Audit Committee Dimension and Firm Profitability in Central and Eastern European Countries

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Abstract

The aim of the paper is to analyze the association between audit committee dimension and firm profitability, using a sample of listed companies from Central and Eastern European countries. In order to conduct the analysis, the data regarding the audit variable is hand-collated data from the Annual Reports of the companies, data regarding the financial characteristics of companies is from Orbis database, and data regarding the macroeconomic variables is from Word Bank database. Using OLS model we found that audit committee size positively influences firm profitability through better monitoring operating performance of the company providing higher authority and extensive knowledge base reflected in increased profitability. Our results benefit corporate practices as evidence in straining the role of audit committees, support shareholders and managers by providing evidence and solutions to improve credibility and compliance of financial statements, as well as investors and creditors in sustaining efficient allocation and monitoring of their capital.

Key words: Internal Audit Committee, firm profitability, CEE countries.
J.E.L. classification: M42, L25

1. Introduction

Verifying and assuring financial statements by auditors is fundamental for the reputation of listed companies but also for those that are not required to publish the financial statements but want to attract capital at a lower cost and to ensure long-term development. The audited financial statements are important for investors, creditors and regulatory authorities in ensuring the credibility, fidelity and compliance of the entity's activities.

Audit missions have an important role in assuring faithfulness of the financial statements reported by firms and influences the credibility of investors, shareholders and creditors in the firms' activity. Therefore, audited financial statements contribute to corporate reputation and credibility.

Audit committee members play an important role in influencing the reputation of the company as a result of their responsibility in monitoring the corporate performance and assuring the integrity of the company`s financial statements (Fama & Jensen 1983). Larger audit committees are associated with the ability of committing boards in providing more resources that improve the financial reporting quality (DeFond & Francis, 2005). In this way, having larger audit committee can improve the audit quality by higher information resources accessed by the auditors and thus improving audit missions reflected in higher assurance of the financial statements compliance and reduced fraudulent reporting that can determine increased shareholders, investors and creditors or other interest parties credibility in company activities. Furthermore, assuring company good reputation by increased credibility of shareholders, investors and creditors could determine lower capital costs for the company and higher profitability. Therefore, the purpose of this paper is to assess the implications of audit practices, especially audit committee dimension, on operating performance expressed through return on assets ratio (ROA) in listed companies from Central and Eastern European (CEE) countries.

The research complements the literature in the field using hand-collected data set on audit committees, being important to academics, students, professors and researchers. We consider that the analysis support shareholders and managers by providing evidence and solutions to improve the credibility, compliance and faithfulness of financial statements, as well as for investors and creditors in sustaining efficient allocation and monitoring of their capital. Furthermore, the analysis is important for corporate practices in assuring lower capital costs by increasing their reputation and credibility in the market.

The paper is organized as follows: Section 2 provides theoretical background and hypothesis development; Section 3 delivers research method and data used in the analysis; Section 4 offers results of the analysis and Section 5 provides conclusions.

2. Theoretical background and hypothesis development

Internal audit characteristics have been analyzed in the literature from different perspectives. Further, we present previous studies that reported results regarding the audit committee size and its effects on firm profitability. For example, using a sample of Australian listed companies from 2001, (Baxter & Cotter, 2009) analyzed audit characteristics influences on earnings quality using OLS regression model. They found that large audit committees are considered more effective because of the varied experienced members that determine higher monitoring of financial practices (Baxter & Cotter, 2009).

Among others characteristics of the internal audit committee, there are studies that consider the audit committee size as an important issue in fulfilling the audit mission effectively (Cadbury, 1992) and that a large audit committee provides higher authority (Braiotta, 2000) and extensive knowledge base (Karamanou & Vafeas, 2005). The latest authors also consider that larger audit committee can harm firm processes and disperse responsibility among the company (Karamanou & Vafeas, 2005).

Larger audit committees are associated with increased meeting frequency and higher effectiveness in monitoring the company that contributes to improved firm performance (Raghunandan & Rama, 2007). Using a sample of 319 firms from the S&P SmallCap600 for the year 2003, they found that there is a positive and statistical significant influence of audit committee size and frequencies of meetings. Thus larger audit committees are associated with higher frequency meetings and more viewpoints that must be discussed (Raghunandan & Rama, 2007).

Bedard *et al.* (2004) found that audit committee size have a higher probability in uncovering and resolving potential problems regarding the financial reporting processes.

Aldamen *et al.* 2012 argue, among other corporate governance characteristics, that the audit committee size and meetings have a positive impact on firm`s accounting performance analyzing 120 of firm observation from S&P300 form 2008 to 2009. Their results suggested that high quality performance is negatively associated with audit committee members. Moreover, they found that larger audit committees are positively associated with accounting performance, expressed through return on assets ratio (ROA), but there was no statistically significance (Aldamen *et al.* 2012).

Al Matari *et al*. 2012 analyzed, among other corporate governance variables, the audit committee size and the association with firm performance of Saudi Arabian listed companies. They found a negative relationship between firm performance, measured by Tobin Q, and audit committee size.

Hamdan *et al.* 2013 analyzed among other audit characteristics, the effects of audit committee size on corporate performance using a sample of 106 Jordan corporations in the financial sector. Their results, regarding the OLS regression, suggest that audit committee size has a positive and statistical significant sign on corporate performance express through return on equity ratio (ROE) and earnings per share (EPS) and a positive but not statistically significant sign on ROA (Hamdan e*t al*. 2013).

Afza & Nazir (2014) analyzed, using 124 listed firms from KSE-100 Pakistan for year 2011 using multiple regression analysis on panel data, the effects of audit committee size on return on assets ratio (ROA) and Tobin Q. Their results suggest that audit committee size has a positive effect on ROA (Afza & Nazir, 2014).

Alqatamin, 2018 analyzed on 165 listed companies from Amman Stock Exchange the audit characteristics effects on firm performance, measured by ROA, from 2014 to 2016, using panel regression random effect method. The results suggest that audit committee size has a positive and statistically significant sign on firm performance (Alqatamin, 2018).

Zhou *et al.* 2018 analyzed, among other corporate governance characteristics, the effects of audit committee size on firm performance, measured by ROA. They found positive association, but not statistically significant, between audit committee size and firm performance, measured by ROA (Zhou *et al.* 2018).

Rahman *et al.* 2019 analyzed among other audit characteristics the impact of audit committee size on return on assets ratio (ROA), profit margin and earnings per share on 503 firm observation from Dhaka Stock Exchange for a period from 2013 to 2017. Their results suggest positive and significant effects of audit committee size and firm profitability. Therefore, they suggest that larger audit committees have diverse skilled resources that help the company in resolving the issues more efficiently and determine higher profitability (Rahman *et al.* 2019).

In relation with the theoretical background regarding the impact of audit characteristics on firm performance, this study aims to examine the impact of audit committee size on firm profitability, measured by return on assets ratio, (ROA). In order to describe the relationship between audit committee size and firm profitability we conducted the following hypothesis:

H1. There is a positive association between audit committee size and firm profitability.

3. Research design

In order to achieve our purpose, we analyzed the relationship between audit committee size and firm profitability, measured by ROA, by conducting OLS regression model on panel data in accordance with Zhou *et al.* 2018; Hamdan *et al.* 2013 and Baxter and Cotter, 2009.

The criteria in selecting the data was that the companies had to be listed companies, considered large companies, and to have at least ten year-observation on Orbis. Initially there was 1071 large firm observation from listed companies from Central and Eastern European (CEE) countries. Due to the lack of accessing some Annual Reports of the companies in our dataset, the data was restricted to 552 large firm observation from CEE countries.

Regarding the financial variables, described in Table no. 1 at the independent control variables sections, the data was retrieved from Orbis database and World Bank database, for a ten-year period (2004-2013). The data regarding internal audit variable (our interest variable) was hand-collected from the Annual Reports of the companies from our dataset.

Detailed variable description is presented in Table no. 1.

Table no. 1 Variable description

Variable	Description	Data Source
	Dependent variables	
ROA	Return on assets ratio, computed as net income divided by total assets.	Orbis
	Internal audit variable	
AlnSIZE	The interest variable measured as logarithm of the number of members in the audit committee (Perez-Cornejo *et al.* 2017)	Hand- collected data from Annual Reports
	Independent Control Variables (Company Financial Characteristics)	
LIQ	Liquidity, measured as logarithm of liquidity ratio	Orbis
ST	Stocks, measured as natural logarithm of stocks	Orbis
Debt	Debt, measured as total liabilities divided by total assets	Orbis
Fsize	Firm size, measured as the natural logarithm of Sales	Orbis
OIM	Operating income margin, measured as operating revenue divided by net sales	Orbis

FATR	Fixed assets turnover ratio, measured as net sales divided by net assets.	Orbis
Independent Control Variables (macroeconomic characteristics)		
INFL	Inflation rate	World Bank
GDP	Annual GDP growth (%)	World Bank

Source: Author's calculation

As dependent variable, we used the return on assets ratio (ROA), a measurement of the operating performance of companies, in accordance with other studies (Rahman *et al.* 2019; Zhou *et al.* 2018; Aldamen *et al.* 2012).

Our independent variables were used in accordance with the literature in the field (Cornejo *et al.* 2019; Zhou *et al.* 2018; Narwal & Jindal, 2015; Abbott & Parker 2000).

In the model, we used six independent variables that express companies' financial characteristics such as: liquidity ratio, coded as LIQ, stocks, coded as ST, debt, coded as Debt, firm size, coded as Fsize, operating income ratio, coded as OIM and fixed assets turnover ratio, coded as FATR. In addition, we used two macroeconomic variables inflation rate, coded as INFL and annual gross domestic product, coded GDP. Calculation of variables are presented in Table no.1.

The interest variable, audit committee size, coded AlnSIZE, is measured as the natural logarithm of the members of the audit committee in accordance with (Rahman *et al.* 2019; Zhou *et al.* 2018) and in our dataset there are committees composed by 1 and up to 7 members.

Descriptive statistics of the full dataset is presented in Table no.2.

Table no. 2 Descriptive Statistics

Variable	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
ROA	1071	5.076304	10.47368	-85.118	82.942
AlnSIZE	552	1.281338	0.3414751	0	1.94591
Fsize	1071	12.98582	1.210359	8.434435	17.1954
LIQ	1053	1.173141	2.904984	0.027	91.064
Debt	1074	0.472764	0.2695152	0.000545	2.899931
FATR	1071	0.775814	2.473955	1.87E-06	65.71594
OIM	1071	1.028566	0.1976766	0.526453	6.938534
ST	1047	10.40814	1.47493	1.085106	15.11992
GDP	1075	3.112628	3.732012	-14.814	11.62113
INFL	1075	2.994041	2.115827	-10.1487	19.5234

Source: Author's calculation

As it can be seen from Table no.2, the dataset is an unbalanced panel data, varying from 552 to 1075. This is explained by the lack of accessing some data regarding the members of the audit committees of the companies.

In order to control for possible correlation problems we conducted Pearson Correlation Matrix, presented in Table no.3.

Table no. 3 Correlation Matrix

	ROA	**AlnSIZE**	**Fsize**	**LIQ**	**Debt**	**FATR**	**OIM**	**ST**	**GDP**	**INFL**
ROA	1									
AlnSIZE	0.0388	1								
Fsize	0.1713	0.0748	1							
LIQ	0.1023	0.0216	0.0855	1						
Debt	-0.4177	0.0199	-0.2109	-0.1822	1					
FATR	-0.0748	0.0390	-0.2217	-0.0321	-0.0873	1				
OIM	-0.0082	-0.0781	-0.1881	-0.0138	-0.0456	0.387	1			
ST	0.0442	0.1363	0.6714	0.019	-0.0495	-0.0742	-0.0096	1		

GDP	0.1039	-0.0451	-0.0874	-0.0155	0.0478	-0.003	-0.0002	-0.0432	1	
INFL	0.0917	-0.1124	-0.1133	-0.0202	-0.0169	0.0087	-0.0075	-0.0822	0.3817	1

Source: Author's calculation

Pearson Correlation Matrix suggest that there is no correlation problems between the variables used in the model. The largest correlation is 0.6714 between the independent variable stocks (ST) and the independent variable firm size (Fsize).

In order to verify the model condition we conducted some tests presented in table no. 4, and 5.

Table no.4 Variance Inflation Factor test (VIFs)

Variable	**VIF**	**1/VIF**
Fsize	2.28	0.43835
ST	2.19	0.456276
FATR	1.33	0.750363
OIM	1.31	0.761162
GDP	1.18	0.847641
INFL	1.18	0.848122
Debt	1.13	0.881266
LIQ	1.05	0.948218
AlnSIZE	1.05	0.952151
Mean VIF	**1.41**	

Source: Author's calculation

According to Variance Inflation Factor test, presented in table no.1 there are no multicollinearity issues as the higher VIF is 2.28 regarding the control variable Fsize and is below 5 as the literature suggest (Zurr *et al.* 2010).

Table no. 5 Additional tests

Test name	**statistic**	**Prob**
Hausman	chi2(9) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 16.51	0.0000
Ftest	F(9,517) =16.60	0.0000
Breusch-Pagan test	chi2(9) =543.21	0.0000

Source: Author's calculation

Additional, as Table no. 5 suggest we conducted Hausman test, F test and Breusch-Pagan test. The tests suggest that fixed effects regression model is more appropriate for the data. Thus, the fixed effects equation is:

$$\boldsymbol{ROA_{it}} = \beta_1 AlnSIZE + \beta_2 Fsize + \beta_3 LIQ + \beta_4 Debt + \beta_5 FATR + \beta_6 OIM + \beta_7 ST + \beta_8 GDP + \beta_9 INFL + u_i + e_{it}$$

Where:

u_i represents the unknown intercept for each entity

e_{it} represents the error term (idiosyncratic errors)

α – constant

ROA is the dependent variable and represents the return on assets ratio, a measure of firm profitability;

AlnSIZE represents the interest variable and is the audit committee size composed from 1 to 7 auditors

Fsize represents a control variable and is the firm size

LIQ represents a control variable and is the liquidity ratio

Debt represents a control variable and is debt

FATR represents a control variable and is the fixed assets turnover ratio
OIM represents a control variable and is the operating income margin
ST represents a control variable and is stocks
GDP represents a control variable and is the annual growth
INFL represents a control variable and is the inflation rate.

The results of the Ordinary Least Squares, OLS fixed effects regression with cluster standard errors at firm level are presents in the next section.

4. Results and discussions

To test the robustness of the results we conducted, both, fixed and random effects models. The results are robust as analyzing both models suggested. In this paper is presented only the fixed effects model as Hausman test for the implied equations suggest.

Table no. 6 presents the OLS regression results regarding the association between audit committee size and firm profitability, measured by return on assets ratio, coded ROA. The results are presented considering the effects of audit committee size (AlnSIZE) on operating firm performance, measured by ROA. The first area of the results table describes the details of the fixed effects model and number of observations, while in the second part of the table are presented the effects of the interest and control variables on the dependent variable.

Table no. 6. Results on audit committee size and firm profitability

Fixed-effects (within) regression	*Number of obs*	*= 527*
Group variable: comp	*Number of groups*	*= 69*
R-sq: within = 0.2218	*Obs per group: min*	*= 3*
between = 0.1185	*avg*	*= 7.6*
overall = 0.1405	*max*	*= 10*
	F(9,68)	*= 16.04*
corr(u_i, Xb) = -0.4234	*Prob > F*	*= 0.0000*

(Std. Err. adjusted for 69 clusters in comp)
Robust

ROA	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
AlnSIZE	5.169569	3.058744	1.69	0.096	-.9340584	11.2732
Fsize	4.708456	2.523293	1.87	0.066	-.3266973	9.743609
LIQ	.0375054	.0330387	1.14	0.260	-.0284223	.103433
Debt	-11.77357	6.196256	-1.90	0.062	-24.138	.5908715
FATR	-5.246896	1.574402	-3.33	0.001	-8.388566	-2.105226
OIM	49.71864	23.08559	2.15	0.035	3.652057	95.78523
ST	-5.915013	2.437471	-2.43	0.018	-10.77891	-1.051115
GDP	.2427042	.0783449	3.10	0.003	.0863693	.399039
INFL	.4590345	.1360538	3.37	0.001	.1875433	.7305257
_cons	-44.95258	26.85346	-1.67	0.099	-98.53782	8.632661

Panel Data: YES
Cluster: Company
Method: Fixed-effects (within) regression

Source: Author's calculation

As Table no. 6 suggests the variable of interest audit committee size (AlnSIZE) has a positive and statistically significant sign on firm profitability measured by return on assets ratio (ROA). Therefore, the hypothesis H1.There is a positive association between audit committee size and firm profitability is accepted at 0.1 level, being in line with (Alqatamin, 2018).

Our results suggest that larger audit committee size in companies from Central and Eastern European countries, determine higher effectiveness in monitoring the company that contributes to improved firm profitability, increasing ROA with 5.169569. Thus, firms with larger audit committees have better profitability, measured by ROA, than firms that do not have larger audit committees.

Our results are consistent with Raghunandan & Rama, 2007, in which audit committee size determine higher effectiveness in monitoring the company. Moreover, our results are in line with Aldamen *et al.* 2012 and Rahman *et al.* 2019 in which larger audit committees have varied skilled resources that help the company in resolving problems more efficiently and are positively associated with accounting performance, expressed through return on assets ratio (ROA). Furthermore, we consider that larger audit committees have the ability of committing boards in providing more resources that improve the financial reporting quality in accordance with DeFond & Francis, 2005.

Regarding the control variables, firm size (Fsize), operating income margin (OIM), annual growth (GDP) and inflation rate (INFL) have a positive and statistically significant influence on dependent variable ROA. In contrast, variables debt, fixed assets turnover ratio (FATR) and stocks (ST) have a negative and statistically significant influence on dependent variable ROA.

5. Conclusions

This paper analyzes the relationship between audit committee size and firm profitability express trough return on assets ratio (ROA) on a 527 firms observation from listed companies in Central and Eastern European countries.

Our findings suggest that larger audit committee in companies from Central and Eastern European countries positively influence firm profitability. Our results imply that there is a positive and statistically significant association between audit committee size and firm profitability, expressed by ROA. Therefore, we consider that larger audit committee determine higher authority in committing boards in providing more resources that improve the financial reporting quality, hence, improve firm profitability. Moreover, we consider that larger audit committees contribute through better monitoring the operating performance of the company reflected in increased profitability.

We agree that larger audit committees have diverse skilled resources that help the company in resolving problems more efficiently contributing to higher profitability expressed by ROA.

We believe that the audit committee size represents an important issue in achieving the audit mission effectively and that a large audit committee provides higher authority and extensive knowledge base that conducts to higher profitability.

We consider that our findings are important for corporate practices by showing audit practices that could influence investors, shareholders and creditors credibility in the faithfulness of audited financial statements reported by the company as well as for sustaining efficient capital allocation and higher monitoring operating performance.

The main limitation to the study is the lack of accessing all data regarding the audit committee size, as more data will be available further research will be conducted.

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