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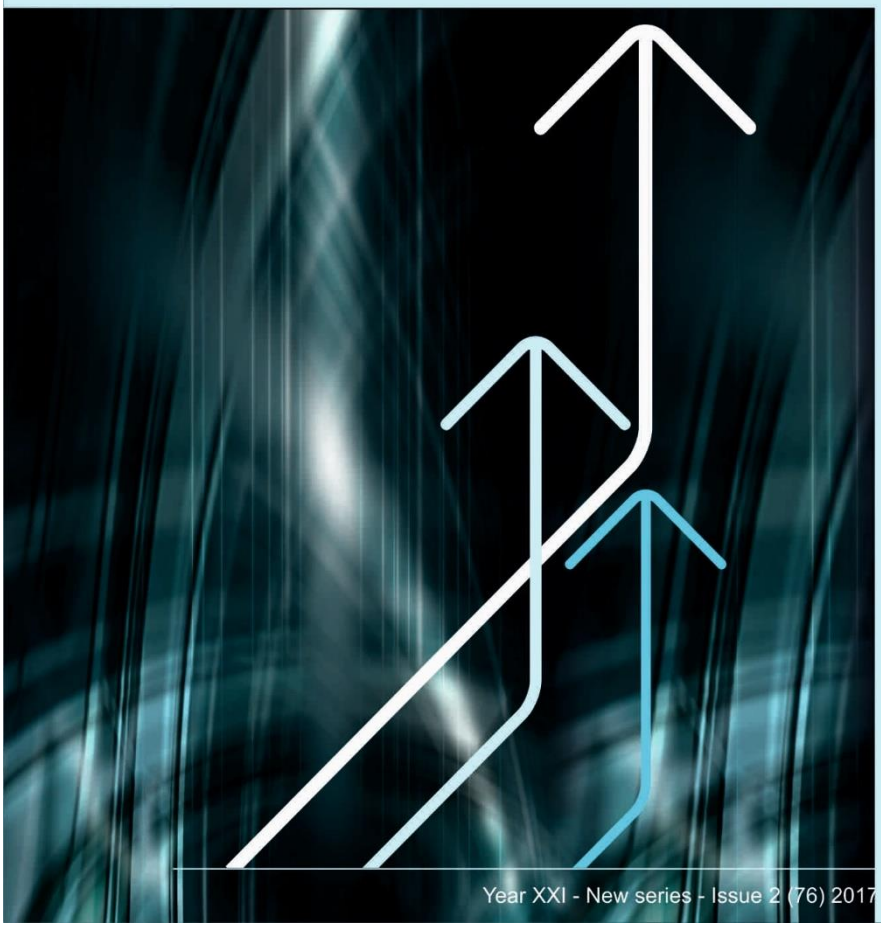

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“VICTOR SLĂVESCU” CENTRE FOR FINANCIAL
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FINANCIAL STUDIES

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CONTENTS

THE EFFECT OF ENTERPRISE RISK MANAGEMENT ON FIRM PERFORMANCE: A CASE STUDY ON TURKEY[1]

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Abstract

Enterprise Risk Management (ERM) is a risk management process based on all of the risks faced in business and applied entirely by the enterprise. It is also a risk management process that evaluates risk and opportunity together and provides reasonable assurance that the business objectives are realized. This study attempts to determine the effect of ERM on firms' financial performance and the determinants of ERM. The study sample was prepared by the firms listed in Stock Exchange Istanbul (BIST), within the first 200 of the list of the Top 500 Industrial Enterprises of Turkey which Istanbul Chamber of Industry prepared for 2015. 231 observational values were obtained from a sample of 33 firms in the 2009-2015 period. In panel data analysis, it was seen that the effects of ERM on firm performance were not determined, whereas in the panel logistic regression, firm size was found to be determinant of ERM applications.

Keywords: Risk Management, Financial Performance, Panel Data Analysis, Panel Logistic Regression

JEL Classification: G10, G17, G32

1. Introduction

Historically, it is possible to examine risk management from two perspectives as Traditional Risk Management (TRM) and Enterprise Risk Management (ERM). The first is TRM, in which

[1] *The study has been done by developing of Zekai Şenol's PhD thesis.*

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insurance and derivative instruments are used as risk management techniques, the risks are handled separately and independently in the business units, the risk is considered as a threat, and it represents a reactive understanding. The second is the ERM, which represents risks in the form of portfolio management, which is used as a portfolio used in business, and which represents a proactive approach that deals with the opportunity dimension as well as the risk threat dimension. Although there are many definitions of ERM, the literature is mostly based on the definition made by The Committee of Sponsoring Organizations of the Treadway Commission (COSO). According to COSO (2004), ERM is a process, effected by an entity´s board of directors, management and other personnel, applied in strategy setting, and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives

In the mid-1990s, ERM, as an understanding of how to deal with risks in modern risk management, emerged as a new approach and idea in risk management (Kleffner et. al, 2003: 54; Simkins ve Ramirez, 2008: 580; Fraser et. al, 2015: 1). ERM first showed improvement in financial sector, then ERM applications started to spread in the real sector. There are undoubtedly many reasons why risk management has gained momentum and reached today.

One reason for its success are the Basel regulations. The main objective in Basel regulation is to regulate capital adequacy for banks to strengthen financial regulations against risk management and supervision. The other reason is the removal of fraud and scandals in the account. For this purpose, the Sarbanes-Oxley (SOX) law in the United States was adopted in 2002. In this regard, Standard and Poor's (S&P) non-financial firms published ERM analyses for credit ratings in 2007 and announced that ERM would be applied in credit ratings in 2008 (Protiviti, 2008: 1). Another important point is that today, with the development of financial markets, the numbers of many partners and public firms have started to increase. The growing scale of the firms reveals the importance of shareholder expectations and the necessity of better governance of the enterprises.

In addition, with the increase of the mass media and the increase of the education and cultural exposure of consumers, concepts such as brand and the firm image have increased and the

firm structure of the environment and collecting has become more sensitive. Despite having a long history of risk management for many organizations, the 2008-2009 global economic and financial collapse has highlighted the importance of healthy organizational structure and long-term sustainability in the ERM framework in general (Hardy, 2015: 27).

The 2008 global crisis revealed the reassessment of risk management insights. Many scholars and experts pointed out that the failure of TRM with the crisis of 2008 (Fraser and Simkins, 2010: 27). The global crisis has shown that risk management is important not only for firms but also for regulators and the global economy as a whole (Eckles et. al, 2014: 247). Organizations, legal regulators, stock exchanges, consulting firms, rating agencies and universities have begun to take ERM into account as a way to combat economic chaos (Bertinetti et. al. 2013, 2).

The main purpose of ERM is to increase firm value and shareholder value. At the point of reaching this basic aim, ERM has the following benefits for firms. ERM benefits for the firms in subjects such as risky danger dimension, demonstrate a proactive management approach to risks, ensuring more efficient use of capital, providing cost advantages through an integrated approach, ensuring sustainability through reduction of operational surprises and losses, provide reasonable assurance that firm objectives will be achieved.

2. Literature review

Firm risk management theory has been developed as an extension of firm finance policy (Eckles et. al, 2014: 248). The issue of risk management has been widely discussed since the 1950s. It is known that the value of the firm is independent of the risk of the firm from the famous Modigliani-Miller approach. Modigliani and Miller (1958) argued that under efficient market conditions, risk management would not affect firm value. In the perfect competition market and in efficient market conditions, it is assumed that the risk will not increase in value despite the increase in the borrowing and debt / equity ratio of the operator (Yıldıran and Tanyeri, 2006: 181). According to this approach; firms must maximize their expected returns regardless of risk formation, securities investors are able to transfer risk with appropriate portfolio allocation (Bertinetti et. al, 2013: 3; Christoffersen, 2003: 2).

ERM theory is based on business risk management theory (Eckles et al., 2014: 248). ERM creates value by influencing the firm both at the macro or firm level and at the micro or firm units level. The macroeconomic risk-return balance that firms face creates value by quantifying and managing senior management. From this perspective, ERM helps to reach firm capital markets and provide other resources needed to implement strategy and firm plans. ERM is a way of life for managers and employees at all levels of the firm on the micro level. Academic literature mainly focuses on ERM's macro-level benefits (Nocco and Stulz, 2006: 8).

Academic and industry commentators have been discussing ERM's ability to reduce earnings and equity price volatility, lower foreign currency costs, increase capital efficiency, and create synergies between different risk management activities. ERM encourages risk awareness, which allows better strategic and operational decision making (Hoyt and Liebenberg, 2011, 795). Uncertainty presents both risk and opportunity in relation to potential depreciation or appreciation. ERM enables management to effectively deal with uncertainty and associated risk and opportunity and therby enhance the entity's capacity to build value (COSO, 2004: 13).

Studies on ERM fall into three main areas: ERM implementation studies, analyzes of ERM applications' determinants or factors affecting ERM practices, and studies of the effects of ERM on value or firm performance (Monda and Giorgino, 2013: 1, Eckles et. al, 2014: 248).

In the majority of academic studies on ERM, the effects of ERM on firm value were investigated. These studies; It is in the form of Şekerci (2011), McShane et. al (2011), Hoyt and Liebenberg (2011), Bertinetti et. al (2013), Li and others (2014) and Farrell and Gallagher. Besides, the effects of ERM on the financial performance indicators and the determinants of ERM were tried to be determined. Studies on the impact of ERM on performance indicators; Gordon et al. (2009), Pagach and Warr (2010), Baxter et al. (2013), Grace and others (2015), Eckles et al. (2014). Studies of ERM determinants are consist of Liebenberg and Hoyt (2003), Beasley et al. (2005), Önder and Ergin (2012), Baxter et al. (2013), Bertinetti et al. (2013) and Farrell and Gallagher.

Studies investigating the effects of ERM on firm value.

Şekerci (2011) has examined the effects of ERM application on firm value, which is derived from the evaluation of questionnaire-

derived data in a study on 150 Nordic firms registered in Sweden, Denmark, Norway and Finland stock exchanges. She found that there was no statistically significant relationship between ERM and firm value.

McShane et al. (2011) used S&P ERM credit rating scores representing ERM, control variables which can influence firm value, and Tobin's Q as representative of firm value. In their study, there was a positive relationship between ERM and firm value, but they found that firm value did not increase as ERM application level increased. Hoyt and Liebenberg (2011) found positive effects of ERM on firm value in the study of the American insurance industry between 1998-2005.

Bertinetti et al. (2013) sought to test the impact of the 200 financial and non-financial European firm examples and ERM practices on firm value. For this, while Tobin's Q was used to represent firm value, ERM applications were made from firms' annual financial statements. A positive relationship was found between the firm value and ERM practice in the study, which was also found to be statistically significant. Li and et al. (2014) used return on equity to represent firm value, sample of 135 insurance firms in China (in 2010). The Pearson correlation matrix between ERM and firm value was found to be positive and significant in the study, but in the regression analysis it was found that the level of relationship was statistically lower than the significance level.

There are also studies on the effects of ERM on financial performance indicators:

Gordon et al. (2009) developed an ERM index primarily to investigate the relationship between ERM and firm performance in their work. The work was done by the US Securities and Exchange Commission (SEC) on the 112 US firms from the 2005 list. As a result, it was observed that there is a strong positive relationship between ERM and firm performance. Pagach and Warr (2010) investigated the effects of ERM on long-term firm performance by explaining how ERM changed financial, asset and market characteristics. In a study conducted using 106 firms that were disclosed to the public and risk manager (Chief Risk Officer-CRO), it was found that in some firms ERM reduced earnings volatility, but in general it was found that ERM effect on firm variables was low. The results of the study fail to find that the ERM will support the situation regarding value creation.

Baxter et al. (2013) used S&P ratings and Tobin's Q in 165 firms and banking and insurance sectors between 2006 and 2008. Using the S&P credit rating measures, they found a positive relationship between ERM quality and firm performance. Eckles et al (2014) tested the hypothesis that ERM implementation would reduce firms' risk reduction costs. In the study, it was seen that the fluctuations of the earnings belonging to the shares of ERM applying firms decreased and the profitability of operating per risk (fluctuation of return on assets / return of shares) increased after ERM applications. Grace et al. (2015) tested the impact of ERM on cost and revenue effectiveness. In the study, efficiency was measured from zero to one by data envelopment analysis and a comparison of firms was produced. Later, multiple regression analysis showed that ERM applications provide economically and statistically significant increases in cost and revenue effectiveness.

These following studies focus on the factors that affect ERM determinants or ERM implementations.

Liebenberg and Hoyt (2003) based their work on the appointment of the CRO, who is responsible for the implementation and management of the ERM to determine the determinants of ERM use. In the study, it was determined that size and leverage are determinants of ERM applications. Exploratory study of Beasley, Clune and Hermanson (2005) examined factors associated with the stage of ERM implementation at a variety of US and international organization. They found the stage of ERM implementation to be positively related to the presence of CRO. Önder and Ergin (2012) tried to determine the factors affecting the ERM implementations in the financial sector firms which registered in the BIST. In the study, it was determined that leverage is important and firm size is less important to ERM implementations.

Baxter et al. (2013) addresses using a sample of 165 firm-year observations in the banking and insurance industries with S&P rating in 2006-2008. The study investigate company characteristics associated with ERM quality and the association of quality with ERM. Result show that ERM quality is positively associated with operating performance. Bertinetti et al. (2013) tested the determinants of ERM implementations with 200 financial and non-financial company examples. In the study was found to be the determinants of ERM for firm size, firm beta and firm profitability in the study which based on the data obtained from the annual financial statements. Farrell and

Gallagher (2015) analyzed determinants of ERM maturity in the 2006-2011 period. In the study, it was confirmed that size was an ERM determinant.

3. Data, Variables and Method

In this study, the effect of ERM on firm performance and ERM determinants for the real sector were examined. The financial sector was not included in the study. Risk management in Turkey has reached a certain level in the financial sector. In the study conducted by Koç (2012), the ratio of the banks in Turkey that have completed the process, in the advanced phase and in the middle of the process in relation to the ERM of the banks is stated as 81,8%. However, ERM applications in the non-finance sector have not yet reached sufficient levels. This situation has also been reflected in the academic studies conducted worldwide, and it is seen that a significant part of the studies on ERM belong to the financial sector. The impact of ERM has been addressed in the non-financial sector, which has not yet reached a sufficient level and has not been subject to sufficient academic research. Due to the disclosure of the data on the financial performance indicators to be used, the firms registered in the BIST were included in the scope of the study.

The ERM application is often used in large firms, and the literature on the subject has been identified in the literature. The study sample was prepared by the firms listed in BIST, taking place in the first 200 of the list of the Top 500 Industrial Enterprises of Turkey, prepared by the Istanbul Chamber of Industry for 2015. The information obtained from the firm's annual reports indicates that ERM implementations in Turkey started in 2009 in the non-financial sector. For this reason, the study period was identified as 2009-2015 and 231 observational values were generated from the annual data of 33 firms.

The variables used in the study are shown in Table 1. These variables have been determined by taking into account past studies such as risk management, firm value and firm performance.

Table 1

Variables Used and Explanations

Variables and Abbreviations	Explaining Variables	Variable Usage Studies
ERM Application **(ERM)**	**ERM if Applied "1", if not applied "0"**	Liebenberg and Hoyt (2003); Şekerci (2011); Li et. al (2014)
Tobin's Q **(TBNQ)**	**(Market Value +Short Term Liabilities+Long Term Liabilities) / Total Assets**	Allayannis and Weston (2001), Jin and Jorion (2006), Mackay ve Moeller (2007), Hoyt and Liebenberg (2011), Şekerci (2011), McShane et. al (2011), Panaretou (2014), Baxter et.al (2013) and Bertinetti et.al (2013)
Market Value-Book Value **(MB)**	**Market Value/Book Value**	Pagach and Warr (2010) Eckles et. al (2014)
Firm Size **(LOGSIZE)**	**Natural Logarithm of Total Assets**	Şekerci (2011), McShane et.al (2011), Hoyt and Liebenberg (2011), Bertinetti et. al (2013), Abdel-Azim and Abdelmoniem (2015)
Financial Leverage **(LEV)**	**Total Debt/Total Assets**	McShane et. al (2011) Abdel-Azim and Abdelmoniem (2015), Pagach and Warr (2010), Şekerci (2011), Önder and Ergin (2012) adn Li et.al (2014)
Return on Assets **(ROA)**	**Net Profit/Total Assets**	Hoyt and Liebenberg (2011), Şekerci (2011), Bertinetti et.al (2013), Baxter et.al (2013), Eckles et.al (2014), Abdel-Azim and Abdelmoniem (2015)
Geographical Diversity **(GD)**	**Foreign Sales / Total Sales**	Allayannis and Weston (2001), Şekerci (2011)
Growth in Sales **(GS)**	**$(Sales_t – Sales_{t-1})/ Sales_{t-1}$**	Hoyt and Liebenberg (2011) and Li et.al (2014)
Price Stability **(PS)**	**Standard Deviation of Daily Prices**	Beasley et. al (2008) and Pagach and Warr (2010)

Source: It was prepared by the authors considering the related literature.

Different methods are used in the literature to determine and measure firms' ERM applications (Şenol et al., 2015: 802). (1) Bertinetti et al (2013) and Pagach and Warr (2010) used the presence of Chief Risk Officer (CRO) in firm management. In addition to Florio and Leoni (2016) appointing a Chief Risk Officer (CRO), they also used ERM to represent board independence variables as well as internal control and risk committee.

(2) Hoyt and Liebenberg (2011) used the information obtained from financial reports representing ERM. (3) Şekerci (2011) measured ERM applications with the information obtained from the questionnaire. (4) McShane et al. (2011) used ERM ratings from S&P since 2007 to represent ERM. (5) Gordon et al. (2009) conducted ERM studies through the ERM index they created. The variables used in the study and their explanations are shown in Table 1. In the determination and calculation of the variables, ERM literature and studies related to financial performance are taken as basis in general. And also statistical summary appear in Table 2.

Table 2

Summary Statistics

	Obs.	Mean	Std. Dev.	Min.	Max.
TBNQ	231	1.901624	1.071159	1.107716	8.862194
MB	231	1.907176	1.486606	0.4281031	8.587649
ERM	231	0.4935065	0.5010435	0	1
SIZE	231	2.61e+09	3.30e+09	2.16e+07	2.24e+10
LOGSIZE	231	21.07508	1.198366	16.88936	23.83085
ROA	231	0.0543444	0.071098	-0.2162277	0.3448591
LEV	231	0.5121941	0.1903641	0.0530751	0.9128917
PS	231	2.217832	10.03457	0.0532091	148.8215
GS	231	0.128686	0.1854141	-0.4795295	0.7737703
GD	231	0.2960342	0.2421374	0	1

Tobin's Q (TBNQ) is used to represent the firm value. The fact that this value is greater than 1 (TBNQ>1) indicates that the expectations about the firms are positive. It is possible to understand Tobin's Q (1.90) that the market values and expectations of the firms

in the sample are positive. The SIZE variable indicates the size of the firm. The average asset size of the sample firms is 2.6 billion TL. Firms have an average return on assets (ROA) of 5%. The average leverage ratios (LEV) are 51%. In the finance literature, this ratio is not much more than 0.50. In this respect, it can be said that they are at the upper limit of the leverage ratio for sample firms. The average growth rate (GS) of annual sales of the firms is 12%.

Table 3

Pearson Correlation Coefficients

	TBNQ	ERM	SIZE	ROA	LEV	PS	GS	GD	MB
TBNQ	1	-0,047 (0,476)	-0,058 (0,377)	0,569** (0,000)	-0,447** (0,000)	0,057 (0,391)	0,014 (0,831)	0,119 (0,070)	0,790 (0,000)
ERM		1	0,308** (0,000)	0,113 (0,086)	0,029 (0,666)	0,073 (0,269)	0,049 (0,455)	-0,005 (0,936)	0,110 (0,083)
SIZE			1	-0,012 (0,859)	0,142* (0,031)	-0,031 (0,635)	0,082 (0,212)	0,302** (0,000)	0,096 (0,129)
ROA				1	-0,539** (0,000)	0,055 (0,404)	0,129 (0,051)	0,073 (0,268)	0,372 (0,000)
LEV					1	0,031 (0,636)	0,172** (0,009)	0,065 (0,326)	0,061 (0,333)
PS						1	-0,005 (0,938)	-0,062 (0,345)	0,124 (0,058)
GS							1	-0,041 (0,533)	-0,056 (0,379)
GD								1	0,102 (0,112
MB									1

*Note: The first values in the table cells indicate Pearson coefficients, ** and * indicate significance levels of 0.01 and 0.05 respectively*

Panel data analysis is performed to determine the effects of ERM on firm performance and panel logistic regression is used to investigating for determinants of ERM.

The panel data regression is generally expressed as follows;

$Yit = \alpha + Xit\ \beta + \mu it\ i = 1, ..., N, t = 1$

Where; *i* denoting household, individuals, firms, conuries, etc. and *t* denoting time. The *i* subscript, therefore, denote the cross-section dimension whereas *t* denote the times-series dimension. *α* scalar, *β*; *K x 1* and *Xit* is the i t th observation on *K* explanatory variables (Baltagi, 2005: 11).

Logistic regression is a technique for creating a model for a dependent variable in cut-off data that can be expressed in two or more classes. Logistic or probit regression methods are used if the dependent variable is intermittent (Arı and Önder, 2013: 169). The purpose of the logistic regression is to explain the relationship between one or more independent variables and dependent variables as in other regression methods (Ege and Bardakoğlu, 2009: 146).

Panel data analysis is also performed for models that show dependent variables qualitatively. In these models, the dependent variable is usually a dummy variable that takes "1" if there is a qualitative change and "0" if it is not (Çağlayan Akay, 2015: 175).

4. Analysis and findings

Table 3 shows the Pearson correlation coefficients for the variables used in the study. Correlation results indicate that there is no significant relationship between the ERM application and the variables used to represent firm performance and the regressions (TBNQ, MB, ROA and PS).

In order to measure the effect of ERM on firm performance and to determine the determinants of ERM application, the following five models were created based on the ERM studies and the benefits of ERM application stated in the literature.

The first performance measure we use to measure the impact of ERM on firm performance is firm value. Tobin's Q (TBNQ) is used to represent firm value. In the literature, the effect of ERM on firm value is investigated in many ERM related studies and Tobin's Q is used in most of these studies. The other variables used in the model are the control variables which are used in past studies and expressed that they affect the firm value in these studies.

$$ddTBNQ_{it} = \beta_0 + \beta_1 ERM_{it} + \beta_2\, ddLOGSIZE_{it} + \beta_3 ddROA_{it} + \beta_4 dGD_{it} + \beta_5 ddLEV_{it} + \beta_6 PS_{it} + \beta_7 GS_{it} + \mu_{it} \quad (1)$$

The second variable used to measure the effect of ERM on firm value in the study is the market value - book value (MB) ratio. Market value applies to publicly traded firms.

$$MB_{it} = \beta_0 + \beta_1 ERM_{it} + \beta_2 LOGSIZE_{it} + \beta_3 ROA_{it} + \beta_4 GD_{it} + \beta_5 LEV_{it} + \beta_6 PS_{it} + \beta_7 GS_{it} + \mu_{it} \quad (2)$$

In terms of profitability in finance, return on asset (ROA), return on equity (ROE) and return on investment are used. Pagach and Warr (2010), Li et al. (2014) used return on equity (ROE) while Baxter et al. (2013) used the return on asset (ROA). This study used return on asset (ROA).

$$ROA_{it} = \beta_0 + \beta_1 ERM_{it} + \beta_2 LOGSIZE_{it} + \beta_3 GD_{it} + \beta_4 PS_{it} + \beta_5 LEV_{it} + \beta_6 GS_{it} + \mu_{it} \quad (3)$$

One of the benefits of ERM, expressed in the literature, is the reduction of operational surprises and the reduction of volatility in the earnings and prices of firms, thereby ensuring firm continuity. While Beasley et al. (2008) used variance in earnings per share volatility as a variable in ERM related returns analysis, Pagach and Warr (2010) investigated the effects of the decrease in earnings and share price fluctuations in their work. The standard deviations of the variables are taken into consideration in the calculation of the fluctuation decrease in the mentioned studies.

$$PS_{it} = \beta_0 + \beta_1 ERM_{it} + \beta_2 LOGSIZE_{it} + \beta_3 GD_{it} + \beta_4 ROA + \beta_5 LEV_{it} + \beta_6 GS_{it} + \mu_{it} \quad (4)$$

Liebenberg and Hoyt (2003), Beasley et al. (2005), Önder and Ergin (2012), Baxter et al. (2013), Bertinetti et al. (2013) and Farrell and Gallagher (2015) analyzed the factors affecting/determinant of ERM implementation/application. Inspired by these studies, the following panel logistic regression model was created:

$$ERM_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 LOGSIZE_{it} + \beta_3 GD_{it} + \beta_4 LEV + \mu_{it} \quad (5)$$

The panel series displays asymptotic properties because the panel is both time and section size. Asymptotic properties can be affected if panel data is correlated between units. Thus, in the case of panel data, there is a correlation between the units, II. Generation unit root tests are used when there is no correlation between the units, and Generation I. unit root tests are used (Şak, 2015: 204).

The Pesaran Test gives reliable results when the time dimension is smaller than the unit size in the panel regression analysis (Yamak et al, 2016: 63). The Pesaran CD Test statistical value is used to test the existence of correlation between the units in the models when the number of units used in the study (N) is 33 and the number of period (T) is 6, i.e N> T. Pesaran CD test statistical values are given in Table 4.

Table 4

Pesaran CD Test Statistics

Models	Pesaran's Test Statistics Value of CD	Prob
TBNQ	8.716	0.0000
MB	4.121	0.0000
ROA	-0.635	1.4745
PS	0.340	0.7340

According to the result in Table 4, While II. Generation unit root tests are used for TBNQ and MB models, I. Generation unit root tests are applied to ROA and PS models.

Table 5

Pesaran's CADF Panel Unit Root Test

Variables	Level	1st Diff	2nd Diff
TBNQ			18.573***
MB	-1.614*		
LOGSIZE			18.573***
ROA			18.573***
LEV			18.573***
PS	-3.083***		
GS	-3.319***		
GD		-1.902*	

*Note: ***, **, and * indicate significance at levels of 1%, 5% and 10%, respectively. The appropriate delay length is determined by the Akaike Info Criterion.*

In the TBNQ and MB models, the level or differences of the variables are used by considering the Pesaran's CADF panel unit root test results in Table 5.

Table 6

Panel Unit Root Tests (I. Generation – None Trend)

	Levin, Lin ve Chu		Breitung		Im, Pesaran ve Shin	
	Level	1st Diff	Level	1st Diff	Level	1st Diff
ROA	-8.7494***			-5.2827***	-2.2826**	
LOGSIZE	-4.7600***			-5.2017***	4.7556	-5.6613***
LEV	-7.8223***			-5.0927***	-1.1103	-7.3333***
GD	-18.1370***			-2.0680**		
PS	-13.6860***		-4.4007***		-5.3208***	
GS	-19.6424***			-3.9568***	-9.3309***	
	Fisher ADF		Harris-Tzavalis		Hadri	
	Level	1st Diff	Level	1st Diff	Level	1st Diff
ROA	84.8787*	225.1680***	-0.0237***		2.0665**	
LOGSIZE	66.1387	195.4745***	0.8920	-0.2303***	15.6451***	
LEV	88.8865**	284.9262***	0.5410*	-0.2173***	10.9796***	
GD	226.2240***		0.2082***		3.0529***	
PS	183.3096***		-0.1517***		-2.7127	
GS	345.4826***		-0.1005***		-0.8786	

*Note: ***, **, and * indicate significance at levels of 1%, 5% and 10%, respectively. The appropriate delay length is determined according to Akaike Info Criterion.*

In the ROA, PS and ERM models, the values at the level of the variables are used based on the results of the six different Generation I. unit root tests in Table 6. The classical model applies when the panel observations are homogeneous, meaning that there are no unit and/or time effects. Likelihood Ratio (LR) test and F Test are done to determine acceptance or rejection of the classical model. The unit and/or time effects were determined on the basis of the tests performed and the classical model was rejected (Table 7). In the panel data models of Hausman (1978) a specification test is used to

decide between a fixed effects estimator and a random effects estimator (Yerdelen Tatoğlu, 2013: 179). The Hausman Test statistic is chi-square distribution. If the Hausman statistic is high, the fixed effect model is preferred whereas if the Hausman statistic is low, the random effect model is preferred (Karaaslan and Yıldız, 2011: 10). In the generated models, the random effect is seen in the Hausman Test statistic (Chi Square) where the predictor models are valid (Table 7).

Table 7

F, LR and Hausman Test Results

Models	F Test		LR Test		Hausman Test
	Test	**Statistic**	**Test**	**Statistic**	**Chi2**
ddTBNQ	Cross-section	0.195253	Cross-section	0.000	1.59 (0.9790)
	Period	5.363783***	Period	9.417***	
	Cross-section and Period	0.744398	Cross-section and Period	9.417***	
	Test	**Statistic**	**Test**	**Statistic**	**Chi2**
MB	Cross-section	19.756265***	Cross-section	156.379***	-3.37 *chi2<0*
	Period	2.358665*	Period	0.016	
	Cross-section and Period	18.520467***	Cross-section and Period	162.010***	
	Test	**Statistic**	**Test**	**Statistic**	**Chi2**
ROA	Cross-section	4.884175***	Cross-section	*42.294****	*-17.12 chi2<0*
	Period	0.720478	Period	*0.000*	
	Cross-section and Period	4.264256***	Cross-section and Period	*42.294****	
	Test	**Statistic**	**Test**	**Statistic**	**Chi2**
PS	Cross-section	1.681162**	Cross-section	3.876**	2.74 (0.8402)
	Period	0.923851	Period	0.000	
	Cross-section and Period	1.564005**	Cross-section and Period	3.876	
	Test	**Statistic**	**Test**	**Statistic**	**Chi2**
ERM	Cross-section	6.538090***	Cross-section	89.48***	1.57 (0.8149)
	Period	11.414489***	Period	127.455***	
	Cross-section and Period	10.127687***	Cross-section and Period	52.056***	

*Note: ***, ** and * indicate significance at the 1%, 5% and 10% significance level of the respective test statistic, respectively.*

Table 8

Test of Assumptions

Models	Assumption	Test	Statistic	Appropriate Estimator
TBNQ	Heteroscedasticity	Levene, Brown and Forsythe	5.3068204***	Arellano, Froot and Rogers
	Autocorrelation	Durbin-Watson	2.5128096	
	Cross Sectional Independence	Pesaran's CD	4.077***	
MB	Heteroscedasticity	Levene, Brown and Forsythe	4.4330236***	Arellano, Froot and Rogers
	Autocorrelation	Baltagi-Wu LBI	1.7814559	
	Cross Sectional Independence	Pesaran's CD	3.121***	
ROA	Heteroscedasticity	Levene, Brown and Forsythe	*2.6126741****	Huber, Eicker and White
	Autocorrelation	Joint Lagrange Multiplier	*76.41****	
	Cross Sectional Independence	Pesaran's CD	*-0.635*	
PS	Heteroscedasticity	Levene, Brown and Forsythe	5.1755631***	Huber, Eicker and White
	Autocorrelation	Durbin-Watson	2.2169166	
	Cross Sectional Independence	Pesaran's CD	7.129***	

*Note: *** indicates statistical significance at 1% significance level.*

In case of heteroscedasticity the estimates to be made will not yield effective results. In the presence of autocorrelation, standard errors are affected and inefficient regression coefficients are estimated (Baltagi, 2005: 79, 84). Following the appropriate modeling period, the panel variance has been tested for heteroscedasticity,

autocorrelation, and correlation between units assumptions. Levine (1960) and, Brown and Forsyhe (1974) tests are used to test the suitability of error terms for the assumption of constant variance in the random effect model (Ün, 2015: 72). In the random effect models, a lack of the assumption of autocorrelation in error terms is tested by Narendranathan's Durbin-Watson, Baltagi-Wu, Lagrange multiplier. Pesaran's CD test is used for cross sectional independence if the number of units (N) is larger than the time (T) dimension (Yerdelen Tatoğlu, 2013: 216, 224).

Table 9

Driscoll-Kraay Random Effect Estimator

	ddTBNQ				MB			
	Coef.	Robust Std. Err.	Z	P	Coef.	Robust Std. Err.	Z	P
ERM	0.0568	0.045	1.26	0.208	0.3315	0.262	1.26	0.207
ddLOGSIZE	-0.7491	0.160	**-4.67**	0.000	0.1863	0.340	0.55	0.584
ddROA	-0.2463	0.337	-0.73	0.466	-0.6565	0.543	-1.21	0.227
dGD	0.2738	0.195	1.40	0.161	-0.1779	0.256	-0.69	0.488
ddLEV	-0.8647	0.412	**-2.10**	0.036	0.0506	0.811	0.06	0.950
PS	0.0013	0.000	**2.81**	0.005	-0.0010	0.003	-0.34	0.732
GS	-0.0628	0.124	-0.51	0.613	-0.7094	0.424	**-1.67**	0.095
Constant	-0.0996	0.034	-2.89	0.004	1.9636	0.311	6.30	0.000
	Number of Observation: 165 Number of Groups: 33 P = 0.0000 R^2(within) = 0.19 Wald x^2=37.15				Number of Observation: 165 Number of Groups: 33 P = 0.0000 R^2(within) = 0.10 Wald x^2= 11.25			

Note: The term "d" indicates the difference between the relevant variable.

The validity of *t* and *F* statistics, R^2 and confidence intervals are affected if there is heteroscedasticity, autocorrelation and correlation between units. Therefore, if the model has at least one of variance, autocorrelation and correlation between units, resistant predictors should be used (Yerdelen Tatoğlu, 2013: 242). Since the critical values were exceeded in the tests for the heteroscedasticity, autocorrelation and correlation between units assumptions regarding the models used in the study, standard error-resisting prediction models were used which gave more consistent results considering these assumptions.

It is common to rely on durable standard errors to provide valid statistical inferences when the assumptions of the basic regression model are violated. The most common of the alternative

covariance matrix estimators was developed by Huber (1967), Eicker (1967) and White (1980) (Hoechle, 2007: 283). Driscoll and Kraay (1998) developed a standard non-parametric time series covariance matrix estimator to be able to withstand the general forms of temporal and cross-sectional dependence (Hoechle, 2007: 284).

Table 9 shows the regression results used to estimate the effects of ERM on firm value. For this purpose, Tobin's Q (TBNQ) and Market Value - Book Value (MB) variables are used to represent firm value. The effects of firm size (ddLOGSIZE), financial leverage (ddLEV) and price stability (PS) variables on Tobin's Q (ddTBNQ) variable are statistically significant. The firm size (ddLOGSIZE) adversely affected the firm value (ddTBNQ) as opposed to the expected effect of the variable. It is seen that the financial leverage (ddLEV) variable negatively affects the firm value (ddLOGSIZE). It is normal for the financial leverage to be positive or negative because of the financial risk arising from the borrowing. Risk has threats and opportunities, resulting in negative or positive results.

The price stability (PS) variable is positive as expected for the impact on Firm Value (ddLOGSIZE). The second variable used to represent firm value is market value to book value. The effect of Growth in Sales variable on Market Value - Book Value (MB) is found statistically significant. Growth in sales (GS) is negative on the contrary to the expectation of impact on Market Value - Book Value (MB). The effect of the ERM application, which is the primary variable in the creation of ddTBNQ and MB models, is not found statistically significant. In other words, the effect of ERM on firm value has not been determined.

This result is similar to the results of Şekerci (2011) study, which does not find a meaningful relationship between ERM and firm value. In Pagach and Warr´s study (2010), their ERM findings do not support the situation regarding value creation. Our study shows similarities with these results. In addition, McShane et al. (2011) found similar results when ERM applications were developed, firm value did not increase. The studies that show positive effects of ERM on firm value are Hoyt and Liebenberg (2011), Baxter et al. (2013) and Bertinetti et al. (2013).

Table 10

Huber, Eicker and White Random Effect Estimator

	ROA				PS			
	Coef.	Robust Std. Err.	Z	P	Coef.	Robust Std. Err.	Z	P
ERM	0.0110	0.008	1.24	0.214	1.0032	1.305	0.77	0.442
LOGSIZE	0.0023	0.008	0.28	0.783	-0.3499	0.468	-0.75	0.455
GD	0.0182	0.024	0.75	0.452	-2.6359	3.454	-0.76	0.445
LEV	-0.2124	0.036	**-5.81**	0.000	5.3551	4.103	1.31	0.192
PS	0.0002	0.000	1.20	0.229				
ROA					12.1938	5.117	**2.38**	0.017
GS	0.0693	0.021	**3.26**	0.001	-1.9275	1.775	-1.09	0.278
Constant	0.0939	0.175	0.54	0.592	6.7204	8.956	0.75	0.453
	Number of Observation: 231 Number of Groups: 33 P = 0.0000 R^2(overall)=0.36 Wald x^2=*47.04*				Number of Observation: 231 Number of Groups: 33 P = 0.0568 R^2(overall)=0.02 Wald x^2= 12.24			

Note: The term "d" indicates the difference between the related variable.

While firm profitability (ROA), which is shown as a firm performance indicator, is negatively affect by the Financial Leverage (LEV), is positively affect by the Growth in Sales (GS) (Table 10). The effect of ERM on return on assets (ROA) is not statistically significant. The effect of Return On Asset (ROA) on Price Stability (PS) variable is statistically significant. In similar studies, Baxter et al. (2013) showed a positive effect on the return on assets (ROA) of ERM application whereas Li and others (2014) failed to determine the effect of ERM on the return on equity used as asset profitability. ERM has not affected on price stability (PS). Pagach and Warr (2010) find that ERM has a limited impact on price and earnings volatility. Beasley et al. (2008) find not positive relationship between ERM and firm's variance in earning per share (EPS).

Table 11

The Determinants of ERM (Panel Logistic Regression)

	Coef.	Std. Err.	Z	P
ROA	-3.533012	10.8325	-0.33	0.744
LOGSIZE	18.80115	2.222174	**8.46**	0.000
GD	3.00198	4.338259	0.69	0.489
LEV	-11.28258	6.898455	-1.64	0.102
Constant	-394.337	45.68267	-8.63	0.000

Number of observation: 231 Number of Groups: 33;
Wald x^2=73.80(P=0.0000); Likelihood-ratio test:89.48(P=0.000)

The panel logistic regression show that the firm size variable (LOGSIZE) is the determinant of ERM applications (Table 11). According to this, it is possible to say that as the firm size increases, ERM applications become more widespread. In similar studies that firm size (LOGSIZE) is the determinant of ERM, or that ERM and firm size are positively related; Liebenberg and Hoyt (2003), Beasley et al. (2005), Önder and Ergin (2012), Baxter and others (2013), Farrell and Gallagher (2015). Other factors related to the determining the use of ERM in the literature; Liebenberg and Hoyt (2003), financial leverage (LEV); Önder and Ergin (2012), systematic risk (BETA) and Bertinetti et al. (2013) return on asset (ROA) find ERM determinants.

5. Conclusion

The study attemted to determine the effects of the ERM applications on the financial performance indicators of the real sector firms listed on the BIST as well as the factors determining ERM applications. Panel data analysis and panel logistic regression analysis were performed when hypotheses were tested.

ERM has no effect on Firm Value (ddTBNQ), Market Value-Book Value (MB), Return on Asset (ROA) and Price Stability (PS) variables used for firm performance. That is, the effect of ERM on firm performance can not be determined. The effects of Firm Size (ddLOGSIZE), Financial Leverage (ddLEV), Price Stability (PS), Growth in Sales (GS) and Return on Asset (ROA) on firm performance indicators were observed variables used as control variables. This conclusion proves Modigliani-Millery approach. It has been determined that Firm Size (LOGSIZE) is a factor affecting ERM implementations.

It may take time to establish ERM in enterprises and to reach ERM level of maturity. Initial levels of ERM are aimed at preventing the loss and maintaining the current state. However, as the maturity level of the ERM increases and best ERM practices are achieved, the quality of ERM's value creation can emerge. In Turkey´s non-financial sector, since ERM applications have not yet reached a sufficient maturity level, it may be a natural consequence that ERM has no effect on firm performance. The data used in this study was formed from financial and operating reports. These reports provide limited information on risk management practices. By using survey methodology in subsequent studies, the levels of ERM implementation will be quantitatively and qualitatively more realistic, thus the effects of ERM can be seen more clearly.

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META-ANALYTIC REVIEW OF THE RELATION BETWEEN BOARD GLOBALIZATION AND FIRM PERFORMANCE

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Abstract

Following the corporate governance scandals such as Enron, WorldCom, and Vivendi, the special attention has been attached to the board composition, and different dimensions related to board diversity has been discussed in this context. Recently, the interest in the board of directors' diversity has shifted to the globalization of boards, and the number of studies that investigates the relation between foreign board members and firm financial performance has increased. However, these studies report contradictory results, therefore the current study aims to reconcile these conflicting results. In response to these results, meta-analyses have been conducted by using the results obtained from 21 individual studies. The results show that the relation between foreign board representation and general firm financial performance is positive, however, the effect size for this relation is small. Similarly, there is a positive relation between foreign board representation and accounting-based firm performance. By contrast, the analysis has found that there is no statistically significant relation between foreign board representation and market-based firm performance. Overall, the results suggest that although foreign board representation does not lead large-scale increase in the firm financial performance, the impact is still positive. Even though the study has several limitations, the findings might assist the executives, shareholders, regulators, and researchers.

Keywords: Board diversity, foreign board representation, performance measurement, corporate governance, meta-analysis.

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1. Introduction

Over the last two decades, one of the internal corporate governance mechanisms - Board of Directors (BoD) especially its' composition - has been intensely discussed by not only academic researchers but also executives and government leaders. Since the success of a company is mostly based on successful decisions made in the board, researchers attempt to find an answer to the question: "how the board of directors' composition should be to increase the quality of decisions made by BoD". In this regard, the relation between diversity in board especially observable ones such as gender, independence, age, tenure, nationality and firm performance has been intensively investigated (Carter et al., 2003; Erhardt et al., 2003; Rose, 2007; Adams and Ferreira, 2009; Ararat et al., 2010). As a result of these studies, some public authorities enforce the companies to have independent/outside board members (e.g. Korea, Turkey) and female board members (e.g. Norway, Spain, France, and Sweden) on their BoD.

For the last few years, interest in the board of directors' diversity has shifted to the globalization of board, in other words, the presence of foreign board members in BoD. Some researchers argue that foreign board representation increases the firm performance (Choi et al., 2012; Estelyiova and Nisar, 2012), while others advocate that the presence of foreign board members negatively affect the firm performance (Frijns et al., 2016; Hahn and Lasfer, 2016). Supporters of the presence of foreign board members assert that unless a firm corresponds to the global environment, political and economic situation in various countries, changing market dynamics, different customer expectations, and the firm is going to fail. It is stated that board members who have various backstory from the standpoint of education, experience, nationality, gender, and age may help the firm to deal with above-mentioned situations (Mishra, 2016). Accordingly, foreign board representation might assist the firm to have a broader perspective, correspondingly a better performance. It is also claimed that today many firms have foreign investors, so the presence of foreign board members helps the firm to understand their specific needs (Oxelheim and Randøy, 2003; Estelyiova and Nisar, 2012). In addition, foreign board members assist firm to have new skills,

knowledge, technology and contemporary management techniques and improve corporate governance (Liang et al., 2013). On the contrary, opponents allege that foreign board members are probably less informed about domestic affairs (Randøy et al., 2006). It is also claimed that communication is more difficult in the culturally diverse groups (Lehman and Dufrene, 2008; Anderson et al., 2011). Furthermore, foreign board members are less involved in board meetings compared to their national peers (Masulis et al., 2012; Hahn and Lasfer, 2016) and this ends up with less effective controlling and higher agency cost.

Even though it is reasonable to assume that the managerial capabilities of the BoD will significantly affect the firm performance, it is not clear whether the board composition affects the firm financial performance (Engelen et al.2012, Müller, 2014). In line with this, existing literature introduces the conflicting results related to the impact of foreign board members on firm financial performance. Some studies find positive relation (Choi et al., 2007; Ruigrok and Kaczmarek, 2008; Honing, 2012; Ujunwa et al., 2012; Müller, 2014), while others report negative relation (Frijns et al, 2016; Hahn and Lasfer, 2016) and some find no significant relation between foreign board representation and firm financial performance (Rose, 2007; Darmadi, 2010; Engelen et al., 2012; Herdhayinta, 2014).

The current study aspires to shed light on these conflicting results and draw a complete picture about the impact of foreign board members on both accounting-based and market-based firm performance by utilizing meta-analysis. To put in more explicitly, the study aims to find out whether foreign board representation has a positive influence on the firm financial performance by capturing data from 21 individual studies in the literature. Even though there are some meta-analysis studies that focus on board independence (Dalton et al., 1998; Rhoades et al., 2000; Van Essen et al., 2012), board size or number of directors (Dalton et al., 1999) or female board members (Post and Byron, 2015), there is no meta-analysis studies related to foreign board members. Considering these, the article aims to fill this gap in the literature.

The rest of the paper proceeds as follows. The next section explains theoretical grounds on the relation between the composition of BoD and firm financial performance. Following this, are summarized those studies which investigate the relation between foreign board members and firm financial performance. The fourth

section presents data and methodology used in the study. The fifth section shows the results of the meta-analyses and the last section consists of summary and discussion.

2. Theoretical Framework

BoD is a group of people elected or assigned by shareholders for the management of a firm. In other words, BoD is the representatives of shareholders. The two key tasks fulfilled by the BoD are monitoring and controlling management on behalf of the shareholders and providing resources to the firm (Hillman and Dalziel, 2003; Pugliese et al., 2014).

It is argued that the composition of BoD affects the effectiveness of their functioning and correspondingly firm performance (Hermalin and Weisbach, 1991; Yermack, 1996). Therefore, the impact of foreign board representation on firm financial performance might be examined related to the effectiveness of the board of directors' functions. The impact of the foreign board members on the monitoring role might be explained by agency theory. Agency theory stated that one of the key roles of BoD is monitoring and controlling management (Jensen and Meckling, 1976; Fama and Jensen, 1983) and effective monitoring might increase firm performance by decreasing agency cost (Hillman and Dalziel, 2003). Besides, shareholders will elect the representatives to be trusted to fulfill this task. In addition, the psychological literature reveals that similarities such as gender, shared perspective are associated with trust (Levin et al., 2006). Regarding these, it will be no wrong to state that domestic shareholders will elect domestic board members they share common values since they believe that they are more powerfully represent their interests (Oxelheim et al., 2013). With the same viewpoint, foreign shareholders ask to be foreign board members in the BoD who protect their interests. Therefore, foreign board representation will be interpreted as an indication of protecting the rights of foreign and minority shareholder. Carter et al. (2003) also argued that diversity in BoD increases the board independence since board members who have different backgrounds ask various questions that board members with a similar background will not ask. Moreover, foreign board members might act as independent directors since they care about their prestige (Estelyiova and Nisar, 2012) and so the presence of foreign board members might enhance corporate governance. A foreign board member might also improve the

corporate governance when he/she comes from developed countries in terms of corporate governance (Miletkov et al., 2016).

The other theory that relates the composition of BoD to firm performance is Resource Dependency Theory (RDT). This theory emphasizes the capital aspect of BoD that comprises both human capital such as experience, expertise, reputation and relational capital like external contingencies and communication networks to the outside (Hillman and Dalziel, 2003) and argues that board diversity might enhance the firm performance since diversity links the firm to its external environment and stakeholders (Rose et al., 2013). In other words, RDT proposed that the role of BoD is providing access to resources such as information resources, communication networks, financial and reputational supports and legitimacy (Preffer and Salancick, 2003). Similarly, researchers propound that globalization of the markets and worldwide operations have forced firms to have different knowledge related to customer expectations, regulatory regimes, accounting principles and etc. In conjunction with this, shareholders might bring the firm into a broader perspective and correspondingly better performance by electing foreign board members who came from different backgrounds (Mishra, 2016).

3. Literature Review

Diversity in BoD has become one of the important topics discussed by researchers. Some studies considered nationality with other characteristics of board diversity such as gender, age, and tenure while several studies concentrated only foreign board representation. Some of these studies are summarized below.

One of the first studies that examine the impact of foreign board members on firm value was conducted by Oxelheim and Randøy (2003). They used a dummy variable for independent Anglo-American board membership. The empirical results revealed that foreign board membership enhances the firm value. Similarly, Ameer et al. (2010) investigated the relation between board composition and firm performance for emerging markets. The empirical results demonstrated that independent and foreign directors are associated with better firm performance. In addition, Choi et al. (2007) revealed that foreign board representation is positively associated with firm financial performance for Korea. Estelyiova and Nisar (2012) also investigated the impact of foreign board members on firm operations and performance. The results showed that national diversity in BoD is

positively and significantly associated with firm financial performance measured by Tobin's Q and ROA. Ujunwa et al. (2012) investigated the relation between board diversity and firm financial performance for Nigeria. Nationality, gender and ethnicity were considered regarding to the board diversity in the study. The findings demonstrated that gender diversity is negatively associated with firm financial performance, while nationality and ethnicity are positively linked with firm financial performance. In addition, Müller (2014) examined the impact of board composition on the firm financial performance measured by return on assets. In the study, 9 corporate governance characteristics regarding to the board composition were considered. The results showed that independent board members and the foreign board members have a positive impact on the firm performance.

Masulis et al. (2012) analyzed the impact of foreign independent directors on corporate governance and firm financial performance. The results showed that foreign independent directors are negatively associated with firm financial performance. Hahn and Lasfer (2016) examined the impact of foreign directors on board meeting frequency and firm financial performance. The results demonstrated that foreign non-executive board member leads to the firm have fewer board meetings, hence increase the agency conflict due to the reducing monitoring and advisory role of BoDs. Therefore, the overall effect of foreign non-executive board members on firm financial performance namely shareholders return is negative. In addition, Frijns et al. (2016) investigated the impact of national cultural diversity on the firm financial performance measured by Tobin's Q and ROA. Their findings revealed that national cultural diversity deteriorates the firm financial performance.

Darmadi (2010) examined the relation between board diversity and firm financial performance for Indonesia. He focused three different dimensions of BoD diversity gender, nationality and age respectively. According to the results, there is a negative relation between female directors and firm financial performance, while there is no statistically significant relation between foreign directors and firm financial performance. Engelen et al. (2012) also examined the relation between board diversity and firm financial performance for Netherlands. In the study, board diversity was measured with seven dimensions including nationality diversity, gender diversity, educational diversity, diversity with respect to the field of education,

expertise diversity, socioeconomic background diversity and age diversity. Findings showed that there is no statistically significant relation between gender diversity, nationality diversity, diversity with respect to education and firm financial performance during the crisis. Furthermore, Jhunjhunwala and Mishra (2012) questioned the relation between board diversity and firm financial performance, namely earnings per share in the Indian context. The board diversity was measured with respect to gender, age, tenure, education, experience, and nationality. The findings revealed that there is no statistically significant relation between board diversity and firm financial performance. In addition to all, Miletkov et al. (2016) investigated the impact of foreign independent directors on the firm financial performance. On average, they found that no statistically significant relation between foreign independent and firm financial performance. Further to that, they reported a statistically negative relation in countries with higher quality legal institutions and more positive (less negative) relation when foreign independent directors come from a country with higher quality legal institutions than the host country of the firm.

4. Data and Methodology

The current study aims to make a meaningful generalization for the relation between foreign board representation and firm financial performance by utilizing meta-analysis. As one of the research syntheses meta-analysis aims to quantitatively integrate the results of a set of individual studies. Meta-analysis consists of three steps in general (Schmidt and Hunter, 2014): (1) search and gather studies, (2) extract and code studies and (3) apply meta-analysis to the studies extracted. Thus, the analysis process will be explained based on this order.

In the study, three separate meta-analyses are conducted. Initially, a meta-analysis is utilized in order to calculate the effect size for the relation between foreign board representation and general firm financial performance. Following this, the sample is divided into two separate groups based on the nature of financial performance indicator, and two more meta-analyses, one for accounting-based firm performance and one for market-based firm performance, are conducted.

4.1. Search Strategy

Different databases (Emerald Insight, JSTOR, EBSCOhost, ERIC, ProQuest Digital Dissertation, Taylor & Francis, Sage Journal, Science Direct and Springer Link) have been searched to determine empirical researches related to foreign board representation and firm financial performance. The search has been conducted using the different combination of following terms; foreign, international, globalization, diversity and composition with board, board members, directors, corporate governance and firm performance. In addition to this, reference lists of several studies have been reviewed. Although a total of 4407 publications were obtained as a result of these searches, only 42 studies are related to foreign board representation and firm financial performance.

4.2. Study Selection and Sample

In this section, the sample used in the meta-analysis is introduced based on inclusion criteria. In the meta-analysis, the measurement used to make an overall inference by aggregating individual studies is effect size. Effect size is a kind of indices that measure the magnitude of subject investigated on the population (Cohen, 1988). Although there are different types of effect size, the three commonly used effect sizes are (1) effect size based on means, (2) effect size based on correlation and (3) effect size based on binary data. In the study, the effect size based on correlations is used to investigate the relation between foreign board representation and firm financial performance. Correlation coefficient itself might be used as the effect size (Borenstein et al., 2009). Therefore, main criteria for inclusion is that the study must include Pearson product-moment correlation or the data which required to calculate the correlation. If the study did not report the effect size, the request has been send to the corresponding authors. Therefore, studies did not report effect size or sufficient information to calculate the effect size or did not respond to request excluded from the sample. In addition, it is not necessary that the relation between foreign board representation and firm financial performance is the main focus of the article (e.g. Barako and Brown, 2008; Frias-Aceituno et al., 2013). Furthermore, studies that combine nationality with other aspects of diversity excluded from the sample (e.g. Erhardt et al., 2003). The duplicates (e.g. Masulis et al., 2012) also drop from the sample.

As a result, 21 qualified studies constitute the sample of this study[1]. These studies consist of 11 articles, 7 dissertations, 2 working papers, and 1 book chapter. Studies cover several countries including Canada, Denmark, Germany, Finland, Indonesia, Spain, Sweden, Italy, Malaysia, Norway, Netherlands, Korea, Kenya, UK, and US. Moreover, the total number of firms is 5106.

4.3. Study Coding

The task done after the determination of empirical studies is the coding of these studies. To code studies, several rules are applied. For coding the studies, the surnames of first two authors and study year are used for the code name. Another rule applied for coding studies is that when a study comprises a range of sample, the lowest sample size is considered (e.g. Choi et al., 2007). Furthermore, when a study gives the sample as firm-year format, only number of firms is coded as sample size (e.g. Van Den Berg, 2015). In addition, when a study used more than one independent samples (e.g. Stolk, 2011), each correlation which belongs to the each sample is utilized as analysis unit since each sample represents specific effect size for country or industry. In addition, if a study employs more than one measure for foreign board representation and/or firm financial performance, the average value is considered in order to ensure independence (see Glass, 1982).

4.4. Study Variables

The interest in the relation between board composition and firm performance has increased in recent years. In this regard, foreign board representation has been one of the issues highly emphasized. Plenty of studies has been conducted to reveal the impact of foreign board representation on the firm financial performance. In these studies, foreign board representation has been measured in different ways. As well as foreign board representation, firm financial performance has been examined in various ways. Therefore, in this section, it is described that how each variable was measured in primary studies.

[1] *The number of samples included in meta-analysis is 22 since Stolk (2011)'s study comprises two independent sample, one for Netherlands and one for Malaysia. In addition, the number of samples included in accounting-based firm performance is 18, market-based firm performance is 15.*

In the primary studies included in the meta-analysis, foreign board representation has been examined in a many different ways including the number of foreign directors, the ratio or percentage of foreign directors to the total directors, a dummy variable for foreign directors and nationality index (e.g. Blau index). In the majority of studies, foreign board representation has been examined without separation of executive and non-executive, while in a few studies foreign directors representation has been measured based on the non-executive director (e.g. Masulis et al, 2012; Choi et al., 2012).

Studies that investigate the impact of foreign directors on the firm financial performance also vary based on the financial performance indicators. While some studies utilized accounting-based performance indicators (e.g. Ameer et al., 2010; Müller, 2014), others used market-based performance indicators (e.g. Choi et al., 2012; Arnegger et al., 2014). In addition to these, several studies employed both two performance indicators together (e.g. Darmadi, 2010; Masulis et al., 2012; Andrevski et al., 2014)

Even though accounting-based performance indicators are often used, they have some drawbacks. The most crucial issue related to accounting-based performance indicators is that they are subject to manipulate, in other words, they are under the control of management (Dalton et al., 1998). Therefore, it is argued that accounting-based performance indicators do not accurately measure the firm financial performance (Chakravarthy, 1986). Furthermore, accounting-based performance indicators are criticized since they capture historical/past performance (Kiel and Nicholson, 2003). In addition, this kind of measures also ignores the risk (Temple and Peck, 2002). In contrast, market-based performance measures have several advantages: (1) they reflect risk-adjusted performance, (2) they are not under the control of management, and (3) they are forward-looking.

In the view of above-mentioned issues, the firm financial performance indicators are separated into the two groups in order to clarify whether the nature of performance measures have any impact on the relation between foreign board representation and firm financial performance. Accounting-based performance measures includes return on assets (ROA), return on equity (ROE), sales growth, operating self-sufficiency (OSS), financial self-sufficiency (FSS) and non-performing loan, while market-based performance indicators comprise Tobin's Q and its derivatives (e.g. ln(Tobin's Q)),

average stock return, buy and hold return (BHR). In addition all this, Tobin's Q is the most commonly used market-based performance indicator, while ROA and ROE are most widely used accounting-based performance measures. Apart from all these, more than one performance measure either from the same group or different groups are used in some studies, in this case, the average effect size is considered.

4.5. Calculating the Effect Size

A meta-analysis based on correlation has been conducted in order to reveal the true relation between foreign board representation and firm financial performance. Therefore, studies report correlation or enough data to calculate the effect size has been included in the sample.

One of the key assumptions of meta-analysis is that studies included should be statistically independent. Correspondingly, several steps have been followed to ensure the assumption of independence. Initially, duplicates which use same data (e.g. journal articles based on dissertations) have been considered only once. In addition, when a study employs multiple measures for foreign board representation or a number of performance measures or included multiple periods, the average value has been considered based on the Glass (1982) proposition. Furthermore, since studies used a different type of performance measure, they have been divided into two groups and analyzed separately.

There are two models, fixed-effect model and random effect model respectively to conduct a meta-analysis. In the fixed-effect model, it is assumed that all studies in the meta-analysis share a common effect size, in other words, there is only one true effect size for all studies. This also refers that differences in observed effects are caused only by sampling error (Borenstein et al., 2009). In contrast, it assumed that true effect size might differ from one study to another due to the moderators in the random-effect model. Therefore, effect sizes obtained from studies included in the meta-analysis are supposed to be a random sample of this distribution. Additionally, although more weights are assigned to the more precise studies in both models to obtain more accurate estimate of the summary effect, there exists distinction between two models. In the fixed-effect model, more weight is assigned to larger samples since it aims to predict to one true effect size while in the random effect model, the more

relative weight is assigned because the model aims to determine the mean of distributions of effects. Therefore, the fixed-effect model is criticized since it ignores studies with small samples in assigning the weights, hence many researchers suggest using random effect model (Borenstein et al., 2009; Schmidt and Hunter, 2014).

Another issue related to meta-analysis study is publication bias. The publication bias implies that studies with statistically significant results more likely to publish compared to studies with non-significant results. Therefore, the most efficient way to avoid publication bias is including unpublished and published studies in the meta-analysis, nevertheless, this does not guarantee the avoidance of publication bias (Ustun and Eryılmaz, 2014). In fact, publication bias is not a specific problem to the meta-analysis, it is also valid for other review methods (Borenstein et. al., 2009). Beyond this, a meta-analysis provides methods including visual plots such as forest plots, funnel plots and quantitative analysis like Begg and Mozumdar Method, Egger's linear regression method, Rosenthal's fail-safe N method, and Orwin's fail-safe N method to detect publication bias (Borenstein et al., 2009) and methods such as Original Hedges-Olkin method, Iyengar-Greenhouse method, Duwal-Tweedie's Trim and Fill method to correct it (Schmidt and Hunter, 2014).

5. Analysis and Results

Meta-analysis consist of following main steps (Borenstein et al., 2009):

(1) Correlation coefficient is usually directly obtained from the study; if it is not reported in the study, it should be calculated;

(2) Correlation coefficient is converted to the Fisher's z scale and converted values used in the analyses:

$$\text{Fisher's } z = 0.5 \times \ln\left(\frac{1+r}{1-r}\right)$$

(3) Each effect size is weighted by its inverse variance in order to give more weight to the larger samples[2]:

$$W^*_i = \frac{1}{\left(\sigma^2/n\right) + r^2}$$

[2] *This formula is used for weighting the effect size under the random-effects model.*

(4) The summary values are converted back to the correlation:

$$r = \frac{e^{2z} - 1}{e^{2z} + 1}$$

In the study, three meta-analyses, one for general financial performance, one for accounting based performance and one for market-based performance are conducted to reveal the relation between foreign board representation and firm financial performance. The analyses are predicted with the random-effect model since the studies differ significantly from each other. All analyses are performed using Comprehensive Meta-Analysis (CMA) Software.

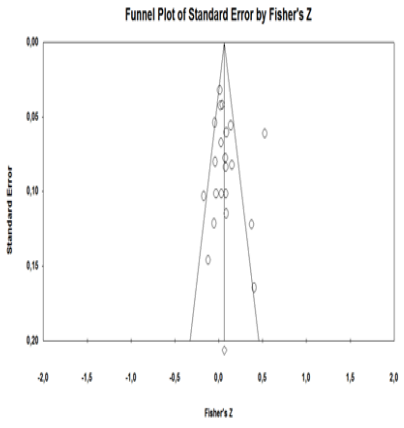
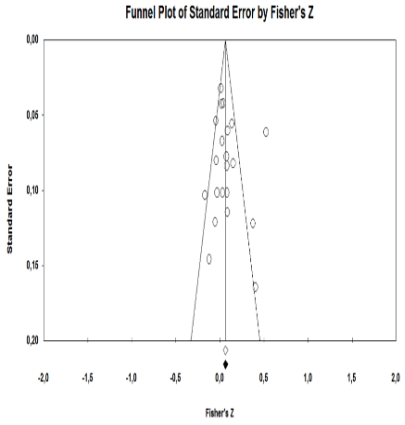
5.1. Detecting Publication Bias

Publication bias is one of the critical issues in the meta-analysis. To detect the publication bias two methods one graphical method (funnel plots) and one quantitative method (Begg and Mozumdar method) respectively are utilized.

Funnel plots are a kind of scatterplot that displays the relation between sample size and effect size. In the funnel plot, the effect size is demonstrated in X axis and sample size in the Y axis. Studies with larger samples appear near the top of the plot while studies with smaller samples will locate at the bottom of the plot. More clearly, the summary effect size in studies with smaller samples will vary widely since because of the greater sampling error (Borenstein et al., 2009). The funnel plot is grounded in the fact that, the average effect size will be the same in the absence of any bias, therefore it is expected that the plot looks like a symmetrical inverted funnel. Funnel plots for each sample are depicted below. According to these results, there is publication bias for only accounting-based firm performance analysis.

Table 1

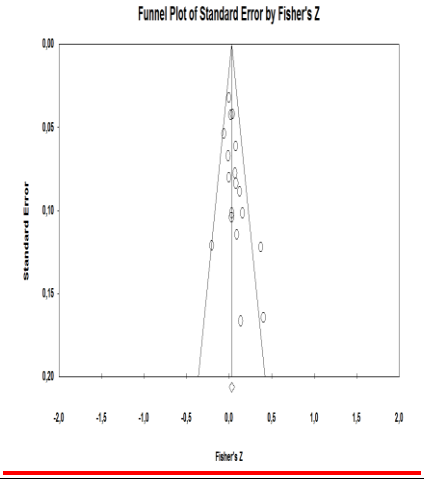
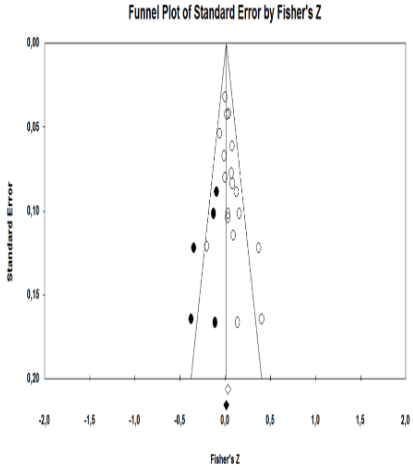
The Funnel Plots for the relation foreign board representation and general firm financial performance

Funnel Plots	Funnel plots with Imputed Studies
	

Source: Borenstein et al., 2009

Table 2

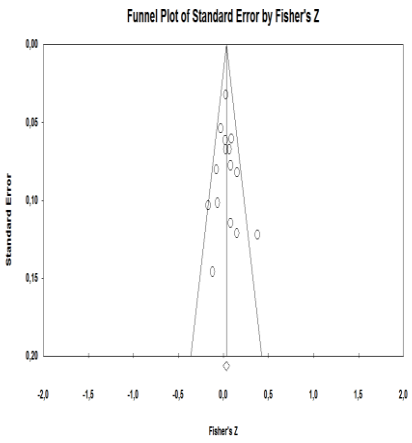
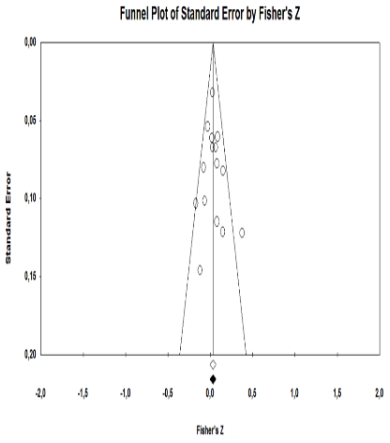
The Funnel Plots for the relation foreign board representation and accounting-based firm performance

Funnel Plots	Funnel plots with Imputed Studies
	

Source: Borenstein et al., 2009

Table 3

The Funnel Plots for the relation between foreign board representation and market-based firm performance

Funnel Plots	Funnel plots with Imputed Studies
	

Source: Borenstein et al., 2009

In addition to funnel plots, Begg and Mozumdar method is also used in the study. Different from the funnel plots, Begg and Mozumdar method is used to detect the publication bias quantitatively. This method assumes that studies with small sample will be published when they report a large correlation while studies with large sam ple will be published regardless of the size of correlation (Schmidt and Hunter, 2014). Therefore, the availability of publication bias is detected based on the correlation. In more detail, there is no publication bias unless the Kendall tau is statistically significant. Begg and Mozumdar test results reveal that although there are no publication bias for general firm financial performance (Kendall τ =0,099; p=0,516) and market-based firm performance analyses (Kendall τ =0,114; p=0,553), there is publication bias for accounting-based firm performance analysis (Kendall τ =0,353; p=0,041).

5.2. Correcting Publication Bias

One of the methods might be applied in order to correct the publication bias is Duwal-Tweedie's Trim and Fill method which grounded Wilcoxon distribution. This method is for adjusting for the effects of publication bias rather than detecting whether it exists

(Schmidt and Hunter, 2014). The method is applicable both under the random-effect model and fixed-effect model. Even though it is a simple method, it gives very close results to the complicated methods (Duval and Tweedie, 2000). In the study, this method is used to obtain adjusted effect size for the relation between foreign board representation and accounting-based firm performance.

Table 4

The results of Duval and Tweedie's trim and fill test

		Random Effects Model			
	Studies Trimmed	Point Estimate	Lower Limit	Upper Limit	Q Value
Observed Values		0,043	0,000	0,085	25,877
Adjusted Values	5	0,015	-0,033	0,063	45,468

5.3. Estimating Effect Size

The results of three meta-analyses are depicted in Table 5. The observed value for accounting-based firm performance analysis is also demonstrated in the parenthesis.

Table 5

Correlation effect size for foreign board representation and firm financial performance

	Number of Studies	Effect Size	95% Confidence Interval		Z- value	P-value	τ^2	Q_w
General Firm Financial Performance	22	0,074	0,012	0,135	2,348	0,019	0,015	89,957
Accounting-Based Firm Performance	18	0,043 (0,015)	0,000 (-0,033)	0,085 (0,063)	1,980	0,048	0,002	25,877 (45,468)
Market-Based Firm Performance	15	0,035	-0,012	0,082	1,450	0,147	0,003	21,771

Results show that the effect size for the relation between foreign board representation and general firm financial performance is positive (ρ=0,074) and at the same time this effect size is statistically significant (Z=2,348; p<0,05). Therefore it can be said that there is statistically significant and positive relation between foreign board

representation and general firm financial performance. However, the magnitude of the effect size of 0,074 is interpreted as small according to the Cohen's Effect Size Classification[3]. Confidence intervals show the accuracy of each estimate and whether the findings are statistically significant. The effect sizes for the relation between foreign board representation and general firm financial performance range from ρ=0,012 to ρ=0,135 in the 95% confidence interval. Similarly, there is a positive and statistically significant relation between foreign board representation and accounting-based firm performance (Z=1,980; p<0,05). The corrected effect size for the relation between foreign board representation and accounting-based firm performance is ρ=0,015. In contrast, the effect size for the relation between foreign board representation and market-based financial performance is ρ=0,035 however, this effect size is not statistically significant (Z=1,450; p>0,05).

6. Summary and Discussion

Scandals such as Enron, WorldCom, Vivendi that have taken place after 2000 have led to an increased importance of corporate governance for investors. Therefore, firms have begun to place more importance on corporate governance practices than ever before. Correspondingly, the impact of the board of directors' composition or diversity in BoD to firm performance has been examined in detail. In this context, size, age, tenure, independence, gender, and nationality have been investigated. In addition, studies related to female board members and independent board members reserve a larger place in the literature. Recently, the trend has shifted to the foreign board members and the number of studies that investigate the relation between foreign board members and firm financial performance considerably increased. However, these studies report contradicting results; while some find positive relation others report negative relation and some find no significant relation between foreign board representation and firm financial performance. Parallel to the situation, the current study aims to reconcile these conflicting results by utilizing meta-analysis.

To investigate the relation between foreign board representation and firm financial performance, three meta-analyses

[3] *According to the Cohen (1988) effect size classification, the Pearson correlation r is interpreted as small if r=0,10; medium if r=0,30 and large if r=0,50.*

are conducted. Financial performance is considered in three different ways; general firm financial performance, accounting-based firm performance, and market-based firm performance respectively. The results of meta-analyses reveal the summary effect size for the relation between foreign board representation and general firm financial performance is positive and statistically significant. In other words, foreign board members might improve general firm financial performance. However, this relationship is not strong since the magnitude of this effect is small according to the Cohen's effect size classification. In addition, according to the findings, foreign board representation might increase the accounting-based firm performance; on the other hand, there is no statistically significant relation between foreign board representation and market-based firm performance.

After all, it can be said that the foreign board members will enhance firm financial performance. This finding is similar to the results of Ujunwa et al. (2012) and Müller (2014). Furthermore, even though the results reveal that there is a statistically significant relation between foreign board representation and accounting-based firm performance and there is no statistically significant relation between foreign board representation and market-based firm performance, it is wrong to say that the board of directors has control on the accounting-based firm performance since the effect size is quite small (ρ=0,043).

Our analysis may suffer from a number of limitations. Although, the composition of BoD or diversity in BoD is one of the popular issues related to corporate governance, the number of studies that examine the impact of foreign board representation on firm financial performance is relatively low compared to female board representation and independent board representation, so a relatively small sample is used in this study. To increase the number of individual studies included in the meta- analysis, measures for both foreign board representation and firm financial performance have not been elaborated too much. In the near future, more reliable meta-analysis study that investigates the relation between foreign board representation and firm financial performance will be conducted as the number of individual studies increases. The increasing number of individual studies also allow the researchers to work with more specific measures for both foreign board representation and firm financial performance. In addition to all, firm and country level

characteristics might affect the relation between foreign board representation and firm financial performance, therefore the impact of moderators such as strength of legal rights, firm size, and firm internalization on this relation might be examined.

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Appendix 1

Studies Included in Meta-Analysis

1. Ameer & Ramli (2010)
2. Arnegger & Hofmann (2014)
3. Barako & Brown (2008)
4. Choi & Sul (2012)
5. Darmadi (2010)
6. Diepen (2015)
7. Engelen & Van Den Berg (2012)
8. Frias-Aceituno & Rodriguez-Ariza (2013)
9. Garcia-Meca & Martinez-Ferrero (2015)
10. Hafsi & Turgut (2013)
11. Herdhayinta (2014)
12. Honing (2012)
13. Masulis & Wang (2012)
14. Müller (2014)
15. Oxelheim & Gregoric (2013)
16. Randøy & Nielsen (2002)
17. Rose (2015)
18. Stolk_Malaysia (2011)
19. Stolk_Netherlands (2011)
20. Talarico (2013)
21. Van Den Berg (2015)

RETHINKING A GLOBAL SUSTAINABLE MONETARY POLICY IN A POST-CRISIS ERA

Adina CRISTE, PhD*

Abstract

The central banks are some of the key institutions which act and intervene through specific operations to influence the overall economic activity. The global financial crisis and its driven effects maintained over time the focus on the way in which the central banks reacted to regulate the engine of the economy. During the post-crisis period, difficult for the global economy, the monetary authority tried to address the challenges through measures aiming to support the financial stability, which is essential for the sustainable economic growth. Within this framework, the central banks which dominate the global economy have implemented several non-conventional measures in order to accomplish their objectives, which cause adverse effects for other economies, particularly the emerging ones. Starting from the characteristics of the post-crisis environment, observed at the global level, the paper identifies some challenges to the central banks, which require rethinking a global sustainable monetary policy.

Keywords: central bank, secular stagnation, disinflation, globalization

JEL Classification: E52, E58, F65

1. Incursion in the post-crisis reality

Most analyses and research papers in the macroeconomic field start from the state of the world economy. Without going into technical details, rather giving a general image of the post-crisis period, Table 1 shows some traits of the global economy as resulting from recent reports of IMF (2016; 2017) and OECD (2016).

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Table 1

State of the world economy, 2015-2017

	Traits regarding the macroeconomic indicators
1.	Lower rate of potential GDP growth in the developed and emergent countries
2.	Low rates of increase of the total productivity of the factors and of the stock of capital
3.	Lower total volume of the trade with goods
4.	Low levels of the *core* and *headline* inflation
5.	Maintenance of the near-term and longer-term inflation expectations (particularly in the developed countries)
6.	Persistent low levels of the short-term and long term interest rates
7.	Higher quantitative easing applied by the central banks from the developed countries
8.	Persistence of high levels for the private sector debt

Source: processing of OECD, 2016; IMF, 2016 and 2017 information

Although there are recently some signs of improvement of trade and manufacturing growth rate, there is a slow economic activity, the global economy being entrapped in a "trap of slow growth" (OECD, 2016). The characteristics that describe the world economy in the post-crisis stage tend to be of long-term, the diversity and complexity of the interactions between them making hard the process of self-correction, as the world economy would recover. Wheeler (2016), noticed, within this difficult context of recovery, that the low inflation rate from some countries is related to the demographic changes, particularly in the countries with decreasing workforce and in the countries with ageing population. The low inflation is also determined by the technological changes regarding the flow of information and energy production and, worldwide, by the excess offer of processed goods and raw materials. The decrease of the natural interest rate can be due to the lower increase of productivity, while the increase of the global saving can be due to the process of post-crisis disintermediation and population ageing.

Generally, it is considered that the decrease of the real interest rates on the medium and long-term, another trait of the post-crisis stage, is determined by the reduction of the natural interest rate

following the changes in the basics of saving and investment (Bean et al, 2015). Summers (2014) says that this trend is due to the low demand for capital, to the higher inclination towards saving and to the sluggish economic growth, which actually are traits of the secular stagnation. On the other hand, Broadbent (2014) considers that the reduction of the natural interest rates is caused by the higher inclination of the emergent economies to save, conjugated with the increasing preference of the investors for safer assets.

Juselius et al. (2016) highlights that the general trend of reducing the real medium and long-term interest rates is rather persistent and significant to be explained merely by the general decline of the natural interest rate. Borio and Zabai (2016) link the interest rate level to the financial conditions, giving importance to the periods of financial boom and boost.

The empiric study of Juselius et al. (2016), on the basis of USA economy data, shows that, considering the influence of the financial cycle, the estimated interest rate usually is higher and less dynamic, while the monetary policy interest rate is below the estimated one. The results of the study reflect the interaction between the monetary policy and the financial cycle as explanation of the decline noticed on the interest rates market. Within this context, the authors consider that the policy acted aggressively and persistently towards the financial decline, but it didn't manage to act swift enough and deliberately in order to control the episodes of financial effervescence, and such asymmetry could be the cause for the trend of decreasing real interest rates.

There are two hypotheses that explain the situation of the world economy (Cunliffe, 2016). On the one hand, this situation would be caused by the low process of economic revival which interacts with the unfavourable events that occurred during the post-crisis period: the Great Recession (2008-2009), the Euro Area crisis (2011-2012) and the deflationist shock manifested by the crash of the oil price (as of late 2014). On the other hand, this situation would be the result of the action of deep structural and secular forces which started to manifest before the onset of the global financial crisis, but whose effects were shaded by the incentives offered by the financial effervescence. In this situation, there is recovery after the financial crisis, but in the economies with lower potential of growth and with higher vulnerability to shocks.

Mishra and Rajan (2016) highlighted that the risk of an economic slowdown both in the developed and in the emergent countries is linked to the higher internal political tensions. One of the political concerns is the identification of those measures and instruments capable to restore the economic growth at the level before the onset of the global financial crisis, but some showed that such objective would be anachronic, given the action of breaking factors. Thus, the financial boom before the great recession left the developed countries with high levels of debt, which hampers the economic recovery. Although the debt could be depreciated as a means of supporting the demand, it is not certain whether this measure would be sustainable. Before the Great Recession, the based-debt demand, which had now become aggressive, concealed a structural slowdown of the global growth potential due to the ageing population in the developed countries and also to the slowing the growth of productivity.

2. Post-crisis challenges for the central banks

2.1. From disinflation and deflation to the risk of de-anchoring the inflationist expectations

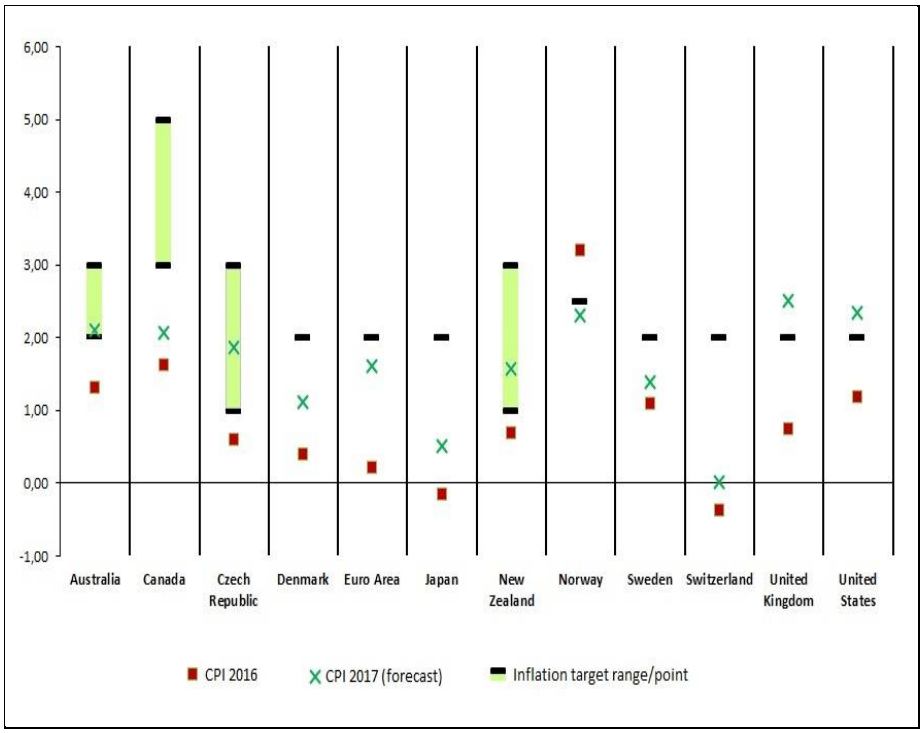
One of the features of the post-crisis period, particularly after 2013, is the persistent decrease of inflation, globally, below the medium-term expectations. According to IMF data (2016), in 2015, out of 120 countries, 85% reported deflationist trends and 20% even displayed signs of deflation.

The conventional explanation of this phenomenon is the low demand and slowed economic growth, both in the developed countries and in the emergent ones, as the post-crisis period is marked by the build-up of the debt (public and private), but also by the decreasing prices for raw materials, oil included, which "self-maintained" the trend of price decreasing by keeping the wages low.

The import prices also contributed to deflation, due to the sharp decline of oil prices in 2014. However, the core inflation (which excludes this very category of prices, as well as the price for food), also decreased below the inflation target set by the central banks in most developed countries (see Graph 1).

Graph 1

Inflation and gap of inflation from its target, in developed economies, in 2016 and 2017

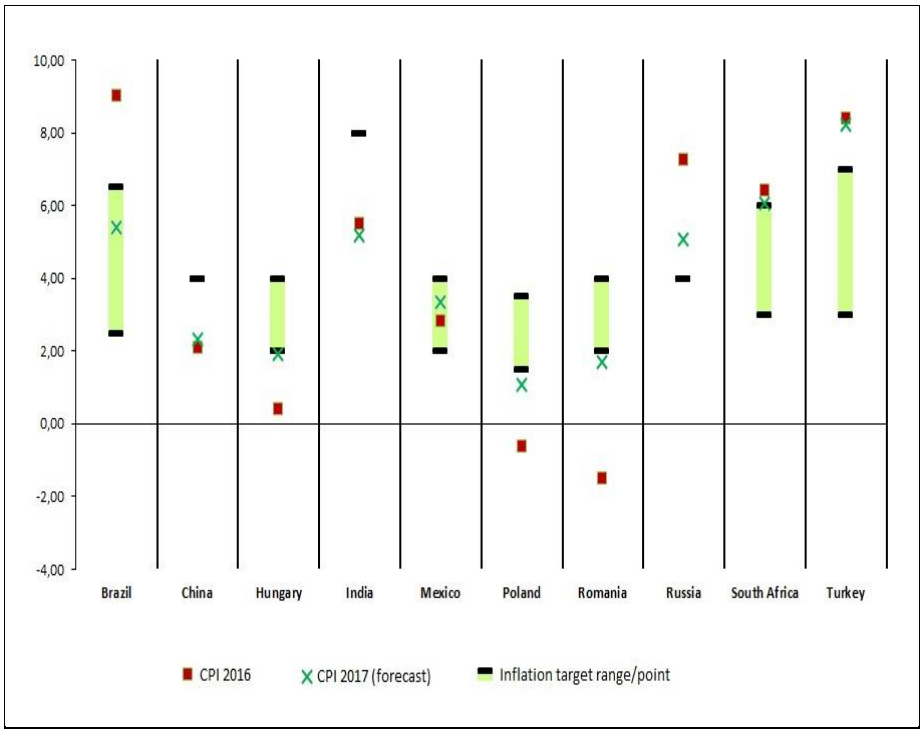


Note: CPI inflation, annual average, percent changes; for 2017, estimated data. Although for Denmark there is no inflation target, we presumed it to be 2% (as for Euro Area).
Source: representation based on IMF data, October 2016; European Commission data for the Euro Area.

For the emergent economies, however, although the image is much more diverse, inflation (IPC) exceeded sometimes the target (see Graph 2).

Graph 2

Inflation and gap of inflation from its target, in emergent economies, in 2015 and 2016



Note: CPI inflation, annual average, percent changes; for 2017, estimated data.
Source: representation based on IMF data, October 2016.

The explanation of the decreased import prices also lies in the large decline of the industrial activity in the emergent economies, particularly in the Asian countries, where there is an excess of capacity in the tradable goods sector. This surplus is the result of the accelerated increase of investments in this sector, before the global financial crisis, due to the favourable forecasts for the global and local demands. Another factor which feeds the general disinflation is the change in the power of price negotiation on the labour market, due not just to the slowing economic activity per se, but also due to the structural changes induced by the market globalization and by the technological progress. The increased competition in the open markets and the technological development put pressure on reducing the power for prices negotiation, both for the companies and for the

workforce. The structural changes within the economy have developed and maintained a feeling of incertitude regarding the employment, inducing a cautious behaviour of the workforce.

Ehrmann (2015), who conducted a study in several countries, suggested that the central banks may have larger difficulties in accomplishing the new inflation targets under the present conditions, when the actual inflation is many times below the target (compared to the situation when the actual inflation exceeded the target). On the other hand, a low, stable and predictable inflation helps maintaining the trust in the value of the currency and contributes to a sustainable economic growth and to improve the standards of living (Bank of Canada, 2016). A clear and transparent communication is essential, also including here the risks that might bear on the published forecasts for the economic indicators.

Not disinflation per se is worrying, rather its persistence, under the conditions in which it leads gradually to a down-adjustment of the expectations regarding the evolution of prices, which might produce costly deflationist cycles, with increased debt burden and long-term hampering of the economic growth and occupation.

According to IMF study (2016), there is a higher risk of prolonged low inflation period, particularly in the countries whose monetary policy is constrained by keeping the interest rates close to zero, the central banks being perceived as not having enough area of manoeuvre to stimulate the economic activity and avoid disinflation. Actually, the results of the study show that the sensitiveness of these expectations tp the unexpected changes in inflation (which should be zero, if the inflationist expectations are perfectly anchored) increased, which might show a phenomenon of de-anchoring the inflationist expectations from the target objective of the monetary policy in those countries. Hence, the role of the inflationist expectations and the path of prices become essential, and the ability of central banks to anchor these expectations on the medium-term inflation objective can help avoiding the related risks.

2.2 Limiting the space of manoeuvre of the monetary policy

From the perspective of the monetary policy, the post-crisis period is marked by the limitation of the manoeuvre space of the interest rate, particularly in the developed countries. This element is defining in reflecting the challenges confronting the monetary

authority, in general, because, on the one hand, the central banks with zero lower bound usually are those which dominate the global economy and are forced to apply non-conventional measures in order to accomplish their objectives and, on the other hand, these measures influence the monetary policy of other economies (particularly the emergent ones).

2.2.1. Influences of the monetary policies dominant at the global level

The effects of the monetary policy of the USA largely influence the world economy due to the domination of the US dollar on the global financial markets and in the world trade (Bruno and Shin, 2015). This domination is reflected in the evolution of prices for assets, of the risk premium and of the lending activity, at the global level. There are studies showing that the USA are the drive behind the world financial cycle (Cetorelli and Goldberg, 2012; Rey, 2013), and from this perspective, the change of Fed's monetary policy conduit influences the financial conditions of other economies.

There are empirical studies (Bauer and Neely, 2013; Fic, 2013; IMF, 2013) which approach the problem regarding the effects of non-conventional measures. Their conclusions show that the emergent countries with solid economic fundamentals and with more developed financial markets were rather resistant to the adverse shocks caused by the decisions of the global central banks. Some studies noticed that for such countries, the results were better in terms of the exchange rate, bond price and stock yield (Ahmed et al., 2015), Mishra et al., 2014). On the other hand, other studies claim that the emergent economies with larger and more developed financial markets were affected more by these external pressures (Eichengreen and Gupta, 2014; Aizenman et al., 2014), or that the solid macroeconomic bases (lower levels of the public debt, higher currency reserves) didn't protect them from the effects of Fed's non-conventional measures (Eichengreen and Gupta, 2014).

Although the results of these studies are not converging, overall it seems that most national currencies depreciated in the post-crisis, and the countries with weaker economic bases were strongly affected by the "external" monetary policy. The Central Bank of Turkey used much of its currency reserves to alleviate the pressure on the national currency, and the Central Bank of South Africa used the exchange rate as the main instrument to absorb the shock. Many

emergent countries had to increase the interest rate in order to decrease the outflow of capital and the pressure on the exchange rate (Turkey, Mexico, South Africa and Brasilia).

Some studies (Buitron and Vesperoni, 2015; BIS, 2015) try to suggest that the effects induced in the Euro Area countries might become important, particularly those generated by the non-conventional measures, and which act through the financial channels.

2.2.2. Influences of the emergent economies

The relations between the emergent economies and the advanced ones continue to represent a challenge during the post-crisis period, not just because there are concerns regarding the impact of the monetary policy decisions from the advanced countries, but also because the emergent economies play an increasingly important role in the trade and financial world circuit, and the growth perspectives of the emergent countries are reflecting in the world economy – the slowing economic growth from these countries affect a potential recovery of the world economy.

One of the channels of influence of the global economy is the commercial one, by more intense relations with the developed countries, and from this perspective, the role of the Chinese economy is dominant due to its increasing share to the world GDP and to its level of trade openness to the exterior. Hence, the decisions of internal economic policy have increasing repercussions at the global level. Thus, China influences the world economy following both its consolidated relation with the US economy and its trade relations with the euro zone countries, by the high level of imports of European intermediate goods which the Chinese industry uses to manufacture goods exported to the rest of the world. A decline of the internal demand in China means lowering the raw materials prices at the global level, being an incentive for the importers of such products (from Euro Area countries).

The influences of the emergent economies on the developed economies are also determined by the intensifying process of their financial integration within the world economy, but the emergent economies tend to be rather receptors than sources of financial influences (BIS, 2016). The process of capital accounts liberalization and the increased importance of the external financing, particularly via the lending channel, are factors which determine the dependence on the external financial environment, particularly on the USA

financial conditions, as most of such loans are in US Dollars (McCauley et al., 2015). The increasing level of the loans denominated in US Dollars, particularly as of 2008, is determined not just by the fast and high rates of economic growth in the emergent economies, but also by the more favourable interest rates for US Dollars loans, and by the expectations regarding the exchange rate developments of the local currencies (Bruno and Shin, 2014).

For the emergent economies, the dependence on the external lending and the accumulation of a high stock of debt denominated in foreign currency have increased the potential for blockages in the developed countries. The low interest rates in USA and the US Dollar depreciation stimulated for a while the crediting activity, increased the price of the assets and stimulated the economic growth in the emergent economies, but the change of the financial conditions in the USA might generate adverse effects in the advanced economies as well. Constâncio (2015) highlights the fact that European Central Bank analyses carefully the events from the emergent economies because their effects on the rest of the world, including on the developed economies, might become more important if the reciprocally potentiating side effects materialise.

In terms of the monetary policy, the post-crisis stage is characterized by the limited area of manoeuvre of the conventional instruments and measures specific to this policy, under the conditions in which the world economy is within a process of secular stagnation, and the disinflation forces persist.

The effects of the monetary policy decisions, irrespective of being conventional or unconventional, are mostly analysed at the domestic economy level, ignoring the influences of the external environment, although, as the post-crisis reality shows, the adverse effects are not insignificant. The challenge for the future is to identify simple and globally applicable rules aimed at minimising these adverse effects.

3. Final remarks

The post-crisis challenges for the central banks are the effect of deeper imbalances reflected not just by the harshness of the recession induced by the global financial crisis and by the persistently weak subsequent recovery, but also by the imbalanced mix of the post-crisis policies, which left monetary policy with the task of managing this burden.

This analysis shows that during the post-crisis period, the central banks have changes their position from an offensive one, given by the assumed posture of important actor in managing the adverse effects of the global financial crisis, to a defensive posture, as an accommodating reaction to the conjuncture created by the complexity of the post-crisis challenges. Such a defensive position of the monetary policy is dominating during this period, both in the context of a narrowed area of manoeuvre of the monetary policy instruments, and with the global economy being in a secular stagnation, or at least in a long process of slowing economic growth.

The narrowed area of manoeuvre of the interest rates reflects the challenges to the monetary authority because, on the one hand, the central banks in this situation usually are those dominating the world economy and they are compelled to apply unconventional measures to meet their objectives, and, on the other hand, these measures influence the monetary policy of other economies, particularly the emergent ones.

These conditions show the necessity of rethinking a monetary policy from the global perspective, the sustainable monetary policy considering all the relations between central banks. The elements which define a sustainable monetary policy refer, among other, to:

- Defining and applying measures with positive effects for the national and world economy;
- Avoiding unconventional measures, whose effects cannot be clearly assessed;
- Limiting the risks of the low interest rates on the financial stability;
- Additional measures to stimulate the economic activity of the large economies able to produce important growth effects, such as to compensate the potentially adverse influence (currency depreciation, capital outflows, and speculative bubbles).

A sustainable monetary policy at the global level is that one which takes into account the international dimension of its assumed responsibility. The basis of its implementation refers to establishing and keeping those rules that maximise the ratio between the favourable effects at the national level and the adverse effects at the global level.

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