Board structure as a defense mechanism during periods of economic downturn, evidence from the 2007-2008 financial crisis in the UK.

Author: X. Stegehuis
University of Twente
P.O. Box 217, 7500AE Enschede
The Netherlands

This paper contributes to the existing corporate governance literature in the United Kingdom. In the 2007-2008 financial crisis, many firms faced adverse firm performance or went bankrupt. This paper tried to reveal a possible ability of board structure to shield against adverse firm performance during periods of economic downturn in the UK. A multiple hierarchal regression method was used to come up with the results, these were controlled with a sensitivity analysis. The random sample in this paper existed of 466 industrial firms listed on the London Stock exchange. The results did not reveal clear or obvious relations between board structure and firm performance during the 2007-2008 crisis. However, evidence was presented for a weak positive relation between board size and firm performance, this connection was confirmed in the sensitivity analysis. This might be confirmation of the claim of Essen et al (2013) that board discretion is desired in periods of economic downturn. Therefore this work can serve as a source of inspiration for future research into the relation between governance mechanisms and firm performance during periods of economic downturn in Anglo-Saxon markets. Connections in those markets appear to be different compared to periods of economic stability.

Supervisors: Peter-Jan Engelen, Xiaohong Huang, Henry van Beusichem, Samy A.G. Essa, George Iatridis, Rezaul Kabir.

Keywords
Board structure, Corporate governance, United Kingdom, board independence, board composition, board compensation, leadership structure, monitoring committee composition, board size

5th IBA Bachelor Thesis Conference, July 2nd, 2015, Enschede, The Netherlands.

1. INTRODUCTION

The global financial crisis of 2007-2008 is considered as the worst financial crisis since the great depression of 1930. The housing bubble in the US is seen as the main reason for the global crisis, which harmed many financial institutions globally. This economic downturn led to many bankruptcies all over the world. Famous examples of these bankruptcies are Lehman Brothers (US), Northern Rock (UK) and ABN AMRO (NL). The fundamental cause of this severe financial crisis was often mentioned as poor risk management by executive management of many financial and non-financial institutions. Poor performance of executive management can be connected with the school of "corporate governance". Corporate governance should have been partially able to prevent this poor performing of executive management by better supervising of executive management. Therefore, the recent financial crisis is sometimes explained through failing corporate governance, this makes it an interesting topic for research.

Corporate governance has been an interesting topic in financial research for many years. The mismatch of interest of owners and executive managers (or "principle-agent problem") can be considered as an important factor of poor firm performance. Corporate governance aims for an alignment between those interests and should result in good performance and economic efficiency (Thomson & Conyon, 2012). Corporate governance can be divided in two sets of mechanisms which are market (external) or firm (internal) oriented.

During and after the financial crisis of 2007-2008, corporate governance was highlighted many times and was considered as very important for explaining the crisis. Erkens et al. (2012) found that corporate governance had a significant impact on poor firm performance during the financial crisis of 2007-2008. With regard to the recent financial crisis of 2007-2008, the internal mechanism "board structure" can be considered as an interesting topic of study. Erkens et al. (2012) found a negative relationship between outside board members and firm performance. They explain this relation in combination with the ownership identity. Especially in case of institutional ownership, more outside board members lead to a worse firm performance due to poor risk management.

When looking at corporate governance in the world, it can be roughly divided in two main systems: Anglo-Saxon and Continental Europe/Japanese. The main difference is the corporate governance focus: internal or external. This orientation mainly stems from the level of protection of shareholders, where it can be considered as relative higher in Anglo-Saxon markets through common law (Schleifer & Vishny, 1997). Therefore Anglo-Saxon corporate governance tends to be more market oriented. Vafeas and Theodorou (1998) strengthen this claim by not finding any significant relation between board structure and firm performance in the UK. Vafeas and Theodorou (1998) didn't find evidence for corporate governance to contribute to firm performance. However, in times of financial crisis and adverse firm performance, specific board structure characteristics might be able to shield such an adverse performance. The UK is often seen as a classic example for Anglo-Saxon markets, but much literature, concerning corporate governance in the UK, focuses on market oriented governance structures. Therefore, the relation between internal governance mechanisms and firm performance in the UK during an economic crisis is an interesting topic for research. This paper specifically focuses on board structure as a governance mechanism. By studying this relation, more insights might be gained on the ability of board structure to shield against adverse performance in Anglo-Saxon markets. Essen et al. (2013) did research on the same topic with a sample size focused on 26 different countries and found interesting phenomena. Therefore, much inspiration will be drawn from their work and conclusions. Findings might lead to an altered attitude towards internal corporate governance mechanisms in Anglo-Saxon markets or during periods of economic downturn. Therefore, the topic of this paper will be stated as follows:

What was the effect of board structure on the impact of the 2007-2008 financial crisis on firm performance in the United Kingdom?

2. LITERATURE REVIEW

The goal of this paper is to explain the effect of "*board structure*" on "*firm performance*" in the UK during the 2007-2008 financial crisis. This section reviews previous research, concerning this topic, in order to come up with clear and testable hypotheses. Below, the concepts of firm performance and board structure are conceptualized before they are reviewed.

First, firm performance is conceptualized. Much research has been done about the conceptualization of firm performance. In this paper, firm performance will be expressed in both market and accounting factors in order to give insights from different perspectives. The distinction between market and accounting factors can be justified through difference of influences on firm performance outcomes between both measures. Market related factors on the one hand, can have other effects than only internal and firm specific effects on firm performance. For example, market perception of a firm might depend on other factors than just earnings or turnover. On the other hand, accounting factors purely reflect internal and firm specific effects on firm performance and is not directly exposed to possible subjective market influences. When looking to prior studies, two main measurements for firm performance, based on market and accounting performance, can be noticed. Those measurements are return on assets before taxes (ROA) and stock price performance. ROA is a good measure since it presents the efficiency of assets allocating of a firm and both equity and liabilities are considered in the calculation. Besides ROA, stock price performance is used as a firm performance metric as well. By using the stock price performance, a possible difference between internal efficiency and market perception of certain board configurations might be revealed.

Next, board structure will be conceptualized. Board structure will be divided in five different characteristics in order to give more detailed information. In this paper the following characteristics of board structure are recognized: *board composition, board ownership, leadership structure and monitoring committee composition*. These characteristics are derived from the work of Vafeas and Theodorou (1998), they assumed these characteristics as most important in an UK context. Besides these four characteristics, an additional concept is considered. Current research has been investigated to look whether important board structure factors are missing which might influence firm performance. This investigation led

to the introduction of the concept board size. In the remainder of this section, the different characteristics will be discussed and the expected effect on firm performance will be explained in order to construct proper hypotheses.

2.1 Board composition

The first characteristic of board structure which will be reviewed is board composition. It is concerned with the presence of non-executive board members (outsiders vs. insiders) and can be defined as board independency. Much has been written about board composition and board independency, it has both its positive and negative aspects. The main concepts which are used to explain board independency are: stewardship theory, information asymmetry, agency theory and substitute hypothesis of takeover markets for outside board directors. Stewardship theory explains the negative aspects of board independency by rejecting the assumption of manager opportunism and the preference of own interest before shareholders' interests (Donaldson and Davis, 1991). Davis et al. (1997) state that managers value cooperation with shareholders more than opposition, this idea is derived from the game theory. So according to the stewardship theory, dependent boards also pursue maximum shareholder value instead of personal benefits. Besides stewardship theory, information asymmetry is an explanation for the undesirability of an independent board. Raheja (2005) claims that inside board directors might have information which is not available for shareholders. In order to reveal this information, dependent board members are desired in the board composition. Agency theory is one of the frequent used theories to explain optimal board composition. It suggests that a more independent board is desired since outsiders have less personal incentives in the company and therefore perform their tasks better. Some of these tasks are firing CEO's, responding to hostile takeovers or acquiring other firms. These tasks are expected to be executed more rational by outside board members but there is only very weak evidence for this (Bhagat and Black, 1999). They explain this weak evidence by the difference in tasks, where independent boards may be better at certain tasks, they might be worse at others. However, there is also empirical evidence that a more independent board positively affects firm performance (Baysinger and Butler, 1985; Lefort and Urzúa, 2008; Jackling and Johl, 2009). Finally, there is another phenomenon explained in the literature which might be of value. It is stated that an effective takeover market can act as a substitute for outside board directors; this is called the "substitute hypothesis of takeover markets for outside board directors". Empirical evidence shows that the takeover market can discipline or even replace a poor performing board of directors; this is observed especially at dependent boards (Kini et al. 1995). The superiority of outside board members may become irrelevant because "the takeover market monitors the monitor" (Kini et al. 1995). Since the UK has a very effective takeover market, this hypothesis may be very relevant to explain board composition. All in all, it can be said that an independent board may be undesired in periods of economic downturn since it may lead to inferior firm performance. This is empirically backed by Erkens et al. (2012), who report worse stock returns of financial firms with more independent boards during the economic crisis of 2007-2008. With this information, it is expected that board independency has a negative effect on firm performance; this is expressed in the first hypothesis.

Hypothesis 1: Board independency had a negative effect on firm performance during the 2007-2008 financial crisis.

2.2 Board compensation

The second characteristic of board structure is board compensation, with focus on equity-related compensation structures. The main idea of equity related compensation is the alignment of interest between executives and shareholders. The agency theory suggests that the problem of non-alignment can be solved by giving executives incentives to perform according shareholders' interests through equity-related compensation structures. Multiple empirical efforts deliver proof of the positive effect of equity-related compensation on firm performance (Murphy, 1985; Mehran, 1995; Lewellen et al. 1985). Equity-related compensation structures may also be useful to overcome the information asymmetry problem. By giving executives personal incentives to increase firm performance and maximize shareholder wealth, they may use personal information to increase firm performance in order to gain own benefits (Coughlan and Schmidt, 1985). However, literature also addresses some critical remarks on equity-related compensation structures. Harris and Bromiley (2007) made such a critical remark towards. According to them, these compensation structures introduce a new set of problems. By relating executive compensation with firm performance, they are given incentives to maximize reported earnings. This can be done by two means. One is the desirable way by actually increase firm performance, the second way is the undesired way by manipulate earnings accounting. By manipulating the earnings accounting and misrepresent real earnings, short-term firm performance may increase and thereby executive compensation as well. However, on the long-run this might have a negative impact on firm performance. Bergstresser and Philippon (2006) back this statement with empirical evidence of a positive relation between equity-related compensation and level of earning-management through "incentivized" CEO's. This means that CEO's with a higher level of equity-related compensation will represent earnings more positive because it will increase their personal compensation. The literature also questions the effectivity of equity-related compensation. Matolcsy and Wright (2011) suggest that compensation structures should be aligned with certain firm characteristics in order to be effective. As an example, they show evidence that there is no positive relation between equity-related compensation and firm performance. Especially for firms with an outside blockholder ownership structure and they claim that a firm, which has this characteristic, should adopt cash compensation. This might be explained by the ability of block holders to monitor executive management on their own. Ozkan (2011) found a negative impact of blockholder and institutional ownership on the level of CEO compensation; this is evidence for a high level of direct monitoring which backs the claim of Matolcsy and Wright (2011). Since the evidence of Ozkan (2011) was derived from the UK, it is highly relevant for this paper and should be interpreted with great weight. Finally, there is also reason to expect a negative relation between equity-related compensation structures and firm performance. Core et al. (2008) didn't find any significant evidence for a possible relation but discovered a critical focus of the press on large option exercises by CEO's. Kuhnen and Niessen (2012) reported the same critical focus but also present a significant effect of the public opinion on the altering of executive compensation, especially on stock options. When taking everything into account, it can be expected that equity-related compensation structures do not have a universal positive impact on firm performance and a

close look to the context has to be taken. When taking the context of the UK into account, board ownership is expected to have a negative effect on firm performance during a financial crisis. Therefore the following hypothesis will be stated:

Hypothesis 2: Equity related compensation structures had a negative effect on firm performance during the 2007-2008 financial crisis.

2.3 Leadership structure

The next characteristic of board structure, which will be reviewed, is leadership structure. This structure covers whether the functions of chairman of the board of directors and CEO are separated or not and will be described as "CEO duality". Again, agency theory is used to explain the effect on firm performance and it suggests that CEO duality is not desired with regard to firm performance in times of economic downturn. Since ownership and control are separated, a board should be fully independent in order to properly execute her tasks (Fama and Jensen, 1983). Dalton and Kesner (1987) quoted the following relevant question for this stand toward CEO duality: "Is it appropriate that the very person to be evaluated is in the evaluation team?". Another argument for the undesirability of CEO duality is presented by Bliss (2011). He found a negative relation between CEO duality and audit fee pricing. This can be interpreted as a lower concern for quality auditing by board chairman's who also hold function as CEO. Since auditing is concerned with information provision and transparency, CEO duality may lead to lower transparency which cannot be considered in line with shareholders' interests. Despite of the negative aspects of CEO duality, literature also considers positive aspects. Boyd (1995) reviews positive aspects of CEO duality by using the stewardship theory. Earlier in this paper, Donaldson and Davis (1991) were already mentioned with their conceptualization of stewardship theory and the rejection of managerial opportunism. When rejecting this managerial opportunism, CEO duality can be seen as desired because they carry particular skills, not or less hold by outside directors. Together with the skill of managerial stewardship, organization theory suggests that CEO duality gives one person unambiguous authority over subordinates which lead to higher decision making efficiency (Finkelstein and D'aveni, 1994). Finally, CEO duality may decrease information costs since CEO's may have inside information which can be valuable for board decision making. This statement is backed up by the work of Brickley et al. (1997) by proving the prevalence of information costs over agency costs. Now both pros and cons are discussed, the following stand shall be addressed which combines both these stands. Much literature proves that the relation between CEO duality and firm performance depends on industry-specific characteristics. Finkelstein and D'aveni (1994) developed a contingency model by describing CEO duality as a "double-edged sword". CEO duality is desired when high decision making efficiency is demanded, often seen in unpredictable environments and industries. CEO duality is undesired in stable and predictable environments and industries where the emphasis is on the control task of the board. Both Elsayad (2007) and Boyd (1995) support the contingency model. When looking to country-specific characteristics of the UK, there is no reason to expect a prevalence of these characteristics over industry-specific characteristics. Since this paper focuses on the 2007-2008 financial crisis, CEO duality might be connected differently to firm performance than in economically steady periods. Essen et al (2013) confirm this statement by showing a desirability of directional discretion which includes CEO duality. Because efficient decision making is necessary to shield against adverse firm performance, the positive aspects of CEO duality will be considered as more important than the negative aspects in this paper. Taking this into consideration, the following hypothesis can be stated:

Hypothesis 3: CEO duality had a positive effect on firm performance during the 2007-2008 economic crisis.

2.4 Monitoring committee composition

The fourth characteristic of board structure which is reviewed is monitoring committee composition. These committees consist of board members and have important decision control tasks. Some of these tasks are: determining board compensation, reviewing financial statement and nominating new executive board members (Vafeas and Theodorou, 1998). However, in this paper only two of those committees will be considered: remuneration committees and audit committees. The argument for this is the focus of those committees on reviewing executive management, nominating committees are concerned with the board of directors itself and therefore less concerned with decision control tasks (Cotter and Silvester, 2003).

Remuneration committees are concerned with executive management compensation structures. According to sound logic, it would be undesirable when executive directors can develop their own compensation packages. This is also supported by the UK corporate governance code: "No director should be involved in deciding his or her own remuneration" (Council, 2010, p. 6). However, Daily et al. (1998) didn't find a relation between remuneration committee independence and level of CEO compensation which might be explained by stewardship theory and a sound feeling of responsibility by executive directors. Where Daily et al. (1998) couldn't observe an obvious phenomenon, Conyon and Peck (1998) could. Again they didn't find a relation between remuneration compensation and level of CEO compensation. But they have found a positive relation between remuneration committee independence and the link between CEO compensation and firm performance. This may indicate that independent remuneration committees are more able to construct compensation structures which are linked to firm performance. Therefore, independent remuneration committees will be considered as desirable for shareholders and firm performance.

Audit committees review financial disclosure of executive management. When looking to the literature, it can be said that the main message is the desirability for independent audit committees; however this independence is not always backed by empirical evidence. First argument for audit committee independence is the negative relation with earning management (Davidson and DaDalt 2003). They state that more dependent audit committees lead to higher level of earning management which may cause short-terminism, and which can be considered to have a negative impact on firm performance. Besides a decreased earning management level, independent audit committees are also associated with higher audit quality. This is proven by Goodwin-Stewart and Kent (2006) through a positive relation between committee independence, meeting frequency and ultimately to higher audit fees which suggest more concern for high audit quality. This statement is empirically backed by Pomeroy and Thornton (2008). Finally, corporate fraud cases are associated with more dependent audit committees (Farber, 2005). However, Abbott et al. (2000) do not support this claim so the strength of this argument is disputable. To wrap things up, it can be assumed that audit committee independence is

desirable for shareholders since it might be associated with higher firm performance.

When taking both monitoring committee reviews into account, it can be assumed that monitoring committee independence is desirable during economic downturn. Independent monitoring committees can also compensate for a desired board discretion in periods of economic downturn. Therefore, the following hypothesis is stated:

Hypothesis 4: Monitoring committee independence had a positive effect on firm performance during the 2007-2008 financial crisis.

2.5 Board size

The final characteristic of board structure, which will be reviewed, is the size of the board. An increased board size can result in lower firm performance through free-rider problems and higher coordination costs through communication problems (Jensen, 1983; Lipton and Lorsch, 1992). Besides free-rider problems and communication problems, Yermack (1996) presents that big boards may suffer from slow decision-making and risk averseness. Guest (2009) states that boards in the UK play a weak monitoring role but a strong advisory role. Negative relations are also often observed among firms in European countries by Conyon and Peck (1998). However, results have to be interpreted carefully. Both Lehn et al. (2009) and Harris and Raviv (2008) didn't find a causal relationship and suggest that the association stem from other causes that influence both variables and that optimal board size depends on firm-specific characteristics. Besides negative aspects, an increased board size also has its positive aspects. Increased board sizes go along with an increased level of expertise brought into the board and therefore with a better alignment of shareholder and executive management interests. Lehn et al. (2004) claim that board size is positively related to the information possessed by a board and can therefore be associated with higher firm performance. Also might an increased board size contribute to higher board discretion what was mentioned earlier as desired in times of economic downturn (Essen et al. 2013). Even though a small board size is often associated with increased decision making efficiency, it also associated with "over-monitoring" by owners. Large board seem to have less trouble with being " over-monitored" as Essen et al. suggest. Therefore, the positive aspects of having larger boards are considered as predominant in this paper and will result in the final hypothesis:

Hypothesis 5: Board size was positively connected to firm performance during the 2007-2008 financial crisis.

Below in figure 1, all the stated hypotheses are put into one model to give a clear and visual overview.

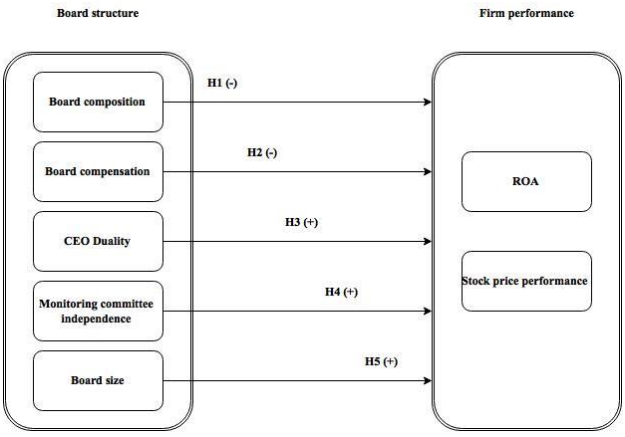


Figure 1. Hypotheses overview model.

3. METHODOLOGY AND DATA

3.1 Data gathering

In order to answer the research question, data was gathered and analyzed to back up the conclusions drawn in this research. The procedure which was used to gather and analyze the data will be discussed now. This paper is concerned with the impact of the global crisis on firm performance and so an impact period had to be considered. When looking to some statistics, 2008 can be considered as impact year of the global financial crisis on firm performance in the UK. Winnet (2008, October 6) reports the biggest drop of the London Stock Exchange in the history. And as can be seen in appendix 1, also UK GDP drops severely in 2008 and starts to recover at the end of 2009 therefore the delta of firm performance will be measured between 2007 and 2009. Because this paper mainly focused on firm performance measures without special interference or regulation due to governmental actions, industries with extraordinary regulation were excluded. Therefore, firms operating in the financial and utility industry were not considered in the data set. Vafeas and Theodorou (1998) also excluded firms operating within those industries and filtered them on unique SIC codes, where firms within the financial industry have primary SIC between 6000 and 6999 and firm within the utility industry primary SIC between 4900 and 4999. The data was subtracted from the *Orbis* database, and after filtering out the firms which showed incomplete data, the total sample size existed of 466 individual firms.

3.2 Data

Table 1. Descriptive statistics

	Mean	Median	Std. Deviation
Δ ROA 2007-2009 %	-,676	-,390	5,95
Δ Stock price performance 2007-2009 %	-,417	-,482	,373
Debt / Total assets 2007	,509	,504	,256
R&D expenses / Total assets 2007	,018	,000	,053
Operating revenue 2007 (in millions of GBP)	1,720	,080	11,113
Board size	8,670	8,000	3,029
Board members holding shares %	,507	,500	,242
Independent board members %	,339	,333	,173
Independent monitoring committee members %	,674	,667	,290
CEO Duality	,309	,000	,463
N	466		

Table 1 presents some descriptive information of the data used in this paper concerning firm performance and board structure. When looking to the first half of the data, some remarkable things can be noticed when comparing this data set with the data set used by Vafeas and Theodorou (1998) with regard to performance specific data. First of all, the average leverage ratio in this data set is 0.34 higher and shows that in 2007 half of the capital existed of debt. Therefore, it can be concluded that firms in this data set are more leveraged than the firms in the dataset of Vafeas and Theodorou (1998). This phenomenon is in line with explanations of the cause of the 2007-2008 credit crisis, since high levels of leverage were considered as intensifiers of the crisis. Besides this, the change of performance characteristics during the financial crisis itself also shows interesting features. As can be seen, both ROA and stock price performance decreased drastically (-68% and -42%) in the period of 2007-2009. This is in line with the expectations of the economic downturn during this period. However, ROA decreased more drastic than stock price performance, this is evidence for a possible mild perception of the market towards adverse performances or a loss which is partially accepted by the market.

When comparing board specific data of the lower half of table 1 with the data of Vafeas and Theodorou (1998), it can be concluded that the outcomes are mostly similar. This means that boards are predominantly filled with executives (mean: 66% executives vs. 34% non-executives) but monitoring committees mostly consist of non-executives (mean = 32% executives vs. 68% non-executives). However, the data also reveals some differences. It can be seen that CEO duality has decreased over the years (Mean: 0.7 in 1998 vs. 0.31 this paper). Besides CEO duality, board compensation also changed over the years. In 1998 only 15% of the board members held equity in the firm, this dataset presents that 50% of the board members held equity in the firm. Another interesting dataset which can be used for comparison derived from the work of Essen et al. (2013). When looking at the descriptive data information about board structure, presented by them, both similarities and differences are to be recognized. The variables board independence, monitoring committee independence, but especially CEO duality and board compensation show the same trend observed in this paper compared to the work of Vafeas and Theodorou (1998). The trend of decreasing CEO duality is often seen as positive, as stated in the Cadbury Report and the often stated negative relation with firm performance. However, this trend of decreased CEO duality is not desirable according to the hypothesis because board discretion is decreased. Besides decreasing CEO duality, they also show an increasing equity related compensation structure for board members, both values are close to 0.50. However, Essen et al (2013) found a board size with an average of 11.04, which is 2.35 higher than the board size presented above. An explanation for this might be the different geographical focus, they focused on 26 different European countries but this paper only focused on the UK. Board sizes differ across countries, in Germany for example, a board size around 17 is often presented because of employee representation, and this might have influenced the average value.

3.3 Model

Below, the process of finding possible relations between board structure and firm performance is described. In order to give a detailed view of the effect of board structure characteristics on firm performance during the 2007-2008 financial crisis, a multivariate hierarchical regression procedure was used *(y=β0+β1xi1+ β2xi2+ … + β5xi5 + Control variables)*. Since there is a notable difference between accounting and market based performance measures, two different regression analyses were conducted. The first regression analysis had ROA as proxy for firm performance and five board structure characteristics as independent variables. The second regression analysis had stock price performance as proxy for firm performance and again the five board structures characteristics were considered as independent variables. This led to the following regression model:

$$FP = \beta 0 + \beta 1 BINDEP + \beta 2 BCOMP + \beta 3 CDUAL + \beta 4 MCINDEP + \beta 5 BSIZE + Control\ variables$$

- *FP:*
  - Δ *ROA:* return on assets (before taxes) between 2007 and 2009 as proxy for firm performance
  - Δ *STOCKPP:* stock price performance between 2007 and 2009 as proxy for firm performance.
- *BINDEP*: percentage of non-executive directors in the board of directors.
- *BCOMP:* percentage of board members holding equity in the firm.

- *CDUAL:* dummy variable with value one if executive is also chairman of the board and zero when otherwise.
- *MCINDEP:* percentage of non-executive board members in monitoring committees.
- *BSIZE:* total amount of board members expressed in absolute numbers.

According to the hypotheses, *BINDEP* should have a negative coefficient since an increased percentage of non-executive directors on the board is expected to be negatively related to firm performance. The coefficient of *BCOMP* is expected to be negative as well because in combination with the UK context, it might have a negative impact on firm performance. *CDUAL* is expected to have positive coefficient since CEO duality is expected to contribute to board discretion what will shield for adverse firm performance according to Essen et al. (2013). For *MCINDEP*, a positive coefficient is expected to be observed, this would be in line with the agency theory and to compensate for desired boar discretion. Finally, *BSIZE* is expected to have again a positive coefficient, which would be due to the contribution of board discretion which is expected to be connected with increased board size. The model controls for four different factors: (1) R&D spending (*R&D)*, because it is expected to be positively related to firm performance through the assumption that it controls managerial opportunism (Le et al. 2006). (2) Leverage (*LEV)*, because debt is often considered as a mean to give managers incentives and reduce agency costs (Jensen and Meckling, 1976) but when looking to the literature, it is expected to be negatively related to firm performance in times of economic downturn because of higher risks and increasing bankruptcy costs (Zeitun and Tian, 2014). (3) Natural logarithm of annual sales (*NLOGSALES)* because the impact of proper corporate governance might differ across firms of different sizes. And finally, the model will control for (4) industry by Bureau van Dijk unique industry codes because some industries might be harmed more by the 2007-2008 credit crisis. This control variable exists of 15 dummy variables.

Before the regression analysis was conducted, the data had to be inspected for some assumptions and possible errors. First, the data was checked for multi-collinearity. When looking at appendix 2, it can be seen that some variables tended to be correlated to each other and therefore a presumption of multi-collinearity may grow. However, after checking for the VIF values of those variables, this presumption was not confirmed since the variables had VIF values between 1 and 1.8 what is too small to confirm multi-collinearity. Besides collinearity, the distributions of the residuals were inspected for heteroscedasticity. From appendix 3 and 4 it can be concluded that the residuals of both dependent variables (ROA and stock price performance) are normally distributed and therefore the data does not suffer from heteroscedasticity.

4. EMPIRICAL RESULTS

In this section, the results of the regressions will be discussed and compared with the stated hypotheses. Below, table 3 and table 4 present the results from the regression analyses. Next, the hypotheses will be discussed in combination with these results in order to come up with empirical results.

Table 2. Results hierarchical regression analysis

Dependent variable: Δ ROA		
	Model 1	Model 2
Constant	-2,430*	-3,484**
	(-1,711)	*(-1,979)*
Block 1 predictors		
BINDEP		,035
		(,527)
BCOMP		,003
		(,065)
CDUAL		-,035
		(-,700)
MCINDEP		,054
		(,841)
BSIZE		,056
		(,873)
Block 2 predictors (control variables)		
R&D	,030	,032
	(,621)	*(,653)*
LEV	,069	,070
	(1,281)	*(1,288)*
NLOGSALES	-,022	-,058
	(-,400)	*(-,783)*
R^2	*,035*	*,046*
	(,956)	*(,988)*
N	*466*	*466*

* Statistically significant at the 10% level
** Statistically significant at the 5% level
*** Statistically significant at the 1% level
Beta coefficients are transformed to standardized values (except for the constant). Values between parentheses represent t-statistic of the standardized beta coefficient (R^2excluded because it represents F-statistic)

Table 3. Results hierarchical regression analysis

Dependent variable: Δ *STOCKPP*		
	Model 1	Model 2
Constant	-,527***	-,468***
	(-5,982)	*(-4,341)*
Block 1 predictors		
BINDEP		,044
		(,676)
BCOMP		,032
		(,696)

CDUAL		-,037
		(-,766)
MCINDEP		-,078
		(-1,240)
BSIZE		,235***
		(3,778)
Block 2 predictors (control variables)		
R&D	,046	,034
	(,955)	*(,724)*
LEV	-,155**	-,137*
	(-2.921)	*(-2,580)*
NLOGSALES	,147*	-,031
	(2,696)	*(-,432)*
R^2	*,059***	*,091****
	(1,644)	*(3,113)*
N	*466*	*466*

* Statistically significant at the 10% level
** Statistically significant at the 5% level
*** Statistically significant at the 1% level
Beta coefficients are transformed to standardized values (except for the constant). Values between parentheses represent t-statistic of the standardized beta coefficient (R^2excluded because it represents F-statistic)

First, both models as a whole will be discussed. It can be noticed that the regression results, as presented in table 2 and table 3, do not show strong prove of expected or unexpected relations because of a weak R^2 (0.046 and 0.091). Still, when looking at the results in more detail, some interesting interpretations can be presented with regard to the stated hypotheses. The first hypothesis which will be discussed was concerned with board size (*BSIZE)*.

Hypothesis 5 expected a positive relation between board size and firm performance during the 2007-2008 crisis. The results show weak support for this hypothesis and the assumption of prevalence of board discretion (Essen et al. 2013). Where table 3 didn't show a significant relationship, table 4 did. This can be interpreted that markets value bigger boards better in the UK because the outcome is both economically (β *=0.235)* and statistically (*t<0.001)* significant but there is no solid evidence that it also directly affects internal firm performance because no statistically significant outcome is seen in relation to ROA (t=0.873). This observation contradicts with statements made by Yermack (1996) that board size is negatively related to firm performance. The explanation for this phenomenon is the ability of smaller boards to have a more efficient decision making process, something what is desired in periods of economic downturn. However, Essen et al. (2013) show that small board sizes often go along with increased supervision by owners, which decreases board decision making efficiency. Both results of Essen et al. (2013) and this paper suggest that negative aspects of small boards (increased owner supervision) outweighed the positive aspects (more efficient decision making) during the 2007-2008 financial crisis.

Where weak support for hypothesis 5 was observed, the results do not show clear support for hypothesis 1. This hypothesis was concerned with board independency (*BINDEP)*. It stated that the variable *BINDEP* should have a negative beta value, but a positive relation in both regression models was observed. However in both regression models *BINDEP* is not economically (β=0.035 and β=0.044) nor statistically significant (t=0.527 and t=0.676) and therefore no support for the hypothesis is observed. According to the literature both positive and negative relationships could have been observed using the information asymmetry assumption and the agency theory. Observed differences might be explained by the focus of this paper on the UK market. In the literature review, the agency theory was rejected using the substitute hypothesis of takeover markets for outside board directors and a prevalence of the information asymmetry problem was expected. However, Healy and Palepu (2001) state that efficient takeover markets reflect all available information. Therefore, the information asymmetry problem might also had no influence on firm performance during the crisis since the UK has an active and efficient takeover market.

Besides a lack of support for hypothesis 1, also no support for hypothesis 5 was recognized. The hypothesis expected a positive relation between CEO Duality (*CDUAL)* and firm performance because it would also contribute to board discretion and therefore lead to increased decision making efficiency. The lack of connection between *CDUAL* and firm performance is not in line with the findings of Essen et al. (2013). It also contradicts the assumption that board discretion is the driving feature to shield against adverse firm performance. Instead of assuming that board discretion is not as important as expected, it might be better to assume that CEO duality does not contribute to board discretion as expected. Besides board discretion, CEO duality is often connected with board independence. As reported before, there was also no link between *BINDEP* and firm performance. So CEO duality might be a more related with board independency than wit board discretion. In combination with the focus on the UK including its efficient takeover market, the lack of connection might be explained.

The next hypothesis (2) stated a negative relation between compensation structures which are equity related (*BCOMP)* and firm performance. Again, no support was presented in both models because *BCOMP* had no effect on firm performance whatsoever (β=0.003 and β=0.032). Also a lack of statistical significance is observed in both models (t=0.065 and t=0.696). The lack of support might be explained of another source of incentives for board members than compensation structures. Healy and Palepu (2001) report that active takeover markets are able to give board members and managers incentives. In the case of the UK, takeover markets might have been a more valuable source of board incentives than compensation structures during the financial crisis. This might explain the lack of connection between *BCOMP* and firm performance.

Finally, no support was found for hypothesis 4, which predicted a positive relation between monitoring committee independence and firm performance during the 2007-2008 crisis. Again the results show both economically (β =0.054 and β=-0.078) and statistically (t=0.841 and t=-1.240) insignificance. This finding might imply the prevalence of the stewardship theory over the agency theory and the rejection of managerial opportunism.

Besides the 5 independent variables, another variable has to be discussed. Table 4 shows a weak negative relationship (β=-0.137) between leverage and stock price performance which is statistically significant (t=-2.580). This can be interpreted as the

negative firm valuation of the market towards firms with high levels of debt as predicted in section 3 where the control variables were discussed. This observation does not fit in the assumption that leverage is a well-valued governance mechanism in a market-oriented system, apparently a view of leverage as a risk factor prevailed in the 2007-2008 financial crisis.

4.1 Sensitivity analysis

Because the results, presented before, did not show strong support for the hypotheses, a sensitivity analysis was conducted. The method was derived from the work of Vafeas and Theodorou (1998) because they also suffered from a lack of support for their hypotheses. The first way to confirm lack of support for the hypotheses was the change of dependent variables. Two other dependent variables proxying for firm performance were chosen and two extra regression analyses were conducted. In order to confirm both regression analyses, it is decided to choose another internal and market-oriented proxy for firm performance: respectively return on equity (*ROE)* and market-to-book ratio *(MTB).* After conducting the sensitivity analysis, no increase, or even a decrease of R^2 was observed. Only after conducting an analysis with *ROE* proxying for firm performance, a weak positive relation with *MCINDEP* was noticed but this relation was not statistically significant at the 10% level, so this relation cannot be considered as solid. The dependent variable *MBT* didn't show any economical or statistical significant outcomes whatsoever. The second way in which this sensitivity analysis was executed was to alter the independent variables and transfer them (with *CDUAL* as an exception because it was a dichotomous variable) into logarithms. The choice for the logarithms was made because of decreased standard deviations so the variable values faced decreased variance. The logarithms were used in a regression model with the original dependent variables *ROA* and *STOCKPP* as proxies for firm performance. Both regression models R^2 did not increase so the models as a whole were not of higher quality. The only thing of interest was the confirmation of the positive relation between board size and stock price performance as a proxy for firm performance. The economic significance decreased but the outcome was statistically significant at the 5% level. Therefore, the positive relation between board size and stock price performance is strong enough to accept. So all in all, it can be concluded that this sensitivity analysis did not reveal new phenomena but it did confirm the features observed in the empirical results and was therefore a useful tool in this paper.

5. CONCLUSION AND DISCUSSION

This paper investigated the possible ability of board structure as a corporate governance mechanism to shield against adverse firm performance in periods of economic downturn. The literature often recognizes the UK market as a classical Anglo-Saxon and market-oriented system which mainly focuses on external governance mechanisms. In this paper an investigation is done to internal corporate governance mechanisms in a UK context. These mechanisms are normally considered as prevalent in Continental Europe/Japanese markets but more explanation about the applicability as shielding mechanisms in periods of economic downturn in Anglo-Saxon markets is needed. Outcomes do not provide evidence for clear connections between board structure characteristics and firm performance during the 2007-2008 financial crisis. However, results presented a possible but weak connection between a small board size and adverse firm performance; this was confirmed in the sensitivity analysis with a statistically significant outcome. This outcome is in line with the suggestions and outcomes of Essen et al. (2013) who plead for more discrete boards. Also some remarkable changes in board configurations are observed, compared to data from 1998 (Vafeas and Theodorou). The data suggested that CEO Duality has decreased over the years, something what corresponds with the Cadbury report. Also did board compensation structures alter over the years and became more equity related. These changes suggest that firms are actually concerned with board structure configuration but no clear link was yet revealed. So this paper shows that board structure is on the agenda of firms and it shows that board size might be used to shield against adverse firm performance. Still, many hypotheses were not supported by the results, this might be due to interference of other corporate governance mechanisms which are market-oriented and were not included in this paper. This is a limitation which could have given more insights in the ability of corporate governance to shield against adverse firm performance in an UK setting. Therefore, future research could focus on the interaction between external and internal governance mechanisms in the UK and the ability to shield against adverse firm performance in periods of economic downturn. Also ownership structure as a governance mechanism can be included in future research. Both Vafeas and Theodorou (1998) and Essen et al. (2013) found an impact of ownership structure on firm performance. Future research could focus on the interaction of ownership structure with board structure and the effect of this interaction on firm performance during periods of economic downturn. Another remarkable observation was the unexpected relation between leverage and firm performance. It is often assumed that leverage is an effective governance mechanism in market-oriented systems. The negative relation might assume that these assumptions do not hold in periods of economic downturn. Future research is needed to give more support for this assumption and it might lead to a very different opinion towards external governance mechanisms.

To make some concluding remarks, some noticeable relations and phenomena were observed like the desire for board discretion. However, the presented model in this paper was not fully able to explain the decrease in firm performance, suffered from the 2007-2008 financial crisis. It does not mean that internal corporate governance mechanisms should be ignored in the UK. But the interaction between internal and external corporate governance mechanisms and between ownership and board structure in periods of economic downturn should be investigated more. Also the existing assumption concerning the relation of external governance mechanisms and firm performance might not hold in periods of economic downturn and require extensive investigation. Because, many firms have suffered severely from this crisis and many investors lost their money, obviousness about means to protect investors against such adverse performances would decrease overall risk for investments. Therefore clear connections would contribute to a healthier financial and investment environment.

6. ACKNOWLEDGEMENTS

I want to thank Mr. P. Engelen for his feedback during the process of writing this paper. Also I want to thank Mrs. X. Huang and Mr. H. van Beusichem for their insightful lectures about data collection and analysis. Finally I want to thank Mr.

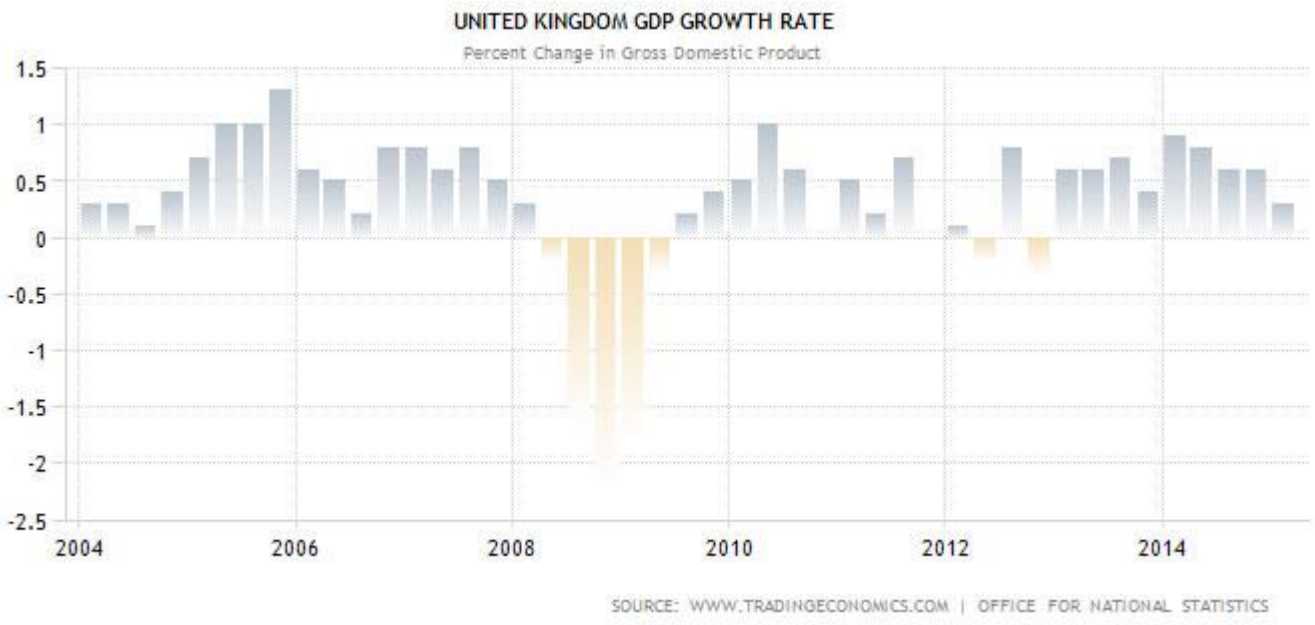
R. Kabir, Mrs. X. Huang and Mr. H. van Beusichem for their walk-in sessions which were very helpful for the preparation of the bachelor thesis.

7. REFERENCES

1) Abbott, L. J., Park, Y., & Parker, S. (2000). The effects of audit committee activity and independence on corporate fraud. *Managerial Finance*, *26*(11), 55-68.
2) Agrawal, A., & Knoeber, C. R. (1996). Firm performance and mechanisms to control agency problems between managers and shareholders. *Journal of financial and quantitative analysis*, *31*(03), 377-397.
3) Baysinger, B. D., & Butler, H. N. (1985). Corporate governance and the board of directors: Performance effects of changes in board composition. *Journal of Law, Economics, & Organization*, 101-124.
4) Bergstresser, D., & Philippon, T. (2006). CEO incentives and earnings management. *Journal of financial economics*, *80*(3), 511-529.
5) Bhagat, S., & Black, B. (1999). The uncertain relationship between board composition and firm performance. *The Business Lawyer*, 921-963.
6) Bliss, M. A. (2011). Does CEO duality constrain board independence? Some evidence from audit pricing. *Accounting & Finance*, *51*(2), 361-380.
7) Brickley, J. A., Coles, J. L., & Jarrell, G. (1997). Leadership structure: Separating the CEO and chairman of the board. *Journal of corporate Finance*,*3*(3), 189-220.
8) Boyd, B. K. (1995). CEO duality and firm performance: A contingency model.*Strategic Management Journal*, *16*(4), 301-312.
9) Conyon, M. J., & Peck, S. I. (1998). Board control, remuneration committees, and top management compensation. *Academy of Management Journal*, *41*(2), 146-157.
10) Conyon, M. J., & Peck, S. I. (1998). Board size and corporate performance: evidence from European countries. *The European Journal of Finance*, *4*(3), 291-304.
11) Core, J. E., Guay, W., & Larcker, D. F. (2008). The power of the pen and executive compensation. *Journal of Financial Economics*, *88*(1), 1-25.
12) Cotter, J., & Silvester, M. (2003). Board and monitoring committee independence. *Abacus*, *39*(2), 211-232.
13) Coughlan, A. T., & Schmidt, R. M. (1985). Executive compensation, management turnover, and firm performance: An empirical investigation.*Journal of Accounting and Economics*, *7*(1), 43-66.
14) Council, F. R. (2010). The UK corporate governance code. *London: Financial Reporting Council*.
15) Daily, C. M., Johnson, J. L., Ellstrand, A. E., & Dalton, D. R. (1998). Compensation committee composition as a determinant of CEO compensation.*Academy of Management Journal*, *41*(2), 209-220.
16) Dalton, D. R., & Kesner, I. F. (1987). Composition and CEO duality in boards of directors: An international perspective. *Journal of International Business Studies*, *18*(3), 33-42.
17) Davis, J. H., Schoorman, F. D., & Donaldson, L. (1997). Toward a stewardship theory of management. *Academy of Management review*, *22*(1), 20-47.
18) Donaldson, L., & Davis, J. H. (1991). Stewardship theory or agency theory: CEO governance and shareholder returns. *Australian Journal of management*,*16*(1), 49-64.
19) Elsayed, K. (2007). Does CEO duality really affect corporate performance?.*Corporate Governance: An International Review*, *15*(6), 1203-1214.
20) Erkens, D. H., Hung, M., & Matos, P. (2012). Corporate governance in the 2007–2008 financial crisis: Evidence from financial institutions worldwide. *Journal of Corporate Finance*, *18*(2), 389-411.
21) Essen, M., Engelen, P. J., & Carney, M. (2013). Does "Good" Corporate Governance Help in a Crisis? The Impact of Country-and Firm-Level Governance Mechanisms in the European Financial Crisis. *Corporate Governance: An International Review*, *21*(3), 201-224.
22) Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control.*Journal of law and economics*, 301-325.
23) Farber, D. B. (2005). Restoring trust after fraud: Does corporate governance matter?. *The Accounting Review*, *80*(2), 539-561.
24) Finkelstein, S., & D'aveni, R. A. (1994). CEO duality as a double-edged sword: How boards of directors balance entrenchment avoidance and unity of command. *Academy of Management Journal*, *37*(5), 1079-1108.
25) Goodwin-Stewart, J., & Kent, P. (2006). Relation between external audit fees, audit committee characteristics and internal audit. *Accounting & Finance*,*46*(3), 387-404.
26) Guest, P. M. (2009). The impact of board size on firm performance: evidence from the UK. *The European Journal of Finance*, *15*(4), 385-404.
27) Harris, J., & Bromiley, P. (2007). Incentives to cheat: The influence of executive compensation and firm performance on financial misrepresentation.*Organization Science*, *18*(3), 350-367.
28) Harris, M., & Raviv, A. (2008). A theory of board control and size. *Review of Financial Studies*, *21*(4), 1797-1832.

29) Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of accounting and economics*, *31*(1), 405-440.
30) Jackling, B., & Johl, S. (2009). Board structure and firm performance: Evidence from India's top companies. *Corporate Governance: An International Review*, *17*(4), 492-509.
31) Jensen, M. C. (1993). The modern industrial revolution, exit, and the failure of internal control systems. *the Journal of Finance*, *48*(3), 831-880.
32) Jensen, M., Meckling, W. (1976). Theory of the firm: Managerial behavior, agency costs and capital structure. *Journal of Financial Economics* 3, 305–360.
33) Kini, O., Kracaw, W., & Mian, S. (1995). Corporate takeovers, firm performance, and board composition. *Journal of Corporate Finance*, *1*(3), 383-412.
34) Kuhnen, C. M., & Niessen, A. (2012). Public opinion and executive compensation. *Management Science*, *58*(7), 1249-1272.
35) Le, S. A., Walters, B., & Kroll, M. (2006). The moderating effects of external monitors on the relationship between R&D spending and firm performance.*Journal of Business Research*, *59*(2), 278-287.
36) Lefort, F., & Urzúa, F. (2008). Board independence, firm performance and ownership concentration: Evidence from Chile. *Journal of Business Research*,*61*(6), 615-622.
37) Lehn, K. M., Patro, S., & Zhao, M. (2009). Determinants of the Size and Composition of US Corporate Boards: 1935-2000. *Financial Management*,*38*(4), 747-780.
38) Lewellen, W., Loderer, C., & Rosenfeld, A. (1985). Merger decisions and executive stock ownership in acquiring firms. *Journal of Accounting and Economics*, *7*(1), 209-231.
39) Li, J., Pike, R., & Haniffa, R. (2008). Intellectual capital disclosure and corporate governance structure in UK firms. *Accounting and Business Research*, *38*(2), 137-159.
40) Mehran, H. (1995). Executive compensation structure, ownership, and firm performance. *Journal of financial economics*, *38*(2), 163-184.
41) Murphy, K. J. (1985). Corporate performance and managerial remuneration: An empirical analysis. *Journal of accounting and economics*, *7*(1), 11-42.
42) Ozkan, N. (2011). CEO compensation and firm performance: an empirical investigation of UK panel data. *European Financial Management*, *17*(2), 260-285.
43) Pomeroy, B., & Thornton, D. B. (2008). Meta-analysis and the accounting literature: The case of audit committee independence and financial reporting quality. *European Accounting Review*, *17*(2), 305-330.
44) Raheja, C. G. (2005). Determinants of board size and composition: A theory of corporate boards. *Journal of Financial and Quantitative Analysis*, *40*(02), 283-306.
45) Schleifer A and Vishny R. W., (1997). A survey of corporate governance. *The journal of finance*. 7 (2), pp.737-782
46) Thomsen, S., & Conyon, M. (2012). *Corporate governance: Mechanisms and systems*. McGraw Hill.
47) Vafeas, N., & Theodorou, E. (1998). The relationship between board structure and firm performance in the UK. *The British Accounting Review*, *30*(4), 383-407.
48) Winnet, R. (2008, October 6). Financial crisis: London stock exchange suffers worst fall in history. *The Telegraph.* Retrieved from http://www.telegraph.co.uk/
49) Yermack, D. (1996). Higher market valuation of companies with a small board of directors. *Journal of financial economics*, *40*(2), 185-211.
50) Zeitun, R., & Tian, G. G. (2014). Capital structure and corporate performance: evidence from Jordan. *Australasian Accounting Business & Finance Journal, Forthcoming*.

8. APPENDIX

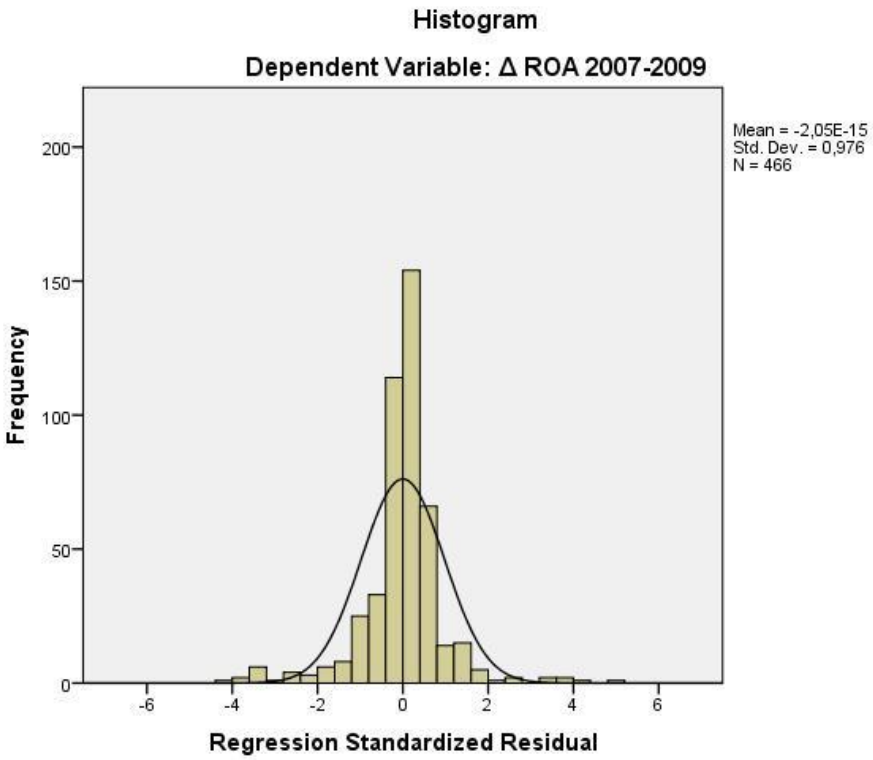


Appendix 1. United Kingdom GDP growth rate (2004-2015)

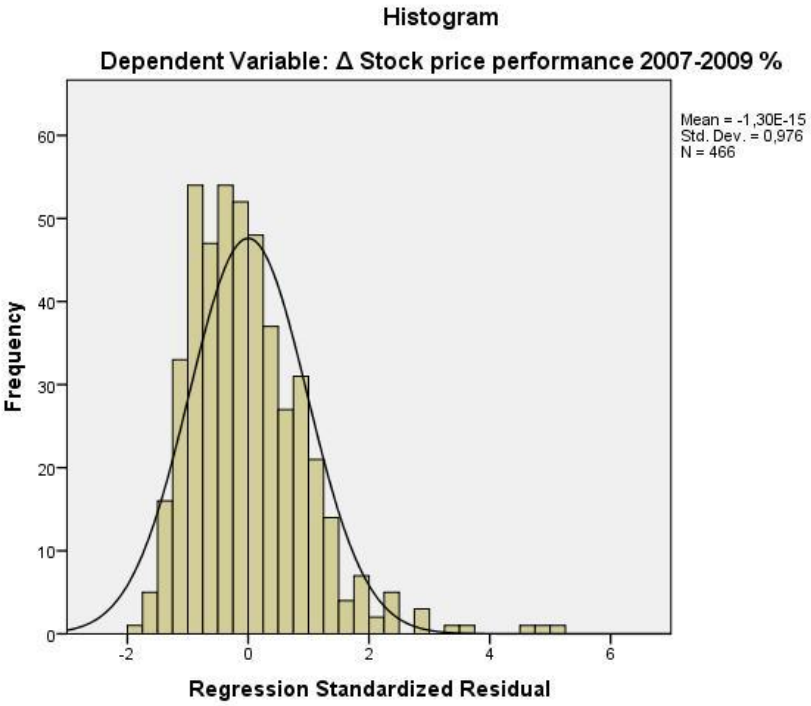
Correlations

		Δ ROA 2007-2009	Δ Stock price performance 2007-2009 %	Board size	Board members holding shares %	Independent board members %	Independent monitoring committees %	CEO Duality
Δ ROA 2007-2009	Pearson Correlation	1						
	N	466						
Δ Stock price performance 2007-2009 %	Pearson Correlation	-,018	1					
	Sig. (2-tailed)	,703						
	N	466	466					
Board size	Pearson Correlation	-,035	,182	1				
	Sig. (2-tailed)	,452	,000					
	N	466	466	466				
Board members holding shares %	Pearson Correlation	,045	,009	-,044	1			
	Sig. (2-tailed)	,334	,853	,342				
	N	466	466	466	466			
Independent board members %	Pearson Correlation	-,009	,001	-,008	-,058	1		
	Sig. (2-tailed)	,843	,991	,862	,211			
	N	466	466	466	466	466		
Independent monitoring committees %	Pearson Correlation	,003	-,045	-,036	-,082	,636	1	
	Sig. (2-tailed)	,942	,335	,435	,078	,000		
	N	466	466	466	466	466	466	
CEO Duality	Pearson Correlation	-,022	-,017	,021	,013	-,344	-,256	1
	Sig. (2-tailed)	,636	,721	,644	,782	,000	,000	
	N	466	466	466	466	466	466	466

Appendix 2. Correlation matrix



Appendix 3. Residuals plot (ROA as proxy for firm performance)



Appendix 4, Residuals plot (Stock price performance as proxy for firm performance)