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MASTER THESIS

The influence of capital structure on the value of the firm.

A study of European firms

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Abstract

Object of study is the financial performance of the largest oil and gas companies in Europe. Research work had the subject of an econometric model of market value, depending on factors related to the structure of capital.

Purpose of the thesis - identifying market value depending on factors related to the structure of capital for oil and gas companies in the region of northern Europe.

Diploma thesis contains an introduction, main part, and conclusion.

The introduction reveals the relevance of the chosen topic, raises the problem, purpose of the study, defined object, a subject of scientific research, formulate hypotheses to achieve.

The main portion consists of three sections. The first section deals with the theoretical aspects of capital management, the impact of various factors on its formation. The second section describes the research methodology. In the third section presents the regression model, depending on the market value of the factors associated with its capital structure, as well as an analysis of its reliability. The fourth section analyzes the results obtained.

In conclusion, summed up the work, brought together the findings, as well as the prospects for the further study of the problem and recommendations for the possible use of the results in practice.

The results have shown that management decisions related to the capital structure in particular, have an impact on the market value of the company. However, revealed from the statistical model is not high enough the coefficient of determination, showing how explains the dependence of the factors considered, showed that company's stock price depends not only on the main indicators of financial performance, but also on the qualitative decision-making managers of the company, the degree of its success and good governance, investor psychology, goodwill, etc.

In this regard, further research in this area should be directed to a deeper analysis of the possible factors that may influence the market value, as well as consideration of their dynamics.

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1. Introduction

1.1. Motivation and background

Decisions about optimizing the capital structure of the firm, no matter if it is a small business or a global corporation, has always been an important issue for the management.

Various authors, (e.g. Booth (2002), Cooper and Nyborg (2006), Farber, Gillet and Szafarz (2006)) state that debt policy may only be viewed in terms of maintaining a fixed market value debt ratio (Miles-Ezzell assumption) or a fixed dollar amount of debt (Modigliani-Miller assumption).

The presence of debt financing increases the total cash flow available to debt and equity claimants, as the tax system in most countries allows interest costs to be tax deductible. As a consequence, a levered firm pays less in taxes than does a pure-equity firm, and the sum of the debt plus the equity of the levered firm must be greater than the sole equity of the unlevered firm.

The tax shield from debt represents a significant proportion of total value for many companies, projects, and transactions. Its potential size can be seen by considering a company with a 30% debt-to-capital ratio and a corporate tax rate of 40%. One approach to valuing the debt tax shield is simply to multiply the amount of debt by the tax rate, in which case the debt tax shield would be seen as contributing 12% of total value (Cooper, Nyborg 2007). And if the leverage ratio were doubled, the debt tax shield could be shown to contribute almost a quarter of the value of the company.

Taking into account all these statements the influence of the firm capital structure on the firm market value as well as other factors related to capital structure has aroused lots of attention from the investors and academic researchers. For a listed company, market value 'is the price at which willing buyers and sellers would trade the assets' (Ross & Westerfield, 2008).

But what determines share prices of the companies? That became a complex and contradictory question among academics. With respect to the economic theory, determination of the price of any asset is usually made by the market forces. Similarly in case of shares prices, it emerges by trading between the investors in stock markets. Major forces working in this case include the firm's key performance indicators (fundamentals), market efficiency, investor's perception, and some macroeconomic variables like GDP, inflation and oil prices (Malik et al,2012).

Investors in the stock market put their money to earn return on their investment. Shares are sold from one investor to another. This transaction is based on the level of information possessed by each participant. According to rational choice theory (RCT) a shareholder who foresees declining performance by the company in future may sell shares. Similarly an investor with an improving performance prediction for a company may want to purchase shares of that company. In this way it depends on the level of information to some extent (Malik et al, 2012).

Share price determination is a contradictory task, affected by lots of factors. This paper attempts to discuss the various effect of capital structure decision on a listed company's market value.

1.2. Research questions

The main objective of this work is to identify the relationship of company's market value to the factors of capital structure for oil and gas companies in Europe, followed by the application for administrative decisions related to capital structure.

Object of study is the financial performance data of major oil companies in Europe. This research puts the subject on an econometric model of market value, depending on factors related to capital structure.

The problem addressed in this work can be defined by following questions:

1. What factors are important when determining share price?
2. To what extent do factors affect market value of firms in oil and gas industry?

The subsequent questions that will help to find the answer for the main problem are the following:

- What factors are suitable for explanation of relationship between market value of the firm and capital structure decisions in oil and gas industry?
- How to measure these factors in order to present them in a quantitative model in a suitable form?
- Are theoretical models sufficient in creating quantitative model and reflecting relationship between dependent and independent variables?
- How to compare the influencing power of each factor?

1.3. Structure of the work

The work contains introduction, main part and conclusions.

In introduction the relevance of the chosen topic is revealed, and then the problem and purpose of the study, as well as the object and subject of scientific research are defined.

The main part consists of three sections, first of which examines the theoretical aspects of capital management, the impact of various factors on its formation. The second section describes the research methodology, where main research design concepts are examined, followed by formulation of the hypotheses. The third section presents an econometric model of market value, depending on factors related to the capital structure and its reliability is examined, as well as an analysis and interpretation of the results are conducted.

In conclusion there is a summary of the work, where all the findings are brought together, as well as the opportunities for the further study of the problem and main implications of the results obtained are discussed.

2. The theory of a firm valuation

Decisions about optimizing the capital structure of the firm, no matter if it is a small business or a global corporation, has always been an important issue for the management. The capital structure refers to how the assets of the firm are financed. For small businesses the possibilities may include the owners' equity, some amount of money that is due for payment to suppliers or loans from the bank. In case of multinational corporations, possibilities vary from short- and long-term bonds, stock market and loans in different currencies. The Modigliani-Miller theorem states that for determining the value of a firm there is no matter what is the source of its financing.

The Modigliani-Miller theorem is a key pillar in modern finance. The theorem has revolutionized corporate finance since it was introduced by the Professors Franco Modigliani and Merton Miller in 1958.

2.1. The Modigliani-Miller theorem

A good description of the theorem is presented by Gupta in his studies (2009):

Consider two firms which are identical except for their financial structures. The first (Firm U) is unlevered: that is, it is financed by equity only. The other (Firm L) is levered: it is financed partly by equity, and partly by debt. The Modigliani–Miller theorem states that the value of the two firms is the same.

In the world without taxes:

Proposition I

$$V_U = V_L \quad (2.1)$$

Where V_U - is the value of an unlevered firm = price of buying a firm composed only of equity, V_L is the value of a levered firm = price of buying a firm that is composed of some mix of debt and equity.

To see, why this should be true, suppose an investor is considering buying one of the two firms U or L. Instead of purchasing the shares of the levered firm L, he could purchase the shares of firm U and borrow the same amount of money B that firm L does. The eventual returns to either of these investments would be the same. Therefore the price of L must be the same as the price of U minus the money borrowed B, which is the value of L's debt.

This discussion also clarifies the role of some of the theorem's assumptions. We have implicitly assumed that the investor's cost of borrowing money is the same as that of the firm, which need not be true in the presence of asymmetric information, in the absence of efficient markets, or if the investor has a different risk profile than the firm.

Proposition II

$$r_E = r_0 + \frac{D}{E}(r_0 - r_D) \quad (2.2)$$

where

- r_E is the required rate of return on equity, or cost of equity.
- r_0 is the company unlevered cost of capital (i.e. assume no leverage).
- r_D is the required rate of return on borrowings, or cost of debt.

- $\frac{D}{E}$ is the debt-to-equity ratio.

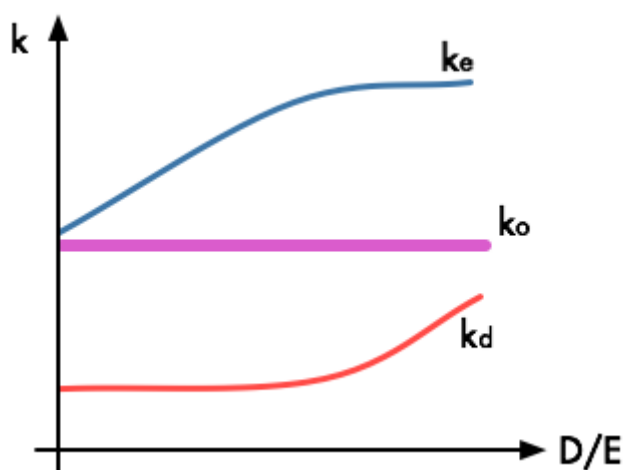


Fig.1. Proposition II with risky debt. As leverage (D/E) increases, the WACC (k_0) stays constant.

A higher debt-to-equity ratio leads to a higher required return on equity, because of the higher risk involved for equity-holders in a company with debt. The formula is derived from the theory of weighted average cost of capital (WACC).

These propositions are true under the following assumptions:

- No transaction costs exist, and
- Individuals and corporations borrow at the same rates.

These results might seem irrelevant (after all, none of the conditions are met in the real world), but the theorem is still taught and studied because it tells something very important. That is, capital structure matters precisely because one or more of these assumptions is violated. It tells where to look for determinants of optimal capital structure and how those factors might affect optimal capital structure.

In the world with taxes

Proposition I

$$V_L = V_U + T_C D, \quad (2.3)$$

where

- V_L is the value of a levered firm.
- V_U is the value of an unlevered firm.
- $T_C D$ is the tax rate (T_C) times the value of debt (D)

The term $T_C D$ assumes debt is perpetual

This means that there are advantages for firms to be levered, since corporations can deduct interest payments. Therefore leverage lowers tax payments. Dividend payments are non-deductible.

Proposition II

$$r_E = r_0 + \frac{D}{E}(r_0 - r_D)(1 - T_C) \quad (2.4)$$

where:

- r_E is the required rate of return on equity, or cost of levered equity = unlevered equity + financing premium.

- r_0 is the company cost of equity capital with no leverage (unlevered cost of equity, or return on assets with $D/E = 0$).
- r_D is the required rate of return on borrowings, or cost of debt.
- D/E is the debt-to-equity ratio.
- T_c is the tax rate.

The same relationship as earlier described stating that the cost of equity rises with leverage, because the risk to equity rises, still holds. The formula, however, has implications for the difference with the WACC. Their second attempt on capital structure included taxes has identified that as the level of gearing increases by replacing equity with cheap debt the level of the WACC drops and an optimal capital structure does indeed exist at a point where debt is 100%.

The following assumptions are made in the propositions with taxes:

- corporations are taxed at the rate T_c on earnings after interest,
- no transaction costs exist, and
- individuals and corporations borrow at the same rate.

While it is critical to understand the theorem, Modigliani and Miller's set of assumptions render the results of their work only partially applicable to real-life situations.

In his critical article Miller wrote with regards to the MM approach: "Looking back now, perhaps we should have put more emphasis on the other, upbeat side of the "nothing matters" coin: showing what *doesn't* matter can also show, by implication, what does," (Miller, 1988: 100). That is why MM's view on capital structure is always taken into consideration but almost never applied to the real world.

Analyzing MM theorem there has been written a note in *Q-finance journal*:

Advantages

In practice, it's fair to say that none of the assumptions are met in the real world, but what the theorem teaches is that capital structure is important because one or more of the assumptions will be violated. By applying the theorem's equations, economists can find the determinants of optimal capital structure and see how those factors might affect optimal capital structure.

Disadvantages

Modigliani and Miller's theorem, which justifies almost unlimited financial leverage, has been used to boost economic and financial activities. However, its use also resulted in increased complexity, lack of transparency, and higher risk and uncertainty in those activities. The global financial crisis of 2008, which saw a number of highly leveraged investment banks fail, has been in part attributed to excessive leverage ratios.

Summarizing the review of the opinions of MM theorem, here is a good presentation of the assumptions applicable to the theorem, which was proposed by Copeland, Weston and Shastri (2005). Set of 9 assumptions:

- (A1) The investment policy of the firm is known and constant: the firm's assets generate a constant operating cash flows in perpetuity period. Importantly, the cash flow is independent of changes in capital structure.
- (A2) Firms can be classified according to the risk: Businesses one risk category is supposed to have a perfect correlation of cash flows. Thus, investors require the same expected return of any two assets within a given risk category.
- (A3) absence of taxes: no corporate tax, no tax on income of individuals.
- (A4) the absence of transaction costs and the costs of bankruptcy.
- (A5) symmetry of information: corporate insiders and outside investors have the same information.
- (A6) the absence of agency costs: managers are always seeking to increase the value of the assets of shareholders and, therefore, deal only with projects that increase the value of assets.
- (A7) Absence of arbitrage opportunities: two assets with the same yield should be sold at the same price.
- (A8) Individual investors can borrow and lend at the risk-free rate.
- (A9) The capital structure of the company consists of borrowings from the risk-free rate and equity.

2.2 The corporate taxes and capital structure

To continue it would be sensible to overview the issue of what impact the corporate taxes has on the MM theorem. It should be mentioned here that assumption A3 (no taxes) is omitted here. For

general understanding a classical tax system is taken into consideration, since it is mostly found in the studies of scholars.

2.2.1. Structure of corporate tax system

A classical system taxes corporate and personal income separately. The key feature of a classical system is the tax-deductibility of interest payments at the corporate level, so that interest is paid out of income before taxes. In contrast, equity payouts are not tax-exempt and are paid from residual corporate income after taxes. (Graham 2003).

The corporate income tax is designed as a tax on corporate profits (also known as net income). Broadly defined, corporate profit is total income minus the cost associated with generating that income. Business expenses that may be deducted from income include employee compensation; the decline in value of machines, equipment, and structures (i.e., depreciation); general supplies and materials; advertising; and interest payments. (Keightley et al, 2014).

Corporate income is taxed at the marginal corporate tax rate T_C , which is assumed to be constant over time. Personal income on dividends, capital gains, and interest is taxed upon receipt by investors (Graham 2003).

Another important component of the corporate tax system is the treatment of losses. A corporation that loses money in a particular year experiences what is known as a net operating loss (NOL). No corporate tax is due when a company has a NOL because they do not have profits (e.g., total income less expenses is negative). In addition, a NOL can be “carried back” and deducted from up to two prior years’ taxable income. The corporation is then eligible for a refund equal to the difference between previously paid taxes and taxes owed after deducting the current year’s loss. If the loss is too large to be fully carried back, it may be “carried forward” for up to 20 years and used to reduce future tax liabilities. (Keightley et al, 2014).

2.2.2. Capital structure and the issue of debt

While suggesting a fundamental irrelevance of financial decisions for firm value, Modigliani and Miller already refer to company taxation as a reason for preferring debt to equity (Modigliani and Miller, 1958). Within their framework of perfect capital markets, the value of a permanently leveraged firm is generated by adding the value of the corporate tax shield of debt to the value of an identical but unleveraged company (Modigliani and Miller, 1963).

A good description of how debt taking affects value of the firm was presented by Damodaran in his work paper:

A basic proposition about debt and value (Damodaran 2006):

For debt to affect value, there have to be tangible benefits and costs associated with its use (instead of using equity).

- If the benefits exceed the costs, there will be a gain in value to equity investors from the use of debt.
- If the benefits exactly offset the costs, debt will not affect value
- If the benefits are less than the costs, increasing debt will lower value

The presence of debt financing increases the total cash flow available to debt and equity claimants, as the tax system in most countries allows interest costs to be tax deductible. As a consequence, a levered firm pays less in taxes than does a pure-equity firm, and the sum of the debt plus the equity of the levered firm must be greater than the sole equity of the unlevered firm. (Barbi 2007)

Considering the impact that corporate taxes have on the value of a firm, and assuming no other factors of imperfect market, a good illustration is presented by Hickman et al. (1996). He pointed out that the firm's value is an increasing function of leverage. Picture 2 explains three different firm values: the value given interest paid after taxes, the value given interest paid before taxes, and the value in perfect markets. One can observe that tax has a strong effect on the firm's value which is negative when interest is paid after tax, and positive in the opposite situation. Positive effect depends on the amount of debt's tax shield.

Obviously, it is commonly accepted among the scholars that a debt tax shield increases a firm value (assuming the tax systems where interest are paid before taxes). However, there is still an ongoing debate about the calculation of the value of the tax shield (Fernandez, 2004, 2005; Cooper and Nyborg, 2006).

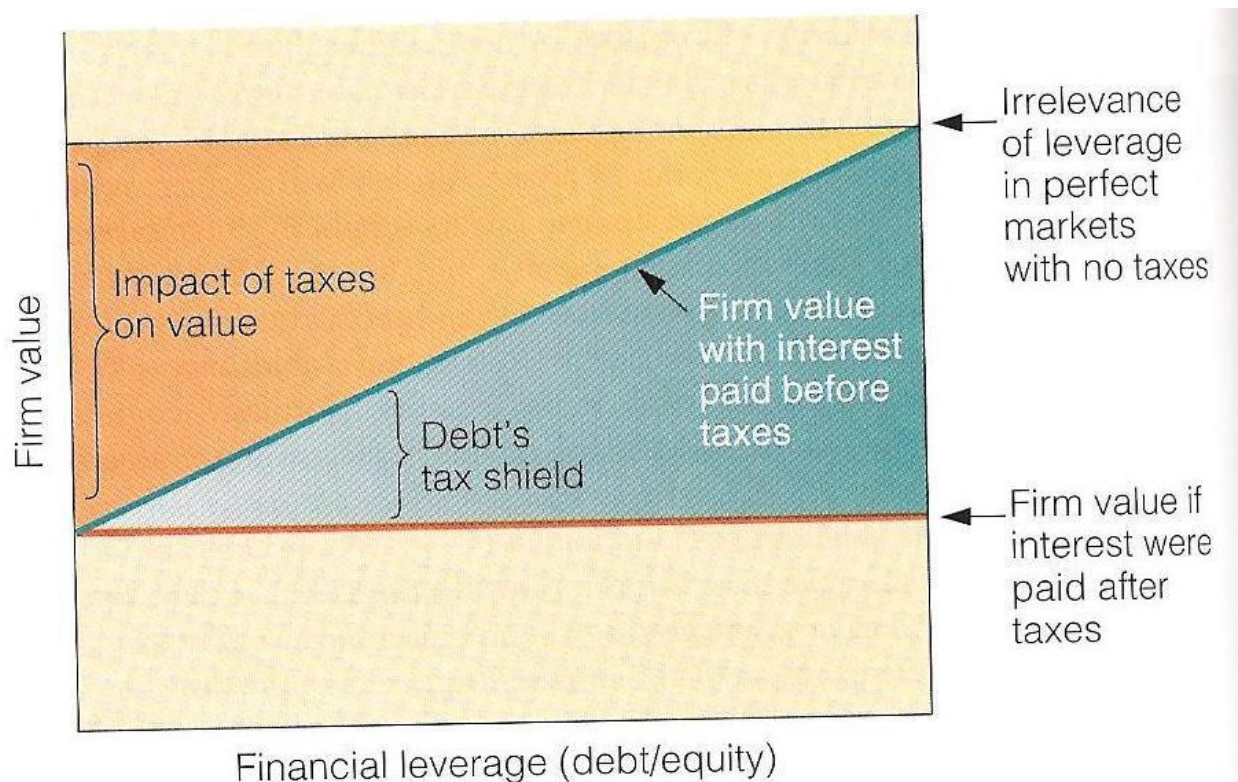


Fig.2. Effect of tax benefit on firm's value (Hickman et al. 1996)

2.3. Influence of costs of bankruptcy

Since the firm, which attracts debt has to pay interest on the loan and the debt itself regardless of its financial situation, there is a risk of non-payment by the company on its obligations, or, in other words, there is the probability of bankruptcy. Bankruptcy “is a legal procedure for liquidating a business (or property owned by an individual) which cannot fully pay its debts out of its current assets. Bankruptcy can be brought upon itself by an insolvent debtor (called 'voluntary bankruptcy') or it can be forced on court orders issued on creditors' petition (called 'involuntary bankruptcy'). Two major objectives of a bankruptcy are (1) fair settlement of the legal claims of the creditors through an equitable distribution of debtor's assets, and (2) to provide the debtor an opportunity for fresh start. Bankruptcy amounts to a business-failure, but voluntary winding up does not”¹. On the other hand, bankruptcy - is a legitimate way to assign the assets of creditors, if due to a decrease in their market value is the risk of default by its obligations. Costs of bankruptcy, in turn are the costs that accompany this method of procedure misappropriation of assets (Brealey, Mayers, 1997).

¹ <http://www.businessdictionary.com/definition/bankruptcy.html>

Increases the probability of bankruptcy due to increased business risk of the company, which in turn varies with the period of time and the industry in which the company operates. The main factors determining the magnitude of the business risk of a particular industry are the following (Brigham, Ehrhardt, 2009)

- a) Variation in demand for products;
- b) Volatility of selling prices;
- c) Volatility of the value used resources;
- d) Ability of the company to influence the selling price;
- e) Ability to adapt quickly to changing market conditions (to develop and implement new technologies and product lines);
- f) Risks associated with doing business abroad;
- g) The share of fixed costs (or operating leverage).

Even with a slight decline in sales, the more firm fixed costs, the more reduced the return on equity (ROE). Therefore, "operating leverage" business risk increases. Among the industries with high shares of fixed costs include industries with high costs of R & D (high-tech companies, automotive), as well as capital-intensive industries (aviation, electric power, chemical industry). Low fixed costs typical for areas such as, for example, retail trade enterprises or companies representing services.

Costs associated with the bankruptcy procedure can be divided into direct costs and indirect costs (Fig. 3).

The direct costs include the costs for the services of appraisal firms, lawyers, attorneys, as well as other administrative and legal costs. Indirect costs of bankruptcy due to the fact that, in connection with the announcement of bankruptcy, the normal operating activities of the company begins to deteriorate (Frank and Goyal, 2009). For example, in order to avoid bankruptcy or postponing the management company can take short-term measures (for example, the adoption of risky projects) to maintain the viability of the company, which may have disastrous consequences in the long term, and adversely affect the value of the company. It should be noted that the magnitude of the costs of bankruptcy is subject to economies of scale: higher costs of bankruptcy for small firms and lower for large firms.

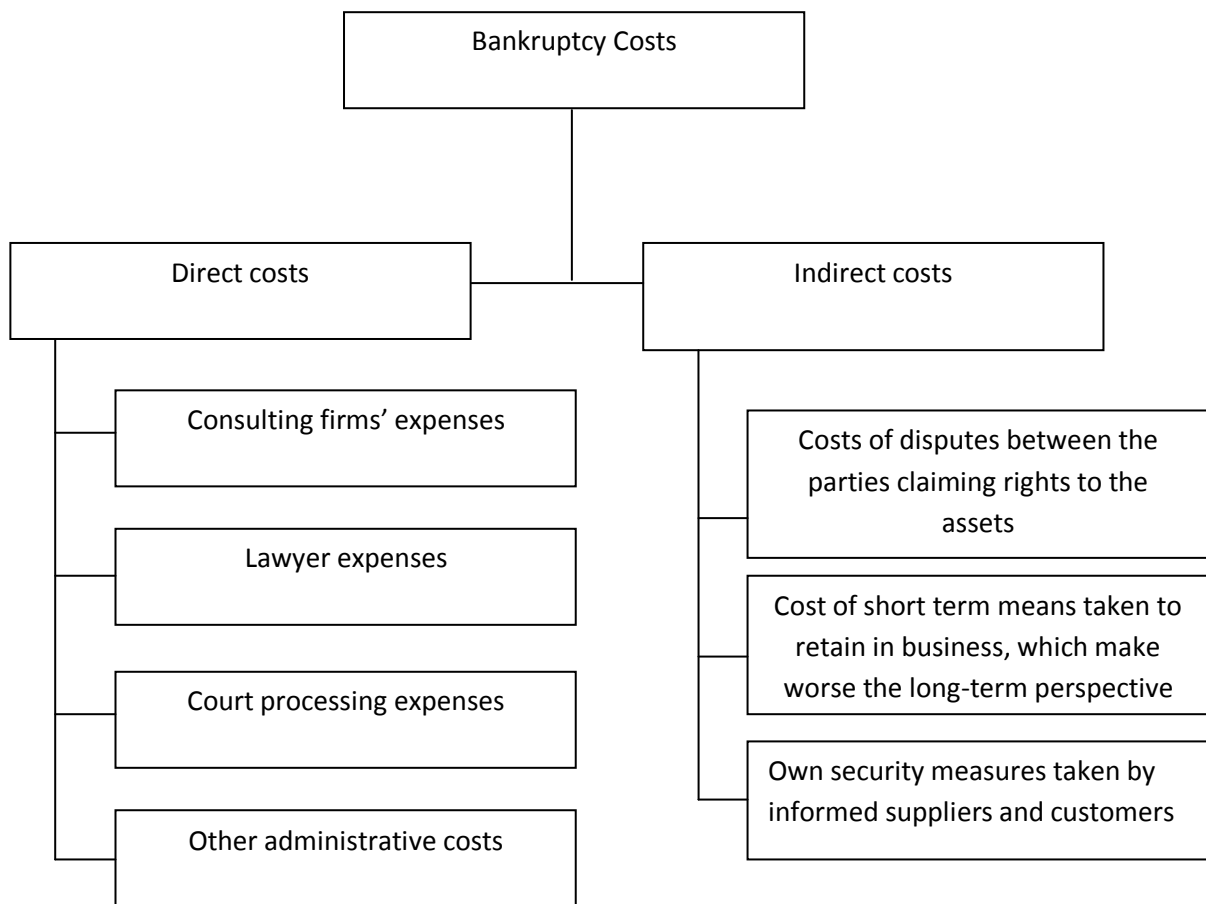


Fig. 3. Costs of bankruptcy (Lapitsky, 2013)

2.4. Trade-off theory

Trade-off theory of capital structure, developed by followers of Modigliani and Miller, included the factor costs of bankruptcy. According to the theory, increasing the threat of bankruptcy associated with raising additional debt, making borrowed funds less attractive to firms. However, the tax benefits of debt capital make it attractive to use. Thus, in the process of formation of capital structure, a firm must find a compromise between the benefits and costs of attracting debt.

Besides the costs of bankruptcy, Trade-off theory also includes agency costs as a factor in the desire to reconcile the interests of different stakeholder groups, with the right to demand the resources of the company (Morellec, 2004). They represent the direct cost of the audit and control of creditors, as well as indirect costs associated with the loss of efficiency. Lenders are encouraged to make audit of borrower by restrictions imposed on the use of borrowed funds in excess of the established norms. Thus, the value of the firm, attracting debt financing consists of the value of its equity, total debt, the present value of the benefits from the tax shield, bankruptcy

costs and agency costs. However, in practice quite difficult to separate the effects of agency costs and the effect of tax deductions (Frank and Goyal, 2009). The optimal capital structure, according to the Trade-off theory, is reached when the marginal tax benefits equal marginal costs associated with the threat of bankruptcy and agency costs.

Trade-off theory is closely related to the model of adjusted present value (APV), which allows calculating the value of the company (or investment project debt financing) by the following formula:

$$APV = \sum_{i=0}^n \frac{CF_i}{(1+WACC)^i} + PV_{TS} - PV_{BC} - PV_{AC} \quad (2.5)$$

where: CF_i – cash flow in the i -th period;

WACC – weighted average cost of capital (pre-tax);

$PV_{TS/BC/AC}$ – present value of the benefits of the tax shield, costs of bankruptcy and agency costs.

In many case studies most of the coefficients of the determinants of capital structure is explained in terms of a trade-off theory. So in the work of Frank and Goyal (Frank and Goyal, 2009) 5 of 6 coefficients are explained on the basis of the conclusions of the static a trade-off theory. Conclusions about the nature of a trade-off theory of factors influencing the capital structure can be described as follows:

- a) The larger the company, the more varied its operating activities, which implies a lower risk of bankruptcy, which means that the firm can attract more leverage (Frank and Goyal, 2009);
- b) The higher the firm's growth rate, the higher the probability of default, and the higher agency costs associated with debt financing, which reduces financial leverage and increase the risks of the company;
- c) The more firm material of liquid assets, the more opportunities for their implementation with minimal losses during the potential threat of bankruptcy. In this regard, the firm can attract more leverage, therefore, reduce the likelihood of bankruptcy. Conversely, if the firm is owned primarily by intangible assets, liquidity is lower (because their sale requires a longer exposure, otherwise they can only be sold at a substantial discount), the financial leverage should be lower because the higher the probability of bankruptcy;

- d) The higher the business risk of the company, the greater the probability of financial distress and bankruptcy, therefore, the firm should attract less leveraged.

2.5.Asymmetric information

Theories of capital structure, taking into account the impact of asymmetric information, were developed on the basis of the needs of public companies to disclose personal information and reduce the effect of adverse selection (Harris and Raviv, 1991). In the first approach (the theory of the hierarchy), capital structure helps to avoid making inefficient investment decisions caused by information asymmetry between insiders and outside investors (Myers and Majluf, 1984; Myers, 1984). The second approach (signal theory) suggests that decisions on using the capital structure through a "signal" to foreign investors transferred insider information, which also reduces the level of information asymmetry (Ross, 1977; Leland and Pyle, 1977).

2.6.Pecking-order-theory

According to Myers and Majluf (1984), if insiders are better informed about the affairs of the firm than outside investors, the company's shares are likely to be undervalued by the market. As a consequence, the financing of investment projects through the issuance of shares may be so costly for companies that profit new investors (and also loss of existing investors) due to underestimation of the shares can cover the net present value (NPV) of the project. This makes the stock less attractive to third-party financing. Retained earnings (and other internal sources of financing, such as depreciation or disposal of liquid market instruments), by contrast, is not subject to the problems of information asymmetry and should, in theory, be used primarily to finance the firm's projects. Debt, to a lesser extent than the shares related to the asymmetry of information, so the lack of domestic sources, the company must attract primarily debt financing. Thus, the conclusion of the theory is that the funding allocated in a hierarchical order from least to most attractive to the firm. Thus, internal sources rather than external, while external sources of debt rather than shares.

Besides information asymmetry, the hierarchy of sources of financing can also be explained by the cost of attracting one source or another, that is, transaction costs (Brigham, Ehrhardt, 2009). Public offering (IPO / SPO, initial / secondary public offering) has the highest value and the sum of the following costs:

- The sale of shares at a price lower than the fair in order to reduce the risk of incomplete placement, as well as reduce the rate of shares: preferred for the issuer to sell cheaper to the share price subsequently grew, and not vice versa;
- administrative costs;
- Expenditure on the inclusion of new securities in the register;
- preparation costs of the prospectus and registration documents;
- The costs of a mediator, a consultant who helps businesses make the issuance of securities.

In addition, the costs of a public offering of shares are subject to economies of scale: the larger the accommodation, so it is cheaper on a per issued share. Therefore, for large organizations it is cheaper to issue shares. Economies of scale are also evident in the fact that the firm to reduce the costs of accommodation must provide funding through short-term obligations as long as the largest public issue of shares will not be justified.

From the theory of the hierarchy to the following conclusions about the factors that affect the capital structure and the nature of their influence:

- a) The greater the profitability of the company, the less it will need experience of foreign investment, and, accordingly, the lower will be its financial leverage;
- b) The larger the company, the cheaper it costs for the issue of shares, and therefore, it will have lower financial leverage;
- c) The smaller the firm has tangible assets, the higher the leverage, as the company is exposed to information asymmetry, and the more likely that its shares are undervalued by the market and, consequently, such a firm is inclined to issue debt rather than stocks.

2.7. The signaling theory

In the model of Ross (Ross, 1977), due to the presence of asymmetric information, the management of the company aware of the true distribution of its income in time, while foreign investors it is not known. In turn, the management of organizations trying to make the placement of shares only when the share price of the company are in the process of escalation, or at a high level, in anticipation of the subsequent decline. If the firm has a high growth potential in the future, the management of which is aware of the prospects of the company, will not carry out the placement of shares currently at current prices, because he knows that prices will rise in the future that will allow for a better share issue. Foreign investors are aware of this fact and agree to

buy shares of a company invests only with discounted prices, making the issue of securities more expensive and less demand in relation to debt financing. Thus, the issue of shares carries a negative signal to investors, while the high level of debt is perceived by investors as a signal of good quality firm.

Negative signal accompanying the issuance of shares may cause a problem of under-investment, as a company with a good investment opportunity, might not attract the necessary funding for the amount by placing shares. To avoid this problem, companies need to maintain a reserve borrowing capacity, subject to the availability of attractive investment opportunities could use cheaper borrowings.

Thus, the issue of new shares shall be carried out under the following conditions:

- the company's management believes that its shares are overvalued by the market;
- funded project must have a high profit margin and not carry a negative signal to investors;
- financing of the project cannot be realized with the help of borrowed capital.

Key findings of the signal theory applied to the factors determining the capital structure:

- a) The higher the profitability of the company, the greater its financial leverage, as more profitable companies are more interested in maintaining the reserve borrowing capacity;
- b) The higher the growth potential, the higher the leverage, as financing through shares carries a negative signal.

2.8. Agency costs

Agency costs are costs caused by the conflict of interest. Conflict of interest between owners and managers of capital arises from the fact that managers are not 100% owned by the firm. This suggests that the efforts of managers to increase the value of the company are not fully reimbursed, although the costs are borne by the managers to the fullest. Eliminate potential conflicts between managers and creditors can through decisions about capital structure. Thus, the decrease in the share of loans in total capital of the company, will lead to a decrease in the proportion of managers in the firm's capital, and is offset by the negative impact factor of agency costs.

Between the owners and creditors arises a conflict of interest of another kind. The owners of the company, having in liabilities debt instruments, have an incentive to invest in risky projects (overinvestment), such as projects not related to the main activities of the company, entering new markets, even if they have a negative impact on the value of the firm. This is due to the fact that such projects increase the cost of equity capital («equity value») by reducing the cost of debt, but at the same time reduce the cost of debt («debt value») (Harris and Raviv, 1991). In turn, the credit contract provides for benefits in excess of the interest owners, and if there are losses, they are creditors because of limited liability. In other words, if the risk is higher than the risk of the project, estimated lender and pledged them in the interest rate, the winner is the owner, and if the risk of the project is lower than the risk inherent in the rate on the loan, the lender wins. This problem is called "asset substitution problem."

Myers (1977) considers a conflict of interest between lenders and owners from the other side. If the holders of shares of the company assume that there is a high probability of bankruptcy, they do not tend to make investment projects, even if it increases the value of the company. This is due to the fact that the costs for the implementation of the project are fully born by the owners, while most of the benefits of the project remain with creditors.

If by the use of debt financing the conflict of interests between owners and managers can be smoothen, the clash of interests between owners and creditors are not amenable to resolution through solutions in the capital structure (Myers, 1977).

Thus, we can draw the general results on the advantages and disadvantages of debt financing.

Advantages

- 1) Benefits of tax deductions: the higher the tax rate, the greater the benefit
- 2) Added Discipline: Higher separation between the managers of the company and its owners, the more profit.

Disadvantages

- 1) Bankruptcy costs: the higher the commercial risk, the higher the costs
- 2) Agency costs: the higher the division between owners and creditors, the higher costs
- 3) Loss of future financial flexibility: the higher the uncertainty of future financial needs, the greater the costs.

3. Methodology

This chapter provides a structural description of the methodology used in this work. Description of the methodology begins with a review of empirical literature, which examines the theory related to our research and practical conclusions from them. Methodology of data collection and processing is the next item, where the data description and their sources are provided, along with the definition of the sample and its size. Section concludes with a description of the factors that determine the quality of research. The concepts of causality, reliability and generalizability are used. Also limitations of the study are discussed and the software that was used to build an econometric model is explained.

3.1. Review of empirical literature

This section provides an overview of empirical studies, most closely associated with this area of work, that is, examining the factors affecting the capital structure of companies belonging to different sectors.

First of all it is necessary to show why using book values is reasonable, as it has empirical support. For example, Graham and Harvey (Graham and Harvey, 2001) based on a survey of CFOs revealed that most of them tend to use book values in making financial and investment decisions, as they tend not to adjust the capital structure when the market value of equity changes. Moreover, the use of balance sheet ratios can be justified by the fact that the tax benefits of debt is calculated based on book values (Waseem, 2012)

An early research about the effects of capital structure change on security prices was made in 1980 (Masulis, 1980). This study considers the impact of capital structure change announcements on security prices. Statistically significant price adjustments in firms' common stock, preferred stock and debt related to these announcements are documented and alternative causes for these price changes are examined. The evidence is consistent with both corporate tax and wealth redistribution effects, There IS also evidence that firms make decisions which do not maximize stockholder wealth. In addition, a new approach to testing the significance of public announcements on security returns IS presented. The author made the following findings:

- 1) Capital structure changes predicted to cause either a corporate debt tax shield effect or a wealth redistribution effect are associated with security price changes consistent with these predictions.
- 2) Security price changes are relatively larger in cases where the corporate tax and redistribution effects are predicted to reinforce each other, and smaller in cases where the corporate tax and redistribution effects are predicted to run counter to each other.
- 3) Offsetting price changes in individual firms' major security classes are observed, as predicted by the wealth redistribution hypothesis for the various capital structure changes studied.
- 4) As predicted by the wealth redistribution hypothesis, relatively large price adjustments are observed for debt issues which do not restrict the issuance of new debt of equal or senior standing.
- 5) On average, stockholders are adversely affected by a decrease in leverage, which suggests that firms do not always follow a policy of maximizing stockholder wealth. These decisions may or may not be consistent with maximizing the firm's net present value.
- 6) No evidence of a bankruptcy cost effect is found for the firms decreasing leverage in case where wealth redistribution effects are not present. This surprising result appears to be inconsistent with the predictions of the corporate tax-bankruptcy cost models of optimal leverage.

Summarizing that, the qualitative predictions of the corporate tax and wealth redistribution effects resulting from a capital structure change are observed, as detailed in table 1, for all three major classes of firm securities. No evidence of an expected cost of bankruptcy effect is observed. Nevertheless, it is always possible that a portion of the observed price adjustment is due to other effects not considered here such as the signaling hypothesis.

There is also a good summary of empirical findings about stock price depending on different factors conducted during 1980-1991 presented in table 3.1:

Table 3.1. Summary of empirical findings about stock price dependence (Harris and Raviv, 1991)

Stock price:	Empirical Evidence
Increases on announcement of debt issue	Yes: Kim & Stulz (1988) No: Dann & Mikkelson (1984),* Eckbo (1986),* Mikkelson & Partch (1986)*
Increases on announcement of debt for equity exchange	Yes: Masulis (1980, 1983), Cornett & Travlos (1989)
Increases on announcement of stock repurchase	Yes: Masulis (1980), Dann (1981), Vermaelen (1981), Dann, et al. (1989)
Decreases on announcement of equity issue	Yes: Asquith & Mullins (1986), Masulis & Korwar (1986), Mikkelson & Partch (1986), Schipper and Smith (1986)
Decreases on announcement of equity for debt exchange	Yes: Masulis (1980, 1983), Eckbo (1986), Mikkelson & Partch (1986), Cornett & Travlos (1989)
Decreases more the larger is the informational asymmetry	Yes: Korajczyk, et al. (1990b)*
Decreases more the larger is the size of the issue	Yes: Asquith & Mullins (1986)

*weak or statistically insignificant relationship

Next study of Rajan and Zingales (1995), aimed directly to see whether there are differences between the factors affecting capital structure in different countries, in other words, to check the stability of those relationships that have been found by researchers in U.S.

In order to conduct the research the data studied was taken about nonfinancial organizations of the "Great Seven» (G-7: United States, Japan, Germany, France, Italy, UK and Canada) for the period from 1987 to 1991. Financial institutions are excluded from consideration, as in all previous studies reviewed for the following reasons:

- In such organizations the capital structure depends on insurance schemes of investors;
- Issued debt by financial institutions are difficult to compare with debt of non-financial firms;
- The capital structure of financial institutions depends directly on the requirements to them by the state.

In their study, the authors pay much attention to the peculiarities of cross-country differences relating to capital structure and adjustments to be carried out together with the financial results of the company to mitigate these differences. First, such differences include consolidated financial statements, the presence or absence of which may increase or decrease the amount of debt respectively. Secondly, the authors suggest that in different countries approaches to the valuation of assets may vary: some countries preferred conservative methods, whereas in other countries it assessment based on fair value is more common. Third, in the different countries the balance sheet may not contain items such as leasing, which in some countries is an essential part of the debt. This fact also applies to pension and provident balance sheet items.

As a result, the authors of examined study come to the following conclusions. At the aggregate level the capital structure of firms in the "Big Seven" is sufficiently homogeneous taking into account the adjustments. In addition, the differences that do occur are difficult to explain through institutional differences, as suggested in the study, so you need a better understanding of the effects caused by institutional differences. Influence of factors on capital structure, as defined in the U.S. studies, is similar to the influence in the work discussed in these countries. However, both in the U.S. and in other countries, the findings of empirical studies loosely reflect the theoretical confirmation of the observed relationships, so you need a more precise definition of the observed values for the unobserved factors.

There has been found a great research on the factors that determine the capital structure made by Frank and Goyal (2009). An important feature of their work lies in the fact that it covers a long period, from 1950 to 2003. In addition, the authors examine the influence of factors on the capital structure in different conditions, such as dividend policy, size and growth. Much attention is paid to issues such as reliability (or robustness, robustness) factors and their mutual substitutability, the impact of excluding factors and their relationship with the theories of capital structure, although testing theories, such as in a work is not carried out.

Frank and Goyal study showed that a trade-off theory explains most of the coefficients of the main MM model. Thus, a significant positive correlation observed capital structure factors from the size, the median industry leverage, government regulation, tangible assets. Factors also negatively related to capital structure, the following: growth, uniqueness, business risks, capital market conditions and the debt market. Furthermore, the authors note the importance of the time factor: over time the overall significance of the model decreases with decreasing value of factor income, while the influence of the factors and the size of the dividend policy increase from year to year. An important finding of this study is considered that conditions change, a set of factors and the nature of their impact on the capital structure remains practically unchanged, which suggests the possibility of building a universal model of capital structure. At the same time, researchers are left open questions testing theories of capital structure, the study of various forms of functional dependence, consideration of a phenomenon in the dynamics.

All of the above studies were considered on the basis of U.S. firms. Since the present study is aimed at European firms we should consider studies conducted in other countries to understand how cross-country differences influence on the investigated subject. One of these works is the study based on a sample of 199 firms in Pakistan belonging to the textile, cement and electricity sectors in the period 2005 to 2009 (Waseem, 2012).

The study was conducted based on a standard regression analysis separately for each industry. As the dependent variable they used the ratio of total debt to the sum of debt and equity in the balance sheet values.

The results indicate that profitability and tangibility of assets - the most important factors determining the capital structure in all three affected industries. Factors influence the size, growth rate and non-interest tax shields, in contrast, varies from industry to industry, which confirms the hypothesis put forward significant influence of industry factors. Nature of the influence of factors most correlated with the theory of hierarchy and compromise theory.

Another view is presented later by Welsh (2004). He was estimating whether actual debt ratios by and large behave as though firms readjust to their previous debt ratios (targeting a largely static target) or whether they permit their debt ratios to fluctuate with stock prices. The basic formula for estimation was

$$\text{ADR}_{t+k} = \alpha_0 + \alpha_1 \cdot \text{ADR}_t + \alpha_2 \cdot \text{IDR}_{t,t+k} + \epsilon_t \quad (3.1)$$

The term ADR is the actual corporate debt ratio, defined as the book value of debt (D) divided by the book value of debt plus the market value of equity (E).

$$\text{ADR}_t \equiv \frac{D_t}{E_t + D_t}, \quad (3.2)$$

The term IDR is the implied debt ratio that comes about if the corporation issues (net) neither debt nor equity,

$$\text{IDR}_{t,t+k} \equiv \frac{D_t}{E_t \cdot (1 + x_{t,t+k}) + D_t}, \quad (3.3)$$

where x is the stock return net of dividends.

He concluded that the market-based debt ratios describe the relative ownership of the firm by creditors and equity holders, and they are an indispensable input in WACC computations. His paper has shown that stock returns are a first-order determinants of debt ratios, that they are perhaps the only well understood influence of debt ratio dynamics, and that many previously used proxies seem to have helped explain capital structure dynamics primarily because they correlated with omitted dynamics caused by stock price changes.

Thus, a review of theoretical and empirical literature allows you to select a set of factors that influence the company's capital structure and to make assumptions about the nature and extent of their influence.

Moreover, a review of theoretical literature devoted to the subject, allows to draw conclusions about the complexity of the problem of formation of capital structure theories and ambiguities of these or other factors. This again points to necessity to find a universal model of capital structure.

3.2. The main hypotheses of the study

On the basis of the theoretical literature, it is possible to draw conclusions about the hypotheses that will be addressed in this study:

H1₀: The debt in the capital structure does not affect the company's market value

H1₁: The debt in the capital structure affects the market value of the company

H2₀: The size of the company does not affect its market value

H2₁: The size of the company influences its market value

H3₀: The share of taxes paid from the general assets does not affect the company's market value

H3₁: The share of taxes paid from the general assets affects the market value of the company

3.3. Data collection process

According to Easterby-Smith et. al (2008), there is a significant difference between quantitative and qualitative research, and it depends on the researcher' chosen technique what kind of data to be collected: quantitative or qualitative. The main methods of qualitative data collection are observation, interviews and focus groups, which implies a direct feedback, aimed at achieving the objectives of the study. This data type is primary.

Collection of quantitative data is performed in several ways, but the most popular are the results of measurements, tests, experiments, surveys. Data collected from other studies are classified as secondary.

Select the data type must match the aims of the study. This study focuses on secondary data collected using such databases as Thomson-Reuters. The advantage of this method of data collection is relatively low time- and cost consuming. A disadvantage of this type of data is that

the initial purpose for gathering this data was different; therefore, it is necessary to examine the validity.

Gathering information for this study did not involve any complexities because all companies listed on the stock market, are sure to provide the financial statements in accordance with international financial reporting standards (IFRS). Object of study is data about the financial performance of major oil companies in Europe. All companies operating in this sector represent the general population. As a sample oil companies in Europe were taken. This choice is due to the fact that a large number of oil and gas companies are located in the European region; most of them are listed on the stock exchanges of New York or London; they submit to one general law regulation; national aspect influencing the selection of optimal capital structure is the same for all firms.

Data that cannot be taken from the financial statements is the company's share price and number outstanding. To solve this problem Thomson Reuter database was used, and access was provided by University of Nordland. With this database, it became possible to reflect the value of the companies uniformly for the entire sample.

3.4. Quality of research

Reliability and validity are key concepts in research methods. With these findings of the process of analysis and opinions expressed in the work are checked if it is to rely on.

3.4.1. Reliability

Easterby-Smith (2008: 332) describes reliability as "the consistency of measurements in a composite variable formed by combining scores of several indicators." Simply put, reliability explains how stable the measurement of indicator is. This allows you to answer the following questions:

- Will the measure yield the same results on the occasions?
- Will similar observations be reached by other observers?
- Is it transparent about how sense was made from the raw data?

To fulfill the terms of reliability, there are some threats: data errors, bias and error observer (Jonson and Duberley, 2000: 50). Discussion of these threats leads to the answer to the question whether this study stable? Undoubtedly, the data used are reliable. They are based on secondary

data from official financial statements which has been prepared and checked by independent auditors. Companies listed on the stock markets should be more open and willing to show their own results in order to attract new investors. Thus, the threat of data errors can be ignored.

3.4.2. Internal and external validity.

Mullen et. al. (2009) defines internal validity as action that helps to bring a causal relationship between two variables. Easterby-Smith et al (2008) suggests the following questions to which the concept of internal validity must answer:

- Are measurable indicators of reality?
- Is the number of points of view of other researchers used?

In practice, it is almost impossible to avoid the causal relationships between variables. The author himself has to choose which way to determine the presence of dependence. For example, the technology can be used correlations.

"External validity is the fulfillment of the condition, we can conclude that the alleged causal relationship can be generalized to the general sample" (Mullen et. Al, 2009: 289).

External validity should answer the following questions (Easterby-Smith et al, 2008: 109):

- As far as this study confirms or refutes the results of already existing similar studies?
- What is the probability that the results obtained in this study may be related to the general population?
- Are the results of this study in other contexts?

In contrast to the causal relationships between variables, external validity can be increased by using heterogeneous (dissimilar) samples.

Johnson and Duberley (2000: 51) identified three differences between internal and external validity, and presented them in the form of threats of generalization (also called external validity)

- Results of the study are valid only for the study sample
- The results depend on the conditions in respect of which an investigation
- The impact on the results of the temporal aspect

Obviously, the presence of these threats will depend on the subject studies. The more specific is the subject of study, the greater the possibility of threat. In this paper we consider only one

region of oil and gas industry, so the probability of threats is high. The study results are more reliable for the European region and aim to use it in this region.

3.5. Limitations of the study

Good research is impossible without imposing restrictions. This work is no exception, and so we've provided the following limitations. The first is connected with the process of collecting and processing information. Despite the fact that the data used as the financial statements of companies (secondary), you must bring them to the desired shape, as different countries have different reporting standards (IFRS, GAAP). The following restriction is faithful calculating the coefficients preserving their properties. Calculated factors may be interrelated, so that they can distort the true effect on the studied quantity. It is necessary to calculate the variables so that they provide the reliability and stability of the results. Using econometric model imposes another limitation. It is important to establish a meaningful relationship between the variables, and the simulation results verify the reliability and validity.

For data processing and models can be used the following programs: "R", "EViews", "RATS", or Microsoft Excel. All these programs have about the same set of tools, but the researcher should understand them well.

Necessary data were collected in accordance with the requirements of the quantitative method used in this work. During data collection, met some difficulties. Until 2006, almost all companies have used the currency of their country. However, since 2006, all European companies began to use IFRS. The new reporting system changes the contents of the financial instruments as well as the method of preparation.

Another difficulty is related to the exchange rate. You can not use the current exchange rate at bringing all the data to a single currency, because it distorts the calculated figures. Consequently, it is necessary to collect data on foreign exchange rates for the corresponding period.

4. Empirical chapter

This chapter provides an empirical study aimed at identifying the key factors affecting the value of companies.

The results of the study are presented in accordance with the following pattern. The first part is a description of the sampling data, descriptive statistics and analysis of the process of selecting variables. The second part deals with the construction firm value regression model and analysis of the results obtained in accordance with the theory and previous empirical research.

4.1. Input data

As mentioned earlier, the object of study is the data on financial performance of major oil companies in Europe. All companies operating in this sector represent the general population. As a sample oil companies in Europe were taken. This choice is due to the fact that a large number of oil and gas companies located in the European region; most of them are listed on the stock exchanges of New York or London; they are financial instruments in accordance with uniform rules governing; geographical factor influencing the selection of optimal capital structure is the same for all firms.

Easterby-Smith et al. (2008) recommends that you check on the representativeness of the sample. This means that the selected number of firms should reflect the general situation in the general population.

The criteria for selection were:

- The company must be listed on the stock market for quite a long time
- Companies engaged in oil exploration and production.

Among the 49 companies, only 37 are listed on the stock exchanges of New York or London, which would assess the value of the same for all. Here there is another limitation - frequency reference data needed. Since few companies prepare their financial statements quarterly, it was decided to use the annual report. The disadvantage of this is the blurring results (data of the higher frequency gives more accurate results.)

As a result, the following companies have been selected as a sample: British Gas Group (BG), British Petroleum (BP), Gazprom (Gazprom), Lukoil (Lukoil), Royal Dutch Shell, Statoil, Total. Companies from the following countries: 2 companies from the UK, two from Russia, the

Netherlands, Norway and France. Sampling units to different countries in Europe, so depending on the geographical factor is also included. The study covers the period from 2000 to 2012 (13 observations).

4.2. Variables computation

Dependent variable is market value (MV - market value). For its value we take share price on the stock exchange in New York (NYSE - New York Stock exchange), values for the parameters of all the companies are displayed in U.S. dollars.

Based on a review of theoretical literature and empirical research in the field of value and capital structure of the company, has been allocated three important factors that influence the market value of the company, namely (in parentheses - the designation of variables for use in the calculations in the program Microsoft Excel):

1. The debt in the capital structure (DEBT);
2. Taxes paid by the company (TAX);
3. Company size (SIZE);

Based on the works of Gaud et. al. (2007), Shyam-Sunder & Miller (1999) suggested calculating the influence factors in the following way:

$$SIZE = \ln(sales) \quad (4.1)$$

$$TAX = \frac{Taxes\ paid}{Total\ assets} \quad (4.2)$$

There are several ways to calculate the leverage ratio (e.g., the ratio of debt to equity or total capital). IFRS provides the following definition of the debt in the capital structure:

$$DEBT = \frac{Book\ value\ of\ total\ debt}{Book\ value\ of\ equity} \quad (4.3)$$

Appendix 1 shows the calculations of coefficients for all the companies in the sample for the period from 2000 to 2012.

4.3. Variables implementation into econometric model

In accordance with the empirical evidence of the relationship between the market value of the company's capital structure, proposed the following model of dependence:

$$MV_i = \alpha - \beta_{\text{debt}} * DEBT_i + \beta_{\text{size}} * SIZE_i - \beta_{\text{tax}} * TAX_i + \varepsilon_{it} \quad (4.4)$$

It is assumed that debt have negative impact on the value of the company, positive effect of size of the company and negative impact of taxes. After implementing coefficients in a regression model with data for each company results were as follows: (see Appendix 2). Values of beta coefficients are calculated and summarized in Table 4.1.

Table 4.1: Values of beta coefficients

Coefficients	Intercept	Debt ratio	Size	Taxes
Company				
BG	-801,228* (-4,96)[0,001]	-220,375 (-1,37)[0,205]	96,834* (5,7)[0,000]	384,76 (1,21)[0,257]
BP	-50,19*** (-2,25)[0,051]	-10,349 (-1,48)[0,174]	5,154** (2,67)[0,026]	-13,396 (-0,77)[0,462]
Gazprom	-82,278*** (-1,88)[0,094]	-1,04 (-0,12)[0,908]	8,636*** (1,94)[0,084]	134,226 (-1,72)[0,119]
Lukoil	-515,49* (-4,43)[0,002]	-179,19** (-2,57)[0,03]	54,158* (5,05)[0,001]	313,343 (0,99)[0,348]
Shell	-21,464 (-0,16)[0,88]	-56,184 (-1,61)[0,141]	4,696 (0,38)[0,716]	11,26 (0,11)[0,913]
Statoil	-1380,226* (-3,39)[0,008]	-274,392** (-2,77)[0,022]	143,704* (3,78)[0,004]	-13,338 (-0,11)[0,916]
Total	117,305 (0,3)[0,769]	-459,638* (-4,17)[0,002]	2,997 (0,09)[0,929]	-959,896** (-2,69)[0,025]

notes: (t-stat.); [p-value]

* - significant at 1% level, ** - significant at 5% level, *** - significant at 10% level

From these data we can conclude that two of the three assumptions about the effect of the studied factors on the market value of the company confirmed using this model for the study sample.

The ratio of borrowed funds in the total capital of the company has a negative impact on the value of the company for all study variables, although the value of indicators is statistically significant at the 5% level for three companies.

As expected, effect of size on the value is positive. Among all indicators, this was the most important and has the greatest positive impact on the average for all companies. Values of these parameters are statistically significant at the 1% level for the three companies for two more companies at 10% level.

Tax factor has not confirmed its effect on the market value of the company, as have very different effects on the company, both positive and negative. While statistically significant at the 5% level of its value was only one company.

On average with an increase of debt ratio in capital structure by 0,05, there follows a decrease of share price by 85\$, while increase of Size factor by 0,1 leads to an increase in share price by 40\$. These numbers are of course very rough and depend on each company' financial indicators. We should note here also, that our purpose was not to precisely find values for overall industry, but more define if there is a relationship on different factors from company to company.

4.4. Model validation

After the results, regression model must be tested for reliability and validity. To do this determination coefficient of model was produced (R^2) using Microsoft Excel. The results are summarized in Table 4.2.

The coefficient of determination shows how this model with the used independent variables explains the change in the dependent variable. Most often, when interpreting coefficient of determination, it is expressed as a percentage. For example, for Gazprom $R^2 = 0,53397$, i.e. in 53,397% of changes in the value of the company is explained by factors that are part of this model. In other words the degree of accuracy that variables fit the regression equation is average. The remaining 46,603% of the company's value changes are due to those factors that are not accounted for in the model.

Table.4.2. Determination coefficient

Company	Determination coefficient R^2
BG	0,47186
BP	0,60077
Gazprom	0,53397
Lukoil	0,77773
Shell	0,41334
Statoil	0,80661
Total	0,69023

Only one company (Statoil) determination coefficient is relatively large, which means a lack of analysis of influencing factors included in the model.

It should be noted that the significance of the model coefficient (F-statistics) is essential for all companies (<0.001), indicating a high reliability of the model.

Next, you need to inspect each variable on the reliability and validity. To do this, use the graphical method of analysis - plotting residuals. According to it, residual values on the chart should remain in a range of about the same width, i.e. they are randomly distributed along the X-axis. Appendix 3 shows plots of residuals by three independent variables. Most charting possible to draw conclusions about what is likely fine, the model is adequate experimental data. The presence of residual emissions misses outlying observations indicate an error calculations, incorrect data or imputed on the need to include an additional factor model.

Also, using Microsoft Excel correlation analysis was made of dependent and independent variables, the data is shown in Table 4.3:

Table 4.3. Correlation coefficients with respect to dependent variable

Coefficient			
Company	Debt ratio	Size	Tax
BG	-0,2716	0,8436*	0,3753
BP	-0,5304	0,708**	0,3235
Gazprom	-0,2842	0,5458	0,5816
Lukoil	-0,3817	0,7309***	0,1616
Shell	-0,6282	-0,1922	0,4258
Statoil	-0,6939***	0,7982**	0,3493
Total	-0,2069	0,249	-0,149

Note: * - significant at 1% level, ** - significant at 5% level, *** - significant at 10% level

From the data in the table it can be concluded that the dependent variable is highly correlated (with a positive coefficient) with all companies in the second factor of influence (company size) and moderately (but with a negative sign) with the majority of companies on the first factor of influence (the ratio of borrowed funds in the capital structure). The majority of the correlation coefficients with the second factor influencing significant at the 5% level or very close to the significance level.

The correlation coefficient of the third factor of influence (taxes) revealed no apparent relationship between the variables.

5. Conclusion

The final section presents the main findings of the study, the scope of their practical application, as well as directions for further research in this area.

5.1. Summary of the study

As a result of this study were the objectives achieved: it was revealed the dependence of the market value of the factors associated with its capital structure for the European oil and gas companies in the region. Was rated the most important factors influence the market value of companies.

To achieve these objectives, information was collected on the financial performance of companies and have been used in the program Microsoft Excel 2007 to analyze the data collected. To determine the relationship between the value of the company and the factors associated with its capital structure, the company's stock price in the stock market was taken as the dependent variable, with the factors influencing the ratio of borrowed funds in the capital structure, the size of the company and the taxes paid by companies.

The study has revealed two factors that have the most significant effect on the market value of the shares of oil companies, namely the size and value of leveraged capital structure. These factors have a sustained impact on the value of the company, taking into account the time factor.

Based on the results of constructing linear regression models for each company during the period under review (2000 to 2012), it was found that the effect size measure of its value, as expected, positive. Among all indicators, this was the most important and has the greatest positive impact on the average for all companies. Factor of the debt in the capital structure has an implicit negative impact. These findings correlate with the theories of capital structure, take into account corporate taxes.

5.2. Implications and further research opportunities

Factors associated with capital structure, have a positive, negative or implicit impact on the market value of the company, which can be corrected by certain management decisions. The most likely is cost control at all levels of the company, as each individual component affects the

total costs of the company, which in turn has an effect on the level of profitability of the company.

Tool also can make adjustments so-called "plan motivating participation in the share capital» (equity incentive plan), when the management of the company has a policy of motivating staff to improve efficiency, providing participation in the share capital with which the employee receives dividends, in turn, depend on the financial performance of the enterprise.

Another way to increase the company's value, as confirmed in this study used a model of management policy is aimed at increasing the company's sales. As a rule, increasing the sales volume increases anticipated future revenues of the company in connection with these expectations company's share price is also increasing.

It is also important to note that the successful management policy aimed at product differentiation, implemented by the company, will also have a positive effect on firm value. With proper analysis of the market and the needs of the target audience share price will surely increase. On the example of Apple, which produces modern digital gadgets, it is very well seen². The company is engaged in research to improve the product and arranges public presentations of new products approximately every six months. Over the course of the presentation follows a huge audience, it is always waiting. After one of these presentations, which introduced a new product, the company's shares a few days increased by 14%³.

Summing up, it should be noted that management decisions related to the capital structure in particular, have an impact on the market value of the company. However, revealed from the statistical model is not high enough the coefficient of determination, showing how explains the dependence of the factors considered, showed that company's stock price depends not only on the main indicators of financial performance, but also on the qualitative decision-making managers of the company, the degree of its success and good governance, investor psychology, goodwill, etc.

In this regard, further research in this area should be directed to a deeper analysis of the possible factors that may influence the market value, as well as consideration of their dynamics.

² Even though the company is from other industry, distinct from consideration, but the application of the concept of differentiation is possible in many industries.

³ <http://iphone5news.ru/?p=8947>

6. References

- Brigham E.F., Ehrhardt M.C. (2011). Financial management: theory and practice. 13th edition. South-Western Cengage Learning.
- Cooper I.A., Nyborg K.G. (2006). The value of tax shields IS equal to the present value of tax shields. *Journal of Financial Economics*, 81, 215-225.
- Cooper, Ian and Kjell G. Nyborg. 2007. Valuing the debt tax shield. *Journal of Applied Corporate Finance* 19
- Damodaran A. (2006). Debt and value. Beyond Miller and Modigliani
- DeAngelo H., Masulis R. Optimal Capital Structure under Corporate and Personal Taxation // *Journal of Financial Economics*. 8 (1980). P. 3-29.
- Dyreng, Scott and John Graham. 2007. How much do debt tax shields contribute to firm value? A natural experiment in the Canadian income trust market. Working Paper. University of North Carolina, Chapel Hill, USA.
- Exchange. *The Romanian Economic Journal*, 15 (43), pp. 97 – 114
- Fernandez, Pablo. 2004. Reply to the value of tax shields is equal to the present value of tax shields. Working Paper. University of Navarra, IESE Business School, Barcelona, Spain.
- Frank M., Goyal V. Capital Structure Decisions: Which Factors are Reliably Important? // *Financial Management*. 38(1) (2009). P. 1-37.
- Harris M., Raviv A. The theory of capital structure // *The journal of finance*. 46(1) (1991). P. 297-355.
- Hickman K.A., Hunter H.O., Byrd, J.W. (1996). Foundations of corporate finance. West publishing company.
- Leland, H. and Pyle, H., 1977. "Informational asymmetries, financial structure, and financial intermediation," *Journal of Finance*, Vol.32, No2, pp.371-87.
- Malik, M. F., Qureshi, M. U. and Azeem, M, 2012. Determination of Share Price: Evidence from Karachi Stock
- Mark P. Keightley, 2014 "The Corporate Income Tax System: Overview and Options for Reform"
- Masulis, Ronald W., The Effects of Capital Structure Change on Security Prices: A Study of Exchange Offers (March 2, 1980). *Journal of Financial Economics (JFE)*, Vol. 8, No. 2, June 1980.
- Merton H., Miller M. Debt and Taxes // *Journal of Finance*. (1977). P. 261-275
- Miller, M.H. (1988). The Modigliani-Miller propositions after thirty years. *Journal of Economic Perspectives*, Fall 1988, 99-120.
- Modigliani F., Miller M.H. (1958). The Cost of Capital, Corporation Finance and the Theory of Investment. *American Economic Review*, 48 (3), 261–297.

Modigliani, Franco and Miller, Merton H. 1963. Corporate income taxes and the cost of capital: A correction. *American Economic Review* 53: 433-443.

Morellec E. Can managerial discretion explain observed leverage ratios? // *Review of Financial Studies*. (17) (2004). P. 257–294.

Myers C. The capital structure puzzle // *The journal of finance*. 39(3) (1984). P. 575–592.

Myers. S., Majluf N. Corporate Financing and Investment Decisions When Firms Have Information Investors Do Not Have // *Journal of Financial Economics*. 13 (1984). P. 187-221.

Rajan R., Zingales L. What do we know about capital structure? Some evidence from International data // *The Journal of Finance*. 50 (5) (1995). P. 1421-1460.

Ross S. The determination of financial structure: The incentive-signalling approach // *The Bell Journal of Economics*. 8(1) (1977). P. 23-40.

Ross, S.A., Westerfield, R.W., Jaffe, J., Jordan, B.D. (2008). *Modern financial management*. 8th edition. McGraw-Hill Irwin.

Titman S., Wessels R. The Determinants of Capital Structure Choice // *The Journal of Finance*. 43 (1) (1988). P. 1-19.

Welch, Ivo, Capital Structure and Stock Returns. *Journal of Political Economy*, Vol. 112, No. 1, Pt. 1, pp. 106-31, February 2004

<http://iphone5news.ru/?p=8947>

<http://www.businessdictionary.com/definition/bankruptcy.html>

7. Appendix

Appendix 1.

Coefficients of Debt ratio, Size and Tax paid

Debt ratio variable							
Year	BG	BP	Shell	Staoil	Total	Gazprom	Lokoil
2000	0,001	0,143	0,026	0,233	0,088	0,061	0,125
2001	0,002	0,160	0,026	0,277	0,090	0,380	0,186
2002	0,004	0,235	0,023	0,199	0,094	0,500	0,173
2003	0,003	0,089	0,021	0,128	0,077	0,531	0,129
2004	0,009	0,076	0,025	0,095	0,092	0,012	0,102
2005	0,006	0,047	0,028	0,060	0,097	0,313	0,074
2006	0,005	0,058	0,031	0,051	0,100	0,117	0,084
2007	0,007	0,090	0,036	0,060	0,087	0,084	0,090
2008	0,003	0,090	0,069	0,156	0,116	0,043	0,288
2009	0,011	0,101	0,192	0,172	0,128	0,178	0,197
2010	0,013	0,114	0,200	0,184	0,140	0,181	0,210
2011	0,020	0,102	0,145	0,156	0,168	0,172	0,154
2012	0,018	0,111	0,116	0,123	0,169	0,859	0,112

Size							
Year	BG	BP	Shell	Staoil	Total	Gazprom	Lokoil
2000	9,075	11,296	11,199	10,485	11,059	9,355	10,014
2001	9,120	11,313	11,211	10,488	11,023	9,446	10,021
2002	9,192	11,324	11,327	10,507	11,011	9,572	10,078
2003	9,254	11,306	11,399	10,519	11,020	9,720	10,238
2004	9,333	11,379	11,453	10,606	11,068	9,842	10,422
2005	9,487	11,459	11,487	10,708	11,139	10,057	10,639
2006	9,591	11,504	11,504	10,750	11,187	10,198	10,723
2007	9,609	11,533	11,551	10,841	11,201	10,231	10,806
2008	9,755	11,637	11,661	10,937	11,255	10,412	10,925
2009	9,680	11,463	11,444	10,788	11,118	10,276	10,802
2010	9,932	11,562	11,566	10,845	11,202	10,408	10,914
2011	10,027	11,659	11,672	10,933	11,266	10,538	11,019
2012	10,059	11,661	11,669	10,972	11,301	10,575	11,036

Tax							
Year	BG	BP	Gazprom	Lukoil	Shell	Staoil	Total
2000	0,028	0,011	0,029	0,046	0,040	0,207	0,074
2001	0,033	0,012	0,023	0,043	0,065	0,193	0,071
2002	0,040	0,008	0,022	0,038	0,095	0,167	0,074
2003	0,057	0,029	0,023	0,036	0,098	0,124	0,079
2004	0,061	0,036	0,085	0,054	0,068	0,183	0,073
2005	0,072	0,046	0,089	0,057	0,059	0,208	0,060
2006	0,092	0,057	0,079	0,060	0,078	0,255	0,060
2007	0,075	0,044	0,081	0,057	0,069	0,289	0,056
2008	0,070	0,055	0,071	0,058	0,086	0,316	0,053
2009	0,040	0,035	0,027	0,024	0,028	0,173	0,049
2010	0,036	-0,006	0,028	0,025	0,046	0,154	0,044
2011	0,045	0,043	0,032	0,029	0,071	0,176	0,039
2012	0,044	0,023	0,023	0,028	0,065	0,175	0,037

Appendix 2

Results of regression models (1)

BG - company

<i>Regression analysis</i>	
Multiple R	0,904430728
R ²	0,817994941
Adjusted R ²	0,757326588
Std. error	19,70182621
Obs.	13

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Sig. F</i>
Regression	3	15700,83089	5233,610295	13,48305833	0,001117085
Residual	9	3493,457604	388,161956		
Total	12	19194,28849			

	<i>Coefficients</i>	<i>STd error</i>	<i>t-stat</i>	<i>P-value</i>	<i>Low. 95%</i>	<i>Up. 95%</i>
Y-intercept	-801,2278075	161,4710653	-4,962051907	0,000778332	1166,500734	-435,9548813
Var X 1	-220,3748583	161,2881133	-1,366342837	0,204993169	585,2339182	144,4842017
Var X 2	96,83371966	17,00071009	5,695863241	0,000295855	58,37544164	135,2919977
Var X 3	384,7599105	317,7744813	1,210795495	0,256808994	-334,095907	1103,615728

Results of regression models (2)

BP - company

<i>Regression analysis</i>	
Multiple R	0,775096796
R ²	0,600775043
Adjusted R ²	0,467700058
Std. error	0,829186475
Obs.	13

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Sig. F</i>
Regression	3	9,311960601	3,103987	4,514560271	0,034038036
Residual	9	6,187951899	0,68755		
Total	12	15,4999125			

	<i>Coefficients</i>	<i>STd error</i>	<i>t-stat</i>	<i>P-value</i>	<i>Low. 95%</i>	<i>Up. 95%</i>
Y-intercept	-50,19018122	22,26425156	-2,254294562	0,050646622	-100,555417	0,175054827
Var X 1	-10,34863385	7,002179689	-1,477916065	0,173549907	-26,1886647	5,491397055
Var X 2	5,154350794	1,933798426	2,665402312	0,025816225	0,779794843	9,528906745
Var X 3	-13,39583866	17,44706053	-0,767799174	0,462274499	-52,8638315	26,0721542

Results of regression models (3)

Gazprom - company

<i>Regression analysis</i>	
Multiple R	0,7307357
R ²	0,5339747
Adjusted R ²	0,3786329
Std. error	6,2881355
Obs.	13

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Sig. F</i>
Regression	3	407,75328	135,9178	3,437418612	0,065417629
Residual	9	355,86583	39,54065		
Total	12	763,61911			

	<i>Coefficients</i>	<i>STd error</i>	<i>t-stat</i>	<i>P-value</i>	<i>Low. 95%</i>	<i>Up. 95%</i>
Y-intercept	-82,27795	43,939158	-1,87254	0,093917021	-181,675234	17,11932739
Var X 1	-1,041528	8,7985639	-0,11837	0,908370674	-20,945261	18,86220684
Var X 2	8,6359235	4,4541621	1,938844	0,084465912	-1,44009127	18,71193828
Var X 3	134,2258	77,946264	1,72203	0,119165698	-42,1009007	310,5524996

Results of regression models (4)

Lukoil - company

<i>Regression analysis</i>	
Multiple R	0,881889947
R ²	0,777729879
Adjusted R ²	0,703639839
Std. error	14,09509868
Obs.	13

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Sig. F</i>
Regression	3	6256,427975	2085,476	10,49709079	0,002691963
Residual	9	1788,046261	198,6718		
Total	12	8044,474236			

	<i>Coefficients</i>	<i>STd error</i>	<i>t-stat</i>	<i>P-value</i>	<i>Low. 95%</i>	<i>Up. 95%</i>
Y-intercept	-515,4902794	116,3099088	-4,43204	0,001642297	-778,601572	-252,3789866
Var X 1	-179,19225	69,66408145	-2,57223	0,030077413	-336,783350	-21,60114952
Var X 2	54,15817643	10,72643718	5,049037	0,000691248	29,8932897	78,42306307
Var X 3	313,3434463	316,7428003	0,989268	0,34838097	-403,178546	1029,865439

Results of regression models (5)

Shell - company

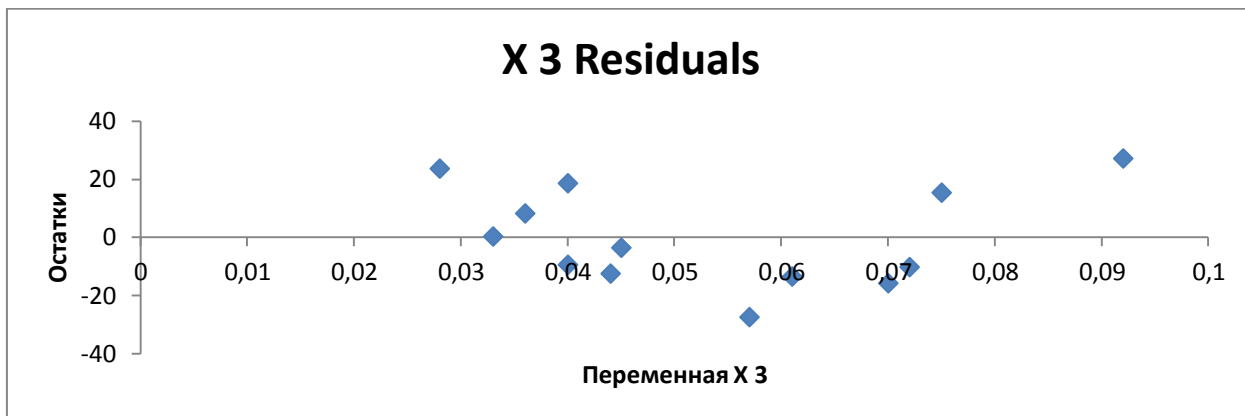
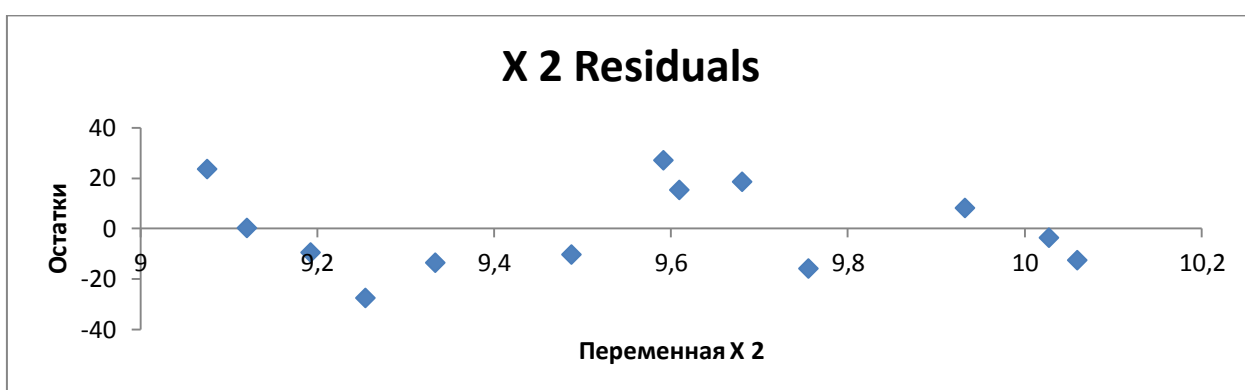
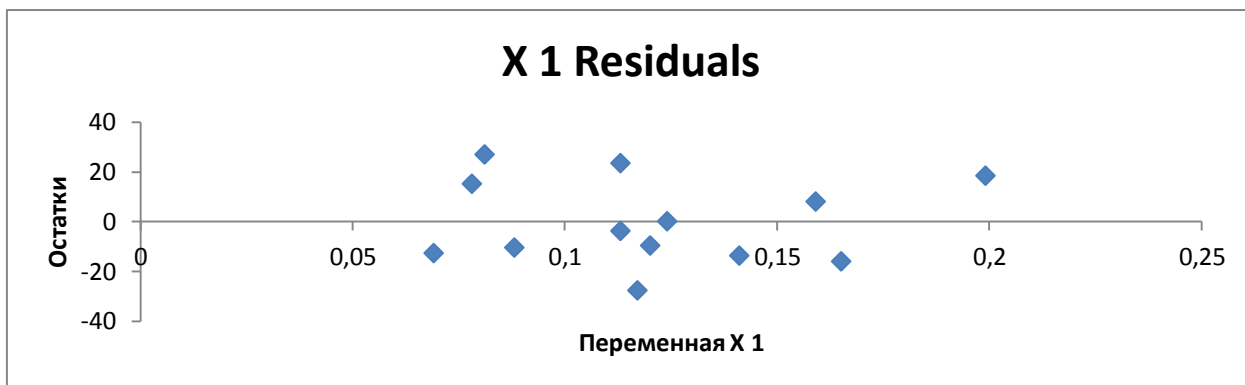
<i>Regression analysis</i>	
Multiple R	0,642912
R ²	0,413336
Adjusted R ²	0,217782
Std. error	4,989741
Obs.	13

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Sig. F</i>
Regression	3	157,8747726	52,62492	2,113662084	0,168677267
Residual	9	224,0775956	24,89751		
Total	12	381,9523682			

	<i>Coefficients</i>	<i>STd error</i>	<i>t-stat</i>	<i>P-value</i>	<i>Low. 95%</i>	<i>Up. 95%</i>
Y-intercept	-21,4639	138,0335873	-0,1555	0,879860746	-333,717561	290,7897739
Var X 1	-56,1841	34,82628437	-1,61327	0,141144789	-134,966599	22,59845797
Var X 2	4,695611	12,48693751	0,376042	0,715596799	-23,5518037	32,9430264
Var X 3	11,26004	100,8403147	0,111662	0,913542008	-216,856598	239,3766807

Appendix 3

Residual plots- BG



Residual plots – Statoil

