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Governance as a mechanism to alleviate financing constraints on investment

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Abstract

Governance as a mechanism to alleviate financing constraints on investment - Russian evidence

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This paper addresses whether adopting good governance standards alleviates financing constraints on investment via improved internal efficiency or access to external capital. The Russian context serves as an appropriate laboratory for studying longitudinal effect of governance. We test if corporate governance acts as a moderator between financing constraints on investment and internal efficiency, i.e. the effect of internal efficiency on improving investments is amplified in presence of good governance. We also test for mediation and moderation effects between governance and external capital.

This paper makes three contributions. First, Russia provides a unique institutional context for a longitudinal study of corporate governance and its determinants. In developed countries, governance is stable over time. The improvements in Russian governance over the last 10-20 years provide enough time variation to test the relationship between corporate governance and investments in a fixed effects framework. Relatively few studies examine governance in the Russian context over a long period of time. Perhaps the most influential is by Black et al. (2007). Second, we test the effect of corporate governance on financing constraints through investment, which has not been extensively researched in the Russian context. In fact, most literature examines the effect of governance on firm's performance, as the latter is the most widely used indicator of shareholder value. Finally, our results show that governance significantly impacts capital investment. The significance remains when controlling for internal efficiency.

Financing constraints affect all publicly listed companies and in particular in emerging markets where debt and equity capital markets are underdeveloped or illiquid (La Porta (1997), Shleifer and Vishny (2000)). By improving governance or reducing the asymmetry of information between the agent and the principal (external shareholder or debtholder), we hypothesise that (1) good governance can improve the internal efficiency or transparency of the firm, the cash-flows thus become more visible and controllable, and there is more efficient allocation of internal funds stimulating investment

expenditure; and (2) by being more transparent, the firm attracts external investors and has greater access to local and global financial markets, is able to raise more funds externally via capital markets which in turn stimulates capital investments (indirect effect of governance).

We are using Transparency & Disclosure (TD) scores produced by Standard & Poor's as a proxy for corporate governance. Financial data is sourced from Compustat and complemented by companies' publicly available information. The strengths of TD score lie in its usage and applicability. There exist plenty inter-firm and temporal variation between the scores to make TD score an interesting variable for a longitudinal study. We start with an investment equation in error correction specification (as in Bond et al, 2003 amongst others). We apply fixed effects and dynamic panel data analysis such as GMM. We find governance to be a significant and positive factor for investment. Governance is still significant when controlling for internal efficiency, proxied by profitability (EBIT margin). While we find strong impact of governance on investment, when controlling for firm's ability to access capital, we do not find access to external capital being a strong moderator or mediator between governance and investment. However, external capital (both debt and equity) does significantly and positively influence investment. The firms which have raised additional debt are subject to more scrutiny from banks and are applying better governance rules to maximise the use of additional cash flows in investment projects. Another unexpected result consisted of finding gross cash flow not significantly related to investment. This could indicate that managers are colluding with major shareholders to hold investment low irrespective of cash flow because of risk of expropriation.

Corporate governance as a mechanism to alleviate financing constraints on investment

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Abstract

This paper addresses whether adopting good governance standards alleviates financing constraints on investment via improved internal efficiency or access to external capital. The Russian context serves as an appropriate laboratory for studying longitudinal effect of governance. The 10 year dataset contains all major listed Russian firms, locally or abroad, consistently ranked by Standard & Poor's according to their transparency and information disclosure levels. We test if corporate governance acts as a moderator between financing constraints on investment and internal efficiency, i.e. the effect of internal efficiency on improving investments is amplified in presence of good governance. We also test for mediation and moderation effects between governance and external capital. While we do not find them significant, we find that corporate governance, ability to issue debt and equity each positively and significantly impact capital investment. We then split the panel data in two sub-samples according to the presence of majority controlling shareholder or not. The results are maintained for the sub-sample where there is a majority shareholder, whether the shareholder is a state-owned entity or a private individual (oligarch).

Keywords

Corporate governance

Financing constraints

Russia

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Chapter 1

Introduction

Russia provides an interesting setting for studying the impact of corporate governance on financing constraints on investment. Being a country with weak investor protection, it has underdeveloped capital markets. Although an increasing number of Russian firms are able to cross-list abroad, the majority still suffer from under-investment as investors are reluctant to take high risks given uncertain returns on their investments. Corporate governance, through firm's transparency, plays a crucial role in giving firms access to external capital and thus alleviating financing constraints on investment. Arguably, governance plays a lesser role for funds-rich state-owned firms, but adopting high governance standards may still improve their internal efficiency and financing structure. Empirical analysis is done on a 10-year panel dataset containing observations on the largest Russian companies, publicly listed in Russia or abroad.

This paper makes three contributions. First, Russia provides a unique institutional context for a longitudinal study of corporate governance and its determinants. In developed countries, governance is stable over time. The improvements in Russian governance over the last 10-20 years provide enough time variation to test the relationship between corporate governance and investments in a fixed effects framework. Relatively few studies examine governance in the Russian context over a long period of time. Perhaps the most influential is by Black et al. (2007). Second, we test the effect of corporate governance on financing constraints through investment, which has not been extensively researched in the Russian context. In fact, most literature examines the effect of governance on firm's performance, as the latter is the most widely used indicator of shareholder value. Related studies on Russia and emerging economies include Black et al (2007 and 2001) (Russia), Black, Jang and Kim (2006) (Korea), Aksu and Kosedag (2006) (Turkey), Durnev and Kim (2005) (cross-country), Klapper and Love (2004) (cross-country).

Finally, our results show that governance significantly impacts capital investment. The significance remains when controlling for internal efficiency or ability to access external capital.

Corporate governance usually refers to "the system by which business corporations are directed and controlled" (Cadbury Committee Report, 1992). The mechanisms of governance can be assessed by anything ranging from board and management structures to shareholder rights to transparency and disclosure of information.

Anglo-American studies of corporate governance are concerned with a principal-agent problem. The main stream of literature (led by Shleifer and Vishny) considers the primary focus of corporate governance to be the value maximisation for shareholders. In other words, how to ensure, via governance mechanism, that the shareholders receive the best return on their investment. This approach to corporate governance generally envisages a dispersed ownership, in the presence of liquid stock markets and effective legal protection. The principal-agent model had a strong influence on how the corporate governance problem is perceived by policy makers. Examples include the corporate governance framework defined by the OECD and the World Bank (OECD Principles of Corporate Governance), which emphasizes the need for a governance mechanism to address the principal-agent problem that arises from the separation of ownership and control.

There have been criticisms of the usefulness of the Anglo-American approach to governance in emerging economies, including Russia, where the attributes of this model are not fulfilled. In presence of weak shareholders' rights protection and law enforcement, as well as less efficient capital markets, the predominant ownership structure is concentrated, where the majority (>50%) or block shareholder (>25%) has control over the firm, its board and its management. The main risks that beset emerging economies, including Russia, are the conflicts between the 'controlling' and minority shareholders. The risks centre on transparency and disclosure, dilution (through share issuance, merger etc.), asset stripping and transfer pricing, bankruptcy, limits on foreign ownership, management attitude towards shareholders and registrar risk. A recent survey done by the Russian Institute of Directors also shows that dividend policy, dividend payout, and the stability of dividend policy are of insufficient level. Appendix 1 contains a table that compares methodologies by different institutions of measuring levels of corporate governance. They are all based on more or less similar criteria.

TD score is the most frequent measure of governance standards as it appears in methodologies of four out of five institutions. We use unique corporate governance variables from TD rankings by S&P. In 2002, S&P published its first survey of TD by the largest Russian public corporations.

As a result of the continued interest among the investment community, S&P has been updating the survey ever since and improving the methodology. More on measurement of corporate governance can be found in Chapter "Data".

Chapter 2

Theoretical Framework

Financing constraints affect all publicly listed companies and in particular in emerging markets where debt and equity capital markets are underdeveloped or illiquid (La Porta (1997), Shleifer and Vishny (2000)). Modigliani and Miller's seminal work on the irrelevance of financing structure gave rise to various models generally without reference to the possible influence of financing factors. However, by relaxing Modigliani and Miller's assumptions, in particular on the symmetry of information, firms experienced financing constraints in the presence of imperfect and inefficient markets. The higher the asymmetry of information or the lower the standards of governance, the higher is its effect on financing constraints (Hubbard (1998)), if such constraints exist. This effect of governance on financing constraints is illustrated in Figure 1.

For constrained firms, good governance extends the horizontal part of the supply curve or flattens the angle of the slope, as presented on the chart below. Unconstrained firms would still benefit from good governance as it improves their operational transparency and efficiency.

By improving governance or reducing the asymmetry of information between the agent and the principal (external shareholder or debtholder), we hypothesise that the firm can mitigate financing constraints in the following (non-exhaustive ways):

Hypothesis One. *Good governance can improve the internal efficiency or transparency of the firm, the cash-flows thus become more visible and controllable, and there is more efficient allocation of internal funds stimulating investment expenditure; and*

Hypothesis Two. *Indirect effect of governance: by being more transparent, the firm attracts external investors and has greater access to local and global financial markets, is able to raise more funds externally via capital markets which in turn stimulates capital investments.*

Figure 2.1: Financing constraints

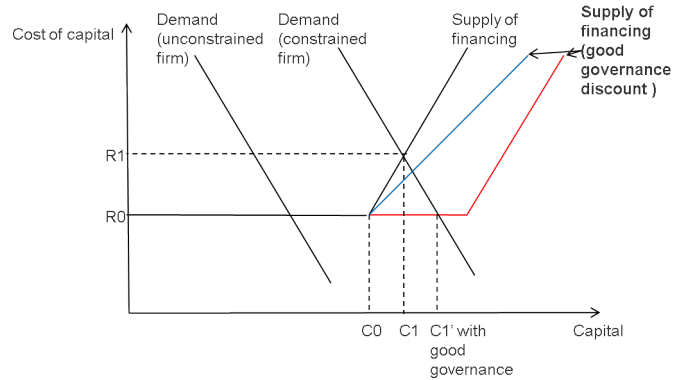


chart.png

Dating back to the influential work of Fazzari, Hubbard and Petersen (1988), researchers have used the sensitivity of capital investment to cash flow as a metric for gauging the severity of financing constraints. The intuition behind this test is straightforward. If a firm cannot obtain outside finance, then its investment should respond strongly to movements in internal funds. Implementing this idea requires controlling for investment opportunities; otherwise cash flow might capture movements in investment opportunities instead of movements in internal funds. Investment opportunities or demand are most often proxied by Tobin's Q . Therefore the standard approach to measuring financing constraints has been to estimate a fixed effects regression of capital investment on cash flow and Tobin's Q . Most studies find that firms which are *a priori* more likely to face binding financing constraints exhibit greater sensitivity of investment to cash flow, as in Hubbard (1998), Bond and Van Reenen (2007).

Referring back to our Chart 1, the steeper the upward-sloping portion of the supply curve, the greater is the cost of capital. Whether governance makes this slope shallower or steeper can be investigated by testing for its interaction effect with access to external capital. In the extreme case - if there were no costs associated with the asymmetry of information between the lender and the borrower - it would make the slope horizontal, so there would be no financing constraints on investment. Further analysis of interaction effects is in the section 'Empirical Specification'.

A common approach in the financing constraints literature is to separate firms into groups according to *a priori* criteria that relate to the presence of financing constraints. Researchers have used a variety of criteria to categorise firms (see Hubbard (1998)). Some split the sample by firm size (Carpenter et al. (1998), Chevalier and Scharfstein (1995)), some by dividend payouts, both proxies for net worth. Other *a priori* groupings are by more direct proxies

for information costs, for example firm's underwriting costs (Calomiris and Himmelberg (1995)). Our sample is relatively small to separate the firms into groups, unless it is done according to ownership. We also interact governance with state ownership dummy or other institutional variables to see if corporate governance is more important to investment where there is state ownership or other institutional factor.

Going back to our hypotheses, from a theoretical point of view it is not straight forward to justify that governance will positively affect investment. Jensen (1986) argued that managerial opportunism would lead managers to overinvest in 'pet' projects not creating shareholder value, therefore good governance might stop managers from investing and ultimately reduce investment. But why would management have an incentive to invest free cash flow in a negative NPV project or waste money in other ways? They might be motivated by an increase in resources under their control, an increase in compensation, because the latter is positively associated with an increase in firm's size (Murphy (1986)). The firms which reward middle-level managers through promotion also create a strong organisational bias towards firm growth to supply such new positions (Baker (1986)).

Free cash flow agency problems are most likely to occur in firms with large free cash flow or few positive NPV projects. One way to reduce these agency problems is to disgorge the excess current cash via dividend payment, and promise to pay out any future free cash flow. A current dividend can get rid of the current excess in cash. What about future free cash flow? A capital structure composed of a large amount of debt can reduce the agency problems associated with free cash flow. Empirical evidence shows that leverage-increasing transactions such as LBOs or public-to-private transactions have large free cash flow agency cost reducing benefits. Since debt payments are mandatory, the promise to make increased future payments is believable. Typically LBO firms are large firms, with stable business histories and substantial free cash flows. However, there are problems with additional debt in the capital structure as debt payments have to be covered by cash flows.

Jensen's argument was based on events related to US oil companies in the late 1970s to early 1980s, which wasted a lot of money on 'pet' projects and diversification. These acquisitions were unsuccessful partly because of the absence of managerial expertise outside the oil sector. The oil industry had large increases in free cash flow. Yet evidence shows that the oil firms continued to invest in exploration and development even though the rate of return probably had a negative NPV (McConnell and Muscarella (1986)), rather than paying out the excess cash to shareholders. Overinvestment problem was more likely to be pronounced in stable, cash-rich companies in mature industries without many growth opportunities.

Russian institutional context allows us to set a maintained hypothesis that there would not be any reason to expect Russian managers to overinvest. Most Russian firms have old and fully amortised assets to start with, due to the legacy of the soviet regime and a heavy use of outsourcers, rather than reliance on own production. The current average longevity of equipment in Russia is 18-19 years in contrast with desired 7-8 years (Aganbegyan 2008). According to Dzarasov (2009), in spite of the prolonged recovery in 1999-2008, capital investment by Russian firms was low and deficient in quality. Russian firms are characterised by inseparability of management and control due mainly to influence of large shareholders over management. This influence over management is not unusual for firms with concentrated ownership (R. Murdoch, R. Branson and C. Koch preside over News Corp, Virgin Group and Koch Industries respectively and entirely control their management). But unlike in Europe and US, Russia still has legal loopholes allowing the majority shareholders with the consent of managers to funnel the funds out of the firms, rather than invest in long term assets and infrastructure. They seek to maximise the short-term rent, because of uncertain legacy of their assets, acquired in the 90's privatisations, often through crime and bribes, which undermines investment and also leads to a number of conflicts between majority and minority shareholders. The majority of Russian firms consider their productive assets as underinvested and obsolete to meet the growing competition and market demand (Anabegyan 2008, Dzarasov 2009). This institutional impediment to investment growth allows us to set a maintained hypothesis of good governance improving investment.

Chapter 3

Data

Black et al. (2007) analysed the various measures of corporate governance in Russia and concluded that sophisticated governance indices do not necessarily predict better. In particular, the Standard & Poor's (S&P) Transparency and Disclosure (TD) scores were found to be more useful measures of governance, in that Black et al. found they predict Tobin's Q, and therefore may correspond to the elements of governance that matter to investors. Black et al. stated that TD scores outperform, in this sense, the more complex S&P governance indices also produced by S&P.

The total TD score produced by S&P for ninety companies consists of three components - (1) ownership structure and shareholder rights, (2) financial and operational information, and (3) board and management structure and process. These three sub-scores are positively correlated with each other. The checklist methodology is to search for 110 TD attributes relating to the three components (cf. full list of attributes in Appendix 2). Each attribute is scored on a binary basis to ensure objectivity, and scores for the three components are developed from the scores on individual attributes. The scoring accounts for information included in the three major sources of public information: annual reports, web-based disclosures, and public regulatory reporting (such as publicly available statutory documents filed with the Russian financial markets regulator, FFMS, Frankfurt Stock Exchange, UK's FSA, UKLA and the US SEC) available on web sites of companies or stock exchanges or the regulatory authority involved. According to the weighting system, public disclosure - regardless of the source through which it has been made - yields 80% of the maximum score on each point of the questionnaire. The remaining 20% of points are awarded if this information is present in the other two sources as well (10% each). This methodology reflects the notion that replication of information in various sources holds value for investors, as it makes the information more easily accessible. The value of replication

Table 3.1: **Example questions, survey of transparency and disclosure**

Components	Questions
Ownership structure and shareholder rights	Does the annual report contain: (a) the identity of the largest shareholder? (b) corporate governance charter or guidelines (c) voting rights (d) the way the shareholders nominate the directors to the board
Financial and operational information	Does the annual report contain: (a) annual financial statements according to international standards (IFRS/ US GAAP) (b) efficiency indicators (c) any plans for investment in the coming years
Board and Management information and remuneration	Does the annual report contain: (a) the list of board members, their current and previous employment (b) the number of shares held in other affiliated companies by managers (c) size and composition of CEO's pay

is, however, incremental relative to the fact of disclosure.

The S&P methodology is constructed from the perspective of the international investor, which is reflected in the list of 110 attributes.

The strengths of TD score lie in its usage and applicability. First, there exists plenty inter-firm and temporal variation between the scores to make TD score an interesting variable for a longitudinal study. 2009 scores range from 20% for the bottom company to 80% for the top one. There is still plenty of room for future improvement in Russian TD scores. In 2009, the Transparency index, calculated as the average score for the 90 companies amounted to 56% only, while its counterparts in the UK, France and US amounted to 71%, 68% and 70% respectively (in 2003, the last date on which this survey was conducted in these regions).

Second, TD scores matter for (foreign) investors, since they are willing to pay the highest premium for firms from Russia with better governance practices relative to firms from other countries (McKinsey, 2002, Global Investor Opinion Survey). Examples of such Russian companies as MTS, Vimpel-

com and Wimm-Bill-Dann illustrate that by their higher trading multiples relative to peers (Shekshnia 2003).

Third, transparency and disclosure are integral to corporate governance (Patel et al 2002). TD practices are an important component of the corporate governance framework (OECD, 1999) and a leading indicator of corporate governance quality. Beeks and Brown (2005) find that firms with higher corporate governance standards make more informative disclosures. Sadka (2004) provides evidence that publicly shared financial reporting (market transparency) directly increases TFP¹ and GDP growth employing data from 30 countries. Transparency and full disclosure of information is important to emerging markets and Russia in particular, where external capital is necessary to sustain the high growth rate and the biggest agency problem centers on asymmetric information and expropriation by majority shareholders (Aksu and Kosedag 2006).

However, transparency and disclosure scores produced by S&P which are used in this paper have not been previously analysed in connection to financing constraints on investment, not only in Russia but in emerging markets research overall. Most research dealing with TD scores focuses on their interaction with firm value. Patel (2006) produces a series of bi-variate correlations of price-to-book ratio to TD score in six emerging countries², and finds that for five markets, correlation between price-to-book ratios and TD scores is positive. Aksu and Kosedag (2006) provide evidence that firm size, financial performance and market-to-book equity best explain the variation in TD scores of the firms listed on Istanbul Stock Exchange. Doidge et al (2007) test a model of how country characteristics, such as legal protections for minority investors and the level of economic and financial development influence firms in implementing measures to improve the transparency of their P&L. The authors find that country characteristics explain much more of the variance in TD ratings (39-73%) than observable firm characteristics (4-22%).

What does the TD score mean, how is it defined? It gives a rank to a firm based on publicly disclosed information. It is an objective measure in a sense that the information is either disclosed or not. The accuracy of information however is not entirely assessed. To a certain extent, the disclosure of audited accounts, even more if they are done according to IFRS or US GAAP standards and/or by a top-tier auditor, justifies some level of accuracy of information disclosed in these documents. But for more 'subjective' governance measures, Russian companies tend to engage in window

¹Total Factor Productivity

²Does not include Russia

dressings, and good governance practices remain on paper, limited to a box ticking exercise. Is an independent director really independent? Or, vice versa, is he so remote from the firm's operations as to be a pure PR figure? Do minority shareholders have access to the same information as the controlling shareholder? To address these limitations, our hypotheses are based on the belief that governance alone (or governance scores assigned to firms) might not be as efficient and impacting investment as when coupled with implementation of true procedures and internal controls, resulting in improved internal efficiency.

What does the TD score signal? Does it properly convey firm's quality to investors? Does it signal improvement in free cash flows and investment? Signaling theories are built on a variety of signals a firm can choose to convey a specific event to investors³. Signaling theories are based on the assumption that information is not equally available to all parties at the same time, and that information asymmetry is the rule.

A large stream of signaling theories deal with dividend pay-out as signal of future increase in cash-flows. The best known are those of Bhattacharya (1979), Miller and Rock (1985) and John and Williams (1985). The basic intuitive idea in all these models is that firms adjust dividends to signal their prospects. A rise in dividends typically signals that the firm will do better, and a decrease suggest that it will do worse. However, La Porta et al. (2000) found that in countries with weak investor protection and law enforcement, management does not have a strong incentive to convey its quality through payout policy. This finding supports the idea that investors use their legal power to force dividends. That is, an effective legal system provides investors with the opportunity to reduce agency costs by forcing managers to pay out cash. In the absence of an effective legal system, managers have no incentives to do it on their own.

Another argument in favor of dividend payout being a weak signal for firm's value is related to ownership structure. When firms are owned as part of a corporate pyramid structure, or through a network of family or business contacts (which is mostly the case in Russia), it is easier for manager-shareholders to expropriate wealth from minority shareholders or debt holders. La Porta, Lopez-De-Silanes, Shleifer and Vishny (2000) find that firms in countries with weaker minority shareholder rights pay lower dividends. Holding all else constant, countries with weak shareholder rights will experience much larger price increases on announcement of dividend increases

³In finance, signals include issuing dividends, debt, equity etc. In economics, Spence, the recipient of 2001 Nobel prize is most known for his seminal work on the job market signaling.

(Faccio, Lang and Young (2001)).

It implies that in Russia dividend is considered by managers to be a costly signal. Russian managers could find cheaper and more persuasive ways to credibly convey the company's true worth to the market. It might support the idea that firms in Russia turn to 'less costly' signal such as TD or more complex corporate governance scores. This would be an interesting finding in itself, and would mean that the Russian firms would aim at frequently increasing their TD score. Over time, the score levels would go up. It might induce isomorphic behavior of firms, where firms would mimic the behaviour of better governed, more transparent firms, by creating same rules and procedures (to an extent that we are dealing with public or semi-public information on which TD or similar corporate governance scores are based). While it would improve the overall standards of Russian economy, it might also lead to a diminishing power of TD scores as a signal of firm's worth.

Another limitation of TD scores might be possible endogeneity. Firms desiring to access capital for investment projects might set up better corporate governance practices. This issue is further addressed in 'Robustness checks' section. If we assume that firms and investors care about TD scores, then hypothetically a positive change in investment or cash flows might improve the TD score. Would firms try to influence S&P as to get a higher TD score through increase in investment or cash flow? This seems quite unlikely though, since there are other direct ways of improving the score, such as disclosing the ownership structure, remuneration of key management and board members.

One might ask what is good and bad corporate governance in the Russian context? The low minimum quality of Russian corporate governance leaves huge room for inter-firm variation. Some insiders will funnel funds from their firms; others will try to attract investors through good conduct; and still a few will steal some of the firm's profits. In the contrast, the minimum quality of Anglo-American corporate governance, set by law and by norms so widely accepted that almost no public firms depart from them, is quite high. But governance standards are improving gradually in Russia as the Russian firms increasingly participate in international capital markets. There were over 60 companies listed abroad in 2009. S&P TD scores show that companies listed on the main market of London Stock Exchange (LSE) or New York Stock Exchange (NYSE) were substantially more transparent than others. Companies traded only in Russia had an average transparency index of 50%, whereas the transparency index for companies listed on LSE was 63%; the number was 74% for NYSE-listed firms.

The results also show higher transparency for companies electing independent directors to their supervisory boards. The presence of independent

directors is a requirement for companies listed on Western stock exchanges.

Chapter 4

Empirical specification

Table 4.1: **Summary statistics**

Variable	Obs	Mean	Std. Dev.	Min	Max
Sales	938	98,537	283,916	1	3,518,960
EBIT margin	896	.20	1.19	-4.53	30.48
Capital investment	838	16,500	55,124	3	841,156
Gross cash-flow	813	25,191	80,926	(80,298)	1,000,782
Tobin's Q	537	2	16	0	237
New long term debt	769	7,028	26,124	0	313,762
New equity	746	7,712	32,855	0	456,927
Transparency and disclosure scores- total panel					
Total score	589	.48	.17	0	.85
Financial & operational disclosure	589	.51	.20	0	.9
Ownership & shareholders rights	589	.49	.19	0	.93
Board & management structures	589	.49	.17	0	.86
Transparency and disclosure scores- sub-panel with independent directors					
Total TD score	223	.54	.16	.02	.85
Financial& operational disclosure	223	.58	.18	.02	.9
Ownership& shareholders rights	223	.54	.20	.04	.93
Board& management structures	223	.47	.16	0	.83
Transparency and disclosure scores- sub-panel without independent directors					
Total score	180	.45	.18	0	.85
Financial & operational disclosure	180	.45	.19	0	.89
Ownership & shareholders rights	180	.47	.20	0	.88
Board & management structures	180	.45	.19	.01	.86

Notes: Financial metrics are in million RUB. TD scores scale 0 to 1

Table 4.2: Correlations

	Total TD	Sales	EBIT %	Inv.	GCF	Q	Debt	Equity
Total TD	1.0000							
Sales	0.2213	1.0000						
EBIT %	0.0371	0.0165	1.0000					
Investment	0.1999	0.9087	0.0210	1.0000				
GCF	0.2079	0.9216	0.0320	0.9652	1.0000			
Tobin's Q	-0.1126	-0.0441	-0.0136	-0.0357	-0.0370	1.0000		
Debt	0.2465	0.5359	0.0051	0.6107	0.6054	-0.0337	1.0000	
Equity	0.0005	0.0915	0.0626	0.1141	0.0741	-0.0256	0.0748	1.0000

Notes: Debt is new long term debt, equity is secondary issue

Table 4.1 above lists number of observations, mean, standard deviation from mean, minimum and maximum observations for raw variables most commonly used in the empirical specification. The transparency and disclosure total score is broken into three sub-scores: Financial & operational disclosure, ownership & shareholders rights and board & management structures. The total score is an algebraic sum of the three sub-scores. Average annual sales of the sample are EUR2.46bn¹ which is rather high, but there could be some big outliers as standard deviation is high. Average capital investment amounts to EUR412m, with a big spread between minimum (EUR75,000) and maximum (EUR21bn). The averages for the three sub-scores over the entire period are 51%, 49% and 44% respectively.

There is significant correlation between size (as proxied by sales) of a firm and its corporate governance. Larger publicly listed firms tend to be more attending to appropriate governance levels. Investment is strongly correlated with gross cash-flows which is in line with mainstream finance theory. New debt is strongly correlated with governance, as the higher the governance standards, the lower the cost of capital due to diminishing moral hazard and therefore the more accessible external financing is. Tobin's Q is negatively correlated with governance.

Let us now define the empirical specification. We start with a typical investment equation in error correction form² :

¹Exchange rate EUR/RUB of 40 as of 18.06.2011

²Most research shows that investment is non stationary so it is preferred to use the error correction model. Error correction models have been used for capital investment and R&D investment in a number of papers, such as Becker and Hall (2008), Bond et al. (2003), Mairesse et al. (1999), Bond et al. (1997)

$$\Delta i_{i,t} = \beta_0 + \beta_1(i_{i,t-1} - s_{i,t-1}) + \beta_2\Delta g_{i,t} + \beta_3\Delta gcf_{i,t} + f(X) + d_t + \alpha_i + \epsilon_{i,t} \quad (4.1)$$

where X represents a vector of variables, including lagged and first differences values, that have been emphasized as determinants of investment from a variety of theoretical perspectives; d_t controls for year fixed effects, α_i is a firm specific effect and $\epsilon_{i,t}$ is random error term. The term $((i_{i,t-1} - s_{i,t-1}))$ is named error correction term, where $i_{i,t}$ is capital investment and $s_{i,t}$ is sales. $\Delta g_{i,t}$ is the governance variable, proxied by transparency and disclosure score. $gcf_{i,t}$ is firm's gross cash flow defined as the sum of net income and depreciation & amortisation charge. The unit of analysis is firm i at time t . The firm fixed effects are removed by first-differencing.

Hypothesis One: Corporate governance improves internal efficiency of the firm, leading to more efficient allocation of internal funds, alleviating financing constraints on investment.

In Table 4.3 we test for interaction effects between internal efficiency (first difference of EBIT Margin), and governance.

Table 4.3: Investment and internal efficiency

	Investment, first difference Δi_{it}		
	(1)	(2)	(3)
$\Delta i_{i,t-1}$	0.273*** (0.075)	0.285*** (0.076)	0.273*** (0.077)
Δs_{it}	1.022*** (0.144)	0.982*** (0.150)	1.003*** (0.152)
$\Delta s_{i,t-1}$	-0.132 (0.141)	-0.129 (0.141)	-0.111 (0.142)
ect ($i_{i,t-1} - s_{i,t-1}$)	-0.777*** (0.085)	-0.776*** (0.085)	-0.771*** (0.085)
Governance Δg_{it}	0.216** (0.104)	0.215** (0.104)	0.126 (0.134)
$\Delta EBITmargin_{it}$		0.228 (0.243)	0.194 (0.245)
Int. effect $\Delta g_{it} * \Delta EBITmargin_{it}$			1.142 (1.080)
c_{ons}	-1.748*** (0.186)	-1.743*** (0.186)	-1.732*** (0.186)
R ²	0.421	0.423	0.427
N	274	272	272

Notes: Star levels * p<0.10, ** p<0.05, *** p<0.01. All variables are logged

Governance is statistically significant in Model (1) and in Model (2) when controlling for internal efficiency, proxied by $\Delta EBITmargin_{it}$. The interaction term between governance and internal efficiency is weak, although of the right (positive) sign. Governance has most effect on more profitable firms.

If we control for firm size with first difference in total assets, in addition to control with first and second differences in sales, the results of model (1) and (2) above are unchanged. When we use a different proxy for internal efficiency - ROCE (Return on Capital Employed), the models 2-3 give similar results. When we use ROA (Return on Assets) as a proxy for internal efficiency, we get a negative sign in the coefficients of ROA and interaction effect between ROA and governance. The coefficient of ROA is statistically significant but the coefficient of interaction effect is not.

We have tried to include gross cash flows in the specification but that did not gear significant results. Moreover, by definition, EBIT and gross cash

flow (sum of net income and D&A) could be collinear and not showing any significance when shown together in the model.

From model (2), we are most likely to conclude that EBIT margin is not a mediator between governance and investment (there is no change in significance of coefficient of governance from model (1) to model (2) where EBIT margin is included).

When we split the panel in two parts - according to the existence of controlling majority shareholder or not, the governance remains a significant and positive factor for investment in presence of majority shareholder, whether the latter is a state entity or a private investor. The results for a dispersed ownership sub-panel are inconclusive partly due to its smaller size.

Hypothesis two: by being more transparent, the firm attracts external investors and has greater access to local and global financial markets, and is able to raise more funds externally via capital markets.

We test for moderation and mediation effects between investment and access to external capital, through corporate governance. In Table 4.4 we test for interaction effects between external capital (proxied by new long term debt), and governance. A recent stream of finance literature (a comprehensive review can be found in Brown and Petersen 2009) argued for inclusion of external finance in investment studies. Including debt (and stock) issues would control for possible omitted variable biases and evaluate the role of external finance on investment.

Table 4.4: Investment and external finance, fixed effects

	Investment, first difference Δi_{it}		
	(1)	(2)	(3)
$\Delta i_{i,t-1}$	0.309*** (0.073)	0.274*** (0.074)	0.310*** (0.073)
Δs_{it}	1.002*** (0.140)	0.993*** (0.144)	0.974*** (0.139)
$\Delta s_{i,t-1}$	-0.161 (0.136)	-0.148 (0.140)	-0.177 (0.135)
ect ($i_{i,t-1} - s_{i,t-1}$)	-0.818*** (0.083)	-0.778*** (0.084)	-0.818*** (0.082)
Governance Δg_{it}	0.220** (0.102)	0.250** (0.104)	0.249** (0.102)
Debt $_{it}$	0.025*** (0.007)		0.026*** (0.007)
equity $_{it}$		0.017** (0.008)	0.017** (0.008)
$cons$	-1.949*** (0.189)	-1.792*** (0.186)	-1.996*** (0.188)
R ²	0.458	0.434	0.471
N	271	273	271

Notes: Star levels * p<0.10, ** p<0.05, *** p<0.01. All variables are logged.

Here, we are only analysing long term debt, while 54% of debt on sampled firms' balance sheets is short term debt. The firms are still not very leveraged, they have on an average 1.5x Debt/ EBITDA multiple. There is a broad range of firms contracting new long term debt, from firms controlled by the state to firms controlled by private shareholders.

Governance is significant in models (1) and (2). New long term debt positively and significantly impacts capital investment. New common equity also significantly impacts investment. In model (3) we simultaneously include the three variables - governance, debt and equity and we find them all significant and positively impacting investment. Debt and equity are not correlated, which is in line with the pecking order theory, as the firms specifically seek funds from debt financing, the cheaper source of financing, and then equity.

3

³Pecking order states that to fund for investment, firms first use their internal cash-

What is interesting is that when we include gross cash flows, their effect on investment while statistically insignificant, is of a negative sign⁴. According to the pecking order theory, this could be interpreted as an absence of financing constraints. It could be that getting no significant cash flow effect means the demand for investment funds by managers is so low that it does not intersect the upward-sloping portion of the supply curve (see chart 1). This could indicate that managers are colluding with major shareholders to hold investment low irrespective of cash flow because of risk of expropriation. Manager-controlling shareholder tandem might decide to spend the extra cash on short term projects or dividends, rather than invest in capital assets.

A test of whether managers are keeping investment low might be to split the sample into those firms who are vulnerable to exploitation or holding back the investment and those who are not. Since lenders have good information their willingness to offer credit to firms may be a sign as to how safe the assets are. Another way of testing the 'insignificant GCF coefficient - no constraints' hypothesis would be to see if SOE are different in that regard from the rest of the sample. It is a fact that SOE are less constrained in Russia (generally highly profitable, in natural resources or monopolistic industries) and have access to cheaper external finance (by definition of their state ownership). We would suspect the rest of the sample to behave more in line with the classic interpretation of the pecking order theory.

Another reason why investment is significantly impacted by new debt and new equity issues and not internal cash flows is that the cost of external financing might be lower than the cost of internal cash flow funds. While this could be true for the SOE, we would need to categorise the firms according to their ability to access external financing (most likely firms will be once more grouped by ownership type).

We also tested the specification with lagged debt and lagged equity but did not yield any significant results⁵.

flows, the cheapest source of financing, then raise debt, and finally equity, on the bottom of the pecking order

⁴Another puzzling conclusion is that the interaction term between governance and gross cash flow is negative and statistically weak. Could it be that improving governance coupled with growing cash-flows still cannot reverse the trend of allocation of funds to short term projects, particularly in the presence of alternative external finance? This could be one of the explanations as to why Russian firms have underinvested assets while not being always financially constrained.

⁵The idea behind using lagged debt and equity is that of avoiding simultaneity between debt (equity) and governance. New debt or equity represent the firm's ability to access the capital, not necessarily its desire to access capital because it is constrained. Debt is also endogenous of investment, in a sense that new debt is taken on to fund investment

We also tested if issuing new debt or new equity acts as a mediator between governance and investment. We adopted the Baron and Kenny approach and calculated the Sobel test. We neither find evidence of mediation nor moderation.

Chapter 5

Robustness checks

In this section, we address some potential concerns about the data and econometric methodology. One concern is that of endogeneity. Endogeneity problems are frequent in studies that analyse corporate governance practices at the firm level (Klapper and Love 2004). A fast growing firm, for example, may adopt better governance practices in order to ensure access to external financing at a lower cost. These growth opportunities would also be reflected in the market valuation of the firm, thus inducing a positive correlation between governance and Tobin's Q. It is more questionable whether after controlling for growth opportunities with Tobin's Q, we would still find reverse causality between investment and corporate governance. We could use dynamic panel data (Arellano & Bond version) to further address the issue of causality (not addressed in this paper). This is one of the main advantages for us to have longitudinal data. We also use lagged dependent variables on the RHS ¹ of the equation. Investment data are not as fat-tailed as high frequency share data for example, so GMM ² will not be spurious. An alternative would have been to use likelihood-based inference methods for panel VAR models, but our time dimension of ten years is too short for such models to show robust results.

Other measures to address causality exists such as instrumental variables and difference-in-differences (DID) estimators ³.

A second problem could also arise due to omitted variables that serve as pre-determinants for differences in Tobin's Q, sales, assets or gross cash-flows,

¹Right hand side

²Generalised Method of Moments

³An estimator that arises in policy analysis with data for two time periods. One version of the estimator applies to independently pooled cross sections and another to panel dataset. Source: Wooldridge, Introductory Econometrics

that are, in turn, shown to be correlated with investment.

A third potential concern is that of selection bias. The companies in the sample were selected according to their size and liquidity. In 2009, they amounted to 90, and 76 of those were included in 2008 study. The liquidity of stocks is generally positively correlated with the size of the company, but there are exceptions, especially in cases of minor free-float. There are more than 300 public companies in Russia, and the S&P sample may not be representative of all Russian public companies. As the larger companies tend to be more transparent than smaller ones, the sampling method is likely to cause an upward bias in assessing transparency of the entire population of public Russian companies. On the other hand, as the companies included in the sample account for about 80% of the cumulative market capitalisation of the Russian stock market, they represent a majority of the Russian economy in terms of assets and operations. Russian small and medium-size businesses are focused on different priorities. They are operating in situations where there is less need for transparency, like similar companies in the rest of the world. The costs of transparency and disclosure are quite high, including accounting and IT expenses, and it can be an obstacle to pursuing good governance standards.

Chapter 6

Conclusion

We conclude with a brief summary of our main findings and a brief discussion of the main implications. We have tested the significance of capital investment sensitivity to governance via internal efficiency. We analysed if governance acts as a moderator, i.e. if the effect of internal efficiency on investment is stronger in presence of good governance (significance in coefficient of interaction term between the corporate governance proxy and investment proxy). We found governance to be a significant and positive factor for investment in the error correction specification. Governance is still significant when controlling for internal efficiency, proxied by profitability (EBIT Margin).

We also found positive albeit weak interaction effect between governance and internal efficiency, which means that governance has most effect on more profitable firms. Further research might explore alternative efficiency indicators.

When estimating the impact of governance on capital investment while controlling for external finance, we have used two of the many variables to estimate external finance: new long term debt and new common equity.¹ We tested whether ability to access external finance is a mediator between governance and investment. While we found strong impact of governance on investment, when controlling for firm's ability to access capital, we did not find access to external capital being a strong moderator or mediator between governance and investment.

External capital (both debt and equity) does significantly and positively influence investment. The firms which have raised additional debt were (are) subject to more scrutiny from banks and were (are) applying better governance rules to maximise the use of additional cash flows in investment

¹We have also tested listing location with inconclusive results in current sample.

projects.

Another unexpected result consisted of finding gross cash flow not significantly related to investment. This could indicate that managers are colluding with major shareholders to hold investment low irrespective of cash flow because of risk of expropriation. Further research would consist of a test whether managers are keeping investment low by splitting the sample into those firms who are vulnerable to exploitation or holding back the investment and those who are not.

The research in this article may be further enhanced with robustness checks through GMM or instrumental variables analyses. Russian context could be searched to identify an institutional variable that interacts with corporate governance and affects investment. The list is non-exhaustive, but we could choose from ownership variables (SOE, FIGs, foreign ownership) or unique institutional equity markets characteristics, such as value of preferred shares.

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Appendices

Appendix 1

Table 1: **Measuring corporate governance risks in Russia**

Organisation	Criteria
Standard & Poor's	Transparency, audit and corporate governance initiatives Shareholders' rights Shareholders' control Efficiency of Board of Directors, strategy and incentives programs
Investor Protection Association (IPA)	Existence of corporate conflict that could damage issuer's reputation or finances Independent evaluation of assets that generated the conflict or disputes Issuer practicing transfer pricing Transactions that would be against principles of good corporate governance Ownership structure Issuer's market capitalisation
Institute of Corporate Law and Governance (ICLG)	Information disclosure Ownership structure Board of directors and management structure Shareholders rights Expropriation risks Corporate governance history
Brunswick UBS	Low transparency Dilution Asset transfers and/or transfer pricing Mergers and restructuring Bankruptcy Ownership and voting restrictions Corporate governance initiatives Registrar quality
Troika Dialog	Ownership Structure Ownership structure and transparency Accountability to shareholders Management and investor relations Corporate culture Information disclosure and financial discipline

Sources: Standard & Poor's, "S&P corporate governance scores - criteria, methodology and definitions"; IPA website; ICLG website; Brunswick UBS, "Corporate governance analyser", Brunswick UBS Warburg Research, May 2000; Troika Dialog, "Russian corporate governance", Troika Dialog Research, May 2001. Both Brunswick UBS and Troika Dialog ceased to publish their corporate governance report due to allegedly having conflict of interest regarding their respective clients.

Appendix 2

Criteria for the transparency and disclosure survey

Block 1: ownership structure and shareholder rights

Component 1. Ownership structure

Disclosure of:

1. The number and par value of issued ordinary shares.
2. The number and par value of issued other types of shares disclosed.
3. The number and par value of authorized but unissued shares of all types.
4. The identity of the largest shareholder.
5. The identity of holders of all large stakes (blocking: > 25%; controlling: > 50%).
6. The identity of shareholders holding at least 25% of voting shares in total.
7. The identity of shareholders holding at least 50% of voting shares in total.
8. The identity of shareholders holding at least 75% of voting shares in total.
9. The number and identity of each shareholder holding more than 10%.
10. The indication that management is not aware of the existence of any stake exceeding 5% in except for those that are reported.
11. An update on shareholder structure after the record date.
12. Shareholding in the company by individual senior managers.
13. Shareholding in the company by individual directors.
14. The description of share classes.
15. A review of shareholders by type.
16. The percentage of cross-ownership.
17. Information about listings on exchanges.
18. Information about indirect ownership (e.g., convertible instruments).

Component 2. Shareholder rights

Disclosure of:

19. Corporate governance charter or corporate governance guidelines.
20. Evidence of existence of a code of business conduct and ethics.
21. The contents of the code of business conduct and ethics.
22. Articles of association (including changes).
23. Voting rights for each voting or nonvoting share.
24. The way that shareholders nominate directors to the board.
25. The way that shareholders convene an extraordinary general meeting (EGM).
26. Procedure for initiating inquiries with the board.

27. Procedure for putting forward proposals at shareholders meetings.
28. Formalized dividend policy.
29. Announcement of recommended dividends before the record date.
30. Review of the last shareholders meeting.
31. Full general shareholder meeting (GSM) minutes.
32. Calendar of important shareholder future dates.
33. GSM materials published on the Web site.
34. Detailed press releases covering last corporate events.
35. Policy on information disclosure.

Block 2: Financial and Operational Information

Component 3. Financial information

Disclosure of:

36. The company's accounting policy.
37. The accounting standards it uses for its accounts.
38. Accounts according to local standards.
39. Annual financial statements according to an internationally recognized accounting standard (IFRS/U.S. GAAP).
40. Notes to annual financial statements according to IFRS/U.S. GAAP.
41. Independent auditor's report on annual financial statements according to IFRS/U.S. GAAP.
42. Unqualified (clean) audit opinion on annual financial statements according to IFRS/U.S. GAAP.
43. Audited IFRS/U.S. GAAP financial statements published before the end of April.
44. Unaudited IFRS/U.S. GAAP financial statements published before the end of April.
45. Audited IFRS/U.S. GAAP financial statements published before annual general meeting.
46. Unaudited IFRS/U.S. GAAP financial statements published before the end of June.
47. Disclosure of related-party transactions (RPTs): sales to/purchases from, payables to/receivables from related parties.
48. Indication that RPTs are made on market or nonmarket terms.
49. Exact terms of RPTs.
50. Interim (quarterly or semi-annual) financial statements according to an internationally recognized accounting standard (IFRS/U.S. GAAP).
51. Notes to these financial statements.
52. Whether these financial statements are audited or at least reviewed.
53. Consolidated financial statements according to the local standards.
54. Methods of asset valuation.

55. A list of affiliates in which the company holds a minority stake.
56. The ownership structure of affiliates.
57. A basic earnings forecast of any kind.
58. A detailed earnings forecast.
59. Segment analysis (results broken down by business line).
60. Revenue structure (detailed breakdown).
61. Cost structure (high degree of detail).
62. The name of the auditing firm.
63. Whether the audit firm is a top-tier auditor.
64. Auditor rotation policy.
65. How much the company pays in audit fees to the auditor.
66. Whether auditor renders non-audit services.
67. Non-audit fees paid to the auditor.

Component 4. Operational information

Disclosure of:

68. Details of the type of business the company is in.
69. Details of the products or services the company produces or provides.
70. Output in physical terms.
71. A description of functional relationships between key operating units within the group.
72. Industry indicators that allow comparison with peers.
73. Other financial indicators.
74. Characteristics of fixed assets employed (including licenses).
75. Efficiency indicators.
76. A discussion of corporate strategy.
77. Any plans for investment in the coming years.
78. Detailed information about investment plans in the coming year.
79. An output forecast of any kind.
80. An overview of trends in its industry; regulatory environment with regard to industry.
81. The market share for any or all of the company's businesses.
82. Social reporting (e.g., Global Reporting Initiative).
83. Overview of compliance with ecology law.
84. Principles of corporate citizenship.

Block 3: Board and Management Structure and Process

Component 5. Board and management information

Disclosure of:

85. The list of board members (names).
86. Details about the current employment and position of directors.
87. Other details: previous employment and positions, education, etc.

88. When each director joined the board.
89. The name of the chairman.
90. Details about role of the board of directors at the company.
91. A list of matters reserved for the board.
92. A list of board committees.
93. Names of all members of each existing committee.
94. The bylaws on other internal audit functions besides the audit committee.
95. Information about the ratio of in absentia and in person board meetings.
96. Attendance record for board meetings.
97. The list of senior managers not on the board of directors.
98. The backgrounds of senior managers.
99. The non-financial details of the CEO's contract.
100. The number of shares held in other affiliated companies by managers.
101. Policy on assessment of board of directors and on training provided to them.

Component 6. Board and management remuneration

Disclosure of:

102. The decision-making process for directors' pay.
103. The specifics of directors' pay, including the salary levels.
104. The form of directors' salaries, such as whether they are in cash or shares.
105. The specifics of performance-related pay for directors.
106. The decision-making process for determining managerial (not board) pay.
107. The specifics of managers' (not board) pay, such as salary levels and bonuses.
108. The form of managers' (not board) pay.
109. The specifics of performance-related pay for managers.
110. Size and composition of CEO's pay.