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Financial ratios that derived from past data are used in many studies and analysis to estimate of uncertain future. In this context, financial ratios can be used to determine the stock value and thus the value of a company.

The aim of this study is to determine the relationship between the financial ratios and stock value of a company. In this context, 16 cement industry firms', whose stocks are dealt in

Istanbul Stock Exchange (BIST), annual and quarter period data in a decade (2005-2014) is used. In this study, while current ratio, acid-test ratio, debt ratio, asset turnover, stock turnover, marketing value/ book value are used as independent variables; financial leverage, assets controlled variable and stock value are used as dependent variables. According to the established model of panel data analysis; a significant relation is determined between acid-test ratio, debt ratio, marketing value/ book value, financial leverage and stock value.

Keywords: Financial Ratios, Stock Value, Firm Value, Panel Data Analysis

THE ROLE OF FINANCIAL RATIOS ON EVALUATION OF STOCK VALUES: AN APPLICATION IN BIST

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Abstract

Financial ratios obtained from past data are used in estimation of the future, which is financially uncertain, in many studies and analyses. In this regard, financial ratios can be used to determine the stock values and therefore the value of the company.

The objective of this study: is to determine the relationship between the financial ratios of the companies and stock values. Accordingly, 10-year and quarterly data of 16 cement factories whose stocks are traded at exchange in İstanbul Stock Market (BİST) between years 2005-2014. In the study, current ratio, acid test ratio, liability ratio, accounts receivable turnover rate, inventory turnover rate, market value/book value are used as independent variables, financial leverage and size of assets are used as control variables and stock value is used as dependent variable. In accordance with the results of panel data analysis; it is seen that there is a meaningful relationship between acid-test ratio, liability ratio, market value/book value and financial leverage and between stock values.

Key words: Financial Ratios, Stock Values, Company Value, and Panel Data Analysis.

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Introduction

Stock value predictions play an important role while making investment decisions. Quite a few data are used during the prediction stage. Either for data belonging to previous periods or statements of the company's executives can be used for the prediction of the possible stock returns. Financial ratios obtained from the financial statements are also used in prediction of stocks returns as well as in many other fields. However, which ratios will be used in the stock returns will be used is a significant detail. The sector that the company operates in, present state and the future of the sector, macro indicators of the country that the company is located and the periods that the financial ratios are calculated may reveal different results.

Financial ratios make a significant contribution to the interpretations about the company. They give important hints about the present and future state of the company. On the other hand, analysis that will be made with the financial ratios, provide significant benefits to decision makers by revealing many positive and negative information that are not reflected on the company's stock values. In this regard; an economic model was set by using the data of companies who are operating in cement industry and whose stocks are traded in İstanbul Stock Market. By using this model, we tried to determine whether there is an impact of financial ratios on determination of stock values and if there is which ratios affect the values at which levels.

Literature Research

When the literature related with the effect of financial ratios on stock values is examined, it is possible to run across many studies where different criteria are used. When aforementioned criteria is examined;

Bhandari has formed two year sub-periods in order to minimize the effects of possible changes of parameters and to cleanse these the results from these effects and has examined the

effect of stock debt equity ratio, which changed between 331 and 1241 in these periods, on the value of the company in his (1988) study. In this study, it is stated that since beta remained incapable of explaining the non-systematic risk of the company, debt/equity ratio can be used for explaining the returns of the stocks. As a results of the regression analysis, a very meaningful and positive statistical relation between expected stock returns and debt/equity ratio.

In Mramor and Mramor-Kosta's (1997) study, which comprises the period of years 1992-1994 for more than 70 companies who operates in Slovenia and who have more than 10 workers, they tested their hypothesis that claims there is a non-linear relationship between financial ratios and stock returns. In accordance with the analysis results, it is seen that there are non-linear relationships between stock returns and many of the financial ratios.

In their (1997) study, which comprises period of years 1982-1993, Mukherji yd. have examined the relationships between stock values in Korean Exchange Market and radical variables. In the study, it is seen that there are positive relationships between annual stock returns and market value/book value ratio, sales/price ratio and debt/equity ratio and there is a negative relationship between annual stock returns and company size variable. Moreover, no meaningful relationships were found between price/income and beta coefficient.

Crowderve Wohar has examined the long-term relationship between stock prices and dividend distribution with present value model in (1998) study. Moreover, the relationship between quarterly stock prices and dividend distribution for period between 1919-1926 is discussed. In accordance with the results of the study it is determined that there is a strong relationship between stock price and dividend distribution.

Hull (1999) has evaluated the change of the company's leverage ratio together with the average leverage ratio of the company's industry and has examined its effect on the company value. Regression analysis has been applied by using the data of 338 companies, which

provide stated criteria, for the period of years between 1970-1988. As a result of the analysis, although both are meaningful, it is seen that the companies moving away from the industry leverage average have greater negative effect than the companies moving closer to the industry leverage average.

In accordance with the results of the study of Gönenç and Arslan (2003) where capital structures are compared by evaluating periods of 1995-1999 and 2000-2001 separately for international and domestic real economy sector companies that are registered to İstanbul Stock Exchange, it is seen that debt ratios excluding long-term debts increase as the international activity level. Moreover, it is determined that the effect of the variables composed of profitability, size, tangible fixed assets level, market-book value ratios are consistent with the discussions of the theory.

Sueyoshi (2003) has examined the effects of liquidity, profitability, productivity and leverage ration on bankruptcy probabilities on his study where he compared the financial performances of the 171 companies, which operates in energy sector in U.S.A. In accordance with the results of the study, probability and capital structure ratios are significant for understanding bankruptcy probabilities.

Öcal and others (2005) used factor analysis in their study where they aimed to determine the financial indicators that may be used in analysis of the Turkish construction sector and resulted that 5 factors consisting of liquidity, capital structure and probability, operating productivity, profit margin and growth, assets of the company are extremely sensitive to economic changes in the country.

Oh, Kim and Kim (2006) used the annual data of companies treated in the Korean Stock Market in their study. The data used in the panel data and financial analysis system at the level of the company (1981-2000) is comprised of stock price data that is published by the Korean Investment Service (KIS-FAS 2002) and TS200 (KoreaListedCompaniesAssociation

2001). In the study, all the 140 companies were examined by using stock prices chosen only at the end of December and end of March for the company year in order to constitute the expected education and the relationship between stock price and return per stock is examined by using Korean Stock Market data. Also, floating data was used in the study. In accordance with the results of the study, individual stock prices do not offer combination with income per stock, whereas stock prices combine with the income per stock. Moreover, although there are proofs that support the deviation from the weak average for the price/income ratio, there are also mixed proofs that support deviation from strong average. As a result, it is stated in the study that stock prices act in accordance with the foundations of the company in the long-term and on average.

Beccalli (2007) found out that there is a lower performance relationship between investments done in the sector and performances of banks than expected in his study where he examined the relationship between performances of banks and investments done in the informatics sector.

Yalama and Coşkun (2007) researched the intellectual capital performance of the banks in their study where they used the data of the banks registered to İstanbul Stock Exchange Market concerning years 1995-2004. The writers determined the coefficients of the intellectual capital factors by using VAIC method and then they made performance evaluation by using Data Envelopment method and ranked the best performing companies in respect of years.

Albayrak and Akbulut (2008) stated in their study that the most important indicators in determination of profitability structures are liquidity, capital structure, company size and inventory turnover.

Dehuan and Jin (2008) included the companies that show best 10% performance with regard to annual yield in their study. In their study they used simple multiple regression

analysis, annual stock return is used as dependent variable and total assets turnover rate, change in the earnings per share, profit margin, return on assets, profit capital and profit on sales are used as independent variables. In accordance with the results of the study, it is stated that independent variables have a meaningful effect on the stock yield for the first two years of the research period.

Burca (2008) examined the relationship between capital structure and stock value by using panel data analysis in the study where monthly data of publicly traded companies for the period of July 1996-June 2006 are used. In the study, they used stocks of 74 companies belonging to İstanbul Stock Exchange, 43 companies belonging to Bovespa, 65 companies belonging to NYSE 100, 42 companies belonging to FTSE 100. It is concluded that there is a statistically meaningful and positive relationship between natural logarithm of total debts / market capitalization and stock returns for all the four stock companies.

Karacaer and Aygün (2009) examined the effect of intellectual capital on performance of the companies whose stocks are traded at İstanbul Stock Exchange in 2007. In accordance with the result of the study, it is stated that there is a positive and meaningful relationship between intellectual capital and company performance excluding structural capital activity.

Sari and Hutagaol (2009) tried to measure the effects of debt/equity, operating leverage level and beta of the company on stock returns by using data of catering firms whose stocks are traded in Indonesian Stock Exchange for periods of 2003-2008 in their study. In accordance with the results of regression analysis, the hypothesis stating that debt/equity ratio does not have any effect on the stock returns is found statistically meaningful.

Büyükşalvarcı (2010) tested 17 independent variables consisting of financial ratios and 3 independent variables consisting of stock returns by using 10 different models in the study including 83 companies that are operating in manufacturing sector in 2009 whose stocks are traded in İstanbul Stock Exchange. In accordance with the result of the analysis, it is stated

that there is a linear relationship between current ratio, inventory turnover, asset turnover, long-term debt/total total assets and stock returns, on the other hand it is stated that usually there are non-linear relationships between stock returns and financial ratios.

Birgili and Düzer (2010) determined a positive relationship between Total Debt/Equity Ratio and LTD (Long Term Debt)/Total Debt and they showed that there is a negative relationship between Total Debt/Total Total Assets and STD (Short Term Debt)/Total Debt, which are among financial structure ratios in their study where they examined 58 companies of İstanbul Stock Exchange 100.

Yenice and Dölen (2013) examined the corporate governance rating notes of companies that took place among the Corporate Governance Index between years 2007-2011. The stock values of these notes for 30 days before and 30 days after the statement, these values are compared with the corporate governance rating notes and some statistical analyses were applied. In accordance with the result of the study, it is stated that there are meaningful relationships between Wicoxon Signed Rank Test and dependent sample t-test and corporate governance ranking note and stock values.

Kokmaz and Karaca (2013) examined the data of 16 companies that belong to İstanbul Stock Exchange 30 Index with panel regression model for years 1998-2010. In the study two models were formed and in accordance with these in Model 1 it was concluded that the change in Dividend Pay-out Ratio (DPR) and Earnings Per Share (EPS) increases the final quotation, whereas change in Return on Assets (ROA) decreases the final quotation and alongside it was concluded that the increase in Market Value Book Value (M_B) and Market Price does not effect final quotation (CLS). In Model 2, it was observed that Return Share Ratio (RSR); Market Value Increase (MVI) and Equity Per Share (EPS) increase final quotation and Return on Assets (ROA) does not affect it.

Methodology

Method of the Study and Data

In the study, panel data analysis was used in order to find out whether there is a statistically meaningful relationship between financial ratios of the companies and stock values and if there is to determine the direction and level of this relationship. Panel data analysis is a method that brings horizontal and time series together and combines the data sets belonging to same units in different periods of time (Wooldridge, 2009; 452) In panel data analysis method, analysis is done by choosing either fixed or random effect model. In the study, test statistic, which is suggested by Hausman, was put to use in order to determine which model to choose.

The research comprise of a 10 year period starting from January, 2005 to fourth quarter of year 2014. In total data of 40 periods consisting of three-months concerning the related time were used for 16 cement industry companies (Adana Çimento, Afyon Çimento, Aslan Çimento, Baştaş Başkent Çimento, Batıçim Çimento, Batı Sköe Çimento, Bolu Çimento, Bursa ÇİmentO, Çimbetom Çimento, Çimtaş Çimento, Çimsa ÇİmentO, Göltaş Çimento, Konya Çimento, Mardin Çimento, Nuh Çimento, Ünye Çimento) whose stocks are traded in İstanbul Stock Exchange. The data used in the study is obtained from official website of Public Disclosure Platform.

Models and Variables of the Study

In the study current ratio, acid test ratio, debt ratio, accounts receivable turnover rate, inventory turnover, market value / book value ratio are used as independent variables, financial leverage and size of assets are used as control variables and stock value is used as dependent variable. Model is structured as shown below:

$$HSD = \alpha_{it} + \beta_1 CO + \beta_2 ATO + \beta_3 BO + \beta_4 ADH + \beta_5 SDH ++ \beta_6 PD/DD + \beta_7 FKAL ++ \beta_8 AB + \varepsilon_{it} \quad (1)$$

The explanations concerning the variables used in the model is shown in Table 1.

Table 1: Variables Used in the Model

Variables	İnitials	Explanation
Dependent Variable	HSD	Stock Value
Independent Variable	CO	Current Ratio
	ATO	Acid Test Ratio
	BO	Liability Ratio
	ADH	Accounts Receivable Turnover Ratio
	SDH	Inventory Turnover Ratio
	PD/DD	Market Value/Book Value
Control Variables	FKAL	Financial Leverage
	AB	Size of Assets

Findings of the Study

Findings of the variables

Definitive statistics of the variables, correlation matrix and panel data results are presented below. Some fundamental definitive statistics of the variables used in the model are presented in Table 2.

Table 2 : Descriptive Statistics

Variables	Average	Standard Deviation	Minimum Value	Maximum Value
CO	1,52	4,40	0,04	5,21
ATO	1,02	1,82	0,003	3,85
BO	0,54	3,05	0,123	0,786
ADH	6,62	7,72	1,235	30,32
SDH	7,85	5,92	1,1254	22,55
PD/DD	5,25	3,70	4,325	16,56
FKAL	1,04	0,35	0,11	10,5624
AB	4,52	2,82	1,256	7,235

As it can be seen in Table 2, it is measures that the current ratio of the sector is 1,52; debt ratio is 0,54; accounts receivable turnover rate is 6,62; inventory turnover is 7,85, financial leverage ratio is 1,04 and size of assets is 4,52.

The correlation matrix between the variables is presented in Table 3.

Table 3: Correlation Matrix

	HSD	**CO**	**ATO**	**BO**	**ADH**	**SDH**	**PD/DD**	**FKAL**	**AB**
HSD	1,0								
CO	0,01	1,0							
ATO	0,03	0,01	1,0						
BO	-0,01	0,02	0,18	1,0					
ADH	0,16	0,11	0,10	0,06	1,0				
SDH	0,15	0,09	0,17	0,05	0,07	1,0			
PD/DD	0,04	0,17	-0,12	0,14	0,04	0,05	1,0		
FKAL	0,07	0,05	0,01	0,18	0,11	0,11	0,03	1,0	
AB	0,13	0,06	0,03	0,02	0,08	0,15	0,04	0,11	1,0

As it can be seen on Table 3 while there is a 0,01 negative relationship between debt ratio and company value, there are positive relationships between other variables and company value. Among independent variables, there is a 0,12 negative relationship between Market Value/Book Value and the relationships between other independent variables are positive.

Panel data results

Pesaran panel unit root test (CDLM) was used in order to research the horizontal section dependency in the study. In accordance with this, it is found that CDLM value is 13.240 and probability value is 0.0001. In other words, it is seen that there is a horizontal section dependency between variables. Moreover, there is no unit root.

After this stage Hausman test was used in order to determine whether the effects are fixed or random. In accordance with this, it is measured that X^2 value is 24.8568 and the probability value is 0,18. Within the frame of these values, it is concluded that random effects model should be used in the master model. (HO: $E(\varepsilon_{it} \ |X_{it}) = 0$ section data and time series are random).

Main regression results that are used in the study are presented in Table 4.

Table 4: Main Regression Results of Model Application

$HSD = \alpha_{it} + \beta_1 CO + \beta_2 ATO + \beta_3 BO + \beta_4 ADH + \beta_5 SDH ++ \beta_6 PD/DD + \beta_7 FKAL ++ \beta_8 AB + \varepsilon_{it}$				
Dependent Variable : Stock Value Periods : 2005-2014 Observation Number : 640 Group Number : 16			$R^2 = 0,246$ F = 0,0005 Durbin Watson : 2.4563 Hausman Test : 24.8568 Hausman Probability : 0,18	
Variables	**Coefficient**	**Standard Error**	**Statistics**	**P**
CO	0,136	0,00653	1.56	0,834
ATO	0.0453	-0,00420	6.36	0,040*
BO	-0,0140	0,03212	-4.73	0,003*
ADH	1,054	-0,34562	2,01	0,562
SDH	1,346	0,09425	1,74	0,486
PD/DD	0,00167	-0,00811	12,75	0,002*
FKAL	-1,21565	0,0453	-8,95	0,012*
AB	0,00265	0,00820	1,27	0,621

*Meaningful at 5% level.

A meaningful and positive relationship at statistically 5% level between Acid Test Ratio variable and stock value after the model was activated. In other words, increase in the acid test ratio leads to an increase in the stock value. Similarly, there is a meaningful and positive relationship at 5% level Market Value/Book Value and stock value. It is determined that there is a negative relationship between debt ratio and stock value. In accordance with this, as the debt ratio and financial leverage of the companies increase, their stock values decrease.

Conclusion

Company partners and potential investors are closely interested in stock values of the companies. Therefore, the estimation of stock returns of a company has great importance. In estimation of the stock values, financial statement of the company is one of the primary resources. Because, financial statements are the outputs of companies' financial positions. Financial ratios, which are among the main methods in analyses of financial statements, offer important information to users in many fields. In this study, it is researched whether financial ratios have any effect on stock values or not by using financial statements of companies who operate in Cement industry and whose stocks are traded in İstanbul Stock Exchange. In the

study where panel analysis method is used, the period of years between 2005-2014 was subject to observation.

In accordance with the results of the study, it is shown that financial ratios affect stock values. Acid test ratio and market value / book value ratios, which are among the variables used in the model, affect the stock values positively. The findings of the study show similarity with the results of Chui and Wei (1998), Gemici (2010) and Rosenberg, Reid and Lanstein (1985) studies. Debt ratio and financial leverage ratio, which are among the variables of the study, affect the stock values negatively. The findings that state financial leverage ratio affects stock values negatively shows similarity with the results of Cai and Zhang (2011), Rayan (2008) and Horasan (2010) studies. Although study's findings show similarity with the studies stated above, they contradict with the results of Basu (1977) study. It is found that there is no relationship between current ratio, accounts receivable turnover rate, inventory turnover and size of assets variables that are used in the model and stock values.

Stock value is a dynamic value and there are many factors that affect this versatility. The effect of the financial ratios on the evaluation of stock values that are shown econometrically in this study and also in similar studies is an undeniable fact. However, speculating on the stock values only depending on the financial ratios may arise some negative consequences for the investors. Therefore, investment decisions should be made by considering all factors, which determines the stock values, commonly.

In this study, the impact of the financial ratios on the stock values is evaluated. Together with this, cross-sectorial comparisons may be made when aforementioned effect is researched for different sectors in the future. Moreover, making new researches in order to find which financial ratio or ratios are the most important ones in effectiveness change will be guiding for the companies to make healthy decisions.

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