collections but also higher returns on equities owned by the government. On the other hand, the government is subject to the same principle-agent conflict (e.g., Jensen and Meckling, 1976; Shleifer and Wolfenzon, 2002) as corporations. Moreover, this conflict is even more severe in the case of government ownership because the incentives of officials who act on behalf of the government often conflict with the true interests of the government. Therefore, in the case of government ownership, two forces act in opposing directions. How government ownership affects cash flow diversion is thus an empirical question.

2.4.2 *Revenue and Revenue growth*

Arguably, larger firms (measured in our case by *Revenue*) may enjoy economies of scale that make the implementation of corporate government controls less onerous and, hence, more likely. Moreover, certain variables such as *Board size* are positively related to the company's size.

Shleifer and Wolfenzon (2002) and Durnev and Han Kim (2005) predict that controlling shareholders will be less prone to divert resources when growth opportunities are higher because the opportunity cost of the money diverted is higher. Higher growth also increases the likelihood of cross-listing (Pagano, Roell and Zechner, 2002).

2.4.5 *Leverage (Debt/Assets)*

The optimal capital structure of a company is the outcome of several factors. It is then difficult to argue that leverage is, *per se*, a governance variable. Having said that, to the extent that “debt discipline” (e.g., Jensen and Meckling, 1976) increases the monitoring of insiders by creditors, we should expect lower income diversion in more leveraged firms.

3 Data and Sample

The main data source used in this paper is a unique dataset of Russian banking transactions from 1999 to 2004. The data for 2003 and 2004 were used in Mironov (2013) and come from www.vivedata.com. The data from 1999 to 2002 were obtained through www.rusbd.com. The dataset contains information on 513,169,660 transactions involving 1,721,914 business and legal government entities and self-employed entrepreneurs without legal enterprise status, including the date of each transaction, the payer, the recipient, the amount paid, and the self-reported purpose of the transaction. Mironov (2013) imposes numerous reality checks on these data.

To construct a sample of companies, we start with 347 corporations that were traded on the RTS (Russian Trading System) at the beginning of 2006. These companies are selected because the Federal Financial Market Service (FFMS) requires that traded

companies regularly submit quarterly reports containing, among other items, information on board composition and a company's auditor. Because large Russian companies typically divert cash flow through affiliate entities, we restrict the sample to companies that have lists of affiliates available for 2003 or 2004.⁹ This yields a final sample of 156 companies.

Using information from quarterly reports, we manually code the following variables related to corporate governance. *Publicly traded* is a variable that takes a value of one if a company is traded on RTS or MICEX (Russian stock exchanges) and zero otherwise. *ADR* is a variable that takes a value of one if a company has ADRs (American Depositary Receipts) and zero otherwise.¹⁰ *Audit by Big 5* is variable that takes a value of one if a company is audited by one of the Big 5 accounting firms (Arthur Andersen, Deloitte, Ernst & Young, KPMG, or PWC) and zero otherwise. *Board Size* is the number of directors serving on a company's board. *CEO ownership* indicates a CEO's company stock ownership as a percentage of total market capitalization. *CEO on board* and *Foreigner on board* are variables that take values of one if, respectively, the CEO has a seat on the board or a foreigner serves on the board, and zero otherwise. Table 1 Panel D presents the correlations among these variables. As expected, having one of the Big 5 consulting companies as an auditor is more prevalent among publicly traded firms and, especially, among firms cross-listed in the US. Publicly listed companies tend to have larger boards as well.

We supplement these data with data from Rosstat, the Russian statistical agency, accessible at spark.interfax.ru. This database contains each firm's INN (taxpayer number), name, region, date of registration, industry and additional identifying information about the

⁹ We assume that these affiliates were also affiliates during 1999-2002.

¹⁰ Our data do not distinguish between Level 1 ADRs, which trade Over-The-Counter, and Level 2 and 3 ADRs, which are directly listed in US stock exchanges. Although this distinction may have important implications for the effective monitoring pressure in place, our limited sample size of cross-listed firms does not allow for such tests.

firm. In addition, it contains basic accounting data, such as revenues, profits, net income, assets, debt, and other items. We use these data to construct our control variables. $\text{Log}(\text{Revenue})$ is the natural logarithm of the company's reported revenue. *Revenue growth* is defined as $\text{Log}(\text{Revenue}_{t+1}) - \text{Log}(\text{Revenue}_t)$. *Owned by Government* is a variable that takes a value of one if the government owns more than 20% of company shares and zero otherwise.¹¹ *Debt/Assets* is the ratio of the company's long term debt over total asset value, both at book value. According to Russian law, all firms (even small ones) must report their balance sheets and income statements to Rosstat on a quarterly basis. Although the law does not explicitly penalize firms that do not report, the majority of Russian firms prefer to report their data to Rosstat to maintain good relations with the tax authorities. Rosstat contains accounting data for approximately 2.5 million Russian firms.

As dependent variables, we use *Tobin's Q*, *EBITDA Margin*, and *ShadowR*. We postpone the description of the income diversion variable, *ShadowR*, to Section 4.2. We calculate *Tobin's Q* for listed companies as follows. For the numerator, we take total assets, subtract the book value of equity, and add the market value of equity. For the denominator, we use total assets. *EBITDA Margin* is calculated as $\text{EBITDA}/\text{Revenue}$ and is constructed using the accounting data reported by firms to Rosstat.

Table 1, Panel A presents summary statistics for all firms in our sample. An average (median) company has revenue of 683M (143M) dollars and assets of 1,287M (174M) dollars.¹² Of the companies, 64.2% were traded on RTS or MICEX in 1999-2004, and 7.3% were cross-listed on US exchanges. Additionally, 18.2% were audited by a Big 5 accounting firm. The average board has 8.4 members (the median is 8). CEO ownership is very low, with an average of 1.6% and a median that is not distinguishable from zero (in comparison, US

¹¹ A threshold of 50% yields similar results.

¹² The exchange rate is updated annually. The average rate over the sample period was 30 Rubles per Dollar.

directors and officers in Yermack's (1996) sample account for, on average, 9.1% of company market capitalization, with a median of 2.8%).¹³ In more than 83% of cases, the CEO serves on the board of directors, and 14.6% of companies include at least one foreigner on the board. The government controls 27.7% of the companies in the sample. The average leverage (Debt/Assets) is 16.5%; the median is 11.7%.

Panel B of Table 1 reports summary statistics for the subsample of publicly traded companies, which are much larger than most companies in the sample. An average (median) publicly traded company has revenue of 902M (237M) dollars and assets of 1,543M (282M) dollars. The average market capitalization among the sampled companies is 1,159M dollars. The average Tobin's Q stands at 0.92. Comparing our sample of listed companies with the set of private companies in Mironov (2013), we observe remarkable differences in size and revenues. The average (median) asset size in the sample of private companies is 0.86M (0.071M) dollars, while the average (median) revenues are 1.42M (0.25M) dollars. Companies with ADRs (Panel C of Table 1) are even larger and generate greater revenues. An average (median) company that is cross-listed on the US stock exchange has revenues of 4,235M (1,072M) dollars and assets of 9,199M (1,779M) dollars. A much larger percentage (62.2%) of these companies are audited by Big 5 accounting firms and are more likely (35.6%) to have a foreigner sitting on the board and be controlled by the government (40%). The average cross-listed company has a higher Q value equal to 1.168. Their operating performance is also higher. The average EBITDA Margin (EBITDA/Revenue) for companies with ADRs is 28.6% compared to 16.8% for listed companies without ADRs. The average Margin for all companies in the sample is 16.6%.

¹³ Given that CEO ownership is nearly zero for the majority of firms in our sample, we remove this variable in later tests.

[Insert Table 1 here]

The dependent variables, *Tobin's Q*, *ShadowR* and *EBITDA Margin*, and the control variables, *Log(Revenues)*, *Revenue Growth*, and *Debt/Assets* are winsorized at the top 95%.¹⁴

4 Empirical Results

4.1 Corporate Governance and Firm Value

Our first set of tests delves into the empirical relationship between several firm-specific corporate governance mechanisms and firm value. As is standard in this literature, we will use *Tobin's Q* as our valuation measure. This restricts our set of companies to publicly listed firms. As a robustness test, we will expand the test to all firms in the sample, publicly listed or not, replacing *Tobin's Q* with the company's *EBITDA Margin* as a measure of performance.

Table 2 presents the results for listed firms. Specifications (1) through (5) analyze each corporate governance variable in isolation, controlling by government ownership, company size and leverage. Specification (6) includes the three board-related measures simultaneously. Finally, the last column (specification (7)) includes all variables jointly. In all cases, year dummies are introduced. Standard errors are clustered at the firm level.

As a first conclusion, it is worth noting that coefficients (both in size and sign) and standard errors are, in general, consistent across specifications (with the exception of ADR, as we will discuss next). We interpret this as evidence that potential multicollinearity across the governance characteristics does not induce significant biases in our estimations.

¹⁴ The results are qualitatively the same when the winsorization is performed at the top 99%.

The coefficient on the ADR dummy variable in specification (1) is 0.15. This is 16% higher than the average Q for all listed firms. This estimate roughly coincides with the average increase in Q (12% increase relative to the average Q) reported by Doidge, Karolyi, and Stultz (2004) and Doidge *et al.* (2009). Unlike these papers, however, our estimate is not statistically significant, most likely because of a much smaller sample size.

The increase in Q for firms audited by a Big 5 consulting company and firms in which a foreigner serves on the board is large and strongly significant at the 1% level: auditing is associated with a higher Q (the coefficient is 0.25, 27% higher than the average Q); a foreigner on the board also results in a higher Q (coefficient 0.36, 39% relatively higher). These results are robust to the inclusion of alternative governance variables in specification (7).

The other two variables associated with the board composition, $\text{Log}(\text{Board size})$ and CEO on board , have the predicted sign and they are marginally significant at the 13% level. A one standard deviation increase in board size is associated with a decrease of 0.07 in Q (8% lower than the average Q). Having a CEO seated on the board is associated with a lower Q (coefficient negative 0.09, approximately 10% lower than the average Q).

Analyzing the controls, we observe that companies owned by the government underperform the average listed firm, with a strongly significant drop in Tobin's Q of 0.22 (specification (7)). Firms with larger revenues, especially more leveraged firms, tend to have higher Q . This evidence is statistically strong and consistent across all specifications.

To summarize, the results reported in Table 2 show a positive relationship between corporate governance and firm value, measured by Tobin's Q . We need to be cautious in interpreting this finding, however. These results are indeed consistent with a positive causal effect of corporate governance on firm value. Firms cross-listing in the US, for instance, are "bonded" to the stricter US regulation and supervision on corporate governance and minority

shareholder protection. Auditing by internationally reputed accounting firms disciplines management. Smaller, more independent boards will monitor management more efficiently.

However, the results could also be explained by a signaling model under asymmetric or incomplete information whereby companies with higher growth prospects (and, hence, higher Q) signal their quality through better corporate governance. This could be achieved, for instance, via cross-listing in the US or by appointing a reputed foreign board member. Unfortunately, we do not have any significant exogenous shock to corporate governance during our sample period, so we cannot distinguish between these two alternative explanations.

4.2. Measuring Income Diversion

Over the total sample of 156 companies, we find more than 7,000 affiliates in the 1999-2004 period. Matching this list of affiliates to the banking database, we identify approximately 1,661 affiliates that sent funds to more than 11,000 spacemen. For example, we identify 212 affiliates of Gazprom, 68 affiliates of Lukoil, and 29 affiliates of Norilsk Nickel.

Note that not all monies transferred to spacemen constitute cash flow diversion. If a firm pays a spaceman for non-existent consulting services, then the diversion is 100% of the payment. However, if a firm orders goods from a spaceman, the diversion is a fraction of the transfer. To illustrate, consider a manager who wishes to divert cash by buying a computer above fair price. He buys the computer from a spaceman for \$4,000, the spaceman transfers \$1,000 to a real firm that sells computers, the real firm delivers the computer, and the manager receives \$3,000 in "cash back." In this case, the diversion is \$3,000, not \$4,000. Empirically, we estimate a net transfer to a spaceman as the difference between money

transferred to a spaceman and money the spaceman transfers to regular firms. Following Mironov (2013), we construct three measures of income diversion at the firm level:

$$ShadowP = \frac{Net\ transfers\ to\ spacemen}{Total\ payments},$$

$$ShadowR = \frac{Net\ transfers\ to\ spacemen}{Revenue},$$

$$ShadowA = \frac{Net\ transfers\ to\ spacemen}{Assets}.$$

Net transfers to spacemen are net cash transferred to spacemen by a firm, *Total payments* represent total money paid from the firm's bank account, and *Revenue* and *Assets* are book revenue and assets taken from Rosstat.

Table 3, Panel A presents summary statistics of the income diversion measures. To reduce the influence of outliers and measurement error, the measures of income diversion are winsorized at the top 95th percentile. Annually, an average firm transfers to spacemen 2.7% of its total payments, 1.7% of its book assets, and 1.8% of its revenues. Publicly traded companies (see Panel B) transfer, relative to their size, less to spacemen than non-publicly traded firms. An average public firm transfers to spacemen 2.4% of its total payments, 1.5% of its book assets, and 1.6% of its revenues. Cross-listed companies with ADRs (see panel C) transfer to spacemen an even smaller percentage: 1.8% of their payments, 0.9% of their assets, and 1.3% of their revenues.

[Insert Table 3 here]

Table 4 shows the top 20 largest companies by income diversion. The largest diverter is Lukoil (\$7.5 billion dollars accumulated from 1999 to 2004), followed by Gazprom (\$2.2 billion dollars). Interestingly, consistent with the findings of Desai, Dyck, and Zingales

(2007) for Sibneft, Lukoil significantly decreased its transfers to spacemen starting in 2002, after Putin started a series of actions to enforce tax payment by top oil companies in Russia. The sharp decline in income diversion reported in Table 4 translates into an increase in the company's EBITDA Margin (from 16% in 2001 to 29% in 2002) and a decline in the estimated *ShadowR* measure of income diversion (8.4% in 2001 to 3.6% in 2002). This evidence is consistent with the predictions of our hypotheses.¹⁵ In contrast, state-owned Gazprom significantly increased its transfers to spacemen in the 2003-2004 period. Comparing this table with the median diversion values shown in Table 2, we observe that income diversion is highly skewed by a subset of large companies engaged in massive diversion, both in absolute and relative terms.

[Insert Table 4 here]

4.3. Income Diversion, Operating Performance and Corporate Governance

After documenting the size and distribution of income diversion in our sample, we proceed now to test our hypotheses. We will examine, on the one side, the relationship between income diversion and corporate governance (Table 6). On the other side, we will study the relationship between operating performance and our corporate governance measures (Table 7). We introduce year dummies in both tables. Standard errors are clustered at the firm level.

Our basic research question is whether the increase in firm value associated with certain corporate governance institutions documented in Section 4.1 is accompanied by a decrease in income diversion. This would be evidence consistent with our null hypothesis,

¹⁵ In the same period, income diversion, net transfers and *ShadowR* more than doubled for Tatneft, a relatively smaller oil company in Tatarstan that was not affected by Putin's enforcement action. Consequently, its EBITDA Margin actually decreased from 24% in 2001 to 18% in 2002.

i.e., corporate governance mechanisms help transfer wealth from controlling shareholders and/or managers to minority shareholders, hence reducing income diversion. Note that our metric, *ShadowR*, captures income diversion on the cost side, i.e., companies inflate the expenses to decrease reported income. Thus, a reduction in income diversion should be, at the same time, positively associated with the reported EBITDA Margin.

Under the alternative hypothesis, better corporate governance still creates value (captured by a higher Tobin's Q), but this is not associated with lower income diversion. Better governance may also result in higher operating performance (higher EBITDA Margin), increasing value both for minority and controlling shareholders without any redistribution of value between parties.

Table 5 presents a univariate comparison of the income diversion measure, *ShadowR*, across a subset of corporate governance variables without any controls. We observe that, as predicted by the null hypothesis, publicly traded firms divert less than private firms (on average, the difference is significant at the 10% level). This is especially true of firms listed as ADRs in the US (the mean difference is statistically significant at the 5% level). On the other hand, there is no evidence that direct monitoring by auditors or boards, regardless of their composition, entails any difference, on average, with respect to income diversion. Firms in which the government has a greater than 20% share also divert less income than other firms (a result that is significant at the 5% level).

[Insert Table 5 here]

Next, we run multivariate panel regressions of the *ShadowR* diversion measure (Table 6) and *EBITDA Margin* (Table 7) on the various corporate governance characteristics controlling for firm size, government ownership and leverage. Confirming the results of the

univariate tests in Table 5, companies traded on stock exchanges divert less cash flow than their non-traded peers. The coefficient for the related dummy is negative and significant at the 5% level in specifications (1), (2) and (8). Publicly traded companies divert approximately 0.6% less revenue to spacemen than their non-traded peers (an average company diverts 1.8% of its revenue). This estimation is likely biased downward due to sample selection bias: because all companies in our sample were eventually traded by 2006,¹⁶ it is likely that companies not traded during the 1999-2004 period began to decrease cash flow diversion activities two to three years before listing on RTS. We therefore expect that the true difference in cash flow diversion between traded and not-traded companies is much larger than the estimated difference.

When we consider cross-listing in the U.S. combined with listing on the local stock exchange (specification (2)), the coefficient is negative 0.52%, significant at the 11% level. In specification (8), where all variables are considered jointly, the coefficient rises to negative 0.77%, and it becomes significant at the 5% level. This negative coefficient may be interpreted as evidence of a causal effect of cross-listing, which imposes stricter corporate governance standards on the company, hence curbing the ability of insiders to extract private rents. Alternatively, cross-listing in the US may be a signal used by companies that already have a good corporate governance system in place and, in particular, exhibit low income diversion. Either way, our results show that, consistently with the null hypothesis, companies cross-traded on more developed stock markets tend to divert less income. Analyzing now the coefficient of *ADR* in Table 7, we observe that companies cross-listing in the US show, on average, a significantly higher EBITDA Margin: the increase ranges from 10% to 13%,

¹⁶ As explained in Section 3, in constructing the sample, we select companies traded on RTS (Russian stock exchanges) in 2006.

depending on specification. All coefficients are significant at the 1% level. These results point in the direction of hypothesis $H0$.

Audit by Big 5 is not significant in Table 6. In other words, auditing by a Big 5 accounting firm is uncorrelated with cash flow diversion: the coefficient for the corresponding dummy is statistically insignificant. This finding indicates that Enron was most likely not an exception, as auditing by a reputable firm does not protect shareholders from managerial fraud.¹⁷ On the other side, in Table 7, auditing is associated with a significantly higher EBITDA Margin. Firms audited by one of the Big 5 consulting companies have an EBITDA Margin between 8.6% (specification (2)) and 6.9% (specification (8)) higher than the rest of the firms in our sample. These results are significant at the 1% level. This finding supports the alternative hypothesis $H1$: auditing by a reputed international company is positively associated with market value (the coefficient in Table 2 is sizeable and significant at the 1% level), yet this is not associated with a decrease in income diversion but rather to an increase in operating efficiency.

All the variables related to the board and its composition (*Foreigner on board*, *Log(Board size)*, and *CEO on board*) are uncorrelated with income diversion (Table 6) and EBITDA Margin (Table 7). These results lend support to the alternative hypothesis $H1$: the company's board size and its composition (especially having a foreigner seated on the board)

¹⁷ As anecdotal evidence on this point, in 2003-2004, Gaztaged (a 100% subsidiary of Gazprom) transferred one billion dollars to an unknown company, "Trubniy Torgoviy Dom". According to Spark (Spark.interfax.ru), this company was registered in December 2003 with a charter capital investment of 10,000 RUR (\$330). Banking data show that the new company received \$343,000,000 from Gazprom in 2003 and \$657,000,000 in 2004 in payment for pipes. According to Rosstat data, revenues of "Trubniy Torgoviy Dom" were \$148,000 in 2003 and \$206,000 in 2004, or approximately 3,000 times less than actual revenues. In addition, this firm has no website or office. Based on this evidence, we conclude that this company is a typical spaceman and that the billion dollars transferred to it was pure cash flow diversion. There is no mention whatever of this transfer or the alleged supplier in PWC's audit opinion for Gazprom. We can only speculate whether this was due to incompetence or bribery.

are associated with higher firm value. However, this increase in value is not a reflection of lower income appropriation by the insiders (management or majority shareholders).¹⁸

[Insert Table 6 here]

[Insert Table 7 here]

Regarding the controls, *Revenue growth* is negatively related to income diversion, although this effect is only marginally significant at the 10% level in specifications (1) and (2) from Table 6. This is consistent with the evidence reported by Shleifer and Wolfenzon (2002) and Durnev and Han Kim (2005). *Owned by Government* is not significantly related to income diversion or EBITDA Margin. This may be the net outcome of the two opposing effects discussed in section 2.4. Firm size, proxied by the *Log(Revenues)*, is unrelated to income diversion in Table 6 and, as expected, is positively related to EBITDA Margin in Table 7, possibly reflecting some economies of scale.

Finally, firm leverage, proxied by *Debt/Assets*, is positively and significantly related to income diversion. This result is in contradiction with the expected negative relation we hypothesized based on the standard discipline effect of debt (Jensen and Mecling, 1976). This finding may reflect that firms with higher income diversion cannot finance themselves so easily in the equity market. On the other side, banks, or lenders in general, are more protected than shareholders because they can seize firm assets in case of default. Incidentally, Mironov and Srinivasan (2013) find that debt holders also protect their interests by charging higher interest rates to firms with high levels of income diversion. Because leverage is positively related to income diversion in Table 6, it is negatively related to EBITDA Margin in Table 7.

¹⁸ When we include firm fixed effects, all variables become insignificant. This is probably due to the small sample size and the short panel with little within firm variation.

In summary, we can distinguish two groups of governance variables. The first group includes *Audit by Big 5*, *Foreigner on board*, $\text{Log}(\text{Board size})$, and *CEO on board*. These variables show a positive impact on Tobin's Q , yet they have no significant relation to income diversion. This group of variables provides support for hypothesis $H1$. In the second group, we have *Publicly traded* and *ADR*. These variables showed a significant and sizeable negative correlation with *ShadowR*. *ADR* also showed a positive and significant covariance with *EBITDA Margin*. The second group of variable shows evidence in favor of hypothesis $H0$.

Interestingly, our results indicate that various instruments of corporate governance have a different impact on income diversion. At first, this seems to be a puzzling result as, arguably, firms hire reputed auditors, design their boards and appoint independent board members to monitor managers and protect the interest of minority shareholders against the control of majority shareholders. The failure of auditing and board composition in curbing income diversion, however, casts doubts on this interpretation. Although value is added, minority shareholders do not fully profit from it: income diversion is not significantly lower among firms with these governance mechanisms in place. This evidence is consistent with management keeping, to a large degree, control over the board size and composition and the choice of the auditor. This limits the potential of these mechanisms against income diversion, consistent with the results reported. On the other side, firm management has no control over listing rules and/or SEC regulation. These governance mechanisms, upon which the management has less leverage or control, prove themselves to be more efficient in curbing income diversion.

5. Conclusion

Using a unique set of banking transaction data for large public Russian corporations, we have investigated the efficacy of corporate governance in reducing income diversion. In particular, we have employed a metric developed by Mironov (2013) to estimate income diversion among private firms in Russia to study interactions among corporate governance, income diversion and firm value among publicly held Russian companies during the 1999-2004 period.

The magnitude of income diversion is sizeable, amounting, on average, to 1.8% of company revenues or 1.7% of assets per year. The evidence supports the role of external corporate governance mechanisms: publicly traded companies, notably, those cross-listed on US exchanges, divert less income than privately held companies. On the other hand, internal monitoring mechanisms, such as auditing by internationally reputed accounting firms or board size and composition (whether the CEO serves on the board or foreigners are present on the board), while related to firm value, are unrelated to income diversion.

The lack of an external shock to the choice and implementations of corporate governance instruments does not allow us to draw causal implications from our findings. Nevertheless, our results cast doubt on the efficacy of internal governance mechanisms (such as board size, board composition and auditing) typically used in advanced economies to limit income diversion in emerging economies. External instruments, such as listing or cross-listing in more developed and better regulated markets, seem to be better corporate instruments. This result supports the role of cross-listing as a bonding mechanism to convince the market about the firm's corporate governance standard or impose better governance practices on firm managers.

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Table 1
Summary Statistics: Sample of Companies

The table presents summary statistics for the sample of 156 companies. All statistics are averaged for 1999 to 2004. *Revenue*, *Assets*, *Total Bank Payments*, *EBITDA* (earnings before interest, taxes, depreciation and amortization), and *Debt* are taken from Rosstat. *Total Bank Payments* represents the total amount of money paid from the firm's bank account. The remaining variables are manually collected from companies' quarterly reports. *Publicly traded* is a variable that takes a value of one if the company is traded on RTS or MICEX (Russian stock exchanges) and zero otherwise. *ADR* is a variable that takes a value of one if the company has ADRs (American Depositary Receipts) and zero otherwise. *Tobin's Q* is computed as total assets less the book value of equity plus the market value of equity divided by total assets. *Audit by Big 5* is a variable that takes a value of one if the company is audited by one of the Big 5 accounting firms (Arthur Andersen, Deloitte, Ernst & Young, KPMG, or PWC) and zero otherwise. *Board Size* is the number of directors serving on the company's board. *CEO ownership* represents the CEO's company's stock ownership as a percentage of total market capitalization. *CEO on board* and *Foreigner on board* are variables that take values of one if, respectively, the CEO has a seat on the board or a foreigner serves on the board. *Owned by Government* is a variable that takes a value of one if the government owns more than 20% of company shares and zero otherwise.

	Mean (1)	Median (2)	St. dev. (3)	N of obs. (4)	N of firms (5)
Panel A. Summary statistics for entire sample					
Revenue, \$000's	683,707	143,075	2,239,771	687	156
Assets, \$000's	1,287,107	174,493	6,499,900	687	156
Total Bank Payments, \$000's	683,841	53,513	3,272,284	687	156
EBITDA, \$000's	143,542	8,560	578,406	682	156
EBITDA / Revenue	0.166	0.138	0.131	682	156
Debt / Assets	0.165	0.117	0.155	687	156
Publicly traded	0.642	1.000	0.480	687	156
ADR	0.073	0.000	0.260	687	156
Audit by Big 5	0.182	0.000	0.386	687	156
Board size	8.454	8.000	2.646	687	156
CEO ownership	0.016	0.000	0.063	678	154
CEO on board	0.833	1.000	0.374	687	156
Foreigner on board	0.146	0.000	0.353	687	156
Owned by Government	0.277	0.000	0.448	687	156
Panel B. Summary statistics for publicly traded companies					
Revenue, \$000's	902,844	236,726	2,561,853	441	112
Assets, \$000's	1,543,897	281,691	6,837,458	441	112
Total Bank Payments, \$000's	930,083	91,119	3,965,770	441	112
EBITDA, \$000's	187,715	13,848	666,867	440	112
EBITDA / Revenue	0.168	0.138	0.130	440	112
Debt / Assets	0.172	0.124	0.155	441	112
ADR	0.102	0.000	0.303	441	112
Market cap	1,159,014	69,000	4,771,502	441	112
Tobin's Q	0.920	0.855	0.496	441	112
Audit by Big 5	0.243	0.000	0.429	441	112
Board size	8.916	8.000	2.678	441	112
CEO ownership	0.010	0.000	0.040	436	111
CEO on board	0.823	1.000	0.382	441	112
Foreigner on board	0.159	0.000	0.366	441	112
Owned by Government	0.315	0.000	0.465	441	112

Panel C. Summary statistics for companies with ADR					
Revenue, \$000's	4,235,368	1,072,100	6,710,728	45	13
Assets, \$000's	9,199,321	1,779,458	19,685,980	45	13
Total Bank Payments, \$000's	4,603,213	669,044	10,182,055	45	13
EBITDA, \$000's	1,061,749	244,233	1,677,518	45	13
EBITDA / Revenue	0.286	0.287	0.136	45	13
Debt / Assets	0.176	0.175	0.125	45	13
Market cap	7,215,699	1,677,592	12,764,289	45	13
Tobin's <i>Q</i>	1.168	1.039	0.625	45	13
Audit by Big 5	0.622	1.000	0.490	45	13
Board size	9.600	10.000	2.209	45	13
CEO ownership	0.004	0.001	0.013	45	13
CEO on board	0.844	1.000	0.367	45	13
Foreigner on board	0.356	0.000	0.484	45	13
Owned by Government	0.400	0.000	0.495	45	13

Panel D. Correlation matrix						
	Publicly traded	ADR	Audit by Big 5	Foreigner on board	Log (Board size)	CEO on board
Publicly traded	1					
ADR	0.1508	1				
Audit by Big 5	0.2106	0.3181	1			
Foreigner on board	0.05	0.1386	0.1156	1		
Log (Board size)	0.2483	0.1196	0.1517	-0.0411	1	
CEO on board	-0.034	0.0055	-0.0311	-0.0139	0.087	1

Table 2
Tobin's Q and Corporate Governance

The table shows the regression of *Tobin's Q* = $(\text{Total Assets} - \text{Book Value of Equity} + \text{Market Cap}) / \text{Total Assets}$ on a set of corporate governance variables, controlling for Government Ownership (*Owned by Government*), the company's (Log) Revenues and Debt/Assets. *Revenue*, *Total Assets*, and *Book Value of Equity* are book values taken from Rosstat. *ADR* is a variable that takes a value of one if the company has ADRs (American Depository Receipts) and zero otherwise. *Audit by Big 5* is a variable that takes a value of one if the company is audited by one of the Big 5 accounting firms (Arthur Andersen, Deloitte, Ernst & Young, KPMG, or PWC) and zero otherwise. *Board Size* is the number of directors serving on the company's board. *CEO on board* and *Foreigner serves on board* are variables that take values of one if, respectively, the CEO has a seat on the board or a foreigner serves on the board. *Owned by Government* is a variable that takes a value of one if the government owns more than 20% of company shares and zero otherwise. All specifications include year dummies. Standard errors are in parentheses. ***, **, * denote, respectively, significance at the 1%, 5% and 10% levels. The standard errors of differences are clustered at the firm level. *Tobin's Q* , *Log (Board Size)*, *Log (Revenues)*, and *Debt/Assets* are winsorized at the top 95th percentile.

Dependent variable:	Tobin's Q						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
ADR	0.1481 (0.1629)						0.0393 (0.1167)
Audit by Big 5		0.2499 (0.0969)***					0.2397 (0.0815)***
Foreigner serves on board			0.3596 (0.136)***			0.3573 (0.1273)***	0.3491 (0.1197)***
Log (Board size)				-0.2230 (0.1537)		-0.2029 (0.1429)	-0.2049 (0.1391)
CEO on board					-0.1130 (0.0753)	-0.0914 (0.0692)	-0.0923 (0.0657)
Owned by Government	-0.267 (0.077)***	-0.266 (0.071)***	-0.242 (0.08)***	-0.245 (0.079)***	-0.260 (0.078)***	-0.218 (0.079)***	-0.220 (0.073)***
Log (Revenue)	0.0684 (0.0282)**	0.0538 (0.0262)**	0.0570 (0.0259)**	0.0926 (0.0311)***	0.0801 (0.0287)***	0.0695 (0.0277)**	0.0425 (0.0256)*
Debt/Assets	0.5957 (0.2001)***	0.4835 (0.1941)**	0.6192 (0.1911)***	0.6112 (0.2037)***	0.5961 (0.2032)***	0.6234 (0.1931)***	0.5083 (0.1865)***
Year dummy	Y	Y	Y	Y	Y	Y	Y
R-sq	0.197	0.229	0.255	0.204	0.197	0.274	0.312
Number of obs.	441	441	441	441	441	441	441
Number of firms	112	112	112	112	112	112	112

Table 3
Summary Statistics for Income Diversion

The table presents income diversion measures. $ShadowP = Net\ transfers\ to\ spacemen / Total\ Payments$, $ShadowA = Net\ transfers\ to\ spacemen / Assets$, and $ShadowR = Net\ transfers\ to\ spacemen / Revenue$, where *Net transfers to spacemen* is the net cash transferred to spacemen by a firm, *Total Payments* represents the total amount of money paid from the firm's bank account, and *Revenue* and *Assets* are book revenue and assets taken from Rosstat. The three measures of income diversion are winsorized at the top 95th percentile.

	Mean	Median	St. dev.	N of obs.	N of firms
	(1)	(2)	(3)	(4)	(5)
Panel A. Summary statistics for the entire sample					
ShadowR	0.018	0.008	0.024	687	156
ShadowA	0.017	0.006	0.024	687	156
ShadowP	0.027	0.017	0.029	687	156
Panel B. Summary statistics for publicly traded companies					
ShadowR	0.016	0.007	0.022	441	112
ShadowA	0.015	0.006	0.022	441	112
ShadowP	0.024	0.015	0.027	441	112
Panel C. Summary statistics for companies with ADR					
ShadowR	0.013	0.009	0.015	45	13
ShadowA	0.009	0.005	0.013	45	13
ShadowP	0.018	0.009	0.024	45	13

Table 4

Estimated Income Diversion by Top Listed Russian Companies, \$000's

The table shows the top 20 largest listed companies by accumulated income diversion between 1999 and 2004. Income diversion is measured as net transfers to affiliated spacemen. A firm is defined as a spaceman if it satisfies all of the following criteria: (a) the ratio of taxes paid to the difference in cash inflows and outflows (net tax rate) is less than 0.1%; (b) the firm pays less than \$7.2 in Social Security Tax per month, an amount that approximately corresponds social security taxes paid on the salary of one minimum wage worker; and (c) the firm's cash inflows exceed its outflows.

Ticker	Name	1999	2000	2001	2002	2003	2004	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
LKOH	Lukoil	.	3,134,821	3,647,323	263,772	228,527	174,024	7,448,467
GAZP	Gazprom	54,278	107,446	141,176	141,459	587,887	1,152,517	2,184,763
CHMF	Severstal	73,649	147,183	177,769	53,926	94,647	360,786	907,959
GMKN	Norilsk Nickel	.	.	443,168	80,928	20,724	76,340	621,160
NLMK	NLMK	27,625	43,348	38,356	47,563	121,348	78,177	356,417
TATN	Tatneft	.	72,253	42,344	97,873	100,554	29,105	342,130
TNKO	TNK	.	.	.	.	89,691	191,880	281,572
SDNK	Sidanko	.	73,684	.	171,136	7,193	.	252,013
YUKO	Yukos	.	73,233	74,505	40,260	.	.	187,998
ROSN	Rosneft	.	.	.	.	60,458	127,281	187,740
MSNG	Mosenergo Mikhailovsky	1,511	6,346	16,322	6,587	75,771	18,433	124,970
MGOK	GOK	1,359	6,443	2,039	1,467	33,264	79,345	123,917
UDMN	Udmurneft	.	4,003	9,660	513	38,665	56,004	108,845
AGKK	Rusal Rosneft-	5,482	.	49,889	12,962	14,769	25,124	108,225
PFGS	Purneftegaz	.	23,394	14,735	4,022	13,550	25,376	81,076
CHMK	ChMK	.	40,791	17,077	2,968	4,696	14,140	79,673
RTKM	Rostelekom	.	3,430	7,580	12,649	27,650	27,128	78,437
MTSS	MTS	.	2,274	7,444	12,186	14,135	40,916	76,956
SLAV	Slavneft	.	.	.	75,628	.	.	75,628
MFGS	SN-MNG	2,872	8,700	5,668	11,502	9,920	34,886	73,548

Table 5
Summary Statistics for ShadowR by Governance Variable

The table shows the statistics for the income diversion variable $ShadowR = Net\ transfers\ to\ spacemen / Revenue$, where *Net transfers to spacemen* is the net cash transferred to spacemen by a firm, and *Revenue* is the book revenue taken from Rosstat. *Publicly traded* is a variable that takes a value of one if the company is traded on RTS or MICEX (Russian stock exchanges) and zero otherwise. *ADR* is a variable that takes a value of one if the company has ADRs (American Depositary Receipts) and zero otherwise. *Audit Big 5* is variable that takes a value one if the company is audited by one of the Big 5 accounting firms (Arthur Andersen, Deloitte, Ernst & Young, KPMG, or PWC) and zero otherwise. *CEO on board* and *Foreigner on board* are variables that take values of one if, respectively, the CEO has a seat on the board or a foreigner serves on the board. *Owned by Government* is a variable that takes a value of one if the government owns more than 20% of company shares and zero otherwise. *Difference in Means* is the difference between the mean value of a variable when it takes a value of one and the mean when it takes a value of zero. The standard errors of differences are clustered at the firm level. *t-stats* are the t-values used in tests where the null hypothesis is that the difference in means does not differ from zero.

	Variable = 0				Variable = 1				Difference in Means	
	Mean	St. dev.	N of obs.	N of firms	Mean	St. dev.	N of obs.	N of firms	Difference	T-stats
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Publicly traded	0.0210	0.0256	246	94	0.0163	0.0221	441	112	-0.0047	-1.730
ADR	0.0185	0.0241	637	148	0.0122	0.0142	50	13	-0.0063	-2.224
Audit by Big 5	0.0175	0.0236	562	134	0.0201	0.0232	125	36	0.0026	0.761
Foreigner on board	0.0172	0.0229	587	144	0.0226	0.0264	100	40	0.0054	1.440
CEO on board	0.0219	0.0248	115	62	0.0172	0.0232	572	147	-0.0046	-1.534
Owned by Government	0.0197	0.0251	497	125	0.0136	0.0180	190	50	-0.0061	-2.254

Table 6

Income Diversion and Corporate Governance

The table shows the regression of *ShadowR*= *Net transfers to spacemen/Revenue* on a set of corporate governance variables controlling for Government Ownership (*Owned by Government*), the company's (Log) *Revenues* and *Debt/Assets*. *Net transfers to spacemen* is the net cash transferred to spacemen by a firm. *Revenue*, *Assets*, and *Debt* are book values taken from Rosstat. *Publicly traded* is a variable that takes a value of one if the company is traded on RTS or MICEX (Russian stock exchanges) and zero otherwise. *ADR* is a variable that takes a value of one if the company has ADRs (American Depositary Receipts) and zero otherwise. *Audit by Big 5* is a variable that takes a value of one if the company is audited by one of the Big 5 accounting firms (Arthur Andersen, Deloitte, Ernst & Young, KPMG, or PWC) and zero otherwise. *Board Size* is the number of directors serving on a company's board. *CEO on board* and *Foreigner serves on board* are variables that take values of one if, respectively, the CEO has a seat on the board or a foreigner serves on the board. *Owned by Government* is a variable that takes a value of one if the government owns more than 20% of company shares and zero otherwise. All specifications include year dummies. Standard errors are in parentheses. ***, **, * denote, respectively, significance at the 1%, 5% and 10% levels. The standard errors are clustered at the firm level. *ShadowR*, Log (*Board Size*), Log (*Revenue*), *Revenue growth* and *Debt/Assets* are winsorized at the top 95th percentile.

Dependent variable:	ShadowR							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Publicly traded	-0.0063 (0.0028)**	-0.0063 (0.0028)**						-0.0070 (0.0029)**
ADR		-0.0052 (0.0033)						-0.0077 (0.0039)**
Audit by Big 5			0.0039 (0.0036)					0.0050 (0.0035)
Foreigner on board				0.0048 (0.0034)			0.0052 (0.0034)	0.0053 (0.0033)
Log (Board size)					0.0040 (0.0041)		0.0048 (0.0042)	0.0062 (0.0042)
CEO on board						-0.0017 (0.0028)	-0.0021 (0.0028)	-0.0019 (0.0027)
Owned by Government	-0.0040 (0.0029)	-0.0038 (0.0029)	-0.0046 (0.0029)	-0.0041 (0.003)	-0.0051 (0.003)*	-0.0045 (0.003)	-0.0047 (0.003)	-0.0040 (0.003)
Log(Revenue)	0.0005 (0.0009)	0.0007 (0.001)	-0.0004 (0.001)	-0.0003 (0.001)	-0.0003 (0.001)	-0.0002 (0.001)	-0.0006 (0.001)	0.0001 (0.0011)
Revenue growth	-0.0092 (0.0055)*	-0.0092 (0.0055)*	-0.0090 (0.0057)	-0.0086 (0.0055)	-0.0081 (0.0056)	-0.0084 (0.0055)	-0.0076 (0.0054)	-0.0084 (0.0054)
Debt/Assets	0.0280 (0.0079)***	0.0279 (0.0079)***	0.0264 (0.0084)***	0.0274 (0.008)***	0.0276 (0.0082)***	0.0275 (0.0082)***	0.0270 (0.0081)***	0.0256 (0.0081)***
Year dummy	Y	Y	Y	Y	Y	Y	Y	Y
R-sq	0.067	0.070	0.058	0.060	0.057	0.055	0.064	0.087
Number of obs.	627	627	627	627	627	627	627	627
Number of firms	156	156	156	156	156	156	156	156

Table 7

EBITDA Margin and Corporate Governance

The table shows the regression of $EBITDA\ Margin = EBITDA/Revenue$ on a set of corporate governance variables controlling for Government Ownership (*Owned by Government*), the company's (*Log Revenues* and *Debt/Assets*). *Revenue*, *Assets*, and *Debt* are book values taken from Rosstat. *Publicly traded* is a variable that takes a value of one if the company is traded on RTS or MICEX (Russian stock exchanges) and zero otherwise. *ADR* is a variable that takes a value of one if the company has ADRs (American Depositary Receipts) and zero otherwise. *Audit by Big 5* is a variable that takes a value of one if the company is audited by one of the Big 5 accounting firms (Arthur Andersen, Deloitte, Ernst & Young, KPMG, or PWC) and zero otherwise. *Board Size* is the number of directors serving on a company's board. *CEO on board* and *Foreigner serves on board* are variables that take values of one if, respectively, the CEO has a seat on the board or a foreigner serves on the board. *Owned by Government* is a variable that takes a value of one if the government owns more than 20% of company shares and zero otherwise. All specifications include year dummies. Standard errors are in parentheses. ***, **, * denote, respectively, significance at the 1%, 5% and 10% levels. The standard errors are clustered at the firm level. *EBITDA Margin*, *Log (Board Size)*, *Log (Revenues)*, and *Debt/Assets* are winsorized at the top 95th percentile.

Dependent variable:	EBITDA Margin						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Publicly traded	-0.0128 (0.016)	-0.0179 (0.0162)	-0.0126 (0.0169)	-0.0138 (0.0165)	-0.0129 (0.0168)	-0.0136 (0.0164)	-0.0170 (0.0155)
ADR	0.1296 (0.0348)***						0.1033 (0.0359)***
Audit by Big 5		0.0866 (0.0247)***					0.0694 (0.0248)***
Foreigner on board			0.0313 (0.023)			0.0320 (0.0237)	0.0197 (0.0193)
Log (Board size)				0.0088 (0.0265)		0.0102 (0.0264)	0.0047 (0.0238)
CEO on board					0.0141 (0.0142)	0.0137 (0.0137)	0.0139 (0.0125)
Owned by Government	-0.027 (0.017)	-0.024 (0.018)	-0.020 (0.019)	-0.023 (0.019)	-0.023 (0.019)	-0.021 (0.02)	-0.027 (0.017)
Log(Revenue)	0.0100 (0.0048)**	0.0103 (0.0053)*	0.0147 (0.0053)***	0.0155 (0.0055)***	0.0159 (0.0053)***	0.0144 (0.0054)***	0.0059 (0.005)
Debt/Assets	-0.1247 (0.047)***	-0.1581 (0.044)***	-0.1261 (0.0479)***	-0.1249 (0.0484)***	-0.1233 (0.0476)***	-0.1243 (0.0476)***	-0.1502 (0.0432)***
Year dummy	Y	Y	Y	Y	Y	Y	Y
R-sq	0.141	0.138	0.089	0.082	0.084	0.091	0.179
Number of obs.	682	682	682	682	682	682	682
Number of firms	156	156	156	156	156	156	156