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We test the ability of boards of directors to eliminate the negative impact of CEO behavior on payout policy. We contribute to the literature by testing the ability of boards to influence CEO payout propensity. First, we show that if the compensation scheme of a CEO does not stimulate him or her to take more risk, the level of payout will be higher. Second, by introducing an index of corporate governance quality we show that corporate governance tools may reduce the negative effects of CEO risk preferences: in companies with good corporate governance, the risk preferences of the CEO do not affect payout decisions. Third, based on a set of specifications for risk preferences, we show how the impact of CEO attitudes to risk influences the types of payouts.

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1. Introduction

Recent research has shown that the behavioral characteristics of chief executive officers (CEOs) may affect a company's payout policy. The risk preferences of CEOs are among such behavioral characteristics. Given the significance of risk tolerance and a specific CEO's appetite for risk, the board of directors set up a framework to determine the level of risk that the CEO should take. Within such a framework, the incentive of executive pay packages could play an important role. Research shows that a CEO will pay out less to investors if his or her compensation plan is risk-oriented (Sundaram, Yermack, 2007; Burns et al., 2015; Geiler, Renneboog, 2016), and a CEO will pay out more if the compensation is less risk-oriented (Minnick, Rosenthal, 2014). Risk-averse CEOs tend to pay higher dividends despite market trends and investor preferences (Sundaram, Yermack, 2007; Caliskan, Doukas, 2015).

In addition to compensation policies, a board of directors may use its monitoring power to induce CEOs to pay out more (Bhabra et al., 2015; Yarram, Dollery, 2015; Detthamrong et al., 2017; Green, Homroy, 2018). It is assumed that if the board of directors is not too small and not too big, and/or if the number of independent directors and women in the board is optimal, the board will be efficient in setting corporate policies and will have sufficient monitoring power. While a CEO's risk preferences may be influenced by different board policies, there is still no clear evidence as to whether corporate governance reduces the possible detrimental effects of CEO behavior in payout decisions.

Although the literature shows that risk preferences may affect corporate decision-making, there are some limitations. First, the results for total payout are mixed: some authors find positive relationships (Geiler, Renneboog, 2016) and others find negative relationships (Cuny, Martin, Puthenpurackal, 2009). Second, the impact of a CEO's risk preferences on the decision to *start* paying out and to switch between dividends and share repurchases has not yet been adequately examined. Third, there are no significant results on the ability of corporate governance to overcome the negative effects of a CEO's risk preferences on payout policies.

In this paper, we improve the understanding of the role of boards of directors in eliminating the negative effects of CEO risk preferences on payout decisions. This paper provides new empirical evidence on the ability of the strategic oversight of boards to offset the possible negative impact of a CEO's risk preferences on payout policy and the choice between dividends or share repurchases.

To investigate the remuneration policy as a tool for defining a CEO's risk preferences, we not only examine cash compensation, but also compensation by way of restricted stocks, the relative proportion of total stocks that are owned by the CEO, and the CEO's age. Cash compensation and restricted stocks do not encourage a CEO to take higher risk, because the former is salary, which in almost all cases does not depend on the company's value, and the latter is used to compensate for the achievement of long-term goals. Thus, such CEOs may be reluctant to invest in high risk projects and may distribute money among the shareholders instead.

In contrast, a higher share of stocks in the CEO remuneration may stimulate CEOs to take additional risks to increase the company's value in the short-term and to make some speculative profits. Dividends decrease the price of the shares and the value of the CEO's portfolio. As a result, he or she may end up paying out less to the shareholders and not acting in their interests.

Our findings add to the literature in the following ways. First, we investigate how CEO risk preferences influence the decision to initiate paying dividends or repurchasing shares through remuneration policies. Our empirical evidence shows that risk preferences affect the probability of starting the payment of cash dividends: less risky CEOs are more likely to initiate cash dividends than riskier ones. The decision to initiate share repurchases is not affected by the risk preferences of the CEOs.

Second, our findings show that the quality of the board's work matters for overcoming the possible negative impact of CEO risk preferences on payout policies. By introducing our corporate governance quality index, we differentiated between companies which have higher and lower values on the index and show that higher-quality governance may reduce or even eliminate the negative effects of CEO risk preferences on the payout policy. We also found that the ability of corporate governance to eliminate the negative impact of CEO behavior on the payout policy decreases for companies with the highest levels of payout. Risk preferences still significantly influence the level of payout and the choice of payout channel in these companies. We assume that shareholders are satisfied with such levels of payout and do not ask for protection against the negative effects of CEO risk preferences.

Third, we provide evidence for the impact of CEO risk preferences on the choice of payout channels. We found that CEOs who were encouraged to take more risks paid out more through repurchases than through dividends to shareholders: the level of total payout is made up mostly of repurchases. We found that companies with the highest levels of payout use repurchases more widely than companies with the lowest levels of payouts. The mean figure for the proportion, or fraction of repurchases relative to the total payout is higher for companies with the highest payouts.

This means that companies tend to distribute some base level of funds among shareholders through cash dividends and distribute extra funds through repurchases.

We organize the paper as follows. In Section 2, we review the payout policy literature with respect to the risk preferences of CEOs and the literature on the ability of corporate governance to influence the strategic policies of companies, including the payout policy. In Section 3, we develop hypotheses, discuss models and data. We discuss our results in Section 4. Section 5 concludes and introduces possible further research agendas.

2. Literature review

Although there are several conceptual explanations of dividend policies and their empirical tests (based on the assumption of rational behavior), they cannot fully explain the drivers of payout decisions. These approaches are not sufficient to fully account for agent behavior, especially when it is subject to biases. The existence of a number of such biases (for example, overconfidence, over-optimism, hindsight, anchoring) and their ability to affect the decisions of top management are already recognized conceptually and in empirical papers (Kahneman, Tversky, 1979). In addition to these anomalies, the patterns of behavior of top management, based on a variety of managerial traits beyond individualism and opportunism may be significant drivers of payments to shareholders. According to behavioral studies in finance, CEOs act within bounded rationality; their decisions are significantly influenced by cultural values, emotions and cognitive biases. Given the leading role of CEOs in the decision-making process, there are a number of existing studies on their personal traits and behavioral biases attempting to approximate the behavioral patterns of top management and their consequences for key financial decisions on strategic deals (Graham et al., 2013) and capital structure (Chava, Punanandam, 2010). However, direct empirical evidence outlining the behavioral foundations of payout policies is still missing (Baker et al, 2013; Breuer et al, 2014).

In this section, we discuss the literature with respect to (1) the determination of CEO risk preference by the compensation policy; (2) the effects of risk preferences on the different aspects of the payout policy; (3) the quality of corporate governance.

a. Remuneration policy and CEO risk preferences

Managers are assumed to be affected by several biases, which are related to various levels of risk preferences. Given these biases, CEOs may promote a payout decision that may not be the one most favorable for shareholders. It has been shown that the pay-for-performance mix can motivate an agent to change his or her appetite towards risk and therefore it has an impact on corporate

policies. Risk-taking CEOs are paid with a higher proportion of performance-based compensation packages and less with cash-based packages.

Boards introduce equity-based payments to induce optimal risk-taking behavior (Financial behavior, 2017). Equity-based compensation, i.e. shares and stock options, stimulates a CEO to increase the company's equity value. To do so, the CEO needs to invest more heavily. As his or her investment set increases, so does the risk (Caliskan, Doukas, 2015). He or she may pursue investment projects with a higher-than-average risk factor (from the company's perspective), hoping that it will boost the company's capitalization and the CEO's pay (Douglas, 2007; Sundaram, Yermack, 2007; Burns et al., 2015; Geiler, Renneboog, 2016). The evidence also shows that an increase in managerial risk aversion results in lower valuations of firms, and that lower risk levels prevail in the firms with low equity-based pay in their CEO incentive plans, compared to companies with risky CEOs (Low, 2009).

To motivate CEOs to adopt less risk, compensation may be tied to the market value of the company's debt, which has a negative correlation with risk (Sundaram, Yermack, 2007). If the board of directors implement this compensation policy, the CEO becomes a creditor of the company and does not benefit from an increase of the share price. Instead, he or she will allocate as much resources within the company as possible to decrease the probability of default. This makes the CEO less risky. If the compensation of the CEO is based only on salary and bonuses, he or she is not encouraged to increase the company's value. In these cases, the investments set may be limited to projects with low risk that guarantee an acceptable level of cash flow (Berger et al., 1997).

Therefore, the compensation policy may define the risk preferences of the CEO through the available investment set. Now we move to a discussion of how risk preferences may affect the payout policy.

b. CEO risk preferences and payout policy choice

We start with a discussion of how risk preferences may affect the level of shareholder payout. If the CEO's compensation is tied to the market value of the company, the CEO does not have any strong risk burdens. Such CEOs will allocate more money to investment projects pursuing high returns and which are riskier. As a result, they will be left with a lower cash flow and will pay out less dividends (Douglas, 2007; Burns et al., 2015; Geiler, Renneboog, 2016). On the other hand, such CEOs may consider the shares of their company to be undervalued and will distribute more through share repurchases. However, the increase in repurchases is usually not enough to cover the

dividend reduction, so the total payout will be less if the CEO is a risk-taker (Cuny, Martin, Puthenpurackal, 2009).

The companies where compensation is tied to the market value of the company debt pay out more on average, as CEOs avoid risky projects and have cash flows that can be distributed among shareholders (Caliskan, Doukas, 2015). In addition, the risk appetite of the CEO may also be reduced, if the compensation scheme is built on restricted stock units (RSU – those which cannot be sold before a specified point in the future but that bear dividends). Such a remuneration policy encourages CEOs to pursue long-term goals. If a CEO takes additional risks, he or she may not achieve these goals in the future and will not get compensation. The CEO will choose investment projects more carefully and will have more cash to be distributed among shareholders (Minnick, Rosenthal, 2014). If such compensation plans are not used in the company, the shareholders will be left with lower dividends.

The risk preferences of the CEO may affect not only the level of dividends or repurchases, but also the choice of payout channel. The literature provides some findings on the relationship between stock-option-based compensation and the choice of share repurchase to pay shareholders (Kahle, 2002). The use of executive stock options and restricted stock by boards is associated with a reduction in cash dividends and a shift to share repurchases (Aboody, Kasznik, 2008). Renneboog and Geiler (2016) come to the same conclusion and show that the use of stock options and RSU as remuneration are positively related to the choice of share repurchase.

CEO risk preferences do not always serve to increase shareholder wealth. Research shows that these adverse effects can be mitigated through corporate governance practices. Given both the monitoring and the conformance roles of boards, the directors aim to reduce agency conflicts and to develop an original strategic vision for the company. The empirical evidence shows that the more efficient the mechanism of corporate governance, the more the company pays out to investors (Jiraporn et al., 2011; Sharma, 2011; Bhabra et al., 2015). CEOs may be forced to pay out more due to better protection of shareholders' rights in such companies.

In the next subsection, we discuss the existing approaches to measuring the quality of corporate governance.

c. The quality of corporate governance

Several approaches have been developed to define the quality of corporate governance. The first approach is to use an index that is based on several measures chosen by the authors. The

elements of the index may include gender and age diversity (Bernile et al., 2018); the size of the board of directors and its committees (Chan et al., 2014; Ararat et al., 2017); the level of the company's transparency (Braga-Alves, Shastri, 2011; Hwang et al., 2013); or the presence of independent directors on the board and in committees (Mande et al., 2012). These researchers conclude that high-quality corporate governance increases the company's value, shareholder payouts, and reduces the agency problem. The second approach is to use commercial indexes, which are provided by professional agencies, for example, RiskMetrics (Zagorchev, Gao, 2015), G-Index (Chang et al., 2014), ISS (Jiraporn et al., 2011; Zhu, 2014), and Globe&Mail (Adjaoud, Ben-Amar, 2010). These authors conclude that high-quality corporate governance increases operational efficiency, increases shareholder payouts, and reduces the cost of capital.

In this study, to assess the quality of corporate governance we will develop an index. As a huge number of elements with equal weights may increase measurement errors (Bozec, Bozec, 2012), we limit our index to 5 parts. We also focus only on the quality of the board of directors as the main corporate governance body to capture its effects on the relationship between payout policy and the CEO risk preferences. We will discuss the index more thoroughly in the next section.

There is limited evidence on the ability of the board of directors to eliminate the negative effects of the CEO's risk preferences on payout policy. To deeper understand the role of the strategic direction of the board in payout decisions, it is very important to fill the gaps in studies on the impact of CEO risk preferences. The literature still demonstrates contradictory results on the effects of CEO risk preferences on both the level of payouts and the choice of payout channel. There is limited evidence for the effect of CEO risk preferences on the decision to initiate payments to shareholders (as repurchases or cash dividends).

To address these issues, this paper provides new empirical evidence on the role of the board of directors in protecting shareholder interests against the adverse effects of the CEO's risk preferences.

3. Hypotheses development, model and data

Research findings suggest that the most conservative policy is to pay dividends. Risk averse CEOs are more likely to stick to decreasing or even passing over investments in projects, which leads to higher volatility in future cash flows. To investigate the relationship between CEO risk preferences and payout policy, we study the increases and decreases in payouts, the decisions to start paying out, and the changes in the repurchase-dividend mix. We use several compensation-based proxies to measure CEO risk preferences.

Based on previous results, we assume that the compensation scheme aligns the CEO's risk preferences with those of the board of directors. Following the literature, we apply the fraction of the total cash amount of the CEO's compensation, the fraction of company shares owned by the CEO (Burns et al., 2015) and the fraction of compensation in the form of restricted stocks (Minnick, Rosenthal, 2014). We also control for executive option-based compensation schemes by the ratio of exercisable options to the total executive options. This measure may reflect the level of CEO overconfidence – another characteristic of CEO behavior (Fenn, Liang, 2001; Deshmukh et al., 2013). Equity-based compensation, due to the capital gains of the CEO, may involve him or her gambling on the high marginal cost of investing in projects which forego cash dividends, thus yielding different utility (Kahneman, Tversky, 1979).

We also assume that risky CEOs may prefer repurchases rather than cash dividends. Such managers may consider the company's stocks undervalued and be willing to repurchase them at what they think is a low price (Sundaram, Yermack, 2007; Geiler, Renneboog, 2016).

Finally, the age of the CEO may be a proxy for measuring CEO behavior. There is evidence that younger CEOs pursue risky investment policies, seeking riskier (and more lucrative) components in their compensation plans (Kempf et al., 2009; Serfling, 2014).

CEOs who are risk-takers will search for funds to initiate additional risky investment projects. Additional capital expenditure will lead to a decrease in the level of payout (net income being constant) (Minnick, Rosenthal, 2014) and to postpone or even avoid initiating payouts altogether (Burns et al., 2015).

Therefore, we test the following hypotheses:

Hypothesis 1: The higher the risk preferences of the CEO, the lower the level of both cash dividends and repurchases.

Hypothesis 2: The higher the risk preferences of the CEO, the lower the probability of initiating both cash dividends and repurchases.

Hypothesis 3: The higher the risk preferences of the CEO, the more the company switches to repurchases.

To test these hypotheses, we used the following models:

$$Payout_{i,t} = \alpha + \beta_1 \bullet Payout_{i,t-1} + \beta_2 \bullet RiskPref_{i,t} + \beta_3 \bullet Age_{i,t} + \beta_4 \bullet Ex\_Opt_{i,t} +$$
$$\sum_{k=5}^{12} \beta_k \bullet Control_{i,t,k} + \theta_i + \delta_t + \varepsilon_{i,t} \ (1)$$

$$pr(DTP_{i,t} = 1) = \varphi\{\mu + \gamma_1 \bullet DTP_{i,t-1} + \gamma_2 \bullet RiskPref_{i,t} + \gamma_3 \bullet Age_{i,t} + \gamma_4 \bullet Ex\_Opt_{i,t} +$$
$$\sum_{k=5}^{12} \gamma_k \bullet Control_{i,t,k} + \theta_i + \delta_t\} \ (2),$$

where $Payout_{i,t}$ is one of the three Payout variables; $pr(DTP_{i,t} = 1)$ is the probability that $DTP_{i,t}=1$; $DTP_{i,t}$ is one of the two "Decision to pay" variables; $\varphi\{x\}$ is the standard normal cumulative distribution function; $RiskPref_{i,t}$ is the set of "Risk preferences" variables; $Age_{i,t}$ is the age of the CEO; $Ex\_Opt_{i,t}$ is the ratio of the value of exercisable options to the value of all executive options; $Control_{i,t,k}$ is the set of control variables; $\alpha, \beta_k, \mu, \gamma_k$ are coefficients for regressions; $\varepsilon_{i,t}$, are normally distributed error terms; θ_i are industry effects; δ_t are the year's effects; i is the company index; t is the year index.

The definitions of the variables for the Models (1) and (2) are presented in Table 1.

Table 1. The variables.

Variable type	Variable name	Definition
Payout	Repurchase ratio	Repurchases to total assets
	Dividend ratio	Cash dividends on common and preferred to total assets
	Fraction of repurchases	Repurchases to total payout
Decision to pay	Decision to repurchase	1 if repurchases took place, 0 otherwise
	Decision to pay dividends	1 if cash dividends took place, 0 otherwise
Risk Preferences	CEO Cash compensation	Total cash compensation to total compensation
	CEO Restricted stocks	Restricted stocks to total compensation
	CEO Ownership	Percentage of stocks owned by the CEO
Age	Age	Age of the CEO
Overconfidence	Exercisable options	Value of exercisable options to the value of all executive options
Control variables	Cash	Cash holdings to total assets
	Tobin's Q	Market value of equity to book value of equity
	Debt to equity	Book value of debt to equity
	Capital expenditures	Capital expenditures to total assets
	Research and development	R&D expenses to total assets
	Long-term debt	Long-term debt to total debt
	Return on assets	Net income to total assets
	Size	Natural logarithm of total assets

Table 1 summarizes four specifications to measure the risk preferences of the CEO. We assume that cash compensation and RSU tend to lower the risk preferences of CEOs. As the CEO has no incentives to boost capitalization in the short-run, he or she might choose less risky projects with more certain outcomes and which are more likely to distribute cash. In contrast, stock compensation may encourage CEOs to bear additional risks to increase capitalization. This is why we think that CEO ownership should have a negative effect on payouts.

The CEO's age also can be a measure of CEO's behavior because it is assumed that older people are more cautious and less willing to take certain risks.

We assume that the value of exercisable options which have not yet been exercised may reflect CEO overconfidence, as he or she is confident of a stock price increase and postpones the decision to exercise the options. Exercisable options are those for which the vesting period has already expired and that can be exercised at any time from now until the expiration date. Such CEOs may be more willing to repurchase stocks if they consider them undervalued. We summarize our predictions in Table 2.

Table 2. Predicted signs of the impact of risk preferences, age and overconfidence on the payout ratios.

Variables	Predicted impact on the payout ratios
CEO Cash compensation	+
CEO Restricted stocks	+
CEO Ownership	-
Age	+
CEO exercisable options	+

Given the monitoring and conformance roles of corporate governance mechanisms, we study not only how the board aligns the risk preferences of the CEO with the required risk levels of the corporate strategy by the induced compensation scheme, but also its capability to overcome the negative effects of the CEO's risk preferences. We construct the corporate governance quality index (CGQI) based on the following board characteristics: the presence of women; the presence of independent directors; CEO duality; the size of the board; the frequency of board meetings. For each characteristic, we assign values of zero or one. Based on previous papers on the quality of boards, we scored companies in the following way.

1. If there is at least 1 woman in the board, the company gets 1, and 0 otherwise (Green, Homroy, 2018).

2. If more than 50% of directors in the board are independent, the company gets 1, and 0 otherwise (Black et al., 2012; Zagorchev, Gao, 2015).

3. If there is no CEO duality, the company gets 1, and 0 otherwise (Yarram, Dollery, 2015).

4. If the company holds more than four board meetings a year, the company gets 1, and 0 otherwise (Black et al., 2012).

5. If the size of the board is less or equal than the sample mean (9 for our sample), the company gets 1, and 0 otherwise (Mande et al., 2012).

The CGQI can have a value ranging from zero (poor) to five (excellent). We create a dummy variable for the companies that have a value of CGQI 4 or 5. These values are strictly above the mean value of CGQI, (see Table 3), and represent companies with a high quality of corporate governance.

Finally, we test the impact of governance with the following hypothesis:

Hypothesis 4: The quality of the board of directors reduces the negative effects of the CEO's behavior on payout policy.

To test Hypothesis 4, we add a dummy variable for high-quality corporate governance (1 if CGQI has a value of 4 or 5, and 0 otherwise). We then extend Models (1) and (2) and assess Models (3) and (4):

$$Payout_{i,t} = \alpha + \beta_1 \bullet Payout_{i,t-1} + \beta_2 \bullet RiskPref_{i,t} + \beta_{13} \bullet RiskPref_{i,t} \bullet D_{i,t} + \beta_3 \bullet Age_{i,t} + \beta_{14} \bullet Age_{i,t} \bullet D_{i,t} + \beta_4 \bullet Ex\_Opt_{i,t} + \beta_{15} \bullet Ex\_Opt_{i,t} \bullet D_{i,t} + \sum_{k=5}^{12} \beta_k \bullet Control_{i,t,k} + \theta_i + \delta_t + \varepsilon_{i,t} \ (3)$$

$$pr(DTP_{i,t} = 1) = \varphi\{\mu + \gamma_1 \bullet DTP_{i,t-1} + \gamma_2 \bullet RiskPref_{i,t} + \gamma_{13} \bullet RiskPref_{i,t} \bullet D_{i,t} + \gamma_3 \bullet Age_{i,t} + \gamma_{14} \bullet Age_{i,t} \bullet D_{i,t} + \gamma_4 \bullet Ex\_Opt_{i,t} + \gamma_{15} \bullet Ex\_Opt_{i,t} \bullet D_{i,t} + \sum_{k=5}^{12} \gamma_k \bullet Control_{i,t,k} + \theta_i + \delta_t\} \ (4),$$

where $D_{i,t}$ is the dummy variable for high-quality corporate governance; β_{13} and γ_{13} are the coefficients for companies with high-quality governance.

If corporate governance eliminates completely the impact of CEO behavioral characteristics on their decisions, then the following equations should hold:

$$\beta_2 = -\beta_{13} \text{ and } \gamma_2 = -\gamma_{13};$$

$$\beta_3 = -\beta_{14} \text{ and } \gamma_3 = -\gamma_{14};$$

$$\beta_4 = -\beta_{15} \text{ and } \gamma_4 = -\gamma_{15}.$$

We use Wald statistics to check whether these equations hold.

In addition to these variables and based on previous research (see Table 1), we use a set of control variables (Cash holdings, Tobin's Q, Debt-to-Equity ratio, Long-term Debt ratio, Capital and R&D expenditures, ROA and Size) representing the financial position of the company. To capture possible effects, we also included industry dummies and year dummies.

To sum up, unlike previous studies, we include in the analysis the relationship between behavioral characteristics and the repurchases-dividends mix, the impact of risk preferences on the decision to initiate payouts, and the power of corporate governance. We also check the results for different quartiles.

We collected a sample of non-financial and non-utility companies from the US for 2007 to 2016 from the S&P 1500 Index, which represents the largest and most stable companies in the US. We further restricted the sample to companies that had a positive payout at least once during the period of observation. After adjusting for missing data and outliers, we came up with a final sample of 671 companies. The data was obtained from the S&P Capital IQ and Bloomberg databases.

To assess Models (1) and (3), we use the dynamic panel data method, namely the Arellano-Bond estimator. We did so because lags are included in our specifications. We also run Arellano-Bond tests for autocorrelation, and the Sargan test for specification. To address the lagged dependent variable and the initial conditions problem, for Models (2) and (4) a panel probit model regression has been applied [Wooldridge, 2005]. For all models the robust standard errors at firm level and standardized variables have been used.

To check our predictions for companies with different levels of payout we implement quantile regressions for the 25th, 50th and 75th quantiles of the sample. Given the panel structure of data and endogeneity, we use Powell's estimator [Powell, 2016].

4. Empirical Results

Table 3 presents the descriptive statistics for the sample (for the purpose of this table we use unstandardized variables).

Table 3. The descriptive statistics.

Variable	Mean	Std. Dev.	Min	Max
CEO ownership	1.459	4.042	0.000	42.270
CEO age	57.729	6.187	36.000	86.000
CEO cash compensation	0.487	0.228	0.005	1.000
CEO restricted stocks	0.291	0.226	0.000	0.995
CEO exercisable options	0.479	0.413	0.000	1.000
Repurchase ratio	0.035	0.062	0.000	0.877
Dividend ratio	0.014	0.024	0.000	0.316
Repurchase to total payout	0.494	0.420	0.000	1.000
Decision to repurchase	0.692	0.462	0.000	1.000
Decision to pay dividends	0.595	0.491	0.000	1.000
Cash	0.117	0.112	0.000	0.875
Tobin's Q	1.927	1.800	0.000	53.175
Debt to equity	0.353	0.439	0.000	4.036
Capital expenditures	0.048	0.051	0.000	0.460
R&D expenses	0.022	0.043	0.000	0.579
Long-term debt	0.694	0.386	0.000	1.000
Return on assets	0.054	0.089	-1.265	0.558
Size	7.849	1.619	3.892	13.589
CGQI	3.642	0.809	1.000	5.000
CGQI_dummy	0.558	0.497	0.000	1.000

Table 3 shows that the companies in our sample differ in various respects: from companies with a high concentration of CEO ownership, to companies where no stocks are owned by the CEO; from companies with high payout ratios and to those with no payouts; companies with very high levels of debt and companies with no debt. There are also companies with different board quality levels, but we can see that most companies in our sample have high CGQI. Within the sample, repurchases are, on average, more common than cash dividends (the average repurchase ratio for our sample is 0.035 and the average dividend ratio is 0.014). These are in line with previous findings (Fama, French, 2001). Given the changes in the fractional amount of repurchases relative to the total payout for the period from Figure 1, the data suggest that repurchases have been becoming increasingly popular.
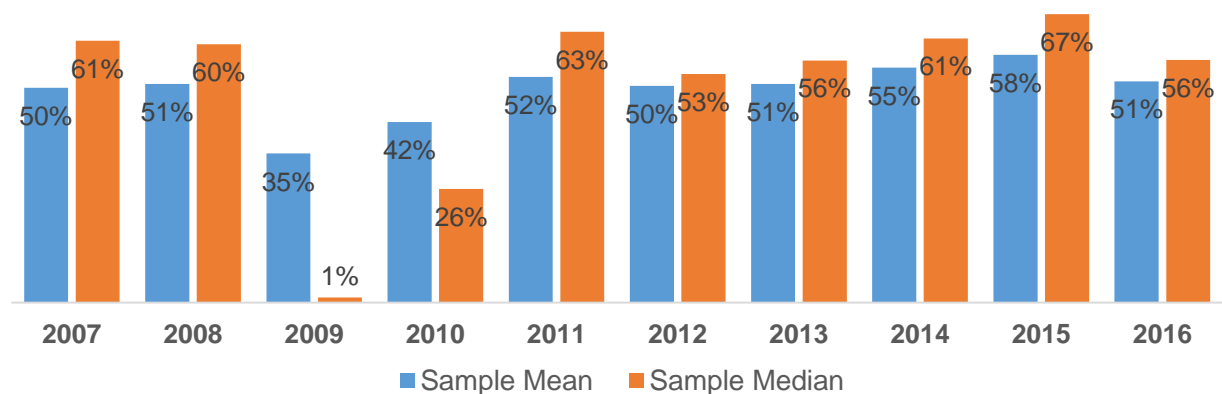
Fig. 1. The dynamics of the fractional amount of repurchases relative to the total payout.

We can see from Fig. 1 that from 2009 to 2011 and from 2012 to 2015 both the mean and median fraction of repurchases in the total payout increased. The major shocks that happened in 2009 (the "Great Recession") and 2012 (tax reform and the tightening of monetary policy) dramatically reduced the overall fraction of repurchases, but the subsequent trends were upward and in 2014 repurchases reached pre-recession levels. To consider the effects of 2009 and 2012 we use dummy variables for both years in our Models.

Table 4. Mean values for the 1-st, 2-nd, 3-rd and 4-th quartiles.

Variable	q1	q2	q3	q4
Total payout ratio	0.008	0.025	0.048	0.117
Repurchase ratio	0.005	0.017	0.034	0.086
Decision to pay out	0.673	0.872	0.932	0.945
Repurchase to total payout	0.364	0.467	0.531	0.616
CEO exercisable options	0.467	0.449	0.501	0.500
CEO ownership	2.094	1.567	0.873	1.300
CEO age	57.729	57.971	57.733	57.480
CEO cash compensation	0.528	0.503	0.466	0.450
CEO restricted stocks	0.289	0.287	0.295	0.295
Cash	0.107	0.102	0.113	0.151
Tobin's Q	1.447	1.352	1.682	3.232
Debt to equity	0.396	0.361	0.323	0.331
Capital expenditures	0.063	0.046	0.042	0.040
R&D expenses	0.019	0.016	0.019	0.033
Long-term debt	0.724	0.754	0.678	0.620
ROA	0.019	0.035	0.056	0.108
Size	7.469	7.792	8.161	7.974
CGQI	3.310	3.270	3.265	3.266

Table 4 presents the means for variables in 4 quartiles divided by the total payout. The fraction of repurchases increased for the companies with the highest levels of payout. This means that the companies that pay out more prefer repurchases rather than cash dividends. The companies that pay out less prefer cash dividends instead. This shows that companies tend to distribute some base level of funds among shareholders through cash dividends and distribute extra funds through repurchases. We can also see that companies from the upper quartile use less cash and shares, but more stock options as part of their compensation policies.

Table 5. Correlation matrix.

	CGQI_dummy	Repurchase ratio	Dividend ratio	Decision to repurchase	Decision to pay dividends	CEO exercisable options	CEO Ownership	CEO age	CEO cash compensation	CEO restricted stocks	Cash	Tobin's Q	Debt to equity	Capex	R&D expenses	LTD	ROA	Size
CGQI_dummy	1.00																	
Repurchase ratio	0.03	1.00																
Dividend ratio	-0.03	0.13	1.00															
Decision to repurchase	0.01	0.38	0.04	1.00														
Decision to pay dividends	-0.09	-0.04	0.51	0.07	1.00													
CEO exercisable options	-0.02	0.06	-0.03	0.09	0.05	1.00												
CEO Ownership	-0.09	-0.01	-0.05	-0.06	-0.09	-0.14	1.00											
CEO age	-0.08	-0.03	0.09	0.07	0.18	0.06	-0.06	1.00										
CEO cash compensation	-0.03	-0.09	0.01	-0.13	-0.03	-0.22	0.25	-0.12	1.00									
CEO restricted stocks	0.08	0.03	0.02	0.10	0.03	0.13	-0.15	0.12	-0.62	1.00								
Cash	0.07	0.12	-0.01	0.00	-0.23	-0.04	0.09	-0.11	0.05	-0.05	1.00							
Tobin's Q	0.02	0.32	0.36	0.08	-0.02	-0.01	0.04	-0.01	-0.06	0.00	0.20	1.00						
Debt to equity	-0.03	0.01	0.04	0.02	0.05	0.01	-0.09	0.08	-0.08	0.08	-0.26	0.19	1.00					
Capex	-0.02	-0.03	-0.03	-0.08	0.05	-0.02	0.08	-0.05	0.00	0.06	-0.18	-0.02	0.02	1.00				
R&D expenses	0.08	0.16	-0.05	0.01	-0.27	0.01	-0.02	-0.12	-0.12	0.02	0.38	0.15	-0.20	-0.16	1.00			
LTD	-0.05	-0.06	-0.04	0.03	0.21	0.07	-0.14	0.16	-0.15	0.11	-0.39	-0.13	0.33	0.07	-0.24	1.00		
ROA	-0.03	0.29	0.29	0.16	0.10	0.04	0.04	0.00	0.06	-0.08	0.09	0.33	-0.15	-0.01	-0.04	-0.11	1.00	
Size	-0.15	0.01	0.08	0.13	0.31	0.16	-0.21	0.21	-0.38	0.23	-0.37	-0.11	0.26	0.07	-0.20	0.39	0.01	1.00

Table 5 provides the correlation matrix for the chosen variables. All the correlations are below 50%, which means that there will be no multicollinearity in the Models. Table 6 summarizes the results of the tests for Models (1) and (2). Tables 7, 8 and 9 summarize the results for the 25th, 50th and 75th quantiles.

Table 6. Results of testing hypotheses 1, 2 and 3. [4]

	Dependent variables				
	Repurchase ratio	Dividend ratio	Repurchase fraction	Decision to repurchase	Decision to pay dividends
CEO cash compensation	0.123	0.013	-0.118***	-0.042	0.097**
	(1.33)	(0.31)	(-2.76)	(-1.31)	(2.04)
CEO restricted stocks	0.129**	-0.002	-0.005	0.035	0.017
	(1.96)	(-0.07)	(-0.22)	(1.23)	(0.43)
CEO ownership	0.107*	-0.009	0.164	0.001	-0.002
	(1.75)	(-0.51)	(1.18)	(0.05)	(-0.06)
CEO age	-0.042*	0.015	-0.010	0.005	0.036
	(-1.76)	(0.86)	(-0.36)	(0.19)	(1.00)
CEO exercisable options	0.031**	0.010	0.053***	0.055***	0.086**
	(2.04)	(0.99)	(2.70)	(2.72)	(2.50)
Dependent variable (t-1)	0.285***	0.622***	0.386***	1.318***	3.655***
	(7.99)	(6.01)	(14.06)	(28.31)	(44.90)
Cash	0.032	-0.069**	0.039	0.016	0.001
	(0.49)	(-2.12)	(0.47)	(0.60)	(0.03)
Tobin's Q	0.138*	0.135**	-0.195**	-0.004	0.041
	(1.69)	(2.01)	(-2.06)	(-0.16)	(1.28)
Debt to equity	0.006	-0.097*	0.003	-0.035	-0.076**
	(0.06)	(-1.65)	(0.02)	(-1.29)	(-2.05)
Capital expenditures	-0.062	-0.044	-0.066	-0.015	0.006
	(-1.09)	(-0.18)	(-0.93)	(-0.56)	(0.12)
R&D expenses	0.143**	0.030	-0.052	0.054**	-0.029
	(2.08)	(0.79)	(-0.59)	(2.04)	(-0.74)
Long-term debt	0.184**	-0.018	-0.026	0.040	0.051
	(1.97)	(-0.32)	(-0.21)	(1.61)	(1.16)
ROA	0.134**	0.007	0.155**	0.166***	0.159***
	(2.14)	(0.23)	(2.40)	(6.68)	(3.84)
Size	0.050	0.088	-0.147	0.101***	0.214***
	(0.51)	(1.27)	(-1.05)	(3.32)	(4.12)
Year 2009	-0.259***	-0.033	-0.354**	-0.632***	-0.232**
	(-5.01)	(-1.26)	(-2.52)	(-10.31)	(-1.99)
Year 2012	-0.087	0.021	-0.089	-0.064	0.230**
	(-1.40)	(0.72)	(-1.05)	(-1.21)	(2.21)
Intercept	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes
Num. of observations	6039	6039	6039	6039	6039
Method	Arellano-Bond GMM	Arellano-Bond GMM	Arellano-Bond GMM	Panel Probit regression	Panel Probit regression
Wald stat (chi_sq)	255.89	470.24	470.63	1147.55	2822.53
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Sargan test	467.50	649.94	144.60	-	-
	(0.00)	(0.00)	(0.00)		
AB test	-5.87	-2.86	-15.62	-	-
	(0.00)	(0.00)	(0.00)		

[4] This table presents results from the Arellano-Bond two-step GMM estimator and panel probit regressions for the complete sample. All regressions include intercept and dummies for industries. z-Statistics for Arellano-Bond and for probit are reported in parentheses below each coefficient estimate. P-values for Wald stat., Sargan test and the Arellano-Bond test are reported in the parentheses below each statistics. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Table 7. Determinants of the repurchase ratio per quartiles. [5]

	Repurchase ratio		
	25-th	50-th	75-th
CEO cash compensation	-0.000	0.013**	-0.069***
	(-0.59)	(2.02)	(-7.75)
CEO restricted stocks	0.001***	0.046***	-0.023***
	(28.35)	(6.56)	(-8.44)
CEO ownership	0.001	-0.017***	0.023***
	(1.41)	(-11.90)	(20.53)
CEO age	0.000	-0.005***	-0.094***
	(0.62)	(-4.74)	(-29.13)
CEO exercisable options	0.001***	0.018***	0.021***
	(24.03)	(9.07)	(18.89)
Cash	-0.000	-0.020***	0.073***
	(-0.65)	(-6.35)	(51.58)
Tobin's Q	0.003***	0.190***	0.412***
	(11.16)	(88.51)	(48.66)
Debt to equity	-0.001*	-0.008***	0.007*
	(-1.91)	(-3.66)	(1.78)
Capital expenditures	-0.001***	-0.015***	-0.039***
	(-7.38)	(-3.91)	(-25.05)
R&D expenses	0.001***	0.051***	0.153***
	(6.41)	(12.30)	(33.19)
Long-term debt	-0.000	-0.016***	0.001
	(-0.74)	(-8.07)	(0.15)
ROA	0.002***	0.035***	0.083***
	(25.28)	(4.12)	(10.27)
Size	0.004	0.063***	0.099***
	(37.16)	(7.07)	(18.63)
Year 2009	-0.004***	-0.217***	-0.394***
	(-7.36)	(-8.28)	(-47.97)
Year 2012	-0.001	-0.105***	0.013
	(-0.87)	(-5.06)	(.60)
Intercept	NO	NO	NO
Industry effects	Yes	Yes	Yes
Num. of observations	6710	6710	6710
Method	Quantile regression for panel data		

Table 8. Determinants of the dividend ratio per quartiles. [6]

	Dividend ratio		
	25-th	50-th	75-th
CEO cash compensation	0.000	-0.003	0.053***
	(0.00)	(-0.42)	(44.53)
CEO restricted stocks	0.000	0.010**	0.014***
	(0.00)	(2.41)	(9.09)
CEO ownership	0.000	-0.011***	-0.044***
	(0.00)	(-4.43)	(-38.87)
CEO age	0.000	0.065***	0.085***
	(0.00)	(51.18)	(126.04)
CEO exercisable options	0.000	0.014***	-0.033***
	(0.00)	(3.64)	(-50.08)
Cash	0.000	-0.006	-0.063***
	(0.00)	(-1.10)	(-81.24)
Tobin's Q	0.000	0.216***	0.684***
	(0.00)	(33.54)	(748.30)
Debt to equity	0.000	-0.048***	-0.097***
	(0.00)	(-27.95)	(-194.43)
Capital expenditures	0.000	0.003	-0.058***
	(0.00)	(0.42)	(-88.87)
R&D expenses	0.000	-0.100***	-0.092***
	(0.00)	(-12.38)	(-107.27)
Long-term debt	0.000	0.010*	-0.031***
	(0.00)	(1.92)	(-64.37)
ROA	0.000	-0.001	0.060***
	(0.00)	(-0.10)	(54.48)
Size	0.000	0.119***	0.194***
	(0.00)	(16.37)	(369.65)
Year 2009	0.000	0.014	0.001
	(0.00)	(1.43)	(0.20)
Year 2012	0.000	0.048***	-0.035***
	(0.00)	(2.85)	(-32.07)
Intercept	NO	NO	NO
Industry effects	Yes	Yes	Yes
Num. of observations	6710	6710	6710
Method	Quantile regression for panel data		

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[6] This table presents results from the Powell's quantile regressions on panel data. All regressions include dummies for industries. z-Statistics are reported in parentheses below each coefficient estimate. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Table 9. Determinants of the fraction of repurchases per quartiles. [7]

	Fraction of repurchases		
	25-th	50-th	75-th
CEO cash compensation	0.001	-0.020	-0.008
	(0.79)	(-0.45)	(-0.79)
CEO restricted stocks	0.016***	0.026**	0.032***
	(24.75)	(2.50)	(4.72)
CEO ownership	0.003***	-0.077***	0.013***
	(7.80)	(-12.82)	(2.99)
CEO age	-0.001*	-0.016	-0.046***
	(-1.76)	(-0.46)	(-15.88)
CEO exercisable options	0.009***	0.091***	-0.005***
	(21.32)	(5.97)	(-3.05)
Cash	-0.009***	0.038	-0.003
	(-7.04)	(1.62)	(-0.82)
Tobin's Q	0.032***	-0.014**	-0.050***
	(25.63)	(-2.18)	(-5.23)
Debt to equity	-0.008***	-0.075***	0.031***
	(-7.83)	(-4.82)	(7.41)
Capital expenditures	-0.010***	-0.122***	-0.040***
	(-6.43)	(-29.54)	(-23.11)
R&D expenses	0.013***	0.182***	0.031***
	(13.31)	(16.39)	(6.69)
Long-term debt	-0.005***	-0.009	-0.000
	(-4.74)	(-0.43)	(-0.00)
ROA	0.024***	0.193***	0.069***
	(39.75)	(12.38)	(7.60)
Size	0.048***	0.031**	-0.148***
	(23.14)	(2.52)	(-32.35)
Year 2009	-0.053***	-1.154***	-.164***
	(-16.58)	(-20.09)	(-23.27)
Year 2012	0.004***	-0.236***	-0.037**
	(2.33)	(-6.87)	(-2.56)
Intercept	NO	NO	NO
Industry effects	Yes	Yes	Yes
Num. of observations	6710	6710	6710
Method	Quantile regression for panel data		

Hereafter the results are reported for the five dependent variables that are described in Table 1: repurchase ratio, cash dividend ratio, fraction of repurchase, decision to initiate repurchases, decision to initiate cash dividends.

In line with our predictions from Table 2 and previous findings (Caliskan, Doukas, 2015) less risky CEOs tend to distribute more funds among the shareholders. Table 6 shows that restricted stock compensation stimulates CEOs to repurchase more than in companies from the whole sample. We can see that a 1 standard deviation increase in restricted stock compensation leads to a 0.129

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[7] This table presents results from the Powell's quantile regressions on panel data. All regressions include dummies for industries. z-Statistics are reported in parentheses below each coefficient estimate. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

standard deviation increase in the repurchase ratio. CEO ownership and exercisable executive options also lead to an increase in the repurchase ratio. We think that CEOs with large stock holdings tend to repurchase stocks to signal to markets that a company's stocks are undervalued. This should result in more demand for this stock and a price increase. The CEO's portfolio should increase as well. As we pointed out, more options that are exercisable may be proof of a CEO's overconfidence in the undervaluation of his or her company's stocks. Again, such a CEO prefers repurchases: a 1 standard deviation increase in exercisable option compensation increases the repurchase ratio by 0.031 standard deviations. The impact of the CEO's age on payout policy was not significant.

When we implement the quantile regressions (Table 7), we can see that exercisable options increase the level of repurchases in companies from all quartiles. The impact of exercisable options increases with quantiles. The impact of restricted stocks and CEO age also increases with quantiles. It is conceivable that when the level of payout through repurchases in these situations starts to increase, CEOs start to be affected by their risk preferences. When the level of repurchases is low, the payout policy is mostly determined by financial variables, because CEOs seek opportunities to increase payout ratios with limited resources. When the level of repurchases is high, the impact of risk preferences increases. This may happen if the CEO, having satisfied all the demands of the shareholders, starts to look for investment opportunities in accordance with his or her risk preferences.

The risk-preferences and overconfidence of CEOs have no impact on the cash dividend ratio according to the results from Table 6. Only the control variables represented by financial measures are important for the level of cash dividends: cash holdings (a 1 standard deviation increase in cash holdings decreases the dividend ratio by 0.069 standard deviations), Tobin's Q (a 1 standard deviation increase in Tobin's Q increases the dividend ratio by 0.135 standard deviations), and debt-to-equity ratio (a 1 standard deviation increase in debt-to-equity ratio decreases the dividend ratio by 0.097 standard deviations).

However, when we analyze the per quantile figures from Table 8, the risk preferences and the overconfidence of the CEO starts to influence the dividend ratio in companies with median and high levels of dividends. When accounting for the increase in RSU and stock option compensation and the age of the CEO, the level of dividends also increases. This may occur because in those companies with lower levels of payout, the dividend level should be defined solely by the limited financial resources. When these resources are sufficient, CEOs are tempted to put some resources aside.

Age affects dividends positively and repurchases negatively and this impact increases with the quantiles. This means that more experienced CEOs prefer dividends rather than repurchases. This may be due to the fact that dividends have traditionally been more popular than repurchases and have been displaced by repurchases recently.

Now we turn to the issue of switching between repurchases and cash dividends. The level of exercisable options has a positive effect on the fraction of repurchases in the total payout. Again, this is a result of the CEO's belief that the company's stocks are undervalued. The level of cash compensation also has a significant impact on the fraction of repurchases: a 1 standard deviation increase in the level of cash compensation decreases the repurchase fraction by 0.118 standard deviations. This means that less risky CEOs prefer cash dividends rather than repurchases. This could be explained by the absence of sound policies to induce CEOs to create share value because their compensation is not based on the equity value. As a result, shareholders are left with a base level of dividends and do not receive additional cash distributions in the form of repurchases.

Table 9 shows that the impact of restricted and exercisable stocks increases with the quantiles. It corresponds with the results for the dividend ratio: risk preferences reduce the fraction of repurchases in terms of total payout when the level of payout is high. When resources are limited, financial measures matter more than behavioral ones.

Table 10. Marginal effects for the model (2) at average. [8]

	Dependent variables	
	Decision to repurchase	Decision to pay dividends
CEO cash compensation	-0.013	0.033**
	(-1.38)	(2.04)
CEO restricted stocks	0.011	0.006
	(1.23)	(0.43)
CEO ownership	0.001	-0.001
	(0.05)	(-0.06)
CEO age	0.001	0.012
	(0.19)	(1.00)
CEO exercisable options	0.018***	0.029**
	(2.71)	(2.48)

This argument is also supported by the significant positive impact of the level of cash compensation on the probability of initiating cash dividends. From Table 10 we can see that a 1 standard deviation increase in the level of cash compensation leads to an increase in the probability of initiating paying dividends by 0.033 standard deviations. The level of exercisable options also has a positive impact on the probability of both initiating repurchases and initiating the payment of

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[8] This table presents at average marginal effects for the probit estimations. z-Statistics are reported in parentheses below each effect estimate. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

cash dividends: a 1 standard deviation increase in the level of exercisable options increases the probability of repurchases and cash dividends by 0.018 and 0.029 standard deviations respectively.

Our findings show that the previous levels of both repurchases and cash dividends have a significant positive impact on the current levels of payouts. This means that dividends are "sticky", and CEOs are not willing to change their payout policies. For all specifications (except the model with the dividend ratio), ROA affects payout policy positively and affects the dummy variables for 2009 negatively, which can also be observed in Figure 1. R&D expenses also have positive effects on the levels and the probability of repurchases. Therefore, profitable companies do not consider investments and payouts as substitutes for each other, but having a strong cash flow tends to increase both investments and payouts. We also found that the specific industry matters only in terms of the level of repurchases and the decision to initiate repurchases. For other specifications of the payout policy, the impact of industry is not robust.

To verify Hypothesis 4, on the mitigating role of the boards, we assess models (3) and (4) and make linear tests on coefficient equality. We also check whether both coefficients are statistically significant. Cells in Table 11 and 12 are highlighted in green if both coefficients are significant and the test shows that the equations $\beta_n = -\beta_m$ and $\gamma_n = -\gamma_m$ hold. If the equations do not hold, we highlight them in red. If the equations do not hold but the coefficients have different signs we use yellow, which means that corporate governance reduces but does not completely eliminate the effects of the CEO's risk preferences, age and overconfidence. Tables 11 and 12 summarize these results.

Table 11. Results of testing Hypothesis 4. [9]

	Dependent variables				
	Repurchase ratio	Dividend ratio	Repurchase fraction	Decision to repurchase	Decision to pay dividends
CEO cash compensation	0.11 (0.74)	0.06 (0.80)	16.46*** (0.00)	5.64** (0.02)	2.00 (0.16)
CEO restricted stocks	0.22 (0.64)	0.38 (0.54)	7.57** (0.01)	0.14 (0.71)	0.73 (0.39)
CEO ownership	2.45 (0.12)	0.32 (0.57)	1.36 (0.24)	0.04 (0.84)	0.01 (0.91)
CEO age	0.71 (0.40)	0.57 (0.45)	0.01 (0.92)	1.39 (0.24)	0.01 (0.91)
CEO exercisable options	5.92** (0.02)	0.90 (0.34)	1.42 (0.23)	3.48* (0.06)	2.30 (0.13)

According to the results in Table 11 and Table 6, we can conclude that efficient corporate governance may reduce the negative effects of overconfidence on the repurchase ratio and the effect

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[9] This table presents chi2 statistics for the tests of H0 ($\beta_2 = -\beta_{13}$ and $\gamma_2 = -\gamma_{13}$). P-Values are reported in the parentheses *, **, and *** represent that H0 can be rejected at the 10%, 5% and 1% levels, respectively.

of risk preferences on the fraction of repurchases. The boards with better governance reduce the influence of the personal risk preferences and overconfidence of CEOs on the fraction of repurchases in the total payout, and the level of repurchases respectively. The quality of corporate governance does not reduce the negative effects of the CEO's risk preferences and age on the level of repurchases and the effect of CEO's overconfidence on the fraction of repurchases and decisions to repurchase and to pay dividends. This means that corporate governance has a limited ability to overcome the negative effects of CEO's behavioral characteristics on payout decisions.

The level of RSU does not have significant effects on the repurchase fraction and the decision to repurchase in the whole sample, but it starts to influence these variables in the companies with efficient boards, though the effects are limited and should cancel each other out.

We check whether these interrelations hold when we analyze companies per quantile in Table 12.

Table 12. Results of testing Hypothesis 4 per quartiles. [10]

	Repurchase ratio		
	Q1	Q2	Q3
CEO cash compensation	433.46*** (0.00)	0.60 (0.44)	98.74*** (0.00)
CEO restricted stocks	63.68*** (0.00)	31.43*** (0.00)	50.26*** (0.00)
CEO ownership	15.61*** (0.00)	50.24*** (0.00)	743.78*** (0.00)
CEO age	501.62*** (0.00)	23.90*** (0.00)	661.23*** (0.00)
CEO exercisable options	1.62 (0.20)	183.94*** (0.00)	91.06*** (0.00)
	Dividend ratio		
CEO cash compensation	-	1836.31*** (0.00)	6.20** (0.01)
CEO restricted stocks	-	3.96** (0.05)	23.62*** (0.00)
CEO ownership	-	418.03*** (0.00)	208.93*** (0.00)
CEO age	-	178.75*** (0.00)	64.62*** (0.00)
CEO exercisable options	-	5.90** (0.02)	750.02*** (0.00)
	Fraction of repurchases		
CEO cash compensation	613.16*** (0.00)	70.66*** (0.00)	2074.93*** (0.00)
CEO restricted stocks	17.07*** (0.00)	16.66*** (0.00)	0.86 (0.35)

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[10] This table presents chi2 statistics for the tests of H0 ($\beta_2 = -\beta_{13}$ and $\gamma_2 = -\gamma_{13}$). P-Values are reported in the parentheses *, **, and *** represent that H0 can be rejected at the 10%, 5% and 1% levels, respectively.

CEO ownership	15.94*** (0.00)	234.61*** (0.00)	263.08*** (0.00)
CEO age	0.27 (0.60)	308.77*** (0.00)	133.80*** (0.00)
CEO exercisable options	44.51*** (0.00)	660.01*** (0.00)	5.78** (0.02)

We can now also differentiate the impact of corporate governance quality on the effects of risk preferences, age and overconfidence between the companies with low and high levels of dividends and repurchases. Table 12 shows that corporate governance may eliminate the negative effects of a CEO's risk preference only in companies with the lowest levels of payouts, not in the companies with the highest levels of payout. We can see that with the increase in quantile, the number of green cells decreases while the number of red cells increases. This is especially clear for the repurchase ratio and the fraction of repurchases. The shareholders in these companies might still be satisfied with the level of payout, even though they do not get the maximum payout, i.e. what the level of payout would have been if the CEO's risk preferences had not influenced payout decisions. However, corporate governance still has enough power to decrease the negative effects of CEO behavior.

Comparing these results with Tables 7, 9 and 11 we can see that the level of restricted stocks is not statistically significant in this case. Therefore, the significance of the level of restricted stocks in Table 11 does not seem robust. However, age and the level of cash compensation become significant for the repurchase ratio (Q1) and the fraction of repurchases (Q2 and Q3). We assume that in such companies there might be some additional tools to cope with CEO behavior that are not taken in our CGQI.

5. Conclusions

In this study we explored the relationships between different aspects of payout policies and CEO risk preferences, and whether the boards of directors are able to eliminate the negative effects of CEO risk preferences on payout decisions through governance mechanisms.

First, we showed that the choice of the payout channel is affected by the risk preferences of the CEO. More risky CEOs choose to distribute profits among shareholders through repurchases rather than through dividends. Risky CEOs consider the company stock to be undervalued and tend to repurchase them at what they think is a good price. We also found that repurchases prevail in companies with the highest levels of payout.

Second, we found that less risky CEOs are more likely to initiate paying dividends.

Finally, we proved that efficient boards of directors are able to eliminate or reduce the negative influence of CEO risk preferences. However, we found that this ability decreased with increasing payout levels and is limited overall.

The aspects of CEO risk aversion studied here are only a part of the traits that predetermine different styles in developing corporate policies. We believe that further research should focus on a deeper understanding of the influence of the overall set of behavioral traits of CEOs, which could be assigned to the bounded rationality of decision-making by top executives. It seems important to better understand how CEO overconfidence, which is based on an underestimation of future risks, and CEO optimism, which is an overvaluation of future outcomes and of favorable trends, interact in corporate payout policies. Future research on the interaction of CEO behavioral biases along with the board biases might be a productive angle for understanding the future of corporate payout policies.

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