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INVESTIGATION OF THE RELATIONSHIP BETWEEN PROFITABILITY AND FINANCIAL RATIOS ACCORDING TO SELECTED SECTORS: AN APPLICATION IN BORSA ISTANBUL

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Investigation of the Relationship Between Profitability and Financial Ratios According to Selected Sectors: An Application in Borsa İstanbul

Seçilmiş Sektörlere Göre Karlılığın Finansal Oranlar ile İlişkisinin İncelenmesi: Borsa İstanbul'da Bir Uygulama

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ABBREVIATIONS

PDP: Public Disclosure Platform

BIST: Borsa İstanbul

Current: Current Ratio

Acidtest: Acid-test Ratio

Cash: Cash Ratio

Shtliab: Short Term Liabilities/Total Liabilities

Lngliab: Long Term Liabilities/Total Liabilities

Equrat: Equity Ratio

Leverage: Leverage Ratio

Debtequrat: Debt Equity Ratio

İnvturn: Inventory Turnover Ratio

Recturn: Receivable Turnover Ratio

Workcapturn: Working Capital Turnover Ratios

Fixasturn: Fixed Asset Turnover Ratio

Equturn: Equity Turnover Ratio

Asturn: Asset Turnover Ratio

Opeprof: Operating Profitability Ratios

Netprofmarg: Net Profit Margin

ROE: Return on equity

ROA: Return on assets

Ecoprof: Economic Profitability Ratio

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ABSTRACT

The main purpose of this study is to measure the effect of financial ratios on profit and loss status of firms operating in different sectors, to analyze which ratios affect the profit and loss status of firms and to examine whether there is any relationship between financial ratios and profitability of firms. We determined whether there is a significant difference in financial ratios between sectors and examined the effects of financial ratios on profit and loss status of firms by logistic regression analysis.

Results indicate that there is no difference in terms of current ratio, cash ratio, working capital turnover ratio, asset turnover ratio, return on equity, return on assets and economic profitability ratio and there is a significant difference between all other ratios. According to logistic regression results, return on equity, operating profitability ratio, asset turnover ratio and debt equity ratio are the most effective financial ratio on profit and loss situations. Also, while cash ratio, debt equity ratio, asset turnover ratio, operating profitability ratio, and ROE is found positive correlation on profitability, short-term liabilities/total liabilities ratio, long-term liabilities/total liabilities ratio, working capital turover ratio and fixed asset turnover ratio is found negative correlation on profitability. On the other hand, results indicate that liquidity ratios have less effect on the profit / loss situations of the firms compared to other ratios.

Keywords: financial ratios, logistic regression, profitability, sectors, financial analysis

ÖZET

Bu çalışmanın temel amacı; finansal oranların farklı sektörde faaliyet gösteren firmaların kar-zarar durumları üzerindeki etkisini ölçmek, en çok hangi rasyoların firmaların kar-zarar durumlarını etkilediği analiz etmek ve finansal oranlar ile firmaların karlılık durumu arasında herhangi bir ilişki olup olmadığı incelemektir. Finansal oranlarda sektörlere göre anlamlı bir farklılığın olup olmadığı tespit edilmiş ve sektörlere göre finansal oranların firmaların kar-zarar durumları üzerindeki etkileri lojistik regresyon analizi ile incelenmiştir.

Çalışmada sektörlere göre cari oranı, nakit oranı, işletme sermayesi devir hızı oranı, aktif devir hızı oranı, özvarlık kazanma gücü oranı, aktif kazanma gücü oranı ve ekonomik rantabilite oranı açısından bir farklılık bulunmazken, diğer tüm oranlar arasında anlamlı bir farklılık tespit edilmiştir. Lojistik regresyon sonuçlarına göre firmaların kar-zarar durumları üzerinde en etkili değişkenler özvarlık kazanma gücü oranı, ekonomik rantabilite oranı, aktif devir hızı oranı ve borç/özkaynak oranıdır. Ayrıca, nakit oranı, borç özkaynak oranı, varlık devir oranı, faaliyet kârlılığı oranı ve özvarlık kazanma gücü oranları ile kârlılık arasında pozitif ilişki, kısa vadeli borçlar / toplam borçlar oranı, uzun vadeli borçlar / toplam borçlar oranı, işletme sermayesi devir hızı oranı ve sabit aktif devir hızı oranları ile karlılık arasında negatif ilişki tespit edilmiştir. Diğer taraftan, sonuçlar incelendiğinde likidite oranlarının, firmaların kar / zarar durumları üzerinde diğer oranlara göre daha az etkili olduğu tespit edilmiştir.

Anahtar Sözcükler: finansal oranlar, lojistik regresyon, karlılık, sektörler, finansal analiz

INTRODUCTION

Profit is a very important concept for the firms and is seen as a tool to measure the success of companies. In order to maintain their assets and gain sufficient profit, companies aim to make profit at the end of each period and they want to control their activities. Therefore, they have to keep their financial activities under control in addition to their basic commercial activities. Financial analysis plays an important role in the management and evaluation of company activities. In addition, thanks to financial analysis, financial structure, profitability and productivity of firms can be informed about such issues.

The analysis of financial statements is widely used by various interest groups, including partners and managers in order to be able to make an accurate financial planning in an enterprise, financial statements analysis should be performed. Financial ratio analysis can be made by using the balance sheet and income statements and thus to have an idea about the financial situation of the companies. The goal of financial statement analysis is to explore the financial position of a company and thus to help investors, creditors, analysist and firm's manager in their decision making. Whether the firms have cash shortages, how much foreign resources they need to continue their activities, whether they use their own resources efficiently and whether they make profit or loss can be obtained through financial analysis.

Data are obtained from the Public Disclosure Platform (PDP) in the 2015 financial reports of companies operating in non-metallic mineral products industry, machinery and metal product industry, wholesale and consumer trade industry and technology industry traded on Borsa Istanbul (BIST). The net profit / loss item of these companies in the financial statements and income statements is accepted as positive companies are profitable and negative companies are loss firms. 24 companies from the non-metallic mineral industry, 22 companies from the machinery and metal products industry, 20 companies from the wholesale and

consumer trade industry and 15 companies from the technology industry are included in the analysis. There are 81 companies in the analysis, of which 63 are profit-making companies and 18 are loss-making companies.

19 financial ratios are calculated based on data obtained from 2015 annual financial reports of 81 companies in four sectors traded on Borsa Istanbul. In this study, current ratio, acid-test ratio, cash ratio, short term liabilities/total liabilities ratio, long term liabilities/total liabilities ratio, equity ratio, leverage ratio, debt equity ratio, inventory turnover ratio, receivable turnover ratio, working capital turnover ratio, fixed asset turnover ratio, equity turnover ratio, asset turnover ratio, operating profitability ratio, net profit margin ratio, return on equity ratio, return on assets and economic profitability ratio are defined as independent variable and profitability status as dependent variable.

In this study, firstly, we examine whether there is a difference between sectors in terms of financial ratios. Secondly, the logistic regression analysis is conducted to determine the financial ratios that affect firms' profit and loss situation. Industry variable is added to the model as a categorical variable.

Initially, this model is unpredictable for a great number of independent variables. A small number of observations versus a large number of independent variables do not make it possible to calculate the parameter covariance matrix. Therefore, highly correlated variables is included in the analysis. According to the results, cash ratio, short term liabilities/total liabilities ratio, long term liabilities/total liabilities ratio, debt equity ratio, inventory turnover ratio, receivable turnover ratio, working capital turnover ratio, fixed asset turnover ratio, asset turnover ratio, operating profitability ratio, return on equity ratio, economic profitability ratio and industry variables are included in the model.

In this study is divided into four parts. In the first part, profitability concept and financial analysis method are explained, data and methodology used in this

study is explained in second part. In third part, empirical results are provided, the results is discussed in last part.

CHAPTER 1
PROFITABILITY AND FINANCIAL STATEMENT ANALYSIS

1.1. PROFITABILITY

Profitability is required for every organization. The planning and control functions of finance aim to increase the profitability of the company. The cost of funds must be low to ensure profitability. Idle funds accrue, not any returns. Therefore, the organization should avoid idle funds. The finance function also requires matching costs and fund returns. Profitability increases if funds are used efficiently (Gopal, 2008).

Profitability depends on the correct use of funds. Budget control, ratio analysis and cost volume profit analysis can be increased by analyzing the company's profitability (Paramasivan and Subramanian, 2009).

Profitability is the “bottom line” and the primary reason for being in business. Having your own business might provide an opportunity to achieve greater returns than are possible with more traditional means, but it might be subject to much greater risk as well. For many people, the opportunity to run their own business and be their own boss might be even more motivating than the profit motive, but if the company isn’t profitable, it can’t survive. (Gill et all, 2009)

1.2. FINANCIAL STATEMENT ANALYSIS

The financial analysis establishes the relationship between the items in the financial statements in order to determine a firm's financial condition, results of operations and financial development and to make a future-looking forecast. In order to be able to make an accurate financial planning in a firm, financial statements analysis should be performed.

The analysis of financial statements is widely used by various interest groups, including partners and managers. Business owners want to see whether their capital is protected or not and profitability of their investments and managers want to see whether the operations of the firm are successful or not.

The financial statements is the most important element that investors, lenders and managers look at when they want to make the right decision since the financial statements show the results of the company's activities. Financial statement analysis provides information about the financial structure of the companies for the previous period. Furthermore, the company's future profit, future cash flow requirement and future borrowing need can be estimated through financial statements analysis. Briefly, financial analysis is a method of calculating the relationship between the items in the financial statements and the trends of the items in the years to see the financial position and financial development of a firm and to make predictions about the financial position of the firm.

The purpose of the financial statement analysis is to explore company operations and developments as a result of these operations, ie the financial situation of a company, and to help external users such as financial analysts, creditors and governments and internal users such as the company's management and employees in their decision making (Mugan and Akman, 2007).

Financial statements are used to look at the financial and investment activities of a firm in a given period. Financial statement analysis provides information to all stakeholders in understanding the firm's health and competitiveness. In terms of firm management, financial statements analysis is an important method to identify the strengths and weaknesses of the firm and to ensure that the firm is more advantageous than its competitors. When lenders decide whether or not to lend to the company, if they want to determine the strengths and weaknesses of the firm and foresee the future of the firm, it will be a useful tool to use the firm's financial statement analysis (Malhotra and Lafond, 2008).

The main objectives of financial analysis in terms of management and manager are:

- measuring the degree of success in activities,
- examining the rate at which the goals are reached,
- investigation of the causes if the targets are not achieved,
- comparison with competing businesses,
- ensuring continuous monitoring of activities,
- making correct and corrective financial decisions at every stage,
- financial planning. (Usta, 2008)

The main techniques used in financial analysis are;

- horizontal analysis,
- vertical analysis,
- trend analysis,
- ratio analysis.

1.2.1. Horizontal Analysis

Horizontal analysis is performed by comparing the financial statements of the company for two or more periods. It is used to examine the changes in the items in the financial statements over time. The changes in the items can be calculated

either on the basis of the first year or the change of each year compared to the previous year.

1.2.2. Vertical Analysis

The vertical analysis is interpreted by proportioning the item in the financial statement to the sum of the total or group. Thus, the percentage of each item is determined and interpreted according to the percentage of items.

1.2.3. Trend Analysis

In the trend analysis, a year is taken as a base year and the increase or decrease of the items compared to the base year is determined and the changes are shown as a percentage. Thus, the trend of the items according to the base year is calculated and the changes experienced by the company can also be analyzed.

1.2.4. Ratio Analysis

Ratio analysis utilizes ratios and relationships between various financial statement accounts as basic tools to compare operational, financial and investing performance of companies over time and against one another (Feldman and Libman, 2007). Ratio analysis is a frequently used method of financial statement analysis. The ratio defines the relationship between the two items and is used as an index to use in the analysis.

Effective financial management is necessary for a company to be financially successful. Therefore, financial ratios are an important technique in performing financial analysis. Lenders and investors use ratio analysis when making decisions because ratio analysis is very important for us to interpret financial statements, to determine trends over time and to measure financial structures of enterprises (Goel, 2016).

Thanks to the ratio analysis, company managers can compare the firm's financial position to other firms in the same sector, identifying the company's relative strengths and weaknesses and making a better plan for the future. This benchmarking will help investors and lenders to better understand the position of the firm compared to other firms in the industry, rather than making intuitive decisions (Malhotra and Lafond, 2008).

The results of trend analysis, horizontal analysis and vertical analysis may be insufficient in some cases. For example, ratio analysis is needed when it is desired to look at whether assets are used efficiently. Ratio analysis is used when looking at the relationship between items such as the relationship between profitability and sales or profitability and asset. In interpreting the ratios, the financial position of the competitors and the sector averages are taken into consideration (Mugan and Akman, 2007).

Michael Samonas said that there are some limitations to the ratio analysis. Some of these limitations are the fact that rates include information about the past rather than the future, the difficulty of choosing an appropriate industry to be used in the comparison of firms, and the categorization of industries due to the fact that some firms are involved in several different business lines. (Samonas, 2015)

Ratios can be classified into various aspects according to the purpose of the analysis since the ratio analysis explain the relationships that other methods used in financial analysis do not reveal. It can be classified as ratios in terms of the relationship of financial statements with each other (ratios related to asset structure; ratios related to capital structure). In terms of functions; ratios can be classified as ratios related to liquidity analysis, ratios related to financial structure analysis; ratios related to activity analysis ratios and ratios related to profitability analysis ratios (Arat, 2015).

The calculation of various ratios is not only a goal but also sufficient for analysis. The fact that the data used in calculating ratio is not healthy, and that these data show great differences in various months and seasons of the year can be misleading and may lead to erroneous results. It is important to correctly interpret the ratios. The following points should be taken into consideration when making ratio analysis:

- a small number of ratios that will determine the status of the firm should be taken to calculate,
- should be taken when interpreting ratios,
- other useful resources should be used when interpreting ratios,
- inflation should be considered while interpreting
- should be compared with the ratios of the enterprise in previous years,
- should be compared companies in the same industry (Usta, 2008).

Classification from the point of view of financial management is as follows:

- Liquidity Ratio
- Activity Ratio
- Solvency Ratio
- Profitability Ratio

1.2.4.1. Liquidity Ratio Analysis

Companies that want to achieve their long-term profitability targets have to fulfill their financial obligations on time and survive in the short term. Liquidity means that the company has sufficient funds to meet its short-term obligations or can raise funds in a timely manner. Ensuring sufficient liquidity is a serious concern for all companies (Mautz and Angell, 2006).

Liquidity analysis, which focuses on cash flow, measures how quickly assets are converted to cash, ie the ability of a company to meet its short-term

obligations. In daily transactions, liquidity management ensures the efficient use of assets (Robinson, 2009). Liquidity ratio can be calculated by current ratio, acid cash ratio and cash ratio.

While liquidity ratios show the solvency of firms, it is a ratio that shows the ability to turn into cash without losing its liquidity value. In general, the excessively high rates cause the problem of not reaching the profitability target as a result of keeping the liquid assets of the company idle. The low rate also indicates that the company may have difficulty in paying overdue debts. (Aksoy and Tanrıöven, 2007)

1.2.4.2.1. Current Ratio

Current ratio referred as a working capital ratio or banker's ratio. Current ratio expresses the relationship of a current asset to current liabilities.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liability}}$$

A good current rate for a company may vary depending on the nature of the entity, but if the rate is too low, the company may have difficulty in fulfilling its short-term obligations. If the current ratio is too high, the company may over-invest in the current assets and perhaps invest part of the fund in different areas. (Sherman, 2015)

The current ration is much lower than the standards can be interpreted as follows:

- The company's fixed assets are partially covered by short-term liabilities.
- The company cannot pay its short-term debt on time.
- The company does not have sufficient working capital and therefore cannot operate its fixed assets efficiently.

1.2.4.2.2. Acid Test Ratio

Current ratio takes into consideration current assets and current liabilities by evaluating the general liquidity position of an firm. From time to time, it is desirable to reach a more urgent location than indicated by the current rate. The acid test ratio relates the most liquid assets to current debts. When calculating the acid test ratio, the inventory is removed from current assets. Some of the reasons for the inventory may be that the inventory is slow-moving or outdated, and parts of the inventory are pledged to certain creditors.

$$\text{Acid Test Ratio } = \frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liability}}$$

The acid test ratio indicates the ability of an firm to pay its short-term debt without the liquidity of inventories with low liquidity compared to other short-term assets. It is generally preferred that this ratio is equal to one and this ratio also shows whether an firm may meet its obligations in the event of a decrease in sales (Aksoy and Tanrıöven, 2007).

1.2.4.2.3. Cash Ratio

Cash ratio is useful for a company who is undergoing is financial trouble.

$$\text{Cash Ratio } = \frac{\text{Cash } + \text{ Marketable Securities}}{\text{Current Liability}}$$

Cash ratio is considered to be the most sensitive indicator of solvency among liquidity ratios. The rate is generally expected to be 20% and if the rate falls below 20%, it may cause congestion in cash and difficulty in finding loans. However, the fact that the ratio is low should not be interpreted as negative

immediately, the structure and quality of the assets of the companies should be analyzed and it is a more accurate method to evaluate this ratio together with the operational ratios (Aksoy and Tanrıöven, 2007).

1.2.4.2. Solvency Ratio Analysis

These ratios show how the assets of a company are financed and provide information about the long-term liquidity of a company (Mugan and Akman, 2007). Financial leverage ratios measure the firm's long-term soundness and the firm's degree of financial risk. A high degree of solvency is interpreted as sufficient for a company to pay its debts (Goel, 2016). With the help of financial structure ratios, the relationship between the equity and liabilities of the companies is examined and the relationship between these resources and assets is also determined (Aksoy and Tanrıöven, 2007).

Financial Risk Ratios measure a company's ability to fulfill its long-term obligations and can also answer the question of whether firm has the right amount of debt. This ratio, which is used more by creditors, measures the ability of the company to pay the loans received. In order to make these measurements, debt and equity items are related. (Samonas, 2015)

1.2.4.2.1. Short Term Liabilities/Total Liabilities

This ratio shows that both how much of the total assets of the companies are funded by short-term debts and how much is used from short-term debts in total resources.

$$\text{Short Term L./Total L.} = \frac{\text{Short Term Liabilities}}{\text{Total Liabilities}}$$

It can be expressed as a risky situation that this ratio exceeds 1/3 in an enterprise. However, in our country, the ratio exceeds this limit in many enterprises

because it is difficult to obtain long term debt. The issue that needs to be considered in the financing of the enterprise is the financing of current assets with short-term funds and the financing of fixed assets with long-term funds. Companies that do not comply with this principle may have difficulty in paying their debts and may even face the obligation of liquidation (Toroslu and Durmuş, 2016).

1.2.4.2.2. Long Term Liabilities/Total Liabilities

This ratio shows that both how much of the total assets of the companies are funded by long-term debts and how much is used from long-term debts in total resources.

$$\text{Long Term L./Total L.} = \frac{\text{Long Term Liabilities}}{\text{Total Liabilities}}$$

Excessive long-term credit utilization of companies increases the annual interest burden, reduces the share of partners' profits, and the enterprise may have difficulty in paying debt installments during periods of recession. The well-known companies whose sales are stable and have been operating in the same line of business for a long time, and those using capital intensive technology or undertaking large-scale new investments can be considered high (Toroslu and Durmuş, 2016).

1.2.4.2.3. Equity Ratio

The debt ratio indicates the firm’s long-term debt-paying ability. It is computed as follows:

$$\text{Equity Ratio} = \frac{\text{Shareholder’s Equity}}{\text{Total Asset}}$$

It is used as a ratio that helps to see how much of the firms's assets are financed by partners. A higher ratio indicates that the firm may not have difficulty

in paying its long-term debt. It is desirable that the ratio does not fall below 50%. However, it is seen that this ratio is kept low in companies that want to make more profit because some firms prefer to keep equity low and turn to foreign resources in order to increase their profitability.

1.2.4.2.4 Leverage Ratio (Debt Ratio)

The debt ratio indicates the extent to which companies' assets are financed by long-term debt rather than equity, ie the leverage ratio of a company. If the debt ratio is high, it means that the company's debt is much higher than the equity and that the principal and interest payments of the company are a great burden on the company (Goel, 2016). As a general rule, the ratio between 1: 1 and 2: 1 is acceptable but depends on the sector in which a company operates.

$$\text{Leverage Ratio} = \frac{\text{Total Liabilities}}{\text{Total Asset}}$$

It is an indication of the level of financial leverage used by the company because it represents the percentage of assets financed by creditors. This ratio is usually about %60 in Turkey. If the ratio is high, the possibility of the company having difficulty borrowing in the future may increase. In assessing debt ratios, fluctuations in a company's net income and cash flow from operations should also be examined and the effects of inflation should be taken into account when making the assessment (Mugan and Akman, 2007).

1.2.4.2.5. Debt Equity Ratio

The debt / equity ratio measures the degree to which a company's creditors provide security, showing the relationships between the funds provided by creditors and those provided by stochholders. Thi ratio is particularly useful in analyzing by

the lenders to whom the company requests a loan because it provides important information on how long the company can continue to borrow.

$$\text{Debt Equity Ratio } = \frac{\text{Total Liabilities}}{\text{Shareholders}' \textit{ Equity}}$$

The debt / equity ratio is used to determine the balance between the capital resources provided by the partners and the total liabilities. This high rate can be interpreted as the fact that the company is financed through creditors rather than equity and in such a case the risk of company creditors is high. (Samonas, 2015)

This ratio shows the percentage of long-term funds provided by creditors as of the funds provided by the stakeholders. It reflects strengths and weakness in basic financing operations. The desired level is usually one to one. However, in Turkey companies usually have the ratio of 60% to 40% (Mugan and Akman, 2007). It can be said that debt / equity ratios should be evaluated according to sector averages for each sector. However, the comparison of debt / equity ratios in firms in the same sector may not give very accurate results (Sherman, 2015).

1.2.4.3. Activity Ratio Analysis

Activity rates, also referred to as operational efficiency rates, allow you to measure how efficiently a company manages its various assets. Operational rates are considered as an indicator of operational performance as it shows whether both working capital and long-term assets are managed properly (Robinson, 2009).

Efficiency ratios explain the relationship between the level of activity of the company and the assets required to sustain the activity. The purpose of using these ratios is to analyze the indicators of how efficiently the company uses its assets. The ratio of the ratios to the desired intervals is interpreted as the asset utilization

of the company is efficient and the management of the company is strong. (Hitchner, 2017)

Only the interpretation of the current ratio and acid test ratio from the liquity ratios can give misleading results. These ratios do not show quality of debtors and are insufficient to show movement of debtors. In summary, since liquidity ratios are insufficient to show the quality of inventories, debts and receivables, it is necessary to calculate the turnover of these assets in order to determine their quality and how efficiently they are used in the company. Therefore, activity ratios are needed (Gopal, 2008).

1.2.4.3.1. Inventory Turnover Ratio

In the calculation of the ratio showing the number of times the inventories are converted, net sales are mostly used in the calculations due to the difficulty of determining the costs of the goods sold. The fact that inventory turnover is high or increasing over the years is considered to be very positive because it is concluded that inventory management is effective (Aksoy and Tanrıöven, 2007).

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{Average\ Inventory}$$

A high inventory turonver ratio indicates that inventory management is done efficiently. A low inventory turnover ratio also indicates that inventory management is not used effectively. The reasons for this may be an indication of a slow-moving inventory, perhaps due to a low rate of inventory exemption, due to technological obsolenscence or change in fasion (Robinson, 2009).

1.2.4.3.2. Receivable Turnover Ratio

Receivables turnover ratio shows how many times the receivables will be converted into cash during the period, but this ratio is high in companies where the company's credit or collection policies are very strict. Thus, they may suffer loss due to less sales than competitors with more flexible credit or collection policies, but it should be noted that flexible credit and collection procedures of companies with a low turnover rate may also cause problems. (Robinson., 2009)

$$\text{Receivable Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Average Accounts Receivable}}$$

1.2.4.3.3. Working Capital Turnover Ratio

This ratio, which shows the relationship between working capital and sales, is an important ratio showing whether or not the working capital is used effectively and is sufficient. However, in order to make the right analysis, the company must compare with the historical rates, competitors and sector averages.

$$\text{Net Working Capital Turnover Ratio} = \frac{\text{Net Sales}}{\text{Net Working Capital}}$$

This ratio is used to measure the efficiency of working capital management and it is preferable that this ratio is high. High ratio shows that working capital is used efficiently, that is, indicates a lower investment in working capital has generated more volume of sales. High ratio increases the profitability of the company. (Gopal, 2008)

1.2.4.3.4. Fixed Asset Turover Ratio

The fixed asset turnover rate measures the effectiveness of management in generating sales from investments in fixed assets. this ratio differs between capital-

intensive enterprises and labor-intensive enterprises. It can be said to have a lower rate in capital intensive enterprises. However, to define a general range, this ratio range is 1 to 3 times. As the rate increases, the investment required to generate sales decreases and profitability can be increased. Moreover, when evaluating this ratio, firms in the same sector group should be compared. When comparing the two firms or industries, the asset numbers should be considered and the assets should be approximately the same (Gill et all, 2009).

$$\text{Fixed Asset Turnover Ratio} = \frac{\text{Net Sales}}{\text{Average Fixed Assets}}$$

1.2.4.3.5. Equity Turnover Ratio

This ratio indicates whether or not equity is used efficiently. The large ration indicates that the company effectively uses its own equity or that its equity is low and that it makes wide use of foreign resources in financing. It would be correct to see which of these options applies to the business. The low turnover rate means that equity is not used effectively and profitability will be negatively affected. In this case, in order to increase the equity turnover rate, it may be used to decrease the equity or increase the sales.

$$\text{Equity Turnover Ratio} = \frac{\text{Net Sales}}{\text{Average Debt}}$$

A high ratio indicates that the company's equity is used efficiently. There is no accepted standard measure for this ratio. In order to measure whether the equity ratio of the entity is sufficient or not, it should be compared with the ratios of other enterprises in the same sector (Toroslu and Durmuş, 2016).

1.2.4.3.6. Asset Turnover Ratio

Asset turnover ratio is a rate that measures the success of the assets and sales volume created by the companies. This ratio indicates whether the assets are over-invested. The low rate indicates that the firms does not use its assets efficiently and that the firms does not operate at full capacity (Toroslu and Durmuş, 2016).

It is preferred that the ratio be high since this ratio is used to measure the company's ability to effectively use its assets to generate revenue. The higher this rate, the better the company is generating more revenue on its assets (Goel, 2016).

$$\text{Asset Turnover Ratio} = \frac{\text{Sales}}{\text{Total Assets}}$$

1.2.4.4. Profitability Ratio

All companies are working to maximize their profits. The profitability analysis helps to determine the firm's probability of generating profit, to assess the overall efficiency and performance of firms. If the company is able to obtain profits as a result of its core operating activities, it is sign of good operational health of the firm (Goel, 2016).

Company's management, lenders and owners use profitability ratios to measure the company's productivity. So, profit for everyone associated with the company is important. For example, from a lender's point of view, if the profit is not sufficient, it will be difficult for them to receive interest payments and principal payments. From a manager's point of view, it should evaluate the company's productivity in terms of profits. Profitability ratios can be expressed in two ways based on sales and based on investments (Gopal, 2008).

1.2.4.4.1. Operating Profit Ratio

Operating profit margin measures the probability of a concern by taking into account the amount of the profit that a firm is able to generate after paying its other line of expenses, including office and selling expenses. It is a better indicator of the probability of the company as it is concerned with only the profits from core operations the company as it is concerned with only the profits from core operations of the company and excludes the noncore items (Goel, 2016).

$$\text{Operating Profit Ratio} = \frac{\text{Operating Profit}}{\text{Sales}}$$

1.2.4.4.2. Net Profit Ratio

The net profit margin shows the final profit picture of the company. The higher the net profit margin, the more likely the company will turn its income into profit. However, assessing the low or high of this ratio may sometimes not give accurate results. Because, if a company recently borrowed long-term debt to increase production capacity or invest, the net profit margin will be significantly reduced. Therefore, the fact that this ratio is lower than that of its competitors does not mean that the company is less productive. A lower profit margin, a decrease in sales erases profits and results in net loss. The higher this margin, the more effective the company's income will be in real profit. Net profit margin is often used to compare a company's results over time (Goel, 2016).

$$\text{Net Profit Ratio} = \frac{\text{Profit After Tax}}{\text{Sales}}$$

1.2.4.4.3. Return on Equity

This rate calculates the return accrued to the common shareholders after deducting interest payments and dividends and informs the owners about the return of the rest of firm's investments (Mugan and Akman, 2007).

$$\text{ROE} = \frac{\text{Net Income} - \text{Preferred Dividends}}{\text{Average Shareholders}' \textit{Equity}}$$

ROE can be used as an important profitability measure for shareholders because it calculates the net income amount expressed as a percentage of equity. In other words, it measures how much profit a company makes with the money invested. If the roe is high, it can be said that a company's efficiency in converting its shareholders' capital into profits is so good (Goel, 2016).

1.2.4.4.4. Return on Asset

Return on assets measures the firm's ability to utilize its assets to create profits by comparing profits with the assets that generate the profits.

$$\text{ROA} = \frac{\text{Operating Income}}{\text{Average Total Assets}}$$

This ratio measure the probability of the total resources available to the business. It indicates how efficiently management has used the total available resources to earn income (Mugan and Akman, 2007).

1.2.4.4.5. Economic Profitability Ratio:

Economic profitability ratio shows the profitability of the total resources of the enterprise. This rate is used to measure the return on funds invested in the entity. The economic profitability ratio should be lower than the return on equity ratio. Otherwise, it may be assumed that the cost of utilizing foreign resources is above normal (Toroslu and Durmuş, 2016).

$$\text{Economic Probability Ratio} = \frac{\text{Profit After Tax}}{\text{Total Assets}}$$

CHAPTER 2
DATA AND METHODOLOGY

2.1. DATA

We collect data obtained from 2015 annual financial reports of 81 firms operating in four different sectors traded on Borsa Istanbul (BIST) from the Public Disclosure Platform (PDP). The financial analysis ratios calculated through the balance sheet and income statements of the firms are grouped according to the 4 main sectors mentioned in Table 1. These sectors include non-metallic mineral products industry, machinery and metal product industry, wholesale and consumer trade industry and technology industry. Stock exchange transaction codes of the companies used in the analysis by sectors are given in Table 1.

Table 1. Companies' Stock Exchange Transaction Codes

Industry	Stock Exchange Transaction Codes
Non-metallic Mineral	ADANA, AFYON, AKCNS, ANACM, ASLAN, BOLUC, BSOKE, BTCIM, BUCIM, CIMSA, CMBTN, CMENT, DENCM, DOGUB, EGSER, GOLTS, IZOCM, KONYA, KUTPO, MRDIN, NUHCM, TRKCM, UNYEK, USAK
Machinery and Metal Products	ALCAR, ARCLK, ASUZU, BFREN, DITAS, EMNIS, EGEEN, EMKEL, FMZIP, FROTO, GEREL, IHEVA, KARSAN, KATMR, MAKTK, OTKAR, PARSN, PRKAB, TOASO, TTRAK, VESTEL, SILVER
Wholesale and Consumer Trade	AYCES, AVTUR, BIMAS, BIZIM, BMEKS, CRFSA, DOAS, KIPA, MAALT, SANKO, SELEC, TEKTU, MARTI, MGROS, METUR, MIPAZ, PKENT, PIMAS, UTPYA, VAKKO
Technology	ALCTL, ANELT, ARENA, ARMADA, ASELS, DESPC, DGATE, ESCOM, INDES, KAREL, KRONT, LINK, LOGO, NETAS, PKART

The net profit / loss item of these companies in the financial statements and income statements is accepted as positive companies are profitable and negative companies are loss firms. 24 companies (23 profit-making companies and 1 loss-making company) from the non-metallic mineral industry, 22 companies (17 profit-making companies and 5 loss-making companies) from the machinery and metal products industry, 20 companies (12 profit-making and 8 loss-making companies) from the wholesale and consumer trade industry and 15 companies (4 loss-making and 11 profit-making companies) from the technology industry are included in the thesis.

There are 81 companies in the analysis, of which 63 are profit-making companies and 18 are loss-making companies. In this study, the number of profit and loss status of the firms grouped by sector are shown in Table 2.

Table 2. Number of Companies' Profit and Loss Situations by Industry

Industry	**loss-making**	**profit-making**	**Total**
Non-metallic Mineral	1	23	24
Machinery and Metal Products	5	17	22
Wholesale and Consumer Trade	8	12	20
Technology	4	11	15
Total	18	63	81

Financial ratios used in the study are obtained by using the data in the annual financial statements and income statement of the companies. In this study, current ratio, acid-test ratio, cash ratio, short term liabilities/total liabilities ratio, long term liabilities/total liabilities ratio, equity ratio, leverage(debt) ratio, debt-equity ratio, inventory turnover ratio, receivable turnover ratio, working capital turnover ratio, fixed asset turnover ratio, equity turnover ratio, asset turnover ratio, operating

profitability ratio, net profit margin, return on equity, return on assets and economic profitability ratio are calculated. Financial ratios used in the study and codes of these ratios are shown in Table 3.

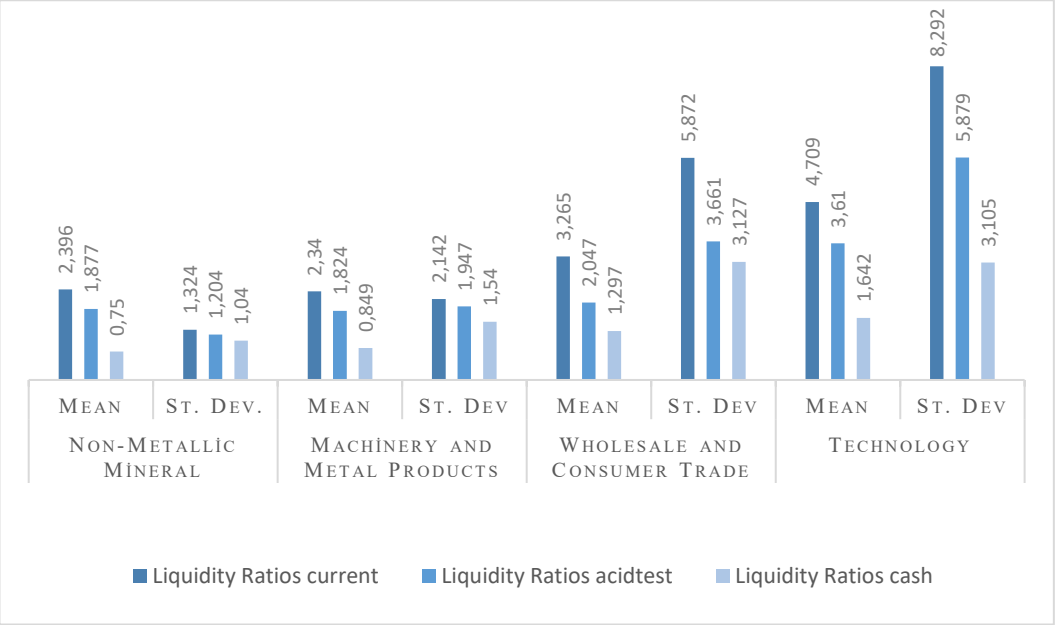
Table 3. Financial Ratios in the Study

	Financial Ratios	**Codes**		**Financial Ratios**	**Codes**
Liquidity Ratios	Current Ratio	current	**Operating Ratios**	Inventory Turnover Ratio	invturn
	Acid-test Ratio	acidtest		Receivable Turnover Ratio	recturn
	Cash Ratio	cash		Working Capital Turnover Ratios	workcapturn
Financial Statements Ratio	Short Term Liabilities	shtliab		Fixed Asset Turnover Ratio	fixasturn
	Long Term Liabilities	lngliab		Equity Turnover Ratio	equturn
	Equity Ratio	equrat		Asset Turnover Ratio	asturn
	Leverage Ratio	leverage	**Profitability Ratios**	Operating Profitability Ratios	opeprof
	Debt Equity Ratio	debtequrat		Net Profit Margin	netprofmarg
				Return on equity	roe
				Return on assets	roa
				Economic Profitability Ratio	ecoprof

2.1.1. Descriptive Statistics of Financial Ratio

In order to better understand the general situation of the industries, the average value is given. In addition, Standard deviation values are also included to understand the internal variability of the sectors in terms of financial ratios. Information on the descriptive statistical results of financial ratios are given in for groups as liquidity ratios, financial structure ratios, operational ratios and profitability ratios.

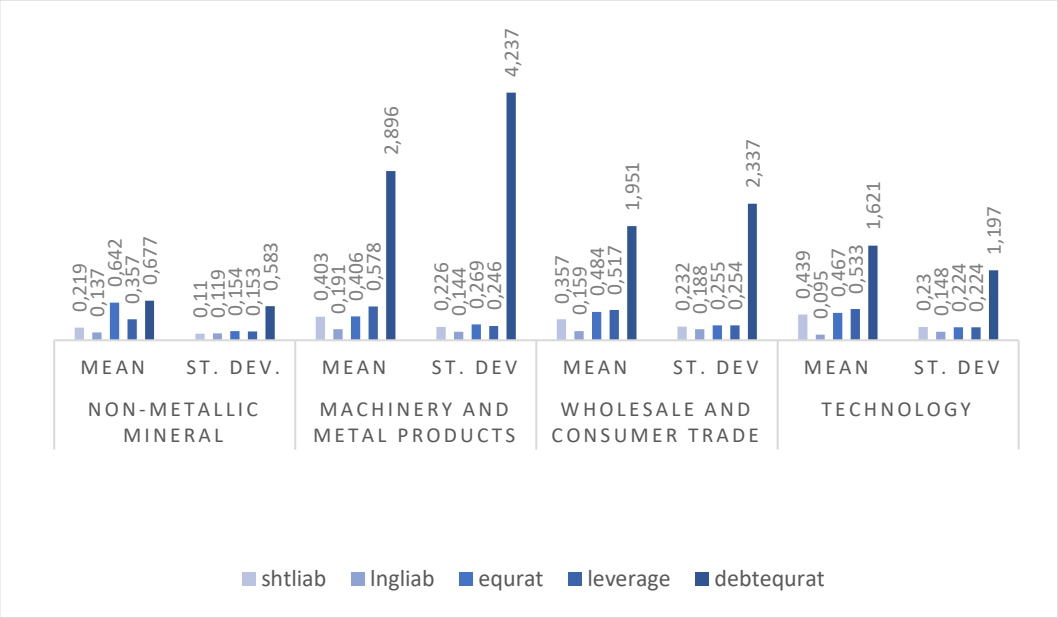
Figure 1. Descriptive Statistics of Liquidity Ratio



Although the non-metallic mineral industry and machinery and metal products industry have similar average of liquidity ratios, high standard deviation values of all liquidity ratios in the machinery and metal industry compared to the non-metallic mineral industry have been observed. We see that the standard deviation values of all liquidity ratios of wholesale and consumer trade industry are much higher than the standard deviation values of industry non-metallic mineral industry and machinery and metal products industry. Also, we see that the highest

standart deviation are observed in the technology industry. However, the high standard deviation values indicate that the internal variability is high. For this reason, there is more internal variability in wholesale and consumer trade industry and technology industry in terms of liquidity ratios than non-metallic mineral industry and machinery and metal products industry.

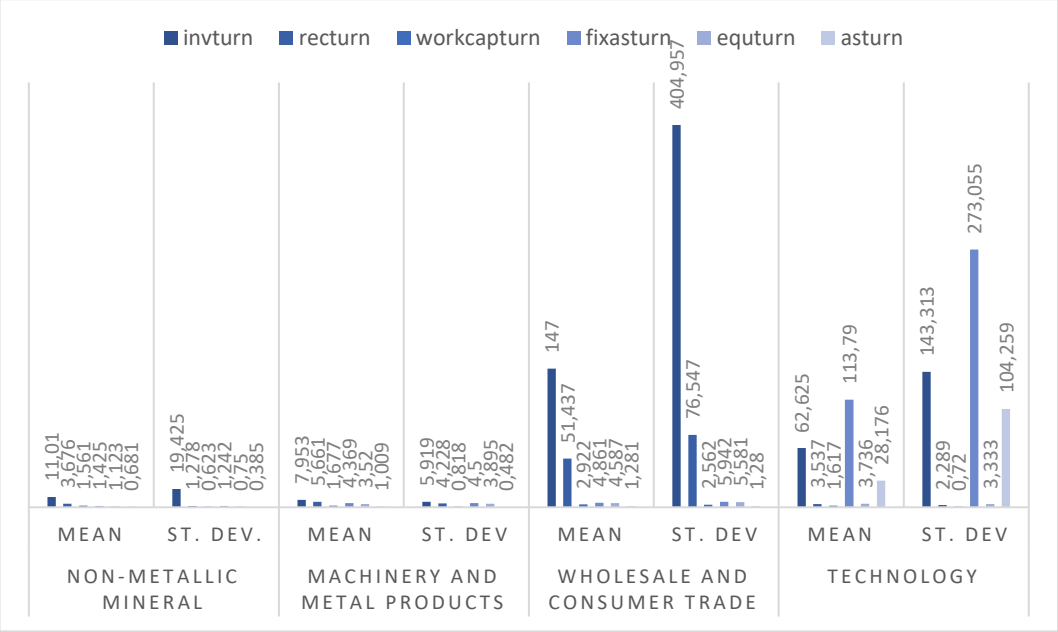
Figure 2. Descriptive Statistics of Financial Statement Ratio



According to descriptive statistics of financial statement ratio, both standard deviation and average of short-term liabilities/total liabilities ratio, long-term liabilities/total liabilities ratio, equity ratio and leverage(debt) ratio are almost the same in four sectors. The obtained values are analyzed in terms of financial statement ratios, we see that there is a similarity between the industries in general terms. Contrary to similarity means and standard deviations of all ratios except debt-equity ratio from financial statement ratios, there is a difference between the industries in means and standard deviations of the debt to equity ratio. The average and standard deviation of debt to equity ratio in the non-metallic mineral industry is quite low compared to all other sectors. Also, we see that machinery and metal products industry is differentiated from other industries in terms of debt to equity

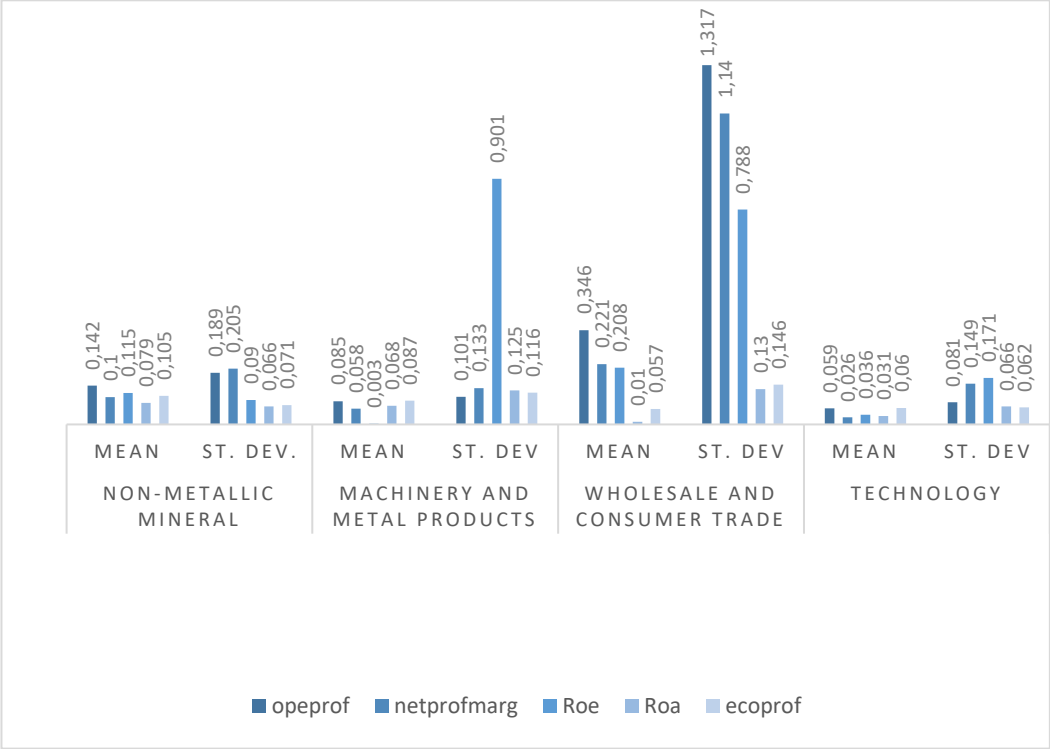
ratio. When the standard deviation rates are analyzed in terms of these ratios, we see that the industry with the least internal variability is the non-metallic mineral industry.

Figure 3. Descriptive Statistics of Activity Ratio



When the obtained data are evaluated in terms of activity ratios, we see that the average and standard deviations of the activity ratios of the industries are quite different from the other sectors. However, both standard deviation and average of inventory turnover ratio, receivable turnover ratio, working capital turnover ratio, fixed asset turnover ratio, equity turnover ratio and asset turnover ratio are almost the same in non-metallic mineral industry and machinery and metal products industry. Wholesale and consumer trade industry has the highest average and standart deviations in terms of inventory turnover ratio and receivable turnover ratio compared to other sectors. Finally, when the averages and standard deviations of the activity ratios of the technology sector are evaluated, we see that this sector has high average and standart deviations in terms of inventory turnover ratio, fixed asset turnover ratio and asset turnover ratio compared to other sectors.

Figure 4. Descriptive Statistics of Profitability Ratio



When the data obtained are evaluated in terms of probability ratios, the non-metallic mineral industry, technology industry and machinery and metal product industry have similar average and standart deviation of profitability ratios. Higher standard deviation and average values of probability ratios have been observed in the wholesale and consumer trade industry. We see that the standard deviation and average values of operating profitability ratio, net profit margin ratio and return on equity ratio of wholesale and consumer trade industry are much higher than the standard deviation values and average of these ratios in other industries. For this reason, there is more internal variability in wholesale and consumer trade industry in terms of probability ratios than other industries.

2.2. METHODOLOGY

In this thesis, first of all, we aim to examine whether there is a difference between sectors in terms of financial ratio values. Whether the data have normal distribution is examined before testing the difference between sectors because whether or not the data set has a normal distribution is very important in using the correct statistical methods in the analysis.

Normality test, Kolmogorov-Smirnov (K-S) and Shapiro-Wilk tests are performed. Kolmogorov-Smirnov (K-S) test is used when the number of observations is more than 35, and Shapiro-Wilk test is used when the number of observations is less than 35 (McKillup, 2012).

In this study, Shapiro-Wilk test is peformed using SPSS program because number of observations for each industry is less than 35. In this test, 95% confidence level, p value less than 0.05 indicates that the variable does not have normal distribution.

Current ratio, acid-test ratio, cash ratio, short term liabilities/total liabilities ratio, long term liabilities/total liabilities ratio, equity ratio, leverage(debt) ratio, debt equity ratio, inventory turnover ratio, receivable turnover ratio, working capital turnover ratio, fixed asset turnover ratio, equity turnover ratio, asset turnover ratio, operating profitability ratio, net profit margin ratio, return on equity ratio, return on assets and economic profitability ratio are tested with Shapiro-Wilk test.

Table 4 shows the Shapiro-Wilk normality test results for each financial ratio by sector. Current ratio, acid-test ratio, cash ratio, inventory turnover ratio, receivable turnover ratio, fixed asset turnover ratio, equity turnover ratio and operating profitability ratio are not normally distributed in the all sectors. Equity ratio, leverage(debt) ratio and return on assets is normally distributed in the all

sector. According to the Shapiro-Wilk test results, this study uses to use non-parametric tests because most of the variables do not have normal distribution.

Table 4. Shapiro-Wilk Normality Test

		Shapiro-Wilk				Shapiro-Wilk		
		Statistic	df	Sig.		Statistic	df	Sig.
Non-metallic Mineral	current	0,876	24	0,007	workcapturn	0,968	24	0,609
Machinery and Metal Product		0,755	22	0		0,863	22	0,006
Whosale and Consumer Trade		0,521	20	0		0,889	20	0,025
Technology		0,492	15	0		0,897	15	0,085
Non-metallic Mineral	acidtest	0,835	24	0,001	fixasturn	0,768	24	0
Machinery and Metal Product		0,704	22	0		0,709	22	0
Whosale and Consumer Trade		0,536	20	0		0,798	20	0,001
Technology		0,523	15	0		0,486	15	0
Non-metallic Mineral	cash	0,73	24	0	equturn	0,796	24	0
Machinery and Metal Product		0,593	22	0		0,767	22	0
Whosale and Consumer Trade		0,452	20	0		0,787	20	0,001
Technology		0,571	15	0		0,865	15	0,028
Non-metallic Mineral	shtliab	0,89	24	0,013	asturn	0,879	24	0,008
Machinery and Metal Product		0,927	22	0,105		0,958	22	0,445
Whosale and Consumer Trade		0,906	20	0,055		0,852	20	0,006
Technology		0,925	15	0,233		0,291	15	0
Non-metallic Mineral	lngliab	0,851	24	0,002	opeprof	0,665	24	0
Machinery and Metal Product		0,935	22	0,157		0,913	22	0,054
Whosale and Consumer Trade		0,778	20	0		0,339	20	0
Technology		0,676	15	0		0,815	15	0,006
Non-metallic Mineral	equrat	0,976	24	0,814	netprofmarg	0,642	24	0
Machinery and Metal Product		0,967	22	0,641		0,929	22	0,116
Whosale and Consumer Trade		0,931	20	0,164		0,534	20	0
Technology		0,896	15	0,082		0,835	15	0,011
Non-metallic Mineral	leverage	0,976	24	0,814	Roe	0,954	24	0,332
Machinery and Metal Product		0,934	22	0,147		0,423	22	0
Whosale and Consumer Trade		0,931	20	0,159		0,647	20	0
Technology		0,896	15	0,082		0,92	15	0,195
Non-metallic Mineral	debtequrat	0,734	24	0	Roa	0,942	24	0,179
Machinery and Metal Product		0,578	22	0		0,91	22	0,048
Whosale and Consumer Trade		0,716	20	0		0,887	20	0,023
Technology		0,934	15	0,318		0,967	15	0,812
Non-metallic Mineral	invturn	0,342	24	0	ecoprof	0,95	24	0,277
Machinery and Metal Product		0,829	22	0,001		0,868	22	0,007
Whosale and Consumer Trade		0,409	20	0		0,793	20	0,001
Technology		0,463	15	0		0,937	15	0,346
Non-metallic Mineral	recturn	0,889	24	0,013				
Machinery and Metal Product		0,737	22	0				
Whosale and Consumer Trade		0,692	20	0				
Technology		0,79	15	0,003				

Then, the logistic regression analysis is conducted to determine the financial ratios that affect firms' profit and loss situation. The research questions identified in the analysis are as follows.

i. What are the financial ratios that affect the profit and loss status of companies by industry?

ii. Which ratio is the most effective on the profit and loss situation of companies?

iii. How much change do industries have in terms of profitability compared to a unit change of a financial ratio?

In statistics, logistic regression or logit regression is a type of probabilistic statistical classification model (Bishop, 2006).

Logistic regression models in which the dependent variable consists of two categories are called binary logistic regression models, and logistic regression models in which the dependent variable consists of more than two categories are called multinomial logistic regression models. The dependent variable is encoded as receiving 0 and 1 (life-death, failure-success, etc.). In the binary logistic regression model, the dependent variable is expressed as $P / (1 - P)$. Since this value represents the probability value, it takes a value between 0 and 1 (Böhning, 1992).

In multivariate statistical analyzes using independent and dependent variables, when the dependent variable is a nominal variable, least squares (LS) estimates are not sufficient. In other words, the variance obtained from the estimation result is not the smallest variance value. Because the LS method "dependent variable is suitable for normal distribution" is made under the assumption. This assumption cannot be achieved if the dependent variable is nominal. In case the dependent variable is a nominal value, logistic regression

analysis is used as an alternative to LS method (Kleinbaum, Dietz, Gail and Klein, 2002).

In the application of logistic regression analysis, assumptions such as normal distribution of data or continuity are not required. In addition, logistic regression analysis does not require that the variance-covariance matrices be equal and it is assumed that there is no problem of multicollinearity between independent variables. Logistic regression analysis is more flexible than other methods. Therefore, it is more preferred than other methods (Menard, 2002).

Logistic regression model can generally be written as follows.

$$Y = ln\left[\frac{P_i}{1-P_i}\right] = \beta_0 + \beta_1 x_1 + \cdots + \beta_n x_n + e$$

Here, Y is dependent variable (categorical), x's are independent variables and β's represent the regression coefficients. In this study, the industry variable was added to the model as an independent variable.

The model to be used in the study is generally expressed as follows.

$$\begin{aligned} Status\ (1,0) = {} & \alpha + \theta(industry) + \beta_1(current) + \beta_2(acidtest) + \beta_3(cash) \\ & + \beta_4(shtliab) + \beta_5(lngliab) + \beta_6(equrat) + \beta_7(everage) \\ & + \beta_8(debtequrat) + \beta_9(invturn) + \beta_{10}(recturn) \\ & + \beta_{11}(workcapturn) + \beta_{12}(fixasturn) + \beta_{13}(equturn) \\ & + \beta_{14}(asturn) + \beta_{15}(opeprof) + \beta_{16}(netprofmarg) \\ & + \beta_{17}(roe) + \beta_{18}(roa) + \beta_{19}(ecoprof) + e \end{aligned}$$

Here, status is dependent variable;

$$\text{status} = \begin{cases} 1; & Profit \\ 0; & Loss \end{cases}$$

Financial ratios and industry is categorical independent variable. θ and β's represent the regression coefficients.

CHAPTER 3
RESULTS

In the literature, the main tests that assess the assumption of normality are the chi-square goodness of fit test, Kolmogorov-Smirnov (K-S) test, Lilliefors corrected Kolmogorov-Smirnov test, Anderson-Darling test, Cramer-von Mises test, Shapiro-Wilk test, D'Agostino skewness test, Anscombe-Glynn kurtosis test, D'Agostino Pearson omnibus test and Jarqua-Bera test (Öztuna, Elhan and Tüccar, 2006).

Table 5. Kruskal Wallis-H Test Results by Industries

Test Statistics[a,b]

	current	acidtest	cash	shtliab	lngliab	equrat	leverage	debtequrat	invturn	recturn
Chi-Square	8,074	10,925	2,282	12,147	9,024	12,875	12,834	12,773	9,437	12,702
df	3	3	3	3	3	3	3	3	3	3
Asymp. Sig.	,045	,012	,516	,007	,029	,005	,005	,005	,024	,005

	workcapturn	fixasturn	equturn	asturn	opeprof	netprofmarg	Roe	Roa	ecoprof
Chi-Square	2,620	15,056	12,097	7,365	16,502	9,368	5,172	7,671	6,883
df	3	3	3	3	3	3	3	3	3
Asymp. Sig.	,454	,002	,007	,061	,001	,025	,160	,053	,076

a. Kruskal Wallis Test

b. Grouping Variable: industry

In the previous part of the study, we concluded that most of the variables are not suitable for normal distribution. Firstly, in order to investigate whether there are statistically significant differences between two or more groups, Kruskal-Wallis H test which is a rank-based non-parametric hypothesis test is used. Kruskal-Wallis test results are shown in Table 5.

It can be said that there is a significant difference when the p values obtained from Kruskal-Wallis H test results are less than 0.05 at 95% confidence level. According to Kruskal-Wallis H results, there is a significant difference between the industries in terms of acid-test ratio from liquidity ratios only. In addition, there is a significant difference between the sectors in terms of all solvency ratios. When the operating ratios are analyzed, we see that the ratios other than working capital turnover ratios and asset turnover ratio have a significant difference between the industries. When the profitability ratio is examined, while the operating profitability ratios and net profit margin ratios have a significant difference between the industries, no significant difference has been detected in terms of return on equity, return on assets and economic profitability ratio.

In the second part of the study, logistic regression is applied. Industry variable is added to the model as a categorical variable. Initially, this model is unpredictable for a great number of independent variables. A small number of observations versus a large number of independent variables do not make it possible to calculate the parameter covariance matrix. Therefore, only one of the highly correlated variables is included in the analysis.

Detailed Spearman's correlation table is given in Appendix 1. According to the results, cash ratio, short term liabilities/total liabilities ratio, long term liabilities/total liabilities ratio, debt-equity ratio, inventory turnover ratio, receivable turnover ratio, working capital turnover ratio, fixed asset turnover ratio, asset turnover ratio, operating profitability ratio, return on equity and economic profitability ratio are included in the model. So, the predicted model is as follows.

$$\text{Status } (1,0) = \alpha + \theta(industry) + \beta_1(cash) + \beta_2(\text{shtliab}) + \beta_3(\text{lngliab}) + \beta_4(\text{debtequrat}) + \beta_5(\text{invturn}) + \beta_6(\text{recturn}) + \beta_7(workcapturn) + \beta_8(\text{fixasturn} + \beta_9(\text{asturn}) + \beta_{10}(\text{opeprof}) + \beta_{11}(\text{roe}) + \beta_{12}(\text{ecoprof}) + e$$

The most important independent variables are determined by using the backward likelihood ratio selection criterion (Backward LR) using SPSS program. Backward likelihood ratio change values are shown in Table 7.

Table 6. Backward Likelihood Ratio Change Tabl**e**

Model if Term Removed

Variable		Model Log Likelihood	Change in -2 Log Likelihood	df	Sig. of the Change
Step 4	cash	-8,553	1,087	1	,030
	shtliab	-14,348	12,677	1	,000
	lngliab	-12,187	8,356	1	,004
	debtequrat	-11,782	7,546	1	,006
	workcapturn	-13,500	10,981	1	,001
	fixasturn	-10,137	4,255	1	,039
	asturn	-15,113	14,208	1	,000
	opeprof	-22,272	28,526	1	,000
	Roe	-11,555	7,092	1	,008
	industry	-9,166	2,314	3	,051

When the Table 6 is examined, we see that the most appropriate model is obtained in step 4. Finally, significant variables used in the model are determined

as cash ratio, short term liabilities/total liabilities ratio, long term liabilities/total liabilities ratio, debt-equity ratio, working capital turnover ratio, fixed asset turnover ratio, asset turnover ratio, operating profitability ratio and return on equity ratio. In addition, the industry type, which is a categorical variable, is included as a significant variable in the model.

Table 7. Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	,489	7	,849
2	,553	7	,790
3	,632	7	,930
4	,671	7	,800

Table 7 shows Hosmer-Lemeshow test results, which is an indicator of goodness of fit of the model. The hypothesis tests valid for this test are as follows.

H_0: The theoretical model represents the data well.

H_1: The theoretical model does not represent the data well.

When the Table 7 is examined, we see that the Hosmer-Lemeshow test results in step 4 is not significant at 95% confidence level. (0.800> 0.05). Therefore, H_0 cannot be rejected. Model estimates are not different from the observed situation. The fact that H_0 cannot be rejected is an indication that the model fit is at a good level. In other words, it is concluded that there is no significant difference between the values estimated by the model and the observed values, and it can be said that the theoretical model represents the data at a good level.

The beginning block iteration values are shown in the Table 8. In the initial model, the value of -2 Log Likelihood with only the fixed term is 85,812. Estimation terminated at iteration number 4 because parameter estimates changed by less than 0.001.

Table 8. Beginning Block Iteration History

Iteration History[a,b,c]

Iteration		-2 Log likelihood	Coefficients
			Constant
Step 0	1	86,101	1,111
	2	85,813	1,248
	3	85,812	1,253
	4	85,812	1,253

a. Constant is included in the model.

b. Initial -2 Log Likelihood: 85,812

c. Estimation terminated at iteration number 4 because parameter estimates changed by less than ,001.

Omnibus test results of the coefficients obtained from the final model are given in the Table 9. According to results; at the end of the fourth step, we find that the coefficients obtained in the whole block and the whole model are significant because significant value is less than 0.05 at 95% confidence level.

The G-statistics (Chi-Square) obtained by the inclusion of independent variables in the initial model are found to be statistically significant. Thus, logistic regression coefficients are found to be significant. This situation is accepted as an indicator of the goodness of the model.

Table 9. Omnibus Tests Results of Model Coefficients

		Chi-square	df	Sig.
Step 4	Step	-,314	1	,575
	Block	69,794	12	,000
	Model	69,794	10	,000

When the independent variables are added, we see that the -2 Log Likelihood value is 69,794 in Table 9. When the table is examined, we see that -2 Log Likelihood value obtained in the initial model is 85,812 and -2 Log Likelihood value decreases and the goodness of fit of the final model increases.

Nagelkerke R^2 value is a different form of Cox & Snell R^2. Nagelkerke R^2 value is always higher than Cox-Snell R^2 value (Allison, 2014). Cox-Snell R^2 and Nagelkerke R^2 values are shown in the Table 10. These values represent the explanatory power of the model. When the Cox-Snell R^2 value is examined, we see that the rate of explaining the profit-loss situation of the independent variables is 57.8%, and the rate of explaining the dependent variable of the independent variables is 88.4% when Nagelkerke R^2 value is examined.

Table 10. Model Summary

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	15,381a	,581	,889
2	15,606a	,580	,887
3	15,704a	,579	,886
4	16,019a	,578	,884

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

The classification values of the model including only the constant are shown in the Table 11. The values presented in the table are those in which all firms are considered to have made a profit. The correct classification rate obtained from the model is found to be 77.8% in the case where there is only constant in the model. In other words, assuming that all companies included in the study have made a profit, we see that the probability of accurate estimation of the profit and loss situations of the firms is 77.8%.

Table 11. Beginning Classification Table

Classification Tablea,b

Observed			Predicted		
			situation		Percentage Correct
			loss	profit	
Step 0	situation	loss	0	18	0,0
		profit	0	63	100,0
	Overall Percentage				77,8

a. Constant is included in the model.

b. The cut value is ,500

The classification values obtained as a result of logistic regression analysis are shown in Table 12. These table values should be compared with the initial classification values given in the previous table (Table 11). In the previous table, the average accuracy rate is 77.8 %. According to the classification values obtained as a result of step 4 of the logistic regression analysis application, 15 of the 18 firms that lost and 63 of the 61 firms that profit are classified correctly by including the

independent variables into the model. The correct classification rate obtained from this classification are found to be 93.8%. The correct classification rate of the resulting model should be above 50%. The value obtained from the classification table of the final model obtained in the fifth step is above this value. Furthermore, this value is found to be over 77.8 %, which is the first classification accuracy rate obtained in Table 12. This is an indication that both the classification made as a result of the model is correct and that the independent variables added to the model contribute to the model.

Table 12. Classification Table

Classification Table[a]

Observed		Predicted		
		situation		Percentage Correct
		loss	profit	
Step 1		15	3	83,3
		2	61	96,8
				93,8
Step 2		15	3	83,3
		1	62	98,4
				95,1
Step 3		15	3	83,3
		1	62	98,4
				95,1
Step 4		15	3	83,3
		2	61	96,8
				93,8

a. The cut value is ,500

Prediction results obtained from logistic regression are shown in Table 13. The first value to be examined in the analysis results is the significance values of the variables and this thesis examine firstly significant values. When the obtained results are examined at 90% confidence level, values such as $p<0.10$ are considered

as significant variables in the model. Accordingly, the categorical variables, industry variable, are found to be statistically significant. While among the financial ratios, cash ratio (cash), short term liabilities (shtliab), long term liabilities (lngliab), debt equity ratio (debtequrat), working capital turnover ratio (workcapturn), asset turnover ratio (assturn), operating profitability ratios (opeprof) and return on equity ratio (roe) are found as significant variables in the model, fixed asset turnover ratio (fixasturn) is not found statistically significant in the model. As a result, we can say that statistically significant variables have an effect on the profit and loss status of firms and the constant coefficient is statistically significant.

Table 13. Logistic Analysis Results

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 4	cash	16,779	1,536	1,193	1	,027	1,187
	shtliab	-59,575	40,509	2,163	1	,014	,010
	lngliab	-69,757	46,766	2,225	1	,014	,050
	debtequrat	5,122	3,655	1,964	1	,016	2,676
	workcapturn	-4,334	2,683	2,609	1	,011	,013
	fixasturn	-,009	,014	,433	1	,511	,991
	asturn	7,361	4,436	2,754	1	,097	6,738
	opeprof	137,513	97,107	2,005	1	,016	52,638
	Roe	17,838	12,829	1,933	1	,016	55,822
	industry			,856	3	,084	
	industry(1)	-15,608	3689,571	,000	1	,095	,450
	industry(2)	-17,608	3689,571	,000	1	,095	,520
	industry(3)	-12,839	3689,573	,000	1	,095	,320
	Constant	27,763	922,524	,001	1	,095	1,526

The fact that the odds ratio value shown as Exp (β) in Table 13 is greater than 1 indicates that the variables have a positive effect on the profit which is the

reference category, provided that it is statistically significant. This is also confirmed by the positive regression coefficients shown as B in the table. Value of Exp (β) less than 1 (provided that it is statistically significant) indicates that these variables have a negative effect on the profit, which is the reference category.

Non-metallic mineral industry is selected as the reference category within the industries. According to the logistic regression results, we determine that the companies operating in machinery and metal products industry have a 2.22 times (1 / Exp (β) =1/0.45=2.22) less chance of making profit compared to the companies operating in non-metallic mineral industry. It is found that wholesale and consumer industry companies have a 1.92 times (1 / Exp (β) =1/0.52=1.92) less chance of profit than non-metallic mineral companies. In addition, it is determined that the companies operating in the technology industry are 3.13 times (1 / Exp (β) =1/0.32=3.13) less likely to make a profit than those operating in the non-metallic mineral industry.

When the non-categorical variables are analyzed, it is seen that nine financial ratios have a significant effect on the profit and loss status of firms. One of these variables is the cash rate. According to the results, one-unit increase in cash ratio increases the probability of profit by (Exp (β) =1.187) 1.187 times due to positive parameter coefficient. Financial statements ratios seem to have a significant effect on the profit and loss situation. A one-unit increase in short term liabilities reduces the probability of profit by 100 times (1 / Exp (β) =1/0.01=100). A one-unit increase in long term liabilities reduces the probability of profit by 20 times (1 / Exp (β) =1/0.05=20). Also, one-unit increase in debt equity ratio increases the probability of profit by 2.676 times. Operating ratios affect the profit / loss status of firms. Accordingly, one unit increase in working capital turnover ratio decreases the probability of profit by 7.69 times (1 / Exp (β)=1/0.13)=7.69), while one unit increase in asset turnover ratio increases the probability of making profit by 6.738 times. According to the results obtained, it is determined that profitability ratios are the most effective ratios on the profit and loss situations of

the firms. A one-unit increase in operating profitability ratios increases the probability of firms making profits by 52.638 times. In addition, a one-unit increase in return on equity increases the profitability of firms by 55.822 times.

CONCLUSION

Financial analysis is extremely important for businesses because firms need effective financial analysis to clearly see their financial situation and to plan their future activities. For these purposes, financial ratios derived from financial analyzes are important tools and financial ratios are used to examine the financial position and results of firms and to compare the results of other companies from different industries.

In this thesis; the financial ratios of 81 companies operating in the non-metallic mineral industry, machinery and metal products industry, wholesale and consumer trade industry and technology industry listed on the stock exchange for the year 2015 are analyzed in terms of sectors.

Results indicate that there is a significant difference between the sectors in terms of acid-test ratio among liquidity ratios only. The acid test ratio, calculated as the ratio of liquid assets to short-term liabilities, shows how well companies can meet their current assets and short-term liabilities. It is used to measure the ability of the company to pay its short-term debt if sales stop. This ratio is similar in terms of non-metallic minerals industry and machinery and metal products industry. In addition, the wholesale and consumer trade industry and technology industry have similar proportions. The wholesale and consumer trade sector has an ideal working capital and good debt repayment as it is usually a sector where hot money is returned. This is also true for the technology sector and sales in these two sectors are usually made in cash. However, the same cannot be said for both the non-metallic mineral sector and the machinery and metal products sector. Therefore, the acid-test ratio is not ideal in these two sectors.

According to results, there is a significant difference between the industries in terms of all financial statements ratios. Financial statements ratios examine the relationship between the company's equity and liabilities. Financial statements

ratios are also known as borrowing ratios. The source of the difference in terms of these ratios is the non-metallic mineral sector. The non-metallic mineral sector has the strongest structure in terms of equity. Other sectors generally cover their debts through sales.

When the operating ratios are analyzed, we see that there is a significant difference between the sectors in terms of inventory turnover ratio, receivable turnover ratio, fixed asset turnover ratio and equity turnover ratio. These ratios allow the examination of the relationship between the sales of companies and asset groups. The source of the difference in terms of these ratios emerges as the wholesale-consumer and technology sector. This situation shows that that the companies operating in these sectors collect their trade receivables through sales. In addition, the fact that firms operating in the wholesale-consumer and technology sectors do not over-invest in tangible assets is the most important element that distinguishes these firms from other sector firms. It also shows that there is no idle capacity in these companies. Companies in this sector are making continuous sales and renewing their stocks compared to other sector companies.

When the profitability ratio is examined, while the operating profitability ratios and net profit margin ratios have a significant difference between the industries. These ratios show whether or not the company's profitability is sufficient. The purpose of calculating these ratios is to determine to what extent the main activities of the firms are profitable. The source of the difference in terms of these ratios is the non-metallic mineral sector. Low input costs and ease of access to raw materials are among the most important factors increasing profitability in this sector.

Logistic regression results indicate that the sector has a direct effect on the profit and loss situation of the firms. Macroeconomic effects can be cited as the reason for this situation. As a matter of fact, companies engage in commercial

activities and this situation directly enters the field of economy. However, there are some factors that arise from the specific characteristics of the sectors.

Logistic regression results that the companies operating in machinery and metal products industry have a 55% less chance of making profit compared to the companies operating in non-metallic mineral industry. The reason for this situation is the inability of the machinery and metal products industry to solve the institutional structure, capital and financing problems. In this respect, firms in this sector are highly affected by interest rates due to insufficient capital. Non-metallic mineral industry which is stronger in terms of capital, has less financial problems compared to machinery and metal products industry. We find that wholesale and consumer industry companies have a 48% less chance of profit than non-metallic mineral companies. Wholesale and consumer industry has a very dynamic structure in which there is intense competition. In this respect, it is a sector capable of generating strong cash. This sector is in direct contact with the last and a few previous consumers. Therefore, disposable income of last consumers is considered as the most important indicator of the sector. Therefore, inflation rates are vital for the sector because inflation means that the disposable income of the last consumers decreases. Apart from this, the prices of products increase as a result of inflation. This situation will be reflected in the sector as low demand and will cause a decrease in profitability of the company. Non-metalic mineral sector is less affected by inflation than wholesale and consumer sector. The high rate of inflation in 2015 can be considered as the reason for this difference between the sectors.

In addition, we determine that the companies operating in the technology industry are 68 % less likely to make a profit than those operating in the non-metallic mineral industry. The increase in population creates demand increase in technology sector. However, intense competition and macroeconomic conditions reduce the profitability of the sector. There is less competition in the non-metallic mineral sector compared to the technology sector. This situation can be considered as a reason for the profitability of the non-metallic mineral sector to be higher.

When the quantitative variables are analyzed, we see that nine financial ratios have a significant effect on the profit and loss status of firms. One of these variables is the cash ratio. As a result of the analysis, it was found that the increase in cash ratio increased the probability of profit. Cash rate; if there is no cash inflow to the firm, it is an indicator of the solvency of the company. Cash is an important force in trade and often helps reduce costs. Therefore, it is expected to have an impact on profitability. Financial risk ratios reveal the relationship between equity and liabilities. These ratios are an indicator of financial independence. The amount of assets financed by foreign sources and the amount of liabilities covered by equity are determined by these ratios. In a sense, the increase in these ratios means a decrease in financial freedom. So, this brings a number of additional costs and profitability decreases. It has been found that financial statements ratios excluding the debt equity ratio have a negative effect on the profitability of firms. Unlike other financial risk ratios, debt equity ratio has a positive effect on profitability. The debt to equity ratio is a financial, liquidity ratio that compares a company's total debt to total equity. The high debt equity ratio is a ratio that shows that the business is more entrepreneurial. Therefore, it can have a positive effect on profitability.

The relationship between sales and assets of firms is examined with operating ratios. Operating ratios are also referred to as efficiency ratios. According to the results of the analysis, the increase in working capital turnover ratio leads to a slight decrease in the probability of profit. Working capital turnover ratio indicates whether net working capital is sufficient. It is seen that the adequacy level of net working capital does not have much effect on profitability. However, the one-unit increase in asset turnover ratio increases the probability of firms to profit by 6.738 times. This rate can be considered as a high rate. Asset turnover ratio is a measure of a company's effectiveness. Efficient activities of companies increase their profit potential. Companies with high profit potential are more likely to make profits. For this reason, it is possible to say that the increase in asset turnover ratio will increase the probability of profit.

As a result of the analysis, we see that the most effective financial ratios on profitability of firms are profitability ratios. A one-unit increase in operating profitability ratio increases the probability of firms making profits by 52.638 times. Operating profit ratio is an indicator of the relationship between operating profit and net sales from operations. It is used to measure a company's performance. The increasing performance of the firm is expected to increase the profitability of the firm. Return on equity (ROE) is a measure of how well a company uses investments to generate earnings growth. According to the analysis results, a one-unit increase in return on equity ratio increases the profitability of firms by 55.822 times. As a result, the effective rate of meat on firms' profitability is ROE. This result shows that the high level of ROE demonstrates the impact of investments on profitability, but also reveals the importance of investments for firms.

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APPENDIX

Appendix 1. Sperman Correlation Analysis Results

		current	acidtest	cash	shtliab	lngliab	equrat	leverage	debtequrat	invturn	recturn
current	Ceof.	1	,947**	,727**	-,598**	-0,153	,562**	-,556**	-,555**	-0,173	-0,067
	Sig.		0	0	0	0,174	0	0	0	0,123	0,555
	N	81	81	81	81	81	81	81	81	81	81
acidtest	Ceof.	,947**	1	,740**	-,606**	-0,186	,586**	-,580**	-,579**	0,017	-0,179
	Sig.	0		0	0	0,096	0	0	0	0,879	0,11
	N	81	81	81	81	81	81	81	81	81	81
cash	Ceof.	,727**	,740**	1	-,435**	-0,044	,329**	-,321**	-,320**	0,042	,264*
	Sig.	0	0		0	0,695	0,003	0,003	0,004	0,711	0,017
	N	81	81	81	81	81	81	81	81	81	81
shtliab	Ceof.	-,598**	-,606**	-,435**	1	-0,11	-,791**	,786**	,786**	-0,003	0,061
	Sig.	0	0	0		0,327	0	0	0	0,976	0,591
	N	81	81	81	81	81	81	81	81	81	81
lngliab	Ceof.	-0,153	-0,186	-0,044	-0,11	1	-,419**	,424**	,425**	-,285*	0,091
	Sig.	0,174	0,096	0,695	0,327		0	0	0	0,01	0,419
	N	81	81	81	81	81	81	81	81	81	81
equrat	Ceof.	,562**	,586**	,329**	-,791**	-,419**	1	-,998**	-,998**	0,12	-0,192
	Sig.	0	0	0,003	0	0		0	0	0,288	0,086
	N	81	81	81	81	81	81	81	81	81	81
leverage	Ceof.	-,556**	-,580**	-,321**	,786**	,424**	-,998**	1	1,000**	-0,116	0,205
	Sig.	0	0	0,003	0	0	0		0	0,302	0,066
	N	81	81	81	81	81	81	81	81	81	81
debtequrat	Ceof.	-,555**	-,579**	-,320**	,786**	,425**	-,998**	1,000**	1	-0,116	0,205
	Sig.	0	0	0,004	0	0	0	0		0,302	0,067
	N	81	81	81	81	81	81	81	81	81	81
invturn	Ceof.	-0,173	0,017	0,042	-0,003	-,285*	0,12	-0,116	-0,116	1	0,071
	Sig.	0,123	0,879	0,711	0,976	0,01	0,288	0,302	0,302		0,532
	N	81	81	81	81	81	81	81	81	81	81

		current	acidtest	cash	shtliab	lngliab	equrat	leverage	debtequrat	invturn	recturn
recturn	Ceof.	-0,067	-0,179	,264*	0,061	0,091	-0,192	0,205	0,205	0,071	1
	Sig.	0,555	0,11	0,017	0,591	0,419	0,086	0,066	0,067	0,532	
	N	81	81	81	81	81	81	81	81	81	81
workcapturn	Ceof.	-,427**	-,471**	-,259*	,438**	-,253*	-0,214	,222*	,221*	,277*	,502**
	Sig.	0	0	0,02	0	0,023	0,056	0,047	0,048	0,012	0
	N	81	81	81	81	81	81	81	81	81	81
fixasturn	Ceof.	0,099	0,032	0,11	,560**	-,396**	-,337**	,349**	,348**	0,018	,270*
	Sig.	0,378	0,78	0,329	0	0	0,002	0,001	0,001	0,873	0,015
	N	81	81	81	81	81	81	81	81	81	81
equturn	Ceof.	-,273*	-,335**	-0,117	,756**	-0,079	-,666**	,683**	,683**	0,003	,405**
	Sig.	0,014	0,002	0,296	0	0,484	0	0	0	0,977	0
	N	81	81	81	81	81	81	81	81	81	81
asturn	Ceof.	-0,099	-0,167	-0,006	,624**	-,388**	-,353**	,364**	,363**	0,116	,400**
	Sig.	0,38	0,136	0,958	0	0	0,001	0,001	0,001	0,301	0
	N	81	81	81	81	81	81	81	81	81	81
opeprof	Ceof.	,593**	,573**	,395**	-,547**	0,067	,431**	-,439**	-,437**	-0,146	-0,126
	Sig.	0	0	0	0	0,551	0	0	0	0,194	0,264
	N	81	81	81	81	81	81	81	81	81	81
netprofmarg	Ceof.	,726**	,716**	,499**	-,673**	-0,061	,607**	-,603**	-,602**	-0,018	-0,104
	Sig.	0	0	0	0	0,589	0	0	0	0,872	0,356
	N	81	81	81	81	81	81	81	81	81	81
Roe	Ceof.	,387**	,356**	,251*	-0,185	-0,014	0,146	-0,159	-0,158	-0,007	-0,02
	Sig.	0	0,001	0,024	0,098	0,902	0,194	0,157	0,16	0,948	0,86
	N	81	81	81	81	81	81	81	81	81	81
Roa	Ceof.	,669**	,637**	,459**	-,456**	-0,161	,490**	-,487**	-,486**	-0,009	-0,024
	Sig.	0	0	0	0	0,152	0	0	0	0,937	0,829
	N	81	81	81	81	81	81	81	81	81	81
ecoprof	Ceof.	,509**	,449**	,352**	-,238*	-0,131	,279*	-,279*	-,278*	-0,062	0,042
	Sig.	0	0	0,001	0,032	0,245	0,012	0,012	0,012	0,582	0,713
	N	81	81	81	81	81	81	81	81	81	81

		workcapturn	fixasturn	equturn	asturn	opeprof	netprofmarg	Roe	Roa	ecoprof
current	Ceof.	-,427**	0,099	-,273*	-0,099	,593**	,726**	,387**	,669**	,509**
	Sig.	0	0,378	0,014	0,38	0	0	0	0	0
	N	81	81	81	81	81	81	81	81	81
acidtest	Ceof.	-,471**	0,032	-,335**	-0,167	,573**	,716**	,356**	,637**	,449**
	Sig.	0	0,78	0,002	0,136	0	0	0,001	0	0
	N	81	81	81	81	81	81	81	81	81
cash	Ceof.	-,259*	0,11	-0,117	-0,006	,395**	,499**	,251*	,459**	,352**
	Sig.	0,02	0,329	0,296	0,958	0	0	0,024	0	0,001
	N	81	81	81	81	81	81	81	81	81
shtliab	Ceof.	,438**	,560**	,756**	,624**	-,547**	-,673**	-0,185	-,456**	-,238*
	Sig.	0	0	0	0	0	0	0,098	0	0,032
	N	81	81	81	81	81	81	81	81	81
lngliab	Ceof.	-,253*	-,396**	-0,079	-,388**	0,067	-0,061	-0,014	-0,161	-0,131
	Sig.	0,023	0	0,484	0	0,551	0,589	0,902	0,152	0,245
	N	81	81	81	81	81	81	81	81	81
equrat	Ceof.	-0,214	-,337**	-,666**	-,353**	,431**	,607**	0,146	,490**	,279*
	Sig.	0,056	0,002	0	0,001	0	0	0,194	0	0,012
	N	81	81	81	81	81	81	81	81	81
leverage	Ceof.	,222*	,349**	,683**	,364**	-,439**	-,603**	-0,159	-,487**	-,279*
	Sig.	0,047	0,001	0	0,001	0	0	0,157	0	0,012
	N	81	81	81	81	81	81	81	81	81
debtequrat	Ceof.	,221*	,348**	,683**	,363**	-,437**	-,602**	-0,158	-,486**	-,278*
	Sig.	0,048	0,001	0	0,001	0	0	0,16	0	0,012
	N	81	81	81	81	81	81	81	81	81
invturn	Ceof.	,277*	0,018	0,003	0,116	-0,146	-0,018	-0,007	-0,009	-0,062
	Sig.	0,012	0,873	0,977	0,301	0,194	0,872	0,948	0,937	0,582
	N	81	81	81	81	81	81	81	81	81
recturn	Ceof.	,502**	,270*	,405**	,400**	-0,126	-0,104	-0,02	-0,024	0,042
	Sig.	0	0,015	0	0	0,264	0,356	0,86	0,829	0,713
	N	81	81	81	81	81	81	81	81	81

		workcapturn	fixasturn	equturn	asturn	opeprof	netprofmarg	Roe	Roa	ecoprof
workcapturn	Ceof.	1	,466**	,625**	,729**	-,359**	-,386**	-0,062	-0,09	0,082
	Sig.		0	0	0	0,001	0	0,58	0,422	0,467
	N	81	81	81	81	81	81	81	81	81
fixasturn	Ceof.	,466**	1	,830**	,915**	-,252*	-0,193	0,132	0,126	,242*
	Sig.	0		0	0	0,023	0,084	0,241	0,264	0,03
	N	81	81	81	81	81	81	81	81	81
equturn	Ceof.	,625**	,830**	1	,884**	-,384**	-,410**	-0,051	-0,116	0,075
	Sig.	0	0		0	0	0	0,653	0,303	0,508
	N	81	81	81	81	81	81	81	81	81
asturn	Ceof.	,729**	,915**	,884**	1	-,307**	-,290**	0,068	0,058	,231*
	Sig.	0	0	0		0,005	0,009	0,545	0,606	0,038
	N	81	81	81	81	81	81	81	81	81
opeprof	Ceof.	-,359**	-,252*	-,384**	-,307**	1	,869**	,630**	,777**	,778**
	Sig.	0,001	0,023	0	0,005		0	0	0	0
	N	81	81	81	81	81	81	81	81	81
netprofmarg	Ceof.	-,386**	-0,193	-,410**	-,290**	,869**	1	,612**	,863**	,664**
	Sig.	0	0,084	0	0,009	0		0	0	0
	N	81	81	81	81	81	81	81	81	81
Roe	Ceof.	-0,062	0,132	-0,051	0,068	,630**	,612**	1	,813**	,769**
	Sig.	0,58	0,241	0,653	0,545	0	0		0	0
	N	81	81	81	81	81	81	81	81	81
Roa	Ceof.	-0,09	0,126	-0,116	0,058	,777**	,863**	,813**	1	,875**
	Sig.	0,422	0,264	0,303	0,606	0	0	0		0
	N	81	81	81	81	81	81	81	81	81
ecoprof	Ceof.	0,082	,242*	0,075	,231*	,778**	,664**	,769**	,875**	1
	Sig.	0,467	0,03	0,508	0,038	0	0	0	0	
	N	81	81	81	81	81	81	81	81	81