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# MASTER DISSERTATION

## ON THE TOPIC

**"Capital Structure and Companies Financial Performance: Azerbaijan example"**

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**BAKU  –  2019**

Head of the Center

Phd. Fariz Ahmedov

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# MASTER DISSERTATION

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## "Capital Structure and Firms Financial Performance: Azerbaijan Example"

**Code and name of Programme: Finance**

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# Kapital Strukturu və Şirkətlərin Maliyyə Performansı: Azərbaycan Nümunəsi"

## Xülasə

Bu yazı şirkətlərin kapital strukturunun onların fəaliyyətə təsirini təhlil edir və Dow Jones Industrial Average indeksinə aid olan 30 şirkətin və Azərbaycan banklarının maliyyə hesabatlarının təhlili nəticəsində şirkətlərin kapital strukturu ilə onların performansı arasındakı əlaqəni analiz edir. Dow Averages indeksinə Amerika Birləşmiş Ştatlarının 30 ən böyük şirkəti daxil edilmişdir. Bu şirkətlər 1957-ci ildən etibarən böyük əhatəli ABŞ səhmlərinin bazarının ən yaxşı göstəricisi olaraq qəbul edilir.Bu günə qədər demək olar ki, Dow Averages indeksinə daxil olan şirkələrin kapital strukturunun determinantlarını və bu determinantların kapital strukturuna təsirini araşdıran elmi-tətqiqat işinə rast gəlinməmişdir.

Bu tədqiqat 2013-2018-ci illərin maliyyə hesabatlarından Aktivlər üzrərində gəlir, Səhmlər üzrə Gəlir və Tobin Q kimi nisbətlərin performans göstəricisi olaraq qəbul edilib hesablanması nəticəsində aparılmışdır. Elmi-tətqiqada şirkətlərin performansa təsir edən digər nisbətlər hesablanmış və hipotezlər qoyulmuşdur.

Qoyulmuş hipotezlər şirkətlərin leverage nisbətlərin performans göstəriciləri hesab edilən Aktivlər üzrərində gəlir, Səhmlər üzrə Gəlir və Tobin Q ilə necə əlaqədə olduğunu aşkarlamaq üçün aparılmışdır. Müxtəlif statistik testlərdən istifadə edərək qarşıya qoyulan 'Kapital strukturu şirkətlərin maliyyə fəaliyyətlərinə necə təsir edir? , Kapitalın strukturu və onun maliyyə göstəriciləri ilə bağlı əsas nəzəriyyələr hansılardır? Leverə və firmanın maliyyə performansı necə qiymətləndirilir? Kimi suallara cavab tapmağa cəhd edilmişdir.

Bir firmanın aktivlərini maliyyələşdirməklə bağlı qərarlar hər bir işdə çox vacibdir və maliyyə meneceri tez-tez borc və bərabərliyin optimal nisbətinin nə olacağına dair dilemma ilə qarşılaşır. Ümumi qayda olaraq, firmanın aktivlərini maliyyələşdirmək üçün borc və səhm kapitalının düzgün qarışığı olmalıdır. Kapital strukturu adətən səhmdarların maraqlarına xidmət etmək üçün nəzərdə tutulmuşdur.

Açar sözlər: Kapital strukturu; Leverage; DJIA , şirkətlərin performansı; borc; səhm kapitalı ; ROA ; ROE; Tobin'in Q

# ABBREVIATIONS

1. **DJIA**      Dow Jones Industrial Averages
2. **ROA**      Return on Assets
3. **ROE**      Return on Equity
4. **MM**       Modigliane&Miller
5. **P value**   Probability value

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## Introduction

**Actuality:** Regularly, we hear about capital structure of firms from professional investors, financial analyst, and corporate officers. Most of them may not know about what capital structure is and why we need this term, but an idea of capital structure is highly important for companies. Capital structure doesn`t only affects companies` return, but also refers whether the company survives from economic shocks. Capital structure is important for survival and development of a company as it plays main role in financial performance of companies to reach its long-term goals and shorts on targets.

Capital structure measures the amount of debt and/or equity that a firm employs to finance its assets and operations. Typically, the capital structure is expressed as debt to capital, debt to equity. Capital structure can be a mix of short-term debt, long-term debt, and preferred equity of a company. When analyzing capital structure of companies, a company short-term debt, long-term debt, debt ratio is taken into consideration. When analysts refer to capital structure, they generally refer debt ratio (total debt into total assets) of firms that gives insight into how risky business is. Debt and equity are used to finance capital spending, the operations and other investments of a business. Companies have to make tradeoffs when they make a decision whether to raise equity or debt, or managers should balance to find optimum capital structure.

**Putting the problem and learning level**: A company`s optimal capital structure is often defined as proportion of equity and debt resulting the lowest weighted average capital cost of company. However, in practice, this definition is not frequently used, and companies often have philosophical or tactical view of which structure should be. A company decides if it needs more equity or debt in order optimizing the structure, and can issue whatever it requires. The new issued capital can be used investing in new assets or to repurchase debt or equity and financing operations of business.

Debt is one of two main ways in which companies raise capital in the markets. Because of tax advantages, companies would want to issue debt. Interest payments are tax deductible. In contrast to equity, debt also allows company or business to take full control. Additionally, debt is easily available and easy to reach in periods of low interest rate.

Equity is more costly than debt, particularly when interest rate is low. But, if earnings decrease, equity needs not to be repaid, unlike debt. On the other hand, as a part owner, equity represents a claim on the company`s future earnings.

Consequently, financial conditions in the business sector affects not only on firm performance, but also on macroeconomic results. Organization`s capital structure is of vital importance to company managers and lenders, as a wrong mix of equity vs. debt may adversely have an impact on company performance and survival. A suitable capital structure is subsequently critical decision for any company. This decision is not only crucial because of maximize returns of company, but also because of impact a decision has on the ability of a company to deal with competitive environment.

Lintner in 1956, Hirshleifer , Roanna (2014) and Modigliani and Miller have emerged with a focus on capital structure since the late 1950s. Today, Capital structure has become one of the most crucial issues in literature of corporate finance. Its importance arises from capital structure. The significance of capital structure comes from fact that it is directly linked to the firms` ability to meet the needs of different stakeholders.

Modigliani and Miller`s impactful paper on irrelevancy of capital structure has been supported by extensive theoretical research studies to determine "optimal capital structure". Modigliani vs. Miller reveals that, firm value is free from capital structure under strict assumptions of frictionless and perfect capital structure. However, actually, there are frictions on the market. Later literature was dedicated to study market imperfections that were mentioned above. Four main theories have been suggested to clarify the amount of leverage for cost-benefit analysis.

**Research methods:** Empirical studies on capital structure`s theory have been undertaken. These studies have determined key leverage determinants, such as firm size, collateral value of assets, profitability (such as ROA, ROE, Tobin`s Q), growth opportunities. Therefore, this creates a gap in the literature which focuses on financing attitudes of private companies. The general theories about capital structure are also assumed to be relevant throughout the private industry. But it may not be case, as private and public companies can deal with different financing costs. This can result in various financing options. Public companies have access to capital markets, while private ones have limited access to capital markets. As a result, both equity and debt costs are relatively higher for private companies(Brav, 2009).

**Research database:** Some institutional factors can specify a company`s capital structure other than traditional company specific characteristics. There may also be variations in bankruptcy, lender-borrowing relationships, and tax laws, concentration of ownership ( Rajan and Zinglaes, 1995).  For example, UK, Germany has strict creditors' rights in comparison with the Netherlands (La Porte 1998). This could direct us to observe relatively higher leverage in UK and Germany that, suppliers, whose rights are well protected, are more willing to lend. There can be similar differences across the countries, depending on their legal rights, which can dictate leverage.

A continuous development of new theories on capital structure and firm performance has been seen in last decades. Theories of capital structure such as theory of static trade off and theory of pecking order have emerged over years.

Static trade off theory states that firm's trade- off the costs and benefits of equity, and debt financing, optimal capital structure after taking into account for market imperfections according to Kraus and Lichtenberger in 1973. Market imperfections are such as taxes, bankruptcy costs and agency costs which exist in an imperfect market. An imperfect market is market where  buyers and sellers can impact prices of goods and services and production, the information about products and prices

are not disclosed, and there are high barriers to enter and exit in the market. It's contrast of a perfect market that is defined by perfect competition, market equilibrium, and an unlimited number of buyers and sellers.

However, Myers and Majluf (1984) support pecking order theory, which stating that companies should follow financing hierarchy for minimizing information asymmetry between market participants. Thus, pecking order theory indicates that companies tend to finance themselves internally before choosing debt or equity financing. Pecking order theory says that, companies will choose debt financing when all internal finance have been exhausted and switch to equity financing as a last opportunity. So, it is expected that, firm with high profit and cash flow will use less debt than other ones which don`t generate high cash flow. Therefore, this theory supports the fact firms attempt to finance with debt rather than equity. (Zingales vs. Rajan 1995).

Additionally, agency cost theory is based on the idea that, interest of company's managers and company`s shareholders are not perfectly taken into account. It clarifies the relationship between shareholders of the firm, principal, agents, management of companies, in decision making process regarding company's capital structure. Jensen and Meckling show that, the level of leverage impacts the decisions about firm's capital structure, which causes agency conflicts between managers and shareholders. (1976)

The economists, financial analysts have not reached an agreement yet, on how and to what degree capital structure of company has an impact on firms` financial performance, after half century of studies and research. Furthermore, the studies and empirical results of last century have at least shown that, capital structure has more essential than in the simple M&M model, which says that, firm value is free from capital structure under the strict assumptions of perfect and frictionless capital structure.

**Purpose of Thesis:** The purpose of my research study is to find out relationship between performance of firms and capital structure for Dow Jones Industrial

Average firms. I searched, whether there is paper about DJIA firms or not and didn`t find paper about analyzing determinants of capital structure, the effect of capital structure on company performance for constituents of the DJIA firms so far. Dow Average is stock market index which shows the value of publicly owned and 30 large companies which are located in the United States, how these companies have traded in stock market within different time periods.

Moreover, my research study aims to cover gap in literature as a consequences of limited studies conducted in this area using DJIA constituents so far. Throughout my study, I attempt to solve following research question "How does capital structure have an impact on financial performance of constituents of DJIA firms". I have also other important questions in order to answer my research are: "What are main theories about capital structure of firms and their financial performance? How are company's financial performance and leverage evaluated? What exactly are the DJIA companies?" I firstly determine indicators for capital structure such as leverage and profitability ratios, then set hypothesis to find out answers through using statistical tests.

Furthermore, I hope that, my  will contribute to  literature lies on Dow Averages companies, which have significantly higher importance among United States companies, compared to most of studies, as well as, my study is focusing on one of world's leading indices.

**Scientific significance of thesis**: My results represent mostly a consistent and negative correlation between leverage ratios and ROE, ROA and Tobin Q. I found out positive correlation between leverage and Return on Equity. I found out following results after investigating for an impact of leverage on companies' performance, measured by Tobin's Q. Tobin's Q is correlated negatively with short term debts into total assets, total debts into total assets. However, it is positively correlated with long-term debt over capital Moreover, control variables proved to influence significantly company`s performance while having expected sign. Furthermore, my paper also recommends that, ROE and Tobin's Q, as well as,

asset tangibility, total assets, and firm size are vital capital structure determinants. I found out sufficient evidence suggesting that Pecking Order theory is more appropriate for  constituents of  Dow Averages firms over the period 2013-2018.

To present our analysis, the remainder of this paper is ordered as follows. Part 2 presents reader with  necessary information relating to Capital Structure and its relationship with firm performance. Part 3 indicates my data sample, econometric estimations and research methodology along with my descriptive statistics. Part 4 presents my empirical results and findings.Part 5 ultimately concludes and discusses limitations and recommendations of my research.

**Literature Review**

**Theoretical Framework**

Some main theories have been suggested by researchers, which give us some insight into company`s financing behavior. These theories assume percentage of leverage to be accomplished through leverage`s cost-benefit analysis. The benefits, that come from debt financing, as source of capital mainly, include tax-advantage of debt, so interest expense is tax deductible. However, costs of debt financing also exists, such as, loss of non-debt tax shields, bankruptcy costs, the agency costs (Brealy and Myers, in 2002). Theoretically, optimal capital structure requires a careful balancing of these costs and benefits.

*Modigliani & Miller theorem*

 Modigliani-Miller theorem (M&M) indicates that, firm market value is evaluated on the basis of using the risk of its assets and market earning power assets and it does not depend on way, it distributes dividends or finances investments. A firm can choose one or more methods from three financing methods: borrowing, equity financing (as opposed to distributing them to investors in form of dividends), and issuing shares. Although complicated, theorem in its basic form is premised on idea which states, there is no differentiation between company financing itself with equity or debt.

As mentioned earlier, irrelevance theory of capital structure represented by Franco Modigliani and Merton Miller and Franco Modigliani in 1958, marked throughout my paper by M&M, was first breakthrough relating to capital structure topic and M&M effect on company performance. First, they hypothesized, if market is perfectly competitive, company performance would not be linked to capital structure, thus indicating no significant relationship between firm performance and its capital structure. The value of firm is not also affected by its financial structure. M&M assumptions ,about perfectly competitive market , don`t account the effect of tax, transaction costs and inflation associated with going bankrupt, or rising money. Additionally, they also suppose that disclosure of whole information is creditable, thus there is not information asymmetry (Stiglitz , 1974 and Hamada, 1969;).

There have been different criticisms that have encouraged M&M to make a change to their first theory. This new theory is referred to as M&M2. They introduced tax benefit as determinant of capital structure in their updated proposal. The important feature of taxation is recognition of interest as a tax-deductible expenditure. As said by MM, company, that fulfills its tax obligations, gets benefits from partially offsetting interest, in particular the tax shield, in order to pay lower taxes. Hence, M&M shows that, firms are able to maximize their value by using more debt due to tax shield benefit associated with use of debt. Thus, firms get benefit from debt financing. M&M indicates that value of firm and company performance is an increasing leverage function due to tax deductibility of interest payments at the company (M & M, 1963).

Markets are inefficient in reality, because of agency conflicts, information asymmetry, taxes, bankruptcy costs, transaction costs, any other imperfect elements. The M&M theorem starts to lose large proportion of its explaining power, when taking these aspects into account. Although M&M theory was widely criticized of some deficiencies and its irrelevant assumptions of real world. This

MM theory still provides a framework for many other theories proposed by many other researches.

**Trade-off Theory**

Trade-off theory is a derivative of Modigliani and Miller model. Interest expense is tax deductible. Thus, a higher interest expense will lead to lower taxable profits and therefore lower taxes. In order to increase amount of debt on their statement of financial position, Companies can generate tax benefit through to interest tax shield. However, financial distress can increase, if firm are going to increase debt. Business may not meet its debt obligations increasing the likelihood of default with very high debt levels. Hence, there is a trade-off between benefits and costs of debt.

Companies face with a decreasing marginal benefit of debt and increasing marginal cost of debt. In effort to maximize firm value, companies would then borrow to the point in which the marginal benefit of tax is compensating by marginal cost of bankruptcy. (Myers, in 1984).

According to Litzenberger and Kraus, the static trade-off theory suggest that companies trade the costs and benefits of equity and debt financing, so find optimal capital structure, after taking account for market imperfections. For example, agency costs, taxes, and bankruptcy costs. The theory suggests that there is benefit to finance with debt; it means that benefit of debt financing exceeds cost of it, specifically the tax benefit. But, there is cost of debt financing, which is indirect bankruptcy costs, direct financial distress costs. This is therefore trade-off that all companies, which want to maximize value of firm, should focus on when making a choice what extent amount of equity and debt required to finance their operations. It goes without saying that, there is a highest possible point where marginal benefit of increase in debt declines, when debt financing increases, while the marginal cost increases.

Furthermore, static trade off theory indicates , optimal capital structure is acquired in which net tax advantage of financing with debt offsets or balances leveraged

relating to costs such as bankruptcy, and financial distress costs, retaining constant the assets of the firm and investment decisions. Baxter & Altman viewed of this theory, argue that when we choose equity financing means, moving away from optimum and should therefore be regarded as bad news. Companies, which adopt this theory, could be considered as setting target debt ratios with steady try to achieve it according to Myers (in 1984). But, Myers suggests that, company` managers will be reluctant choosing equity financing if they feel that it is undervalued in market. The result is that investors choose to issue equity, only if equity is either fairly priced or overpriced.

According to Vander Sar, leverage increase performance of companies by reducing conflicts between managers and shareholders due to excess cash (2011). Ebaid (2009) stated that leverage reduces lower agency costs, since company`s reputation and managers' salary are at risk. But, from the other side, higher leverage also implies that  company has higher interest to meet  future obligations, in terms of interest payments and principal. In addition, higher leverage ratios also result in higher costs of financial distress. Miller (1977) stated that the financial distress costs are not material in comparison to benefit of higher leverage. Furthermore, the trade-off theory consider that, companies which have high level of retained earning, i.e. profitable companies, attempt to have higher level of debt because these companies can more effectively utilize the tax shields on interest. Thus, the probability and financial distress costs of these companies are also lower, because these companies have higher level of operating profits. As a result,  static trade-off theory demands a positive relationship between companies' leverage ratios and their performance. (Myers, 1984; Majluf, 1984).

**Empirical consequences on Trade-Off Theory**

Wippern investigated relationship between performance and financial leverage of companies in 1966.  He used debt/equity ratio as financial leverage indicator and earnings to market cap of firms of common stock as performance indicator. Results

of his study represents, that leverage has a positive effect on companies` performance.

Capon et al. undertaken a meta-analysis of financial performance of 320 published studies in 1990, and found a positive relationship between leverage usage by companies and financial performance of them. Roden and Lewellen investigated impact of capital structure of firms` performance related to 48 US based firms from the period 1981 to 1990, in order to use multinomial logit models. The results of their study represents that, there is positive correlation between companies` performance and its leverage ratios which is based on tax considerations. Therefore, their findings are consistent with trade-off theory. Additionally, Dessi and Robertson findings (2003) say that, there is a positive correlation between performance of firms and financial leverage. They argue that low growth companies are trying to rely on borrowing to take advantage of investing borrowed money in profitable projects and expected growth opportunities that will increase company`s performance.

Abor conducted regression analyses in 2005 for analyzing impact of leverage ratio on companies` performance between Ghanaian listed companies from 1998 to 2002. He compares capital structures of publicly quoted companies, large unquoted companies and medium and small firms throughout his analysis. He set his models based on three measures for leverage, which are total debt over total assets, short-term debt over total assets, long-term debt over total assets, on performance, and took performance measure as Return on Equity. His research results say that there is significantly positive relationship between short-term and total debt and Return on Equity.

Safari and Arbiyan (2009) also reported similar results, after evaluating the effect of leverage ratios on 100 Iranian publicly listed companies on these firms` performance from 2001 to 2007. They discovered that total debts and short-term total debts are positively correlated with profitability measured by Return on Assets, however found a negative correlation between ROE and long term debts.

Additionally, Salteh et al. investigated the relationship between firm performance which is listed on the Tehran Stock Exchange and capital structure from the period 2005 to 2009. They demonstrate that when companies` performance is measured by Tobin's Q, and Return on Equity, it represents significant positive relationship with capital structure of firms. Several proxies were used to evaluate leverage ratios, which are short-term debt to total assets, total debt to total assets, total debt to equity, and, long-term debt to total assets.

At last, Ari (in 2002) used samples of eastern Asian companies and found a positive link between leverage and company performance. Umar et al.'s (2012) research study also indicate a positive link between leverage and firm performance, where he measured performance and leverage by respectively current liabilities to total assets and earnings per share. He used an exponential generalized least squares approach in his research study of top 100 companies on Karachi Stock Exchange during the period 2006 – 2009, and he found that results of his research support trade-off theory.

**Signaling Theory**

Through choice of capital structure, the signaling theory tends to address problem of underinvestment which is caused by information asymmetries. Ross sets up a model to represents that information can be moved and firm value can be declared to the external investors by taking into consideration different financing options. He states that that higher leverage messages future cash flows and higher quality earnings to investors. In effect, by increasing debt levels, companies implicitly state that they can be able to fulfill the additional debt obligation (increased interest expenditure) in relation higher cash flows and future profitability. Thus, companies are able to undertake higher levels of debt to message their future expectations to market.

Myers (1984) states that, Indeed, the question must be asked that "how do companies select their capital structure?". Certain company-specific characteristics which determine capital structure of companies have come to light. These theories

developed and improved over the years, concentrating on information asymmetry, tax benefits and agency costs, particularly. Titman and Wessels defines the following characteristics which can affect the companies` financing behavior in their study which was written in 1984: growth opportunities, asset structure, uniqueness, profitability, industry classification, size, non-debt tax shields, earnings volatility.

The theorized relationships between leverage and these firm-specific characteristics are based on groundings in assumption (theory). In my thesis, I first shortly discuss theories surrounding determinants of capital structured such as ROE, ROA, Tobin`s Q, supported by a thorough theoretical framework of my variables of interest. They are profitability, firm size, asset tangibility, assets growth. Rajan and Zingales, Frank and Goyal have identified four of these factors, including asset tangibility, firm size, profitability and assets growth as being the most valid determinants of capital structure (2007). But, these findings are about public firms only. Schoubben (2004) and Hulle, and Deloof and Verschueren (1998) found out a significant relationship leverage and earnings volatility about some previous studies on private sector. Some researcher used some other factors as determinants of capital structure such as share price, and equity risk premium.

**Pecking order theory**

The pecking order theory does not suppose an optimal level of capital structure, as an opposed to trade-off theory. As previously mentioned Myers & Majluf (1984) supports pecking order theory, which includes the assumptions of transaction costs and information asymmetries. Therefore, this pecking order theory recommends that companies should follow hierarchy of financing debt, equity, in order to reduce information asymmetry between parties at a minimum. It says that, companies give priority the principle of least resistance or effort, favoring equity financing as a means of financing, when they finance their operations from internal financing to equity financing. Thus, pecking order theory says that internal funds should be used firstly and only when we can use debt (external financing) when all

internal funding have been exhausted, firms will switch to debt. If no more debt is issued, companies will eventually choose equity as last financing resort.

In summary, pecking order theory states that high profitable companies that generate excessive cash flows are predicted to use less debt financing than those which generate lower cash flows. Pecking order theory states that companies follow a financing sources` hierarchy, prefer internal financing when this is available. But, firms will prefer debt over equity, when external financing is acquired. Equity involves issuing of additional shares of firm, which generally bringing a high level of external possession into the company. Thus, the form of debt which a firm chooses, can serve as signal for its external financing needs.

Hence, companies that are high profitable will generate high cash flows and predicted to use less debt in comparison to firms who don`t generate high level of cash flows. Pecking order theory therefore states that companies prefer debt to equity.

All of the methods previously mentioned, propose that pecking order theory asserts a negative relationship between companies` performance and capital structure, since more profitable firms choose to use internal debt financing.

**Empirical consequences of on Pecking Order Theory**

Hitherto, existing literature on pecking order theory has offered mixed evidence regarding to the effect of capital structure on company performance.

Shyam-Sunder (1999) and Myers find evidence for the existence of pecking order theory by analyzing data which is from NYSE ( New York Stock Exchange ) cover different areas from 1971 to 1989. And from the other side, Frank and Goyal detected little support for pecking order theory, while they both of them used American publicly traded companies which cover from 1971 to 1998 (2003). They stated that net equity issued rather than the net debt issued, is more highly correlated with financing deficit. Both of them also pointed out that hypothesis of pecking order theory seem to be much more relevant for the data prior to 1990.

Furthermore, Fama and French analyzed the financing decisions of several individual companies and found that decisions of these companies conflict with pecking order theory (2005) . They also found that while equity is considered to be the last decision for alternative financing, most companies issue some kind of equity every year.

In 1986, Kester detected a negative relationship between company performance and capital structure of companies located in US and Japan. Friend and Lang, and Titman and Wessels reported similar results that there is negative link between company performance and capital structure. Rajan and Zingales have used data from F7 countries for their research and revealed a negative relationship between company's performance and firm leverage (1995). Wald detected similar results for developed countries (1999), while Wiwattanakantang also found a negative relationsip between ROA  and market leverage and book leverage for 270 Thai firms (1999).

In their publication of which was conducted in 2002, Fama and French also investigated  pecking order and  static trade-off theories on even more than 3000 companies. Their research study contained from 1965 to 1999. Their models were focused on both time series and cross-section data in order to test for robustness of their outcomes. They support pecking order theory by recording a negative link between a companies` performance and its leverage.

Minton and Wruck analyzed domestic capital structure of financial conservative firms from period of 1974 to 1998, and both of them reached the conclusion that low leverage firms performance exceeds high level firms` performance of (2001). Thus, this shows that there is a negative link between leverage of firms and their performance.

Abor used a panel data for analyzing 200 South African SMEs and 160 Ghanaian, where he checked the correlation between performance of the firms and leverage ratios (2007). He assumes that higher leverage ratios have negative impact on firm's performance, as firms rely heavily on borrowing, these firms will not be

able to receive tax shields leading increase in borrowing costs that could expose the companies to bankruptcy risks and decrease return. Zeitun and Tian focused their research study on choices of capital structure set by companies effecting firm performance during 1989- 2003, which consists of 167 Jordanian companies (2007). Zeitun and Tian reached the conclusion that capital structure has significant and negative impact on company performance.

**Hypothesis**

We endeavor to address the accompanying research question by making diverse models, "How does capital structure influence financial performance of constituents of Dow Jones Industrial Average Companies, How are leverage and financial performance of companies measured?" It is just intelligent to accept that the appropriate response isn't as clear as one may propose. Along these lines, I want to analyze various parts of capital structure and financial performance of firms by addressing to the following hypothesis:

The pecking order theory proposes that, a company firstly should prefer to finance its operations internally through retained earnings. If there is no internal financing source, a company should then finance itself through external finance, such as debt. So, this will lead us static trade off theory which states that, since debt payments of company are tax deductible, there is less risk of using debt financing over equity. Debt financing is cheaper than equity financing. Proofs have indicated greater help for the pecking order theory, along these lines the followings hypothesis will be tried to test:

H1: There is negative correlation between company` performance and company's size.

H0: There is a positive link between firms` performance and company's size (or firm size).

Most of the investigations measuring effect of firm size on profitability have discovered outcomes with positive relationship between company size and firms`

profitability. Most of these investigations have used total sales, total assets or number of employees as firm size. We have used total assets when we calculated firm size.

One of the previous research studies exploring effect of firm size on benefit has been conducted on by Simon in 1962. Simon could not find significant relationship between firm size and profitability. However, Hall and Weiss have discovered a positive relationship between profitability and firm size in research which they carried out on over Fortune 500 firms (1967). On the other hand, Shepherd has discovered a negative relationship between firm size and profitability in 1972. Whittington (1980) conducted study which says that firm benefit is free from firm size.

H2: There is a negative link between companies' performance and leverage ratio.

H0: There is a positive link between companies' performance and leverage ratio.

Numerous empirical studies analyzed the relationship between firms' profitability and leverage. Those research studies used financial performance of different companies and leverage ratios, and try to define the mutual relationship between the profits and the use of debt, in order to carry out studies with using statistical methods and regression analysis specifically. Performance measures can be ROE, ROA and we took ROE, ROA and Tobin Q.

Most of conducted research studies revealed negative relationship between companies` profitability and leverage. For example: Baker (1973), Hall and Weiss (1967), Breadley, Jarell (1984) and Kim, Arditti (1967) found a significant negative relationship between firms` profitability and leverage. However, several studies found a positive relationship between leverage and companies` returns and indicating that returns increase with leverage, e.g. Brav (2009), Bhandari (1988), Hamada (1969), Masulis (1983), and Weill (2004).

H3: There is positive link between companies' asset tangibility and its performance.

H0: There is negative correlation between companies' asset tangibility and its performance

There are limited proofs relationship between assets tangibility and financial performance of companies. Previous research study were limited in finding a positive relationship between assets tangibility and firms` performance. They are Friend and Lang (1988), Titman and Wessels (1988) research studies, and Rajan and Zingales (1995) study. Nowadays, studies on financial performance demonstrates that companies, with more fixed assets, gets more debt financing in countries with poor enforceability of contract Acharya et al. (2004), Claessens and Laeven (2003), (Braun (2003). These kinds of studies represent that, assets tangibility increases external financing.

**Sample Description**

My analysis is based on companies listed on Dow Jones Industrial Average firms. This index comprises the 30 big companies which are publicly owned organizations and leading industries of the U.S. economy, and how they've traded inside the stock market during these years. Dow Jones Industrial Average Index is the second one-oldest U.S. Market index after Dow Jones Transportation Average, which is offered by Dow Jones & Company co-founder Charles Dow and Wall Street Journal editor. Market capitalization of these companies is $ 6.56 trillion. This index is the best known as Dow Averages, owned by S&P Global and was initially published on February 16, 1885. Although Dow is compiled to measure the overall industrial performance of American economic system, the index's overall performance is influenced not only by economic and corporate reports, but also foreign political activities, such as warfare and terrorism, and in addition by natural disasters that could harm economy of Unites States of America. Dow Averages has consisted of  following companies since June 26, 2018: 3M, American Express, Coco Cola, Microsoft, Nike, Protect & Gamble, Caterpillar, Chevron Visa, Walt Disney, Apple, Boeing, Cisco System, and so on.

Main source of collecting the required data is from secondary sources. It includes the financial statements of these companies which are statement of financial position, profit and loss statement, changes in owners` equity, notes to financial statements and cash flow statement. Sampling Technique is companies' annual financial reports and annual income statements. Sample was decreased due to lack of some companies` data. I am planning to use quantitative methods for data analysis. Financial data relating to my sample was obtained from different Research Data Services, such as companies websites over the period 2013 -2018 consists of companies' financial reports, income statements. Companies which don`t have data from 2013 through 2018 were excluded from my sample, this accumulated to a total of 25-30 companies. My sample was thus decreased to total of around 25-30 companies.

**Data**

I start my research by analyzing determinants of capital structure for companies listed on DJIA. I follow an approach similar to that of Roane N. Martis, and Buferna et. Al, where they focus on main capital structure theories for S&P 500, and Libyan market (2005). They suggest that, some key factors that identify the leverage ratio of companies are profitability, asset tangibility, and firm size, and also firm growth as significant factor. Our main dependent variables which determines performance of firms are Return on Assets, Return on Equity, Tobin Q, and independent variables are Short-term Debts/Total Assets, Long term Debts/Total Assets, Total Liabilities/ Total Assets that are leverage ratios, Asset Tangibility, Asset Turnover, Firm Size, Asset Growth. I try to gain deep insight into above mentioned theories, which include pecking order theory, and trade-off theory for our research study.

We confine our analysis to research impact of capital structure on companies' performance. We're going to test our three leverage proxies on firm performance. Our research paper is based on various company performance measurements. These can be divided into accounting measures, such as Return on Equity, gross

profit margin, Return on Assets, and into market measurements as described by Tobin Q. Return on Assets is an indicator of how profitable a firm is relative to its assets. ROA gives an idea to investor, manager, or analyst as to how efficient a company`s management is to use its assets to gain profit. ROA is calculated by dividing a company`s Net income by Total assets. It is an indicator of how well firms utilize its assets, where ROA sets out how profitable a firm is relative to its assets, and used when comparing similar companies or a company to its previous performance.

ROE is a way of measuring financial performance of companies which is calculated by dividing net income by equity of shareholders. ROE could be known as the net asset return, because equity of shareholders is equal to the assets of company minus liability. ROE is mostly known as a measure of how efficiently management utilizes the assets of firm to generate profit. ROE is expressed as a percentage, and calculated if both net income which is calculated in before dividend paid to common shareholders and after dividends to preferred shareholders and interest to lenders, and equity are positive numbers for any company.

The Tobin`s Q ratio is calculated as firm`s market value divided by replacement cost of firm`s assets. Therefore, equilibrium is where market value of firm equals to replacement cost. This ratio is popularized by James Tobin who is Nobel laureate in economics, and hypothesized that replacement costs of all the companies should be approximately equal to their market value on stock market. While Tobin Q is often credited as its creator, in 1966, economist Nichholas Kaldor first suggested this ratio in an academic publication. The ration is sometimes referred in early texts as "Kaldor`s v."

If The Tobin's Q above 1 says that the company is worth more than cost of firm total assets. Because the concept of Tobin's is that companies should be worth what their assets are worth. Anything above 1.0 theoretically presents that company is overvalued.

We also calculated leverage ratios, such as short term debts/total assets, long term debt/total assets, total debts/total assets. Leverage ratio is some kind of ratio that indicates a business entity`s level of debt in its financial statements. These ratios show us that; how assets of company and business operations are funded (business used equity or debt financing)

**Correlation matrix and Descriptive Statistics of DJIA companies**

Table 1 provides descriptive statistics of variable for our 2014-2018 research study. The results of table indicates that the mean and median of company performance measures Return on Equity, Return on Assets and Tobin's Q are 0.6642, 0.1808; 0.0726, 0.0732; and 1.4487, 1.1639; respectively. This suggests that sound performance has been recorded by companies listed on DJIA. Mean of Tobin's Q is 1.4487, which indicates that, market values of companies listed on DJIA are higher values than their book values. Since their price to book ratio is higher than 1, these companies are expected to grow in the future as market price also takes into account any future earnings at the current price. Minimum of ROE and ROA are -2.1261, and -0.0016 respectively, while the maximum of ROE, ROA and Tobin's Q are 25.512, 0.1839 and 4.2686 respectively. If ROE and ROA are negative values, that means, net income is negative. ROE level around 10 percent is considered strong for most companies and it means, these firms cover their costs of capital.

The mean and median for short-term and long-term debt to total assets are 0.3352; 0.5003 and 0.2913; 0.525, respectively, indicating that on average companies listed on DJIA use relatively more short-term debt than long-term debt if we take consideration mean, on the other side these firms uses a little bit more long term debt than short ones if we consider median of them.

The mean (median) of total debt ratio is 0.6897 (0.71), indicating that more than 65 % of total assets are financed with debt. As mentioned above, mean of total debt ratio is nearly 68 percentages, which indicates, most of DJIA companies are highly leveraged. Leverage results from using borrowed capital as a source of funding

when investing to enlarge the company's asset base and generate returns on risk capital. Leverage can also adhere to the amount of debt that company uses to finance its assets. On the other hand, most of these debts are short-term debts (40%) as opposed to long-term debt (20%).

In addition, firms leverage varies significantly across companies as shown in standard deviation paired with the maximum and minimum values. Leverage ratios show considerable convergence over time that means, firms with relatively higher leverage tend to move towards more average levels of leverage.

Asset tangibility shown in table, we see, it has a low mean value of 0.245. Low asset tangibility shows that proportion of companies` fixed assets to total assets is nearly 24% means that fixed assets don't have large amount within total assets, because financial services companies, services companies are mostly included in DJIA companies, so they have less fixed assets. But on the other side, Asset turnover has very high mean value (0.7272), so it means that these firms efficiently utilize their assets.

Average firm size is 5.232 which is calculated log of total assets of firm, while the average asset growth is 0.025 (2.5%).When we say firm size, we should take into consideration capital invested, value of product, volume of output, product capacity of plant, and so on.

The standard deviation is a statistic that measures dataset set`s dispersion relative to its mean and is calculated as the square root of the variance. By identifying the variation between each data point relative to the mean, it is calculated square root of variance. There is a higher deviation within the data set if data points are far away from the mean thus, the more spread out the data, the higher the standard deviation.

Standard deviation of ROE and Tobin Q is higher than other ones.  The greater the standard deviation of ROE, and Tobin Q, the greater the variance between each ROE of firms and the mean of them, which shows a larger amount range.

Standard deviation of ROA and Asset growth is lower than other ones. The lower the standard deviation of ROE, and Asset growth, the smaller the variance between each ROA of firms and the mean of them, which shows a lower amount range between mean and ROA.

At the next step, we will analyze correlation between our variables for gaining a better knowledge of our research study. In addition, we also carry out test for significance levels (Significance level of 1%, 5% and 10%). Table (below) indicates correlation for variables for period 2014 through 2018.

Table: 1 Descriptive Statistics

| Descriptive Statistics | | | | | | |
|---|---|---|---|---|---|---|
| | Median | Mean | Std | Min | Max | N |
| Return on Assets | 0.0732 | 0.0726 | 0.0515 | -0,0016 | 0,1839 | 25 |
| Return on Equity | 0.1808 | 0.6642 | 3.0571 | -2,1261 | 25,512 | 25 |
| Tobin`s Q | 1,1639 | 1,4487 | 1,027518 | 0,0733 | 4,2686 | 25 |
| Short-term Debts/Total Assets | 0,2913 | 0,3352 | 0,199937 | 0,0777 | 0,7869 | 25 |
| Long term Debts/Total Assets | 0,525 | 0,5003 | 0,258392 | 0,0605 | 1,2522 | 25 |
| Total Debts/Total Assets | 0,71 | 0,6897 | 0,234659 | 0,0413 | 1,1907 | 25 |
| Asset Turnover | 0,5616 | 0,7222 | 0,744699 | 0,0357 | 3,4584 | 25 |
| Asset Growth | 0,0186 | 0,025 | 0,08981 | -0,2933 | 0,2938 | 25 |
| Firm Size | 5,11 | 5,232 | 0,478858 | 4,4917 | 6,42 | 25 |
| Asset Tangibility | 0,12 | 0,245 | 0,278725 | 0 | 0,989 | 25 |
| Number of firms | 25 | | | | | |

*Table 1 indicates descriptive statistics of Dow Averages companies` sample from 2014 to 2018. Return on equity is calculated as Net Income (or Loss) over total equity. Return on Assets is evaluated as net income divided by assets of firms and Tobin's Q is calculated as ratio of market cap of companies to total assets. Asset tangibility indicates gross fixed assets as a proportion of total assets of companies and asset turnover is evaluated as sales revenue over firm total assets. Firm size is calculated as the log (logarithm) of total assets. Asset growth indicates the annual percentage change of company's assets.*

Correlation coefficient is statistical metric that measure strength of relationship between relative movements of two variables. Values changes between -1.0 and 1.0. There was error in calculation of correlation if calculated number is greater than 1.0 or less than -1.0. If correlation coefficient is -1.0, it shows perfect negative correlation, whereas a correlation coefficient 1.0 indicates perfect positive correlation. Correlation of 0.0 indicates no relationship between the movements of two variables. Strength of relationship differs in degree based on value of

correlation coefficient. For example, correlation coefficient 0.2 represents that there is positive relationship between two variables, but relationship is insignificant and weak. Experts don`t consider correlation as significant until value exceeds 0.8 or more.

Correlation has an effect size and so we can verbally describe the strength of the correlation using guide that Evans suggests for absolute value of r (coefficient correlation) (1996). If r value is 0.00-0.19, then relationship between variables "very week", 0.20-0.39 (week), 0.40-0.59 (moderate), 0.60-0.79 (strong), 0.80-1(very strong) .

 ROA is negatively correlated with short-term debt over total assets, total debts over total assets, and firm size are -0.51, -0.21,-0.54 respectively. Relationship between ROA and short term debt/ total assets, firm size is insignificance, because correlation coefficient values greater than -0.8. ROA is also positively correlated with long term debts/capital, asset tangibility, asset turnover, and asset growth and values of them are 0.04, 0.11, 0.04, and 0.16 respectively. As we see, Relationship between ROA and long term debts/capital, asset tangibility, asset turnover, and asset growth are very week and insignificance.

Tobin's Q on the other hand is correlated negatively with short term debts into total assets, total debts into total assets, and firm size, and these ratio`s values are -0.57, -0.20, -0.66 respectively which means relationship is insignificance.  It is positively correlated with long-term debt over capital, asset tangibility, assets turnover and asset growth. Those values are 0.12, 0.26, 0.03, and 0.15 respectively that shows relationship insignificance.

ROE is correlated negatively with asset tangibility, firm size which r values  are -0.12, -0.05 respectively and represents that relationship is insignificance, because correlation coefficient values greater than -0.8. It is positively correlated with short term debts into total assets, long-term debt over capital, total debts into total assets, assets turnover and asset growth which r values are 0.28, 0.22, 0.17, 0.03, and 0.07

respectively. These r values indicate that relationship between ROE and other variables are insignificance

Table: 2 Correlation between variables (Dow Averages Companies)

| Correlation t-Statistic | ROA | ROE | TOBIN_Q | STD__TOTA... | LTD_CAP | TD__T_ASS... | ASSETS_TA... | ASSETS_TU... | ASSETS_G... | FIRM_SIZE |
|---|---|---|---|---|---|---|---|---|---|---|
| ROA | 1.000000 | | | | | | | | | |
| | ----- | | | | | | | | | |
| ROE | 0.030788 | 1.000000 | | | | | | | | |
| | 0.263180 | ----- | | | | | | | | |
| TOBIN_Q | 0.780568 | -0.007564 | 1.000000 | | | | | | | |
| | 10.66948 | -0.064628 | ----- | | | | | | | |
| STD__TOTAL_ASS... | -0.518353 | 0.284478 | -0.570736 | 1.000000 | | | | | | |
| | -5.178882 | 2.535331 | -5.938587 | ----- | | | | | | |
| LTD_CAP | 0.045981 | 0.227757 | 0.124244 | 0.377275 | 1.000000 | | | | | |
| | 0.393279 | 1.998485 | 1.069834 | 3.480652 | ----- | | | | | |
| TD__T_ASSET | -0.216346 | 0.172001 | -0.202823 | 0.597031 | 0.834604 | 1.000000 | | | | |
| | -1.893303 | 1.491812 | -1.769700 | 6.358671 | 12.94520 | ----- | | | | |
| ASSETS_TANG | 0.118295 | -0.122352 | 0.263146 | -0.580806 | -0.161146 | -0.263529 | 1.000000 | | | |
| | 1.017863 | -1.053294 | 2.330457 | -6.096003 | -1.395064 | -2.334095 | ----- | | | |
| ASSETS_TURN | 0.040267 | 0.038907 | 0.036059 | -0.203493 | 0.074418 | 0.007093 | 0.143166 | 1.000000 | | |
| | 0.344322 | 0.332676 | 0.308292 | -1.775798 | 0.637597 | 0.060604 | 1.235941 | ----- | | |
| ASSETS_GROWTH | 0.166045 | 0.075949 | 0.156881 | 0.065622 | 0.001932 | 0.008447 | -0.301921 | -0.129246 | 1.000000 | |
| | 1.438658 | 0.650792 | 1.357193 | 0.561887 | 0.016510 | 0.072175 | -2.705890 | -1.113619 | ----- | |
| FIRM_SIZE | -0.540874 | -0.050255 | -0.669506 | 0.626285 | -0.219655 | 0.141602 | -0.279039 | -0.417608 | 0.066408 | 1.000000 |
| | -5.494250 | -0.429925 | -7.700882 | 6.863810 | -1.923716 | 1.222161 | -2.482721 | -3.926846 | 0.568649 | ----- |

Correlation between variables

**Methodology**

Methodology is hypothetical, systematic analysis of methods which is used in field of study, such as research study. Methodology consists of theoretical analysis of methods in your study or principles related with a part of knowledge.

This chapter investigates the econometric estimations (regression analysis) that are used throughout my research paper. Determinants of capital structure for companies listed on Dow Jones Industrial Average are assessed by performing OLS regressions. OLS regressions` models are used in this research paper based on model which was used by Ram Kumar Kalkani et. al and Roane (2013), with some changes in the independent variables (1998).

Regression analysis is statistical tool or method for examining the relationship between two variables. Though there are many types of regression analysis, they all analyze influence on a dependent variable of one or more explationary variables at their base. The regression process allows us to evaluate confidently which

factors matter most, which ones can be ignored, and how they impact on each other's.

To fully understand regression analysis, the followings parameters should be understood:

- ✓ Dependent Variable: The result of this variable depends on independent variables. This variable also can also be called as response, regressed, predicted, explained variable.
- ✓ Independent variables: It represents inputs and causes, which is potential reason for variation. These variables are also known as regressors, explationary, exposure.

As previously mentioned above, I evaluated three measures for leverage, such as total debt ratio, short-term debt ratio, and long-term debt ratio. However, I just used total debt ratio, for keeping in line with past research studies for my research study test. The explained variables are three various performance measures used throughout my study, which are Tobin's Q , ROA, ROE over total assets. In addition, we used asset tangibility, total assets growth, asset turnover and firm size.

Next, I added dummy variable in my models controlling for years from 2014 to 2018. Dummy variables is one that changes between the value 0 and 1 to indicate the absence or presence of some categorical influences that can be expected to change the result, so we also take consideration other effects such as economic changes over the world.

An econometric model has been used to evaluate determinants of capital structure which is based on dependent variable. My benchmark model used in this study is as follows:

$$Performance_{i,t} = \beta_0 + \beta_1 Leverage_{i,t} + \beta_2 Controls_{i,t} + \varepsilon_{i,t} .$$

(2)

Where performance indicates the measures of the company`s performance, whereas leverage indicates the company`s leverage ratios and i and t signify

companies and time effects respectively. Control indicates a vector which keeps control variables that also impact firms` financial performance. In addition, $\varepsilon_{i,t}$ indicates the idiosyncratic error. I used three different measures for companies` performance, as mentioned above. Performance, firstly, is measured by Return on Assets, then I will change indicator of performance and re-evaluate my model, based on ROA and Tobin`s Q. With respect to leverage ratios such as total debt , short-term debt, long-term debt ratios,  same methodology will apply to variables indicating leverage ratios.

I also will analyze effect of asset turnover, leverage, asset tangibility on companies` performance listed on Dow Averages. "Larger companies are more diversified and better experience rather than newly ones, however not gaining excessive returns". (Rajan and Zingales ; Jermais, 2008). "While sales growth shows a higher cash flow for debt holders and shareholders to implement any commitment". (Minton and Wruck, 2001).

Additionally, by carrying out an OLS estimate, I test the relationship between companies listed on Dow Averages during 5 years (2013-2018). This is done to verify that our results are robust. I try to decrease collinearity in my models by using the panel dataset. Collinearity is concern in regression analysis when there is high correlation between two predictor variables and also has dramatic increase in the p value of one predictor variable when other predictor is included in OLS regression model.

On the other side, we can take leverage dependent variable and performance indicator as independent variables. An econometric model has been used to estimate the determinants of capital structure based on dependent variables. My statistical model is as follows:

$$Leverage_{i,t} = \beta_0 + \beta_1 Performance_{i,t} + \beta_2 Controls_{i,t} + \varepsilon_{i,t} ,$$

Where Leverage indicates total debt/total assets, whereas Performance indicates the performance measures of companies. Controls shows vector containing control

variables which is mentioned above, which also impacts leverage. Here εi,t indicates the idiosyncratic error, whereas i and t denote firm and time specific effects.

**Empirical Results**

This section introduces my main findings in a defined method relating the effect of capital structure on companies' performance. In this section, my hypothesis will be dealt with deeply to gain insight into various aspects of company capital structure and firms` performance. I begin by looking over my study period at main determinants of capital structure, after which I will investigate impact of capital structure on companies` performance. All models used in this research keep fixed and firm effects for better assessing correlation between capital structure and company performance.

Table: 3 Relationship between ROA and Leverage ratios

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.117904 | 0.015890 | 7.420144 | 0.0000 |
| STD__TOTAL_ASSETS | -0.129425 | 0.031577 | -4.098703 | 0.0001 |
| LTD_CAP | 0.109001 | 0.035583 | 3.063293 | 0.0031 |
| TD__T_ASSET | -0.081861 | 0.045233 | -1.809777 | 0.0746 |

| | | | |
|---|---|---|---|
| R-squared | 0.365964 | Mean dependent var | 0.072588 |
| Adjusted R-squared | 0.339173 | S.D. dependent var | 0.051547 |
| S.E. of regression | 0.041903 | Akaike info criterion | -3.455057 |
| Sum squared resid | 0.124667 | Schwarz criterion | -3.331457 |
| Log likelihood | 133.5646 | Hannan-Quinn criter. | -3.405705 |
| F-statistic | 13.66031 | Durbin-Watson stat | 0.557969 |
| Prob(F-statistic) | 0.000000 | | |

This regression analysis, in a table 2 mentioned above, introduces us relationship between ROA and leverage ratios, such as , long term debt ratio, short term debt ratio, and total debt ratio. I also included constant variable or control variables which I holds constant (controls) during my research. It's important for us to try to keep all variables constant except for the explationary variable. The correlation between the dependent and independent variable may disregarded, if a constant variable changes during a research study. Constant variables should be identified,

measured, and recorded where possible. So, for these reasons I added constant variable into my model.

If we begin to analyze table, we can see that R- squared is 0.3659, it means, my model explains 36 % of variation in the response variable around its mean. Larger $R^2$, means that, the regression model fits better your observations. Then if we look at p value (probability) of short term debt ratio, p value is 0.01%, means that, it is statistically significant, because to become significant p value must be less than 5 % if we take significant level as 5 %. So short term debt ratio is significance to explain dependent variable ROA. If I take short term ratio leverage so we would reject our null hypothesis which state, "H2: There is a negative link between companies' performance and leverage ratio". But in most studies take total debt ratio to analyze relationship between leverage and firm performance.

Next, If we look at p value of long term debt ratio, it is 0.31%, it says us, it is statistically significant, because p value is less than 5 %. So long term debt ratio is significance to explain dependent variable ROA. In this case, we must also reject null hypothesis.

Last one is debt ratio that is main determinant of leverage of firm. P value of debt ratio, it is 7 %, it says us, it is statistically insignificant, because p value is more than 5 %. So, debt ratio is insignificance to explain dependent variable ROA. In this case, we must accept null hypothesis: "H2: There is a negative link between companies' performance and leverage ratio".

P value of F statistics is less than 5 % , so it is significance and that means, our independent variables jointly influences dependent variable ROA. F statistics is statistical test where, under null hypothesis, the test statistics has an F distribution. F test is mostly used to compare models fitted to a data set for defining the model which best fits population from which data derived or were sampled. F test will tell us if other variables are jointly significant or not.

You can use the F statistic when deciding to support or reject the null hypothesis. In your F test results, you'll have both an **F value and an F critical value.**

- The **F critical value** is also called the **F statistic**.

- The value you calculate from your data is called the **F value** (without the "critical" part).

If you are using the F Statistic in regression analysis (perhaps for a change in R Squared, the Coefficient of Determination), you would use the p value to get the "big picture."

✓ If the p value is less than the alpha level, go to Step 2 (otherwise your results are not significant and you cannot reject the null hypothesis). A common alpha level for tests is 0.05.

✓ Study the individual p values to find out which of the individual variables are statistically significant.

As we know, we also have ROE and Tobin's Q as performance indicator. So, I will analyze ROE regression.

Table: 4 OLS - Dependent variable ROE

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.128892 | 1.103331 | -0.116821 | 0.9073 |
| STD__TOTAL_ASSETS | 5.531732 | 2.192598 | 2.522912 | 0.0139 |
| LTD_CAP | 4.990169 | 2.470771 | 2.019681 | 0.0472 |
| TD__T_ASSET | -5.159207 | 3.140808 | -1.642637 | 0.1049 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.130868 | Mean dependent var | | 0.664251 |
| Adjusted R-squared | 0.094144 | S.D. dependent var | | 3.057068 |
| S.E. of regression | 2.909608 | Akaike info criterion | | 5.025772 |
| Sum squared resid | 601.0733 | Schwarz criterion | | 5.149372 |
| Log likelihood | -184.4665 | Hannan-Quinn criter. | | 5.075124 |
| F-statistic | 3.563576 | Durbin-Watson stat | | 0.877404 |
| Prob(F-statistic) | 0.018335 | | | |

If we begin to analyze table, we can see that R- squared is 0.13, it means, my model explains 13 % of variation in the response variable around its mean. Then if we look at p value (probability) of short term debt ratio, p value is 1.3%, means that, it is statistically significant, because to become significant p value must be less than 5 % if we take significant level as 5 %. So short term debt ratio is significance to explain dependent variable ROE. If I take short term ratio as

leverage ratio so we would reject our null hypothesis which state, "H2: There is a negative link between companies' performance and leverage ratio". But in most studies take total debt ratio to analyze relationship between leverage and firm performance. Next, p value of long term debt ratio, it is 4.72 %, so it is statistically significant, because p value is less than 5 %. So long term debt ratio is significance to explain dependent variable ROE. In this case, we must also reject null hypothesis.

Last one is debt ratio that is main determinant of leverage of firm. P value of debt ratio, it is 10 %, it says us, it is statistically insignificant, because p value is more than 5 %. So, debt ratio is insignificance to explain dependent variable ROE. In this case, we must accept null hypothesis: "H2: There is a negative link between companies' performance and leverage ratio".

P value of F statistics is less than 5 % ,  so it is significance and that means, our independent variables jointly influences dependent variable ROE.

Table: 5 OLS regression- Dependent variable Tobin`s Q

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 2.411849 | 0.278198 | 8.669545 | 0.0000 |
| STD__TOTAL_ASSETS | -2.871249 | 0.552849 | -5.193546 | 0.0000 |
| LTD_CAP | 2.960636 | 0.622989 | 4.752309 | 0.0000 |
| TD__T_ASSET | -2.148409 | 0.791934 | -2.712862 | 0.0084 |
| R-squared | 0.510883 | Mean dependent var | | 1.448719 |
| Adjusted R-squared | 0.490216 | S.D. dependent var | | 1.027518 |
| S.E. of regression | 0.733639 | Akaike info criterion | | 2.270259 |
| Sum squared resid | 38.21405 | Schwarz criterion | | 2.393858 |
| Log likelihood | -81.13471 | Hannan-Quinn criter. | | 2.319611 |
| F-statistic | 24.71986 | Durbin-Watson stat | | 0.329475 |
| Prob(F-statistic) | 0.000000 | | | |

If we begin to analyze table, we can see that R- squared is 0.51, it means, my model explains 51 %  of variation in the response variable around its mean. Then if we look at p value (probability) of short term debt ratio, p value is 0.0%, means that, it is statistically significant, because to become significant p value must be less than 5 % if we take significant level as 5 %. So short term debt ratio is significance to explain dependent variable Tobin`s Q. If I take short term ratio as

leverage ratio so we would reject our null hypothesis which state, "H2: There is a negative link between companies' performance and leverage ratio". But in most studies take total debt ratio to analyze relationship between leverage and firm performance. Next, p value of long term debt ratio, it is 0.0 %, so it is statistically significant, because p value is less than 5 %. So long term debt ratio is significance to explain dependent variable Tobin `s Q. In this case, we must also reject null hypothesis.

Last one is debt ratio that is main determinant of leverage of firm. P value of debt ratio, it is 0.08 %, it says us, it is statistically significant, because p value is less than 5 %. So, debt ratio is significance to explain dependent variable Tobin`s Q.

P value of F statistics is less than 5 % , so it is significance and that means, our independent variables jointly influences dependent variable Tobin`s Q.

Next hypothesis of my research states , "H3: There is a positive link between firms' asset tangibility and its performance".

Table: 6 Relationship between Asset Tangibility and Leverage ratios

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.067231 | 0.007944 | 8.463321 | 0.0000 |
| ASSETS_TANG | 0.021877 | 0.021493 | 1.017863 | 0.3121 |
| R-squared | 0.013994 | Mean dependent var | | 0.072588 |
| Adjusted R-squared | 0.000487 | S.D. dependent var | | 0.051547 |
| S.E. of regression | 0.051534 | Akaike info criterion | | -3.066834 |
| Sum squared resid | 0.193872 | Schwarz criterion | | -3.005034 |
| Log likelihood | 117.0063 | Hannan-Quinn criter. | | -3.042158 |
| F-statistic | 1.036045 | Durbin-Watson stat | | 0.318649 |
| Prob(F-statistic) | 0.312105 | | | |

If we look at p value (probability) of assets tangibility, p value is 31.21%, means that, it is statistically insignificant, because to become insignificant p value must be more than 5 % if we take significant level as 5 %. So assets tangibility ratio is insignificance to explain dependent variable performance indicator, ROA. P value of F statistics is more than 5 %, so it is insignificance and that means, our independent variables not jointly influences dependent variable ROA.

**Comparison of low and high leverage companies on company performance**

After evaluating determinants of capital structure and effect of capital structure on company performance with the help of descriptive statistics and Ordinary Least Squares method , I will test difference between impact by focusing solely on low and high leverage companies of my dataset using ROA, ROE, Tobin`s Q as performance measure. I have divided firms in order to their level of leverage. After I have identified my subsamples, I test my estimations on 62-63 observations. I took ROA, ROE, Tobin`s Q as performance measure. My results are presented below tables. Table mentioned below presents the results indicating impact of low and high leverage on ROA from 2013 to 2018. We can see that short-term debt effects return on asset.

Table 7 Difference between Performance of Low and High leverage companies using ROA( a performance indicator)

| Difference in Performance between High and Low leverage firms using ROA as performance measure 2014-2018 | | | | | | |
|---|---|---|---|---|---|---|
| | Short-term debt | | Long term debt | | Total debt | |
| Determinants | High | Low | High | Low | High | Low |
| Leverage | -0,5575 | 0,0727 | 0,531 | 0,4541 | 0,2782 | 0,0096 |
| | | | | | | |
| Asset turnover | 0,0323 | 0,493 | 0,03 | 0,4304 | 0,0223 | 0,5186 |
| | | | | | | |
| Asset tangibility | 0,0699 | -0,1678 | 0,5282 | -0,4617 | 0,457 | -0,3965 |
| | | | | | | |
| Firm size | -0,4006 | -0,6225 | -0,7053 | -0,2615 | -0,6052 | -0,4267 |
| | | | | | | |
| Asset growth | 0,1719 | 0,1785 | -0,1616 | 0,3957 | -0,119 | 0,3551 |
| | | | | | | |
| Year fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| | | | | | | |
| number of obs | 62 | 62 | 62 | 62 | 62 | 62 |
| R squared | 0,4045 | 0,6225 | 0,6669 | 0,64 | 0,5112 | 0,7267 |

*This table mentioned above illustrates us results of impact of Low and High Leverage on Company Performance. With performance measure ROA as dependent variable and with leverage as Total debt ratio, Long-term debt and Short-term debt ratios.*

ROA is negatively linked with short-term debt into total assets for high leverage firms and relationship is moderate, however positively correlated with low leverage firms with week relationship between them. ROA is also positively correlated with long term debts, and total debts ratios, and their values are 0.53 and 0.27 respectively for high leverage firms. As we see, Relationship between ROA and long term debts are moderate and week respectively. If we look at the low leverage firms, we see that, link between ROA and long term debts, total debts are 0.27 and 0.0009 respectively, and relationship is week and very week between them respectively.

Relationship between ROA and asset turnover is like that: As it purports that, low leveraged firms have a larger impact on Return on Assets in comparison to their high leveraged ones. However, when we look at asset tangibility, we see that, only high leveraged companies are positively correlated with this factor (ROA). Firm size is negatively correlated with Return on Assets, regardless if the firm belongs high leveraged or low leveraged firms, however level of relationship between them differs from high leveraged to low leverage firms. For assets growth, low leverage firms effects highly than high leverage firms. However, relationship between them is week.

As presented by my results, in most cases the effect of these ratios for low leverage firms are larger impact on firm performance in comparison to their peer ones.

Secondly, we adhere the same approach as before and indicate my findings in table 8, which refers to Return on Equity. Short-term debt and long term debt positively effects performance for both low leverage and high leverage firms, while the total debt is positively correlated with ROE for high leverage firms but negatively linked with for low leverage firms. Level of relationship between ROE and leverage ratios are week regardless if the firm belongs high leveraged or low leveraged firms. Asset tangibility both have a negative impact on performance, regardless firm belongs to high leverage or leverage peer groups.

Table: 8 Difference between Performance of Low and High leverage companies using ROE( a performance indicator)

| Difference in Performance between High and Low leverage firms using ROE as performance measure 2014-2018 | | | | | | |
|---|---|---|---|---|---|---|
| | Short-term debt | | Long term debt | | Total debt | |
| Determinants | High | Low | High | Low | High | Low |
| Leverage | 0,2176 | 0,4226 | 0,2289 | 0,7269 | 0,168 | -0,0029 |
| | | | | | | |
| Asset turnover | 0,0217 | 0,0312 | 0,0209 | 0,5072 | 0,021 | 0,5048 |
| | | | | | | |
| Asset tangibility | -0,0201 | -0,3667 | -0,1285 | -0,4688 | -0,1236 | -0,3779 |
| | | | | | | |
| Firm size | -0,1571 | 0,2519 | -0,0566 | -0,3524 | -0,068 | -0,5503 |
| | | | | | | |
| Asset growth | 0,09 | 0,2601 | 0,1479 | 0,295 | 0,1456 | 0,3081 |
| | | | | | | |
| Year fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| | | | | | | |
| number of obs | 63 | 63 | 63 | 63 | 63 | 63 |
| R squared | 0,3466 | 0,3439 | 0,1107 | 0,553 | 0,6123 | 0,456 |

*This table shows results of impact of Low and High Leverage on Performance. As performance measure ROE as dependent variable and Long-term debt to total assets,Short-term debt to total assets, and Total Debt to total assets as measures for Leverage.*

However, firm size presents negatively affect performance for low leveraged and high leveraged firms for all leverage ratios except short term debt of low leveraged firms. There is positive correlation between ROE and asset turnover for high and low leveraged firms. Mostly, relationship between them is week except long term and total debt ratios of low leveraged firms (moderate relationship). As indicated by my results, the effect of assets turnover ratios for low leverage firms are larger impact on firm performance compared to their peer ones in most cases.

Assets growth ratio is positively correlated with ROE performance indicator for both high and low leverage companies. However relationship is week between them.

Finally, we took Tobin`s Q as a performance indicator. We see from table mentioned above, short-term debt effects positively to firm performance for low leverage firm, however negatively correlated with Tobin`s Q for high leveraged firms . Tobin`s Q is positively linked with long debt , and total debt ratios and relationship is strong for long term debt ratio. However, there is week relationship between into total assets for high leverage firms and relationship is moderate, however positively correlated with low leverage firms with week relationship between them.

Relationship between Tobin`s Q and asset turnover is like that: As it states that, low leveraged firms have a larger impact on Tobin`s Q compared to their high leveraged ones, and all of them is positively correlated with Tobin`s Q.

Table: 9 Difference between Performance of Low and High leverage companies using

Tobin`s Q (a performance indicator)

| Difference in Performance between High and Low leverage firms using ROE as performance measure 2014-2018 | | | | | | |
|---|---|---|---|---|---|---|
| | Short-term debt | | Long term debt | | Total debt | |
| Determinants | High | Low | High | Low | High | Low |
| Leverage | -0,6368 | 0,0323 | 0,5721 | 0,7062 | 0,3303 | 0,07 |
| | | | | | | |
| Asset turnover | 0,0928 | 0,2438 | 0,0723 | 0,0997 | 0,069 | 0,2132 |
| | | | | | | |
| Asset tangibility | 0,5042 | -0,1842 | 0,7747 | -0,569 | 0,7794 | -0,5382 |
| | | | | | | |
| Firm size | -0,5871 | -0,7393 | -0,7509 | -0,5273 | -0,7074 | -0,6106 |
| | | | | | | |
| Asset growth | 0,1635 | 0,173 | -0,0549 | 0,329 | -0,0058 | 0,2612 |
| | | | | | | |
| Year fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| | | | | | | |
| number of obs | 63 | 63 | 63 | 63 | 63 | 63 |
| R squared | 0,623 | 0,5632 | 0,236 | 0,5632 | 0,742 | 0,621 |

*This table shows results of impact of Low and High Leverage on Performance. As performance measure Tobin`s Q as dependent variable and Long-term debt to total assets, Short-term debt to total assets, and Total Debt to total assets as measures for Leverage.*

However, when we take into consideration asset tangibility, we see that, there is positive strong correlation between assets tangibility and Tobin`s Q for only high leveraged companies, however assets tangibility is negatively correlated with Tobin`s Q for low leveraged peers.

Firm size is negatively strong correlated with Tobin`s Q, regardless if the firm is highly leveraged or low leveraged firms, but level of relationship between them differs from high leveraged to low leverage firms (mostly, strong correlation) . For assets growth, low leverage firms affect highly firm performance than high leverage firm groups. However, relationship between asset growth and Tobin`s Q is weak.

**Banks of Azerbaijan**

The tendency of concentration observed in the banking sector since 2017 has shown a tendency to rise again in 2018. The market share of five banks in the banking sector increased from 55% to 68.2% in the period from 2013 to 2016, however down to 65.2% in 2017, and with a slight increased to 65.3% in the 9 months of 2018.

The market share and assets of the International Bank of Azerbaijan, which is the largest bank in the country, continued to decline. Bank's assets decreased by 4.3% or 374.8 million manat, while the market share of IBAR fell from 31.1% to 28.5%. Pasha Bank, that is the second largest bank in the country, has managed to increase its assets by 22% and to increase its market share from 12.7% to 14.8%. Xalq Bank (6.5% to 6.6%), Kapital Bank (6.5% to 6.6%), which holds the next places in the ranking of its assets, increased slightly its market share; market share of ASB remains stable 3.4 %.

Reducing the number of bank networks within the framework of optimization of expenditures after devaluation has been replaced by the tendency of expansion of these networks nowadays. At the end of 2017, DemirBank's license was revoked based on the decision of the Board of Directors of the Financial Markets Chamber dated December 22, 2017. The reason for the decision is that the total capital of the

bank is lower than the minimum amount of capital allocated to banks and the adequacy ratio of the total capital is less than 3% provided by the legislation, as well as failure to fulfill the obligations to the creditors. Thus, the number of banks decreased to 30.

Figure:1 Change in assets of 10 largest banks in Azerbaijan

| Banks | Assets | | Change (+ increase, − decrease) |
|---|---|---|---|
| | 2017 | 2018 (9 months) | |
| 1. International Bank of Azerbaijan OJSC | 8695,1 | 8320,3 | − 374,8 |
| 2. PAŞA Bank OJSC | 3551,8 | 4332,0 | 780,2 |
| 3. Kapital Bank OJSC | 3184,5 | 3457,5 | 273 |
| 4. Xalq Bank OJSC | 1813,6 | 1941,0 | 127,4 |
| 5. Azerbaycan Sanaye Bankı OJSC | 945,2 | 1007,2 | 62 |
| 6. Bank Respublika OJSC | 702,1 | 976,0 | 273,9 |
| 7. AccessBank CJSC | 844,8 | 836,5 | -8,3 |
| 8. Unibank KB OJSC | 601,8 | 669,3 | 67,5 |
| 9. Rabitabank OJSC | 727,2 | 656,2 | -71 |
| 10. Silk Way Bank | 411.3 | 614,1 | 202,8 |
| Total: | 27921 | 29201,8 | |

Source: Azerbaijan Banks Association www.aba.az

The close of Demirbank, as well as the deterioration of the financial position of some banks led to the reduction of the branch network of banks. Compared with the same period last year, the number of bank branches fell 8.6% (from  557 to 511)  in 9 months of 2018. On the contrary, 2 new branches were opened during 9 months of the current year. In this process, the number of branches per bank fell from 18 to 17. Over the last year, two bank branches have been opened.

Despite the weak growth of branches, the increase in the number of employees in the banking sector was significant. During 9 months of 2018, the number of employees increased by 5.5% (17066 employees). The increase in the number of employees compared to the same period last year was 4.4%.

**Bank resources: sources of formation and use**

The observed decline in banks' assets in recent years has been replaced by an increase for 9 months in 2018. Analysis of the Financial Markets Chamber's statistics shows that banks' assets grew 4.6 % from AZN 27.92 billion to AZN 29.2 billion in this period. Compared with the corresponding period of 2017, the growth was 11.6%.

An increase in assets led to an increase in the number of separate items included in its structure. In the first nine months of 2018, other indicators, excluding deposits in nostro accounts and financial institutions, have increased. The main increase in assets was in securities (34.7%), other assets (23.8%), cash (19.5%) and correspondent accounts (18.5%) in the Central Bank. The most decrease was in the Nostro accounts (21.6%) (Figure 1)

Compared with the corresponding period of 2017, it is seen that the increase occurred mostly in securities. Banks' investment in securities has risen to three times during this period (Figure 1). The process of increasing their capital has been continued to strengthen the stability of banks. Total capital of banks increased by 10.9% over the first nine months of 2018 to AZN 4.71 billion from 3.71 billion. As a result of this increase, the share of capital in banks' assets has increased from 13.3% to 14.1%.

As of October 1, 2018, 77.6% of banks' liabilities have been formed at the expense of deposits (physical and legal entities, including financial institutions) and the share of this resource increased by 76% compared to the end of 2017. Loans from banks and other financial institutions were the second major source of funding for banks. The share of total liabilities fell from 8.7% to 8% as the recession decreased. The reason for the decline was the decline in banks' loans. In this period, the share of securities issued by banks in banking liabilities fell from 7.7% to 7.3%.

The main reason for the sharp increase in banks' investment in securities is decrease in their interest in lending loans to people, corporations due to high risk of devaluation. Despite the increase in credit investments (loans) in January-

September 2018, however credit (loans) in the share of assets continued to decline. Thus, the country's credit investments have increased by 4.3% during 2018 and increased from AZN 11.6 billion to AZN 12.1 billion. This has been the first growth since 2015. The share of credit investments in assets declined from 41.55% to 41.44%. In 9 months of 2017, this figure was higher (47.02%).

Figure: 2 Structure of Banks Assets, AZN
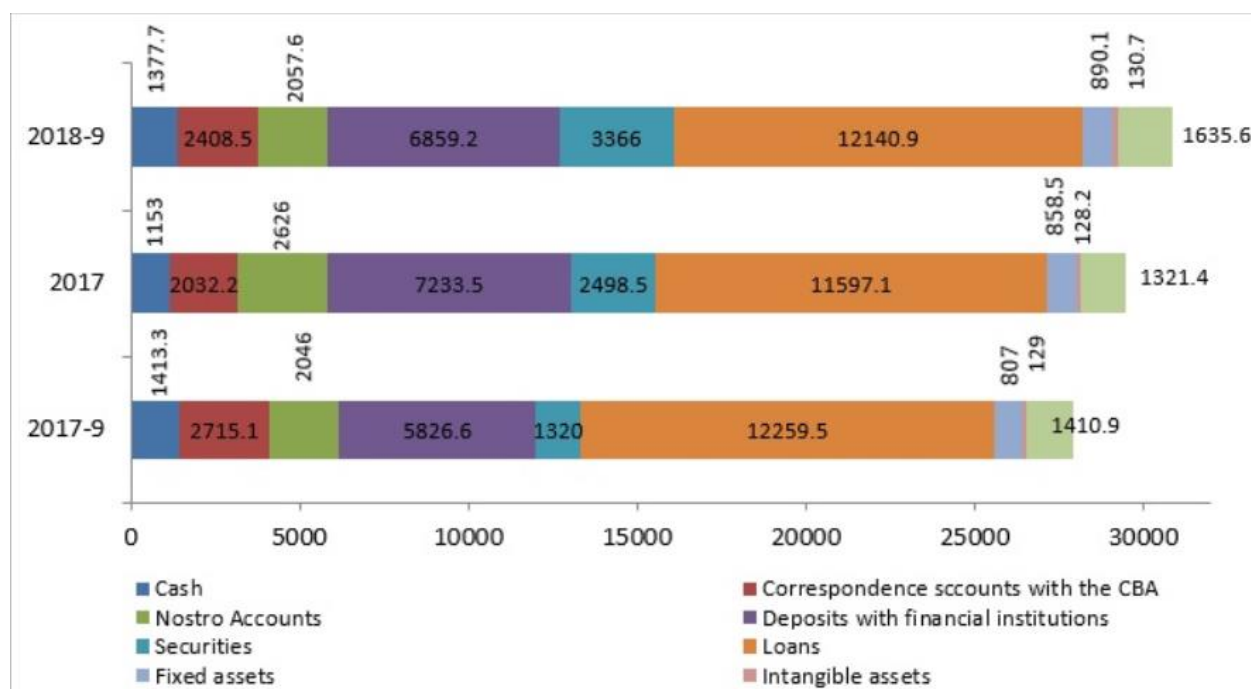


Source: Financial Market Supervisory Authority

**Credit market**

The increase in credit investments occurred at the expense of private banks, especially private banks with local capital. The volume of joint crediting of the International Bank of Azerbaijan and Azer-Turk Bank, representing state-owned banks, fell by 3%, to 1858.8 million manat from 1916.2 million manat in January-September of the current year. During this period, private banks' lending increased by 6.6% to AZN 1,942.4 million from $ 9421.4 million. The main supporter of growth was private banks with local capital. Loans` capital of local banks increased by 621.2 million manat, loans` capital of banks with 100% foreign investment have increased by 25.9 million manat, while other private banks with a foreign capital of less than 100 percent have fallen by 53 million manat.

Unlike banks, the economy of non-bank credit institutions (NBCI) continued to decline. During 9 months of 2018, credit portfolio of NBCI decreased by 4.6% to 401.1 million manat from 420.2 million manat. This is the lowest threshold since 2013.

Sectoral analysis of credit investments shows that in the first nine months of 2018, there has been an increase in other sectors except construction and property sectors. Thus, trade and service sector lending grew by 0.4% in January-September, industrial and manufacturing sector by 9.1%, transport and communications sector by 14.4%, agricultural and processing sector by 8.1%, consumer lending - by 9.7%. During this period, the construction and property sector declined by 29%.

Credit organizations that cannot afford to invest their assets at the level they want to actively lend prefer investment in securities. As a result, from September 2017 to September 2018, the share of securities in assets increased from 5.1% to 11.5%. The increase in credit investments occurred at the expense of private banks, especially private banks with local capital. The volume of joint crediting of the International Bank of Azerbaijan and Azer-Turk Bank, representing state-owned property, fell by 3% to 1858.8 million manat from 1916.2 million manat in January-September of the current year. During this period, private banks' lending increased by 6.6% to AZN 1,942.4 million from $ 9421.4 million. Unlike banks, the economy of non-bank credit institutions (NBCI) continued to decline. During 9 months of 2018, credit portfolio of NBCI decreased by 4.6% to 401.1 million manat from 420.2 million manat. This is the lowest threshold since 2013.

The tendency of consumer loans to decline since 2014 has been replaced by a recent increase. Compared with the beginning of the year, the share of consumer loans in total loans increased from 39.2% to 41.1%. In this period, the share of trade and services sector fell from 17.6% to 16.9%, construction and property sector - from 4.6% to 3.2%. The share of the agricultural sector increased from

3.7% to 3.8%, the share of the industrial and manufacturing sectors increased from 5.3% to 5.5%.

The currency structure of loans shows that, in contrast to the foreign currency, there has been an increase in lending in national currency. Credit financing in national currency for 9 months of 2018 increased by 8.7% to AZN 7557.2 million. Nevertheless, the volume of manat loans has been at the lowest level since 2011. As regards the terms of the loans, banks have preferred to short-term lending. In January-September of the current year, the volume of short-term loans increased by 17.2%, while the volume of long-term loans increased by 1.9 regardless of the currency structure Both national short-term (24.8%) and long-term (5.9%) loans have increased. Short-term foreign currency (9.9%), long-term lending (4.4%) decreased in foreign currency.

**Deposit market**

The shrinkage observed in the deposit market in 2015-2017 has been replaced by a new trend in growth in 2018. During the first 9 months of this year, total investment in the country increased by 4.8% to 21.6 billion manat. The increase in the volume of deposits was also reflected in the liabilities of the banks. The dependence of banks on deposits continued to grow. In 2015, while the share of deposits in total liabilities is 74.9%, it is 76% in 2017 and 77.6% in January-September 2018.

After the devaluation, the annual interest rate increase of manat deposits began to decline in 2018. The annual interest rate of deposits in foreign currency continued to decline. Individuals` deposits have decreased from 8.83% to 2.95%, deposit on legal entities have decreased from 4.81% to 1.22% in 2015-2018. As a result of the decline in annual profitability in foreign currencies, interest rates on both deposits of individuals and legal entities in foreign currency have dropped.

An increase in the type of deposits before the demand is an indication that depositors are uncertain about the sustainability of the banking sector. Deposits increased by 9.6% to 11.3 billion manat in the first nine months of 2018. Thus, the

share of deposits in total deposits increased from 52% to 52.3%. The reason for growth was the national currency deposits (34.8%), while those foreign currency deposits decreased by 2.2% on the contrary. Non-financial institutions (42.8%) provided growth of deposits in the national currency.

Figure: 3 Trends in volume of deposits and share of Banking sector Liabilities, 2015-2018
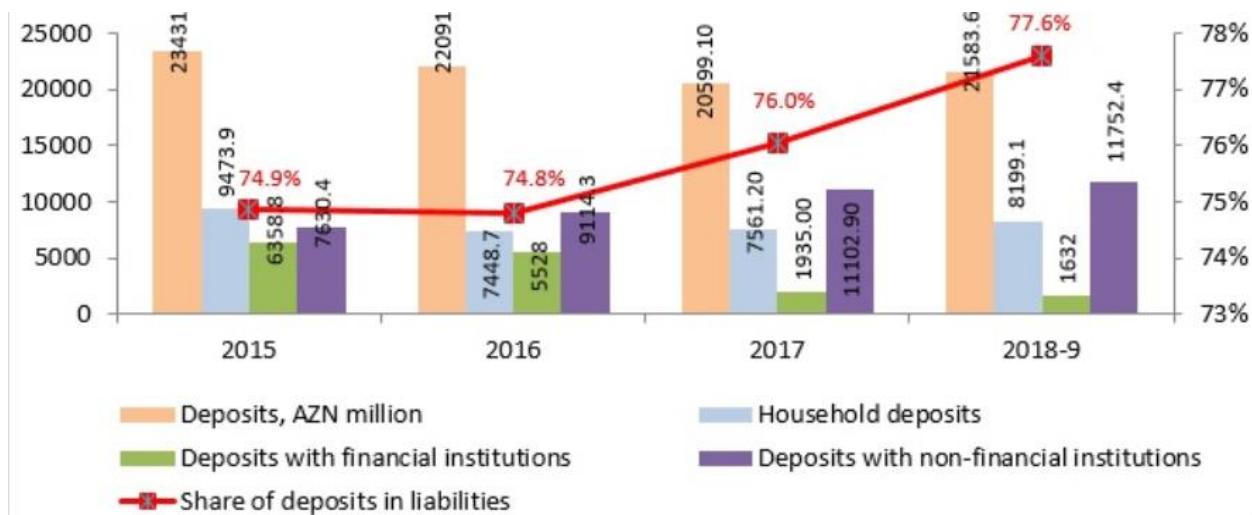


Source: Central Bank of Azerbaijan

The Deposit Insurance Act, which was adopted on January 19, 2016, is fully insured for 3 years, irrespective of currency type, at a fixed annual interest rate (maximum 15% on national currency, maximum 3% on foreign currency). If the term of the law is not prolonged, it will lose its force on January 19, 2019, and the amount of compensation for fully insured deposits will be regulated by the Deposit Insurance Act effective from December 29, 2006. According to Article 26.1 of the mentioned Law, Deposit Insurance is repaid in the amount of 100 percent of the amount insured by the Fund insured, but not more than 30 thousand manats. The Law on "Full Deposit Insurance" minimized the population's withdrawal from bank deposits. For this reason the share of deposits in the population deposits is about 32%, but recent months have been rising. Since the said Law does not apply to legal entities, their deposits are not protected. That is why the share of non-financial organizations in deposits remains high and even increased in January-September of the current year to 70.6 Growth tendency was also observed in the deposits of financial institutions (from 18.2% to 22.6 According to official data

of the Central Bank, the annual interest rate on deposits in national currency is 0.2% and 0.1% in foreign currency. However, term deposits are 10.2% and 2.9% respectively.

The level of regional distribution of deposits indicates that the deposits are mainly concentrated in Baku. During the first nine months of the current year, a slight decline in the share of the capital (from 92.6% to 92.2%) was observed when the growth rate of Baku city (8%) was lower than the growth rate of the regions (14%). The highest growth in the regions was found in Upper Garabagh (52.3%), Daglyg Shirvan (41.7%) and Guba-Khachmaz (31.2%). Aran economic region dropped by 2.6%.

The Central Bank continued to support banks by using significant financial instruments to minimize the excessive liquidity in the banks due to a significant increase in deposit attraction, however, due to the weakening of lending. In January-September 2018 the Central Bank made 41 deposit auctions x]. These deposits were short-term - 14 days. The total duration of attracting deposit at 3 auctions was 10, 13 and 20 days. The volume of deposit transactions by the Central Bank in the auctions has fluctuated between 200-350 million manat. In all trades, except for 1 auction, the demand of banks exceeded the demand several times. The annual interest rate offered by the Central Bank for deposit auctions has changed in the range of 8.01 14.79%. The average annual interest rate of 41 traded trades was 8.01%. Throughout the reporting period, banks earned more than 41 million manat revenues.

The Central Bank also provided banks with short-term notes. During the reporting period, the Central Bank placed 40 short-term notes through the Baku Stock Exchange. The maturity of notes was 28 days. The total placement was 27 days, and one placement was 364 days. The volume of placed notes fluctuated mainly in the range of 250-300 million manat. Demand for these securities exceeds 2-3 times. The annual yield of notes changed from 8.01% to 14.52%..

Bank Clients and Accounts As of October 1, 2018 the number of bank clients reached 6.23 million, which is 7.9% more than in the beginning of the year. This is a historical record limit. Of these, 6,13 million or 98.4 of the total number of legal entities fell to physical, 1.6% or 99.6 At the end of the reporting period the number of customer accounts increased by 8.5% to 17.5 million. 83.4% of customer accounts account for current, 14.6% of loans and 2% of deposit accounts. Generally, in recent years the share of current accounts has increased due to the decrease in credit and deposit accounts The year before the devaluation the share of current accounts in 2014 was 83.4%, reaching 83.4% by the end of September 2018During this period, the share of credit accounts decreased from 22.4% to 14.6%, and the share of deposit accounts decreased from 2.9% to 2%. If in 2013 a bank customer dropped 1.7 times, now this figure has increased to 2.8.

**The level of dollarization in the banking sector**

The downward trend in dollarization in the banking sector continued in 2018. Both credit investments and deposits in dollar were decreased.

In 2015, the drop in the dollarization rate (49.4%) since 2006 was followed by decline in the background of the stability of the manat. During the first 9 months of 2018, the share of foreign currency loans fell from 40.9% to 38.6%. This is the lowest rate since 2014.

The stability of the national currency and the low profitability offered by banks in foreign currency depreciated the interest of individuals and legal entities in investments in foreign currency, which, in turn, had a detrimental effect on the level of dollarization of deposits. The tendency to decline in the dollarization level observed in total deposits continued in 2018 and dropped from 72.4% to 67.4% at the end of the third quarter of that year. The lowest level of exclusion was recorded in savings accounts. During 9 months of 2018, the level of dollarization of savings fell from 66.5% to 62.6%. As a result of the devaluation, the share of foreign currency in the deposits with dollar (89.1%) in financial institutions decreased by 77.1% as of October 1.

**Hypothesis**

We made hypothesis for finding answers to following questions which we made for DJIA companies before. "How does capital structure influence the financial performance of the constituents of 10 Azerbaijan banks?" How are financial performance of banks and leverage measured?" It is only intelligent to recognize that the correct response isn't as evident one as might propose. So, I want to investigate different parts of capital structure and financial performance of banks by setting to the following hypothesis:

H1: There is a negative correlation between banks` performance and bank's size.

H0: There is a positive link between banks` performance and bank's size.

Most of the research studies measuring the impact of firm (or banks) size on profitability have revealed outcomes with positive relationship between firms` (banks) profitability and firm size (banks). Most of these them have used total assets, total sales, or number of employees as firm size as said before. I have used total assets when I calculated bank size as calculation of firm size of DJIA.

Next hypothesis which I set up is:

H2: There is a negative correlation between bank' performance and leverage ratio.

H0: There is a positive correlation between banks' performance and leverage ratio.

Numerous research studies investigated the relationship between firms (or banks) leverage and profitability. These research studies utilized financial performance of various companies' profitability and leverage ratios, and attempt to identify the mutual relationship between the use of debt and the profits, in order to carry out research studies with using regression analysis specifically and statistical methods. Performance measures can be ROE, ROA and Tobin`s Q . I took ROE, and ROA because I couldn`t find market cap of Azerbaijan banks.

Last hypothesis is:

H3: There is a positive correlation between banks' asset tangibility and its performance.

H0: There is a negative link between banks 'performance and asset tangibility.

There is limited proofs relationship between financial performance of banks and assets tangibility of them. Previous researches were less in finding a positive correlation between banks` performance and assets tangibility of them. These kinds of research studies represent us that, assets tangibility increases external financing.

**Sampling**

I also investigated Azerbaijan banks with the same approach that I used in analysis of DJIA companies. Why I chose banks in Azerbaijan: Because there is no any index such as Dow Averages, S&P500, and also Azerbaijan companies don't publish publicly its financial statements. So I couldn`t find financial statements of big companies in Azerbaijan in contrast to banks. My analysis is based on banks which are leading banks in Azerbaijan. There are 30 banks in Azerbaijan, so I took 10 leading banks as a sample for my research study. These banks are: IBAR, Pasha Bank, ASB, Rabita bank, Kapital bank, Unibank , Access bank and so on which is stated above table. Total assets of 4 banks (International Bank of Azerbaijan, Kapital Bank,  Xalq Bank and Pasha Bank) cover more than 50% of assets of all banks. The market share of the remaining 20 banks is less than 5%. Under the legislation, the country's banking system is composed of the Central Bank of the Republic of Azerbaijan and credit institutions. The Central Bank, representing the basic stages, is the central bank of the state and its activities are regulated by the Constitution of the Republic of Azerbaijan, the Law "On the Central Bank of the Republic of Azerbaijan", the Civil Code and other normative legal acts. Under the legislation, the Central Bank - licenses and regulates banking activities, monitors banking activity in accordance with the law.

Secondary sources are main source of collecting the required data. This includes the financial statements of these firms which are profit and loss statement, statement of financial position, changes in owners` equity, and cash flow statement

and notes to financial statements of banks. Sampling Technique is banks' annual financial reports and income statements. I have reduced due to lack of some banks` data. I am planning to utilize quantitative methods for data analysis of banks. Financial data relating to my sample was obtained from different sources, such as banks` websites over the period 2012 -2017 consists of the firms' annual financial reports, income statements, and other reports. All companies with missing data from 2012 through 2017 were excluded from my sample, this accumulated to a total of 10 banks. My sample was thus reduced to a total of around 10 banks in Azerbaijan.

**Data**

I start my research study by analyzing capital structure`s determinants for the banks as Dow Averages. Our main dependent variables that determines performance of banks are Return on Assets, Return on Equity, and independent variables are Total Liabilities/ Total Assets (or debts/assets) that is leverage ratios, Asset Growth, Asset Tangibility, Firm Size and Asset Turnover. I attempt to get deep insight into theories, which include trade-off theory, pecking order theory, for my research study.

I confine my analysis to study the impact of capital structure of banks on banks` performance. I am going to test total debt into assets on banks performance. My research is based on different firm performance measurements. These are ROE, ROA. As said before, ROA(calculation is NI/Total Assets) measures how profitable a bank or firm is relative its assets, and gives an idea to investors whether to invest to this company or not and how well companies or banks use its assets.

ROE measures banks or firms` financial performance that is calculated by NI/ shareholders` equity. ROE is known as net asset return, and represents, how efficiently management uses the assets of firm to generate profit.

I also calculated debt/ total assets leverage ratio for my research of effect of leverage on banks performance. Leverage ratio is a ratio that shows that, a

business`s debt level in financial statements of them. That ratio show us that, how banks assets and its operations are funded (business used debt financing or equity).

**Descriptive Statistics vs. correlation matrix of Azerbaijan Banks**

Table mentioned above provides the descriptive statistics of our variables for 2012-2017 research study. The results of table shows that the mean and median of the performance measures ROA, and ROE are -0.0016, 0.0084; and -0.0843, 0.0588 respectively. This suggests that unhealthy performance has been recorded by banks of Azerbaijan. The minimum of ROE and ROA are -2.34, and -0.1863 respectively, while the maximum of ROE, ROA are 0.9165, 0.078 respectively. If ROE and ROA are negative values, that means, net income is negative. ROE level around 10 percent is considered strong for most companies and it means, these firms cover their costs of capital. Here, Mean of ROE and ROA are negative values, which states that net loss is occurred or net income is negative. The reason for the decline in banks' performance was the devaluation that took place in 2015 in Azerbaijan. As a result, the borrowers and entrepreneurs who took credit from banks, could not repay the loan. Thus, banks 'revenues quickly fell, and even some banks' net income was negative. Another reason why the bank's revenue fell was that, people no longer want to borrow from the bank. Most people no longer trusted banks, because people reported that they had accepted money with manats when receiving a loan from the bank, but in reality they had to return the loan to the new exchange rate of manat, because they had signed a dollar contract. Accordingly, the mortgage loan agreement is already signed with the manat.

Devaluation, first of all, damaged the banking sector. Difficulties in repaying loans in foreign currency led to worsening of assets in the banking sector. Every third bank operating in the country and every fifth non-bank credit organization closed and left the market. The International Bank, which is the largest bank in the country, accounts for 40% of the banking sector, facing the threat of bankruptcy. A significant part of this bank's assets has been recovered at the expense of the state's billions of dollars, and the foreign debt has been taken over by the state. While the

government had certain support for banks, dollar loans taken by clients should have been repaid to banks by customers, resulting in increasing troubled loans rapidly, putting financial sector in a difficult situation.

Statistical analysis of credit investments for 2013-2017 indicates that deterioration of banks' assets as a result of devaluation has led to their lending restrictions. The growth rate observed in the mid-2000s has not only slowed down, it even began to decline, and this decline has covered some areas of the economy. In 2015, the volume of lending in the country was at a record level (21.7 billion pounds). Over the next two years, the volume of credit investments decreased by 45.9% to 11.8 billion manat. The reason for the decline is that, on the one hand, the International Bank's loans are transferred to another entity, and the other reason is that banks are restricting their ability to allocate money to the economy.

The growth of lending in the pre-devaluation period was followed by a decline. The main reason for growth is not just the dollarization of the currency structure of the loan but also the active financing of banks. However, the decline is caused by the fact that the bank's assets are weakened due to the increase of problematic loans, the decrease in the interest of clients in USD loans, as well as the relative appreciation of manat against the dollar. For instance, trade and services sector loans accounted for 34.5%, construction and property sector 82.2%, industry and manufacturing 68.1%, transport and communications 23.1%, agriculture and processing 15 , 5%, consumer crediting by 45.1%.

After the devaluation, the overdue loans, which make the banks' assets unstable, restrict crediting and block some banks, began to rise sharply. The share of problem loans in total loans rose from 5.1% in 2013 to 13.8% in 2017, according to the Central Bank official data. This is currently a critical limit for the banking sector. The problem of returning loans in foreign currency is deeper. It was not possible to repay 17.4 manats from each 100 manat given by banks. The data of international organizations differs from official data. For example, according to Fitch rating agency, the share of problematic loans in Azerbaijan is 20%.

The median (mean) of the total debt to total assets is 0.8738 (0.8634), represents that more than 85 % of the total assets of banks are financed with debt. As represented above, the mean total debt ratio is nearly 87 percent, which shows that most of the most of banks are highly leveraged. Leverage results from utilizing borrowed capital as a source of financing assets when generate returns on risk capital and investing to enlarge the bank's asset base. Leverage may also adhere to the debt which banks use to fund its assets. In addition, bank`s leverage ratios vary significantly across banks as represented in the standard deviation paired with the minimum values and maximum ones. Leverage ratios indicates considerable convergence over years that means, banks with relatively high leverage attempt to move towards more moderate levels of leverage.

Asset tangibility, mentioned above table, has a low mean value of 0.0226 (2.26%). Low asset tangibility shows that the proportion of the banks' fixed assets into the total assets of them is about 2.26 % , so fixed assets don't have large proportion of total assets, because banks are financial services companies, so they have less fixed assets. Secondly, Asset turnover also has a very low mean value (0.0801), so it means that these banks inefficiently utilize its assets. As we said before, banks had very hard times during last 5 years, so this negatively influenced all ratios mentioned above table.  Average asset growth is 0.2289 (22.89%) which indicates that banks such as Pasha Bank, Kapital bank increased its assets year by year.

Table: 10 Descriptive Statistics for Banks

| Descriptive Statistics | | | | | | |
|---|---|---|---|---|---|---|
| | Median | Mean | Std | Min | Max | N |
| Return on Assets | 0,0084 | -0,0016 | 0,0478 | -0,1863 | 0,078 | 10 |
| Return on Equity | 0,0588 | -0,0843 | 0,6267 | -2,34 | 0,9165 | 10 |
| Total Debts/Total Assets | 0,8738 | 0,8634 | 0,1069 | 0,4942 | 1,1388 | 10 |
| Asset Turnover | 0,0677 | 0,0801 | 0,0477 | 0,0235 | 0,208 | 10 |
| Asset Growth | 0,1925 | 0,2289 | 0,2978 | -0,3805 | 1,1116 | 10 |
| Firm Size | 5,9493 | 6,0292 | 0,4386 | 5,2989 | 7,0918 | 10 |
| Asset Tangibility | 0,0226 | 0,0276 | 0,0214 | 0,0013 | 0,0763 | 10 |
| Number of firms | 10 | | | | | |

*Table 1.1 reports the descriptive statistics of our sample for the period 2012-2017. Return on equity is estimated as Net Income (Loss) over total equity, Return on Assets is calculated as net income divided by total assets. Asset tangibility denotes gross fixed assets as a proportion of the total assets and asset turnover is estimated as sales revenue over total assets. Firm size is calculated as the log of total assets, from the period 2012-2017 and afterwards adding 1 to avoid zeros. Asset growth denotes the annual percentage change of the bank's assets.*

As said before, The standard deviation is a statistic measure of dataset set`s dispersion relative to its mean and is evaluated as the square root of the variance. By defining the difference between each data point relative to the mean, it is evaluated square root of variance. Standard deviation of ROE and Firm (banks) size is higher than others. The greater the standard deviation of bank size and ROE, the greater the variance between each ROE of banks and their mean, which represents a larger amount range.

Standard deviation of ROA, Asset turnover and Asset tangibility is lower than other ones. The lower the standard deviation of ROA, Asset turnover and Asset tangibility, the smaller the variance between each ROA (Asset turnover and tangibility) of banks and their means, which indicates a lower amount range between ROA and its mean.

At the next step, I will analyze the correlation among our variables for getting a better understanding of my research study. In addition, I also test for significance levels (1%, 5% and 10%). Table above mentioned indicates correlation between the variables for the period 2012 through 2017.

ROA is negatively correlated with total debts over total assets, asset tangibility, assets turnover and firm size are -0.53, -0.12,-0.08 and -0.15 respectively. Correlation between ROA and total debt is insignificance, but relationship is close to strong type of relationship. There is negative correlation between debt ratio and ROA means that, when debt financing increases, ROA is going to decline. Banks use more debt financing than equity financing. ROA is also positively correlated with asset growth which is 0.33. As we see, Relationship between ROA and asset growth are week and insignificance. Because, this value is under 50 % or less than 80%.

ROE is negatively linked negatively with leverage ratio, asset tangibility, and asset turnover that r values are -0.31, -0.05 and -0.05 respectively and means that relationship is insignificance, for the reason that, correlation coefficient (r) values are greater than -0.8. It means when leverage increase, ROE –performance of banks are going decline. And also, it refers to, asset tangibility, and asset turnover. However, this relationship is very week, because they are only 5%.

Table: 11 Correlation between variables for banks

| Correlation t-Statistic | ROA | ROE | TD__T_ASS... | ASSETS_G... | ASSETS_TA... | ASSETS_TU... | FIRM_SIZE |
|---|---|---|---|---|---|---|---|
| ROA | 1.000000 | | | | | | |
| | ----- | | | | | | |
| ROE | 0.586681 | 1.000000 | | | | | |
| | 5.019204 | ----- | | | | | |
| TD__T_ASSET | -0.530999 | -0.317975 | 1.000000 | | | | |
| | -4.341502 | -2.323593 | ----- | | | | |
| ASSETS_GROWTH | 0.332495 | 0.169613 | -0.251111 | 1.000000 | | | |
| | 2.442559 | 1.192388 | -1.797335 | ----- | | | |
| ASSETS_TANG | -0.121412 | -0.054039 | 0.262563 | -0.391555 | 1.000000 | | |
| | -0.847435 | -0.374940 | 1.885231 | -2.948169 | ----- | | |
| ASSETS_TURN | -0.077984 | -0.048958 | 0.150665 | -0.178880 | 0.490829 | 1.000000 | |
| | -0.541942 | -0.339600 | 1.055888 | -1.259634 | 3.903057 | ----- | |
| FIRM_SIZE | -0.153870 | 0.029101 | 0.384072 | -0.134577 | -0.007213 | -0.294902 | 1.000000 |
| | -1.078889 | 0.201703 | 2.881968 | -0.940939 | -0.049973 | -2.138230 | ----- |

ROE is positively correlated with assets growth and firm size which r values are -0.16, and 0.02 respectively. This r value of firm size indicates that relationship between ROE and asset growth are insignificance, because correlation coefficient (r) values are less than 0.8. R value of asset growth also indicates that relationship between ROE and asset growth are insignificance, because of the same reason.

**Methodology**

This part investigates the econometric estimations which are used throughout research study of banks as DJIA companies. The determinants of capital structure for banks in Azerbaijan are assessed by making OLS regressions. Regression analysis is statistical tool for examining the link between two variables.

As previously evaluated above for Dow Averages, I evaluated debt ratio for leverage. And, I just used total debt ratio, for banks in Azerbaijan for my research

study test. The explained variables are two various performance measures, which are used throughout my study. They are ROA, and ROE. In addition, I have used asset tangibility, assets growth, firm size, and asset turnover as before.

Then, I also added control variable in my regression model of banks controlling for the years from 2012 to 2017. Dummy or control variables is one which changes between the value 0 - 1 to indicate the presence or absence of some categorical influences which can be expected to diverse the result, so we also consider other effects such as economic changes (inflation, deflation) , political changes, global changes over the world.

An econometric model has been used to analyze the determinants of capital structure based on the dependent variable (ROA, ROE) for banks are represented below. My benchmark model:

$$Performance_{i,t} = \beta_0 + \beta_1 Leverage_{i,t} + \beta_2 Controls_{i,t} + \varepsilon_{i,t}.$$

(2)

Here performance indicates the measures of bank`s performance, however leverage indicates the bank`s leverage ratio (total debt ratio) and i and t signify banks and time effects of them respectively. Control (dummy variable) indicates a vector that keeps control variables which also influence banks` financial performance. Additionally, $\varepsilon_{i,t}$ indicates the idiosyncratic error. I used two various measures for banks` performance, as mentioned for Dow Averages. Performance indicator is measured by ROA, after I change indicator of performance for banks and re-evaluate my model, which based on ROE. The same methodology applies for variables, indicating leverage ratio with respect to leverage ratio - total debt ratio. I also will analyze effect of asset turnover, bank size, asset growth, leverage, and asset tangibility on the banks` performance in Azerbaijan.

Then, by carrying out OLS (regression analyze) estimate, I will test the correlation between banks in Azerbaijan during 5 years (2012-2017). This is done for verifying that my results are robust. I attempt to decrease collinearity in regression model, that developed by me, model with using the panel dataset. Collinearity is

problem in regression analysis that, there is high degree correlation between two independent variables and also has high increase in p value of one independent variable when other predictor is included in regression model (OLS).

**Empirical Results**

This part introduces main findings with a defined method relating impact on capital structure on banks' financial performance. In this part, hypothesis that mentioned above will be engaged in deeply to get insight into the diverse aspects of capital structure and banks` performance. I start by looking through my research main determinants of capital structure, and then I will test the impact of capital structure on banks` performance. All models used in this paper concludes fixed and firm effects for better estimating the link between bank`s performance and capital structure.

I used eviews software tool for regression analysis (OLS) of hypothesis. In a table mentioned above, represents us relationship between Return on Assets and leverage ratio (total debt ratio). I also added constant variable or control variables into my model that I holds constant (control variable) during my paper. This's important for us to attempt to keep constant all variables except for the explanatory variable.

Table: 12 Relationship between ROA and Leverage ratio For Banks

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.125279 | 0.092289 | 1.357456 | 0.1816 |
| TD__T_ASSET | -0.239151 | 0.063491 | -3.766683 | 0.0005 |
| ASSETS_GROWTH | 0.041432 | 0.021791 | 1.901334 | 0.0638 |
| ASSETS_TANG | 0.244442 | 0.339920 | 0.719116 | 0.4759 |
| ASSETS_TURN | 0.022536 | 0.152358 | 0.147912 | 0.8831 |
| FIRM_SIZE | 0.010198 | 0.015808 | 0.645135 | 0.5222 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.339993 | Mean dependent var | | -0.001670 |
| Adjusted R-squared | 0.264993 | S.D. dependent var | | 0.047879 |
| S.E. of regression | 0.041048 | Akaike info criterion | | -3.435990 |
| Sum squared resid | 0.074137 | Schwarz criterion | | -3.206547 |
| Log likelihood | 91.89975 | Hannan-Quinn criter. | | -3.348617 |
| F-statistic | 4.533199 | Durbin-Watson stat | | 1.660052 |
| Prob(F-statistic) | 0.002027 | | | |

The correlation between the regressor and regressand variable may disregard, if a constant variable differ throughout a research study. Constant variables should be defined, measured, and recorded if possible. So, I added constant variable into my model.

If we start to analyze table, we can say that R- squared is 0.3399, it means, this model explains 33 % of variation in the dependent variable around its mean. If $R^2$ is larger, means that, OLS model fits better for your observations. Secondly, if we analyze p value (probability) of debt ratio, p value is 0.05%, means that, it isn`t statistically insignificant, because to be significant p value has to be less than 5 %, if we consider significant level as 5 %. So debt ratio is significance to explain response variable ROA. If I consider debt ratio as leverage hence we would reject null hypothesis which state, "H2: There is a negative correlation between banks' performance and leverage (debt) ratio". In most studies, researchers take total debt ratio for analyzing relationship between leverage and bank performance.

If Probability value of F statistics is 0.2% which is less than 5 %, hence it is significance and which means, independent variables of OLS model jointly impacts dependent variable ROA. F statistics is a statistical test under null hypothesis, where the test statistics (t statistics) has an F distribution. For the most part, F test is used for comparison for models fitted to data set to define the model that best fits population from where data derived or were sampled. And so, F test tells that, other variables are jointly significant or insignificance. We can use the F statistic when we decide to support or reject the null hypothesis. We'll have both an F critical value and F value in our F test results.

If we start to analyze table mentioned above, we can see , R- squared is 14%, it means, this model explains 14 %  of variation in the response (independent) variable around its mean. Secondly, if we look at p value of total debt/ total asset ratio, p value is 1.7%, means that, it isn`t insignificant, because to become significant probability value must be less than 5 % (or 1%, 0%) if we take into consideration significant level as 5 %. So debt ratio is significance to clarify

dependent variable ROE. If we take debt ratio hence we would reject our null hypothesis that state, "H2: There is a negative correlation between banks' performance and debt ratio". However, in most studies researchers take total debt ratio for defining relationship between bank`s performance and debt ratio.

Table: 13 Relationship between ROE and Leverage ratio for banks

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.166117 | 1.371644 | -0.121108 | 0.9042 |
| TD__T_ASSET | -2.322578 | 0.943631 | -2.461320 | 0.0178 |
| ASSETS_GROWTH | 0.295657 | 0.323869 | 0.912891 | 0.3663 |
| ASSETS_TANG | 2.204520 | 5.052026 | 0.436364 | 0.6647 |
| ASSETS_TURN | 0.836131 | 2.264413 | 0.369248 | 0.7137 |
| FIRM_SIZE | 0.313715 | 0.234946 | 1.335263 | 0.1887 |
| R-squared | 0.149083 | Mean dependent var | | -0.084342 |
| Adjusted R-squared | 0.052388 | S.D. dependent var | | 0.626707 |
| S.E. of regression | 0.610070 | Akaike info criterion | | 1.961681 |
| Sum squared resid | 16.37616 | Schwarz criterion | | 2.191124 |
| Log likelihood | -43.04202 | Hannan-Quinn criter. | | 2.049054 |
| F-statistic | 1.541785 | Durbin-Watson stat | | 2.061838 |
| Prob(F-statistic) | 0.196611 | | | |

P value of F statistics is 19.66 % that is more than 5 % , so it is insignificance and that means, our independent variables doesn`t influences jointly to dependent variable ROE.

Next hypothesis of my research paper states following hypothesis:

"H3: There is a positive link between banks' asset tangibility and its performance".

If we start to analyze table mentioned above, we can see , R- squared is 33%, it means, OLS model explains 33 % of variation in the independent variable around its mean. If we look at value of probability of assets tangibility of banks, p value is 47 %, means that, it is statistically insignificant, because to be insignificant p value must be more than 5 % if we take significant level as 5 % (or we can take it 1% or 10%). Hence assets tangibility ratio is insignificance to explain dependent variable performance indicator, ROA. If we take asset tangibility so we would fail to reject our null hypothesis that state, "H3: There is a positive link between banks' asset tangibility and its performance".

P value of F statistics is 19% more than 5%, so it is not significance and that means, our independent variables not jointly influences dependent variable ROA.

Then we take ROE as a performance indicator of banks. If we look at probability of assets tangibility, p value is 47.59%, says that, it is statistically insignificant, because being insignificant p value must be more than 5 % if we take significant level as 5 %. So assets tangibility ratio is insignificance to explain dependent variable performance indicator, ROE. P value of F statistics is more than 5 %, so it is insignificance and that means, our independent variables not jointly influences dependent variable ROE.

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.166117 | 1.371644 | -0.121108 | 0.9042 |
| ASSETS_TANG | 2.204520 | 5.052026 | 0.436364 | 0.6647 |
| ASSETS_GROWTH | 0.295657 | 0.323869 | 0.912891 | 0.3663 |
| ASSETS_TURN | 0.836131 | 2.264413 | 0.369248 | 0.7137 |
| TD__T_ASSET | -2.322578 | 0.943631 | -2.461320 | 0.0178 |
| FIRM_SIZE | 0.313715 | 0.234946 | 1.335263 | 0.1887 |
| R-squared | 0.149083 | Mean dependent var | | -0.084342 |
| Adjusted R-squared | 0.052388 | S.D. dependent var | | 0.626707 |
| S.E. of regression | 0.610070 | Akaike info criterion | | 1.961681 |
| Sum squared resid | 16.37616 | Schwarz criterion | | 2.191124 |
| Log likelihood | -43.04202 | Hannan-Quinn criter. | | 2.049054 |
| F-statistic | 1.541785 | Durbin-Watson stat | | 2.061838 |
| Prob(F-statistic) | 0.196611 | | | |

If we take asset tangibility so we would not reject our null hypothesis that state, "H3: There is a positive link between banks' asset tangibility and its performance".

**Conclusion vs. Recommendations**

Since Modigliani & Miller proposal in 1958 , capital structure has been a much-discussed topic in the finance sector. Theories about capital structure, such as the static trade off theory and the pecking order, appeared in the financial sector and many researchers have tried to attempt to evaluate the consequences of these theories for companies in the market. Some examples of supporters of the pecking order theory are Fama and French, Myers & Majluf, Muritala, as indicating that greater leverage has a negative impact on performance, while Kraus, Ebaid, Litzenberger, and Miller suggest the contrary.

I have analyzed Dow Averages companies and also Azerbaijan banks. Needless to say, the literature about capital structure findings related to Dow Averages has been minimal, thus raising the question of which kind of capital structure theory is more appropriate for Dow Averages. By evaluating this capital market from the period 2013 to 2018, this research attempted to contribute to the current literature. Also, there is no study on capital structure of Azerbaijan banks. I have chosen banks in Azerbaijan because there is available information about publicly published statements of big companies of Azerbaijan.

First, we start to analyze several variables that determine Dow Averages' capital structure, such as firms` performance, asset tangibility of them, total assets, sales growth, leverage and assets turnover. The same methodology was applied into banks in Azerbaijan. We also evaluated all ratios which we need with the help off panel data. For the most of these ratios affect capital structure of firms and banks which we chose. Throughout our paper, we proxy leverage ratio as short-term debt ratio, long term debt ratio and total debt ratio, while all of them as complete assets ratios. Additionally, companies` performance is measured by Return on Equity Return on Assets, and on Tobin's Q. However, Banks` performance is measured only ROE and ROA, because we could not find market capitalization of banks for evaluating Tobin`s Q ratio.

By pursuing this strategy we are better prepared to compare our outcomes with prior findings and we evaluate various aspects of performance and leverage. After assessing the leverage ratios` determinants, we measured the effect of leverage on performance. Once again, we use distinct proxies for leverage and performance indistinguishable. Our findings on Return on Assets relating to leverage indicate a consistent negative link for Dow Averages Companies. This proof supports sufficiently the pecking order theory. On the other hand, we rejected our null hypothesis which states, there is negative link between performance and leverage of banks. But, correlation matrix for banks indicates that, there is negative correlation between performance and leverage for banks of Azerbaijan.

While consequences of leverage on ROE indicate that there is positive relationship between ROE and leverage (total debt ratio) according to correlation matrix for Dow Averages companies. Also we reject null hypothesis which states that: H2: There is a negative link between companies' performance and leverage ratio". Analyze of Azerbaijan banks shows negative relationship between ROE and debt ratio according to correlation matrix, On the other hand we rejected null hypothesis which states, there is a negative correlation between banks' performance and debt ratio.

We, once again, revealed support for pecking order theory while estimating impact of leverage for Tobin's Q ratio. Additionally, I also calculated descriptive statistics of low and high leverage Dow Averages companies, and banks. For this, I organized several subsamples and compared results for low and high leveraged firms. Throughout our OLS regression analyzes, most of research study`s control variables shows expected sign, and is significant.

Although we attempted to test mentioned above, correlations thoroughly, I have defined some limitations of our paper. This paper can serve as basis for future research paper, where these links might be further analyzed for constituents of Dow Averages and banks in Azerbaijan.

**Limitations**

Literature about capital structure and company performance on Dow Averages and Azerbaijan banks has been so limited; I have not been able to make comparison my results with initial research papers. On the other hand, data relating to Azerbaijan banks are so limited, thus we reduced our sample for analyzes. Also, we have come to different test results for Dow Averages and banks. So we couldn`t reach to conclusive results for supporting Pecking order theory.

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