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Executive compensation, corporate payout, and the Dodd-Frank Act

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PREFACE AND ACKNOWLEDGEMENTS

This is my master's thesis for the master's degree in financial economics at the Erasmus School of Economics in Rotterdam. This thesis marks the end of my student years in Rotterdam. I would like to thank G. Cocco for supervising my thesis process, and A. Yang for being my second reader.

ABSTRACT

This thesis examines how the Dodd-Frank Act of July 2010 influences the potential impact of CEO equity-based compensation on the payout policy of American publicly traded firms using data on more than 1,100 nonfinancial firms during 2008-2013. This data has been analyzed using multiple unbalanced time fixed effects regression models. Additionally, this thesis investigates the broader effects of compensation by also examining managerial direct ownership. This thesis finds that managerial stock option awards contribute to more total payout in the period after the implementation of the Dodd-Frank Act compared to the period before. However, managerial stock ownership contributes to less repurchases and total payout in the period after the implementation of the Act compared to the period before. So, by awarding the executive stock options after the implementation of the Act, the interests of shareholders and executives are better aligned. But, once these options are exercised, agency conflicts could arise.

Keywords: executives, payout, repurchases, dividends, regulation.

JEL Classification: G350, G380.

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1. Introduction

At the end of 2019, there was a significant issue with the business operations of WeWork, a prominent provider of coworking spaces. Led by the "hard-partying, charismatic" CEO Adam Neumann, WeWork attracted significant amounts of investments from large investors, such as SoftBank (Financial Times, 2020). The firm had paid for Neumann's rent for the buildings he owned and let him sell hundreds of millions of dollars' worth of shares and that caused major governance related concerns (Financial Times, 2020). It became clear for investors that WeWork was burning cash at a fast rate. This shows a common cash flow problem where managers often invest cash in worthless investment projects instead of returning the cash to the shareholders via dividends or share repurchases (Jensen, 1986). It is one of the most severe conflicts between managers and shareholders and is called the free-cash-flow problem (Jensen, 1986). Agency theory analyses these conflicts, which are caused by the misalignment of interests between shareholders and managers (Jensen, 1986). A potential way of aligning these interests is by compensating the manager based on equity (White, 1996).

Researchers have been interested in investigating the impact of executive equity-based compensation (EBC) on corporate payout policy. For example, Burns et al. (2015) investigate the effects of executive EBC on the payout policy of European firms from 2003 to 2011. They find a positive relationship between managerial stock awards and share repurchases, and a negative relationship between this form of compensation and the level of dividend payout. Furthermore, Lambert et al. (1989) examine the association between the adoption of stock options for senior-level executives and subsequent changes in corporate dividend policy of American firms. They find a negative relationship between the adoption of an executive stock option plan and dividends. These findings also illustrate the potential different effects of EBC on various forms of corporate payout. However, these studies have not investigated the potential effect of regulation on the free-cash-flow problem.

Over the past 80 years, there have been tax policies and direct legislation designed to regulate the board of directors and executive compensation (Murphy, 2012). To illustrate the importance of regulation, Linck et al. (2008) investigate the impact of the Sarbanes-Oxley Act (SOX) of 2002 on directors and boards. This Act sets out principles for governance practices of publicly traded U.S. firms. They find that companies are paying their directors on average 50% more and use significantly more equity-based compensation in the post-SOX period. Moreover, Sharma (2011) finds a negative association between paying directors more equity-based compensation and paying out dividends. These findings combined suggest that regulation could potentially affect the agency conflicts between managerial executives and shareholders of publicly traded firms. A major example of regulation is the passing of the following law.

In response of the financial crisis, Congress passed the Dodd-Frank Wall Street Reform and Customer Protection Act in July 2010 (Dimitrov et al., 2015). The Dodd-Frank Act consists of strict rules for

executive compensation packages. For example, section number 951 is commonly known as the say-on-pay provision. This is a form of shareholder activism and gives the right to shareholders to vote on executive compensation at meetings (Business Insider, 2011). This thesis examines the potential effects of these strict executive compensation rules of the American Dodd-Frank Act on the relationship between executive equity-based compensation and the payout policy of American publicly traded firms. Therefore, this thesis aims to investigate the following research question:

"*How does the American Dodd-Frank Act of July 2010 influence the potential impact of CEO equity-based compensation on the payout policy of American publicly traded firms?"*

To test how the American Dodd-Frank Act of 2010 influences the impact of CEO equity-based compensation on the payout policies of American publicly traded firms, this thesis conducts unbalanced panel time fixed effects regression models. In addition to past studies that use managerial awards as a traditional measure for EBC, this thesis investigates the broader effects of compensation by also examining managerial stock and option direct ownership. This because ownership provides direct incentive alignment between managers and shareholders (Rozeff, 1982). Furthermore, this thesis analyzes interaction effects of a dummy variable for the implementation of the Dodd-Frank Act with executive EBC and ownership variables. This allows the effect of executive EBC and ownership on payout policy to be compared between the periods before and after the implementation of the Act. Lastly, stock ownership is associated with greater payouts especially for firms with potentially the greatest agency problems (Fenn & Liang, 2001). As a robustness check for the potential effect of managerial stock ownership on the payout policy of American publicly traded firms, the same regression models will be performed using a subsample restricted to firms with great agency problems.

The sample period will be 3 years before and 3 years after the implementation of the Dodd-Frank Act, namely 2008 to 2013. More than 1,100 publicly traded American firms will be examined during this period. This thesis finds that managerial stock option awards contribute to more total payout in the period after the implementation of the Dodd-Frank Act in July 2010 compared to the period before. However, managerial stock ownership contributes to less repurchases and total payout in the period after the implementation of the Dodd-Frank Act in July 2010 compared to the period before. This thesis contributes to the existing literature about agency theory as it investigates the potential effects of regulation on the free-cash-flow problem between shareholders and managerial executives.

This thesis is structured as follows. Section 2 will discuss the underlying theory and section 3 presents the data. Section 4 will discuss the methodology and section 5 will present the results. This thesis will end with a discussion in section 6 and a conclusion in section 7.

2. Theoretical Framework

This section will provide a summary of the findings of previous research about the relationship between executive equity-based compensation and firm payout policy, and the potential effect of regulation on this relationship. Furthermore, this section will formulate multiple hypotheses.

2.1 Agency theory

A large part of economic literature focuses on agency theory. This theory analyses conflicts between corporate managers and shareholders (Jensen, 1986). These conflicts can arise during the payout of free cash flow to shareholders (Jensen, 1986). To illustrate, managers have incentives to strive for firm growth beyond the optimal firm size as this growth increases the resources under their control (Jensen, 1986). This will often lead to empire building or overinvestment (Hope & Thomas, 2008). This means that managers accept investment projects with a negative net present value because they derive private benefits from controlling more resources (Aggarwal & Samwick, 2006). Whereas shareholders would rather have a payout in the form of dividends or share repurchases (Fenn & Liang, 2001). The conflict arises because the interests of shareholders and managers may not be aligned and is called the free-cash-flow problem (Jensen, 1986). An important question is whether executive equity-based compensation help mitigate these agency costs (Fenn & Liang, 2001). First, different types of corporate payouts and executive compensation this thesis investigates are discussed.

2.2 Payout policy and executive compensation

Firms can pay out their cash flows in several ways. First, companies can decide to pay out dividends to their shareholders. These dividends are typically distributed either as monetary transfers or as additional shares. Instead of dividends firms can also decide to repurchase their own shares back as a form of payout policy. When a firm buys its own shares back, it increases the demand for the shares, thereby raising the stock price. This also leads to a higher earnings per share for the shareholders and thus an increase in shareholders wealth (Almeida et al., 2016). For decades, U.S. corporations have preferred payouts in the form of dividends rather than share repurchases. However, repurchases have become an important form of payout for U.S. firms (Grullon & Mickaely, 2002). Furthermore, corporations have been substituting share repurchases for dividends (Grullon & Michaely, 2002).

This thesis distinguishes between two categories of executive compensation, namely equity-based compensation, and non-equity-based compensation. Salary and bonuses are examples of non-equity-based compensation because these types of compensation do not offer the executives to partake in ownership of the firm. Equity-based compensation however does and gives the manager the correct incentive to maximize firm value (Jensen & Murphy, 1990). Forms of EBC are shares and stock call options. Stock call options give the recipient the right to buy a share at a prespecified exercise price before a prespecified

exercise date (Hall & Murphy, 2000). After this date the contract expires, and the option becomes worthless. The higher to stock price the more worth the securities become.

Executive EBC represents a specific category of equity-based incentives that links compensation to the company's stock performance. According to Fenn and Liang (2001) these incentives can influence the payout policy of companies in two ways. First, the interests of management and shareholders are better aligned. This generally results in a higher level of total payout (Fenn & Liang, 2001). Berger et al. (1997) support this type of argumentation. According to the authors managers will not issue to optimal amount of debt without pressure from a disciplining force such as shareholders. Second, by using executive equity-based incentives the composition of corporate payouts could be altered (Fenn & Liang, 2001). In addition to past studies that use managerial yearly awards as a traditional measure for EBC, this thesis investigates the broader effects of compensation by also examining managerial stock and option direct ownership. This because ownership provides direct incentive alignment between managers and shareholders (Rozeff, 1982). It is expected that both measures follow the same relationship with payout policy due to their identical security basis. This implies that if ownership is expected to have a certain effect on a particular form of payout, then EBC is expected to have the same effect, and vice versa. The following hypotheses are formulated regarding the effect of different types of EBC and ownership on the payout policy of American publicly traded firms.

2.3 Aligning interests

Burns et al. (2015) examine the effects of executive compensation on the payout policy of European firms from 2003 to 2011. The authors find a negative relationship between both stock option and restricted stock compensation and dividends. There exists a direct negative relationship between these securities and dividend payout because the stock price drops on the ex-dividend date by approximately the amount of the dividend (Campbell & Beranek, 1955). Lambert et al. (1989) find similar results and the hypothesis of their research is that executive stock option compensation is generally not dividend protected and consequently a cash dividend payout will decrease the expected value of the stock options. As a result, the manager will have an incentive to reduce dividend payouts after the introduction of a stock option plan.

Furthermore, De Cesari and Ozkan (2015) investigate how corporate payout policy is influenced by executive incentives for publicly listed European firms over the period from 2002 to 2009. The results show that executive stock option ownership is associated with lower dividend payments. This relationship is mainly driven by exercisable stock options and by options that are in the money. Lastly, Fenn and Liang (2001) examine how corporate policy is affected by managerial stock incentives using data on nonfinancial firms over the period from 1993 to 1997. The authors also show a strong negative relationship between dividends and management stock option ownership. Based on these studies the following hypothesis is formulated:

H1: *Stock and option ownership and awards have a statistically significant negative effect on the level of dividend payout.*

Furthermore, Burns et al. (2015) find a positive relationship between both stock option and restricted stock compensation and stock repurchases. A direct positive relationship between these securities and repurchases exists because repurchases increase the demand for stocks, consequently raising the stock price (Burns et al., 2015). The authors conclude that firms use equity incentives as a substitute for dividends to reduce agency costs. Additionally, Fenn and Liang (2001) show results that indicate a positive effect of managerial stock option ownership on the level of repurchases. Therefore, the following hypothesis is formulated:

H2: *Stock and option ownership and awards have a statistically significant positive effect on the level of repurchases.*

Moreover, De Cesari and Ozkan (2015) find a negative relationship between managerial stock option ownership and the level of total payout. This suggests that executives do not substitute stock repurchases for dividends. These authors conclude however that executive share ownership and stock-based pay-performance sensitivity may mitigate agency conflicts by significantly increasing the level of total payout. Contrary to the findings of Cesari and Ozkan (2015), Fenn and Liang (2001) do find a substitution effect between dividends and repurchases, and therefore conclude a positive relationship between stock option ownership and the level of total payout. This is especially the case for firms with potentially the greatest agency problems – those with few investment opportunities and high free cash flows (Fenn & Liang, 2001). For the formulation of the following hypothesis this thesis follows the findings of Fenn and Liang (2001), since Skinner (2008) also finds a substitution effect:

H3: *Stock and option ownership and awards have a statistically significant positive effect on the level of total payout.*

Additionally, Fenn and Liang (2001) show that stock option ownership is associated with higher repurchases as a fraction of total payout. De Cesari and Ozkan (2015) confirm these results. This because more repurchases boost the value of shares and options, whereas dividend payout decreases the value of these securities. Moreover, executives try to prevent earnings per share delusion by repurchasing more compared to paying out dividend (De Cesari & Ozkan, 2015). This leads to the following hypothesis:

H4: *Stock and option ownership and awards have a statistically significant positive effect on the level of repurchases as a fraction of the level of total payout.*

2.4 Other solutions to the FCF-problem

Finally, according to Murphy (2012) there are more solutions to the free-cash-flow problem. First, the board of directors oversees setting the compensation of the CEO and other top executives. For most of the latest century, these boards were dominated by current executives and corporate insiders (Murphy, 2012). However, shareholder activism has known a rise in the mid-1980s and has been rising over time (Denes et al., 2017). Because of the pressure of these shareholders, more and more outside directors started to have a seat on boards. Outside directors reduce agency problems by implementing incentive executive remuneration contracts that aim to create value for shareholders, and by threatening offending executives with termination (Murphy, 2012). However, according to Fracassi and Tate (2012) many outside directors still share social ties with the CEO. So, outside directors are not perfect agents (Murphy, 2012).

Second, capital markets can help mitigate the agency costs between executives and shareholders (Murphy, 2012). Hartzell and Starks (2003) find that institutional ownership concentration is positively related to the pay-for-performance sensitivity of executive compensation, and negatively related to the overall level of compensation. These results suggest that the capital market – especially large block institutional stockholders – can help mitigate agency problems because of their monitoring role. Third, the legal system can also reduce agency costs by enacting laws that prohibit corporate theft or by implementing strict regulations on executive compensation (Murphy, 2012). These regulations will now be further discussed.

2.5 Regulation

A major example of regulation from the beginning of this century is the Sarbanes-Oxley Act of 2002. This act intents to reform directors and boards by expanding the number of independent directors on boards of publicly listed firms. Linck et al. (2008) find that post-SOX boards are larger and more independent. Additionally, in response of the financial crisis, Congress passed the Dodd-Frank Wall Street Reform and Customer Protection Act in July 2010, and it applies to all publicly listed U.S. firms (Dimitrov et al., 2015). This Act consists of strict rules for executive compensation packages. To illustrate, the Dodd-Frank Act determines shareholder vote on executive compensation disclosures and is commonly known as the say-on-pay provision (Murphy, 2012). It is expected that because of the implementation of the American Dodd-Frank Act of 2010 the interests of the shareholders are more protected. Therefore, it is expected that executive EBC and ownership contribute to more corporate payout in the period after the implementation of the Act compared to the period before. This leads to the following hypothesis:

H5: *Executive EBC and ownership contribute to more corporate payout in the period after the implementation of the Dodd-Frank Act in July 2010 compared to the period before.*

3. Data

Payout data and relevant accounting data of firms from the United States are collected by using Compustat Daily Updates - Annual fundamentals for North American firms from Wharthon Research Data Servies (WRDS). Furthermore, Execucomp – Annual compensation is used for the collection of executive renumeration data. Additionally, the data for the calculation of stock price volatility is collected by using Compustat Securities listed on North American exchanges - Monthly Frequency from WRDS. Moreover, WRDS Thomson Reuters Institutional (13f) Holdings - Stock Ownership Summary is used to collect the data regarding the percentage of shares held by institutional shareholders. Lastly, the ISS Directors US Data Request for the coverage of S&P 1500 Companies database is used for the collection of board of directors' characteristics. The final sample is an unbalanced dataset and consists of 4,949 observations and 1,011 unique American firms over the years 2008-2013.

The descriptive statistics of the data are presented in Table 3.1. The payout variables are cash dividends on common stock, repurchases of common stock, total payout, and repurchases as a fraction of total payout. These variables are in million U.S. dollar. Executive EBC variables and ownership variables are managerial common stock ownership, stock option ownership, stock awards, and option awards in million U.S. dollar. All other variables in Table 3.1 are included to control for omitted variable bias. The way these variables must be interpreted is shown in the text under Table 3.1. There are a couple of notable features of the descriptive statistics.

First, the minimum value of dividends, repurchases and total payout is 0, indicating that not all firms pay out cash flows to their shareholders. Furthermore, the maximum fraction repurchases of total payout is 1, suggesting that sometimes only stocks are being repurchased and no dividends are paid out to shareholders. Additionally, the number of observations for this variable is lower than the other variables. This because sometimes total payout is zero and repurchases divided by zero is undefined. Also, the maximum value of share awards, option awards and non-equity compensation scaled by total compensation is 1, suggesting that sometimes all compensation consists of share awards, option awards or non-equity compensation.

Additionally, not all executives have stock or option holdings as the minimum values of these variables are 0. The minimum value of cash scaled by assets is 0, indicating that not all firms use cash to distribute cash flows to shareholders. Also, some board of directors of firms exist only of independent directors as the maximum value of this variable is 1. Lastly, not all firms have blockholders as the minimum value of blockholders is 0, and some CEOs have 0 year of experience as the minimum value of log(ceotenure) is also 0. Only the CEOs are included in the sample, and this results in a fine distribution of firms across all six years as shown in Table A.1 in Appendix A.

Table 3.1: Descriptive statistics for the dependent and independent variables for the full sample

Variables	mean	sd	min	max
totalpayout	0.0363	0.0446	0.0000	0.6229
dividends	0.0160	0.0222	0.0000	0.4754
repurchases	0.0203	0.0395	0.0000	0.6229
repurchasesfraction	0.4512	0.4175	0.0000	1.0000
shareholding	0.0178	0.0499	0.0000	0.5201
shareaward	0.2761	0.2199	0.0000	1.0000
optionholding	0.0091	0.0124	0.0000	0.1943
optionaward	0.1684	0.1905	0.0000	1.0000
nonequity_comp	0.2594	0.2064	0.0000	1.0000
netoperating	0.0896	0.0843	-0.5666	0.5911
mbratio	1.7469	0.9795	0.5248	10.1477
log(firmsize)	8.1042	1.7114	3.9973	14.6738
leverage	0.5391	0.2199	0.0390	0.9990
volatility_ operinc	0.0314	0.0345	0.0003	0.4914
cash	0.1093	0.1117	0.0000	0.7874
volatilitystock	0.1110	0.0952	0.0113	4.2762
annualreturn	0.1494	0.4176	-0.9106	4.2114
institutions	0.8079	0.1722	0.0008	4.3249
log(boardsize)	2.3318	0.2217	1.6094	3.5553
independentdir	0.7852	0.1109	0.1429	1.0000
blockholders	2.7903	1.5971	0.0000	14.2500
log(ceotenure)	1.8867	0.8570	0.0000	4.1271
Observations	4,949			

Note: the Table reports descriptive statistics for the dependent and independent variables for the full sample. The mean, standard deviation (sd), minimum value (min) and maximum value (max) are reported. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases, and is scaled by market value of common stock outstanding in million U.S. dollar. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding in million U.S. dollar. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding in million U.S. dollar. Repurchasesfraction represents the level of repurchases as a fraction of the level of total payout in million U.S. dollar. This variable has 663 less observations than the other variables as 663 firms have 0 payout. All non-payout variables are 1-fiscal year lagged. Shareholding represents managerial share ownership scaled by the number of common shares outstanding in million U.S. dollar. Shareawards represent managerial share awards scaled by total compensation in million U.S. dollar. Optionholding represents the managerial stock option ownership scaled by the number of common shares outstanding in million U.S. dollar. Optionaward represents managerial stock option awards scaled by total managerial compensation in million U.S. dollar. Nonequity_comp represents managerial non-equity-based compensation scaled by total managerial compensation in million U.S. dollar. Netoperating represents net operating cash flow scaled by total assets in million U.S. dollar. Mbratio represents the market-to-book ratio in million U.S. dollar. Log(firmsize) is the logarithmic value of firm size in million U.S. dollar. Leverage represents firm leverage in million U.S. dollar. Volatility_operinc represents the volatility of operating income scaled by total assets of the past 4 fiscal years in million U.S. dollar. Cash represents the firm's cash position scaled by total assets in million U.S. dollar. Volatilitystock represents the volatility of stock return of the past 2 fiscal years in U.S. dollar. Annualreturn represents the annual return of the firm's stock of the past fiscal year in U.S. dollar. Institutions represents the percentage of common shares outstanding owned by institutions. Log(boardsize) represents the logarithmic value of size of the board of directors. Independentdir represents the number of independent board directors as a fraction of board size. Blockholders represent the number of blockholders. Blockholders own 5% or more of the firm's total common shares outstanding. Log(ceotenure) represents the logarithmic value of the number of years a CEO is active as CEO. 1 is added to logarithmic variables to prevent undefined values. 4,949 observations.

4. Method

To test how the American Dodd-Frank Act of 2010 influences the impact of CEO equity-based compensation on the payout policies of American publicly traded firms, this thesis conducts an unbalanced panel regression model. Time fixed effects are included in the regression model to capture the effects of unobserved relevant firm characteristics that are constant through time per firm, and to account for incremental effects in the dependent variable in period t that is the same for all firms. The standard test results for fixed effects or random effects are presented in Table C.5 up to and including Table C.8 in Appendix C. In addition to past studies that use managerial awards as a traditional measure for EBC, this thesis investigates the broader effects of compensation by also examining managerial stock and option direct ownership as independent variables of interest. This because ownership provides direct incentive alignment between managers and shareholders (Rozeff, 1982).

Furthermore, this thesis analyses interaction effects of a dummy variable for the implementation of the Dodd-Frank Act with executive EBC and ownership variables. This allows the effect of executive EBC and ownership on payout policy to be compared between the periods before and after the implementation of the Act. The Dodd-Frank Act dummy indicates the period after the implementation of the Act and is 1 if the fiscal year is 2011 or later, and 0 otherwise. The base specification of the fixed effects regression model is as follows:

$$(1) \qquad Payoutvariable_{it} = \lambda_t + \beta_1 EBC_{it} + \beta_2 EBC_{it} * post2010_{it} + \sum_{j=3}^{N} \beta_j X_{it} + \nu_{it}$$

Here is '$Payoutvariable_{it}$' the dependent variable and is either one of the following payout variables: dividends, repurchases, total payout or repurchases as a fraction of total payout. Furthermore, λ_t is the common intercept, and 'EBC_{it}' is either one of the following executive equity-based compensation or ownership variables: managerial stock ownership, option ownership, stock awards or option awards. $post2010_{it}$ represents the dummy for the implementation of the Dodd-Frank Act. Lastly, $\beta_j X_{it}$ relates to the jth control variable and ν_{it} represents the disturbance term. Table B.1 in Appendix B presents the way all variables are defined.

For the calculation of repurchases the same method as Fama and French (2001) is used. Firms generally use two methods for stock repurchase, namely either the treasury method or the retirement method. Firms are assumed to use the treasury method if treasury stock is not zero for the current fiscal year and the 1-year lagged fiscal year. Firms are assumed to use the retirement method if treasury stock is zero for both the current fiscal year and the 1-year lagged fiscal year, or if the footnote of Compustat indicates "TR". However, according to Fenn and Liang (2001) this method overstates the repurchases of common stock. Because of limited Compustat data of the purchase and issuance of common stock only, the net purchases

of common and preferred stock are used. To potentially filter out net purchases of preferred stock, a cut-off level of 100% of the market value of common stock is used.

To control for omitted variable bias, the following control variables are collected. In addition to past studies, non-equity-based compensation is collected to control for the situation that wages now get paid higher. This thesis also collects net operating cash flow as a proxy for free cash flow and firm size as a proxy for external financing costs (Fenn & Liang, 2001). Cash is also controlled for as more cash holdings typically mean more payout (De Cesari & Ozkan, 2015). Furthermore, board size and independency measure corporate governance features and are therefore collected (De Cesari & Ozkan, 2015). Finally, CEO tenure is controlled for as more entrenched CEOs may dominate the board and thus influence payout policy (Allgood & Farrell, 2000). According to Fenn and Liang (2001), De Cesari and Ozkan (2015), and Allgood and Farrell (2000), these control variables have a positive effect on dividends, repurchases, total payout, and the fraction of repurchases.

The market-to-book ratio is collected as a proxy for investment opportunities (Fenn & Liang, 2001). This thesis also controls for leverage since as leverage increases, the probability of financial distress and financial costs increases, and this affects the level of payout (Fenn & Liang, 2001). Additionally, the volatility of operating income of the past 4 fiscal years is controlled for (De Cesari & Ozkan, 2015). This variable is one of the two proxies for firm performance volatility. The other proxy is the volatility of stock return of the past two fiscal years (De Cesari & Ozkan, 2015). Lastly, the stock return of the previous year controls for recent market conditions (De Cesari & Ozkan, 2015). According to Fenn and Liang (2001) and De Cesari and Ozkan (2015), these control variables have a negative effect on dividends, repurchases, total payout, and the fraction of repurchases.

Furthermore, institutional shareholders and the number of blockholders are controlled for as these shareholders can influence payout (De Cesari & Ozkan, 2015). Institutions have a positive effect on dividends, repurchases, total payout, and the fraction of repurchases (Lie & Lie, 1999). Furthermore, a positive relationship exists between the number of blockholders and dividends, while a negative relationship exists between this number and both repurchases and total payout, as well as the fraction of repurchases (De Cesari & Ozkan, 2015; Golbe & Nyman, 2013).

Lastly, De Cesari and Ozkan (2015) also control for retained earnings because the higher the retained earnings the less reliant the firm is on other types of financing. However, due to simplicity and redundancy concerns this variable is not included as a control, since net operating cash flow is already accounted for as a proxy for free cash flow.

For every variable, except firm payout, the 1-year lag is used to prevent simultaneously bias. This because executive stock and options compensation at the end of a fiscal year may affect corporate payout decisions during the subsequent year (De Cesari & Ozkan, 2015). Because of the use of 1-year lags and because of new accounting standards in 2006 in the Execucomp database, the sample period starts at 2008.

Thus, the final sample period is three years before and three years after the implementation of the Dodd-Frank Act of July 2010: 2008-2013. The year 2010 is part of the period before the implementation of the Act, since lagged values of executive compensation are used. The Dodd-Frank Act only applies to American publicly listed firms, so the data is filtered based on international stock exchange codes for the United States.

Only CEOs are included in the sample. This because the CEO holds the most power in day-to-day operations. Other studies look at all executives with the argument that corporate financial policy reflects the interests of all executives and not only that of the CEO (Fenn & Liang, 2001). While that may be true, this method does not distinguish between different executive titles. Since different types of executives have different varying levels of influence to control payout policy, they could react differently to equity-based compensation and the results could therefore potentially be biased.

Furthermore, financial firms are dropped from the dataset based on SIC-code 4813. As explained by Fenn and Liang (2001) financial firms are omitted for a variety of reasons, as Compustat does not report their stock repurchases and heavily regulated firms may have affected payout policies. All duplicates and missing values are dropped. Special unrealistic cases, such as negative share awards, are also dropped. This is done to increase the explanatory power of the model. The different databases are merged by CUSIP and fiscal year. Additionally, the logarithmic value is taken of firm size, board size and CEO tenure. 1 is added to these variables to prevent undefined values. The logarithmic variables are interpreted as follows. In terms of marginal effect, a 1% change in the logarithmic variable results in a $0.01\beta_j$ change in the dependent variable.

Finally, the standard diagnostic tests results can be found in Appendix C. To account for heteroskedasticity and seral correlation the standard errors are clustered by firm. Finally, Stock ownership is associated with greater payouts especially for firms with potentially the greatest agency problems (Fenn & Liang, 2001). As a robustness check for the potential effect of managerial regular stock ownership on the payout policy of American publicly traded firms, the same method will be performed using a subsample restricted to firms with great agency problems. According to Opler and Titman (1993) great agency costs can also be defined by market-to-book ratio lower than the median and net operating cash flow higher than the median.

5. Results

Table 5.1 below shows the full sample time fixed effects regression model with dividends as the dependent variable and consists of 4 models. Each model includes a particular form of executive EBC or ownership, along with an interaction term between EBC or ownership and a dummy variable for the implementation of the Dodd-Frank Act of July 2010 ('post2010'). The independent variables of all models collectively explain 6.26% to 6.32% of the variation in the level of dividend payout.

All models show no statistically significant main effect of executive EBC or ownership on the level dividend payout, and there are no statistically significant interaction terms between executive EBC or ownership and the Dodd-Frank Act dummy. So, the results fail to find statistically significant evidence to support the first hypothesis: H1: *Stock and option ownership and awards have a statistically significant negative effect on the level of dividend payout.* Furthermore, the results fail to find statistically significant evidence to support the fifth hypothesis regarding all forms of executive EBC and ownership, and dividend payout: H5: *Executive EBC and ownership contribute to more corporate payout in the period after the implementation of the Dodd-Frank Act in July 2010 compared to the period before.*

Lastly, the control variable volatility of operating income of the past 4 years of all models has an unexpected positive sign. A negative sign is expected according to the literature (De Cesari & Ozkan, 2015). However, since the coefficient is only significant at the 10% level there is not enough evidence to conclude a causal relationship with dividend payout. All signs of the other statistically significant control variables of all models are in line with De Cesari and Ozkan (2015) and Fenn and Liang (2001).

Table 5.1 Unbalanced panel time fixed effects regression models for the relationship between executive equity-based compensation and the level of dividend payout

	(1)	(2)	(3)	(4)
	dividends	dividends	dividends	dividends
Variables				
shareholding	-0.0214			
	(0.0204)			
post2010_ shareholding	-0.0009			
	(0.0145)			
shareaward		-0.0002		
		(0.0019)		
post2010_ shareaward		0.0032		
		(0.0022)		
optionholding			-0.0030	
			(0.0519)	

post2010_ optionholding			0.0151	
			(0.0331)	
optionaward				-0.0004
				(0.0021)
post2010_ optionaward				0.0024
				(0.0026)
Controls variables	Included	Included	Included	Included
Year FE	Included	Included	Included	Included
constant	0.0139	0.0130	0.0127	0.0137
	(0.0206)	(0.0211)	(0.0210)	(0.0211)
Observations	4949	4949	4949	4949
R^2	0.0672	0.0671	0.0666	0.0667
Adjusted R^2	0.0632	0.0632	0.0626	0.0628

Note: the Table reports the results of the unbalanced panel time fixed effects regression model with dividends as the dependent variable for the full sample. All results are in million U.S. dollar and all independent variables are 1-fiscal year lagged. Dividends represents dividend payout and is scaled by market value of common stock outstanding. Shareholding represents managerial share ownership scaled by the number of common shares outstanding. Post2010 represents the dummy for the implementation of the Dodd-Frank Act of July 2010. Post2010_shareholding represents the interaction effect between the aforementioned dummy and managerial share ownership. Shareawards represent managerial share awards scaled by total compensation. Post2010_shareaward represents the interaction effect between the Dodd-Frank Act dummy and managerial share awards. Optionholding represents the managerial stock option ownership scaled by the number of common shares outstanding. Post2010_optionholding represents the interaction effect between the Dodd-Frank Act dummy and managerial stock option ownership. Optionaward represents managerial stock option awards scaled by total managerial compensation. Post2010_optionaward represents the interaction effect between the Dodd-Frank Act dummy and managerial stock option awards. Control variables are not shown but are included in every regression model. The full regression models with control variables are presented in Table D.1 in Appendix D. Year fixed effects are included in every regression model. Clustered standard errors by firm in parentheses. Constant represents the response value when all independent variables equal zero. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. 4949 observations. R^2 and adjusted R^2 report the goodness-of-fit of the regression models.

Table 5.2 below presents the full sample results for the time fixed effects regression model with repurchases as the dependent variable. The independent variables of all models collectively explain 13.71% to 13.81% of the variation in repurchases. The results show no statistically significant results for the main effect of executive EBC of ownership on the level of repurchases. So, the results fail to find statistically significant evidence to support the second hypothesis: H2: *Stock and option ownership and awards have a statistically significant positive effect on the level of repurchases.*

Furthermore, the results of regression Model 1 show a statistically significant interaction term between managerial share ownership and the Dodd-Frank Act dummy of -0.0406 at the 5% level. This means that the initial effect of managerial stock ownership on repurchases has changed in the period after the implementation of the Act compared to the period before. In other words, this means that an increase in managerial share ownership scaled by total shares outstanding of 1 million U.S. dollar results in 0.0406 million dollar less repurchases in the period after the implementation of the Act compared to the period

before the implementation. Therefore, the fifth hypothesis is rejected regarding managerial stock ownership and repurchases: H5: *Executive EBC and ownership contribute to more corporate payout in the period after the implementation of the Dodd-Frank Act in July 2010 compared to the period before.*

Additionally, the results of Model 4 show a statistically significant interaction term between managerial stock option awards and the Dodd-Frank Act dummy of 0.0105 at the 10% significance level. This means that the initial effect of managerial stock option awards on repurchases has changed in the period after the implementation of the Act compared to the period before. In other words, this means that an increase in managerial stock option awards scaled by total compensation of 1 million U.S. dollar results in 0.0105 million dollar more repurchases in the period after the implementation of the Act compared to the period before the implementation. However, caution is needed in interpreting this interaction term because of the 10% significance level.

Moreover, all signs of the statistically significant control variables of all models are in line with De Cesari and Ozkan (2015), Fenn and Liang (2001), and Golbe and Nyman (2013). Lastly, the constant is statistically significant only at the 10% level. However, since not all firms purchase stock back, the constant cannot be interpreted.

Table 5.2 Unbalanced panel time fixed effects regression models for the relationship between executive equity-based compensation and the level of stock repurchases

	(1)	**(2)**	**(3)**	**(4)**
	repurchases	**repurchases**	**repurchases**	**repurchases**
Variables				
shareholding	-0.0107			
	(0.0230)			
post2010_ shareholding	-0.0406**			
	(0.0180)			
shareaward		0.0024		
		(0.0050)		
post2010_ shareaward		-0.0049		
		(0.0053)		
optionholding			0.0352	
			(0.1368)	
post2010_ optionholding			0.0050	
			(0.0976)	

optionaward				-0.0091
				(0.0059)
post2010_ optionaward				0.0105*
				(0.0059)
Controls variables	Included	Included	Included	Included
Year FE	Included	Included	Included	Included
constant	-0.0912*	-0.0929*	-0.0931*	-0.0863*
	(0.0507)	(0.0509)	(0.0494)	(0.0505)
Observations	4949	4949	4949	4949
R^2	0.1416	0.1409	0.1407	0.1418
Adjusted R^2	0.1380	0.1373	0.1371	0.1381

Note: the Table reports the results of the unbalanced panel time fixed effects regression model with repurchases as the dependent variable for the full sample. All results are in million U.S. dollar and all independent variables are 1-fiscal year lagged. Repurchases represents the cost of common stock buyback and is scaled by market value of common stock outstanding. Shareholding represents managerial share ownership scaled by the number of common shares outstanding. Post2010 represents the dummy for the implementation of the Dodd-Frank Act of July 2010. Post2010_shareholding represents the interaction effect between the aforementioned dummy and managerial share ownership. Shareawards represent managerial share awards scaled by total compensation. Post2010_shareaward represents the interaction effect between the Dodd-Frank Act dummy and managerial share awards. Optionholding represents the managerial stock option ownership scaled by the number of common shares outstanding. Post2010_optionholding represents the interaction effect between the Dodd-Frank Act dummy and managerial stock option ownership. Optionaward represents managerial stock option awards scaled by total managerial compensation. Post2010_optionaward represents the interaction effect between the Dodd-Frank Act dummy and managerial stock option awards. Control variables are not shown but are included in every regression model. The full regression models with control variables are presented in Table D.2 in Appendix D. Year fixed effects are included in every regression model. Clustered standard errors by firm in parentheses. Constant represents the response value when all independent variables equal zero. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. 4949 observations. R^2 and adjusted R^2 report the goodness-of-fit of the regression models.

Table 5.3 below shows the results for the time fixed effects regression model with the level of total firm payout as the dependent variable. The independent variables of all models collectively explain 16.53% to 16.64% of the variation in total payout. The results show no statistically significant results for the main effect of executive EBC or ownership on the level of total payout. So, the results fail to find statistically significant evidence to support the third hypothesis: H3: *Stock and option ownership and awards have a statistically significant positive effect on the level of total payout.*

Furthermore, the results of regression Model 1 show a statistically significant interaction term between managerial share ownership and the Dodd-Frank Act dummy of -0.0416 at the 5% level. This means that the initial effect of managerial stock ownership on total payout has changed in the period after the implementation of the Act compared to the period before. In other words, this means that an increase in managerial share ownership scaled by total shares outstanding of 1 million U.S. dollar results in 0.0416 million dollar less total payout in the period after the implementation of the Act compared to the period before the implementation. Therefore, the fifth hypothesis is rejected regarding managerial stock ownership and total payout: H5: *Executive EBC and ownership contribute to more corporate payout in the period after the implementation of the Dodd-Frank Act in July 2010 compared to the period before.*

Additionally, the results of Model 4 show a statistically significant interaction term between managerial stock option awards and the Dodd-Frank Act dummy of 0.0129 at the 5% significance level. This means that the initial effect of managerial stock option awards on total payout has changed in the period after the implementation of the Act compared to the period before. In other words, this means that an increase in managerial stock option awards scaled by total compensation of 1 million U.S. dollar results in 0.0129 million dollar more total payout in the period after the implementation of the Act compared to the period before the implementation. Therefore, the fifth hypothesis is accepted regarding managerial stock option awards and total payout: H5: *Executive EBC and ownership contribute to more corporate payout in the period after the implementation of the Dodd-Frank Act in July 2010 compared to the period before.* Lastly, all signs of the statistically significant control variables of all models are in line with De Cesari and Ozkan (2015) and Fenn and Liang (2001).

Table 5.3 Unbalanced panel time fixed effects regression models for the relationship between executive equity-based compensation and the level of total payout

	(1)	**(2)**	**(3)**	**(4)**
	totalpayout	**totalpayout**	**totalpayout**	**totalpayout**
Variables				
shareholding	-0.0321			
	(0.0288)			
post2010_ shareholding	-0.0416**			
	(0.0186)			
shareaward		0.0022		
		(0.0053)		
post2010_ shareaward		-0.0017		
		(0.0056)		
optionholding			0.0321	
			(0.1531)	
post2010_ optionholding			0.0202	
			(0.1054)	
optionaward				-0.0095
				(0.0064)
post2010_ optionaward				0.0129**
				(0.0065)
Controls variables	Included	Included	Included	Included
Year FE	Included	Included	Included	Included
constant	-0.0773	-0.0799	-0.0804	-0.0726
	(0.0511)	(0.0516)	(0.0501)	(0.0511)

Observations	4949	4949	4949	4949
R^2	0.1699	0.1688	0.1688	0.1699
Adjusted R^2	0.1663	0.1653	0.1653	0.1664

Note: the Table reports the results of the unbalanced panel time fixed effects regression model with total payout (totalpayout) as the dependent variable for the full sample. All results are in million U.S. dollar and all independent variables are 1-fiscal year lagged. Totalpayout represents total payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Shareholding represents managerial share ownership scaled by the number of common shares outstanding. Post2010 represents the dummy for the implementation of the Dodd-Frank Act of July 2010. Post2010_shareholding represents the interaction effect between the aforementioned dummy and managerial share ownership. Shareawards represent managerial share awards scaled by total compensation. Post2010_shareaward represents the interaction effect between the Dodd-Frank Act dummy and managerial share awards. Optionholding represents the managerial stock option ownership scaled by the number of common shares outstanding. Post2010_optionholding represents the interaction effect between the Dodd-Frank Act dummy and managerial stock option ownership. Optionaward represents managerial stock option awards scaled by total managerial compensation. Post2010_optionaward represents the interaction effect between the Dodd-Frank Act dummy and managerial stock option awards. Control variables are not shown but are included in every regression model. The full regression models with control variables are presented in Table D.3 in Appendix D. Year fixed effects are included in every regression model. Clustered standard errors by firm in parentheses. Constant represents the response value when all independent variables equal zero. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. 4949 observations. R^2 and adjusted R^2 report the goodness-of-fit of the regression models.

Table 5.4 below shows the results of the time fixed effects regression models with repurchases as a fraction of total firm payout as the dependent variable. The independent variables of all models collectively explain 5.63% to 5.80% of the variation in the repurchases fraction. The results of Model 3 show a statistically significant coefficient for the main effect of managerial stock option ownership of 2.8046 at the 1% significance level. This means that the relationship between managerial stock option ownership and repurchases as a fraction of total payout is positive. In other words, this means that an increase in managerial stock option ownership scaled by total shares outstanding of 1 million U.S. dollar causes a 2.8046 million dollar increase in repurchases as a fraction of total payout. The fourth hypothesis is thus accepted regarding managerial stock option ownership: H4: *Stock and option ownership and awards have a statistically significant positive effect on the level of repurchases as a fraction of the level of total payout.* However, other forms of managerial equity-based compensation or ownership do not show a statistically significant main effect on the level of repurchases as a fraction of total payout. So, the results fail to find statistically significant evidence to support the fourth hypothesis regarding other form of EBC or ownership and repurchases as a fraction of total payout.

Furthermore, the results of Model 4 show a statistically significant interaction term between managerial stock option awards and the Dodd-Frank Act dummy of 0.1366 at the 5% significance level. This means that the initial effect of managerial stock option awards on total payout has changed in the period after the implementation of the Act compared to the period before. This means that an increase in managerial stock option awards scaled by total compensation of 1 million U.S. dollar results in 0.1366 million dollar more repurchases as a fraction of total payout in the period after the implementation of the Act compared to the period before the implementation.

Additionally, the results of Model 2 show a statistically significant interaction term between managerial stock awards and the Dodd-Frank Act dummy of -0.0718 at the 10% significance level. This means that the initial effect of managerial stock awards on total payout has changed in the period after the implementation of the Act compared to the period before. This means that in increase in managerial stock awards scaled by total compensation of 1 million U.S. dollar results in 0.0718 million dollar less repurchases as a fraction of total payout in the period after the implementation of the Act compared to the period before the implementation. However, caution is needed in interpreting this interaction term because of the 10% significance level.

Moreover, all signs of the statistically significant control variables of all models are in line with De Cesari and Ozkan (2015), Fenn and Liang (2001), and Golbe and Nyman (2013). Lastly, Figure D.1 up to and including Figure D.4 in Appendix D show the average dividend payout, repurchases, total payout, and repurchases fraction over 2008-2013. The figures show a decrease in the level of all forms of payout at the end of 2011.

Table 5.4 Unbalanced panel time fixed effects regression models for the relationship between executive equity-based compensation and the level of stock repurchases as a fraction of the level of total payout

	(1)	**(2)**	**(3)**	**(4)**
	repurchasesfraction	**repurchasesfraction**	**repurchasesfraction**	**repurchasesfraction**
Variables				
shareholding	0.2537			
	(0.2375)			
post2010_ shareholding	-0.3201			
	(0.2681)			
shareaward		-0.0189		
		(0.0395)		
post2010_ shareaward		-0.0718*		
		(0.0416)		
optionholding			2.8046***	
			(1.0036)	
post2010_ optionholding			-1.0638	
			(1.0289)	
optionaward				-0.0582
				(0.0443)
post2010_ optionaward				0.1366**
				(0.0540)
Controls variables	Included	Included	Included	Included

Year FE	Included	Included	Included	Included
constant	-0.1860	-0.1798	-0.2327	-0.1159
	(0.2732)	(0.2731)	(0.2742)	(0.2761)
Observations	4286	4286	4286	4286
R^2	0.0610	0.0618	0.0627	0.0625
Adjusted R^2	0.0563	0.0572	0.0580	0.0579

Note: the Table reports the results of the unbalanced panel time fixed effects regression model with repurchase as a fraction of total payout (repurchasesfraction) as the dependent variable for the full sample. All results are in million U.S. dollar and all independent variables are 1-fiscal year lagged. Repurchasesfraction represents repurchases as a fraction of total payout. Shareholding represents managerial share ownership scaled by the number of common shares outstanding. Post2010 represents the dummy for the implementation of the Dodd-Frank Act of July 2010. Post2010_shareholding represents the interaction effect between the aforementioned dummy and managerial share ownership. Shareawards represent managerial share awards scaled by total compensation. Post2010_shareaward represents the interaction effect between the Dodd-Frank Act dummy and managerial share awards. Optionholding represents the managerial stock option ownership scaled by the number of common shares outstanding. Post2010_optionholding represents the interaction effect between the Dodd-Frank Act dummy and managerial stock option ownership. Optionaward represents managerial stock option awards scaled by total managerial compensation. Post2010_optionaward represents the interaction effect between the Dodd-Frank Act dummy and managerial stock option awards. Control variables are not shown but are included in every regression model. The full regression models with control variables are presented in Table D.4 in Appendix D. Year fixed effects are included in every regression model. 663 missing values because 663 firms have 0 payout. Clustered standard errors by firm in parentheses. Constant represents the response value when all independent variables equal zero. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. 4286 observations. R^2 and adjusted R^2 report the goodness-of-fit of the regression models.

Table 5.5 below shows the results for the robustness check for managerial stock ownership and presents the time fixed effects regression model with dividends, repurchases, total payout, and the repurchases fraction as the dependent variables and managerial share ownership as the independent variable of interest. The independent variables of Model 1 of Table 5.5 collectively explain 5.67% of the variation in dividends. Furthermore, Model 1 shows no statistically significant main effect of managerial stock ownership on dividend payout, and there are no statistically significant interaction terms between stock ownership and the Dodd-Frank Act dummy. So, the results of Model 1 fail to find statistically significant evidence to support the first hypothesis regarding managerial stock ownership: H1: *Stock and option ownership and awards have a statistically significant negative effect on the level of dividend payout.* Furthermore, the results of Model 1 fail to find statistically significant evidence to support the fifth hypothesis regarding managerial stock ownership and dividend payout: H5: *Executive EBC and ownership contribute to more corporate payout in the period after the implementation of the Dodd-Frank Act in July 2010 compared to the period before.* Lastly, all signs of the statistically significant control variables of Model 1 are in line with De Cesari and Ozkan (2015) and Fenn and Liang (2001).

Additionally, the independent variables of Model 2 of Table 5.5 collectively explain 21.03% of the variation in repurchases. Model 2 shows no statistically significant main effect of managerial stock ownership on repurchases. So, the results fail to find statistically significant evidence to support the second hypothesis regarding managerial stock ownership: H2: *Stock and option ownership and awards have a statistically significant positive effect on the level of repurchases.* However, the results of Model 2 of Table 5.5 show a statistically significant coefficient of the interaction term between management share

ownership and the Dodd-Frank dummy at the 1% level of -0.3238. This means that the initial effect of managerial stock ownership on repurchases has changed in the period after the implementation of the Act compared to the period before. In other words, this means that an increase in managerial share ownership scaled by total shares outstanding of 1 million U.S. dollar results in 0.3238 million dollar less repurchases in the period after the implementation of the Act compared to the period before the implementation. Therefore, the fifth hypothesis is rejected regarding managerial stock ownership and repurchases: H5: *Executive EBC and ownership contribute to more corporate payout in the period after the implementation of the Dodd-Frank Act in July 2010 compared to the period before.*

The control variable volatility of operating income of the past 4 years of Model 2 of Table 5.5 has an unexpected positive sign. A negative sign is expected according to the literature (De Cesari & Ozkan, 2015). However, since the coefficient is only significant at the 10% level there is not enough evidence to conclude a causal relationship with dividend payout. All signs of the other statistically significant control variables of Model 2 are in line with De Cesari and Ozkan (2015) and Fenn and Liang (2001).

Moreover, the independent variables of Model 3 collectively explain 20.60% of the variation in total payout. Model 3 shows no statistically significant main effect of managerial stock ownership on total payout. So, the results fail to find statistically significant evidence to support the third hypothesis regarding managerial stock ownership: H3: *Stock and option ownership and awards have a statistically significant positive effect on the level of total payout.* Additionally, the results of Model 3 of Table 5.5 show a statistically significant interaction term between managerial share ownership and the Dodd-Frank dummy at the 1% level of -0.3591. This means that the initial effect of managerial stock ownership on total payout has changed in the period after the implementation of the Act compared to the period before. In other words, this means that an increase in managerial share ownership scaled by total shares outstanding of 1 million U.S. dollar results in 0.3591 million dollar less total payout in the period after the implementation of the Act compared to the period before the implementation. Therefore, the fifth hypothesis is rejected regarding managerial stock ownership and total payout: H5: *Executive EBC and ownership contribute to more corporate payout in the period after the implementation of the Dodd-Frank Act in July 2010 compared to the period before.*

The control variable volatility of operating income of the past 4 years of Model 3 of Table 5.5 has an unexpected positive sign. A negative sign is expected according to the literature (De Cesari & Ozkan, 2015). However, since the coefficient is only significant at the 10% level there is not enough evidence to conclude a causal relationship with dividend payout. All signs of the other statistically significant control variables of Model 3 are in line with De Cesari and Ozkan (2015) and Fenn and Liang (2001).

Furthermore, the independent variables of Model 4 collectively explain 16.30% of the variation in the repurchases fraction. Model 4 shows no statistically significant main effect of managerial stock ownership on the repurchases fraction. So, the results fail to find statistically significant evidence to support the fourth hypothesis regarding managerial stock ownership: H4: *Stock and option ownership and awards have a statistically significant positive effect on the level of repurchases as a fraction of the level of total payout.* Moreover, Model 4 of table 5.5 shows a statistically significant interaction term between managerial share ownership and the Dodd-Frank dummy at the 5% level of -3.2109. This means that the initial effect of managerial stock ownership on the repurchases fraction has changed in the period after the implementation of the Act compared to the period before. In other words, this means that an increase in managerial share ownership scaled by total shares outstanding of 1 million U.S. dollar results in 3.2109 million dollar less repurchases as a fraction of total payout in the period after the implementation of the Act compared to the period before the implementation. Lastly, all signs of the statistically significant control variables of Model 4 are in line with De Cesari and Ozkan (2015) and Fenn and Liang (2001).

Table 5.5 Subsample unbalanced panel time fixed effects regression models for the relationship between stock ownership and the level of dividend payout, repurchases, total payout, and the repurchases fraction

	(1)	**(2)**	**(3)**	**(4)**
Variables	**dividends**	**repurchases**	**totalpayout**	**repurchasesfraction**
shareholding	-0.0171	-0.0262	-0.0433	-1.4731
	(0.0484)	(0.4490)	(0.4168)	(2.1015)
post2010_ shareholding	-0.0352	-0.3238***	-0.3591***	-3.2109**
	(0.0507)	(0.1135)	(0.1209)	(1.4765)
Controls variables	Included	Included	Included	Included
Year FE	Included	Included	Included	Included
constant	0.0722	-0.2303	-0.1581	-0.3817
	(0.0527)	(0.1953)	(0.1849)	(2.0701)
Observations	556	556	556	464
R^2	0.0924	0.2402	0.2360	0.2010
Adjusted R^2	0.0567	0.2103	0.2060	0.1630

Note: the Table reports the results of the unbalanced panel time fixed effects regression model with dividends, repurchases and total payout as the dependent variable for the subsample. All results are in million U.S. dollar and all independent variables are 1-fiscal year lagged. Dividends represents dividend payout and is scaled by market value of common stock outstanding. Repurchases represents the cost of common stock buyback and is scaled by market value of common stock outstanding. Totalpayout represents total payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Shareholding represents managerial share ownership scaled by the number of common shares outstanding. Post2010 represents the dummy for the implementation of the Dodd-Frank Act of July 2010. Post2010_shareholding represents the interaction effect between the aforementioned dummy and managerial share ownership. Control variables are not shown but are included in every regression model. The full regression models with control variables are presented in Table D.5 in Appendix D. Year fixed effects are included in every regression model. Clustered standard errors by firm in parentheses. Constant represents the response value when all independent variables equal zero. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. 556 observations. R^2 and adjusted R^2 report the goodness-of-fit of the regression models.

6. Discussion

The previously presented results show that managerial stock ownership contributes to less repurchases and total payout in the period after the implementation of the Dodd-Frank Act in July 2010 compared to the period before. This is not in line with the fifth hypothesis but can however be explained as follows. As Francis and Smith (1995) argue, managerial stock ownership is associated with an increase in innovation and productivity of firms so that in the long run the value of the firm and its stock increases. Moreover, since the Dodd-Frank Act aims to prevent excessive risk-taking of firms that could lead to a new financial crisis, executives with stock ownership could be incentivized even more to demonstrate good corporate governance and therefore to focus even more on long-term firm value. To finance innovations and other internal developments executives could decide to reduce the level of stock repurchases and the level of total payout.

Furthermore, the results show that managerial stock option awards contribute to more total payout in the period after the implementation of the Dodd-Frank Act in July 2010 compared to the period before. Stock call options give the recipient the right to buy a share at a prespecified exercise price before a prespecified exercise date (Hall & Murphy, 2000). After this date the contract expires, and the option becomes worthless. According to Hall and Murphy (2002) stock option awards provide incentives for executives to stay until the stock option expires and to take actions that increase the stock price. So, executives will try to short-term boost the stock price before the stock option expires. Because the Dodd-Frank Act protects the interests of shareholders, executives could have decided to increase total payout more in the period after the implementation of the Dodd-Frank Act to accommodate shareholders, and substitute repurchases for dividends to boost the stock price and therefore the value of their stock option. This way, executives and shareholders both benefit. To illustrate, the results indeed confirm that executives who receive stock option awards substitute repurchases for dividends.

However, this thesis finds no statistically significant main effects of executive EBC or ownership on dividends, repurchases, or total payout. This is not in line with past studies but can however be explained as follows. The first, second and third hypotheses about the main effects of executive EBC and ownership on payout are formulated based on the findings of Burns et al. (2015), Fenn and Liang (2001), De Cesari and Ozkan (2015) and Lambert et al. (1989). Burns et al. (2015) use a European sample. Fenn and Liang (2001) do use an American sample, but their sample period dates to the mid-1990s. Furthermore, De Cesari and Ozkan (2015) use a sample consisting of the UK, Germany, France, Italy, the Netherlands and Spain. Lastly, Lambert et al. (1989) do use an American sample, but their sample dates back to the calendar year 1956. So, the sample of this thesis differs significantly from the sample used by past studies.

Furthermore, this thesis only collects relevant renumeration of the CEO because the CEO holds the most power in day-to-day operations. However, Fenn and Liang (2001), De Cesari and Ozkan (2015) and Lambert et al. (1989) look at remuneration of all executives with the argument that corporate financial policy reflects the interests of all executives and not only that of the CEO. While that may be true, this method does not distinguish between different executive titles. Since different types of executives have different varying levels of influence to control payout policy, they could react differently to equity-based compensation or ownership and the results could therefore potentially be different.

Additionally, possible misspecification could be present in the regression models. According to Morck et al. (1988) the relationship between firm value and executive ownership is nonlinear. Above some critical level, increases in managerial ownership are no longer beneficial because management becomes entranced (Morck et al., 1988). Additionally, Baker and Hall (2004) argue that the dollar value of managerial share ownership is a more accurate measure of management incentives. This thesis however does not account for a critical level of managerial ownership and takes the number of shares as a measure of managerial share ownership instead of the dollar value.

Furthermore, the explanatory power of the regression models of this thesis is generally lower than that of past studies. For example, Burns et al. (2015) find a R^2 of 0.284 for regression models with dividend payout as the dependent variable. In contrast, the R^2 of this thesis for the same regression model is 0.067. So, the independent variables of the regression models in this thesis explain generally less proportion of variance in the dependent variable. The reason for the low explanatory power of this thesis could be that the relationship between some independent variables and the dependent variable might be non-linear.

Moreover, this thesis uses another research methodology than past studies. For example, Burns et al. (2015), Fenn and Liang (2001) and De Cesari and Ozkan (2015) use Tobit and Probit regression models, whereas this thesis uses a linear regression model with time fixed effects. Furthermore, Burns et al. (2015) look at a special type of stock, namely restricted stock. This thesis does not investigate the effect of restricted stock on firm payout. Restricted shares are not fully transferable before certain conditions are met (Bryan et al., 2000). CEOs who own restricted stocks bear the wealth loss from risky investment projects and this reduces the CEO's expected utility (Bryan et al., 2000). The effect of restricted stock on firm payout could potentially differ from the effect of regular stock on firm payout.

Lastly, this thesis does not distinguish between exercisable and non-exercisable stock option ownership, and between in-the-money and out-of-the-money stock option ownership. De Cesari and Ozkan (2015) do make this distinction and argue that if executives are concerned about the value of their stock option ownership, this would be most likely the case for exercisable and/or in the money stock option holdings. Not making a distinction between these kinds of options could possibly contribute to different results.

7. Conclusion

The free-cash-flow problem is one of the most severe agency conflicts between managerial executives and shareholders. This agency problem is a consequence of the misalignment of the interests of shareholders and managerial executives. According to existing literature, a potential way of aligning these interests is by compensating the manager based on equity. However, regulation can potentially affect the way executives are compensated. For example, the Dodd-Frank Act contains multiple sections related to corporate governance, which impose strict rules for executive compensation packages. The aim of this thesis is to capture the potential effects of these sections on the relationship between executive equity-based compensation and firm payout. Therefore, this thesis aims to investigate the following research question: *"How does the American Dodd-Frank Act of July 2010 influence the potential impact of CEO equity-based compensation on the payout policy of American publicly traded firms?"*.

To investigate this research question this thesis has conducted multiple unbalanced panel time fixed effects regression models. Furthermore, interaction effects of a dummy variable for the implementation of the Dodd-Frank Act with executive EBC and ownership variables have been analyzed. This allows the effect of executive EBC and ownership on payout policy to be compared between the periods before and after the implementation of the Act. More than 1,100 American publicly traded firms have been investigated over the period 2008-2013.

This thesis finds that managerial stock option awards contribute to more total payout in the period after the implementation of the Dodd-Frank Act of July 2010 compared to the period before. Because the Dodd-Frank Act protects the interests of shareholders, executives could have decided to increase total payout more in the period after the implementation of the Dodd-Frank Act to accommodate shareholders, and substitute repurchases for dividends to boost the value of their stock options. This way, executives and shareholders both benefit. However, this thesis finds that managerial stock ownership contributes to less repurchases and total payout in the period after the implementation of the Dodd-Frank Act compared to the period before. Since the Dodd-Frank Act aims to prevent excessive risk-taking of firms that could lead to a new financial crisis, executives with stock ownership could be incentivized to demonstrate good corporate governance and therefore to focus on long-term firm value. To finance innovations and other internal developments executives could therefore decide to reduce the repurchases and total payout.

So, by awarding the executive stock options after the implementation of the Act, the interests of shareholders and executives are better aligned. But, once these options are exercised, agency conflicts could arise. This thesis contributes to the existing literature about agency theory as it investigates the potential effects of regulation on the free cash flow problem between shareholders and managerial executives.

7.1 Limitations

However, a potential limitation of this thesis is the research methodology. As mentioned before, this thesis uses interaction effects of the Dodd-Frank Act dummy with executive EBC and ownership variables. However, although this approach allows the effect of executive EBC and ownership on payout policy to be compared between the periods before and after the implementation of the Act, these results lack validity and reliability because of the absence of a control group. Therefore, further researchers are encouraged to apply a research methodology that incorporates a control group to ensure reliable results. For example, a similar country to the U.S. that is not affected by the Dodd-Frank Act.

Lastly, the sample period of this thesis includes the year 2008. This year is part of the financial crisis and could therefore have influenced the results. Future researchers are encouraged to choose a sample period that does not include the financial crisis.

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APPENDIX A: Full sample distribution of firms across years

Table A.1: The number of firms per fiscal year

Fiscal year	Freq.	Percent	Cum.
2008	619	12.51	12.51
2009	807	16.31	28.81
2010	842	17.01	45.83
2011	858	17.34	63.16
2012	917	18.53	81.69
2013	906	18.31	100
Total	4,949	100.00	

Note: the Table reports the number of firms per fiscal year. 'Fiscal Year' indicates a particular fiscal year of the full sample. 'Freq.' indicates the frequency of firms in the particular fiscal year. 'Percent' indicates the percent of the frequency of firms in a particular fiscal year as a fraction of the total frequency of firms over all fiscal years. 'Cum.' indicates the cumulative percent of the frequency of firms in a particular fiscal year as a fraction of the total frequency of firms over all fiscal years. 4,949 total observations.

APPENDIX B: Variable definitions

Table B.1 Variable definitions

Variable	Definition
Panel A: payout variables	
Dividends	Cash dividend on common stock of the current year. Dividends are scaled by the market value of common stock (Fenn & Liang, 2001).
Total payout	The level of total payout is calculated by taking the sum of dividends and repurchases. Total payout is scaled by the market value of common stock (Fenn & Liang, 2001).
Repurchases fraction	Repurchases as a fraction of total payout. This fraction is scaled by the market value of common stock (Fenn & Liang, 2001).
Repurchases	According to the treasury method the amount of stock repurchases is calculated by taking the difference of the treasury stock of the current fiscal year and treasury stock of the lagged fiscal year (Fama and French, 2001). According to the retirement method the amount of stock repurchases is calculated by taking the difference between the purchase of common and preferred stocks and the issuance of common and preferred stocks (Skinner, 2008). To potentially filter out net purchases of preferred stock, a cut-off level of 100% of the market value of common stock is used. Repurchases are set to zero if negative. Repurchases are scaled by the market value of common stock.
Panel B: Incentive variables	
Stock ownership	The number of common stocks owned by the executive excluding options. Scaled by the number of common stocks outstanding (Fenn & Liang, 2001). 1-year lagged.
Option ownership	The sum of the number of unexercised exercisable options and the number of unexercised unexercisable options. Scaled by the number of common stocks outstanding (Fenn & Liang, 2001). 1-year lagged.
Stock awards	Yearly stock awards scaled by total managerial compensation (Burns et al., 2015). 1-year lagged.
Option awards	Yearly option awards scaled by total managerial compensation (Burns et al., 2015). 1-year lagged.
Panel C: Control variables	
Non-equity compensation	This variable is defined as the sum of salary and bonus. This variable is scaled by total compensation. 1-year lagged.
Net operating cash flow	This variable is defined by subtracting capital expenditures from earnings before interest, taxes, depreciation, and amortization (Fenn & Liang, 2001). This variable is scaled by total assets. 1-year lagged.
Market-to-book ratio	This variable is defined as the sum of the book value of assets and market value of equity minus the book value of equity, divided by the book value of assets (De Cesari & Ozkan, 2015). 1-year lagged.
Firm size	This variable is defined by the logarithmic value of total assets (Fenn & Liang, 2001). 1-year lagged.
Leverage	This variable is defined as total liabilities divided by total assets (Fenn & Liang, 2001). 1-year lagged.

Volatility of operating income	Volatility of operating income of the past 4 years. This variable is calculated by taking the standard deviation of earnings before interest, taxes, depreciation, and amortization of the past 4 fiscal years. This variable is scaled by total assets.
Cash	Cash scaled by total assets (De Cesari & Ozkan, 2015). 1-year lagged.
Stock volatility	Volatility of stock return of the past two years. This variable is calculated by taking the standard deviation of the stock return of the past two fiscal years (De Cesari & Ozkan, 2015).
Annual stock return	Stock return of the previous year (De Cesari & Ozkan, 2015). This variable is defined by calculating the return of the current stock price related to the 1-year lag stock price.
Institutions	The percentage of common shares held by institutional shareholders (De Cesari and Ozkan, 2015). 1-year lagged.
Board size	The logarithmic value of the total number of board members (De Cesari & Ozkan, 2015). 1-year lagged.
Independent director	This variable is defined as the number of independent board member as a fraction of board size (De Cesari and Ozkan, 2015). 1-year lagged.
Blockholders	The number of shareholders that own 5% or more of the number of common shares outstanding (De Cesari and Ozkan, 2015). 1-year lagged.
Ceo tenure	The logarithmic value of the difference between the year the executive became CEO and the current year (Allgood & Farrell, 2000). 1-year lagged.

Note: the Table presents the definitions of all variables used in the time fixed effects regression models. Panel A presents the definition of the payout variables. Panel B presents the definitions of the incentive variables. Lastly, Panel C presents the definitions of the control variables.

APPENDIX C: Full sample regression model diagnostics

Table C.1: VIF test for multicollinearity for all variables of the managerial stock ownership models

	Dividends	Repurchases	Totalpayout	Repurchasesfraction
	VIF	VIF	VIF	VIF
Variables				
shareholding	2.14	2.14	2.14	2.19
post2010_shareholding	2	2	2	2.01
nonequity_comp	1.39	1.39	1.39	1.41
netoperating	1.71	1.71	1.71	1.89
mbratio	1.83	1.83	1.83	1.98
log(firmsize)	2.79	2.79	2.79	2.8
leverage	1.86	1.86	1.86	1.86
volatility_operinc	1.21	1.21	1.21	1.22
cash	1.44	1.44	1.44	1.47
volatilitystock	1.11	1.11	1.11	1.09
annualreturn	1.32	1.32	1.32	1.37
institutions	1.94	1.94	1.94	1.97
log(boardsize)	1.79	1.79	1.79	1.81
independentdir	1.19	1.19	1.19	1.19
blockholders	2.43	2.43	2.43	2.5
log(ceotenure)	1.16	1.16	1.16	1.16
Mean VIF	1.87	1.87	1.87	1.90

Note: the Table presents the variance inflation factors (VIF) for the variables of the managerial stock ownership models to check for multicollinearity. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding. Repurchasesfraction represents the level of repurchases as a fraction of the level of total payout. Shareholding represents managerial share ownership scaled by the number of common shares outstanding. post2010_shareholding represents the interaction term between the Dodd-Frank Act dummy and shareholding. Nonequity_comp represents managerial non-equity-based compensation scaled by total managerial compensation. Netoperating represents net operating cash flow scaled by total assets. Mbratio represents the market-to-book ratio. Log(firmsize) is the logarithmic value of firm size. Leverage represents firm leverage. Volatility_operinc represents the volatility of operating income scaled by total assets of the past 4 fiscal years. Cash represents the firm's cash position scaled by total assets. Volatilitystock represents the volatility of stock return of the past 2 fiscal years. Annualreturn represents the annual return of the firm's stock of the past fiscal year. Institutions represents the percentage of common shares outstanding owned by institutions. Log(boardsize) represents the logarithmic value of size of the board of directors. Independentdir represents the number of independent board directors as a fraction of board size. Blockholders represent the number of blockholders. Blockholders own 5% or more of the firm's total common shares outstanding. Log(ceotenure) represents the logarithmic value of the number of years a CEO is active as CEO. A VIF of 5 or higher represents multicollinearity.

Table C.2: VIF test for multicollinearity for all variables of the managerial stock awards models

	Dividends	Repurchases	Totalpayout	Repurchasesfraction
	VIF	VIF	VIF	VIF
Variables				
shareaward	2.52	2.52	2.52	2.57
post2010_shareaward	4.19	4.19	4.19	4.35

nonequity_comp	1.53	1.53	1.53	1.54
netoperating	1.71	1.71	1.71	1.89
mbratio	1.84	1.84	1.84	1.98
log(firmsize)	2.79	2.79	2.79	2.81
leverage	1.86	1.86	1.86	1.86
volatility_operinc	1.21	1.21	1.21	1.22
cash	1.44	1.44	1.44	1.47
volatilitystock	1.11	1.11	1.11	1.09
annualreturn	1.32	1.32	1.32	1.37
institutions	1.93	1.93	1.93	1.96
log(boardsize)	1.79	1.79	1.79	1.8
independentdir	1.17	1.17	1.17	1.17
blockholders	2.42	2.42	2.42	2.49
log(ceotenure)	1.06	1.06	1.06	1.06
Mean VIF	2.11	2.11	2.11	2.16

Note: the Table presents the variance inflation factors (VIF) for the variables of the managerial stock awards ownership models to check for multicollinearity. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding. Repurchasesfraction represents the level of repurchases as a fraction of the level of total payout. Shareaward represent managerial share awards scaled by total compensation. post2010_shareaward represents the interaction term between the Dodd-Frank Act dummy and shareaward. Nonequity_comp represents managerial non-equity-based compensation scaled by total managerial compensation. Netoperating represents net operating cash flow scaled by total assets. Mbratio represents the market-to-book ratio. Log(firmsize) is the logarithmic value of firm size. Leverage represents firm leverage. Volatility_operinc represents the volatility of operating income scaled by total assets of the past 4 fiscal years. Cash represents the firm's cash position scaled by total assets. Volatilitystock represents the volatility of stock return of the past 2 fiscal years. Annualreturn represents the annual return of the firm's stock of the past fiscal year. Institutions represents the percentage of common shares outstanding owned by institutions. Log(boardsize) represents the logarithmic value of size of the board of directors. Independentdir represents the number of independent board directors as a fraction of board size. Blockholders represent the number of blockholders. Blockholders own 5% or more of the firm's total common shares outstanding. Log(ceotenure) represents the logarithmic value of the number of years a CEO is active as CEO. A VIF of 5 or higher represents multicollinearity.

Table C.3: VIF test for multicollinearity for all variables of the managerial stock option ownership models

	Dividends	**Repurchases**	**Totalpayout**	**Repurchasesfraction**
	VIF	**VIF**	**VIF**	**VIF**
Variables				
optionholding	2.29	2.29	2.29	2.53
post2010_optionholding	2.55	2.55	2.55	2.78
nonequity_comp	1.36	1.36	1.36	1.38
netoperating	1.71	1.71	1.71	1.89
mbratio	1.83	1.83	1.83	1.98
log(firmsize)	2.91	2.91	2.91	2.93
leverage	1.86	1.86	1.86	1.87
volatility_operinc	1.21	1.21	1.21	1.22
cash	1.44	1.44	1.44	1.48

volatilitystock	1.11	1.11	1.11	1.09
annualreturn	1.32	1.32	1.32	1.37
institutions	1.93	1.93	1.93	1.96
log(boardsize)	1.79	1.79	1.79	1.8
independentdir	1.17	1.17	1.17	1.17
blockholders	2.43	2.43	2.43	2.49
log(ceotenure)	1.1	1.1	1.1	1.1
Mean VIF	1.95	1.95	1.95	2.00

Note: the Table presents the variance inflation factors (VIF) for the variables of the managerial stock option ownership models to check for multicollinearity. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding. Repurchasesfraction represents the level of repurchases as a fraction of the level of total payout. Optionholding represents the managerial stock option ownership scaled by the number of common shares outstanding. post2010_optionholding represents the interaction term between the Dodd-Frank Act dummy and optionholding. Nonequity_comp represents managerial non-equity-based compensation scaled by total managerial compensation. Netoperating represents net operating cash flow scaled by total assets. Mbratio represents the market-to-book ratio. Log(firmsize) is the logarithmic value of firm size. Leverage represents firm leverage. Volatility_operinc represents the volatility of operating income scaled by total assets of the past 4 fiscal years. Cash represents the firm's cash position scaled by total assets. Volatilitystock represents the volatility of stock return of the past 2 fiscal years. Annualreturn represents the annual return of the firm's stock of the past fiscal year. Institutions represents the percentage of common shares outstanding owned by institutions. Log(boardsize) represents the logarithmic value of size of the board of directors. Independentdir represents the number of independent board directors as a fraction of board size. Blockholders represent the number of blockholders. Blockholders own 5% or more of the firm's total common shares outstanding. Log(ceotenure) represents the logarithmic value of the number of years a CEO is active as CEO. A VIF of 5 or higher represents multicollinearity.

Table C.4: VIF test for multicollinearity for all variables of the managerial stock option awards models

	Dividends	**Repurchases**	**Totalpayout**	**Repurchasesfraction**
	VIF	**VIF**	**VIF**	**VIF**
Variables				
optionaward	2.11	2.11	2.11	2.15
post2010_optionaward	2.58	2.58	2.58	2.61
nonequity_comp	1.41	1.41	1.41	1.41
netoperating	1.71	1.71	1.71	1.89
mbratio	1.87	1.87	1.87	2.01
log(firmsize)	2.79	2.79	2.79	2.81
leverage	1.87	1.87	1.87	1.88
volatility_operinc	1.21	1.21	1.21	1.22
cash	1.44	1.44	1.44	1.47
volatilitystock	1.11	1.11	1.11	1.09
annualreturn	1.33	1.33	1.33	1.38
institutions	1.93	1.93	1.93	1.96
log(boardsize)	1.79	1.79	1.79	1.8
independentdir	1.17	1.17	1.17	1.18
blockholders	2.42	2.42	2.42	2.49
log(ceotenure)	1.06	1.06	1.06	1.06
Mean VIF	1.96	1.96	1.96	2.00

Note: the Table presents the variance inflation factors (VIF) for the variables of the managerial stock option awards ownership models to check for multicollinearity. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding. Repurchasesfraction represents the level of repurchases as a fraction of the level of total payout. Optionaward represents managerial stock option awards scaled by total managerial compensation. post2010_optionaward represents the interaction term between the Dodd-Frank Act dummy and optionaward. Nonequity_comp represents managerial non-equity-based compensation scaled by total managerial compensation. Netoperating represents net operating cash flow scaled by total assets. Mbratio represents the market-to-book ratio. Log(firmsize) is the logarithmic value of firm size. Leverage represents firm leverage. Volatility_operinc represents the volatility of operating income scaled by total assets of the past 4 fiscal years. Cash represents the firm's cash position scaled by total assets. Volatilitystock represents the volatility of stock return of the past 2 fiscal years. Annualreturn represents the annual return of the firm's stock of the past fiscal year. Institutions represents the percentage of common shares outstanding owned by institutions. Log(boardsize) represents the logarithmic value of size of the board of directors. Independentdir represents the number of independent board directors as a fraction of board size. Blockholders represent the number of blockholders. Blockholders own 5% or more of the firm's total common shares outstanding. Log(ceotenure) represents the logarithmic value of the number of years a CEO is active as CEO. A VIF of 5 or higher represents multicollinearity.

Table C.5: Hausman test for the managerial stock ownership models for fixed effects or random effects

		Hausman test for fixed effects or random effects	
Dependent variable			
Dividends	Test:	Ho:	difference in coefficients not systematic
			chi2(21) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 168.22
			Prob>chi2 = 0.0000
Repurchases	Test:	Ho:	difference in coefficients not systematic
			chi2(21) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 175.85
			Prob>chi2 = 0.0000
Totalpayout	Test:	Ho:	difference in coefficients not systematic
			chi2(21) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 212.94
			Prob>chi2 = 0.0000
Repurchasesfraction	Test:	Ho:	difference in coefficients not systematic
			chi2(21) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 99.09
			Prob>chi2 = 0.0000

Note: the Table represents the Hausman test for the managerial stock ownership models to decide between a fixed effects or a random effects regression model. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding. Repurchasesfraction represents the level of repurchases as a fraction of the level of total payout. Prob>chi2 represents the p-value and the null-hypothesis (Ho) is rejected at the 5% level. If Ho is rejected, then a fixed effects regression model fits the data the best.

Table C.6: Hausman test for of the managerial stock awards models for fixed effects or random effects

			Hausman test for fixed effects or random effects
Dependent variable			
Dividends	Test:	Ho:	difference in coefficients not systematic
			chi2(21) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 166.34
			Prob>chi2 = 0.0000
Repurchases	Test:	Ho:	difference in coefficients not systematic
			chi2(21) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 175.41
			Prob>chi2 = 0.0000
Totalpayout	Test:	Ho:	difference in coefficients not systematic
			chi2(21) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 210.85
			Prob>chi2 = 0.0000
Repurchasesfraction	Test:	Ho:	difference in coefficients not systematic
			chi2(21) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 100.67
			Prob>chi2 = 0.0000

Note: the Table represents the Hausman test for the managerial stock awards models to decide between a fixed effects or a random effects regression model. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding. Repurchasesfraction represents the level of repurchases as a fraction of the level of total payout. Prob>chi2 represents the p-value and the null-hypothesis (Ho) is rejected at the 5% level. If Ho is rejected, then a fixed effects regression model fits the data the best.

Table C.7: Hausman test for the managerial stock option ownership models for fixed effects or random effects

			Hausman test for fixed effects or random effects
Dependent variable			
Dividends	Test:	Ho:	difference in coefficients not systematic
			chi2(21) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 162.17
			Prob>chi2 = 0.0000
Repurchases	Test:	Ho:	difference in coefficients not systematic
			chi2(21) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 183.58
			Prob>chi2 = 0.0000
Totalpayout	Test:	Ho:	difference in coefficients not systematic
			chi2(21) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 213.20
			Prob>chi2 = 0.0000
Repurchasesfraction	Test:	Ho:	difference in coefficients not systematic
			chi2(21) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 95.26
			Prob>chi2 = 0.0000

Note: the Table represents the Hausman test for the managerial stock option ownership to decide between a fixed effects or a random effects regression model. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding. Repurchasesfraction represents the level of repurchases as a fraction of the level of total payout. Prob>chi2 represents the p-value and the null-hypothesis (Ho) is rejected at the 5% level. If Ho is rejected, then a fixed effects regression model fits the data the best.

Table C.8: Hausman test for the managerial stock option awards models for fixed effects or random effects

			Hausman test for fixed effects or random effects
Dependent variable			
Dividends	Test:	Ho:	difference in coefficients not systematic
			chi2(21) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 185.61
			Prob>chi2 = 0.0000
Repurchases	Test:	Ho:	difference in coefficients not systematic
			chi2(21) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 182.64
			Prob>chi2 = 0.0000
Totalpayout	Test:	Ho:	difference in coefficients not systematic
			chi2(21) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 208.32
			Prob>chi2 = 0.0000
Repurchasesfraction	Test:	Ho:	difference in coefficients not systematic
			chi2(21) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 105.82
			Prob>chi2 = 0.0000

Note: the Table represents the Hausman test for the managerial stock option awards models to decide between a fixed effects or a random effects regression model. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding. Repurchasesfraction represents the level of repurchases as a fraction of the level of total payout. Prob>chi2 represents the p-value and the null-hypothesis (Ho) is rejected at the 5% level. If Ho is rejected, then a fixed effects regression model fits the data the best.

Table C.9: Wald test for the managerial stock ownership models for heteroskedasticity

	Wald test for heteroskedasticity
Dependent variable	
Dividends	H0: sigma(i)^2 = sigma^2 for all i
	chi2 (1011) = 4.8e+36
	Prob>chi2 = 0.0000
Repurchases	H0: sigma(i)^2 = sigma^2 for all i
	chi2 (1011) = 6.1e+32
	Prob>chi2 = 0.0000
Totalpayout	H0: sigma(i)^2 = sigma^2 for all i
	chi2 (1011) = 1.4e+36
	Prob>chi2 = 0.0000
Repurchasesfraction	H0: sigma(i)^2 = sigma^2 for all i
	chi2 (961) = 7.1e+35
	Prob>chi2 = 0.0000

Note: the Table represents the Wald test for the managerial stock ownership models to test for possible heteroskedasticity. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding. Repurchasesfraction represents the level of repurchases as a fraction of the level of total payout. Prob>chi2 represents the p-value and the null-hypothesis (Ho) is rejected at the 5% level. If Ho gets rejected, then there exists heteroskedasticity.

Table C.10: Wald test for the managerial stock awards models for heteroskedasticity

	Wald test for heteroskedasticity
Dependent variable	
Dividends	H0: sigma(i)^2 = sigma^2 for all i
	chi2 (1011) = 9.3e+35
	Prob>chi2 = 0.0000
Repurchases	H0: sigma(i)^2 = sigma^2 for all i
	chi2 (1011) = 3.4e+31
	Prob>chi2 = 0.0000
Totalpayout	H0: sigma(i)^2 = sigma^2 for all i
	chi2 (1011) = 5.2e+34
	Prob>chi2 = 0.0000
Repurchasesfraction	H0: sigma(i)^2 = sigma^2 for all i
	chi2 (961) = 6.7e+34
	Prob>chi2 = 0.0000

Note: the Table represents the Wald test for the managerial stock awards models to test for possible heteroskedasticity. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding. Repurchasesfraction represents the level of repurchases as a fraction of the level of total payout. Prob>chi2 represents the p-value and the null-hypothesis (Ho) is rejected at the 5% level. If Ho gets rejected, then there exists heteroskedasticity.

Table C.11: Wald test for the managerial stock option ownership models for heteroskedasticity

	Wald test for heteroskedasticity
Dependent variable	
Dividends	H0: sigma(i)^2 = sigma^2 for all i
	chi2 (1011) = 6.4e+35
	Prob>chi2 = 0.0000
Repurchases	H0: sigma(i)^2 = sigma^2 for all i
	chi2 (1011) = 5.5e+32
	Prob>chi2 = 0.0000
Totalpayout	H0: sigma(i)^2 = sigma^2 for all i
	chi2 (1011) = 6.8e+32
	Prob>chi2 = 0.0000
Repurchasesfraction	H0: sigma(i)^2 = sigma^2 for all i
	chi2 (961) = 5.4e+35
	Prob>chi2 = 0.0000

Note: the Table represents the Wald test for the managerial stock option ownership models to test for possible heteroskedasticity. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding. Repurchasesfraction represents the level of repurchases as a fraction of the level of total payout. Prob>chi2 represents the p-value and the null-hypothesis (Ho) is rejected at the 5% level. If Ho gets rejected, then there exists heteroskedasticity.

Table C.12: Wald test for the managerial stock option awards models for heteroskedasticity

Dependent variable	Wald test for heteroskedasticity
Dividends	H0: sigma(i)^2 = sigma^2 for all i
	chi2 (1011) = 2.2e+36
	Prob>chi2 = 0.0000
Repurchases	H0: sigma(i)^2 = sigma^2 for all i
	chi2 (1011) = 1.9e+31
	Prob>chi2 = 0.0000
Totalpayout	H0: sigma(i)^2 = sigma^2 for all i
	chi2 (1011) = 2.7e+31
	Prob>chi2 = 0.0000
Repurchasesfraction	H0: sigma(i)^2 = sigma^2 for all i
	chi2 (961) = 4.5e+36
	Prob>chi2 = 0.0000

Note: the Table represents the Wald test for the managerial stock option awards models to test for possible heteroskedasticity. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding. Repurchasesfraction represents the level of repurchases as a fraction of the level of total payout. Prob>chi2 represents the p-value and the null-hypothesis (Ho) is rejected at the 5% level. If Ho gets rejected, then there exists heteroskedasticity.

Table C.13: Wooldridge test for the managerial stock ownership models for autocorrelation

Dependent variable	Wooldridge test for autocorrelation
Dividends	Wooldridge test for autocorrelation in panel data
	H0: no first-order autocorrelation
	F(1, 864) = 1.899
	Prob > F = 0.1686
Repurchases	Wooldridge test for autocorrelation in panel data
	H0: no first-order autocorrelation
	F(1, 864) = 37.038
	Prob > F = 0.0000
Totalpayout	Wooldridge test for autocorrelation in panel data
	H0: no first-order autocorrelation
	F(1, 864) = 32.733
	Prob > F = 0.0000
Repurchasesfraction	Wooldridge test for autocorrelation in panel data
	H0: no first-order autocorrelation
	F(1, 728) = 49.161
	Prob > F = 0.0000

Note: the Table represents the Wooldridge test for the managerial stock ownership models to test for possible autocorrelation. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding. Repurchasesfraction represents the level of repurchases as a fraction of

the level of total payout. Prob>F represents the p-value and the null-hypothesis (Ho) is rejected at the 5% level. If Ho gets rejected, then there exists autocorrelation.

Table C.14: Wooldridge test for the managerial stock awards models for autocorrelation

Dependent variable	**Wooldridge test for autocorrelation**
Dividends	Wooldridge test for autocorrelation in panel data
	H0: no first-order autocorrelation
	F(1, 864) = 1.705
	Prob > F = 0.1919
Repurchases	Wooldridge test for autocorrelation in panel data
	H0: no first-order autocorrelation
	F(1, 864) = 37.287
	Prob > F = 0.0000
Totalpayout	Wooldridge test for autocorrelation in panel data
	H0: no first-order autocorrelation
	F(1, 864) = 32.692
	Prob > F = 0.0000
Repurchasesfraction	Wooldridge test for autocorrelation in panel data
	H0: no first-order autocorrelation
	F(1, 728) = 48.115
	Prob > F = 0.0000

Note: the Table represents the Wooldridge test for the managerial stock awards models to test for possible autocorrelation. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding. Repurchasesfraction represents the level of repurchases as a fraction of the level of total payout. Prob>F represents the p-value and the null-hypothesis (Ho) is rejected at the 5% level. If Ho gets rejected, then there exists autocorrelation.

Table C.15: Wooldridge test for the managerial stock option ownership models for autocorrelation

Dependent variable	**Wooldridge test for autocorrelation**
Dividends	Wooldridge test for autocorrelation in panel data
	H0: no first-order autocorrelation
	F(1, 864) = 1.758
	Prob > F = 0.1853
Repurchases	Wooldridge test for autocorrelation in panel data
	H0: no first-order autocorrelation
	F(1, 864) = 36.989
	Prob > F = 0.0000
Totalpayout	Wooldridge test for autocorrelation in panel data
	H0: no first-order autocorrelation
	F(1, 864) = 32.531
	Prob > F = 0.0000

Repurchasesfraction	Wooldridge test for autocorrelation in panel data
	H0: no first-order autocorrelation
	F(1, 728) = 48.078
	Prob > F = 0.0000

Note: the Table represents the Wooldridge test for the managerial stock option ownership models to test for possible autocorrelation. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding. Repurchasesfraction represents the level of repurchases as a fraction of the level of total payout. Prob>F represents the p-value and the null-hypothesis (Ho) is rejected at the 5% level. If Ho gets rejected, then there exists autocorrelation.

Table C.16: Wooldridge test for the managerial stock option awards models for autocorrelation

Dependent variable	**Wooldridge test for autocorrelation**
Dividends	Wooldridge test for autocorrelation in panel data
	H0: no first-order autocorrelation
	F(1, 864) = 1.743
	Prob > F = 0.1871
Repurchases	Wooldridge test for autocorrelation in panel data
	H0: no first-order autocorrelation
	F(1, 864) = 37.300
	Prob > F = 0.0000
Totalpayout	Wooldridge test for autocorrelation in panel data
	H0: no first-order autocorrelation
	F(1, 864) = 33.004
	Prob > F = 0.0000
Repurchasesfraction	Wooldridge test for autocorrelation in panel data
	H0: no first-order autocorrelation
	F(1, 728) = 48.384
	Prob > F = 0.0000

Note: the Table represents the Wooldridge test for the managerial stock option awards models to test for possible autocorrelation. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding. Repurchasesfraction represents the level of repurchases as a fraction of the level of total payout. Prob>F represents the p-value and the null-hypothesis (Ho) is rejected at the 5% level. If Ho gets rejected, then there exists autocorrelation.

Table C.17: Skewness/Kurtosis test for the managerial stock ownership models for normality

	Skweness/Kurtosis test for Normality					
Dependent variable						
Dividends						joint
	Variable	obs	Pr(skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
	residuals	4,949	0.0000	0.0000	.	.
Repurchases						joint
	Variable	obs	Pr(skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
	residuals	4,949	0.0000	0.0000	.	.
Totalpayout						joint
	Variable	obs	Pr(skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
	residuals	4,949	0.0000	0.0000	.	.
Repurchasesfraction						joint
	Variable	obs	Pr(skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
	residuals	4,286	0.0000	0.0000	.	.

Note: the Table represents the Skewness/Kurtosis test for the managerial stock ownership models to test for possible non-normality. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding. Repurchasesfraction represents the level of repurchases as a fraction of the level of total payout. Pr(skewness) and Pr(Kurtosis) represents the p-value and the null-hypothesis (Ho) is rejected at the 5% level. If Ho gets rejected, then there exists non-normality.

Table C.18: Skewness/Kurtosis test for the managerial stock awards models for normality

	Skweness/Kurtosis test for Normality					
Dependent variable						
Dividends						joint
	Variable	obs	Pr(skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
	residuals	4,949	0.0000	0.0000	.	.
Repurchases						joint
	Variable	obs	Pr(skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
	residuals	4,949	0.0000	0.0000	.	.
Totalpayout						joint
	Variable	obs	Pr(skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
	residuals	4,949	0.0000	0.0000	.	.
Repurchasesfraction						joint
	Variable	obs	Pr(skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
	residuals	4,286	0.0000	0.0000	.	.

Note: the Table represents the Skewness/Kurtosis test for the managerial stock awards models to test for possible non-normality. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding. Repurchasesfraction represents the level of repurchases as a fraction of the level of total payout. Pr(skewness) and Pr(Kurtosis) represents the p-value and the null-hypothesis (Ho) is rejected at the 5% level. If Ho gets rejected, then there exists non-normality.

Table C.19: Skewness/Kurtosis test for the managerial stock option ownership models for normality

	Skweness/Kurtosis test for Normality					
Dependent variable						
Dividends						joint
	Variable	obs	Pr(skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
	residuals	4,949	0.0000	0.0000	.	.
Repurchases						joint
	Variable	obs	Pr(skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
	residuals	4,949	0.0000	0.0000	.	.
Totalpayout						joint
	Variable	obs	Pr(skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
	residuals	4,949	0.0000	0.0000	.	.
Repurchasesfraction						joint
	Variable	obs	Pr(skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
	residuals	4,286	0.0000	0.0000	.	.

Note: the Table represents the Skewness/Kurtosis test for the managerial stock option ownership models to test for possible non-normality. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding. Repurchasesfraction represents the level of repurchases as a fraction of the level of total payout. Pr(skewness) and Pr(Kurtosis) represents the p-value and the null-hypothesis (Ho) is rejected at the 5% level. If Ho gets rejected, then there exists non-normality.

Table C.20: Skewness/Kurtosis test for the managerial stock option awards models for normality

	Skweness/Kurtosis test for Normality					
Dependent variable						
Dividends						joint
	Variable	obs	Pr(skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
	residuals	4,949	0.0000	0.0000	.	.
Repurchases						joint
	Variable	obs	Pr(skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
	residuals	4,949	0.0000	0.0000	.	.
Totalpayout						joint
	Variable	obs	Pr(skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
	residuals	4,949	0.0000	0.0000	.	.
Repurchasesfraction						joint
	Variable	obs	Pr(skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
	residuals	4,286	0.0000	0.0000	.	.

Note: the Table represents the Skewness/Kurtosis test for the managerial stock option awards models to test for possible non-normality. Totalpayout represents the level of total firm payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Dividends represents the total level of dividend payout scaled by market value of common stock outstanding. Repurchases represent the cost of stocks repurchased scaled by market value of common stock outstanding. Repurchasesfraction represents the level of repurchases as a fraction of the level of total payout. Pr(skewness) and Pr(Kurtosis) represents the p-value and the null-hypothesis (Ho) is rejected at the 5% level. If Ho gets rejected, then there exists non-normality.

APPENDIX D: Regression models including control variables

Table D.1 Unbalanced panel time fixed effects regression models for the relationship between executive equity-based compensation and the level of dividend payout

	(1)	(2)	(3)	(4)
	dividends	dividends	dividends	dividends
Variables				
shareholding	-0.0214			
	(0.0204)			
post2010_ shareholding	-0.0009			
	(0.0145)			
shareaward		-0.0002		
		(0.0019)		
post2010_ shareaward		0.0032		
		(0.0022)		
optionholding			-0.0030	
			(0.0519)	
post2010_ optionholding			0.0151	
			(0.0331)	
optionaward				-0.0004
				(0.0021)
post2010_ optionaward				0.0024
				(0.0026)
nonequity_ comp	-0.0020	-0.0014	-0.0020	-0.0019
	(0.0025)	(0.0027)	(0.0025)	(0.0024)
netoperating	0.0056	0.0055	0.0053	0.0055
	(0.0081)	(0.0082)	(0.0081)	(0.0082)
mbratio	-0.0042***	-0.0042***	-0.0042***	-0.0042***
	(0.0008)	(0.0008)	(0.0008)	(0.0008)
log(firmsize)	0.0009	0.0011	0.0010	0.0009
	(0.0024)	(0.0024)	(0.0024)	(0.0024)
leverage	-0.0031	-0.0036	-0.0034	-0.0034
	(0.0046)	(0.0046)	(0.0047)	(0.0046)
volatility_ operinc	0.0383*	0.0363*	0.0371*	0.0369*
	(0.0209)	(0.0209)	(0.0210)	(0.0210)
cash	0.0115	0.0118	0.0116	0.0114
	(0.0072)	(0.0073)	(0.0073)	(0.0073)
volatilitystock	-0.0210*	-0.0206*	-0.0210*	-0.0211*
	(0.0122)	(0.0122)	(0.0122)	(0.0122)

annualreturn	-0.0075***	-0.0075***	-0.0075***	-0.0075***
	(0.0011)	(0.0011)	(0.0011)	(0.0011)
institutions	-0.0064	-0.0063	-0.0062	-0.0062
	(0.0045)	(0.0044)	(0.0045)	(0.0045)
log(boardsize)	0.0054*	0.0052*	0.0054*	0.0054*
	(0.0028)	(0.0028)	(0.0028)	(0.0028)
independentdir	-0.0040	-0.0039	-0.0038	-0.0038
	(0.0049)	(0.0049)	(0.0049)	(0.0048)
blockholders	0.0010***	0.0010***	0.0010***	0.0010***
	(0.0004)	(0.0004)	(0.0004)	(0.0004)
log(ceotenure)	0.0003	0.0002	0.0002	0.0002
	(0.0005)	(0.0005)	(0.0005)	(0.0005)
Year FE	Included	Included	Included	Included
constant	0.0139	0.0130	0.0127	0.0137
	(0.0206)	(0.0211)	(0.0210)	(0.0211)
Observations	4949	4949	4949	4949
R^2	0.0672	0.0671	0.0666	0.0667
Adjusted R^2	0.0632	0.0632	0.0626	0.0628

Note: the Table reports the results of the unbalanced panel time fixed effects regression model with dividends as the dependent variable for the full sample. All results are in million U.S. dollar and all independent variables are 1-fiscal year lagged. Dividends represents dividend payout and is scaled by market value of common stock outstanding. Shareholding represents managerial share ownership scaled by the number of common shares outstanding. Post2010 represents the dummy for the implementation of the Dodd-Frank Act of July 2010. Post2010_shareholding represents the interaction effect between the aforementioned dummy and managerial share ownership. Shareawards represent managerial share awards scaled by total compensation. Post2010_shareaward represents the interaction effect between the Dodd-Frank Act dummy and managerial share awards. Optionholding represents the managerial stock option ownership scaled by the number of common shares outstanding. Post2010_optionholding represents the interaction effect between the Dodd-Frank Act dummy and managerial stock option ownership. Optionaward represents managerial stock option awards scaled by total managerial compensation. Post2010_optionaward represents the interaction effect between the Dodd-Frank Act dummy and managerial stock option awards. Nonequity_comp represents managerial non-equity-based compensation scaled by total managerial compensation. Netoperating represents net operating cash flow scaled by total assets. Mbratio represents the market-to-book ratio. Log(firmsize) is the logarithmic value of firm size. Leverage represents firm leverage. Volatility_operinc represents the volatility of operating income scaled by total assets of the past 4 fiscal years. Cash represents the firm's cash position scaled by total assets. Volatilitystock represents the volatility of stock return of the past 2 fiscal years. Annualreturn represents the annual return of the firm's stock of the past fiscal year. Institutions represents the percentage of common shares outstanding owned by institutions. Log(boardsize) represents the logarithmic value of size of the board of directors. Independentdir represents the number of independent board directors as a fraction of board size. Blockholders represent the number of blockholders. Blockholders own 5% or more of the firm's total common shares outstanding. Log(ceotenure) represents the logarithmic value of the number of years a CEO is active as CEO. Year fixed effects are included in every regression model. Clustered standard errors by firm in parentheses. Constant represents the response value when all independent variables equal zero. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. 4949 observations. R^2 and adjusted R^2 report the goodness-of-fit of the regression model.

Table D.2 Unbalanced panel time fixed effects regression models for the relationship between executive equity-based compensation and the level of stock repurchases

	(1)	**(2)**	**(3)**	**(4)**
Variables	**repurchases**	**repurchases**	**repurchases**	**repurchases**
shareholding	-0.0107			
	(0.0230)			

post2010_ shareholding	-0.0406**			
	(0.0180)			
shareaward		0.0024		
		(0.0050)		
post2010_ shareaward		-0.0049		
		(0.0053)		
optionholding			0.0352	
			(0.1368)	
post2010_ optionholding			0.0050	
			(0.0976)	
optionaward				-0.0091
				(0.0059)
post2010_ optionaward				0.0105*
				(0.0059)
nonequity_ comp	0.0025	0.0026	0.0025	0.0010
	(0.0051)	(0.0054)	(0.0051)	(0.0053)
netoperating	0.0132	0.0137	0.0134	0.0113
	(0.0134)	(0.0133)	(0.0134)	(0.0132)
mbratio	-0.0025*	-0.0024*	-0.0024*	-0.0024*
	(0.0014)	(0.0014)	(0.0014)	(0.0014)
log(firmsize)	0.0257***	0.0258***	0.0259***	0.0256***
	(0.0065)	(0.0065)	(0.0063)	(0.0065)
leverage	-0.0941***	-0.0940***	-0.0946***	-0.0952***
	(0.0126)	(0.0126)	(0.0126)	(0.0127)
volatility_ operinc	0.0099	0.0100	0.0091	0.0094
	(0.0331)	(0.0332)	(0.0335)	(0.0334)
cash	0.0352**	0.0344**	0.0348**	0.0337**
	(0.0141)	(0.0140)	(0.0138)	(0.0139)
volatilitystock	-0.0226	-0.0228	-0.0227	-0.0226
	(0.0149)	(0.0149)	(0.0149)	(0.0148)
annualreturn	-0.0090***	-0.0090***	-0.0090***	-0.0089***
	(0.0018)	(0.0018)	(0.0018)	(0.0018)
institutions	0.0054	0.0059	0.0059	0.0054
	(0.0084)	(0.0084)	(0.0084)	(0.0084)
log(boardsize)	-0.0105	-0.0102	-0.0104	-0.0106
	(0.0073)	(0.0073)	(0.0073)	(0.0073)
independentdir	-0.0054	-0.0059	-0.0058	-0.0063
	(0.0116)	(0.0116)	(0.0116)	(0.0116)
blockholders	-0.0019**	-0.0019**	-0.0019**	-0.0018**

	(0.0008)	(0.0008)	(0.0008)	(0.0008)
log(ceotenure)	0.0013	0.0013	0.0012	0.0012
	(0.0009)	(0.0009)	(0.0009)	(0.0009)
Year FE	Included	Included	Included	Included
constant	-0.0912*	-0.0929*	-0.0931*	-0.0863*
	(0.0507)	(0.0509)	(0.0494)	(0.0505)
Observations	4949	4949	4949	4949
R^2	0.1416	0.1409	0.1407	0.1418
Adjusted R^2	0.1380	0.1373	0.1371	0.1381

Note: the Table reports the results of the unbalanced panel time fixed effects regression model with repurchases as the dependent variable for the full sample. All results are in million U.S. dollar and all independent variables are 1-fiscal year lagged. Repurchases represents the cost of common stock buyback and is scaled by market value of common stock outstanding. Shareholding represents managerial share ownership scaled by the number of common shares outstanding. Post2010 represents the dummy for the implementation of the Dodd-Frank Act of July 2010. Post2010_shareholding represents the interaction effect between the aforementioned dummy and managerial share ownership. Shareawards represent managerial share awards scaled by total compensation. Post2010_shareaward represents the interaction effect between the Dodd-Frank Act dummy and managerial share awards. Optionholding represents the managerial stock option ownership scaled by the number of common shares outstanding. Post2010_optionholding represents the interaction effect between the Dodd-Frank Act dummy and managerial stock option ownership. Optionaward represents managerial stock option awards scaled by total managerial compensation. Post2010_optionaward represents the interaction effect between the Dodd-Frank Act dummy and managerial stock option awards. Nonequity_comp represents managerial non-equity-based compensation scaled by total managerial compensation. Netoperating represents net operating cash flow scaled by total assets. Mbratio represents the market-to-book ratio. Log(firmsize) is the logarithmic value of firm size. Leverage represents firm leverage. Volatility_operinc represents the volatility of operating income scaled by total assets of the past 4 fiscal years. Cash represents the firm's cash position scaled by total assets. Volatilitystock represents the volatility of stock return of the past 2 fiscal years. Annualreturn represents the annual return of the firm's stock of the past fiscal year. Institutions represents the percentage of common shares outstanding owned by institutions. Log(boardsize) represents the logarithmic value of size of the board of directors. Independentdir represents the number of independent board directors as a fraction of board size. Blockholders represent the number of blockholders. Blockholders own 5% or more of the firm's total common shares outstanding. Log(ceotenure) represents the logarithmic value of the number of years a CEO is active as CEO. Year fixed effects are included in every regression model. Clustered standard errors by firm in parentheses. Constant represents the response value when all independent variables equal zero. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. 4949 observations. R^2 and adjusted R^2 report the goodness-of-fit of the regression model.

Table D.3 Unbalanced panel time fixed effects regression models for the relationship between executive equity-based compensation and the level of total payout

	(1)	**(2)**	**(3)**	**(4)**
Variables	**totalpayout**	**totalpayout**	**totalpayout**	**totalpayout**
shareholding	-0.0321			
	(0.0288)			
post2010_ shareholding	-0.0416**			
	(0.0186)			
shareaward		0.0022		
		(0.0053)		
post2010_ shareaward		-0.0017		
		(0.0056)		

optionholding			0.0321	
			(0.1531)	
post2010_ optionholding			0.0202	
			(0.1054)	
optionaward				-0.0095
				(0.0064)
post2010_ optionaward				0.0129**
				(0.0065)
nonequity_ comp	0.0005	0.0012	0.0005	-0.0009
	(0.0054)	(0.0057)	(0.0054)	(0.0056)
netoperating	0.0188	0.0192	0.0188	0.0168
	(0.0152)	(0.0154)	(0.0154)	(0.0152)
mbratio	-0.0067***	-0.0066***	-0.0066***	-0.0066***
	(0.0016)	(0.0016)	(0.0016)	(0.0016)
log(firmsize)	0.0267***	0.0268***	0.0270***	0.0266***
	(0.0063)	(0.0063)	(0.0062)	(0.0063)
leverage	-0.0972***	-0.0976***	-0.0980***	-0.0986***
	(0.0135)	(0.0134)	(0.0135)	(0.0135)
volatility_ operinc	0.0482	0.0463	0.0462	0.0463
	(0.0364)	(0.0367)	(0.0367)	(0.0368)
cash	0.0467***	0.0463***	0.0463***	0.0451***
	(0.0143)	(0.0144)	(0.0142)	(0.0144)
volatilitystock	-0.0436*	-0.0434*	-0.0437*	-0.0437*
	(0.0229)	(0.0228)	(0.0228)	(0.0228)
annualreturn	-0.0165***	-0.0164***	-0.0164***	-0.0164***
	(0.0023)	(0.0023)	(0.0023)	(0.0023)
institutions	-0.0010	-0.0004	-0.0003	-0.0008
	(0.0096)	(0.0095)	(0.0095)	(0.0095)
log(boardsize)	-0.0051	-0.0049	-0.0051	-0.0052
	(0.0077)	(0.0077)	(0.0077)	(0.0077)
independentdir	-0.0094	-0.0098	-0.0097	-0.0101
	(0.0124)	(0.0124)	(0.0124)	(0.0124)
blockholders	-0.0009	-0.0009	-0.0009	-0.0008
	(0.0009)	(0.0009)	(0.0009)	(0.0009)
log(ceotenure)	0.0016	0.0015	0.0015	0.0014
	(0.0010)	(0.0010)	(0.0010)	(0.0010)
Year FE	Included	Included	Included	Included
constant	-0.0773	-0.0799	-0.0804	-0.0726
	(0.0511)	(0.0516)	(0.0501)	(0.0511)
Observations	4949	4949	4949	4949
R^2	0.1699	0.1688	0.1688	0.1699

Adjusted R^2	0.1663	0.1653	0.1653	0.1664

Note: the Table reports the results of the unbalanced panel time fixed effects regression model with total payout (totalpayout) as the dependent variable for the full sample. All results are in million U.S. dollar and all independent variables are 1-fiscal year lagged. Totalpayout represents total payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Shareholding represents managerial share ownership scaled by the number of common shares outstanding. Post2010 represents the dummy for the implementation of the Dodd-Frank Act of July 2010. Post2010_shareholding represents the interaction effect between the aforementioned dummy and managerial share ownership. Shareawards represent managerial share awards scaled by total compensation. Post2010_shareaward represents the interaction effect between the Dodd-Frank Act dummy and managerial share awards. Optionholding represents the managerial stock option ownership scaled by the number of common shares outstanding. Post2010_optionholding represents the interaction effect between the Dodd-Frank Act dummy and managerial stock option ownership. Optionaward represents managerial stock option awards scaled by total managerial compensation. Post2010_optionaward represents the interaction effect between the Dodd-Frank Act dummy and managerial stock option awards. Nonequity_comp represents managerial non-equity-based compensation scaled by total managerial compensation. Netoperating represents net operating cash flow scaled by total assets. Mbratio represents the market-to-book ratio. Log(firmsize) is the logarithmic value of firm size. Leverage represents firm leverage. Volatility_operinc represents the volatility of operating income scaled by total assets of the past 4 fiscal years. Cash represents the firm's cash position scaled by total assets. Volatilitystock represents the volatility of stock return of the past 2 fiscal years. Annualreturn represents the annual return of the firm's stock of the past fiscal year. Institutions represents the percentage of common shares outstanding owned by institutions. Log(boardsize) represents the logarithmic value of size of the board of directors. Independentdir represents the number of independent board directors as a fraction of board size. Blockholders represent the number of blockholders. Blockholders own 5% or more of the firm's total common shares outstanding. Log(ceotenure) represents the logarithmic value of the number of years a CEO is active as CEO. Year fixed effects are included in every regression model. Clustered standard errors by firm in parentheses. Constant represents the response value when all independent variables equal zero. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. 4949 observations. R^2 and adjusted R^2 report the goodness-of-fit of the regression model.

Table D.4 Unbalanced panel time fixed effects regression models for the relationship between executive equity-based compensation and the level of stock repurchases as a fraction of the level of total payout

	(1)	**(2)**	**(3)**	**(4)**
Variables	**repurchasesfraction**	**repurchasesfraction**	**repurchasesfraction**	**repurchasesfraction**
shareholding	0.2537			
	(0.2375)			
post2010_ shareholding	-0.3201			
	(0.2681)			
shareaward		-0.0189		
		(0.0395)		
post2010_ shareaward		-0.0718*		
		(0.0416)		
optionholding			2.8046***	
			(1.0036)	
post2010_ optionholding			-1.0638	
			(1.0289)	
optionaward				-0.0582
				(0.0443)

post2010_ optionaward				0.1366**
				(0.0540)
nonequity_ comp	-0.0227	-0.0470	-0.0185	-0.0275
	(0.0444)	(0.0482)	(0.0444)	(0.0458)
netoperating	-0.0285	-0.0257	-0.0072	-0.0329
	(0.1163)	(0.1142)	(0.1179)	(0.1175)
mbratio	0.0166	0.0155	0.0170	0.0165
	(0.0115)	(0.0115)	(0.0115)	(0.0115)
log(firmsize)	0.0775***	0.0764***	0.0820***	0.0732**
	(0.0287)	(0.0287)	(0.0289)	(0.0287)
leverage	-0.3387***	-0.3266***	-0.3477***	-0.3394***
	(0.0847)	(0.0833)	(0.0840)	(0.0846)
volatility_ operinc	0.1957	0.2273	0.2118	0.1985
	(0.1972)	(0.1981)	(0.1965)	(0.2000)
cash	0.1913*	0.1781*	0.1837*	0.1726
	(0.1086)	(0.1076)	(0.1070)	(0.1087)
volatilitystock	0.0454	0.0314	0.0516	0.0416
	(0.0751)	(0.0755)	(0.0755)	(0.0755)
annualreturn	-0.0256*	-0.0253*	-0.0264**	-0.0245*
	(0.0136)	(0.0136)	(0.0134)	(0.0135)
institutions	0.1645**	0.1691**	0.1622**	0.1676**
	(0.0803)	(0.0793)	(0.0776)	(0.0815)
log(boardsize)	0.0005	0.0048	0.0020	-0.0042
	(0.0570)	(0.0567)	(0.0565)	(0.0572)
independentdir	0.1306	0.1306	0.1194	0.1257
	(0.0938)	(0.0951)	(0.0933)	(0.0945)
blockholders	-0.0160***	-0.0159***	-0.0160***	-0.0159***
	(0.0058)	(0.0058)	(0.0058)	(0.0058)
log(ceotenure)	0.0023	0.0031	0.0001	0.0014
	(0.0080)	(0.0080)	(0.0080)	(0.0080)
Year FE	Included	Included	Included	Included
constant	-0.1860	-0.1798	-0.2327	-0.1159
	(0.2732)	(0.2731)	(0.2742)	(0.2761)
Observations	4286	4286	4286	4286
R^2	0.0610	0.0618	0.0627	0.0625
Adjusted R^2	0.0563	0.0572	0.0580	0.0579

Note: the Table reports the results of the unbalanced panel time fixed effects regression model with repurchase as a fraction of total payout (repurchasesfraction) as the dependent variable for the full sample. All results are in million U.S. dollar and all independent variables are 1-fiscal year lagged. Repurchasesfraction represents repurchases as a fraction of total payout. Shareholding represents managerial share ownership scaled by the number of common shares outstanding. Post2010 represents the dummy for the implementation of the Dodd-Frank Act of July 2010. Post2010_shareholding represents the interaction effect between the aforementioned dummy and managerial share ownership. Shareawards represent managerial share awards scaled by total compensation. Post2010_shareaward represents the interaction effect between the Dodd-Frank Act dummy and managerial share awards. Optionholding represents the managerial stock option ownership scaled by the number of common

shares outstanding. Post2010_optionholding represents the interaction effect between the Dodd-Frank Act dummy and managerial stock option ownership. Optionaward represents managerial stock option awards scaled by total managerial compensation. Post2010_optionaward represents the interaction effect between the Dodd-Frank Act dummy and managerial stock option awards. Nonequity_comp represents managerial non-equity-based compensation scaled by total managerial compensation. Netoperating represents net operating cash flow scaled by total assets. Mbratio represents the market-to-book ratio. Log(firmsize) is the logarithmic value of firm size. Leverage represents firm leverage. Volatility_operinc represents the volatility of operating income scaled by total assets of the past 4 fiscal years. Cash represents the firm's cash position scaled by total assets. Volatilitystock represents the volatility of stock return of the past 2 fiscal years. Annualreturn represents the annual return of the firm's stock of the past fiscal year. Institutions represents the percentage of common shares outstanding owned by institutions. Log(boardsize) represents the logarithmic value of size of the board of directors. Independentdir represents the number of independent board directors as a fraction of board size. Blockholders represent the number of blockholders. Blockholders own 5% or more of the firm's total common shares outstanding. Log(ceotenure) represents the logarithmic value of the number of years a CEO is active as CEO. Year fixed effects are included in every regression model. 663 missing values because 663 firms have 0 payout. Clustered standard errors by firm in parentheses. Constant represents the response value when all independent variables equal zero. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. 4286 observations. R^2 and adjusted R^2 report the goodness-of-fit of the regression model.

Table D.5 Subsample unbalanced panel time fixed effects regression models for the relationship between stock ownership and the level of dividend payout, repurchases, total payout, and the repurchases fraction

	(1)	(2)	(3)	(4)
	dividends	**repurchases**	**totalpayout**	**repurchasesfraction**
Variables				
shareholding	-0.0171	-0.0262	-0.0433	-1.4731
	(0.0484)	(0.4490)	(0.4168)	(2.1015)
post2010_ shareholding	-0.0352	-0.3238***	-0.3591***	-3.2109**
	(0.0507)	(0.1135)	(0.1209)	(1.4765)
nonequity_ comp	-0.0036	0.0413*	0.0377	-0.0243
	(0.0038)	(0.0237)	(0.0239)	(0.2003)
netoperating	0.0182	0.0501	0.0683	1.1590
	(0.0375)	(0.1178)	(0.1319)	(0.8596)
mbratio	-0.0101	-0.0355	-0.0455	0.0247
	(0.0095)	(0.0269)	(0.0304)	(0.2180)
log(firmsize)	-0.0071	0.0493*	0.0422*	0.1648
	(0.0059)	(0.0251)	(0.0239)	(0.2783)
leverage	-0.0097	-0.2269***	-0.2365***	-0.4867
	(0.0124)	(0.0574)	(0.0601)	(0.3588)
volatility_ operinc	-0.0080	0.1712*	0.1632*	0.3352
	(0.0376)	(0.0914)	(0.0954)	(1.1518)
cash	0.0136	0.0321	0.0456	0.9015*
	(0.0144)	(0.0539)	(0.0607)	(0.4663)
volatilitystock	0.0161	-0.0160	0.0001	0.3425
	(0.0244)	(0.0807)	(0.0838)	(0.6433)
annualreturn	-0.0062**	-0.0035	-0.0098	-0.0285
	(0.0026)	(0.0063)	(0.0071)	(0.0754)

institutions	-0.0067	0.0111	0.0044	0.1600
	(0.0051)	(0.0082)	(0.0105)	(0.1046)
log(boardsize)	0.0108	0.0069	0.0177	-0.1534
	(0.0066)	(0.0335)	(0.0338)	(0.3646)
independentdir	-0.0208	0.0066	-0.0141	0.1578
	(0.0235)	(0.0526)	(0.0501)	(0.5488)
blockholders	0.0018*	-0.0031	-0.0013	-0.0363
	(0.0010)	(0.0024)	(0.0030)	(0.0293)
log(ceotenure)	0.0007	0.0036	0.0043	-0.0083
	(0.0010)	(0.0034)	(0.0040)	(0.0342)
Year FE	Included	Included	Included	Included
constant	0.0722	-0.2303	-0.1581	-0.3817
	(0.0527)	(0.1953)	(0.1849)	(2.0701)
Observations	556	556	556	464
R^2	0.0924	0.2402	0.2360	0.2010
Adjusted R^2	0.0567	0.2103	0.2060	0.1630

Note: the Table reports the results of the unbalanced panel time fixed effects regression model with dividends, repurchases, total payout, and repurchases as a fraction of total payout as the dependent variable for the subsample. All results are in million U.S. dollar and all independent variables are 1-fiscal year lagged. Dividends represents dividend payout and is scaled by market value of common stock outstanding. Repurchases represents the cost of common stock buyback and is scaled by market value of common stock outstanding. Totalpayout represents total payout and is the sum of dividends and repurchases and is scaled by market value of common stock outstanding. Shareholding represents managerial share ownership scaled by the number of common shares outstanding. Post2010 represents the dummy for the implementation of the Dodd-Frank Act of July 2010. Post2010_shareholding represents the interaction effect between the aforementioned dummy and managerial share ownership. Nonequity_comp represents managerial non-equity-based compensation scaled by total managerial compensation. Netoperating represents net operating cash flow scaled by total assets. Mbratio represents the market-to-book ratio. Log(firmsize) is the logarithmic value of firm size. Leverage represents firm leverage. Volatility_operinc represents the volatility of operating income scaled by total assets of the past 4 fiscal years. Cash represents the firm's cash position scaled by total assets. Volatilitystock represents the volatility of stock return of the past 2 fiscal years. Annualreturn represents the annual return of the firm's stock of the past fiscal year. Institutions represents the percentage of common shares outstanding owned by institutions. Log(boardsize) represents the logarithmic value of size of the board of directors. Independentdir represents the number of independent board directors as a fraction of board size. Blockholders represent the number of blockholders. Blockholders own 5% or more of the firm's total common shares outstanding. Log(ceotenure) represents the logarithmic value of the number of years a CEO is active as CEO. Year fixed effects are included in every regression model. Clustered standard errors by firm in parentheses. Constant represents the response value when all independent variables equal zero. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. 556 observations. R^2 and adjusted R^2 report the goodness-of-fit of the regression model.

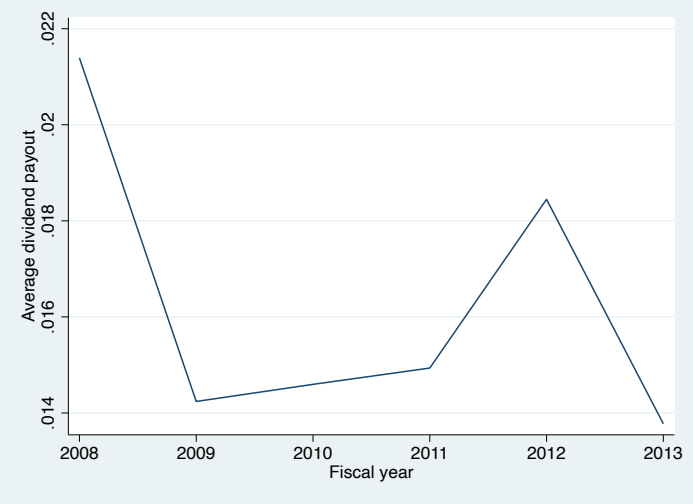

Figure D.1. Average dividend payout, 2008-2013

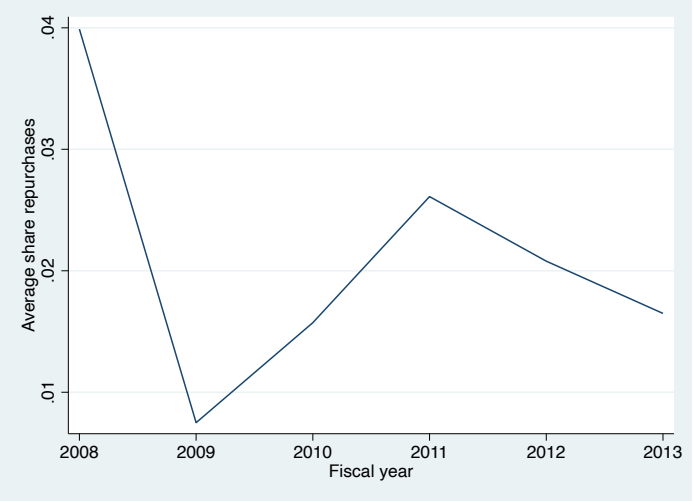

Figure D.2. Average repurchases, 2008-2013

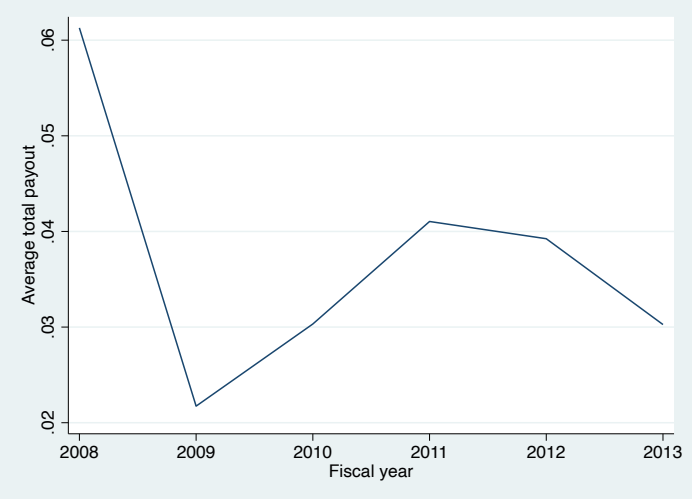

Figure D.3. Average total payout, 2008-2013

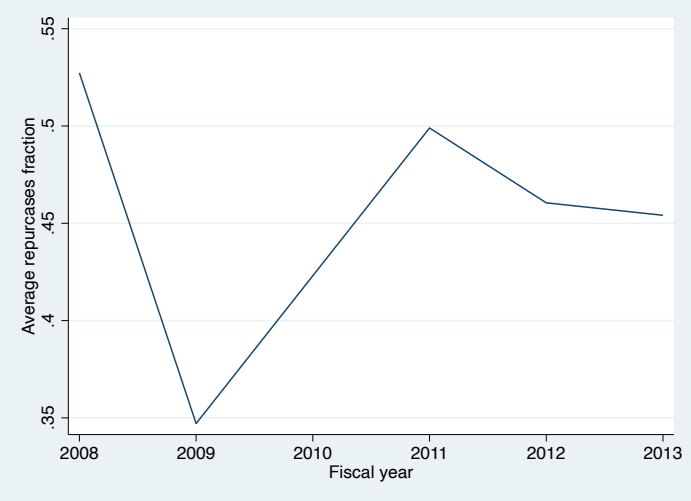

Figure D.4. Average repurchases as a fraction of total payout, 2008-2013