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**DOES THE CHOICE BETWEEN BANK LOANS AND BONDS  
AFFECT FIRM PERFORMANCE?  
Evidence from the Russian Federation**

Master's Thesis in  
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**ABSTRACT**

This study aims to examine the relationship between the choice of debt sources and firm performance. The financial data for the sample of 100 companies that are listed on the Russian stock exchanges was manually gathered and examined for the period from the 1<sup>st</sup> of January of 2004 until the 31<sup>st</sup> of December 2007. Cross-sectional analysis of the gathered data showed that debt structure affects firm value. Thus firms with public debt perform better than firms with private debt based on the market measure of performance – Tobin’s  $q$ . Additional analysis showed that firms with previous public history outperform those that initially make public offerings and those which rely on private debt, while another finding suggests that firms with initial public debt offerings experiencing higher return on equity. Finally, the estimation of the effect of switching from private bank loans to publicly placed debt revealed that after such substitution firms became much more leveraged and showed sustainable growth. However, based on the market measure of performance there appeared to be that these companies experienced a decline in their performance.

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**KEYWORDS:** Public debt; Private debt; Firm performance; Capital structure



## 1. INTRODUCTION

Attracting additional sources of financing is often necessary procedure for any developing business. Frequently, hard conditions of high competitive market make owners and managers count not only on internal cash flows and own funds but also on external financing. With use of borrowed capital the capacity of economic activity significantly broadens providing more effective use of own capital and as the result increase firm's market value. Of course, in perfect market conditions any capital structure should not influence firm's activity and its profitability (Modigliani and Miller 1958). However, in real market conditions corporations are often facing with different risks and imperfections which make the problem of forms and sources of financing of current importance.

There are three primary sources of debt financing for commercial firms: banks, non-banking private lenders and public debt offerings. Among most popular and accessible sources of financing are bank loans. Banks acquire sources from public and provide them to businesses including so called "mark-up" into the price of a loan and additionally requiring monitoring procedures and securitization or in other words collateral (Brealey, Myers 2003: 866-869). Many corporations are using such source in its activity and believe that just bank loans present optimal way of obtaining external financing. However, as banks are just providers of public investors' funds, the logical question arises: "why not to go directly to public for the debt?"

As international experience indicates, important role in corporations' capital structure starts to play issuance of debt securities. Debt security is a financial instrument stating the commitment of a borrower to return obtained funds from a lender in specified circumstances (Vernimmen et. al.: 2005: 485). This method of obtaining extra finances allows operating directly on the public market, communicating with investors in a straight line. The main advantage of bonds in contrast with general stock issues is in its possibility not to redistribute the ownership of a company but to accumulate additional funds from public. During the last decades the share of bonds took more than a half from all securities' issuance in the developed countries, which indicates the importance of corporate bonds as an alternative source of financing.

In fact not only huge corporations but small and medium businesses are resorting external public debt financing. During the last decades more and more entities are relying on public debt. There could be several reasons for that and all of them are different for each firm in each country but the fact is that debt financing became major source of external funds remains indisputable.

**Table 1.** Debt fraction in corporate capital structures in developed countries (Booth, Aivazian, Demirguc-Kurt and Maksimovic 2001).

Country	Time period	Total debt ratio (%)	Long-Term book debt ratio (%)	Long-Term market debt ratio (%)
Germany	1991	73	38	23
France	1991	71	48	41
Italy	1991	70	47	46
Japan	1991	69	53	29
U.S.	1991	58	37	28
Canada	1991	56	39	35
U.K.	1991	54	28	19

As table 1 indicates the total debt ratio in corporations' capital structures is at least more than a half in developed countries. Thus the understanding of the role of different sources of debt appears to be extremely important issues in modern corporate finance.

But as forms and ways of obtaining external finances are well known and widely used by corporations, the effect of its use remains somewhat uncertain. Many studies were aimed to reveal some correlations between capital structure, especially the use of debt financing and firm's performance. For example, some studies showed that there is a relationship between firm's capital structure and its investment spending as well as competitive behavior on the product markets (Rotemberg and Scharfstein 1990; Kovenock and Phillips 1997; Maksimovic 1990). As had been revealed by mentioned researches, debt capital significantly changes the structure of motivation of management and shareholders. Like that, it was argued that on imperfect markets debt financing and investments can give corporations strategic advantage among competitors. More formally, increase in investments can reduce marginal costs of production (see e.g.

Cortazar, Schwartz, Löwener 1998) and at the same time debt commitment can increase investment opportunities and vice versa. Thus, increase in debt financing can lead to an enlargement of production level, decreasing marginal costs and by these provide advantage among competitors. Such advantage can also be obtained by guaranteed long-term debt rather than short-term loans (Clayton 1999).

In middle 80's several financial economists argued that corporations may obtain some advantages from increased debt financing in oligopoly environment (Brander and Lewis 1986; Maksimovic 1988). In particular there is an opinion that increase of debt in firm's capital structure leads to more aggressive production strategies. Such behavior of a firm after increased debt financing is also known as limited liability effect, first discussed by Brander and Lewis (1986). In their work they argue that increased level of riskiness with higher level of debt can be transformed from owners and managers to creditors. In other words managers have liabilities that limited only by their compensation (salary) and shareholders are risking only by made investments. Higher level of debt in company's capital structure motivates shareholders to increase volume of production since in case of bankruptcy they will lose their investments, however in case of full debt repayment they will obtain full rights on all assets. As the result, shareholders are motivated to more aggressive behavior on market and increase the volume of production, which lead to bigger share of market on oligopoly environment and of course higher profits.

As one standpoint described in economic literature states that increased level of debt leads to more aggressive behavior and bigger market share, another economists argue absolutely opposite. For example, Opler and Titman (1994) found that in industry slowdowns high-leveraged companies lose their market share more, in contrast with those firms that are conservatively financed. Here main argument is that companies experiencing financial difficulties during slowdown of its industry start to sell assets and close investment projects, by what decreasing potential volume of production and as the result losing its market share. Such findings were obtained empirically and are hard to call in question.

Somewhat similar problem was also described earlier by Myers (1977) in form of “*debt overhang effect*”. He argued that significant increase in debt may increase the possibility of bankruptcy as well. In that case shareholders may lose investments made and hard debt financing may discourage them from further investments into production and marketing. As the result harder debt usage leads to decrease of investments into business development. In such situation there is also possibility for so called “effect of strategic bankruptcy”. Since increased financial vulnerability may push competitors toward predatory pricing. Competitors may reduce prices hoping that high-leveraged company will suffer from higher losses and go bankrupt.

All mentioned studies were aimed on estimation of the role of debt financing in firm’s performance and in general it can be stated that this role is significant. Either it can lead to significant growth and increase in value or down to bankruptcy. That is why the role of debt has to be learned more and that is what determines the frame of this work. An attempt to distinguish between debt forms was made in order to obtain an understanding of how different sources of debt can influence firm’s performance and its value.

### 1.1 Purpose of the study

This paper raises the question whether the choice between public and private debt has any implications for firm performance. In particular two goals are pursued:

- To examine the influence of different debt sources on firm performance and
- To estimate the effect of switching from private bank loans to publicly traded bonds.

Present study tries to find the answer for the problem of what kind of debt source is influencing firm performance more and under what circumstances what are the benefits from the different debt sources.

The unique data manually gathered by the author from the Russian market makes this research exclusive and significantly adds to the scientific knowledge in the area. To the awareness of the author there were absolutely no similar researches on the Russian market, which makes this work a provider of unique empirical observations for the

academic community. Sample of the empirical testing consists of one hundred corporations among of which 50 are relying on private debt financing – bank loans and 50 – on the public debt. Financial institutions, insurance companies and investment funds were excluded from the sample due to specific structures of capital. The period of estimations is four years, starting from the 1<sup>st</sup> of January of 2004 until 31<sup>st</sup> of December of 2007, which makes this study one of the latest on that topic. This period is also characterized by fast economic growth in Russian economy and covers the environment of vigorous business cycles.

Generally speaking, dividing the debt into private and public is basically comparing bank loans and publicly issued bonds. In this work under bank loans assumed all funds provided by commercial banks to corporations, including leasing and credit lines. And under issued bonds here is assumed a security that certifies loan relationships between its owner (investor) and loan taker (issuer).

Primary performance measures are Tobin's  $q$  and return on assets (ROA), as well as return on equity (ROE). Tobin's  $q$  is estimated as the market value of total assets divided by the replacement cost of assets. Such approach is frequently used in firm value evaluation (see e.g. Yermack 1996; Anderson and Reeb 2003). ROA is calculated as a net income divided by the book value of total assets and ROE is computed as net income divided by total equity. Some control variables are also used and discussed in more details in chapter five.

As long as main purpose is to reveal the relationship between firm performance and different sources of debt financing, additional goal is to examine the particular effect of switching from private to public debt. For that reason 25 corporations that switched from bank loans to bonds during the sample period were chosen. After the switch main performance ratios are compared so its effect could be revealed.

## 1.2 Structure of the study

The paper is structured as follows: first the main conceptual theories of the capital structure are presented for general examination of the topic. Theoretical framework from previous studies is presented next in order to reveal basic concepts in the examining issue. Further previous empirical evidences raise the discussion of coherence of the findings from different markets, followed by empirical part of the paper and conclusion.

The first chapter briefly describes the subject and its importance in the field. Providing background information on the topic it aims to introduce the research problem. Short description of data and scholarly approach to its examination is also provided in chapter one. Chapter two explains main theories on the capital structure and their empirical tests providing the general knowledge on the capital structure choice. The third chapter is devoted to existing models and theories on the debt structure while chapter four presents previous empirical examinations of those theories.

Data and methodology are described in chapter five in more details, while chapter six is presenting empirical results obtained from conducted tests and observations. Chapter seven concludes the paper suggesting some ideas for further research on discussed issue and brief summary of the study is then presented.

## 2. GENERAL CAPITAL STRUCTURE THEORIES AND THEIR EMPIRICAL TESTS

Optimal capital structure implies such combination of borrowed and own funds that will maximize the market value of total capital (Brealey, Myers 2003: 477-478). The search for such combination is a problem, the solution to which was attempted to be found by many researchers and scientists. Thus theoretical models started to appear in economic literature from the mid of the XX century. Literally the capital structure of corporation was examined from the side of debt and equity mixture and huge part of financial economic literature was devoted to the search of the best proportions of these two. As the result different concepts, in basis of which lay controversial approaches to the debt-equity choice optimization were developed. All of them represented by models that aimed to maximize the value of a company by capital structure management. On its behalf, optimization of the debt-equity combination is opening the road to the value maximization of a company and thoughtful structuring of debt as separate can improve the performance of a company and as the result positively contribute to the firm's value maximization.

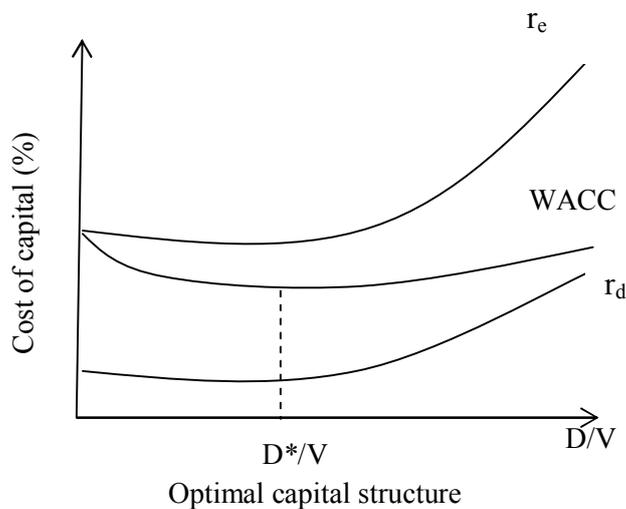
The description of the main capital structure theories is presented in this chapter while the last section suggests a summary of previous empirical studies aimed to check these theories.

### 2.1 Traditional approach and MM's propositions

Traditional approach was developed based on real practice and observations. The foundation of the traditional point of view is laying in costs of capital sources. There was generally agreed that cost of debt ( $r_d$ ) is lower than cost of equity ( $r_e$ ) and therefore, an increase in debt reliance can reduce the total cost of capital ( $r$ ). However, the practice shows that any increase of debt in firm's capital structure also increase the level of default risk and as basis of investments suggest for any given level of risk there is own level of return (Bodie, Kane, Marcus 2001: 160-161). Hence as level of debt increases, the risk of bankruptcy increases as well, requiring shareholders to expect higher level of

return canceling in part or totally the effect of usage of cheaper debt. Traditionalists argue that there is an existence of the point where the combination of debt and equity is minimizing the weighted average costs of capital (WACC) and consequently maximizing the value of corporation. The illustration of this approach is presented on the following graph. Here and further  $D$  is denominated as market value of debt and  $V$  – market value of total capital.

**Graph 1.** Traditional approach to the capital structure.

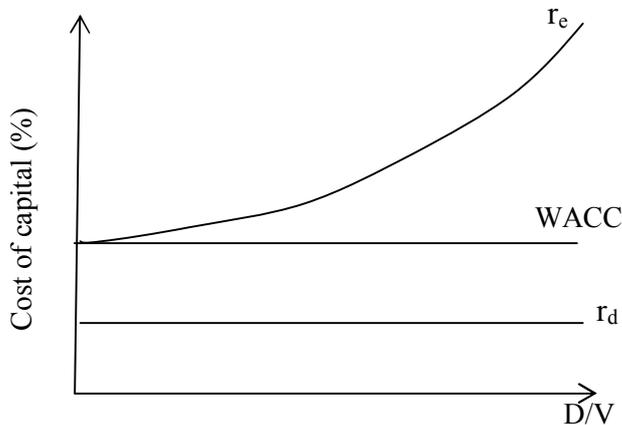


According to this model, corporations with certain amount of debt ( $D^*/V$ ) in their capital structure are valued higher than those that are not using debt. However, with expansion of reliance on debt financing and as the result of increased risk, higher requirements of return by shareholders cancel the effect of cheaper debt usage resulting an increase in both costs of equity and costs of debt, which naturally leads to overall increase in cost of capital (Vernimmen et. al.: 2005: 659).

Traditional approach based on costs of capital sources seemed to explain the problem of debt-equity use unless Franco Modigliani and Merton Miller (MM) (1958) published their revolutionary work devoted to the capital structure problem. According to their model different combinations of debt and equity should not affect the market value of a company. In other words, there is no relationship between the cost of capital and firm's value and therefore there is no optimal capital structure as well as it is not possible to

increase firm's value by changing the mixture of debt and equity. Graphically MM's proposition 1 can be illustrated as on the graph 2.

**Graph 2.** Modigliani and Miller (1958) model of capital structure irrelevance.



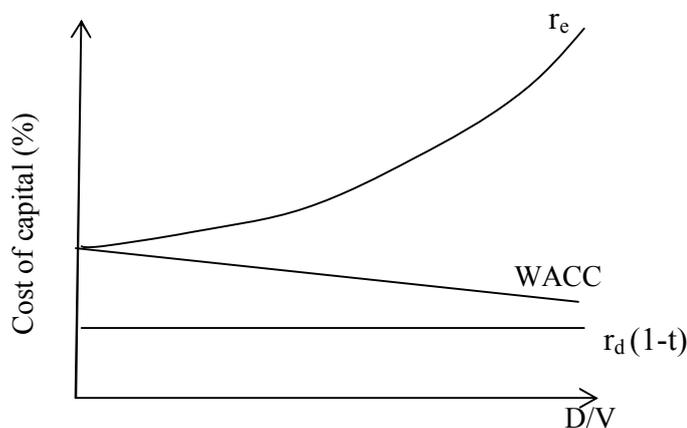
Thus the value of levered firm should be exactly equivalent to the value of unlevered firm all other being equal:  $V_U = V_L$  and the value of assets and investment are determined only by their values. The proof for such statement was obtained with the help of arbitrage theory and claims that in case if the value of levered company is higher than of unlevered, investors would sell part of their stocks of levered company and use the proceeds to buy unlevered firms filling up the lack of financing with debt. Simultaneous operations with stocks of levered and unlevered corporations according to arbitrage theory would lead to price adjustment and at the end the prices of companies would be on around the same level.

But in spite of all coherences in MM's model the practice shows that this theory remains only a theory. The main reason for that is in the assumptions made by MM. While developing the model, the conditions of perfect market were taken as a basis resulting appearance of such assumptions as: absence of taxes, no transaction costs, perfect information, managers' complete representation of interests of shareholders, stability of financial markets and its frictionless, absence of bankruptcy costs, and so on. In addition MM's model assumes that companies can issue only risk-free debt and equity, while there is no difference between private and corporate debt financing.

Obviously such conditions do not characterize the real world markets and the use of the theory on practice remains unclaimed, nevertheless the model (Modigliani and Miller 1958) brought the new understanding of capital structure problem and opened the road for further studies.

Trying to move toward real markets MM published their second study on capital structure theme where corporate taxation was introduced. Indicating that the absence of taxation in MM's model was the most unrealistic assumption there was found that as higher corporation's reliance on debt financing, the higher firm's market value (Modigliani and Miller 1963). According to the correction, a company that is 100% financed by borrowed capital, would maximize its value. Such statement determined by the U.S. taxation system peculiarities where dividends should be paid from after-taxes profits, while interest on borrowed capital is deductible from the tax base. Thus financial leverage has negative relationship with cost of capital and positive relation to firm's value. Graph 3 illustrates MM's model with corporate income taxes.

**Graph 3.** Modigliani and Miller (1963) model with corporate income taxes.

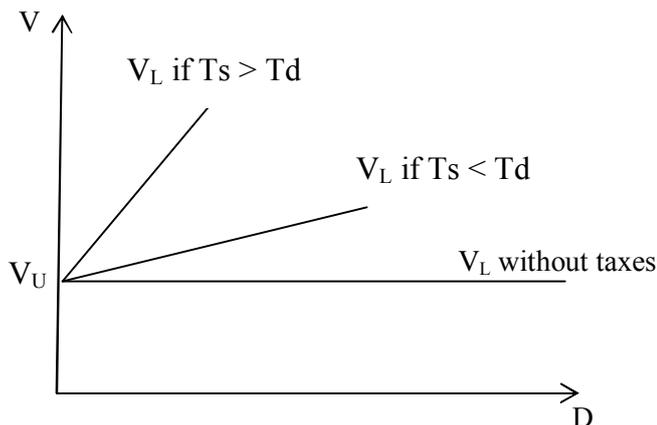


As sensible improvement in capital structure theory was achieved with the second MM's work, in fact a company with 100% of debt in its capital structure is rather nonsense than a common practice. Moreover 100% of debt is even theoretically unreal and here is the question more about the debt proportion maximization. All these indicate that even with relaxation of one significant assumption as corporate taxation the theory

cannot be applied in the real world. In fact not only corporations are enabled to pay taxes on incomes but also private investors – holders of stocks and other corporate securities. Therefore, MM's model with corporate income taxes considered as one sided until Miller (1977) improved previous models incorporating taxation of private capital holders.

According to Miller (1977) personal income taxes may affect investors' behavior since the actual decrease of profits take place. Hence for example taxes on dividends may differ from capital appreciation taxes or income taxes for shareholders may be lower than for bond holders (like in U.S. tax code). In case if taxes on dividends ( $T_s$ ) and taxes on interest ( $T_d$ ) are equal there would be no difference for investors to buy stocks or bonds and companies would receive the same tax shield as there are no personal taxes. But as soon as these two tax rates are different the value of capital would change. In that case firm's value has a positive relationship with tax rates however in case if taxes on dividends are higher than taxes on interest the value would significantly increase with any additional debt financing and vice versa. Graph 4 demonstrates all three possible situations with different tax levels.

**Graph 4.** Miller (1977) model with corporate and personal income taxes.



Hence it is possible to make the following conclusions concerning MM's models:

- Without taxes the market value of a company does not depend on its capital sources. Optimal capital structure does not exist.
- With corporate taxation and no personal taxes or with personal taxes equal to corporate, the value of levered company is higher than the value of unlevered firm for the quantity of tax shield. Optimal capital structure might be obtained with 100% of debt.
- With personal taxes different from corporate, the value of a company increases with any additional use of debt. Dependence of the value on tax levels is presented on graph 4.

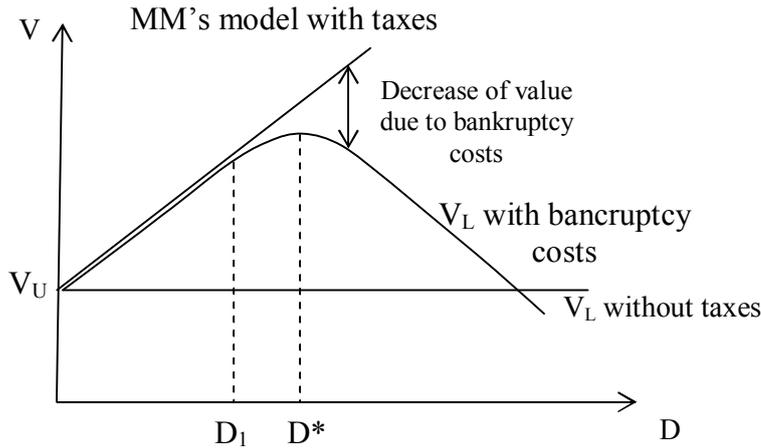
All three models provide a deep understanding of the capital structure problem however they do not hold on the real markets. Thus MM's theories do not take into account agency costs or in other words the conflicts of interest between shareholders and managers or between shareholders and creditors. As well as bankruptcy costs are considered to be zero in perfect markets but on practice such assumption is too far away from the reality. All these drawbacks of MM's models motivated for the search of another capital structure model that can be utilized on the real markets however, most of the developed models are based on relaxation of some assumptions made by Modigliani and Miller. It appeared that many of those assumptions do not significantly affect the final results nevertheless some of them do. Hence for example introduction of bankruptcy costs notably adjusted MM's theory.

## 2.2 Trade-off theory

The model that adds bankruptcy costs to existing MM's hypothesis with corporate taxes was called the "*trade-off*" theory. It suggests that while a firm is increasing the debt financing it benefits from the tax shield revealed by MM (1963) but such benefits can be obtained only until the specific point after which any additional debt increases the cost of capital by increased risk of financial distress and costs associated with it (Brealey, Myers 2003: 497-498). Among the first who added to MM's hypothesis other costs were Kraus and Litzenberger (1973). They presented a model where tax benefits and bankruptcy penalties are valued in a single period. As the result there was found

that the value of a firm is increasing only until the costs associated with riskier activity are lower than benefits obtained from the tax shield (Kraus and Litzenberger 1973). In other words the optimal capital structure is achieved when marginal tax benefits are equal to marginal bankruptcy costs. Graph 5 illustrates this point as  $D^*$ .

**Graph 5.** Comparison of the MM's tax case with the trade-off model.



As the graph above indicates the value of a firm is determined by a trade-off between tax benefits and arising costs of financial distress from increasing debt reliance. In contrast to MM's model with taxation the trade-off theory states that the optimal capital structure of a levered company cannot consist of 100% of debt however, it is also agreed that the value of unlevered firm is lower than the value of a company with right proportion of debt.

According to the trade-off theory the optimal capital structure can be achieved by slow increase of debt financing. This will negatively relate to the cost of capital (WACC) that will decrease with any increase of debt but there is not specific value of the debt ratio but a range of values that provides managers with some freedom in financing choice.

Of course with small leverage the probability of financial distress is low and with heavier use of debt this probability increases however, there is one more aspect that can significantly worsening pre-default situation of a high leveraged firm. It is connected to the agency theory as a possible conflict of interests between managers/shareholders and

creditors. These agency costs are determined by the rejection of the idea of firm value maximization by shareholders and pursuit of own interests during the pre-default condition. Often such actions like for example higher dividends, change of accounting methods, and financial reports corrections, new issues of debt securities are worsening the situation and increasing losses of creditors (Brealey, Myers 2003: 503-505). These actions are often taken by managers and shareholders and usually decrease firm's value even more but using financial and operational instruments they are able to redistribute the losses in that way, so the biggest part would lay on creditors.

Thus it is possible to make several conclusions from the trade-off theory:

1. Presence of particular proportion of debt in firm's capital structure is able to increase its value;
2. Over-use of debt financing is decreasing firm value, negatively influencing overall financial condition;
3. For each firm there is its own optimal proportion of debt in the capital structure but it is assumed that companies within one industry have similar capital structure due to overall similarity in the assets structure, level of risk, etc.

The trade-off theory provides deeper understanding of the factors that influence the optimum of a capital structure nevertheless, this theory is not uniquely capable to determine the optimal proportion of debt and equity due to some other external effects that influence firm value in the real world. This is the reason of existence of other alternative theories that are described below.

### 2.3 Signaling models based on asymmetric information and pecking order theory

In MM's models there was assumed that firms and investors have the same information and decisions are made based on symmetric information. This means that market is able to obtain information about firm's future cash flows, which making possible to estimate correctly the value of its capital. Yet on practice it is easily to notice that the degree of information possession between firms and investors is different. This can be easily

proved by stock prices movements after announcements made by corporations. Therefore, there can be stated that market prices do not present full information about companies' value due to firm's monopoly on this information and managers are able to send signals to the market through making financial decisions such as capital structure choice or dividend policy. Hence such asymmetric information was taken into consideration in developing signaling models.

One of the models based on asymmetric information was suggested by Myers and Majluf (1984). They assumed that managers are acting only in interests of already existing shareholders, in other words "*old*" equity holders. They also suggest that in case if investors do not have full information about a company than financing good positive NPV projects by issuing new equity would make these investments less attractive for existing shareholders. At the same time other sources that are less dependent on information asymmetry like debt would save project's profitability and attraction. More formally if a firm is expecting significant growth after taking a project and thinks that current market price is undervalued than equity financing would imply that profits and capital gains obtained from the undertaken project would have to be divided between old and new shareholders. Such strategy is obviously unfavorable for existing stockholders. In contrast if a company supposes that future profitability would be lowered by higher costs associated with higher competition on the market and current stock prices are representing current situation than financing new investment project would be more reasonable with new equity issue, so the losses from capital depreciation could be partly relayed on new shareholders. As much new equity could be raised so many losses could be relayed on new equity holders.

Summing up it is possible to distinguish between two possible strategies of a capital structure choice. First, if a company has a potential for a price appreciation it is irrational to use new equity for financing means. Second, if there are no growth perspectives new equity issues would maximize the value of capital. From the investors' point of view it is possible to notice these signaling actions. Especially when a large profitable corporation announces the new issue of stocks than this should inform investors about probable future problems and financial difficulties of this company.

Myers and Majluf's (1984) model perfectly explains price declines after new equity issues announcements.

Arguing with the trade-off theory Myers and Majluf (1984) suggest that a company should maintain some reserve of available borrowing power sources in order to use it when the market value can be increased. Therefore, the optimal debt ratio would be lower than stated in the trade-off theory. This point is marked as  $D_1$  on the graph 5. This reveals potential inconsistency in the trade-off model in form of static approach. The model does not consider future needs in financing and therefore could not be used as a forecasting tool for the capital structure. In contrast hypotheses by Myers and Majluf (1984) provide dynamic settings for asymmetric information, which often arises in the future.

Based on the model of Myers and Majluf (1984) and Miller's model with corporate and personal taxes (1977), Myers (1984) formulates the distribution of financing sources in hierarchy order that was called the "*pecking order*" theory. There he proves that retained income is the most favorable source of financing among other sources. In case if internal funds are not sufficient firm will issue debt securities followed by convertible bonds and finishing this pyramid with new equity issues. According to Myers (1984) optimistically tuned managers would issue bonds if there is a need of bigger funds than internal cash flows in order not to sell undervalued stocks. But at the same time pessimistic managers would also issue debt securities in order not to send bad signals to the market. New equity issues would be as a last resort strategy.

The main advantage of the pecking order theory is in its possibility to explain why big stable and profitable corporations do not issue debt as suggested by the trade-off theory. Internally generated funds of those companies are sufficient and they are not needed in other less preferred financing means. Previous empirical studies confirmed this statement but on the other hand there are many studies that provide empirical arguments for this or that capital structure theory. Thus the main dispute swing about the trade-off and pecking order models as the most close to the real markets conditions capital structure theories. Brief discussion of the most interesting empirical evidences on that topic is presented in the following section.

## 2.4 Empirical comparison of the capital structure theories

When there is more than one coherent and scientifically proved theory in the field, empirical tests are the only way to determine the most reliable model. Trade-off and pecking order theories are contradicting with each other and suggest absolutely different directions for the optimal capital structure choice for management. Many studies were aimed to examine practical application of those models however only not a single one provided incontrovertible evidences supporting one of the theories. Nevertheless, all previous studies in the field are contributing to the understanding of the capital structure formation in the real world conditions and therefore worth mentioning.

Hence among the studies that primarily support pecking order model is the work by Shyam-Sunder and Myers (1999). They examine 157 U.S. companies for the period of 1971 to 1989. The regression's formula used is very simple defining change in the long-term debt as dividend payments plus net capital expenditures plus net changes in working capital and minus operating cash flows after interest and taxes. The pecking order predicts that firms with positive financial deficit will more likely issue debt. Empirical tests sustained this hypothesis. As appeared to be the pecking order theory has more explanatory power for corporate financing decisions however the study (Shyam-Sunder and Myers 1999) could not reject the basis of the trade-off theory. Finally, Shyam-Sunder and Myers (1999) conclude that if there is a target optimal capital structure, managers are not hurrying to form it.

Particularly to test the pecking order theory was aimed the study by Frank and Goyal (2003). They used the same approach as Shyam-Sunder and Myers (1999) but for the much larger sample for the period of 1971 to 1998. The results showed that pecking order model receives less support when the sample is bigger and declines over the time. Moreover, there was found that small firms do not follow the pecking order, especially post 1990. Such results occurred mainly for two reasons. First, most of the small firms became publicly traded during the 1980s and 1990s. Second, tests of large companies showed that they tend to prefer more equity than debt over time. All these weaken pecking order implications but not necessarily completely reject it.

On the other hand in spite of the main argument of the trade-off theory concerning the optimal level of debt, determined as equivalence of marginal tax benefits and marginal bankruptcy costs, the study by Graham (2000) reveals that large, liquid, and low risk companies are very conservatively levered. Empirical tests showed that typical firm is able to almost double its debt proportion until the marginal tax benefits will start to decline. Moreover, in case of enlargement of debt reliance the firm would appreciate its value to 7.3 percent (Graham 2000: 1903) which is extremely significant amount. Such paradoxical interdependence appeared to be persistent but for those companies some peculiarities in form of assets construction (more intangible assets) and substantial growth opportunities were found. Nevertheless, as the sample data consists of 87,543 firm-year observations from the U.S. market for the period of 1973 to 1994 the findings are more than reliable and empirically support the pecking order theory.

The same debt-size relation was found by Fama and French (2002) who collected the data from the U.S. market for the large period of 1965 to 1999. The study revealed that more profitable firms have less debt, which absolutely supports pecking order and denies trade-off models of the capital structure. However, at the same time observed large equity issues of the small growth companies denies the pecking order. Thus the study (Fama and French 2002) rejected to reveal determinants of such results, whether they are due to trade-off or pecking order, or some other factors.

The study by Rajan and Zingales (1995) was aimed to establish whether the capital structure choice in different countries is similarly collated with factors influencing it in the U.S. In order to reach this goal they used the data from the biggest economies namely G7-countries for the period of 1987 to 1991. From thirty to seventy percent of the companies listed in every country were examined and the following correlation factors were defined: tangibility of assets, firm size, profitability, and market to book ratio.

The findings confirmed that correlation between leverage and factors identified as important for the U.S. firm is similar across examined countries. However Rajan and Zaingales (1995) found uncertain evidence for size and leverage correlation for several countries and moreover, negative correlation of profitability and debt/asset ratio was

also observed. Interesting evidence was obtained from Germany where legal regulations making liquidation very costly and presuming that firms should wary debt, there was found that large firms have substantially less debt than small firms, suggesting that trade-off theory does not apply there as well.

In a way continuation of the Rajan and Zingales's (1995) research is the study by Wald (1999). He examines the data from the same countries (G7) but uses more variables that might correlate with leverage. Thus Wald (1999) additionally introduces riskiness and growth opportunities as a factors correlated with capital structure. Mainly the results are confirming those that were obtained by Rajan and Zingales (1995) however with few features. Unexplainable positive correlation between riskiness and debt ratio was found in Japan, United Kingdom and France. None of the capital structure theories can really explain such dependence.

Finally, Brounen, Jong and Koedijk (2006) broaden the evidence in the field by providing results from the survey of 313 CFOs from Germany, France, U.K. and Netherlands instead of cross sectional regressions applied in the studies mentioned above. Briefly, obtained results suggest that static trade-off model receives almost no support among European managers, however around 10% of the sample have strict target debt ratio. As appeared financial flexibility is the most important factor affecting the capital structure choice but is not driven by the pecking order.

Based on the previous empirical studies discussed in this section it is possible to conclude that none of the capital structure theories can be supported by 100% on practice. Even though there are some features that are driven by the pecking order and some by the trade-off model in general managers are making similar choices in capital structure around the countries and do not definitely follow this or that theory. Thus the general result may be concluded in the statement that both theories have strong explanatory power like negative correlation between profitability and debt ratio for the pecking order model and equity issues by small firms for the trade-off model but both of them cannot provide unique determinants of the optimal capital structure in the real markets conditions.

### 3. THEORETICAL FRAMEWORK

A huge amount of studies are dedicated to the capital structure problem. Most of them are focused on the problem of choosing between debt and equity financing and still even more than 50 years after Modigliani and Miller's (MM) theory of capital structure indifference (Modigliani and Miller 1958) came out the understanding of that choice is limited. In their work they argue that firm's value does not depend on its proportions of use of debt and equity and entirely determined by its future income. However, in real imperfect world the capital structure does influence a firm's performance and therefore the proposed theory is relevant only for perfect market conditions. The question of how much of debt should be used by an enterprise and what is the impact of that choice on corporate performance partly remains unanswered. In any case if taking any positive Net Present Value (NPV) project a corporation could not finance it by own means, it goes to the debt market and here arises the problem of choosing the form of debt. This question comparing to the problem of debt/equity choice received only a few examinations and little empirical confirmations.

It appeared to be that there is no common opinion in the academic community in the problem of selection between public and private debt and its influence on firm's performance. One side of financial economists argue that public debt has significant advantage over private agreements, while others state that private debt contracts are irreplaceable for commercial companies. Both of these views have the right to exist, unless one of them will be denied by empirical evidences. But for more than 20 years there were several tries to support or refute suggested theoretical models, however the results appeared to be mixed and controversial. Thus it is worth to mention all available theories on the issue of public and private debt selection.

It is possible to divide all available theoretical models on three parts: models that based on information costs and monitoring incentives, models based on efficiency of renegotiation and liquidation and models that discuss managers' incentives while choosing debt source. The remainder of this literature review is divided on subsections where each of effect sides are discussed, following by summary of described models and concluding with examination of previous attempts to empirically test these theories.

### 3.1 Models based on monitoring function of banks and information asymmetries

Among the first who raised the question of capital structure after MM's (1958) theory from the point of view from debt sources selection were Leland and Pyle (1977). The question raised in their study was an explanation of existence of financial intermediaries and information asymmetry. During that time offered theories were not able to provide reasonable explanation for existence of institutes that hold one class of securities and sell the other types of securities, like deposit certificates and bank loans for example. And clearly under no transaction costs such institutes are useless since entities can avoid additional costs charged and borrow directly from public. Transaction costs on behalf could explain financial intermediaries, but such explanation would not be sufficient in many cases. The suggestion was made in the model (Leland and Pyle 1977), where informational asymmetries act as a possible reason of intermediaries' existence.

The information asymmetry raises two substantial problems while a firm tries to borrow directly from investor. First, opening information about a company, a purchaser may be able to open or resell such information without any benefits to a company. The second problem in selling information is connected to its credibility. Investors are almost helpless in indentifying whether the information is good or bad on fact, brining constrains in price values of such information. All these leads to conclusion that made Leland and Pyle (1977) that financial intermediaries perform as a third party through which information can safely transfer. Therefore, authors argue that firms with high degree of information asymmetry will borrow from private sources, while those with lower information asymmetry would prefer public debt placements.

Diamond (1984) develops a model where he examines the delegation of monitoring to commercial banks. He argues that bank financing can be less expensive than borrowing from the public market in terms of possible adverse selection and moral hazard that can occur when going into public debt. Banks can mitigate these problems and provide better, more efficient and less costly monitoring facilities than any other single lender.

Further Diamond (1991) publishes more extended model on the problem of debt source choice. More formally, he provided a theory of bank loans demand and of the banking

monitoring role. The key point in the model is the problem of interactions of borrowers' reputation and monitoring. Main results are consisting of the finding of positive relationship between both credit quality and growth opportunities and reliance on bank debt. As suggested by the model, the highest quality firm will use public debt and borrowers with middle credit ratings will more likely rely on bank debt. However, low quality firms have nothing to lose if they reveal bad information to the market or alternatively if they open bad news to the monitoring institutes such as banks. These firms would probably choose public debt since the costs of bank monitoring outweigh the benefits. The interesting implication of the Diamond's theory is that if there is a moral hazard occurrence, the new debt issuers would start from monitored borrowings, in other words private debt, in order to graft their reputation and later would switch to publicly placed debt. Achieved reputation could be value enhancing during the process of going public and will be treated in predictions made by investors while estimating future actions of a company without monitoring.

In contrast the study by Rajan (1992) presents owner-managed firm taking a project and relying on either bank financing or arm's-length lenders, in other words bonds. Here the division between these two sources is made on short-term and long-term contracts as well as in Diamond's (1993) study and the public debt is assumed to be only long-term loan. Rajan (1992) argues that lender in form of bank will control the borrower's decisions and will continue to support the project only if it has positive net present value (NPV). In contrast, borrowing from public can solve the problem of control and interference in decision making by banks. According to main finding of the paper, such contract may increase the owner's incentive to put more effort into the project than do either short or long-term bank contracts.

One more interesting conclusion made in the paper (Rajan 1992) is about correlation of the quality of a company and its choice between public and private debt. As argued, the highest quality firm will issue only public debt, as well as low quality company will do, while medium quality corporation will borrow from banks. Such distribution is based on the statement that the possibility of being liquidated is higher for low quality company and, therefore the costs of bank monitoring outweigh its benefits.

Combining these two studies (Rajan 1992; Diamond 1993) described above, it is possible to conclude that evident benefits from bank financing are rather ambiguous. Monitoring and controlling have to be weighed against the possibility of alteration in the management's motivation or liquidation of the project. By using public debt in firm's capital structure, which is generally long-term, it is possible to prevent the bank's willingness to close the project as well as motivate management to put more effort applied to the project.

Another sustainable theory was suggested by Sharpe (1990), where he also argues about doubtful benefits from bank loans. According to his arguments, banks learn more about their borrowers' characteristics, resulting appearance of asymmetric information. Such asymmetry potentially can create a monopoly power of banks. For example, in long customer relationships between a company and a bank, the last may not to be motivated to offer lower rents due to such monopoly power over borrower's information. However, due to market competition, rents should be lower at the initial period or in other words for companies that just entered debt relationships with a bank. As the result, low quality firms would employ a greater proportion of capital, which proposes ineffective capital allocation. And at the same time, high quality corporations would pay higher rents due to the informational capture by their banks. Competitive selection of customers makes almost impossible for one bank to interest another bank's good clients without attracting undesirable ones as well.

The model (Sharpe 1990: 1071-1073) reveals these offsetting costs that may prevent companies to borrow exclusively from banks. One possible solution of these costs might be also found in diversification of debt sources by issuing public debt, for example.

In one more paper by Diamond (1993), the author develops a model of the selection process of debt's maturity. Comparing long-term and short-term debt contracts, the investigation of its influence on the future firm's performance is provided. As the model describes three dates in time 0, 1, and 2, where long-term debt is issued on date 0 and matures on date 2, and short-term debt is a single period, the author argues that choosing between these contracts may affect the borrower's future business and provide more flexibility and safety if chosen right.

In more detail, after signing any debt contract on competitive debt market, the lender is interested in obtaining future income from that contract, which depends on future cash flows of the borrower. In case of unfavorable conditions and insufficiency of cash flows, the borrower cannot repay the debt in full and the lender unwilling to take losses will take control over firm's management or call the assets to be sold in order to cover given debt. In other words, this means liquidation of the debt holder and the greater proportion of short-term debt in corporation's capital structure, the greater the possibility of that scenario (Diamond 1993: 342).

The main arguments for such assessment are provided in Diamond's model very thoroughly. Summarizing it, when a firm undertakes short-term debt contract, let's say in period 0 and has to pay it back in period 1, as described above, the information on its performance is limited only to one short period. Borrowers who receive very low performance ratios are liquidated (Diamond 1993: 343). In contrast, when a corporation signs long-term debt contract that last from period 0 until period 2, even when bad news arrive, the possibility not to be liquidated is higher, since the total economic value of financed project is higher without liquidation as there are still time for obtaining additional sources, either by attracting other short-term debt, in other words refinancing or improving project's cash flows in future (Diamond 1993: 343). In case of existence of only short-term debt in corporate capital structure such refinancing is almost impossible and management is deprived of possibility of debt restructuring. Therefore, the mix of long-term and short-term debt can improve corporation's investment decisions by limiting lenders to take actions of liquidation.

The issue of effective monitoring and consequently more effective decision making was also raised by Rajan and Winton (1995). As they argue, loan contracts must be structured to increase the lender's motivation to monitor since better monitoring, according to authors, provide effective decisions by banks while examining a loan contract. Provided model develops characteristics of loan contracts that can improve incentives to monitor. They are covenants and collateral. Banks are using less their monitoring function in short-term contracts and as the result lead to extensive power of lenders in terms of excessive liquidation. Covenants are constraining the lender and ensure borrowers that the liquidation will take place only in case of violation of these

covenants. The model also suggests that private debt in terms of covenants exceeds public debt due to higher easiness of contractual negotiations between private lender rather than public lender and borrower.

On behalf of collateral the model (Rajan and Winton 1995: 1135) suggests that its size should positively correlate with the financial situation and possibility of financial distress of a borrower. As the result, the paper adds to the existing literature that proposes bank debt as a much safer instrument rather than public debt.

Another interesting approach to the problem of capital structuring was suggested by Yosha (1995). He argued that high quality companies will use bilateral credit agreements instead of going into public debt market. According to his model these high quality and creditworthy firms are facing high costs of information disclosure and therefore would prefer bank debt where such information is saved between bank and borrower. Otherwise, small and medium sized risky entities have nothing to lose going into public debt market, while the information they open to this market is not damaging them.

Such interesting point of view is somewhat inconsistent with Diamond (1984, 1991), where it is argued that big high quality firms would issue more public debt, while middle quality firms would most probably use private debt. The argument is concluded in that high quality companies may use their reputation while going into public markets, however, the counterargument made by Yosha (1995) is that it is not the firms that are rejected by capital markets but the capital markets are rejected by high quality companies that are hesitant to reveal private information. However, recent research by Denis and Mihov (2003) empirically tests the determinants of the choice among public, bank, and non-bank private debt for a sample of 1, 560 debt financing observations. Thus, there was found that the choice of debt source is mostly connected to the credit history and credit quality of the borrower. The highest credit quality companies seems to rely mostly on public debt, while the less quality or in other words the most riskier firms are using non-bank private loans. At the same time, middle credit class corporations borrow from banks. Such distribution is consistent with Diamond (1991) where the reliance on bank borrowing depends on the firm's credit quality.

One of the recent simple economic models of financial markets and corporate capital structure was suggested by Bolton and Freixas (2000). They hypothesized that while issuing equity in order to raise capital firms face high costs associated not only with organizational fees but also with informational dilution. Trying to reduce these costs companies are issuing bonds or signing loan contracts with banks. In turn, bank loans are more efficient in terms of flexibility during financial difficulties of a borrower, however are more costly than bonds issues due to intermediation costs.

In their model (Bolton and Freixas 2000: 326-327) all firms are divided into three segments: (1) small young riskier companies that are either unable to raise capital by issuing equity or facing some constraints to do it; (2) medium quality firms that are able to borrow from banks; and (3) mature safest firms that are able to choose between source of financing either from banks or bonds issues or by equity placements. Such segmentation is appropriate for most of the markets, however the absence of junk bonds makes this equilibrium more appropriate for European market where only safest and mature corporations issue public debt rather than for the U.S. capital market.

As the result, the choice in favor of bank debt would be done only in case of high demand for flexibility in loan contracts. Such demand is most likely to be relevant for small risky firms for whom the possibility of financial distress is higher.

### 3.2 Models based on efficiency of renegotiation and liquidation

Continuing research on the topic of tradeoffs between benefits from bank loans and bonds the second side of influence arises. Thus efficiency of renegotiation and liquidation under different debt contracts received attention from the academic community. Berlin and Loyes (1988) for example presented a model of a firm's choice between these two sources of financing: loan contracts with monitoring by financial intermediary and loan contracts with no monitoring - bonds. Using several characteristics of a firm, such as credit ratings, financial condition, etc, economists establish a function of these parameters in order to examine differences between two alternatives available to a firm that chooses sources of finance.

The results were different from previous studies and latter were argued by several alternative theories. Nevertheless, Berlin and Loyes (1988) state that bond contracts tend to be either too strict, constraining the management in taking good positive NPV projects or too loyal, allowing managers to continue running negative profits projects. From the other side, authors also argue that bank monitoring policies provide more efficient liquidation strategies, however with additional costs. They state that firm's choice between too harsh bond contracts and costly delegated monitoring depends on a company's characteristics such as production technologies and information technology. Suggested model, however, do not provide a clear answer on the question of optimal source use.

The capital structure of financially distressed company was also examined by Gertner and Scharfstein (1991). In their study they also state that publicly issued debt may impose some problems and as the result lead to inefficient decisions during financial difficulties. This problem according to authors can lead to underinvestment when bank debt is senior or public debt is short-term. Similarly, the problem of overinvestment may occur when bank debt is junior and public debt is long-term.

Significant contribution was made by Gertner and Scharfstein (1991) in terms of examining the possibility of renegotiation of debt terms under public contracts. Such possibilities include the exchange of previously issued bonds on the new ones. As they argue such offers can be used however, do not lead to efficient investment policies. So, financial distress may result inefficient operating policies even if banks are perfectly informed and renegotiation with public lenders is possible.

Chemmanur and Fulghieri (1994) developed a theoretical framework on the issue of bank debt benefits. Their model suggests that banks have advantage over other lenders in form of flexibility and easiness of renegotiation in case of financial distress. The main argument for that is concluded in willingness of banks to develop long term relationships with borrowers since they are themselves are long-term players on the debt market. Therefore, under financial difficulties of a borrower banks provide better decisions about future actions in a certain circumstances. Thus general point is that publicly placed debt is unable to make such efficient decisions like banks and as the

result will call for liquidation in case of impossibility to pay on its debt by a company, while under private loan contracts banks may decide to restructure the debt and provide additional financial sources in order to support distressed firm. Following this logic firms that are more exposed to financial distress are relying on banks debt even if the interest rates are higher on those contracts, while more stable big companies will borrow directly from public benefiting from lower rents.

### 3.3 Models based on managers' incentives

Another motivation for usage of private debt was supplied by Stiglitz (1985). In his paper he argues that in case if a company is not managed by its owners than managers might not always follow interests of shareholders. Thus, commercial banks may perform as a control function over capital usage. Public lenders are not able to provide such control function due to interest constraints. As a matter of fact, they are interested in the end of process when they will receive all interest payments and borrowed sum. From the other hand, managers that connected with bank loan contracts have to respond to requirements and demands of their banks and as argued by the author, this may assure shareholders from incorrect or improper actions of managers.

As Stiglitz (1985) was mainly aimed on the ownership differences and its affect on firm's performance, Besanko and Kanatas (1993) are considering in their study entrepreneurs in general that are choosing sources for project financing. As the result, they found a negative trend between the amount of external financing and managers' incentives for improving their effort on the project. The main argument is that any external financing reduces the overall payoff from a project and therefore, decreases motivation for additional efforts from managers. However, with monitoring features provided by bank loans, entrepreneurs' effort increases and consequently improves the project's probability of success. Thus this study also adds to existent literature on the advantage of bank relationships.

Bolton and Scharfstein (1996) suggested a theory, which describes the influences of debt structure on managerial performance. They focus on two main aspects: the

determinants of the number of creditors and dependences of optimal capital structure on firm characteristics such as credit quality etc.

First, they argue that an optimal debt contracts provide benefits of mitigating of strategic default and reduce costs in case of liquidity default. According to Bolton and Scharfstein (1996) debt structure affects the price at which creditors can sell collateral in case of default. Thus if there are many creditors, each of whom is interested in profit maximization, the buyer of collateralized assets would have to gather many of them in order to agree on its price. Therefore, following a strategic default, managers would have to pay more for their asset in order to prevent lenders from liquidating the asset when there are many creditors than when there is only one. As the result, borrowing from multiple creditors should prevent managers from strategic default because of lower payoffs from it.

Finally, an optimal debt structure should stabilize two aspects: discouragement of management from strategic defaults and costs decrease in case of unavoidable defaults. The model (Bolton and Scharfstein 1996) suggests that lower credit quality firms will borrow from a single creditor, while low-default risk companies will tend to go into debt with several creditors. The results could be interpreted as a selection process between bank loans and bonds. Thus borrowing from a bank is more beneficial for small, risky, unrated firms, while public debt is more attractive for large, good quality companies.

### 3.4 Summary and comparison of obtained theories

As can be inferred from the discussion above all theories are different and as being mentioned before have their right to exist. Trying to somehow summarize them it can be stated that with few exceptions it is generally agreed that reliance on public debt is positively related to firm's size, growth opportunities, reputation, and monitoring costs. On behalf of private debt one might argue that efficiency of renegotiations and liquidation value are among the most important reasons for reliance on that kind of debt. However, as theoretical models claim, managers' incentives are also playing not the last

role in debt source choice. Thus private debt and its monitoring can serve as additional stimulation for managerial effort on project performance.

But as all these models are more or less clear they remain only theories with significant assumptions that may not hold in real world. Therefore, empirical examination and check of the theories play significant role in academic society. The next section describes available empirical test of the problem of selection between public and private debt. It has to be mentioned that it appeared to be much less empirical studies on the issue than theories. This makes present work more contributable to existing scientific knowledge.

#### 4. PREVIOUS EMPIRICAL STUDIES

The empirical studies are also dividable on counterarguments but in opposite to theoretical framework they are separated on two blocks: confirming or denying the benefits from the use of public debt and confirming/denying the benefits of private debt. Table two presents short description of these studies, while in the next part more detailed discussion is suggested.

**Table 2.** Previous empirical evidences from the field.

<i>Panel A: Pro Private Debt</i>		
<b>Authors</b>	<b>Market</b>	<b>Argument and Findings</b>
James (1987)	U.S.	Significant positive excess return for announcements of new bank loan contracts. Negative abnormal return for announcements of bank debt repayment by issuing public or private non-bank debt. Reason: “ <i>maturity hypothesis</i> ”.
Blackwell & Kidwell (1988)	U.S.	During high volatility of interest rates private debt is less costly and vice versa. Small risky firms would have pay 132 basis points more on average in order to sell their debt publicly.
Lummer & McConnell (1989)	U.S.	Loan revisions under bank contracts are value adding to a firm.
Gilson, Kose & Lang (1990)	U.S.	Banks are better providers of private “ <i>workouts</i> ” in case of financial distress.
Easterwood & Kadapakkam (1991)	U.S.	Private debt is more beneficial under information asymmetry and moral hazard problems. Around 60% of bank debt placements from all long-term debt issues.
Peterson & Rajan (1994)	U.S.	Small firms face huge information asymmetry when entering public debt market. The benefits are higher from long bank relationships.
Krishnaswami, Spindt & Subramaniam (1999)	U.S.	Public debt can prevent corporations to invest into valuable projects. Positive relation between firm’s growth opportunities and the use of private debt. However, large corporations rely more on public debt due to lower costs.
Cantillo & Wright (2000)	U.S.	Private debt is less damaging in case of financial distress. Public debt is more advantageous for large, stable companies. Once a company entered public market for debt it will stay there whatever the changes are.

**Table 2 (continued).**

<i>Panel B: Pro Public Debt</i>		
<b>Authors</b>	<b>Market</b>	<b>Argument and Findings</b>
Houston & James (1996)	U.S.	Banks create offsetting costs. Potential “ <i>hold-up</i> ” problem.
Johnson (1997)	U.S.	Public debt is more beneficial if firm experiencing lower information asymmetry and costs from monitoring. Appropriate mix of public and private debt can resolve problems arrived from each source of debt separately.
Gilson & Warner (1998)	U.S.	Public debt provides more financial flexibility. “ <i>Flexibility/shareholder interest</i> ” hypothesis.
Weinstein & Yafeh (1998)	Japan	Bank debt users did not outperform their industry peers that borrowed from other sources. Despite banks provide better access to capital, it does not improve borrower’s performance.
Arikawa (2008)	Japan	Public debt is better in opening the routes for growth opportunities.

#### 4.1 Evidences in favor of private debt

Among other researches on the debt structure choice it is worth pointing out the study by James (1987). In his work he empirically tested three possible debt contracts: bank loans, private placements, and public straight issues. The main aim of the paper is to practically examine if the bank loans provide any additional value to a borrower. In other words, is there some kind of special service within the loans that is not available from any other debt sources? Pursuing this aim, James (1987) compares stock price responses to all three kinds of debt placements. From the period of 1974 to 1983 there were selected 207 financing announcements, 80 of which are bank loan agreements, 37 announcements of private non-bank placements, and 90 observations of straight public issues. Overall there are 300 companies that are randomly selected from NYSE and AMEX-traded non-financial firms. For statistical accuracy bank loans are determined as existing credits and new loan contracts, including credit lines, as well as extension of existing credit lines. Privately placed debt is characterized as debt sold for cash to a fixed number of creditors, more often to institutional investors.

The regressions results showed a statistically significant positive abnormal return for announcements of new bank loan contracts, whereas abnormal negative returns appeared for private debt placements. In addition, negative statistically significant abnormal return was found for the announcement of bank debt repayment by other private non-bank loans or public debt placements. In his event study (James 1987) an excess return for firms announcing bank loan agreement was about +2% over two-day period event window. It has to be mentioned that the same positive abnormal return of +0.89% was found in the study by Mikkelsen and Partch (1986), which excluding the possibility of statistical incorrectness or data incompetence.

The possible explanation for such differences in abnormal returns might be in suggested maturity hypothesis (James 1987) concluded in the statement that since bank loans are mostly short-term and public debt is usually long-term, managers may use these sources to show firm's expectations about the future cash flows and therefore prevent undervaluation of a company. Thus placing a short-term debt (signing bank loan contract), company assures stockholders in short maturity of cash inflows and vice versa. However, this explanation was not supported by statistical tests made by James (1987) revealing inconsistency of maturity hypothesis with practice. Another potential explanation suggested by James (1987) is in banks' special service supply such as monitoring discussed for example by Leland and Pyle (1977) and Diamond (1984). Nonetheless, further research is needed for identification of the effect of bank services on firm's market value.

Extended cost analysis between private and public debt issues was provided by empirical tests in another study (Blackwell and Kidwell 1988). However, this research is based primarily on bond market only, but comparing two ways of offerings: public and private. In that sense it is very important research since it allows abstracting from agency costs and monitoring policies occurring in bank financing. Privately placed bonds are somewhat similar to bank loans if not taking into account characteristics mentioned above. Such issues are placed among specific number of investors and closed from secondary market fluctuations at the initial stage. The understanding of costs differences between two methods of bonds placement is therefore crucial for the capital structure policies of companies.

Based on 293 observations from 202 companies for the period between June 1979 and December 1983 obtained from Ebasco's Analysis of Public Utility Financing for the private issues and from Drexel Burnham Lambert's Public Offerings of Corporate Securities for the public placements, the analysis showed that a firm's choice of market type is mainly based on the level of transaction costs. Thus, the findings suggest that during the high volatility of interest rates private sales of debt become less costly than public. At the same time when interest rates are stable public offerings are less costly.

One more interesting result was obtained from the study (Blackwell and Kidwell 1988) connected to small risky firms. For those companies there was found that they would have pay of 132 basis points more on average in order to sell their debt publicly. Such huge difference appears due to high agency and floatation costs for smaller firms comparing to large corporations.

An extension of discussed paper by Blackwell and Kidwell (1988) was achieved several years later, when observing 156 largest in terms of annual sales companies during the period of 1980 to 1988 lead to additional findings on the issue (Easterwood and Kadapakkam 1991). First, there was found that 60% of all long-term debt is placed privately, however this number was decreasing during the 1980s. Possible explanation of these movements is the decreasing costs and more loyal policy adjustments of public issues that took place during the sample period. Furthermore, consistent with Diamond (1991), researchers argued that middle size companies rely more on private debt than larger firms. This distribution points on existence of information asymmetry and as assumed by the authors is more critical determinant of the choice between public or private placements of debt. The analysis, however, did not found any relationship between the choice of private/public debt and leverage associated costs such as costs of financial distress (Easterwood and Kadapakkam 1991).

Lummer and McConnell (1989) extend the research by James (1987) in a way that they distinguished between new loan contract and renegotiation and extension of already existing ones. For the empirical part the authors employ the same procedures as James (1987). However, this time 728 announcements concerning loan agreements between U.S. firms and any commercial bank are observed from the NYSE and AMEX-listed

companies for the period of 1976 to 1986. Among those 728 announcements there were 371 of new loan agreements and 357 were about existing contracts.

The research's results provide additional evidence for the effect of bank debt on a company's value. Thus it appeared that for announcements about new credit contracts there is no reaction of stock prices, while for the news about revision of already existing contracts there is a significant excess return of +1.24%. Such findings indicate that bank loan review consists of valuable to capital market information and for favorable contracts' review there is a positive relation, while for termination of a contract or loan reduction is met by negative reactions of the market. Confirming these results there was found that extremely positive stocks' price reaction was for review of loan contracts that were considered in trouble. All these indicate that decisions made by banks are considered as signals to the capital market and transformed into firm's value.

A subject of significant research is the understanding of the role of private and public debt in case of business default described in section 2.2 in this work. Thus several empirical studies were aimed to reveal the benefits from using bank loans or bonds. Gilson, Kose and Lang (1990) were among the first who examined private debt from the side of efficiency in case of a corporate financial distress. In their paper they empirically tested 169 companies that experienced financial difficulties during 1978-1987. The main goal was to reveal the incentives of those firms to choose between going bankruptcy and possibility of renegotiation.

As the result of the study, about a half of all companies were able to successfully restructure their debt and avoid bankruptcy procedure. Such evidence can be explained by a simple economic model. Since the borrowers and lenders have only two ways, either claim for bankruptcy or attempt to renegotiate the terms of debt use, alternative costs are starting to play major role. As argued in the paper, both shareholders and lenders will benefit from private "workout" rather than starting the procedure of bankruptcy. According to legal regulation this process is long and costly, so both sides prefer to solve the problem without additional costs, which is possible in form of renegotiation.

Finally, the findings were confirmed by analysis of stock returns of the sample companies. It suggests that the market react positively when debt is restructured privately. Therefore, concluding the study of Gilson et al. (1990) it can be said that in case of financial distress, a higher proportion of bank debt in a company's capital structure allows to avoid bankruptcy by private renegotiation.

The potential benefits from the bank loans relations are described by Peterson and Rajan (1994). In contrast with previous research, economists empirically tested small business data from the U.S. The key point is that small firms are relying heavily on debt but face information asymmetries while entering public markets due to their size and as a consequence unwillingness of rating agencies to rate them, by which creating uncertainties about trustworthiness for investors. Therefore, small companies are relying on bank loans more and by this benefiting from establishing relationships with financial institutions in form of funds availability. The study also provides evidence that such relations are cheaper form of financing for the sample companies.

One more interesting study was conducted by Krishnaswami, Spindt and Subramaniam (1999), which extends previous research by empirical tests of the determinants of a firm's debt structure. It significantly contributes to an understanding of a company's choice between private and public debt placements. Using a sample of 297 firms over the period from 1987 until 1993, the authors examine the impact of costs, conflicts and asymmetries on a firm's debt placement structure.

Consistent with Myers (1977), Krishnaswami, Spindt and Subramaniam (1999) found the positive relationship between firm's growth opportunities and the use of private debt, confirming that "risky debt" can prevent corporations to invest into valuable projects. However, there was also proved that larger corporations experience the scale of economies in issuance costs of public debt, and therefore have lower proportions of private debt in their capital structure. Nevertheless, over 60% from sample companies place their debt privately, rather than publicly and this fraction remains about on the same level around the sample period.

Although, the study did not support the hypothesis that private debt diminishes the contracting costs comparing to public debt. But it is argued that firms that are subject to a greater degree of information symmetry, relying more on bank or other financial intermediation loans.

Recently, the theoretical model based on empirical tests on the determinants of lenders choice was developed by Cantillo and Wright (2000). This study significantly adds to the previous theoretical background since contains the empirical base for its proof. The data for the empirical part was statistically tested and divided into two blocks: the older set and the newer set. First block contains of 291 companies with annual financial data from 1974 to 1992 and the second block consists of 5,554 companies that have at least one year of financial data. Last block was established in order to input control variables for examining if there are important differences between young and mature firms. All data was obtained from COMPUSTAT, Moody's manuals, and Compact Disclosure.

The main point in mentioned theory (Cantillo and Wright 2000) is that public and private debt has their own advantages in different situations. As was supported by empirical tests, the main advantage of private debt is in the possibility of less damaging interventions by banks in case of financial distress. From the other hand, public debt is more advantageous for companies that are less likely to default, otherwise have high and stable cash flows, profitability, and low level of real interest rates.

Cantillo and Wright (2000) also proved that once a company entered the market for public debt it will stay there even after slowdowns in its growth rates and fall in financial performance comparing with the original entry circumstances.

#### 4.2 Evidences in favor of public debt

In contrast to all results presented above, the panel B in the table 2 suggests the set of studies that primarily argue for benefits from public debt usage. For example, Houston and James (1996) published their research where they empirically examined the importance of bank information monopolies in determining a firm's reliance on bank

debt. In order to do it, detailed information on the debt structure of 250 publicly traded companies was collected. The sample was randomly gathered from New York Stock Exchange (NYSE), American Stock Exchange (AMEX), and National Association of Securities Dealers (NASD) at three different points in time: 1980, 1985, and 1990. This allowed researchers to compare companies' reliance on bank debt in retrospective and permitted to analyze the changes in debt structure over time.

Using standard statistical tests, several interesting findings were obtained. They revealed that firm's reliance on bank borrowing depend not only on its size and overall leverage level, but also on the importance of growth opportunities, level of intangible assets, the number of bank relationships, and the firm's ability to access to public markets.

In particular, the findings suggest that banks create offsetting costs related to information monopoly, or in other words "hold-up" problems even for the largest U.S. corporations. The tests also showed that the reliance on bank debt is decreasing as the size and overall leverage of a firm is increasing. This implies that banks primarily focus on small companies and at the same time, the study reveals a negative statistically significant relation between the reliance on bank debt and the importance of growth opportunities. Such results support the hypothesis that potential hold-up problems limit a firm's trust to bank debt.

However, all those findings were obtained based on a single-bank relationship. But in the sample there were corporations, which were using several commercial banks as a debt source and this allowed discovering another, positive relation between firm's reliance on bank debt and the importance of growth opportunities with several banks relationships. At the same time, it is logical that the same relation was found for companies that had public debt and for those companies that used bank along with public debt, this relation was not disturbed.

Finally, the research by Houston and James (1996) brought the evidence of reliance on other private non-bank debt. As appeared, other private debt combined with general

bank debt do not resolve hold-up problem, which indicates the uniqueness of bank debt in corporate capital structure.

Generalizing the work (Houston and James 1996) several conclusions can be made. First, consistent with Rajan's (1992) and Diamond's (1993) models, along with different benefits, bank debt also creates offsetting costs that have to be taken into account, while choosing the debt source. Second, an appropriate mix of public and private debt can mitigate these problems and provide more flexibility for a company. And finally, other non-bank private debt does not resolve hold-up problem as reliance on several banks in debt relationships does.

A year later, Johnson (1997) published the work where he also tries to examine the costs of bank financing and as Houston and James (1996) distinguishes between bank debt and other private non-bank financing. Among the other findings, empirically obtained from the sample of 847 U.S. companies, Johnson (1997) argues that firms are relying more on public debt if they experience lower information asymmetry and monitoring costs, as well as less likely to be financially distressed. Moreover, he finds that around 73% of the companies from the sample are relying on at least two different sources of debt financing. This implies that appropriate mix of public and private debt is able to mitigate some problems arrived from each source of debt separately.

Another study was not published in scientific literature but definitely extends previous literature and scientific knowledge on the topic and deserves to be described here in details. Gilson and Warner (1998) raise the question about the effect of switching from private bank loans to public junk bonds. The analysis is somewhat similar to the second section of this research, where the effect of substituting bank financing with public debt is examined. Nevertheless, the study by Gilson and Warner (1998) is different in several aspects. First, their study is aimed to examine the effect from debt source reliance on the stock returns, while this paper is aimed to estimate the effect on firm performance. Second, the sample data for bond issues is taken from the Securities Data Corporation (SDC) database, while this work is aimed on the Russian market. On the other hand, Gilson and Warner (1998) excluded from their sample issues that financed LBOs, mergers, takeovers, and leveraged capitalizations as well as convertible junk bonds

because basically that could be effective equity issues. The same exclusions were made in this paper as well. The period of the sample observations was from January 1, 1980 until December 31, 1992 which comparatively larger than four years observations in the present study.

Gilson and Warner (1998) start their analysis from stock market reaction to the information containing the shift from private to public debt. Using a standard event study methodology they found that statistically significant this reaction is negative for the event window (-1; +1) and (0; +1), however, for the longer interval like (-100; +40) there was no evidence of abnormal returns. Even though, they bring out two hypotheses that can serve as an explanation of such market's reaction. First, so called "reduced monitoring hypothesis" is based on the argument that managers obtain more freedom to take value-reducing actions after shift from bank debt. Thus, reduced monitoring by banks has negative impact on firm's performance. However, the second hypothesis the "flexibility/shareholder interest" appeared to be more supported and dramatically different from the first one. The concept is that it can be in shareholders' interest to withdraw from private debt if firms expect decline in profits and there are several reasons for that. The decline in performance may rouse higher constrains for managers from the bank side and moreover it will be more costly to restructure this debt. Therefore, shareholders decide to restructure it now in order to return to growth side. Or simply, it might be that defaulting on such debt is more costly.

The second hypothesis was supported more by the study's findings. All firms were experiencing profit declines just prior to bonds issue but none was financially distressed. After debt restructure those firms were able to maintain financial stability and growth opportunities, which positively influenced their future performance, while the debt ratio remained unchanged. This strongly suggests that public debt provides more financial flexibility and is the only factor that motivates managers to bank debt pay downs in the sample. On the other hand, alternative explanations for such restructure as, for example, managers' desire to avoid bank monitoring did not have enough evidence and was not supported by tests (Gilson and Warner 1998).

The main aim to examine the effects of bank relationships on firm's performance was achieved in the study based on Japanese market (Weinstein and Yafeh 1998). According to their study, better availability of capital provided by banks does not lead to higher performance, profitability and growth. Large data of about 700 manufacturing firms for the period 1977 to 1986 was collected in order to empirically test such hypothesis.

As appeared these companies that were primarily financed by banks did not have higher profits comparing to their industry competitors that did relied on bank debt. Furthermore, there were discovered that bank's mitigated firms' growth by conservative investment policy. Even though, the sample companies benefited from production techniques obtained from the capital availability, they did not outperform their industry peers. The analysis showed that the share of capital was significantly higher for the sample companies prior to 1980. This finding is consistent with the view that banks were able to provide better access to capital. However, after policy adjustments and liberalization of financial market in Japan in 1980 such difference in capital usage disappeared.

One possible explanation of low profitability and growth of main banks clients might be in the rents that charged by banks in exchange for their financial services. There was found that these interest payments were higher than average payments on debt on the market. These results point on the ability of banks to control their borrowers in terms of taking high risk high profit projects and therefore can disturb them from growth opportunities. Based on the results of the study, Weinstein and Yafeh (1998) argue that on underdeveloped markets, such as Japanese during the sample period, bank debt relationships may lead to a redistribution of profits obtained by borrowers from industrial to financial sector of economy leaving the firms without sensible growth rates and better performance.

One of the most recent researches in corporate financing problem was aimed to investigate the choice between public and private debt by Japanese firms (Arikawa 2008). Using a data set for a sustainable period of time from 1980 until 2005, Arikawa (2008) examines the factors that determine the demand for public and private debt on the Japanese market.

First, he takes a look on a general situation on bonds market and bank borrowings. Dividing the sample on large (more than 1 mill yen in net worth) and small firms (less than 1 mill yen in net worth), he imposes the bond to total assets ratio. Observations showed that this ratio grew drastically in 1985 – 1990 for large corporations, from 5% to more than 10%. However, for small firms the same ratio remained almost on the same level, less than 1% along whole analyzing period. It has to be mentioned that it also grew from 0.27% to 0.80 during the last few years. These numbers point that public debt is used mainly by large corporations in Japan.

Further on, the cross-sectional analysis by industries was run. It appeared that borrowing from financial institutions is much higher for non-manufacturing firms than for manufacture oriented ones. Concerning the level of bonds usage comparing to total debt, there was found that large Japanese companies had around 25% in 1980s and more than 40% starting from 1986 until 2005 in bonds to total borrowings ratio. At the same time for small firms this ratio was only about 0.4% in 2005, suggesting again that public source of debt is used only by large corporations in Japan. Moreover, there was also found that for manufacturing firms the ratio of bonds to total debt is significantly higher. Nevertheless, it was declining from 1990 until 2005 from 70% to less than 50%. And as for non-manufacturing companies this ratio was growing from 35% in 1985 to almost 40% in 2005.

Trying to explain all described above movements on the Japanese debt market, Arikawa (2008) uses general statistical analysis and reveals the main determinants of firm's choice between public and private debt financing. As appeared to be, during the 1980s, when the use of public debt increased rapidly, the growth opportunities were the main factor influencing the firm's decision to switch from bank debt to public. High growth opportunities and low default risk are the main determinants of potential hold-up problems associated with bank borrowings. In contrast, riskier and low growth perspective companies continued to rely on bank debt.

As can be inferred from the discussion above the debt structure received a significant attention in the academic community. However, different points of view create inconsistencies in the modern approach to debt formation in corporate financing.

Concluding this part it is worth mentioning the study by Graham and Harvey (2001) that shows how managers make decisions about debt financing on practice. The main goal of the study was to investigate recent trends in corporate finance topics, such as capital budgeting, cost of capital, and capital structure in order to reassure and develop existing theories in these fields.

As the result, different findings were obtained, both confirming previous theories and unexpected. Thus, in the capital structure chapter there were found the most important factors affecting debt police. They are financial flexibility and credit ratings, as well as managements' concern about earnings per share ratio and stock price appreciation in case of debt issuance. At the same time, the survey provided little evidence that management consider such questions as asymmetric information, transaction costs, and taxes while choosing the debt source. However, according to the study (Graham and Harvey 2001) the majority of respondents choose to issue debt in order to minimize their weighted average cost of capital (WACC) or in order to fund projects or future growth, but only if internal funds are insufficient.

Surprising evidence was also obtained from the point of credit ratings. As being argued, firms relying more on short-term debt if they expect the improvement in their credit ratings (Flannery 1986), however, the survey revealed that short-term debt is not used when rating improvement is expected. Nevertheless, credit ratings are playing one of the most important roles in debt issuance decisions.

Finally, the research showed that more than 44% of the sample has strict target debt ratios in their capital structures. All those results are trustworthy as were obtained from approximately 4,440 firms sample, totaling 392 chief financial officers (CFO) based on specific qualitative questions – survey (Graham and Harvey 2001).

## 5. DATA AND METHODOLOGY

### 5.1 Overview of the Russian capital market and banking sector

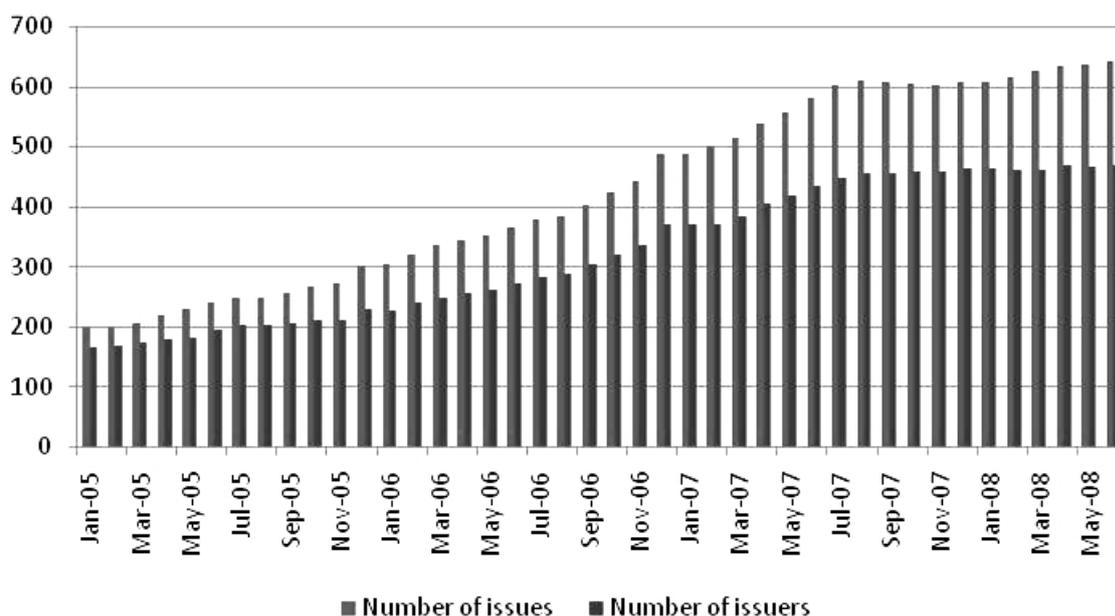
Current situation on the Russian capital market can be characterized as fast development and enlargement. Today it is treated as one of the most attracting among other developing capital markets in the world. For the first half of 2008 the capitalization of the Russian stock market was 1.3 trillion U.S. dollars (Timofeev, Tregub, Shabunina, Shubochkin 2008: 6). This number is comparable with for example OMX Nordic Exchange where capitalization of equity market was 1.24 trillion U.S. dollars or with Swiss Exchange with capitalization of 1.27 trillion U.S. dollars by the end of 2007. In contrast on the London Stock Exchange the market capitalization was about 3.8 trillion U.S. dollars in 2007 (World Federation of Exchanges 2007).

In spite of several problems Russian market for debt securities was growing predominantly from the very beginning, however with substantial lag from the stock market or from the market of government bonds. There were almost no corporate bonds until 1999 and in opposite to other international debt securities markets Russian corporate bonds started their development straight from the exchange markets. Graph 6 shows progressive dynamics of the number of issues and issuers of corporate debt securities starting from the year of 2005. It demonstrates that the number of issuers of corporate bonds on the Russian market was growing on average by 41% per year. Approximately the same rate of growth (46%) was in the number of issues. Thus by the end of 2006 and 2007 the number of bond issuers was 465 and 370 respectively (Timofeev, Tregub, Shabunina, Shubochkin 2008: 13). Comparing to other capital markets these numbers were 357 and 361 for the OMX Nordic Exchange, 410 and 435 for the Swiss Exchange and 1619 and 1633 for the London Stock Exchange (World Federation of Exchanges 2007).

Such rapidly growing numbers indicate that the Russian market of debt securities is experiencing substantial development. More and more commercial entities initiate the process of public crediting substituting or adding to existing bank loan contracts. The ratio of corporate bonds value and corporate credits to the Russian companies given out

by banks is presented on the graph 7. As can be observed corporate bonds took more than 50% in the debt financing structure. However, at the end of 2007 this ratio lowered to about 40% (Russian National Association of securities market participants, NAUFOR 2008: 130).

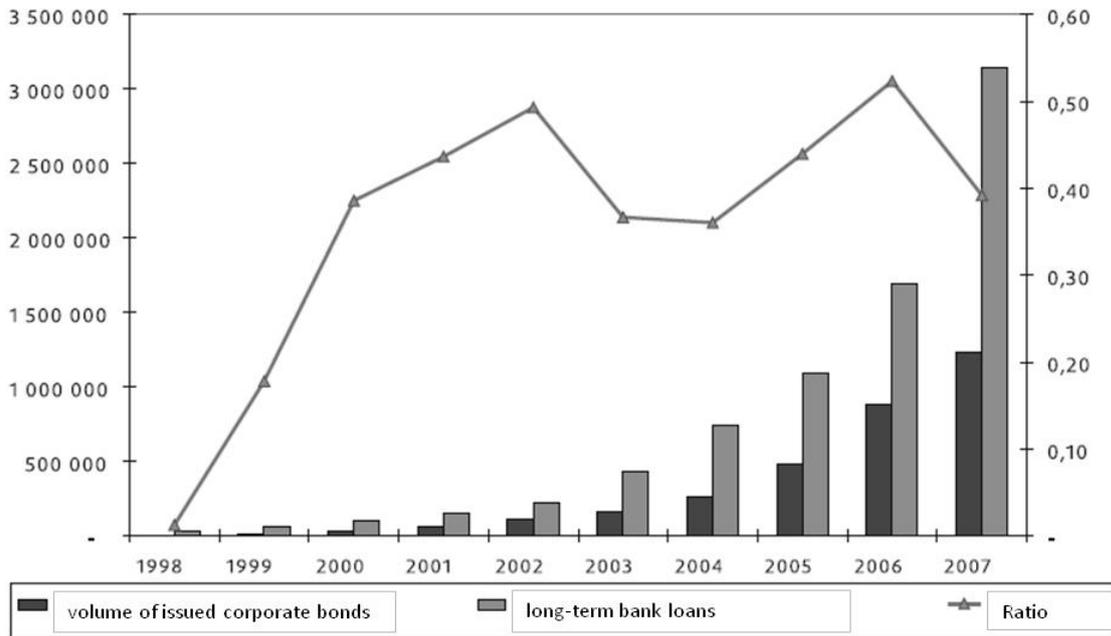
**Graph 6.** The number of domestic corporate bonds issues and issuers.



Along with domestic bonds issues in national currency (rubles) Russian corporations actively attract financing from international markets issuing their own Eurobonds. Hence even if this part is not included into domestic market valuation, international markets are playing a big role in providing external funds for the Russian corporations. According to statistics the total amount of Eurobonds issues was around 300 for the 01.01.2008, the nominal value of which was 94,3 billion U.S. dollars (Russian National Association of securities market participants, NAUFOR 2008: 17).

It also has to be mentioned that at the end of 2006 the Russian market for debt securities was expanded by new perspective securities – mortgage-backed bonds, however this part of the market currently developing slower than others tacking in account the mortgage crisis in the U.S. and in some other developed countries.

**Graph 7.** Ratio of corporate bonds in circulation and volume of long-term (longer than 1 year) bank loans to corporations (in millions of Russian rubles). (source: NAUFOR).



The Russian capital market is also presented by governmental, municipal, and Central Bank bonds, as well as commercial papers, and investment shares. Derivatives markets mainly presented by futures and options on stock prices and indices. The amount of open futures and options on stock prices and indices was 2,5 million contracts at the end of 2007 (Russian National Association of securities market participants, NAUFOR 2008: 19). The development of these parts of the market is coherent with main trends on the Russian capital market.

In spite of all advantages nowadays the Russian capital market is still not significant instrument of capital accumulation for population and not the primary source of investments for majority of corporations. Thus it can be described as at the very beginning of its development. However the market in such condition becomes even more interesting to examine because of possibility to observe the processes of financial circulation in its formation.

The banking sector on the other hand is presented by 1 243 registered banks at the end of 2008. This amount was significantly bigger prior 2003. Hence since 2003, 1 419

bank licenses were annulled. In part this reduction in commercial banks quantity was politics of the Central Bank of Russia (2008), according to which there is no need in so many banks for the economy. Today, total registered capital of the banking system is 731,7 billion Russian rubles (RUR).

The crediting function of commercial banks was expanding extensively during the last decades. Total credits grew from 2,5 trillion RUR in 2002 to almost 12 trillion RUR in 2007. This means that overall credit portfolio of the banking system was on average almost doubling each year. As the result the most important value measurements of the commercial banks were growing as well. Return on assets (ROA) grew from 2,4% in 2001 to 3,25% in 2007, while return on equity (ROE) has grown from 19% to 27% respectively (Central Bank of the Russian Federation 2008).

As well as in the capital market, the banking system has its problems. Among the most important and destructive ones is a high concentration of the assets within top banks (around 45% of the system assets retained by the biggest 5 banks, following 20% held by the next 6-20<sup>th</sup> banks). Loan concentration within one industry is becoming less hardened but still counted as disadvantage. And finally, geographical concentration (the Capital region) of sensible part of financial resources significantly slows down further development of the system. All these problems are well understood by the Russian authorities and establishing regulative policies are aimed to solve them.

## 5.2 Sample description and data collection procedure

In order to reach stated purpose of the study two blocks of data are required. First there is a need for companies that relies more on public debt or in other words issued bonds during the sample period. Second it is required to have companies that do not issue any public debt and use only private bank loans. Both blocks of firms should be presented at the stock exchange during the sample period. Thus the data for yearly stock quotations and bonds issues that is available online was gathered from the two biggest Russian stock exchanges: Russian Trading System Stock Exchange (RTS) and Moscow Interbank Currency Exchange (MICEX).

To construct the sample for the first block – companies with public debt, the search of all corporate bonds issues was conducted for the period from the 1<sup>st</sup> of January 2004 until the 31<sup>st</sup> of December 2007. Totally there were registered 1258 issues, including seven annulled. Further, all issues made by banks, non-banking financial organizations, insurance companies and other financial institutions as well as public utilities were excluded from the sample due to some complexities and inconsistencies and because government regulations potentially affect firm performance in case of public utilities. In particular, the incomparableness of debt-alike liabilities of financial firms and debt issued by nonfinancial companies may cause inconsistencies in the analysis. Moreover, governmental regulation of financial institutions such as minimum capital requirements may straightforwardly affect capital structure and therefore lead to improper analysis' outcome. As the result 619 issues by 417 companies left.

Further, for more coherent analysis straight adjustment for firm size was applied. Thus the biggest (“*blue chips*”) and smallest companies were subtracted from the sample. Other adjustments such as stock market presence requirement and financial data availability were made and as the result 103 issues by 50 companies left. Table 3 briefly describes this sample.

**Table 3.** Description of the bond issues sample.

	<b>Issues that were aimed to replace private debt</b>	<b>Issues for other purposes</b>	<b>Total</b>
Number of issues	31	72	103
Number of issuing companies	25	25	50
- Paid down issues	8	19	27
- Issues in circulation	41	35	76
Average Maturity ( <i>years</i> )	4.84	4.57	4.65
Average Face Value ( <i>billion rubles</i> )	11.05	5.24	5.63

As can be inferred from the table above the number of issues that were aimed to repay previous bank debt is much less than the number of issues for other purposes during the

sample period. However the amount of firms is absolutely equivalent indicating that some companies turned to the public debt market exclusively for bank loans repayments. Average maturity of issued bonds is not significantly longer for firms that repaid bank debt with obtained proceeds, 4.84 years against 4.57 years for bond issues for other purposes. But an average face value is significantly higher for aimed issues, 11.05 against 5.24 billion rubles, while the average face value of all issues is 5.63 billion rubles.

The data for the second block – companies with private bank debt is the corresponding number of firms with no public bonds issues that are traded on one of two biggest Russian stock exchanges. The main requirement for these companies was the presence of bank debt in their capital structure.

Further, accounting book values are required for performance evaluation. The complexity of this part is concluded in the unavailability of such information at one common place. Official sites of the stock exchanges suggest only limited financial data of issuers but annual financial values are not available for the full sample during the examining period. Thus the manual collection of financial reports and emission prospectuses was conducted by the author of this paper in order to complete the empirical part of the present study. In total one hundred companies were examined for the period of 4 years.

Pursuing the second goal of this paper – to examine the effect of switching from private to public debt, 25 companies were chosen from the sample of 50 firms with issued bonds. The main requirement for those companies was the presence of defined aim in the bonds emission prospectus as a “bank debt repayment”. Such repayments could be partial or complete but not less than 50% of proceeds from the issue. Table 4 presents main values extracted from the financial and annual reports averaged across the sample period.

**Table 4.** Overview of the basic extracted values for the data sample.

Column 1 introduces the overall values for the full sample of 100 companies calculated based on averages across firms for each year and then averaging across sample years – 2004 – 2007. Column 2 and 3 present average values for two blocks of data separately based on the same calculation techniques as in column 1.

	<b>Total</b>	<b>With Public</b>	<b>With Private</b>
	<b>(1)</b>	<b>Debt</b>	<b>Debt</b>
		<b>(2)</b>	<b>(3)</b>
Number of companies	100	50	50
Division by industry:			
- manufacturing	52	22	30
- other	48	28	20
Market Capitalization*	159.46	102.03	57.43
Total Assets*	112.60	74.37	38.23
Total Liabilities*	35.98	27.96	8.03
Equity*	77.39	46.42	30.97
Net Income*	15.07	10.46	4.61

\* *in billions rubles*

As table 4 indicates the industry division between manufacturing and other companies is almost equal. Companies that rely on public debt are presented by 22 manufacturing firms and 28 firms from other industries, while for companies with private bank loans these numbers are 30 and 20 correspondingly. But what is more interesting in the table is that already based on the simple averages calculations it can be inferred that firms with publicly placed debt are generally bigger and more profitable. Hence the average total assets of the middle company with issued bonds are almost twice bigger than an average firm with bank loan relationships has, while total liabilities are more than triple higher. One more interesting detail is concerning the level of equity used in firm's capital structure. Equity is still higher for companies with public debt but the difference here is not as big as for the level of assets and liabilities. Moreover in overall an average firm with public debt is relying much less on equity than the company with private bank loans relationships. Such interesting distribution is contradicting to the static pecking order theory (Myers 1984) which claims that firms will rely on equity only as the last

opportunity. An average firm from the second block of the data – firms with private debt, seems to give priority to the equity financing however deeper analysis is obviously required for making further conclusions.

### 5.3 Methodology

As the main aim of the study is to examine how the performance is influenced by different debt sources, several performance measures are calculated. Return on assets (ROA) and return on equity (ROE) are the primary performance measures that calculated from the accounting statements of the sample companies while Tobin's  $q$  is a primary market measure of firm performance. It is calculated as the market value of total assets divided by the replacement costs of assets, ROA is calculated as net income divided by the book value of total assets, and ROE is computed as net income divided by total equity.

Some control variables are also introduced to check for firm characteristics such as size, debt-to-equity ratio and simple debt ratios, and liquidity. Thus the firm size is determined as natural logarithm of the book value of total assets. The amount of leverage is computed as the ratio of long-term debt to total assets, while debt-to-equity ratio is used to determine how much borrowed funds are used in comparison with shareholders' investments and calculated as long-term liabilities divided by total equity. Market-to-book is determined as the ratio of market capitalization to total assets however is used only in pair with ROA and ROE measures due to high correlation with Tobin's  $q$ . Liquidity is presented as cash means divided by short-term liabilities. Such conservative measure checks the level of firm's liquidity and shows how effective financial means are distributed in a company. Hence if the level of the measure is more than one than it can be stated that management does not effectively distribute cash means that could be invested into valuable projects. Table 5 summarizes the sample firms and provides overview of descriptive statistics of the full sample. The calculations are made based on time-series averages for each firm separately during the sample period and then averaging across companies.

**Table 5.** Data description of the full sample (n=100).

<b>Measure</b>	<b>Mean</b>	<b>Median</b>	<b>Standard Deviation</b>	<b>Max.</b>	<b>Min.</b>
Long-term debt/Total assets	18.36%	13.13%	17.1%	112.47%	0.01%
Ln (total assets), (in thousands rubles)	16.43	16.55	166.71%	20.87	12.72
Cash means/Short-term debt	0.24	0.1	46.43%	3.66	0.001
Market-to-book ratio	1.46	1.01	148.3%	8.61	0.01
Debt-to-equity ratio	45.39%	26.44%	52.8%	267.21%	0.03%
ROA	8.68%	7.06%	9.27%	45.21%	-8.08%
ROE	14.63%	12.95%	24.34%	148.75%	-110.85%
Tobin's $q$	1.88	1.44	142.74%	8.93	0.42

The empirical tests of the gathered data start from the simple means tests where statistics is based on calculations of time-series averages for each company during the sample period and then averaging across companies, while multivariate analysis employs time-series regressions in order to recognize any relationship between different debt sources reliance and firm performance. Hence the following regression equation is aimed to fulfill the main purpose of the paper and determines if firm performance is influenced by the methods of debt placements:

$$\begin{aligned}
 \text{Firm Performance} = & \beta_0 + \beta_1 (\text{Companies with Public Debt}) \\
 (1) \quad & + \beta_2 (\text{Control Variables}) + \beta_3 (\text{Industry Parameter}) \\
 & + \beta_4 (\text{2005 – 2007 Year Dummy Variables}) + \varepsilon
 \end{aligned}$$

where:

*Firm Performance* is presented as ROA, ROE and Tobin's  $q$ ;

*Companies with Public Debt* are determined by binary variable that equals one when there is public debt in firm's capital structure and zero otherwise;

*Control Variables* as discussed before are firm characteristics such as size, debt-to-equity and simple debt ratios, and liquidity;

*Industry Parameter* is a binary variable that equals one if the object is a manufacturing firm and zero if a firm is in any other industry.

*2005 – 2007 Year Dummy Variable* is 1 for each year in the sample period.

Additionally the distinction is made between the companies that initially issue debt on the public markets and those that making it already not for the first time. Thus companies with initial public bond issues are denoted as one and zero if otherwise in the time-series regression. Correspondingly firms with continuing public offerings are marked as one in the binary system. The regression formula is taking the following view in that case:

$$\begin{aligned}
 \text{Firm Performance} = & \beta_0 + \beta_1 (\text{Companies with initial public debt offerings}) \\
 & + \beta_2 (\text{Companies with continuing public debt offerings}) \\
 (2) \quad & + \beta_3 (\text{Control Variables}) + \beta_4 (\text{Industry Parameter}) \\
 & + \beta_5 (\text{2005 – 2007 Year Dummy Variables}) + \hat{\epsilon}
 \end{aligned}$$

To achieve the second purpose of this paper – to estimate the effect of switching from private bank debt to public bonds two kinds of tests are introduced. First, average values of performance ratios are calculated before the switch from private to public debt for determined 25 companies, following the same procedure but after the switch. As the result means test of 50 observations in total presents significance of influence of the debt restructuring on firm performance. To accomplish this tests standard event study is applied. Thus as company may have substituted its private bank debt with publicly traded bonds in any time during the sample period (2004-2007), the event window takes form of approximation of the time period before and after substitution. Literally performance measures are calculated based on approximately two years before and two years after the substitution announcement. More formally the event window is [-2 years; +  $\approx$  2 years]. The sign “*approximately*” ( $\approx$ ) is used due to limits in financial data availability. The last published financial report is available only for six months of the year of 2008 and for companies that issued debt securities in 2007 the event window

might be less than 2 year, however only a few issues do not completely fit the event window and therefore the analysis results can still be reliable.

Second, time-series regression analysis is introduced in order to determine if the performance of companies that changed private bank debt to public bonds is differ from those that used proceeds from public debt issues for other purposes. The regression equation for this analysis takes the following form:

$$(3) \quad \begin{aligned} \text{Firm Performance} = & \beta_0 + \beta_1 (\text{Companies that switched from private to public debt}) \\ & + \beta_2 (\text{Control Variables}) + \beta_3 (\text{Industry Parameter}) \\ & + \beta_4 (\text{2005 – 2007 Year Dummy Variables}) + \hat{\epsilon} \end{aligned}$$

where:

*Firm Performance* is presented as ROA, ROE and Tobin's  $q$ ;

*Companies that Switched from Private to Public Debt* are determined by binary variable that equals one if firm switched during the sample period and zero otherwise;

*Control Variables* as discussed before are firm characteristics such as size, debt-to-equity and simple debt ratios, and liquidity;

*Industry Parameter* is a binary variable that equals one if the object is a manufacturing firm and zero if a firm is in any other industry.

*2005 – 2007 Year Dummy Variable* is 1 for each year in the sample period.

Using the methods described above the paper tries to answer the question of what kind of debt is influencing firm performance more and under what circumstances what are the benefits from each debt source.

#### 5.4 Hypotheses

According to the previous literature devoted to the capital structure problem and especially to the debt source choice it is possible to conclude that different debt sources affect differently overall firm performance. One argument is that private debt in form of

bank loans is able to add value to a firm (see e.g. Lummer and McConnell 1989; Gilson et al. 1990; Easterwood and Kadapakkam 1991). On the other hand others argue that banks can create offsetting costs and cause hold-up problem (Houston and James 1996) while public debt provides more financial flexibility and helps to increase growth rates and as the result overall firm performance (see e.g. Gilson and Warner 1998; Arikawa 2008).

Following this previous findings, it is possible to formulate the main hypothesis of this paper that is going to be tested. Therefore, the argument is that:

*H<sub>1</sub>: The choice between private and public debt affects firm performance.*

Further, concerning the second goal of the current study – to estimate the effect of switching from private bank loans to publicly traded bonds previous studies suggest that market reaction is generally negative (James 1987) implying that such market measure of performance as Tobin's  $q$  would be most probably lower for companies that used proceed from the public issues to pay down bank loans than for those who used it for other purposes. Therefore, following maturity hypothesis stated by James (1987) the second argument of this paper can be formulated as:

*H<sub>2</sub>: Substitution of bank loans with bonds has a negative effect on firm performance.*

Next chapter provides empirical tests of these hypotheses and supplies additional results obtained from the analysis.

## 6. EMPIRICAL RESULTS

### 6.1 Means analysis of sample companies with public and private debt

Table 6 presents test of means of performance measures and control variables for two blocks of data separately: companies with public debt and firms with private bank loan contracts. In addition panel B provides correlation coefficients.

**Table 6.** Sample means tests and correlation coefficients.

Panel A in the table reports means and t-statistics for performance measures and control variables. The means tests are based on time-series averages for each company during the sample period and then averaging across corresponding block of the sample: companies with public or private debt. Panel B presents correlation coefficients between performance measures and control variables. Coefficients are based on simple averages for each firm ( $n = 100$ ) in the sample during the sample period (2004-2007). Basic performance measures are Tobin's  $q$ , ROA and ROE. Tobin's  $q$  is calculated as the market value of total assets divided by the replacement costs of assets. ROA measured as net income divided by the book value of total assets while ROE is calculated by dividing net income on the book value of total equity. Firm size is determined as natural logarithm of the book value of total assets ( $\ln(\text{total assets})$ ). The amount of leverage is computed as the ratio of long-term debt to total assets (LT debt/Total assets), debt-to-equity ratio is used to determine how much borrowed funds are used in comparison with shareholders' investments and calculated as long-term liabilities divided by total equity. Market-to-book is determined as the ratio of market capitalization to total assets. Liquidity is presented as cash means divided by short-term liabilities (Cash/ ST debt).

<i>Panel A</i>			
	<i>With Public Debt</i>	<i>With Private Debt</i>	<i>t-statistics</i>
1 Number of firms	50	50	
2 Long-term debt/Total assets	24.56%	12.16%	3.88 *
3 Debt-to-equity	64.15%	27.38%	3.42 *
4 $\ln(\text{total assets})$ (in thousands rubles)	17.11	15.74	4.49 *
5 Market-to-book-ratio	1.61	1.30	1.04
6 Cash means/Short-term debt	27.11%	20.01%	0.76
7 ROA	8.35%	9.01%	-0.36
8 ROE	13.12%	16.14%	-0.62
9 Tobin's $q$	2.11	1.65	1.63 **

\* - significant at 1% level

\*\* - significant at 10% level

**Table 6.** (continued)

<i>Panel B</i>							
	<i>LT debt/Total assets</i>	<i>Ln (total assets)</i>	<i>Cash/S T debt</i>	<i>Debt-to- equity ratio</i>	<i>ROA</i>	<i>ROE</i>	<i>Tobin's q</i>
LT debt/Total assets	1						
Ln (total assets)	0.11	1					
Cash/ST debt	0.04	-0.09	1				
Debt-to-equity	0.59	0.10	0.06	1			
ROA	-0.03	0.29	-0.08	-0.23	1		
ROE	-0.15	0.18	-0.11	0.04	0.73	1	
Tobin's <i>q</i>	0.10	-0.04	0.49	0.05	0.12	0.11	1

The results of means tests of equal samples of 50 companies from each block of data show that there is a substantial difference in leverage ratios. Debt ratio determined as long-term liabilities divided by total assets is twice bigger for companies with private debt than for firms with bank loan contracts. Debt-to-equity ratio is also significantly bigger for firms with public debt. The difference is significant at 99% confidence level for both of these measures. Firm size determined as natural logarithm of total assets is also different in two blocks of data. As row 4 in table 5 indicates, companies with public debt are generally larger than firms with private debt. Although the difference is smaller than in leverage ratios, it is significant at 1% error level.

Slight better performers according to means tests of ROA and ROE ratios are companies with private bank debt nevertheless no statistical significance was found at conventional levels as well. However for market measure of performance – Tobin's *q* there is substantial difference in favor of companies with public debt and this difference is significant but only at 10% level. Thus as row 8 in table 5 indicates firms with public debt have on average market performance ratio at the level of 2.11, while companies with private bank debt only at 1.65.

Panel B in table 6 in addition provides information concerning correlation coefficients of basic performance measures and some control variables. Presented coefficients are calculated based on simple averages for each firm in data sample across the sample period and characterize interdependencies of the chosen variables. Thus for example debt-to-equity is naturally correlated more with debt ratio with coefficient of 0.59 but the rate is not critically high for causing multicollinearity problem in the multivariate analysis. Another interesting fact from the correlation panel is dependences of the performance measures. In particular, the accounting measures of firm performance are negatively correlated with debt ratio (-0.03 and -0.15 for ROA and ROE respectively) and liquidity measure (-0.08 and -0.11 respectively), while the market firm performance measure defined as Tobin's  $q$  moves different direction and correlates significantly positive with just mentioned control variables (0.1 and 0.49 for debt ratio and liquidity indicator respectively). The same differences between basic performance measures and control variable correlation are found for the firm size defined and natural logarithm of total assets. Thus ROA and ROE have positive coefficients (0.29 and 0.18) while Tobin's  $q$  has small negative coefficient (-0.04).

But despite these different coefficients with control variables, all three performance measures positively correlate with each other. Hence Tobin's  $q$  has coefficients of 0.12 and 0.11 with ROA and ROE respectively, while ROA and ROE have significant positive correlation at the level of 0.73.

The correlation matrix presented in the table 6 suggest that multivariate analysis would more likely to produce different results for market measure of firm performance – Tobin's  $q$  and accounting measures of performance – ROA and ROE.

## 6.2 Multivariate analysis of the relationship between firm performance and public debt reliance

The primary interest in the relationships between firm performance and reliance on the public debt is examined by three time-series regressions where all three measures of performance (ROA, ROE and Tobin's  $q$ ) are tested. The analysis also incorporates

variables that identify initial public debt offerings and continuing presence on the public debt market dividing each regression by two separate regressions. Table 7 presents results using market measure of performance.

**Table 7.** Performance measure as Tobin's  $q$  and reliance on public debt.

The table reports results of regressing firm performance (Tobin's  $q$ ) and reliance on public debt. Tobin's  $q$  is calculated as the market value of total assets divided by the replacement costs of assets. Firm with public debt is binary variable that equals one when the public debt is present in firm's capital structure. Firm with initial public debt is marked one when the public debt offerings are for the first time for the sample company. Firm with continuing public debt offerings equals one when firm had been issuing public debt before. Firm size is determined as natural logarithm of the book value of total assets (Ln (total assets)). The amount of leverage is computed as the ratio of long-term debt to total assets (LT debt/Total assets), debt-to-equity ratio is used to determine how much borrowed funds are used in comparison with shareholders' investments and calculated as long-term liabilities divided by total equity. Liquidity is measured as cash means divided by short-term liabilities (Cash/ ST debt). Industry belongings equals one when firm is manufacturing and zero otherwise. All regressions include year dummy variables. Standard errors are in parentheses.

	<b>Tobin's <math>q</math></b>	
	(1)	(2)
Intercept	4.53*** (1.12)	4.75*** (1.15)
Firm with public debt	0.53** (0.25)	
Firm with initial public debt offerings		0.41 (0.29)
Firm with continuing public debt offerings		0.67** (0.30)
LT debt / Total assets	1.44** (0.59)	1.42** (0.59)
Ln (total assets)	-0.22*** (0.07)	-0.24*** (0.07)
Cash / ST debt	1.09*** (0.12)	1.08*** (0.12)
Debt-to-equity ratio	-0.002 (0.001)	-0.002 (0.001)
Industry belongings	-0.27 (0.22)	-0.24 (0.22)
Adjusted R square	0.2006	0.1998
Number of observations	400	400

\*, \*\* and \*\*\* denote coefficients significant at the 10%, 5% and 1% levels, respectively.

Focusing on column 1 in table 7 the findings suggest that firms with public debt are performing better than companies with private debt. The coefficient is positive and significant at the 5% level. This result suggests that Tobin's  $q$  in firm with publicly placed debt is 28.19 percent higher than in company with bank loans. I calculate this as the estimated coefficient divided by the average Tobin's  $q$  for the full sample, which is presented in the table 5. ( $0.53 / 1.88 = 0.2819$ ).

Column 2 in table 7 differentiates between firms with initial and continuing public debt offerings. In other words distinguishing between companies that joined public debt market during the sample period and firms that were already presented on it before, allow to estimate how the public recognition influences firm performance. The results suggest that coefficient is positive and statistically significant for firms with continuing public offerings meaning that firms with private debt and firms with initial public debt offerings generally have lower Tobin's  $q$ . The estimated coefficient for firms with initial public debt offerings is not statistically significant.

Estimations in both regressions also show that Tobin's  $q$  is positively related to the debt ratio defined as long-term debt divided by the total assets as well as the liquidity ratio presented as cash means divided by the short-term debt. In addition the negative relation of the performance variable with the firm size estimated as the natural logarithm of total assets is statistically significant at the 1 percent level. The coefficients for debt-to-equity ratio and industry belongings are negative but not statistically significant at the conventional levels in both regressions. The time-series regression was explained on around 20% in both cases by the presented variables and can be considered as reliable enough.

The results from analysis of ROA and ROE as the performance measures are presented in tables 8 and 9. In the regression with ROA as the dependent variable the only statistically significant relation was found for the firm size. The coefficient is positive but the adjusted R square is less than 1% and therefore significance of the whole regression is very low.

**Table 8.** Performance measure (ROA) and reliance on public debt.

The table reports results of regressing firm performance (ROA) and reliance on public debt. ROA is calculated as the net income divided by the book value of total assets. Firm with public debt is binary variable that equals one when the public debt is present in firm's capital structure. Firm with initial public debt is marked one when the public debt offerings are for the first time for the sample company. Firm with continuing public debt offerings equals one when firm had been issuing public debt before. Firm size is determined as natural logarithm of the book value of total assets ( $\ln(\text{total assets})$ ). The amount of leverage is computed as the ratio of long-term debt to total assets (LT debt/Total assets), debt-to-equity ratio is used to determine how much borrowed funds are used in comparison with shareholders' investments and calculated as long-term liabilities divided by total equity. Market-to-book is determined as the ratio of market capitalization to total assets. Liquidity is measured as cash means divided by short-term liabilities (Cash/ ST debt). Industry belongings equals one when firm is manufacturing and zero otherwise. All regressions include year dummy variables. Standard errors are in parentheses.

	Return on Assets	
	(1)	(2)
Intercept	-0.25** (0.11)	-0.24** (0.12)
Firm with public debt	-0.01 (0.02)	
Firm with initial public debt offerings		-0.01 (0.03)
Firm with continuing public debt offerings		-0.008 (0.03)
LT debt / Total assets	-0.04 (0.06)	-0.04 (0.06)
$\ln(\text{total assets})$	0.02*** (0.007)	0.02*** (0.007)
Cash / ST debt	-0.01 (0.01)	-0.01 (0.01)
Debt-to-equity ratio	0.0002 (0.0002)	0.0002 (0.0002)
Market-to-book ratio	0.008 (0.005)	0.007 (0.005)
Industry belongings	0.02 (0.02)	0.02 (0.02)
Adjusted R square	0.008	0.006
Number of observations	400	400

\*, \*\* and \*\*\* denote coefficients significant at 10%, 5% and 1% levels, respectively.

**Table 9.** Performance measure (ROE) and reliance on public debt.

The table reports results of regressing firm performance (ROE) and reliance on public debt. ROE is calculated as the net income divided by the book value of total equity. Firm with public debt is binary variable that equals one when the public debt is present in firm's capital structure. Firm with initial public debt is marked one when the public debt offerings are for the first time for the sample company. Firm with continuing public debt offerings equals one when firm had been issuing public debt before. Firm size is determined as natural logarithm of the book value of total assets ( $\ln(\text{total assets})$ ). The amount of leverage is computed as the ratio of long-term debt to total assets (LT debt/Total assets), debt-to-equity ratio is used to determine how much borrowed funds are used in comparison with shareholders' investments and calculated as long-term liabilities divided by total equity. Market-to-book is determined as the ratio of market capitalization to total assets. Liquidity is measured as cash means divided by short-term liabilities (Cash/ ST debt). Industry belongings equals one when firm is manufacturing and zero otherwise. All regressions include year dummy variables. Standard errors are in parentheses.

	<b>Return on Equity</b>	
	(1)	(2)
Intercept	4.17 (12.29)	0.74 (12.68)
Firm with public debt	3.93 (2.74)	
Firm with initial public debt offerings		5.76* (3.21)
Firm with continuing public debt offerings		1.89 (3.31)
LT debt / Total assets	-9.68 (6.37)	-9.38 (6.38)
$\ln(\text{total assets})$	-0.36 (0.78)	-0.13 (0.80)
Cash / ST debt	0.08 (1.5)	0.11 (1.5)
Debt-to-equity ratio	0.332*** (0.02)	0.33*** (0.017)
Market-to-book ratio	-0.3 (0.54)	-0.27 (0.54)
Industry belongings	2.27 (2.42)	1.93 (2.44)
Adjusted R square	0.4942	0.4945
Number of observations	400	400

*\*, \*\* and \*\*\* denote coefficients significant at 10%, 5% and 1% levels, respectively.*

In contrast time-series regression with ROE as the dependent variable presented in table 9 is explained on almost 50% by the presented variables. Distinction between initial and continuing public debt offerings is presented in column 2 and provide statistically significant positive coefficient for firms with initial public debt offerings with ROE. In other words companies that just entered the market for public debt are associated with higher ROE. No other significant relation was found in both regressions except for debt-to-equity ratio. This coefficient is positive and statistically significant at the 1% level. The economic significance of this finding is concluded in the fact that return on equity is generally greater for higher levered companies.

Summarizing results presented in tables 7 through 9 it is possible to conclude that firms with public debt perform better than entities with private bank loans if the performance is measured by Tobin's  $q$ . Moreover, higher market measure of performance is experienced by more liquid and higher leveraged companies. At the same time interesting negative relation was found between Tobin's  $q$  and firm size however this result is not necessarily inconsistent with previous research. Panel A in the table 6 indicate that firms with public debt are generally bigger, more liquid and higher leveraged than those that use bank loans and therefore the negative relation with the firm size in the multivariate analysis had been most probably caused by exogenous factors like negative correlation between size variable and market measure of performance.

The unique result was also obtained with Tobin's  $q$  measure. The analysis showed that firms with continuing public debt offerings perform better. To the knowledge of the author no previous studies were aimed to examine this side of the research. Also there was found that higher ROE is experienced by initially entered companies into the public debt market.

In general obtained results considering applied control variables are consistent with earlier research. In fact the findings in this part are significantly added to the previous understanding of the relationship between sources of debt and firm performance. Next section examines the effect of switching from one form of debt to another.

### 6.3 Means analysis of sample companies that switched from private to public debt

Table 10 presents results of means tests of companies that switched from private to public debt during the sample period. The means are calculated before the switch and tested against those that are measured after the switch. In order to regulate the time period when the measures are taken the standard event window is used which limits the measures from  $-2$  years to  $\approx +2$  years from the date of the issue announcement. The sign “*approximately*” ( $\approx$ ) is used due to limits in financial data availability.

**Table 10.** Difference of means tests before and after the switch from private to public debt.

This table reports means and t-statistics for performance measures and control variables. The means tests are based on time-series averages for each company that switched from private to public debt during the sample period and then averaging across corresponding status: before and after the switch. Basic performance measures are Tobin’s  $q$ , ROA and ROE. Tobin’s  $q$  is calculated as the market value of total assets divided by the replacement costs of assets. ROA measured as net income divided by the book value of total assets while ROE is calculated by dividing net income on the book value of total equity. Firm size is determined as natural logarithm of the book value of total assets ( $\ln(\text{total assets})$ ). The amount of leverage is computed as the ratio of long-term debt to total assets (LT debt/Total assets), debt-to-equity ratio is used to determine how much borrowed funds are used in comparison with shareholders’ investments and calculated as long-term liabilities divided by total equity. Market-to-book is determined as the ratio of market capitalization to total assets. Liquidity is presented as cash means divided by short-term liabilities (Cash/ ST debt).

	<i>Before Switch</i>	<i>After Switch</i>	<i>t-statistics</i>
1 Number of firms		25	
2 LT debt/Total assets	26.11%	29.63%	-1.80*
3 Debt-to-equity (LT debt/total equity)	154.68%	289.88%	-1.41
4 $\ln(\text{total assets})$ ( <i>in thousands rubles</i> )	16.84	17.34	-5.45*
5 Cash/ST debt	10.10%	10.16%	-0.05
6 Market-to-book ratio	1.25	1.13	0.48
7 ROA	5.59%	6.24%	-0.59
8 ROE	11.17%	2.80%	0.70
9 Tobin's q	1.79	1.71	0.35

\* - *significant at 10% level*

The analysis of means shows that after the switch from private to public debt companies became more leveraged as well as bigger. Thus the firm size measured as natural logarithm of total assets increased from 16.84 to 17.34 thousand rubles and the debt ratio presented as the relation of long-term debt to total assets grew from 26.11% to 29.63%. These are the only variables means of which are differ at the conventional significance levels. Tobin's  $q$  and ROE are indicating a decline, while ROA increased by a bit more than 1 percent but as mentioned before no statistical significance was found in difference of means of these performance measures. Overall this analysis revealed that companies in general are able to sustain growth rates after the switch from private to public debt and naturally become more leveraged as public market of debt is associated with greater sums of loans.

As univariate analysis did not provide any significant evidence on the effect of switching from private to public debt the multivariate analysis can be applied in order to examine whether the firms that paid down bank loans with proceeds from public bonds issues outperform those that did not switch and used proceeds for other purposes.

#### 6.4 Multivariate analysis of the effect of switching from private bank debt to public bonds on firm performance

Table 11 reports results from the time-series regressions using Tobin's  $q$ , ROA, and ROE as dependent variables. The economically significant result is that firms that used the proceeds from public bonds issues have 32.7% lower Tobin's  $q$  compared to those that used the proceeds for other purposes. I calculate this as the estimated coefficient divided by the average Tobin's  $q$  for the sample companies with public debt, which is presented in the table 6. ( $-0.69 / 2.11 = -0.327$ ). Such significant amount suggests that the effect of switching from private to public debt is generally negative in terms of market measure of performance. Yet no significant results were obtained from ROA and ROE regressions for the variable that indicates the switch.

With respect to control variables the significant negative relation of performance measures as Tobin's  $q$  and ROE to debt ratio was found (columns 1 and 3).

**Table 11.** Performance measures and switch from private to public debt.

The table reports results of regressing firm performance measures and switch from private to public debt. Tobin's  $q$  is calculated as the market value of total assets divided by the replacement costs of assets. ROA measured as net income divided by the book value of total assets while ROE is calculated by dividing net income on the book value of total equity. Firm that switched from private to public debt is binary variable that equals one when the switch took place during the sample period. Firm size is determined as natural logarithm of the book value of total assets ( $\ln(\text{total assets})$ ). The amount of leverage is computed as the ratio of long-term debt to total assets (LT debt/Total assets), debt-to-equity ratio is used to determine how much borrowed funds are used in comparison with shareholders' investments and calculated as long-term liabilities divided by total equity. Market-to-book is determined as the ratio of market capitalization to total assets. Liquidity is measured as cash means divided by short-term liabilities (Cash/ ST debt). Industry belongings equals one when firm is manufacturing and zero otherwise. All regressions include year dummy variables. Standard errors are in parentheses.

	<b>Tobin's <math>q</math></b>	<b>ROA</b>	<b>ROE</b>
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>
Intercept	14.51*** (2.29)	-0.3 (0.28)	40.42 (33.67)
Firm switched from private to public debt	-0.69* (0.36)	0.01 (0.04)	-3.85 (5.00)
LT debt / Total assets	-2.55** (1.06)	-0.12 (0.12)	-28.85** (14.68)
$\ln(\text{total assets})$	-0.71*** (0.13)	0.02 (0.01)	-1.98 (1.88)
Cash / ST debt	1.15*** (0.16)	-0.003 (0.02)	0.85 (2.51)
Debt-to-equity ratio	-0.0006 (0.002)	0.0002 (0.0002)	0.34*** (0.02)
Market-to-book ratio	-	0.004 (0.008)	-1.21 (0.97)
Industry belongings	-0.23 (0.36)	0.02 (0.04)	3.9 (4.91)
Adjusted R square	0.34	0.008	0.49
Number of observations	200	200	200

\*, \*\* and \*\*\* denote coefficients significant at 10%, 5% and 1% levels, respectively.

Liquidity ratio in addition is positively associated with Tobin's  $q$  while debt-to-equity is positively related with ROE. The same negative relation of the firm size and Tobin's  $q$  was found in this analysis and is significant at 1 percent level. No other statistically significant relation was found.

Summarizing this part of the analysis it is possible to make several conclusions. First, companies that switched from private to public debt by repaying bank loans with proceeds from the bonds issue became more leveraged and were able to grow after the switch. Second, switched firms experienced lower market measure of the performance. Thus the entities that decided to change their private bank loan agreements to publicly traded bonds have lower Tobin's  $q$  on 32.7% comparing to those that used the proceeds from bonds issues for other purposes. Finally, statistically significant negative relation between performance measures (Tobin's  $q$  and ROE) and the debt ratio confirm the finding of lower performance of the switched from private to public debt companies since the univariate analysis indicated significant increase in the leverage ratio.

## 7. SUMMARY AND CONCLUSIONS

Distinguishing between two sources of debt financing, private and public this study aims to reveal any relationship between the choice of the debt source and firm performance. In order to reach stated goal the sample of 100 companies that are traded on the Russian stock exchanges was chosen. Among these firms 50 are relying exclusively on bank loans and 50 have issued bonds in their capital structure. The time period for which financial indicators were manually collected is from the 1<sup>st</sup> of January 2004 until 31<sup>st</sup> of December 2007 which makes this study one of the most recent in the field.

Cross-sectional analysis of the gathered data showed that firms with public debt in their capital structure are more than twice higher leveraged than firms with private debt. The finding of general bigger size of firms with publicly placed debt is logical and expected since the total amount of assets is a trustworthy indicator for public investors. However, the main finding of this paper suggests that firms with public debt are much better performers than firms with private debt based on the market measure of performance – Tobin's  $q$ . The difference in the sample firms' Tobin's  $q$  is more than 28% implying that the main hypothesis that companies with public debt perform differently than firms that rely on private debt cannot be rejected and supporting the argument that capital structure does influence the overall firm performance.

In addition the results also revealed that firms with previous public history outperform those that initially make public offerings and those who rely on private debt. This relation is also based on the market measure of performance, while another finding suggests that firms with initial public debt offerings experiencing higher return on equity.

Furthermore, concerning the second purpose of this paper stated as the estimation of the effect of switching from private bank loans to publicly placed debt there was found that after such substitution firms became much more leveraged and showed sustainable growth. However, again based on the market measure of performance it is appeared that these companies experienced decline in the performance. On average the difference in

Tobin's  $q$  indicator between switched and other companies was about -33%, which completely supports the second hypothesis made in this paper and totally consistent with James (1987) who found negative abnormal return for announcements of bank debt repayment by issuing public debt.

Generalizing obtained evidence it is possible to conclude that different debt sources influence firm performance differently. In particular there was found that public debt increases the market measure of performance (Tobin's  $q$ ) making those firms that use it in their capital structure more valuable. The possible interpretation of such behavior might be in availability of larger capitals on the public market entering which a company is able to attract bigger amount of debt than from the banks and as the results has more financial flexibility. In addition better public recognition also influences stock prices rising market capitalization and as the result market measure of performance. The finding that firms with continuing public debt offerings perform better supports this statement.

On the other hand negative relation of bank loans pay downs by issued public bonds and firm performance can be explained by debt overhanging problem. In other words firms that substituted their bank loan agreements with publicly traded bonds and used the rest of proceeds for other purposes become more leveraged and as the result riskier from the investors point of view. Therefore the market measure of performance significantly declined on average for those firms.

The present research can be extended in several ways. First, it would be interesting to make cross-country analysis of the issue. Comparison of the results from the biggest world economies would provide additional theoretical framework on the issue of the capital structure and debt choice. Second, it is possible to broaden the types of debt used for the analysis. Thus for example distinguishing between private bank debt, public debt and private non-bank debt would provide more accurate results. Finally, the analysis made in this work raises the issue of optimal forms of debt reliance. If the tradeoff between public/private debt and firm performance is clear than one might be interested how does different mixtures of debt sources affect firm performance?

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