

Regional Differences and Financial Ratios: A Comparative Approach on Companies of ISE City Indexes

Ali DERAN

Niğde University, Department of Business,
Niğde, Turkey. Email: alideran@gmail.com

Omer ISKENDEROGU

Niğde University, Department of Business,
Niğde, Turkey. Email: oiskenderoglu@nigde.edu.tr

Incilay ERDURU

Niğde University, Department of International Trade and Business,
Niğde, Turkey. Email: savasincilay@gmail.com

ABSTRACT: This study aims to compare the regional differences by the financial ratios of 157 companies listed on Istanbul Stock Exchange (ISE), Turkey. In this respect, data of 157 companies are researched on the city indexes of Istanbul, Izmir, Kocaeli and Bursa. 16 ratios showing liquidity, financial structure, turnover, profitability and stock market performance of the companies is calculated in the analysis for 2011 annually. Independent Sample t test and Mann-Whitney U Test are employed to reveal any significant difference in the companies operating in different regions. The result of the study varies on the compared regions. The differences also figure out that financial management differs among regions.

Keywords: financial ratio; regional difference; independent sample t test; mann-whitney u test

JEL Classifications: B26; L25; M41

1. Introduction

The traditional literature of financial statement analysis often emphasizes the significance of financial ratios. As an analysis technique, financial ratio analysis is a key methodology to evaluate the performance and financial condition of a firm. Starting with the calculation of financial ratios, this analysis technique depends on comparisons. Comparing the financial ratios of companies is usually done according to size, age, sector and ownership structure. Nevertheless, financial ratio analysis is not limited with the performance or financial condition.

There is a wide range of literature and research published on financial ratios. The early studies on financial ratios were trying to reveal the bankruptcy or failure expectations. Beaver (1966; 1968a; 1968b), Altman (1968; 1973), Altman and Lorriss (1976), Altman and McGough (1974), Altman, Haldeman, and Narayanan (1977), Deakin (1972), Libby (1975), Blum (1974), Edmister (1972), Wilcox (1973), Moyer (1977), Lev (1971), Ohlson (1980) are the first studies that evaluate the bankruptcy by financial ratio analysis. Besides Bhagat and Black (1996), Jensen (1993), Gilson and Roe (1993, 1994) are the studies with the board size – firm size and firm value relation by financial ratios. Another perspective of financial ratios can be defined by comparing the financial ratios of small and big firms. The differences between financial ratios of small and big firms are studied in Storey, Keasey, Watson, and Wynarczyk (1987), Chung (1993), Titman and Wessels (1988), Osteryoung et. al (1992), Rajan and Zingales (1995). Another point of view on financial ratios reveals the ownership structure and firm value. This relation is investigated in Morck, Shleifer, and Vishny (1988), McConnell and Servaes (1990), and Holderness, Kroszner, and Sheehan (1999). Moreover, promising point of view on financial ratios can be defined as decomposition of Economic Value Added (EVA). This methodology combines market and accounting data to reveal the financial performance of firms. This point of view is evaluated on Zmeškal and Dluhošová (2008). Another unique perspective can be

seen on Hanousek et. al. (2012), which studied with a very specific dataset to define firm and market characteristics, and ownership structures with respect to efficiency.

Financial success is also a basis for financial ratio analyzing; which is studied by İçerli and Akkaya (2006) that focuses on the differences between financially successful and unsuccessful firms.

While earlier studies have provided empirical evidence that the structure of financial ratio patterns differs between retail and manufacturing firms. Johnson (1979), Gombola and Ketz (1983) are the studies that concentrate on the differences between retail and manufacturing firms. The sharp difference between retail and manufacturing firms also gives an idea about the differences between sectors. Keskin Benli (2005) study reveals the differences between different sector firms' financial ratios. While Ekşi and Akçi (2009) focus on sector, sub-sector differences of financial ratios, Dumanoğlu and Ergül (2010, 2012) is oriented on technology sector firms' financial ratios. The effects of financial crisis are a considerable field of research for financial ratio analysis which is investigated by Uyar and Okumuş (2010) for the impact of the 2008 global financial crisis on companies. Not only the companies but also banks are analyzed and compared by financial ratios. Samad and Hassan (1999), Sree Rama Murthy (2004), Ünsal and Duman (2005), Parlakkaya and Çürük (2011), Najjar (2013) are studies that concentrate on bank financial ratio differences among several factors. In addition Poghosyan and Cihak (2009) study reveals the relationship between financial distress and early warning systems with a unique dataset for EU banks. Furthermore the promising perspective on Cihák and Schaeck (2010) study combines competition and shareholders rights with the capital ratios of 2.600 Banks of 10 European countries. It is easy to increase the number of studies depending on the field of research.

There is a growing body of financial ratio analysis with many topics. However, there is a very limited study found regarding the comparison of financial ratios of companies in respect to region or city. Cinca et al. (2005) proved that the country where the firm is located has an impact on the financial ratios of firms. With the limited study, the question whether the region has an influence on the firms' financial ratios is a considerable field of research which is also examined in this study. The aim of this study is to compare financial ratios of firms which are operating in different regions. Regional differences are determined by İstanbul Stock Exchange (ISE) city indexes. Independent Sample T Test and Mann-Whitney U Test are employed to reveal any significant differences on financial ratios among regions.

In this respect, the remainder of this study is as follows. In section II, the city indexes of ISE are presented. In section III, data and methodology are revealed. While Section IV exhibits the empirical findings, last section presents the conclusion.

2. City Index

Different indexes are calculated on social, demographic, economic and financial matters; where city indexes are enabled to reflect the developments about a subject that is wanted to be sought to an area or city. In Turkey, city indexes of companies in ISE have been calculated since February 16, 2009 for the purpose of measuring and comparing the price and yield performance of the companies which are quoted in ISE, and whose main production or operation center is in the same city. ISE made it clear about which city index the companies whose production/service units and management units are in different regions will be included while calculating the city index by four basic criteria;

- The city where at least 50% production of the producer firm is recognized,
- The city where at least 50% of the activity earnings of service firm is earned,
- The city where the business headquarter is located, if no city exists, where at least 50% of the production/activity income is recognized/earned,
- The city where the business is located for the companies and holdings that operate in the sectors of communication and construction

Within the frame of these criteria, the city indexes are calculated for the cities where at least five companies are located. Recently the city indexes are calculated for Adana (XSADA), Ankara (XSANK), Antalya (XSANT), Bursa (XSBUR), İstanbul (XSIST), İzmir (XSIZM), Kayseri (XSKAY), Kocaeli (XSKOC), Tekirdağ (XSTKR), Balıkesir (XSBAL) and Denizli (XSDNZ). Companies which are traded at ISE can be included in the scope of city indexes, whereas banks, insurance companies, financial leasing companies, factoring companies, investment partnerships, real

estate investment trusts, venture capital investment trusts, intermediary firms and companies operating in retail trade sector cannot be included in the related indexes.

3. Data and Methodology

Utilizing the financial ratios of the companies operating in different cities at ISE in 2011, the ISE city indexes are used to determine regional differences. Comparison of financial ratios as so financial performances of the city indexes whose scopes are tried to be set above is highly substantial for the decisions of investors. The comparison of financial performances of the firms which are included in the city indexes of İstanbul, İzmir, Bursa and Kocaeli, where the most companies are registered in ISE in 2011 is intended in this study. Numbers of companies used for the calculation of ISE city indexes are presented in Table 1.

Table 1. City Indexes and Numbers of Companies in the Indexes

City Indexes	Number of Companies	City Indexes	Number of Companies
İstanbul*	94	Adana	8
İzmir*	25	Antalya	7
Bursa*	19	Kayseri	6
Kocaeli*	19	Balıkesir	5
Ankara	13	Tekirdağ	5

* Included in this study.

In this study, the city indexes of İstanbul, İzmir, Bursa and Kocaeli are included in the analysis by taking the number of companies in Table 1 into account. The firms that take place in the city indexes which are included in the sample are given in Table 2 by ISE codes.

Table 2. City Indexes Included in the Sample and Codes of Companies in City Indexes

İSTANBUL					İZMİR		KOCAELİ	BURSA
ACIBD	BRYAT	ENKAI	IHLAS	PARSN	ALKA	PINSU	ASLAN	BFREN
ADEL	CCOLA	ERICO	IHYAY	PKART	ALYAG	PNSUT	ASUZU	BISAS
AEFES	CEYLN	ESCOM	INDES	PTOFS	AVOD	TBORG	BRISA	BUCIM
AFMAS	CLEBI	FENER	INTEM	RANLO	AYCES	TIRE	CELHA	BURCE
AKCNS	DAGI	GLRYH	ISYHO	RYSAS	BAKAB	TUKAS	DYOBY	BURVA
AKENR	DERIM	GLYHO	IZOCM	SAHOL	BTCIM	VKING	EMNIS	CEMTS
AKSEN	DESA	GNTRA	KCHOL	SELEC	CMBTN		FENIS	COMDO
ALARK	DESPC	GOLDS	KRONT	SERVE	CMEN		FMIZP	FRIGO
ALCAR	DGATE	GOODY	LATEK	SISE	EGEEN		FROTO	KARSN
ANELE	DGZTE	GSDHO	LINK	TARAF	EGGUB		HEKTS	KERTV
ANELT	DOAS	GSRAY	MANGO	TAVHL	EGPRO		KARTN	MERKO
ARCLK	DOBUR	GUBRF	MATAS	TCELL	EGSER		KORDS	PENDG
ARENA	DOHOL	HDHOL	METAL	THYAO	EKIZ		LOGO	PRKAB
ARMDA	DURDO	HURGZ	METRO	TKFEN	IZMDC		MAKTK	SANKO
AVTUR	DYHOL	HZNDR	MUTLU	TRCAS	KAPLM		MRSHL	SNPAM
AYGAZ	ECILC	IDAS	NETAS	TRKCM	KATMR		NUHCM	SONME
BJKAS	ECZYT	IEYHO	NTHOL	TRNSK	KOZAL		PIMAS	TATKS
BROVA	EDIP	IHEVA	NTTUR	YAZIC	PETKM		SARKY	TOASO
BRSAN	EGCYH	IHGZT	OLMKS		PETUN		TUPRS	ZOREN

Source: www.borsaistanbul.com

Within the framework of financial analysis, calculated financial ratios to compare companies are separated into five parts: Liquidity Ratios, Financial Structure Ratios, Turnover Ratios, Profitability Ratios, Stock Market Performance Ratios which are also presented in Table 3.

Table 3. Calculated Financial Ratios to Compare Firms in Different Regions

Ratio Group	Ratio Name	Calculation
LIQUIDITY RATIOS	Current Ratio	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$
	Acid-Test (Liquidity) Ratio	$\frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}}$
	Cash Ratio	$\frac{\text{Cash} + \text{Cash Equivalents}}{\text{Current Liabilities}}$
FINANCIAL STRUCTURE RATIOS	Leverage Ratio	$\frac{\text{Total Liabilities}}{\text{Total Assets}}$
	Short Term Financial Liabilities/Total Liabilities Ratio	$\frac{\text{Short Term Financial Liabilities}}{\text{Total Liabilities}}$
	Long Term Financial Liabilities/Total Liabilities Ratio	$\frac{\text{Long Term Financial Liabilities}}{\text{Total Liabilities}}$
TURNOVER RATIOS	Asset Turnover Ratio	$\frac{\text{Net Sales}}{\text{Average Total Assets}}$
	Receivables Turnover Ratio	$\frac{\text{Net Sales}}{\text{Average Total Receivables}}$
	Inventory Turnover Ratio	$\frac{\text{Cost of Sales}}{\text{Average Inventory}}$
	Equity Turnover Ratio	$\frac{\text{Net Sales}}{\text{Average Equity}}$
	Working Capital Turnover Ratio	$\frac{\text{Net Sales}}{\text{Average Working Capital}}$
PROFITABILITY RATIOS	Return on Assets Ratio	$\frac{\text{Net Income}}{\text{Total Assets}}$
	Net Profit Margin Ratio	$\frac{\text{Net Profit}}{\text{Revenue}}$
	Return on Equity Ratio	$\frac{\text{Net Income}}{\text{Total Equity}}$
STOCK MARKET PERFORMANCE RATIOS	Price Earnings Ratio	$\frac{\text{Market Value Per Share}}{\text{Earnings Per Share}}$
	Profit Per Share Ratio	$\frac{\text{Net Income}}{\text{Share Quantity}}$
	Price to Book Ratio	$\frac{\text{Total Stock Price}}{\text{Total Equity}}$

Totally 16 ratios are calculated to compare the companies in different regions. The data of the companies are calculated by balance sheets and income statements which are obtained from Public Disclosure Platform” (www.kap.gov.tr). The city indexes are subjected to dual matching, and the following hypotheses are set for each ratio:

H₀: There is no significant difference between the averages of financial ratios of the companies that are included in the city indexes.

H₁: There is a significant difference between the averages of financial ratios of the companies that are included in the city indexes.

Utilizing both “Independent Sample t Test”, which is a parametric test, and “Mann-Whitney U Test”, which is a nonparametric test, to test whether each ratio causes any difference between two city indexes is essential for the reliability of the results. In other words, utilizing more than one method in the testing of the hypothesis reduces the probability of acceptance or refusal of the hypothesis by

mistake. Therefore, low numbers of the companies taking place in the city indexes of Bursa, İzmir and Kocaeli makes the usage of nonparametric tests together with parametric tests necessary.

4. Empirical Results

While Descriptive statistical parameters of the companies within the selected regions can be seen on Appendix 1. Independent samples T test (I-S t) and Mann Whitney U test (M-W U) results are presented in Appendix 2 for different ratio and region comparisons.

The first and the second columns of Appendix 2 indicate the financial ratio group and financial ratio itself. Third column indicates test type, where I-S t represents Independent Samples t test and M-W U represents Mann Whitney U test. The test results can be discussed for different ratio groups. In the comprehension of the differences it will be very useful to exhibit the descriptive statistical parameters of the ratios of the companies on various regions to understand whether the statistically significant difference occurs on a positive or negative way.

Liquidity Ratios: When Appendix 2 is reviewed, there is no statistically significant difference between the regions İstanbul-Bursa, İstanbul-Kocaeli, İzmir-Bursa, İzmir-Kocaeli and Bursa-Kocaeli in regard to current ratio, acid-test ratio and cash ratio. According to the results of the analysis, it is observed that the only significant difference is between İstanbul-İzmir in regard to acid-test ratio and cash ratio. If Appendix 1 is reviewed to find out the direction of this difference with respect to acid test ratio and cash ratio, it is observed that the averages of acid test ratio and cash ratio of the firms operating in the city of İstanbul is higher than the averages of acid test ratio and cash ratio of the companies operating in the city of İzmir. In other words, the firms operating in İstanbul operates with more liquidity.

Financial Structure Ratios: There is no statistically significant difference between any regions on the calculated financial structure ratios. When the average values of the ratios of financial structure used in the comparison of the performances of the city indexes are reviewed, numeral closeness of these numbers also supports the fact that the companies are operating with similar financial structures.

Turnover Ratios: When the regions are reviewed in terms of turnover ratios, there is no statistically significant difference between the regions in respect to asset turnover, equity turnover and working capital turnover. On the other hand, it is found out that there is a statistically significant difference between Bursa-Kocaeli in terms of receivables turnover, and İstanbul-Bursa and İstanbul-Kocaeli in terms of inventory turnover ratios.

Profitability Ratios: If the regions are reviewed in terms of profitability ratios, it is seen that there is a statistically significant difference between the regions İstanbul-Bursa, İzmir-Bursa and Bursa-Kocaeli in terms of return on assets and net profit margin ratios. Nevertheless, there is no significant difference between regions in terms of return on equity ratios. If Appendix 1 is reviewed to find out the direction of this difference between the average of the city indexes in respect to return on assets and net profit margin ratios of the city indexes of Kocaeli, İstanbul and İzmir is higher than the average of the city index of Bursa. In other words, the companies that are included in the city indexes of Kocaeli, İstanbul and İzmir use their assets more efficiently and make their sales more profitably in comparison with the companies that are included in the city index of Bursa.

Stock Market Performance Ratios: Appendix 2 represents that there is a statistically significant difference between the regions İstanbul-Bursa and Bursa-Kocaeli in regard to profit per share ratios, and between the regions İstanbul-Bursa in terms of price to book ratios. On the other hand, it is observed that there is no significant difference between the regions when they are reviewed in respect to price earnings ratios.

5. Conclusion

Along with the globalization and technological developments, the boundaries among the capital markets have been disappearing as in the other markets, and the international flow of information has been intensifying and accelerating. Thus, investors have to make researches at more micro level to be able to make correct decisions. City indexes are used for the comparison of city-based performances of the investors, and they provide the investors with great advantage and convenience to take correct investment decisions. Therefore, the performances of the city indexes of İstanbul, İzmir, Bursa and Kocaeli, which are traded at ISE were tried to be measured by ratio analysis. In the study, “Independent Sample T Test” and “Mann-Whitney U Test” were used to determine whether there is

any statistically significant difference in terms of city indexes such as liquidity, financial structure, operational effectiveness, profitability and stock market performance.

When the results of the analysis were reviewed it was found out that there was a statistically significant difference only between the enterprises that operate in İstanbul and İzmir in regard with acid test ratio and cash ratio, and the above mentioned ratio averages of the enterprises operating in the province of İstanbul are higher than the ones that operate in the province of İzmir. In other words, the enterprises operating in İstanbul liquidate their assets faster than the ones that operate in the city of İzmir. Besides, it is observed that the ability to pay short-term debts and net operating capital of the enterprises which are included in the city index of İstanbul are better than the enterprises that are included in the city index of İzmir.

When the results of the analysis of the ratios of financial structure were reviewed, it was observed that there was no statistically significant difference between the city indexes, in other words, equity capital and ability of paying long-term debts of the enterprises that are included in the city indexes were similar. Within the scope of the results of the analysis, the difference between the city indexes with respect to accounts receivables turnover arises from the ability of collecting debts of the enterprises that are included in the city index of Bursa being higher than the enterprises which are included in the city index of Kocaeli. The difference at the rate of stock turnover rate arises from the fact that the enterprises which are included in the city index of İstanbul liquidate their stock faster than the ones that are included in the city indexes of Bursa and Kocaeli.

When the city indexes are reviewed in terms of return on assets and net profit margin, it was found out that there was a statistically significant difference between İstanbul-Bursa, İzmir-Bursa and Bursa-Kocaeli. When the average values of these ratios are reviewed to find out the direction of this difference, it is seen that the average values of the city indexes of Kocaeli, İstanbul and İzmir in respect to return on assets and net profit margin ratios is higher than the average of the city index of Bursa. In other words, the enterprises that are included in the city indexes of Kocaeli, İstanbul and İzmir use their assets more efficiently and make their sales more profitably in comparison with the enterprises that are included in the city index of Bursa. The fact that there is no significant difference between the city indexes in terms of profitability of equity capital arise from the averages of ratio being close to each other.

While it is observed that there is no statistically significant difference between the city indexes in terms of price earnings ratio, there exists a significant difference between the city indexes of İstanbul-Bursa and Bursa-Kocaeli in regard to profit per share, and between the enterprises which are included in the city index of İstanbul-Bursa in terms of MV/BV. The difference between the city indexes in terms of profit per share arises from the fact that the average of the ratio of profit per share of the enterprises that are included in the city indexes of Kocaeli and İstanbul is higher than the enterprises that are included in the city index of Bursa. In other words, profit per share of the enterprises that are included in the city indexes of Kocaeli and İstanbul is considerably higher than the enterprises that are included in the city index of Bursa. The difference between the city indexes in regard to the ratio of MV/BV arises from the fact that the average of the city index of Bursa being higher than the city index of İstanbul. In other words the market value of stock shares of the enterprises which are included in the city index of Bursa is higher than the enterprises that are included in the city index of İstanbul.

References

- Altman, E.I. (1968), *Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy*, Journal of Finance, 23(4), 589-610.
- Altman, E.I. (1973), *Predicting Railroad Bankruptcies in America*, Bell Journal of Economics and Management Science, 4(1), 184-212.
- Altman, E.I., McGough, T.P. (1974), *Evaluation of a Company as a Going Concern*, Journal of Accountancy, 138(6), 50-58.
- Altman, E.I., Loris, B. (1976), *A Financial Early Warning System for Over the Counter Broker Dealers*, Journal of Finance, 31(4), 1201-1218.
- Altman, E.I., Haldeman, R.G., Narayanan, P. (1977), *Zeta Analysis: A New Model to Identify Bankruptcy Risk of Corporations*, Journal of Banking and Finance, 1(1), 29-54.
- Beaver, W.H. (1966), *Financial Ratios as Predictors of Failure*, Journal of Accounting Research, 4(3), 71-112.

- Beaver, W.H. (1968a), *Alternative Accounting Measures as Predictors of Failure*, Accounting Review, 43(1), 113-123.
- Beaver, W.H. (1968b), *Market Prices, Financial Ratios and the Prediction of Failure*, Journal of Accounting Research, 6(2), 179-193.
- Bhagat, S., Black, B. (1996), *Do Independent Directors Matter?*, American Law and Economics Association Meeting, Chicago.
- Blum, M. (1974), *Failing Company Discriminant Analysis*, Journal of Accounting Research, 12(1), 1-26.
- Chung, K.H. (1993), *Asset Characteristics and Corporate Debt Policy: An Empirical Investigation*, Journal of Business Finance and Accounting, 20(1), 83-98.
- Deakin, E.B. (1972), *A Discriminant Analysis of Predictors of Business Failure*, Journal of Accounting Research, 10(1), 167-180.
- Dumanoğlu, S., Ergül N. (2010), *Measurement of Financial Performance of The Technological Companies Trading In ISE*, The Journal of Accounting and Finance, 48, 101-111.
- Dumanoğlu, S., Ergül, N. (2010), *The Assessment with the TOPSIS Method of Financial Performance of Listed on the ISE Information Sector*. Exchequer and Finance Contribution, 26(95), 59-78.
- Edmister, R.O. (1972), *An Empirical Test of Financial Ratio Analysis for Small Business Failure Prediction*, Journal of Financial and Quantitative Analysis, 7(2), 1477-1494.
- Ekşi, İH., Akçi, Y. (2009), *The Effects of Sectoral Differences on Financial Rates: An Empirical Study on İMKB Manufacturing Industry*, Suleyman Demirel University, The Journal of Faculty of Economics ve Administrative Sciences, 14(1), 115-126.
- Gilson, R., Roe, M. (1993), *Understanding the Japanese Keiretsu: Overlaps Between Corporate Governance and Industrial Organization*, Yale Law Journal, 102, 871-906.
- Gombola, M., Ketz E. (1983), *A Note on Cash Flow and Classification Patterns of Financial Ratios*. The Accounting Review, 58(1), 105-114.
- Holderness, C.G., Randall, S.K., Dennis, P.S. (1999), *Were the Good Old Days That Good? Changes in Managerial Stock Ownership since the Great Depression*, Journal of Finance, 54, 435-690.
- Hanousek, J., Kočenda, E., Shamshur, A. (2012), *Corporate Efficiency in Europe*, <http://home.cerge-ei.cz/kocenda/papers/CorpEffEurope.pdf>
- İçerli, MY., Akkaya, G.C. (2006), *The Detection of Differences Aid Financial Ratios Between the Financial Perspective Successful Business with Unsuccessful Business*, Atatürk University Journal of Economics and Administrative Sciences, 20(1), 413-421.
- Jensen, M. (1993), *The Modern Industrial Revolution, Exit and the Failure of Internal Control Systems*, Journal of Finance, 48(3), 831-880.
- Johnson, W.B. (1979), *The Cross Sectional Stability of Financial Ratio Patterns*, Journal of Financial and Quantitative Analysis, 14(5), 1035-1048.
- Keskin Benli, Y. (2005), *Sectoral Differences Impact on Rates: An Empirical Study*, Gazi University Journal of the Faculty of Industrial Arts Education, 16, 14-30.
- Lev, B. (1971), *Financial Failure and Informational Decomposition Measures*. Accounting in Perspective: Contributions to Accounting Thought by Other Disciplines, South-Western Publishing Company, Cincinnati, Ohio.
- Libby, R. (1975), *Accounting Ratios and the Prediction of Failure: Some Behavioral Evidence*, Journal of Accounting Research, 13(1), 150-162.
- McConnell, J.L., Servaes, H. (1990), *Additional Evidence on Equity Ownership and Corporate Value*, Journal of Financial Economics, 27, 595-612.
- Morck, R., Andrei, S., Vishny, R. (1988), *Management Ownership and Market Valuation: An Empirical Analysis*, Journal of Financial Economics, 20, 293-316.
- Moyer, R.C. (1977), *Forecasting Financial Failure: A Re-Examination*, Financial Management, 6(1), 11-18.
- Najjar, N.C. (2013), *Can Financial Ratios Reliably Measure the Performance of Banks in Bahrain?*, International Journal of Economics and Finance, 5(3), 152 – 163.
- Ohlson, J.A. (1980), *Financial Ratios and the Probabilistic Prediction of Bankruptcy*, Journal of Accounting Research, 18(1), 109-138.
- Osteryoung, J., Constand, R.L., Nast, D. (1992), *Financial Ratios in Large Public and Small Private Firms*, Journal of Small Business Management, 30(3), 35-46.

- Parlakkaya, R., Çürük, S.A. (2011), *Using Financial Ratios to Distinguish between Participation and Conventional Banks: A Case Study of Turkey*, *Ege Academic Review*, 11(3), 397-405.
- Poghosyan, T., Čihák, M. (2009), *Distress in European Banks: An Analysis Based on a New Data Set*, *Conference on the Financial Crisis*, 7-8 May, Barcelona.
- Rajan, R.G., Zingales, L. (1995), *What Do We Know About Capital Structure? Some Evidence from International Data*, *Journal of Finance*, 50(5), 1421-1460.
- Roe, M. (1994), *Strong Managers, Weak Owners: The Political Roots of American Corporate Finance*. Princeton University Press, Princeton, NJ.
- Samad, A., Hassan, M.K. (1999), *The Performance of Malaysian Islamic Bank During 1984-1997: an Exploratory Study*, *International Journal of Islamic Financial Services*, 1(3), 1-14.
- Serrano Cinca, C., Mar Molinero, C., Gallizo, J.L. (2005), *Country and Size Effects in Financial Ratios: A European Perspective*, *Global Finance Journal*, 16, 26-47.
- Schaeck, K., Čihák, M. (2010), *Competition, Efficiency and Soundness in Banking: An Industrial Organization Perspective*, Discussion Paper 2010-68S, Tilburg University, Center for Economic Research. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1015238
- Sree Rama Murthy, Y. (2004), *Financial Ratios of Major Commercial Banks*. Available at: <http://dx.doi.org/10.2139/ssrn.1015238>
- Storey, D., Keasey, K., Watson, R., Wynarczyk, P. (1987), *The Performance of Small Firms; Profits, Jobs and Failures*. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1496201
- Titman, S., Wessels, R. (1988), *The Determinants of Capital Structure Choice*, *Journal of Finance*, 43(1), 1-19.
- Uyar, A., Okumuş, E. (2010), *Effect of Global Economic Crisis on Financial Ratios of Listed Manufacturing Companies in the ISE*, *The Journal of Accounting and Finance*, 46, 146-156.
- Ünsal, A., Duman, S. (2005), *Performance of Banks in Turkey Comparative Analysis with Principal Component Approach*, VII. National Econometrics and Statistics Symposium, May, 1-20.
- Wilcox, J.W. (1973), *A Prediction of Business Failure Using Accounting Data*, *Journal of Accounting Research*, 11(3), 163-180.
- Zmeškal, Z., Dluhošová, D. (2008), *Company Financial Performance Prediction at Risk by Simulation Methodology*, 4. Mezinárodní Konference Řízení a Modelování Finančních Rizik, 11.-12. Zář, Ostrava.

Appendix 1. Descriptive Statistics

Ratio Group	Ratio Name	Descriptive Stat.	İstanbul	İzmir	Bursa	Kocaeli
LIQUIDITY RATIOS	Current Ratio	Mean	2,156	1,610	1,399	1,958
		Minimum	0,089	0,180	0,152	0,341
		Maximum	8,897	2,871	3,106	3,455
		Std.Deviation	2,318	0,716	0,861	0,846
	Acid-Test (Liquidity) Ratio	Mean	1,559	1,063	1,179	1,354
		Minimum	0,002	0,126	0,065	0,231
		Maximum	8,568	2,530	2,186	3,825
		Std.Deviation	1,629	0,612	0,687	0,891
	Cash Ratio	Mean	0,747	0,360	0,467	0,890
		Minimum	0,001	0,001	0,001	0,003
		Maximum	7,338	3,170	6,082	2,526
		Std.Deviation	1,252	0,697	1,375	0,699
FINANCIAL STRUCTURE RATIOS	Leverage Ratio	Mean	46,210	42,020	55,280	43,170
		Minimum	0,685	16,949	1,719	6,298
		Maximum	89,116	56,408	103,555	84,154
		Std.Deviation	24,355	14,326	30,180	23,154
	Short Term Financial Debt/Total Debt Ratio	Mean	19,380	20,400	21,478	24,440
		Maximum	73,012	57,955	68,591	76,453

		Std.Deviation	16,980	17,819	19,354	20,349
	Long Term Financial Debt/Total Debt Ratio	Mean	25,06	22,89	25,374	21,89
		Minimum	0,148	3,669	0,449	0,610
		Maximum	90,573	47,700	67,994	57,706
		Std.Deviation	23,253	12,605	24,109	14,3168
TURNOVER RATIOS	Asset Turnover Ratio	Mean	1,002	0,98	0,961	1,067
		Minimum	0,004	0,161	0,033	0,330
		Maximum	128,908	2,286	1,936	2,294
		Std.Deviation	20,693	0,432	0,593	0,556
	Receivables Turnover Ratio	Mean	6,364	5,612	7,843	4,337
		Minimum	1,283	1,635	2,904	1,290
		Maximum	18,932	13,797	18,521	8,058
		Std.Deviation	4,112	3,432	4,797	1,999
	Inventory Turnover Ratio	Mean	17,280	11,520	7,493	9,068
		Minimum	1,207	1,456	1,220	2,512
		Maximum	80,876	66,529	22,664	19,729
		Std.Deviation	19,740	14,900	6,272	5,352
	Equity Turnover Ratio	Mean	2,520	2,156	2,854	2,435
		Minimum	0,096	0,194	0,033	0,662
		Maximum	13,228	10,367	7,826	6,778
		Std.Deviation	2,777	2,028	1,958	1,761
Working Capital Turnover Ratio	Mean	5,194	4,296	4,244	4,231	
	Minimum	-9,678	-4,239	-6,324	-9,366	
	Maximum	51,213	14,746	9,724	19,653	
	Std.Deviation	10,853	5,140	4,632	6,362	
PROFITABILITY RATIOS	Return on Assets Ratio	Mean	5,009	5,540	1,529	5,294
		Minimum	-8,285	-7,981	-9,887	-1,381
		Maximum	17,701	13,312	7,271	15,130
		Std.Deviation	5,432	5,388	4,732	4,533
	Margin of Net Profit Ratio	Mean	5,070	4,513	0,189	5,346
		Minimum	-6,991	-4,512	-8,111	-2,029
		Maximum	21,293	12,856	6,310	21,184
		Std.Deviation	5,849	5,044	4,492	6,128
	Return on Equity Ratio	Mean	8,806	6,213	3,532	8,207
		Minimum	-8,108	-5,317	-11,473	-2,817
		Maximum	27,082	16,413	22,523	24,559
		Std.Deviation	8,846	6,578	10,471	7,489
STOCK MARKET PERFORMANCE RATIOS	Price Earnings Ratio	Mean	17,450	16,474	24,760	21,648
		Minimum	0,000	0,000	10,697	7,972
		Maximum	73,048	34,966	42,763	36,292
		Std.Deviation	16,638	10,515	11,348	9,084
	Profit Per Share Ratio	Mean	0,364	0,192	0,103	0,402
		Minimum	-3,002	-2,474	-3,434	-0,705
		Maximum	3,875	1,545	0,768	2,960
		Std.Deviation	0,848	0,746	0,865	0,824
	Price to Book Ratio	Mean	1,607	1,995	2,709	2,277
		Minimum	0,000	0,000	1,099	0,719
		Maximum	6,333	6,519	5,069	7,852
		Std.Deviation	1,215	1,414	1,286	1,748

Appendix 2. Results of Two Independent Samples t Test and Mann Whitney U Tests

RATIOS		Test Type	İstanbul İzmir	İstanbul Bursa	İstanbul Kocaeli	İzmir Bursa	İzmir Kocaeli	Bursa Kocaeli	
LIQUIDITY RATIOS	Current Ratio	I-S t	0,067	0,059	0,586	0,373	0,401	0,137	
		M-W U	0,729	0,172	0,689	0,391	0,588	0,187	
	Acid-Test (Liquidity) Ratio	I-S t	0,033*	0,458	0,453	0,819	0,269	0,738	
		M-W U	0,046*	0,061	0,601	0,279	0,247	0,063	
	Cash Ratio	I-S t	0,048*	0,442	0,769	0,776	0,287	0,463	
		M-W U	0,047*	0,057	0,713	0,605	0,281	0,171	
FINANCIAL STRUCTURE RATIOS	Leverage Ratio	I-S t	0,35	0,241	0,612	0,107	0,858	0,181	
		M-W U	0,444	0,187	0,604	0,093	0,806	0,176	
	Short Term Financial Debt/Total Debt Ratio	I-S t	0,799	0,693	0,336	0,861	0,506	0,670	
		M-W U	0,739	0,994	0,256	0,850	0,722	0,448	
	Long Term Financial Debt/Total Debt Ratio	I-S t	0,520	0,96	0,428	0,687	0,810	0,592	
		M-W U	0,855	0,873	0,892	0,594	0,627	0,872	
TURNOVER RATIOS	Asset Turnover Ratio	I-S t	0,866	0,807	0,685	0,907	0,580	0,576	
		M-W U	0,205	0,523	0,198	0,972	0,840	0,759	
	Receivables Turnover Ratio	I-S t	0,396	0,225	0,063	0,104	0,164	0,007*	
		M-W U	0,529	0,203	0,071	0,119	0,297	0,021*	
	Inventory Turnover Ratio	I-S t	0,139	0,001*	0,003*	0,247	0,461	0,439	
		M-W U	0,110	0,018*	0,044*	0,223	0,799	0,198	
	Equity Turnover Ratio	I-S t	0,472	0,554	0,866	0,271	0,629	0,506	
		M-W U	0,809	0,151	0,415	0,121	0,594	0,476	
	Working Capital Turnover Ratio	I-S t	0,577	0,069	0,624	0,182	0,973	0,298	
		M-W U	0,41	0,579	0,477	0,356	0,880	0,516	
	PROFITABILITY RATIOS	Return on Assets Ratio	I-S t	0,711	0,004*	0,604	0,032*	0,477	0,006*
			M-W U	0,873	0,008*	0,737	0,039*	0,692	0,015*
Margin of Net Profit Ratio		I-S t	0,665	0,001*	0,865	0,006*	0,647	0,005*	
		M-W U	0,986	0,002*	0,92	0,016*	0,957	0,015*	
Return on Equity Ratio		I-S t	0,156	0,107	0,776	0,421	0,405	0,187	
		M-W U	0,248	0,067	0,714	0,320	0,483	0,149	
STOCK MARKET PERFORMANCE RATIOS	Price Earnings Ratio	I-S t	0,770	0,191	0,196	0,156	0,160	0,567	
		M-W U	0,695	0,055	0,059	0,105	0,135	0,458	
	Profit Per Share Ratio	I-S t	0,335	0,041*	0,864	0,244	0,411	0,041*	
		M-W U	0,571	0,017*	0,990	0,070	0,615	0,044*	
	Price to Book Ratio	I-S t	0,222	0,005*	0,147	0,104	0,584	0,423	
		M-W U	0,146	0,001*	0,054	0,051	0,582	0,140	

- Indicates a statistically %95 significance difference.