

The Determinants of Firm Financial Performance: Evidence From Istanbul Stock Exchange (BIST)

Famil ŞAMİLOĞLU¹, Ali Osman ÖZTOP², Yunus Emre KAHRAMAN³

¹Department of Business Administration, Faculty of Economics and Administrative Sciences, Muğla Sıtkı Koçman University, Muğla, Turkey (familsamiloglu@gmail.com)

²Department of Economics and Finance, Fethiye Business School, Muğla Sıtkı Koçman University, Muğla, Turkey (aliosmanoztop@mu.edu.tr)

³ph. D. candidate, Muğla Sıtkı Koçman University, Muğla, Turkey (emrekahraman1410@hotmail.com)

Abstract: Accounting-based financial ratios Return-on-Assets (ROA) and Return-on-Equity (ROE) are among the most widely used indicators by investors, creditors and managers in order to evaluate firms' managerial performance. This study aims to investigate the determinants of firms' financial performance indicators (ROA, ROE) by using financial ratios of selected 51 firms quoted at Istanbul Stock Exchange (BIST) over a ten years period from 2006 to 2015. Based on the findings of this paper, there is a significant and negative relationship between ROA and Price-to-Earnings (PE) ratio. Also, Earnings per Share (EPS) and Dividend Yield (DY) are significantly and positively associated with ROA, while there is no significant relationship between ROA and Price to Book (PB). On the other hand, there is significant and negative relationship between ROE and EPS. Finally, it is determined that EPS, PB and DY are significantly and positively related with ROE.

Keywords: Dividend payout, price to earnings, return on asset, return on equity, firm performance.

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I. Introduction

The main aim of a firm is profit and wealth maximization by taking into account the rights of its shareholders. Firm management's investment and finance decisions are closely monitored by main financial market actors such as creditors, investors and potential investors. There are many financial ratios that indicate how well a firm is performing and whether firm resources are managed effectively. In order to determine the overall effectiveness of a firm management, accounting-based Return-on-Assets (ROA) and Return-on-Equity (ROE) are the most frequently used financial ratios (Kangarlouei, et al., 2012: 172).

A company provides funds from shareholders and creditors in order to finance their investments. Effective use of funds is an indication of how successful the firm is managed. Financial ratios on profitability show firm's management success and give firm governance information about the performance of the departments of firm. Shareholders and creditors are also evaluating their investments by examining profitability ratios.

ROA indicates that how firm management is using its assets (or resources) to generate income. On the other hand, ROE is a ratio of profitability that indicates how many amount of profit a company generates as a percentage of shareholders' equity. This study investigates the relationship between dependent variables ROA, ROE and explanatory variables EPS, DY, PE and PB. According to the results of the study, it is tried to determine how explanatory variables affecting ROA and ROE (Al-Matari et al., 2014).

Although they are both measures for profitability, ROE and ROA are different performance indicators. ROA illustrates how successful a firm uses its assets. Therefore, liquidity debt results in an increase in ROA. However, there is no change in ROE for a similar company in the same situation as it takes debt into account (Loi & Khan, 2012).

EPS represents a firm's profit that is allocated to the holders of its common stock. Another accounting-based profitability ratio EPS provides information investors about the value of a share. Main difference of EPS from ROE and ROA is that EPS shows nothing about a firm's earnings beyond whether it has been profitable or loss-making during the period. As a result, cross-company EPS comparisons are meaningless (Kelley & Hora, 2008).

The empirical studies on dividend payout policy has tended to focus on dividend payout and its impact on share price (Ali et. al. 2015; Masum, 2014; Abdullah Al-Hasan, 2013; Hussainey, 2011). However, investors take into consideration profitability performance of the company as well as share price volatility.

A high PE ratio is an indicator of expected earnings growth and negatively related with expected rate of return in the future compared to firms with a lower PE. Another market-based indicator PB ratio signals investors satisfaction about the firm. Investment ratios help shareholders and other investors to assess the value and quality of an investment. These ratios include earnings per share (EPS), price-earnings (PE) ratio, price to book (PB) and dividend yield(DY) (Asiri & Hameed, 2014).The objective of the study is to find out if there is a relationship between investment ratios i.) market-based indicators (PE and PB), ii.) dividend payout policy indicator (DY), iii.) accounting-based indicator (EPS) and accounting-based firm performance indicators (ROA and ROE).

II. Literature Review

There are many dimensions to measuring firm performance. Financial ratios derived from financial data are important in order to objectively evaluate firm's performance. Based on the literature, accounting based performance indicators ROA and ROE are widely used financial ratios by investors in order to measure firm profitability (Masadeh, 2015).

Velnampy et al. (2014) used ROA and ROE as determinant financial ratios of firm performance and used EPS and dividend payout as indicator of dividend payout policy. A statistically significant relationship between EPS and dividend payout and ROE and ROA has not been established in this study, which covers manufacturing companies between 2008 and 2012. Similarly, Thafani & Abdullah (2014) found that there is a significant relationship between dividend payout and firm profitability in terms of ROA, ROE and EPS.

Dividend payout policy literature has largely focused on the amount of dividend and its effect on share price. Dividend payout policy has explained by various theories. Hunjraet.al. (2014) found both dividend yield and dividend payout ratio have statistically significant impact on share price. Contrary to dividend irrelevance theory, dividend payout ratio is positively related to share price. On the other hand, the study shows that dividend yields negatively related with stock price.

Batchimeg (2017) examined the determinants of performance ratios of 100 Mongolian joint stock companies (JSC) quoted at Mongolian Stock Exchange (MSE) for a period from 2012 to 2015. In the study, ROA, ROE and ROS are used as dependent variables and growth in sales, growth in profit, growth in assets, EPS, gross profit margin, cost to revenue ratio, return on costs, short-term debt to assets ratio, current assets to total assets ratio, long-term debt to total assets, quick ratio, current ratio, and cash ratio are used as independent variables. ROA, ROE and Return on Sale (ROS) performance indicators derived from the MSE financial statements. According to panel regression results, ROA have more determinants than ROE and ROS, such as EPS, return on costs have positive impacts, while short-term debts to total assets ratio and cost to revenue ratio have negative impacts. growth in sales, EPS and costs to revenue ratio influence positively the financial performance of an organization by ROS, while return on cost has a positive effect on the financial performance measured by return on sale.

Wu (2014) found a U-shaped relationship between ROE and forward PE ratio. Firms with high forward PE ratio tends to have lower ROE in the subsequent years. Kharatyan (2017) found that firms with relatively higher ROE have a higher competitive. This study consisted of 90 non-financial firms in the NASDAQ-100 index is the most relevant ratios to determine whether ROE is tax burden, interest burden, operating margin, asset turnover and financial leverage regardless of industry sectors. Dissanayake (2012) investigated Sri Lankan Microfinance Institutions (MFI) and found that MFIs have a statistically significant predictor variables in determining the cost per borrower and debt/equity ratios.

A review of literature has shown that the determinants of firm performance indicators can change related to country (Hatem, 2014), financial structure of firm (Saeed, 2015) and firm size (Vintilă, 2015) or the sector firm belong to (Raza, 2017).

III. Data And Research Method

We have investigated firm profitability performance indicators (ROA and ROE) as dependent variables, whereas explanatory variables are DY, PE, PB and EPS. The sample consisted of 51 firms in BIST over a ten years period from 2006 to 2015. Table 1 shows the variables used in this study.

Table 1. Variables

Variables	Abbreviation	Ratio
Return on Assets	ROA	$ROA = \frac{\text{Net profits after taxes}}{\text{Total assets}}$
Return on Equity	ROE	$ROE = \frac{\text{Net profits after taxes}}{\text{Stockholder's equity}}$

Earnings per Share	EPS	$EPS = \frac{\text{Net Income} - \text{Dividends on Preferred Stock}}{\text{Average Outstanding Shares}}$
Dividend Yield	DY	$DY = \frac{\text{Annual Dividends per Share}}{\text{Price per Share}}$
Price Earnings	PE	$PE = \frac{\text{Market Value per Share}}{\text{Earnings per Share}}$
Price Book	PB	$PB = \frac{\text{Market Price per Share}}{\text{Book Value per Share}}$

Note: The ratios are acquired from queenstocks.com and kap.gov.tr. ROA and ROE are dependent variables.

In this study we have performed panel data techniques to estimate the determinants of ROA and ROE. Stata 14 statistical package program was used to estimate the results. We have focused on two techniques to analyze panel data such as fixed effects and random effects. Our methodology is based on similar study of Torres (2007). We have used fixed effects and random effects models for panel data enabling and empirical estimate of relationship between dependent variables ROA, ROE and independent variables DY, PE, PB, EPS. The data of the study was collected from annual financial statements of 51 firms quoted at BIST.

The hypotheses to be tested in the study are:

- H₁: There is relationship between ROA and DY in BIST.
- H₂: There is relationship between ROA and PE in BIST.
- H₃: There is relationship between ROA and PB in BIST.
- H₄: There is relationship between ROA and EPS in BIST.
- H₅: There is relationship between ROE and DY in BIST.
- H₆: There is relationship between ROE and PE in BIST.
- H₇: There is relationship between ROE and PB in BIST.
- H₈: There is relationship between ROE and EPS in BIST.

To investigate the relationship between ROA, ROE and its explanatory variables, the following models are developed:

$$ROA_{it} = \beta_0 + \beta_1DY_{it} + \beta_2PB_{it} + \beta_3EPS_{it} + \beta_4PE_{it} + u_{it}$$

$$ROE_{it} = \beta_0 + \beta_1DY_{it} + \beta_2PB_{it} + \beta_3EPS_{it} + \beta_4PE_{it} + u_{it}$$

Where

- ROA: Return on Assets
- ROE: Return on Equity
- DY: Dividend Yield
- PE: Price Earnings
- PB: Price to Book
- EPS: Earnings per Share

Table 2. Descriptive Statistics

Variables	Observations	Mean	Std. Dev.	Min.	Max.
ROA	510	9.650863	10.70366	-55.15	70.37
ROE	510	16.36033	12.28409	-24.63	78.52
PE	510	15.56637	16.43352	2.2	158.85
PB	510	1.879686	1.56422	.18	12.26
EPS	510	1.436706	2.799336	-11.01	27.59
DY	510	4.973922	12.28409	.21	25.92

Table 2 presents descriptive statistics of the dataset: minimum, maximum, mean, standard deviation values of dependent variables ROA, ROE and independent variables respectively PE, PB, EPS, DY of sample 51 firms quoted at BIST for ten years period from 2006 to 2015.

Based on the average ROA and ROE, firms register approximately 9.65% earnings of the total assets and 16.36% of the total equity). ROA and ROE indicate positive earnings, but a relatively high standart deviation,

meaning that the data points are spread out over a large range of values for minimum (-55.15) and maximum (70.37). The average size of another profitability indicator EPS is also has positive mean. Table 1 illustrates profitability indicators show volatile earnings for Turkish firms over a ten years period from 2006 to 2015.

IV. Analysis And Results

This section contains the results of panel regression analysis of selected 51 firms quoted at BIST within 2006- 2015 period. In this study, the effect of dividend policy (DY and EPS) and market-based performance indicators (PE and PB) on ROA and ROE has been examined. In this study we performed Hausman (1978) test in order to make choice between fixed effects and random effects. Hausman test performed for selection of the method between fixed effects model and random effects model. In Hausman test, the null hypothesis indicates that the difference in coefficients between fixed effects model and random effects model is systematic ($p=0.0000$) (Torres, 2007). The result of the Hausman test is presented in Table 3.

Table 3. Estimated Results (Dependent Variable - ROA)

	β	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
PE	-0.120	.0284	-4.23	0.000**	-0.177	-0.063
PB	1.974	1.01	1.95	0.056	-0.054	4.003
EPS	1.518	0.731	2.07	0.043*	0.048	2.988
DY	0.467	0.114	4.09	0.000**	0.237	0.696
_cons	3.307	2.712	1.22	0.229	-2.141	8.756
sigma_u	5.840					
sigma_e	6.965					
rho	0.412	(fraction of variance due to u_i)				
R-squared						
within	0.301					
between	0.362					
overall	0.329					
Hausman fixed random specification test						
Hausman (chi ²)(4)	34.90					
Prob>chi ²	(0.0000)**					
Modified Wald Test						
Modified (chi ²)(51)	1.9e+06					
Prob>chi ²	(0.0000)**					
Autocorrelation Test						
Modified Bhargava et al. Durbin-Watson	0.728					
Baltagi-Wu LBI	1.063					

p<0.1; *p<0.05; **p<0.01
p-values are in parentheses

In making a choice, if the p-value is higher than 0.05 and insignificant, we use random effects method, but if the p-value is significant, we choose fixed effects. Based on the Hausman fixed random specification test, the fixed effects model was preferred to the random effects model.

In order to determine whether heteroskedasticity problem, we performed modified Wald test for groupwise heteroskedasticity in fixed effect regression model. According to Wald Test, we found heteroskedasticity problem. In order to determine auto-correlation, we performed fixed effects model again and we found Durbin-Watson (DW) = 0.728 and Baltagi-Wu LBI = 1.063. The values of DW test show that there is a problem of auto-correlation. On the other hand, we found a heteroskedasticity problem. Under this condition, we performed fixed effects model and we found results as follows:

After determination and measurement of independent and dependent variables, research hypotheses are tested. Based on findings, there is a significant and negative relationship between ROA and PE ratio. Also, ROA is significantly and positively associated with EPS and DY. On the other hand, there is no significant relationship between ROA and PB. Thus, the first (H₁) and second (H₂) and fourth (H₄) hypothesis are accepted, while the third (H₃) hypothesis is rejected. This indicates that increasing the amount dividend payout will result in an increase on ROA.

Table 4. Estimated Results (Dependent Variable - ROE)

	β	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
PE	-0.210	0.046	-4.55	0.0000**	-0.302	-0.117
PB	3.318	0.825	4.02	0.0000**	1.660	4.975
EPS	1.443	0.337	4.28	0.0000**	0.766	2.120
DY	0.660	0.170	3.88	0.0000**	0.318	1.002
_cons	8.032	1.916	4.19	0.0000**	4.184	11.881
sigma_u	5.222					
sigma_e	7.169					
rho	0.346	(fraction of variance due to u_i)				
R-squared						
within	0.400					
between	0.648					
overall	0.520					
Hausman fixed random specification test						
Hausman (chi ²)(4)	20.89					
Prob>chi ²	(0.0003)**					
Modified Wald Test						
Modified (chi ²)(51)	27237.88					
Prob>chi ²	(0.0000)**					
Autocorrelation Test						
Modified Bhargava et al. Durbin-Watson	1.260					
Baltagi-Wu LBI	1.617					

p<0.1; *p<0.05; **p<0.01
p-values are in parentheses

Table 4 presents the estimated results for ROE. As seen in Table 3, we have performed Hausman test, in order to choose between fixed effects and random effects model. Since the result of the Hausman test for the dependent variable ROE reveals that the difference in coefficients between fixed effects model and random effects model is systematic (p=0.0000), fixed effects model is preferred to the random effects model in ROE.

In order to determine whether heteroskedasticity problem, we performed Wald Test. According to Wald Test, we found heteroskedasticity problem. In order to determine auto-correlation, we performed fixed effects model again and we found Durbin-Watson = 1.260 and Baltagi-Wu LBI = 1.617. The values of DW test show that there is a problem of auto-correlation. On the other hand, we found a heteroskedasticity problem. Under this condition, we performed fixed effects model and we found results as follows:

According to findings, there are a significant and positive relationship between ROE and PE, PB, EPS and DY. Thus, all (H₅, H₆, H₇ and H₈) hypothesis are accepted. This indicates that increasing the amount dividend yield will result in an increase in ROE. This study concludes that all the variables included as explanatory variables have a significant impact on ROE of the firms quoted at BIST.

V. Conclusions

In this study, dependent variables ROA and ROE are analyzed through panel data analysis using EPS, DY, PE and PB as independent variables. Data is derived from firms quoted at BIST over a ten-year period from 2006 to 2015.

Based on the findings of this paper, there is a significant and negative relationship between ROA and PE ratio. Also, EPS and DY are significantly and positively correlated with ROA. On the other hand, there is no significant relationship between ROA and PB. According to findings, while PE is negatively and significantly related with ROE, on the other hand, ROE is positively and significantly associated with EPS, PB and DY. Firm management should consider using debt capital if the return on investment will be higher than the periodic interest payment.

These findings are consistent with both literature which posit a negative relationship between PE and “good” investment potential (Sezgin, 2010). The findings have important implications for investors, as well as the firms' creditors and managers improve the understanding of profitability ratios and the relationship between each other.

Disclosure

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