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**An Analysis on Relationship Between Board Size and Firm  
Performance for Istanbul Stock Exchange (ISE) National  
Manufacturing Index Firms**

S. Ahmet Mentş



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***An Analysis on Relationship Between Board Size and Firm Performance for Istanbul Stock Exchange (ISE) National Manufacturing Index Firms***

**ABSTRACT**

The paper investigates the relationship between board size and firm performance in Istanbul Stock Exchange (ISE) National Manufacturing Index firms for the period of 2004-2009. The Board of Directors is a vital internal mechanism of corporate governance and plays a crucial role in the management of the firm. Specific board features, like board size, and its' impact on firm performance have been extensively studied. This study employs two performance measures; one of them is Return on Assets (ROA), which is an earnings based performance measure. The second performance measure is Economic Value Added (EVA), which is a value based performance measure. The study exhibits that the relationship between board size and EVA is insignificant but there is a positive significant relationship between board size and Return on Assets (ROA). The study concludes by discussing the possible reasons for the findings and proposes recommendations for future studies on the topic.

**Key Words:** Corporate Governance, Board Size, Performance, Economic Value Added

***İstanbul Menkul Kıymetler Borsası (İMKB) Sınâî Endeksi Şirketlerinde Yönetim Kurulu Büyüklüğü ile Şirket Performansı İlişkisi Üzerine Bir Analiz***

**ÖZET**

Çalışma 2004-2009 yıllarını kapsayan dönem için İstanbul Menkul Kıymetler Borsası (İMKB) Sınâî Endeksi firmaları yönetim kurulu büyüklükleri ve şirket performansları arasındaki ilişkiyi araştırmaktadır. Yönetim kurulu şirketlerin hayati önem taşıyan içsel yönetim mekanizmalarındandır ve şirketin yönetimi açısından kritik role sahiptir. Yönetim kurulu büyüklüğü ve performans ilişkisi yönetim kurullarının yoğun olarak araştırılmış özelliklerindedir. Çalışmada iki adet performans ölçütü kullanılmıştır, bunlardan ilki kara dayalı bir performans ölçütü olan Varlık Karlılığıdır. Çalışmanın ikinci performans ölçütü ise Ekonomik Katma Değerdir (EKD). EKD ise değere dayalı bir performans ölçütüdür. Çalışma EKD ve yönetim kurulu büyüklüğü arasında anlamlı bir ilişki bulamamış ancak varlık karlılığı ve yönetim kurulu büyüklüğü arasında anlamlı pozitif bir ilişki tespit etmiştir. Çalışma elde edilen sonuçların olası nedenlerini tartışmakta ve konuyla ilgili gelecekte yapılacak çalışmalar için önerilerde bulunmaktadır.

**Anahtar Kelimeler:** Kurumsal Yönetişim, Yönetim Kurulu Büyüklüğü, Performans, Ekonomik Katma Değer

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## 1. Introduction

The fundamental reasons that caused corporate governance to become such a popular topic in the past three decades are: The world-wide wave of privatization, the growth of private savings, deregulation, the integration of capital markets and a series of scandals and corporate failures (Becht et. al., 2002).

The broad definition of corporate governance made by the OECD states that corporate governance is a regime that helps to ensure that firms take into account the interests of a wide range of stakeholders, as well as of the communities within which they operate, and that their boards are accountable to the firm and the shareholders. This also helps to assure that firms operate for the benefit of society as a whole. It helps to maintain the confidence of foreign and domestic investors (OECD, 1999).

The financial perspective requires a more focused definition of corporate governance. A more concentrated definition of corporate governance for the area of finance uses corporate governance as concept that deals with the ways in which suppliers of finance to firms assure themselves of getting a return on their investment. The concept basically represents a set of mechanisms by which small investors protect themselves against expropriation by both managers and controlling shareholders (Shleifer and Vishny, 1996; La Porta et. al. 1999).

Corporate governance literature has witnessed the emergence of an extensive body of empirical work on the effectiveness of boards of directors. The investigated topics include the relation between firm's financial performance and the proportion of outside directors (Hermalin and Weisbach, 1991; Bhagat and Black, 2002), board size (Yermack, 1996; Eisenberg et. al., 1998), insiders' ownership (Morck et. al., 2004).

The main reason that corporate governance researchers put great emphasis on board related issues is based on the fact that the Board of Directors is the first line of defense for protecting the rights of the shareholders.

As an internal corporate governance mechanism, the Board of Directors plays a vital role in the management of the firm. Board's effectiveness is crucial for the performance of the company and has to be measured using a sound and dependable performance measure. The most frequently used financial performance measures used in academic research are ROA (Return on Assets), ROE (Return on Equity) and EPS (Earnings per Share).

This study employs ROA and Economic Value added (EVA) as the performance measures to understand the relationship between firm performance and board size. EVA is a performance measure that does not suffer the shortcomings of traditional and frequently used financial performance measures such as ROE and ROA. A brief definition of EVA and its superiority compared to other performance measures will be discussed in the following sections.

This study focuses on a particular aspect of boards of directors. It investigates the relationship between board size and performance in Istanbul Stock Exchange (ISE) National Manufacturing firms for the period of 2004-2009. There is a vast number of studies and academicians who advocate that a limited number of directors enhances the effectiveness of the board and improves performance of the firm. The studies that exhibit the negative relationship between the board size and firm performance will be discussed in detail in the "Literature Review" section.

Following the previous studies made on the topic, this study hypothesizes that an empirical investigation should reveal a negative correlation between board size and performance in ISE National Manufacturing Index firms for the period of 2004-2009.

## 2. Literature Review

The literature on boards of directors identifies three basic functions that boards perform (Zahra and Pearce, 1989). The first is the monitoring role which mainly involves selecting board members, compensating and making implicit or explicit decisions regarding the retention of the chief executive officer and other members of the senior management team.

Monitoring role also involves overseeing the process of accounting, financial reporting, auditing and disclosure, the mechanisms by which investors and other stakeholders are able to make assessments about the performance of the company and its management (Hermalin and Weisbach, 1998; Dechow, 1996; Fama and Jensen, 1983; Langevoort, 2000).

The second board function is to assist the company in claiming and protecting its shares of external resources. Board members help make the company more legitimate in the eyes of key resource providers such as governments, customers and labor. Their connections can be of useful for the success of the firm (Langevoort, 2000).

The third function is called the “service” role. Boards do help formulate corporate strategy, acting as a sounding board for the chief executive and senior management team and providing external input into the strategic process (Judge and Zeithaml, 1992).

As mentioned before, there is a vast amount of corporate governance literature on board of directors and its features. One of the most consistent empirical relationships about boards of directors is that board size is negatively related to firm performance (Hermalin and Weisbach, 2003). Yermack (1996) finds a statistically significant negative relationship between board size and firm performance. In the same study, Yermack also exhibited that companies with small boards have more favorable values for financial ratios. Eisenberg, Sundgren and Wells (1998) reach similar results with Yermack (1996) and confirm the negative relationship between board size and firm performance measured by return on assets (ROA) for a sample of Finland based firms. Barhart and Rosenstein (1998) also revealed that companies with fewer board members have superior performance compared to companies with crowded boards. Conyon and Peck's (1998) study, which was conducted in five countries (England, Denmark, France, Netherlands and Italy) for the period of 1992-1995 exhibited the negative relationship between board size and firm performance for each country. Also, Loderer and Peyer (2002) find a significantly negative impact of board size and financial performance for Swiss firms. In their study that includes Japan and Australia, Bonn, Yoshikawa and Phan (2004) exhibit the negative relationship between board size and firm performance for Japanese firms. Similarly, Lasfer (2004) discovered the negative influence of board size on firm performance for British firms. Studies conducted by Mak and Kusnadi (2005) and Haniffa and Hudaib (2006) document the negative impact of board size on firm financial performance for Malaysian firms. In their study that covers Forbes 500, Cheng, Evans and Nagarajan (2008) exhibit that there is a negative relationship between firm performance and board size for 350 of the Forbes 500 firms. Also, Hutler (1997), Van Eas, Postma, and Sterken (2003), and Guest (2009) reach similar findings in their studies about the relationship between board size and firm performance.

The support for smaller boards goes beyond research findings. There is strong support to limit the board sizes. Lipton and Lorsch (1992) claims that board sizes should be limited to ten members in order to increase effectiveness and that overcrowded boards cause shareholders lose money. In the same study, it is argued that it becomes difficult for all board members to express their ideas and opinions if the board size exceeds ten members. Similarly, Jensen (1993) argues that smaller boards can improve firm performance. In cases where boards get beyond seven or eight people, they are less likely to function effectively. The disadvantages of large boards is based on the idea that tasks like communication, coordination and decision making are much harder to be accomplished among larger groups.

Although the findings and arguments in favor of smaller boards are very strong there are also studies that find a positive relationship between board size and firm performance. Tanna, Pasiouras and Nnadi (2008) exhibit the positive relation between board size and performance for British banks. Bhagat and Black (2002) find that the negative relationship between board size and performance is not robust. Adams and Mehran (2005) study concluded that board size does not

have a negative effect on performance. Belkhir (2009) concludes that there is a positive relationship between board size and firm performance. Similar findings are also reached by Kyereboah-Coleman and Biepkke (2006), Larmou and Vafeas (2009).

The most frequently used argument in favor of large boards is underlined by Haleblan and Finkelstein (1993), who claim that the major advantage of large boards is the collective information that the board possesses about factors that affect the value of the firm, such as product markets, technology and regulation. Zahra and Pearce (1989) add that larger boards are tougher to manipulate, as compared to boards with fewer members. Anderson, Mansi and Reeb (2004) support the idea of larger boards by claiming that investors of firms with larger boards believe that the financial accounting structures of those firms are monitored better, enabling those firms to decrease the cost of borrowing.

### **3. Features that Shape Turkish Boards**

A distinguishing feature of Turkish firms is the fact that they are mostly owned by families. Families are not only the controlling shareholders, but they also are very involved with the management of the family firms as well. Family members hold the key management positions (Yurtoğlu, 2000).

There are different factors that promote the heavy presence of family members at board of directors and managerial positions of Turkish firms. The most dominant reason seems to be the motivation of the family to protect its financial rights and interests against possible problems that may rise due to weak investor protection (La Porta et. al., 1999). Cultural factors are also believed to play an important role in the heavy presence of family members at boards of directors. Turkey is classified as a collectivist culture and loyalty is a very typical feature of such cultures (Hofstede). Loyalty is also very strong and specific feature of the Turkish society. This makes family members favorite candidates for boards of family owned firms.

Considering the factors mentioned above, it would not be wrong to suspect that the heavy presence of family members in managerial positions and board of directors may blur or distort the assumed negative relationship between board size and firm performance.

### **4. Performance Management**

Performance shows if the resources of the firm are used efficiently to fulfill the goals of the firm (Daft, 1997) and it is vital in evaluating the overall success of the firm (Parker, 2000). The measurement of the performance of firms has long been of central interest to researchers. Performance management encompasses all the processes, information, and systems used by managers to set strategy, develop plans, monitor execution, forecast performance, report results, and make decisions (Axon, 2010).

Performance measurement is the selection and use of quantitative measures of capacities, processes, and outcomes to develop information about critical aspects of activities, including their effect on the firm. Performance measurement is the periodical collection and reporting of data to track work produced and results achieved (Lichiello and Turnock).

Measuring performance is not an end in itself but plays a crucial role in achieving managerial goals. Kravchuk and Scharck argue performance measurement serves a number of different purposes: planning, evaluation, organizational learning, driving improvement efforts, decision making, resource allocation, control, facilitating the devolution of authority to lower levels of the hierarchy, and helping to promote accountability (Kravchuck and Schack, 1996).

For performance measurement, firms employ both financial and nonfinancial performance criteria. Financial performance measures are the starting point for most firms' performance measurement processes (Bloxham, 2002).

Performance measure can be briefly defined as the specific quantitative representation of a capacity, process, or outcome deemed relevant to the assessment of performance (Lichiello and Turnock).

Measures such as ROA (Return on Assets), ROE (Return on Equity) are earnings based financial performance measures that are most frequently used in academic research. The critiques of earnings based performance measures underline the fact that earnings based performance measures do not take the cost of equity into account while calculating these performance measures.

In order to maximize wealth, investors prefer the investment option with the highest return for a given level of risk. For wealth maximization the return on investment has to exceed the overall cost of the capital. In economic terms, the cost of capital represents the opportunity cost that the investors face for investing their funds in one particular business instead of others with the same level of risk (Koller et. al, 2005), which makes, cost of capital the primary criterion determining whether a company's performance is satisfactory or not (Pratt and Grabowski, 2008).

## 5. Purpose of the Study

The main purpose of this study is to uncover if the academically claimed negative relationship between board size and firm performance holds for ISE National Manufacturing firms. The study is conducted for 120 ISE National Manufacturing Index firms for the period of 2004-2009. The study hypothesizes there is a significant and negative relationship between board size and firm performance at a confidence level of 99%.

## 6. Model Variables

Official web sites of ISE ([www.ise.gov.tr](http://www.ise.gov.tr)) and Public Disclosure Platform ([www.kap.gov.tr](http://www.kap.gov.tr)) are used to gather the information regarding the board sizes and required financial data for the six year period that the study covers. The firms that dropped out of ISE National Manufacturing Index for the period covered are excluded from the study. Also, the firms that failed to report the required data or have missing information at the ISE web site are not included in the study. After excluding the firms that do not fit the criteria, the number of firms that are included in the study is 120.

### 6.1. Return on Assets (ROA)

ROA is one of the most frequently used (Yermack, 1996; Eisenberg et. al., 1998; Belkhir, 2009) performance measure to test the relationship between board size and firm performance. ROA is calculated as the net income divided by the book value of total assets. As mentioned before, ROA is an earning based performance measure. Like all other earning based performance measures ROA is also criticized for not taking cost of equity into account.

In addition to the popular financial performance measures such as ROA that is commonly used in prior studies on the topic, this study also uses Economic Value Added (EVA) as a financial performance measure.

## 6.2. Economic Value Added (EVA)

Unlike previous studies that investigate the relation between board size firm performance; this study employs not only an earnings based performance measure (ROA) but also a value based performance measure (EVA) to understand the relation between board size and firm performance.

The aim of the stock market quoted firm is to maximize shareholder value and it is therefore argued that the main measure of financial performance used by such firms should be in line with this objective. As indicated previously, most measures of financial performance, such as profit, return on investment (ROI), return on equity (ROE) and return on assets (ROA) suffer from inherent defects that may cause dysfunctional decision making on the part of managers. EVA, which is defined as accounting profit less a charge for capital employed, is claimed to be less problematic in this respect (Otley, 1999).

Peter Drucker describes EVA as a vital measure of total factor productivity, one that reflects all the dimensions by which the management can increase value (Ehrbar, 1998). The same book by Ehrbar strongly argues that EVA is a measure of financial performance that is intended to focus managers' minds on the delivery of shareholder value. Young and O'Brein (2000) claims that EVA is the best measure available which does not suffer the drawbacks of other performance measures.

Unlike traditional measures of firm profitability EVA looks at a firm's "residual profitability," net of both the direct cost of debt capital and the indirect cost of equity capital. In this way EVA serves as a modern measure of financial success because it is closely linked to the shareholder wealth maximization requirement. EVA measures residual income; it measures the difference between a firm's cost of capital and return on capital. From an accounting perspective, EVA can be defined as the difference between the firm's net operating profit after tax (NOPAT) and its weighted average cost of capital. In this context, EVA can be expressed in more general terms as (Grant 1997):

$$\text{EVA} = \text{NOPAT} - \text{Cost of Capital}$$

In this equation, the cost of capital is calculated by multiplying the percentage cost of capital times the capital investment according to:

$$\text{Cost of Capital} = [\% \text{ Cost of Capital} / 100] \times \text{Investment}$$

Similarly, the percentage cost of capital is obtained by taking a "weighted average" of the firm's after-tax cost of debt and equity capital as shown by:

$$\begin{aligned} \% \text{ Cost of Capital} = & [\text{Debt Weight} \times \% \text{ After tax Debt Cost} \\ & + \text{Equity Weight} \times \% \text{ Cost of Equity}] \end{aligned}$$

Each of the financial performance measures (ROA and EVA) defined above that are assumed to represent the financial performance of the firms are used as dependent variables of the study.

The study has four independent variables that are assumed to determine the financial performance. Similar variables are also used at Belkhir's frequently referred 2009 study. The first independent variable is logarithmic value of total assets LN(ASSETS). The second independent

variable is the leverage ratio (LEVERAGE). Leverage ratio is calculated as the total debt divided by the book value of total liabilities. Logarithmic value of stock price volatility LN(VOL) is the third independent variable and it is the standard deviation of daily stock prices. The last independent variable is the board sizes (BSIZE) of the firms that are included in the study. Descriptive statistics of variables and the correlation analysis results are displayed at Table 1.

Table 1: Descriptive Statistics of Variables and the Correlation Analysis Results

	N	Mean	Std. Deviation	Correlation with BSIZE	Correlation with EVA/ASSETS	Correlation with ROA
LN(ASSETS)	720	5,366234	1,37	0,431***	0,252***	0,210***
BSIZE	720	7,020833	2,07	1	0,178***	0,248***
EVA.ASSETS	720	-0,06599	0,11	0,178***	1	0,781***
LEVERAGE	720	0,415708	0,21	-0,177***	-0,167***	-0,514***
ROA	720	0,033736	0,10	0,2485***	0,781***	1
LN(VOL)	720	16,87445	1,51	0,417***	0,373***	0,309***
Valid N (listwise)	720					

Correlation analyses suggest that the variables that have strong relationship are ROA and EVA/Assets ratio. Variables with positive moderate level of relationship with board size are LN(ASSETS) and LN(VOL). The variables that have a negative moderate relationship with each other are ROA and leverage ratio (LEVERAGE). The correlation of LEVERAGE with board size and EVA/Assets is weak and negative. The moderate positive relation is evident for the pairs of the variables EVA.ASSETS – LN(VOL) and ROA – LN(VOL). All of the other correlations prove to be positive and weak. All the correlations are statistically significant at a 0,001 significance level.

## 7. Model Design

Multiple linear regression model with stepwise technique is employed and the hypothetical model equations in which two dependent variables are used presented below.

### Model 1

$$EVA / ASSETS = \beta_0 + \beta_1 BSIZE + \beta_2 LEVERAGE + \beta_3 LN(ASSETS) + \beta_4 LN(VOL) + \varepsilon$$

### Model 2

$$ROA = \beta_0 + \beta_1 BSIZE + \beta_2 LEVERAGE + \beta_3 LN(ASSETS) + \beta_4 LN(VOL) + \varepsilon$$

## 8. Empirical Findings for Model 1

In the model in which EVA/ASSETS is used as the dependent variable, only three variables (LN(VOL), LN(ASSETS) and LEVERAGE) are found to be significant. The final equation obtained is as follows:

$$\text{EVA/ASSETS} = -0,6 - 0,056 \text{ LEVERAGE} - 0,016 \text{ LN(ASSETS)} + 0,038 \text{ LN(VOL)}$$

According to the ANOVA analysis results, it is suggested that the model is working. Because the significance level for the model's F value (47,218) is less than 0,001. But the Durbin Watson statistics points out that there is a weak positive auto correlation between error terms ( $1,35 < 1,48$ ). All the variables included in the model are statistically significant for at least 99,5% confidence level.

Variables Entered/Removed <sup>a</sup>			
Model	Variables Entered	Variables Removed	Method
1	LN (VOL)	.	Stepwise (Criteria: Probability-of-F-to-enter ≤ ,050, Probability-of-F-to-remove ≥ ,100).
2	LEVERAGE	.	Stepwise (Criteria: Probability-of-F-to-enter ≤ ,050, Probability-of-F-to-remove ≥ ,100).
3	ASSETS	.	Stepwise (Criteria: Probability-of-F-to-enter ≤ ,050, Probability-of-F-to-remove ≥ ,100).
a. Dependent Variable: EVA.ASSETS			

<b>Model Summary<sup>d</sup></b>					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,373 <sup>a</sup>	,139	,138	,10073	
2	,393 <sup>b</sup>	,155	,152	,09990	
3	,406 <sup>c</sup>	,165	,162	,09935	1,352
a. Predictors: (Constant), VOL					
b. Predictors: (Constant), VOL, LEVERAGE					
c. Predictors: (Constant), VOL, LEVERAGE, ASSETS					
d. Dependent Variable: EVA.ASSETS					

<b>ANOVA<sup>d</sup></b>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,181	1	1,181	116,354	,000 <sup>a</sup>
	Residual	7,285	718	,010		
	Total	8,465	719			
2	Regression	1,310	2	,655	65,638	,000 <sup>b</sup>
	Residual	7,155	717	,010		
	Total	8,465	719			
3	Regression	1,398	3	,466	47,218	,000 <sup>c</sup>
	Residual	7,067	716	,010		
	Total	8,465	719			
a. Predictors: (Constant), VOL						
b. Predictors: (Constant), VOL, LEVERAGE						
c. Predictors: (Constant), VOL, LEVERAGE, ASSETS						
d. Dependent Variable: EVA.ASSETS						

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-,520	,042		-12,306	,000
	VOL	,027	,002	,373	10,787	,000
2	(Constant)	-,475	,044		-10,852	,000
	VOL	,026	,002	,359	10,368	,000
	LEVERAGE	-,065	,018	-,125	-3,603	,000
3	(Constant)	-,600	,060		-9,928	,000
	VOL	,038	,005	,527	7,982	,000
	LEVERAGE	-,056	,018	-,107	-3,050	,002
	ASSETS	-,016	,005	-,196	-2,988	,003
a. Dependent Variable: EVA.ASSETS						

Model results exhibit that there is no significant relationship between board size and EVA/ASSETS which is taken as a measure for financial performance. Since its significance level exceeds our reference significance threshold, that variable is omitted from the model. On the other hand, asset size and leverage appear to be negatively effective on firm performance whereas stock price volatility has a positive effect on the firm performance.

### 9. Empirical Findings for Model 2

In the model proposal where ROA is considered to be the model's dependent variable, the following equation is obtained as the final model.

$$ROA = -0,152 + 0,004 \text{ BSIZE} - 0,238 \text{ LEVERAGE} + 0,015 \text{ LN (VOL)}$$

Regarding Durbin Watson statistics it can be said that there is weak and positive autocorellation between error terms for the test statistic of the model ( 1,27) is slightly below the critical dL value of 1,48.

The significance level for the F value of the model (117,972) is again below 0,001. As seen from the model equation only three variables are found to be statistically significant. Contrary to Model 1, the variable representing board size (BSIZE) takes place in the Model 2. The other significant independent variables are leverage and stock price volatility. However, asset size is left out of the model because of multicollinearity concerns.

Variables Entered/Removed <sup>a</sup>			
Model	Variables Entered	Variables Removed	Method
1	LEVERAGE	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).
2	VOL	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).
3	BSIZE	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).
a. Dependent Variable: ROA			

Model Summary <sup>d</sup>					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,514 <sup>a</sup>	,264	,263	,08909	
2	,572 <sup>b</sup>	,327	,325	,08528	
3	,575 <sup>c</sup>	,331	,328	,08508	1,271
a. Predictors: (Constant), LEVERAGE					
b. Predictors: (Constant), LEVERAGE, VOL					
c. Predictors: (Constant), LEVERAGE, VOL, BSIZE					
d. Dependent Variable: ROA					

ANOVA <sup>d</sup>						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2,046	1	2,046	257,820	,000 <sup>a</sup>
	Residual	5,698	718	,008		
	Total	7,744	719			
2	Regression	2,530	2	1,265	173,928	,000 <sup>b</sup>
	Residual	5,214	717	,007		
	Total	7,744	719			
3	Regression	2,562	3	,854	117,972	,000 <sup>c</sup>
	Residual	5,183	716	,007		
	Total	7,744	719			
a. Predictors: (Constant), LEVERAGE						
b. Predictors: (Constant), LEVERAGE, VOL						
c. Predictors: (Constant), LEVERAGE, VOL, BSIZE						
d. Dependent Variable: ROA						

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,141	,007		18,902	,000
	LEVERAGE	-,258	,016	-,514	-16,057	,000
2	(Constant)	-,158	,037		-4,234	,000
	LEVERAGE	-,243	,015	-,484	-15,679	,000
	VOL	,017	,002	,252	8,155	,000
3	(Constant)	-,152	,037		-4,059	,000
	LEVERAGE	-,238	,016	-,475	-15,264	,000
	VOL	,015	,002	,223	6,622	,000
	BSIZE	,004	,002	,071	2,100	,036
a. Dependent Variable: ROA						

Excluded Variables <sup>d</sup>							
Model		Beta In	T	Sig.	Partial Correlation	Collinearity Statistics	
							Tolerance
1	BSIZE	,163 <sup>a</sup>	5,084	,000	,187	,969	
	ASSETS	,205 <sup>a</sup>	6,592	,000	,239	1,000	
	VOL	,252 <sup>a</sup>	8,155	,000	,291	,986	
2	BSIZE	,071 <sup>b</sup>	2,100	,036	,078	,809	
	ASSETS	-,030 <sup>b</sup>	-,516	,606	-,019	,272	
3	ASSETS	-,056 <sup>c</sup>	-,934	,351	-,035	,262	
<p>a. Predictors in the Model: (Constant), LEVERAGE</p> <p>b. Predictors in the Model: (Constant), LEVERAGE, VOL</p> <p>c. Predictors in the Model: (Constant), LEVERAGE, VOL, BSIZE</p> <p>d. Dependent Variable: ROA</p>							

Model 2 results challenge our hypothesis that there is a significant and negative relationship between board size and ROA as measure of financial performance. The finding that exhibits proportional relationship significant at a confidence level of 95 % between board size and performance conflicts with our expectation.

## 10. Summary and Conclusion Remarks

Corporate governance literature has witnessed the emergence of an extensive body of empirical work on the effectiveness of boards of directors. The main reason that corporate governance researchers put great emphasis on board related issues of directors is based on the fact that board of directors is the first line of defense for protecting the rights of the shareholders.

One of the topics that is heavily investigated is the relationship between board size and firm performance. The findings about the relation between board sizes and financial performance is indecisive. There are numerous studies that support the idea that there is a negative relationship between the board size and firm performance; there are also studies which reach the conclusion that there is a positive relationship between firm performance and board size.

There is no doubt that contradicting findings about the topic is a result of different time periods, different performance measures, different legal and cultural settings of different countries used for each study conducted.

Main purpose of the study is to uncover if the academically claimed negative relationship between board size and firm performance holds for ISE National Manufacturing Index firms. The study tests the validity of the hypothesis that there is a significant and negative relationship between board

size and firm performance at a confidence level of 99% for ISE National Manufacturing Index firms for the period of 2004-2009.

ROA and EVA are assumed to represent the financial performance of the firms and are used as dependent variables in the study. EVA is claimed as immune suffer from inherent defects of earnings based traditional performance measures. Unlike traditional measures of firm profitability, EVA looks at a firm's "residual profitability," net of both the direct cost of debt capital and the indirect cost of equity capital. In this way EVA serves as a modern measure of firm financial success, because it is closely aligned with the shareholder wealth maximization requirement.

The study failed to find a significant negative relationship between EVA and board size. On the other hand, the study revealed a positive relationship between ROA and board size for ISE National Manufacturing Index firms. The findings regarding the relationship between board size and ROA challenge our hypothesis that there is a negative relationship between board size and firm performance for ISE National Manufacturing Index firms for the period of 2004 -2009.

It is highly possible that heavy family presence at boards due to factors such as social culture, legal structure and ownership concentration play a major role on the findings of the study. But the above mentioned factors that are suspected to be effective on the findings are expected to evolve as the globalization transforms legal structures of countries and cultures of societies. Turkey is no exception. Mergers and acquisitions of Turkish firms by foreign firms, the legal and structural reforms initiated by European Union membership process are factors that will speed up the transformation of Turkish firms. These developments are expected to eventually evolve the board structures in Turkey.

Future studies that aim to uncover the relationship between demographical features of board members, such as kinship to controlling shareholder family, education level, age, job experience, and firm performance may contribute to better understanding of the topic.

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**References:**

- Adams, R.B. and H., Mehran, (2005). Corporate Performance, Board Structure and its Determinants in the Banking Industry. *Working Paper, EFA Moscow Meetings*.
- Anderson, R.C., Mansi, S. & Reeb, D.M., (2004). Board Characteristics, Accounting Report Integrity, and the Cost of Debt. *Journal of Accounting and Economics*, 37(3), 315-342
- Axon, D. A. J. (2010). *Best Practices in Planning and Performance Management Radically Rethinking Management for a Volatile World*. (New Jersey): John Wiley & Sons, Inc.
- Barnhart, S.W. & Roseinstein, S. (1998). Board Composition, Managerial Ownership, and Firm Performance: An Empirical Analysis. *The Financial Review*, 33, 1-16.
- Becht, M., Bolton, P. & Röel, A. (2002). Corporate Governance and Control. *European Corporate Governance Institute*, Working Paper No: 02/2002, 10–14.
- Behn, R. D. (2003). Why Measure Performance? Different Purposes Require Different Measures. *Public Administration Review*, 63, 5, 586-605.
- Belkhir, M., (2009). Board of Director's Size and Performance in Banking. *International Journal of Managerial Finance*, 5, 201-221.
- Bhagat, S. & Black, B.S., (2002). The Non-Correlation Between Board Independence and Long Term Firm Performance. *Journal of Corporation Law*, 27, 231-274.
- Bloxham, E., (2002). *Economic Value Management: Applications and Techniques*, (New Jersey): John Wiley&Sons, Inc.
- Bonn, I., Yoshikawa, T. & Phan, P.H., (2004). Effects of Board Structure on Firm Performance: A Comparison between Japan and Australia. *Asian Business & Management*, 3, 105-125.
- Cheng, S., Evans, J.H., & Nagarajan, N. J., (2008). Board Size and Firm Performance: The Moderating Effects of the Market for Corporate Control. *Review of Quantitative Finance and Accounting*, 31, 121-145.
- Conyon, M.J., & Peck, S.I., (1998). Board Size and Corporate Performance: Evidence from European Countries. *European Journal of Finance*, 4, 291-304.
- Daft, R.L., (1997). *Management*, (Florida): The Dryden Press.
- Dechow, P.M., Sloan, R.G. & Sweeney A. P. (1996). Causes and consequences of earnings manipulation: an analysis of firms subject to enforcement actions by the SEC. *Contemporary Accounting Research*,13, 1–36.
- Ehrbar, A. (1998). *EVA: The Real Key to Creating Wealth*. (New York): John Wiley & Sons, Inc.
- Eisenberg, T., S., Sundgren, S. & Wells, M.T. (1998). Larger Board Size and Decreasing Firm Value in Small Firms. *Journal of Financial Economics*, 48, 35-54.
- Fama, E.F., & Jensen, M.C. (1983). Separation of Ownership and Control. *Journal of Law and Economics*, 26, 301-325.
- Grant, J. L. (1997). *Foundations of Economic Value Added*. (Pennsylvania)
- Guest, P.M., (2009). The Impact of Board Size on Firm Performance: Evidence from the UK. *The European Journal of Finance*, 15, 4, 385-404.
- Haleblian, J. & Finkelstein, S. (1993). Top Management Team Size, CEO Dominance and Firm Performance: The Moderating Roles of Environmental Turbulence and Discretion. *Academy of Management Journal*, 36, 4, 844-863.

Haniffa, R., & Hudaib, M. (2006). Corporate Governance Structure and Performance of Malaysian Listed Companies. *Journal of Business Finance and Accounting*, 33,7-8, 1034-1062.

Hermalin, B.E. & Weisbach, M.S. (1991). The Effects of Board Composition and Direct Incentives on Firm Performance. *Financial Management*, 20,4, 101-112.

Hermalin, B.E. & Weisbach, M.S. (1988). The Determinants of Board Composition. *Rand Journal of Economics*, 19, 4, 589-606.

Hermalin, B.E. & Weisbach, M.S. (2003). Boards of Directors as an Endogenously Determined Institution: A Survey of the Economic Evidence. *Economic Policy Review*, 9, 7-26.

Hofstede, [www.geert-hofstede.com](http://www.geert-hofstede.com)

Huther, J., (1997). An Empirical Test of the Effect of Board Size on Firm Efficiency. *Economics Letters*, 54, 3, 259-264.

Jensen, M., (1993). The Modern Industrial Revolution, Exit and the Failure of Internal Control Systems. *Journal of Finance* 48, 3, 831–880.

Judge W. & Zeithaml, C. (1992). Institutional and Strategic Choice Perspectives on Board Involvement in the Strategic Decision Process. *Academy of Management Journal*, 35, 766-794.

Jonathan , J., Daily, C.M. & Ellstrand, A.E. (1996). Boards of Directors: A Review and Research Agenda. *Journal of Management*, 22, 3, 409-438.

Koller, T., Goedhart, M. & Wessels, D. (2005). *Valuation: Measuring and Managing the Value of Companies*. (New Jersey): McKinsey and Company.

Kravchuk, R. S. & Schack, R. W. (1996). Designing Effective Performance Measurement Systems Under the Government Performance and Results Act of 1993. *Public Administration Review*, 56,4, 348–58.

Kyereboah-Coleman, A. & Biepeke, N. (2006). The Link Between Corporate Governance and Performance of the Non-Traditional Export Sector: Evidence from Ghana. *Corporate Governance: International Journal of Business in Society*, 6,5, 609-623.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. & Vishny, R. (1999). Investor Protection: Origins,Consequences, Reform. National Bureau of Economic Research, Working Paper No: 7428.

Langevoort, D. C. The Human Nature of Corporate Boards: Law, Norms and The Unintended Consequences of Independence and Accountability. Georgetown University Law Center, Working Paper No: 241402.

Larmou, S., & Vafeas, N. (2009). The Relation Between Board Size and Firm Performance in Firms with a History of Poor Operating Performance. *Journal of Management Governance*, 14,1, 61-85.

Lasfer, M.A. (2004). On the Monitoring Role of The Board of Directors: The Case of The Adoption of Cadbury Recommendations in the UK. *Advances in Financial Economics*, 9, 287-326.

Lichiello, Patricia Bernard J. Turnock, Guidebook for Performance Measurement, Turning point, The Robertwood Johnson Foundation, 9-11

Lipton, M., & Lorsch, J.W. (1992). A Modest Proposal for Improved Corporate Governance. *BusinessLawyer*, 48, 59-77.

Loderer, C. & Peyer, U. (2002). Board Overlap, Seat Accumulation and Share Prices. *European Financial Management*, 8, 2, 165-92.

- Mak, Y.T. & Y., Kusnadi, Y. (2005). Size Really Matters: Further Evidence on the Negative Relationship Between Board Size and Firm Value. *Pacific-Basin Finance Journal*, 13, 3, 301-318.
- Morck, R., D., Wolfenzon, D. & Yeung, B. (2004). Corporate Governance, Economic Entrenchment and Growth. Working Paper, NBER.
- OECD (1999). OECD Principles of Corporate Governance, Directorate For Financial, Fiscal and Enterprise Affairs.
- Otley, D. (1999). Performance Management: A Framework for Management Control Systems Research *Management Accounting Research*, 10, 363-382
- Parker, C. (2000). Performance Measurement, *Work Study*, 49, 2, 63-66.
- Pratt, S. P. & Grabowski, R. J. (2008). *Cost of Capital: Applications and Examples*. (New Jersey), John Wiley & Sons, Inc.
- Shleifer, A. R. & Vishny, W. (1996). A Survey of Corporate Governance. National Bureau of Economic Research, Working Paper No: 5554.
- Tanna, S., Pasiouras F. & Nnadi, M. (2008). The Effect of Board Size and Composition on The Efficiency of UK Banks. Economics, Finance and Accounting Applied Research Working Paper, Coventry University.
- Van Ees H., Postma T.J. & Sterken, E. (2003). Board Composition and Firm Performance in the Netherlands. *Eastern Economic Journal*, 29, 41-58.
- Yermack, D. (1996). Higher Market Valuation of Companies with a Small Board of Directors. *Journal of Financial Economics*. 40,1, 185-211.
- Young D. & O'Brein, S. F. (2000). *EVA and Value-Based Management A Practical Guide to Implementation*. McGraw-Hill - <http://www.valueadvisors.com/Attachments/Book%20Review%20-%20pdf.pdf>
- Yurtođlu, B. (2003). Corporate Governance and Implications for Minority Shareholders in Turkey. *Journal of Corporate Ownership & Control*, 1, 1, 72-86.
- Zahra, S. & Pearce, J. A. (1989). Boards of Directors and Corporate Financial Performance: A Review and Integrative Model. *Journal of Management*, 15, 2, 291-334.



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