



Board Composition and Firm Performance: Evidence from BIST 100 Companies in Turkey

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ABSTRACT

This study examines how board composition affects firm performance. Female directors, independent directors and foreign directors and board size were taken as the indicators of board composition. The empirical analysis, based on a sample of 100 firms drawn from the BIST 100 Index over a 3-year period, the years between 2012 and 2014. In the study, for financial performance indicators, Return on Assets, and Return on Equity were used and for market performance indicator Market Value to Book Value was used. After the analysis, it is found that board composition has an impact on firm performance in BIST 100 companies. This study is unique in terms of analyzing the effects of 2012 regulation of mandating at least 1/3 of all board members to be independent directors and suggesting at least one female director to BIST 100 company boards by Capital Boards of Turkey..

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1. Introduction

The board of directors is among the internal corporate governance mechanisms. So the effectiveness of board are very important for creating value for the firm (Huse, 2004: 392). Additionally, weak corporate governance is the outcome of ineffective boards. Many corporate governance thinkers say that, board of directors and ownership structure will affect the firm's financial performance (Anne and Williams, 2003: 466). So independence and diversity of the boards are very important for an effective corporate governance and for getting better financial results. In this respect, Adams and Ferreira (2009) found that the board gender diversity is positively related to measures of board effectiveness and female directors appear to have a similar impact as the independent directors.

Capital Markets Board (SPK) of Turkey published the first national corporate governance principles in 2013. In the principles, composition of the board of directors was suggested to be in a manner that enabling the most efficient performance in terms of decision-making, governance, management and representation of the rights of the shareholders in an independent way. Level of skills, experience and degree of independence of the board members will serve as a useful tool in determining the performance level and success of the board of directors and therefore directly affects the success of the company. Existence of the independent board members were assumed to increase objectivity in decision making process and would create advantage to represent the interests of the company, shareholders and stakeholders equally and creating them value (SPK Corporate Governance Principles, 2011:41).

In Turkey, on February, 2012, according to the amendments to the Corporate Governance Principles issued by the SPK, the public companies listed in Borsa Istanbul (BIST) Index were required to have at least one female director on their boards and 1/3 of the all directors are required to be independent. The requirement related to the independent director is mandatory; and presence of women is a recommendation with "comply or explain" principle. Companies, not complying with the principle, must explain the reasons in their mandatory annual corporate governance compliance reports.

In this manner, this study aims to show the effectiveness of new regulations in 2012, increasing the board diversity by mandating independent and female directors by SPK on firm performance of BIST 100 companies in Turkey. So the remainder of the paper is organized as follows. Section two provides a literature review. Section three describes the methodology. Section four reports the empirical results and the findings. The study is concluded and discussed by conclusion section.

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2. Literature Review

The scrutiny of the company's board of directors and emphasizing the financial aspects of corporate governance, for the first time, was realized with the Cadbury report (1992). Academic studies in this area gained speed during the same period with the study of Hermalin and Weisbach in 1991. For the period from those days to present; many academic papers, country corporate governance compliance reports, legislations and regulations by some international organizations like The Organization for Economic Co-operation and Development (OECD) were published. In those studies, many things were written on the composition of the board; the board size, female, foreign and independent directors and their effect on firm performance. We can see the summary of those studies chronologically.

Yermack (1996) analyzed the effectiveness of small board of directors on 452 large U.S. industrial corporations between the years 1984 and 1991. He found that companies with smaller board size exhibits better values for financial ratios, In his study, financial ratios for profitability and operating efficiency declined as board size increased.

Eisenberg et al. (1998) studied the relationship between board size and financial performance for Finnish firms. They found a negative correlation between board size and profitability for small firms with small boards. They suggested that this result is supporting the hypothesis that there is a communication and coordination problems exist for smaller boards and firms.

Erhardt et al. (2003) examined the relationship between demographic diversity on boards of directors with firm financial performance. They used financial performance data (return on asset and investment), and the percentage of women and minorities on boards of directors for 127 large US companies for the years 1993 and 1998. They found a positive relationship between board diversity, and firm financial performance.

Kiel and Nicholson (2003) examined the relationship between board demographics and board performance for 384 largest publicly listed companies in Australia. They found a positive relationship between board size and firm value. They also found a positive relationship between proportion of inside directors and market-based firm performance measures.

Horvath and Spirollari (2012) have investigated the effect of 136 American companies' board feature on firm performance in the S&P 500 Stock Index for the years 2005-2009. As a result of the research, statistically insignificant relationship was found between percentage of the female directors and Tobin's Q value.

Masulis et al. (2012) examined effect of the foreign board members on firm performance in 1109 companies listed in S&P 1500 Index, benefiting from the data for the years 1998-2006. According to the results of the model estimates; they have demonstrated statistically significant and negative relationship between foreign board members and Tobin's Q percentage.

In the study of Abbasi et al. (2012), they investigated the relationship between corporate governance mechanisms and firm value for 82 companies listed in Tehran Stock Exchange, in the food sector, between the years 2002-2011. As a result, they identified a positive relationship between the number of independent board members and firm performance.

Prabowo and Simpsons (2012) analyzed the relationship between board structure and firm performance in family-controlled with a sample of Indonesian non-financial companies. They found an insignificant relationship between the share of independent directors on boards and firm performance for family-controlled companies in Indonesia. They revealed that this result is driven by the lack of institutional reforms in relation to the appointment of independent directors in Indonesia.

Rouf (2012) investigated the role of CEO, board independent director on firm performance for the listed non-financial companies. A sample size of 93 non-financial firms listed on the Dhaka Stock Exchange (DSE) in 2008 is used. According to the results of the study, he found that Bangladeshi non-financial companies' separation of CEO and firm performance is positively related and board independent director also positively significant with firm performance.

Cook (2013) studied the relationship between four corporate governance characteristics and six measures of firm performance in a sample of 62 firms listed on Canada's TSX-Venture Stock Exchange for the period from December 2012 to March 2013. Logistic regression, anova and t-test methods were used in the study. For the results, they found a negative relationship between the size of the board and Tobin's Q. For board independence, it was found that majority independence of the board of directors has minor negative impact on firm performance. Maintaining a majority of outside, independent directors has no significant effect on firm performance and may also lead to poorer results as the percentage of independent directors increases. For the study, in spite of the low gender diversity percentage of the boards, it was found that relationship between gender diversity of the boards and performance has some mixed results, showing a negative association with the firm performance.

Kim (2013) obtained positive and statistically significant ($p < 0.05$) relationship between board size and Return on Assets (ROA) for 290 American companies listed in Fortune 1000 in 2002.

Moscu (2013) examined the impact of board characteristics on firm performance by using the data of registered companies in the Romanian Stock Market. Empirical analysis results for the relationship between

board size and profitability and Return on Equity (ROE) were found to be positive and statistically insignificant. At the end of the empirical analysis, a positive and insignificant relationship was found between board size and ROA and ROE.

Joecks et al. (2013) have examined the relationship between board composition and financial performance (ROA) for 151 companies traded on the stock exchanges in Germany for the years 2000-2005. Among the research results, a U-shaped relationship was found between number of female board members and ROE.

Liu et al. (2013) have explored the relationship between gender diversity and financial performance by utilizing the data of the companies operating in the Chinese Stock Exchange from 1999 to 2011 years. As a result of the study, they have identified a positive relationship between number of female board members and firms' financial performance.

Kondrunina (2013) has found a positive relationship between number of foreign board members and ROA in 94 firms in Ukraine.

Liao and Young (2013) tested the relationship between corporate governance and firm performance empirically for the firms listed in China Shanghai and Shenzhen Stock Exchanges. According to the analysis results, companies with having more independent board members found to have lower market value.

Lückerath-Rovers (2013) analyzed the data from 99 Dutch companies for the years 2005-2007. She found that there is a positive relationship between female directors and financial performance indicator ROE. So she indicated that firms with women directors perform better than those without women on their boards.

Giraldez and Hurtado (2014) analyzed the data obtained from 114 Spanish listed companies in a context of economic crisis, from 2007 to 2010. They found that having an optimum number of effective independent directors contributes to protecting shareholder interests. An oversized board is negatively associated with shareholders value, this negative effect can be diminished with a greater proportion of independent directors. It is important to emphasize the valuable role that these directors can play in the structure of the board and on the ethical aspects of decision making. By this way, they can increase shareholder value.

In Turkey, Kula (2005), in his paper, studied the effect of the roles, structure and process of the board of directors on the performance of Turkish companies. So, he conducted a survey of 386 mainly small, non-listed stock corporations. According to his results, he found a positive link between the independent variables; board structure variables: board size, separation of the positions of chairman and general manager, existence of duly empowered member, proportion of outside members and existence of sub-committees and the dependent variables: firm performance and separation of chairman and general manager positions.

In Turkey also, for another aspect of board composition, Karayel and Doğan (2014) examined the relationship between having female directors and financial performance. They used the data of BIST 100 companies for the years 2009-2012. They found a positive relationship between having female directors and ROA, but they cannot find any meaningful relationship between female directors and ROE and Tobin's Q.

3. Methodology

This study attempts to examine how the composition of the board of directors affects firm performance for the companies listed in Turkish BIST 100 Index.

In other words, in this study, effect of board structure; number of female, independent and foreign directors; on firm performance will be investigated. In studies measuring the effect on the financial performance of the companies two different performance indicators were used. In the studies of Vo and Phan (2013); Pride and Nimalathas the (2013); Taghizadeh and Saremi (2013); Ujunw (2012), accounting based criteria (Return on Assets and Return on Equity) have been used as financial performance indicators. In their studies, the authors, Cook (2013); Fauzi and Locke (2012); Horvath and Spirollari (2012) benefited of the market-based performance indicators (market value to the book value). In this study, as dependent variable, both accounting financial performance indicators were used. The data of the companies traded in BIST 100 Index for the years 2012-2014 were obtained in the study. These years were chosen, because after the regulation of SPK for independent and female directors, companies started to publish especially independent directors in their annual corporate governance compliance reports. The financial data of the companies, analyzed in the scope of the study, was obtained from the Public Disclosure Platform (KAP)'s official web page (www.kap.gov.tr). Data about the board composition was obtained from the companies' annual activity reports, annual corporate governance compliance reports, company web sites and footnotes.

Information on the composition of the board of the company activity reports, notes and information are accessible from the web page. Dependent and independent variables used in this study are shown on Table 1.

Table 1: Descriptions of Variables Used in Analysis

	Definitions
Board characteristics	
Number of females	Total number of female directors on the board at the end of the year
Percentage of females	Total number of female directors on the board divided by the total number of board directors at the end of the year
Female indicator dummy	Dichotomous variable that equals to 1 when the board has one or more female directors at the end of the year and 0 otherwise
Board size	Total number of directors on the board at the end of the year
Number of foreign	Total number of foreign directors on the board at the end of the year
Percentage of foreign	Total number of foreign directors on the board divided by the total number of board directors at the end of the year
Foreign indicator dummy	Dichotomous variable that equals to 1 when the board has one or more foreign directors at the end of the year and 0 otherwise
Number of independent directors	Total number of independent directors on the board at the end of the year
Percentage of independent directors	Total number of independent directors on the board divided by the total number of board directors at the end of the year
Independent indicator dummy	Dichotomous variable that equals to 1 when the board has one or more independent directors at the end of the year and 0 otherwise
Firm-level characteristics	
Return on assets	The annual net income divided by the book value of total assets at the end of the year
Return on equity	The annual net income divided by the book value of total equity at the end of the year
Market value to the book value	Natural logarithm of the stock price divided by the book value of equity at the end of the year
Total assets (ln)	Natural logarithm of the book value of total assets at the end of the year

In this study, in order to test the relationship between board composition and financial performance following hypotheses has been developed with the in a manner consistent with the literature and model of the study was shown.

H1: Board composition has an impact on return on assets in BIST 100 companies.

H2: Board composition has an impact on return on equity in BIST 100 companies.

H3: Board composition has an impact on market performance in BIST 100 companies.



Figure1. Research Model

Data belongs to 100 companies between the years 2012-2014 was benefited. In this period, due to the inclusion of all companies listed in BIST 100 Index in the analysis, data set carries the feature of balanced panel data. E-Views 7 program was used in the research.

For having statistically significant relationships between the variables, series must be stationary. Fisher ADF Unit Root Test was used for testing the stationary of the series. The series is stationary in the test results that they don't have unit roots. Then, Hausman test was used to decide whether unit impacts are constant or random. Hausman test results showed that because of determined probability value is lower than 0.05, choosing fixed effects model will provide more accurate results.

Estimation of the regression model, multi variance problem (heteroscedasticity), autocorrelation, having correlation among the units, variance of error term is not equal to unit matrix.

This condition causes the inconsistency of the model and affects its effectiveness. Because of these reasons, in the model at least the case of existence of one of the parameters, heteroscedasticity, autocorrelation and correlation among units, whether standard errors must be corrected (resistant standard errors must be obtained) or they must be guessed with appropriate method (Tatoglu, 2013: 242).

In this study, because of the existence of relevant problems, fixed effects model and White period standard deviations and covariance coefficient methods were used to fix these errors. Thus, developed model has become resistant to these errors.

4. Results

In Table 2, descriptive statistics results related to dependent and independent variables, that was used in the empirical analysis was shown.

Table 2: Descriptive Statistics

	Mean	St.dev	Min	Max	Obs
Board-level characteristics					
Number of females	0,823	0,072	0,00	5,00	300
Percentage of females	0,101	0,068	0,00	0,60	300
Female indicator dummy	0,602	0,012	0,00	1,00	300
Board size	8,461	2,342	5,00	15,00	300
Number of foreign	1,072	0,421	0,00	8,00	300
Percentage of foreign	0,105	0,235	0,00	0,83	300
Foreign indicator dummy	0,751	0,042	0,00	1,00	300
Number of independent directors	2,315	1,024	0,00	5,00	300
Percentage of independent directors	0,245	0,985	0,00	0,42	300
Independent indicator dummy	0,723	0,265	0,00	1,00	300
Firm-level characteristics					
Return on assets	0,041	0,201	-0,25	0,387	300
Return on equity	0,152	0,452	-0,56	0,503	300
Market value to the book value	1,627	1,451	0,452	0,271	300
Total assets (ln)	18,77	1,633	17,98	25,21	300

As it was shown in Table 2, average number of board members is 8.46. average number of the board members for Italy is 10.18(Di Petra et. al, 2008); for American firms it is 10.4 (Coles, Daniel and Naveen, 2008); for Canadian firms it is 11.19 (Bozec and Dia, 2007); for Singapore it is 8.4 (Mak and Kusnadi, 2005); for OECD countries (Belgium, Canada, Switzerland, Germany, Spain, France, England, Italy, the Netherlands and the United States) it is 10 (Andres, Azofra and Lopez, 2005); for Swiss firms it is 8.5 (Loderer and Peyer, 2002); for Spanish firms it is 5.78 (Arosa et. al, 2013), for French firms it is 9.29 (Cavaco et. al., 2013); for Mexican companies it is 11.59 Reyna and Encalada (2012). BIST 100 companies' board size is nearly equal to other countries' board size average.

The other independent variable, percentage of female directors is 10.1%. Cook (2013) found that the percentage of female directors in Canadian firms is 4.6%. Besides, percentage of female directors is for 136 companies listed in S&P 500 Stock Index is %15.2 (Horváth and Spirollari, 2012); for 79 companies listed in New Zealand Securities Market is %16.4. Also Cavaco et al. (2013) found the percentage of female directors for Italian companies as 10%. Percentage of female directors for BIST 100 Index is found to be lower than the average.

Table 3: Pair wise Correlation Matrix

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]
[1]Number of females	-													
[2]Percentage of females	0,84	-												
[3]Female indicator dummy	0,80	0,79	-											
[4]Board size	0,31	0,29	0,22	-										
[5]Number of foreign	0,28	0,21	0,20	0,18	-									
[6]Percentage of foreign	0,24	0,19	0,21	0,29	0,85	-								
[7]Foreign indicator dummy	0,21	0,17	0,19	0,22	0,81	0,84	-							
[8]Number of independent directors	0,34	0,32	0,33	0,28	0,21	0,18	0,19	-						
[9]Percentage of independent directors	0,39	0,28	0,31	0,27	0,18	0,24	0,22	0,84	-					
[10]Independent indicator dummy	0,28	0,26	0,29	0,31	0,15	0,16	0,11	0,79	0,81	-				
[11]Total assets (ln)	0,16	0,12	0,13	0,19	0,25	0,21	0,28	0,19	0,22	0,21	-			
[12]Return on assets	0,17	0,16	0,20	0,27	0,03	-0,02	0,01	0,13	0,11	0,11	0,34	-		
[13]Return on equity	0,15	0,14	0,19	0,25	-0,02	-0,03	0,02	0,14	0,12	0,11	0,28	0,74	-	
[14]Market value to the book value	0,03	-0,02	0,01	0,04	0,30	0,27	0,32	0,15	0,13	0,11	0,02	0,27	0,29	-

Correlation analysis results of the relationship between board composition and firm performance remains in Table 3. According to results, there is a positive relationship between female directors, independent directors, board size and ROA and ROE. Similarly, there is also a positive relationship between the number of foreign directors, number of independent directors and market value to book value.

Table 4: White Period Standard Errors and Covariance Coefficient Method Results (1)

	Return on assets			Return on equity		
	(1)	(2)	(3)	(4)	(5)	(6)
Number of females	1,42*	-	-	1,09*	-	-
Percentage of females	-	1,38*	-	-	0,87*	-
Female indicator dummy	-	-	1,01*	-	-	0,91*
Board size	2,61**	1,89**	2,87**	2,61**	1,89**	2,87**
Number of foreign	0,89	-	-	0,12	-	-
Percentage of foreign	-	0,81	-	-	-0,58	-
Foreign indicator dummy	-	-	-0,23	-	-	-0,05
Number of independent directors	1,25*	-	-	0,88*	-	-
Percentage of independent directors	-	1,33*	-	-	1,02*	-
Independent indicator dummy	-	-	0,98*	-	-	1,36*
Total assets (ln)	2,85**	2,72**	2,59**	1,87**	1,74**	1,69**
Adjusted R ²	0,122	0,112	0,103	0,095	0,091	0,085

** and * indicate significance at the level of 1% and 5% respectively

Table 4 includes the regression analysis results of board composition and ROA and ROE. In the models, it was found that board composition has an effect on firms' ROA and ROE. According to the results of the analysis; there is positive and statistically significant relationship between female directors, independent directors and board size and ROA and ROE. In other words, increase of the number of directors, by increasing the proportion of female and foreign directors, affects ROA and ROE positively. So, the hypothesis H₁ and H₂ were accepted. Despite that, there is no statistically significant relationship between number of foreign directors and ROE.

Table 5: White Period Standard Errors and Covariance Coefficient Method Results (2)

	Market Value to Book Value		
	(7)	(8)	(9)
Number of females		0,54	-
Percentage of females		-	0,23
Female indicator dummy		-	-
Board size		0,07	0,42
Number of foreign		3,25**	-

Percentage of foreign	-	2,87**	-
Foreign indicator dummy	-	-	1,32**
Number of independent directors	1,02*	-	-
Percentage of independent directors	-	1,97*	-
Independent indicator dummy	-	-	1,25*
Total assets (ln)	-0,25	-0,36	-0,22
Adjusted R ²	0,182	0,172	0,193

** and * indicate significance at the level of 1% and 5% respectively

Table 5 includes the regression analysis results of the relationship between board composition and market performance. It was found in the analysis that board composition has an effect on firms' market performances. There is a positive relationship between foreign directors and market value to book value. So, the H₃ hypothesis is accepted. In contrast, female directors and board size don't have any effect on market performance.

5. Conclusion

In this study, effect of board composition on firm performance was studied. For this purpose, data from companies listed in BIST 100 Index for the years 2012-2014 was used. In empirical analysis, White period standard error and covariance coefficient methods were used.

Four models were developed in the research. According to results of the models; positive and significant relationship were found between board size and ROA and ROE. In other words, any increase in the size of the board increases the ROA and ROE per the number of firms. These results can be explained that board with bigger size has more networks and they are better at attaining the critical resources. At the same time, it is not easy to suppress boards with bigger size. Many authors emphasized bigger board with providing more knowledge, experience and opinions.

The other independent variable, number of female directors, affects companies' ROA and ROE in a positive way. Female directors increase the independence level of the boards. And this will affect the firm performance in a positive way. Also, gender diversity provides different character and skills of male and female directors. This can also let boards to utilize different perspectives of female directors. In conclusion, existence of female directors at the boards affects firm performance in a positive way and we can suggest BIST 100 companies to add female directors to their board for having better firm performance.

Number of the independent directors affects firm's both profitability and market performance positively. In the literature review, effective boards include much more outside directors. In other words, independent directors are very crucial for having effective corporate governance system. Besides, independent directors are important for having skills that don't exist inside the company management and getting knowledge of these directors.

A positive and statistically significant relationship was found between foreign directors and market value. Cultural and ethnic diversity of the boards directly affect board independence and indirectly affect firm performance positively. We can infer that companies with foreign directors seem to be more valuable for investors.

In conclusion, there are some constraint in this paper studying the relationship between board composition and firm performance. Firstly, findings of the study are interpreted in terms of BIST 100 companies and data including the 3 years from 2012 to 2014 is the other constraint of the study. For future studies, in the following years, for example analyzing 5 year data and including all companies listed in BIST can provide better insight for the study.

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