# EXECUTIVE STOCK INCENTIVES AND CORPORATE PAYOUT POLICY

**HOW DO EXECUTIVE STOCK INCENTIVES AFFECT PAYOUTS, AND CAN THEY BE USED TO MITIGATE THE FREE CASH FLOW PROBLEM?**

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**Executive Stock Incentives and Corporate Payout Policy: How do executive stock incentives affect payouts, and can they be used to mitigate the free cash flow problem?**

Abstract:

Using data on 849 companies included in the S&P 1500 Index during 2015-2019, this study provides an overview of how executive held shares and stock options affect companies' payout policies. By examining how executive stock incentives relate to the magnitude and composition of payouts, we aim to establish whether such incentives can be utilized to mitigate the free cash flow problem defined by Jensen (1986). Our primary findings suggest that agency problems are present while showing weak or no indications of executive stock incentives having a mitigating effect on the free cash flow problem. The results show strong links between executive stock incentives and the composition of payouts. We observe a positive relationship between executive share ownership and dividends, which could be explained by dividends' liquidity benefits and under-diversified executives' desire to reduce their exposure to their employer. Moreover, executive held options correlate positively (negatively) with repurchases (dividends), potentially explained by the fact that executive stock options are rarely dividend protected and repurchases are used to reach the target payout level by offsetting the option-caused decrease in dividends. Executive stock option ownership might also create a bias toward repurchases as that form of payout counter the dilutive effect of option grants and increase earnings per share.

Keywords:

Executive Stock Incentives, Corporate Payout Policy, Free Cash Flow Problem, S&P 1500

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# 1 Introduction

Dividends and share repurchases together constitute a company's corporate payout policy and are both means of distributing cash to shareholders. Public companies' decisioning around corporate payout policy is under careful scrutiny of shareholders and other stakeholders, such as analysts, as it sends meaningful signals to the market and has a significant impact on returns and financial ratios.

Apart from returning cash to shareholders and thereby reducing the amount of resources under executive control, a company can also decide to retain excess cash. As shareholders are eager to receive a return on their investment if there are no profitable investment opportunities to be pursued, while executives are incentivized to retain excess cash, there is a misalignment of interests and hence cause for conflict. This agency problem is defined by Jensen (1986) as the free cash flow problem, which refers to the conflict of interest between shareholders and executives over companies' cash in excess of that required to fund all net present value (NPV) positive investments.

Executive stock incentives could potentially be used to mitigate the free cash flow problem by better aligning the incentives of executives and shareholders. This paper investigates the relationship between executive stock incentives and corporate payout policy. By establishing how executive stock and stock option ownership affect dividends, share repurchases and total payouts, we hope to conclude how executive stock incentives can impact the size and composition of payouts and possibly be used to help mitigate the free cash flow problem. Thus, this paper aims to investigate how corporate payout policy is affected by executive stock incentives for U.S. companies included in the S&P Composite 1500 Index (hereafter, S&P 1500) during the years 2015-2019.

Top executives can potentially affect a company's corporate payout policy in two ways. First, Espahbodi, Liu and Westbrook (2016) underscore that executive preferences regarding corporate payout policy are likely to influence the board of directors and, in length, turn into board action due to the close nature of the relationship between the two bodies. It is not uncommon that top executives are members of the board. In some instances, the Chief Executive Officer (CEO) even serves as chairman of the board (Espahbodi et al., 2016), which further highlights the close relationship between the board and top executives. In the way described above, executives can influence both the size and composition of payouts in accordance with their own preferences, such as increasing their equity-based compensation.

Second, executives are in a position that allows them to affect the amount of free cash flow that is distributable through payouts to shareholders. For example, top executives can decide on which and how many investment opportunities to pursue, regardless of whether the investment opportunity is value-destroying or NPV positive. Consequently, executives can affect the amount of excess cash that the board of directors has at hand to distribute to shareholders. This way has no direct impact on the composition of payouts as the first-mentioned way has but could affect the size of them. However, it could potentially indirectly alter the composition of payouts as dividends are generally kept at a more stable level, while share repurchase is increasingly viewed as a more flexible tool of payout (Brav, Graham, Harvey and Michaely, 2005).

Fenn and Liang (2001) carried out a similar study to this one by examining companies included in the S&P 1500 during the years 1993-1997, which was the first time period with publicly available executive compensation data in the U.S., following the Securities and Exchange Commission's (SEC) 1992 executive compensation disclosure rule.

Fenn and Liang (2001) found a relationship between executive stock ownership and higher payouts for companies facing possibly the greatest agency problems. Furthermore,

previous literature on this topic has found consensus on a positive relationship between executive stock option ownership and repurchases and a negative relationship between executive stock option ownership and dividends for U.S. companies (Aboody and Kasznik, 2008; Fenn and Liang, 2001).

There are mainly three plausible explanations for why executive stock option awards induce executives to favor repurchases over dividends. First, executive stock options are rarely dividend protected (Lang and Litzenberger, 1986; Lambert, Lanen and Larcker, 1989; Murphy, 1999). As a result, the exercise price of executive held stock options do not decrease in conjunction with dividend payouts and is therefore disfavored by option holding executives. Fenn and Liang (2001) hypothesize that executives with option holdings are indifferent to retaining the excess cash or using it for share repurchases. However, they state that repurchases may be used to offset the option-caused decrease in dividends in order to reach the target payout ratio, which leaves total payouts principally unaffected.

Lastly, executives favor repurchases because it counters the dilutive effect of stock option grants (Dittmar, 2000) and increases earnings per share (EPS) (Brav et al., 2005), as the earnings are held fixed while the amount of outstanding shares decreases. Almeida (2019) highlights that EPS is commonly used by shareholders, analysts, and companies as a measure of performance, although he argues that it is ineffective as it seems to cause underperformance in the long term.

Previous literature on this topic also argues that executive stock ownership prompts executives to favor dividends over repurchases (Aboody and Kasznik, 2008). First, Brown, Liang and Weisbenner (2007) argue that the Jobs and Growth Tax Relief Reconciliation Act of 2003 significantly reduced the tax costs associated with dividends paid out to executives. Second, executive stock awards make executives favor dividends over repurchases due to liquidity benefits (Espahbodi et al., 2016). As executives are classified as insiders, they are not allowed to trade when possessing material, non-public information about the company and need to pre-clear stock trades.

In addition, a top executive's disposal of stocks might signal a lack of confidence in the company's future share price development to shareholders and analysts, which potentially has a negative effect on the stock price. The fact that executive held stocks are rather illiquid due to insider trading policies and the usual negative market reactions to executive stock sales could further elevate the value of the liquidity benefits offered to executives by dividends.

Altogether, there has been limited research on the associations between executive stock incentives and corporate payout policy for U.S. companies, especially during the 2010s. There are mainly three reasons why it is important to further extend previous literature on this topic by studying a more recent data sample. First, corporate payouts have dramatically increased in size and changed in composition. Kahle and Stulz (2021) highlight the fact that the average annual inflation-adjusted amount paid out through dividends and repurchases by U.S. industrial companies is more than three times larger between the years 2000 and 2019 than between the years 1971 and 1999, where increased payout rates account for 63% of that increase. Moreover, they point out that the increase is primarily due to an increase in share repurchases.

Second, the size of executive compensation packages has changed rapidly. According to Mishel and Wolfe (2019), CEO compensation, measured with the value of realized stock options, grew by 52.6% between 2009 and 2018. The rapid increase could potentially influence the relationship between executive stock incentives and payouts and the magnitude of agency problems.

Third, information asymmetry between executives and shareholders has been increasingly reduced by stricter regulations targeting executive compensation disclosure rules. Espahbodi et al. (2016) argue that the SEC's 2006 amendments to executive compensation

disclosure rules decreased executives' self-interested behavior by mitigating the information asymmetry between shareholders and executives. In addition to the 2006 amendments and following the financial crisis, the SEC further amended the executive compensation disclosure rules in 2009 in order to reduce information asymmetry further. Given the lack of recent research under new market conditions, characterized by increased and altered payouts, larger executive compensation packages, and reduced information asymmetry, this paper contributes to previous literature.

For the purpose of examining whether the deployment of cash flows is correlated with executive stock incentives, data is collected from S&P's Execucomp and Compustat databases on U.S. companies included in the S&P 1500 during the fiscal years 2015-2019. With this sample, we test for the relation between our explanatory variables, including executive stock incentives and firm characteristics, and the payout variables by carrying out a tobit regression model for each of the dependent variables. We use company averages over a three to five year time period in order to reduce the impact of abnormal changes in payouts, and as our study aims to investigate long-term corporate policies. To ensure this paper's contribution and comparability to previous literature, this study mainly replicates Fenn and Liang's (2001) by using the same data sources and applying a similar methodology.

Our results strongly display the presence of agency problems, showing strong links between executive stock incentives and the composition in the means of payouts. However, we find no or weak evidence that executive stock incentives help mitigate these problems. While the findings suggest that shares and options held by executives have a major impact on the composition of payouts, no apparent links are found between the executive stock incentive variables and total payout.

Furthermore, the findings provide strong evidence that executive stock options relate negatively to dividends while being positively related to repurchases. The results could find their explanation in the fact that executive stock options generally are not dividend protected. Moreover, companies compensate for the dilutive effect options have on earnings per share through share repurchases. The dilution counteracting effect generated by share repurchases could thus help explain the results.

Lastly, our results point to a substitutive relation between dividends and repurchases, suggesting that option-caused decreases in dividends give rise to increases in repurchases. By offsetting such decreases in dividends with repurchases, companies can reach their target payout level.

# 2 Theoretical framework

## 2.1 Corporate payout policy

The corporate payout policy comprises cash dividends and share repurchases, and there are several economic theories relating to it. First, Modigliani and Miller (MM) suggested in 1961 that dividend policy is irrelevant, given perfect capital markets, rational behavior and perfect certainty. With such conditions, MM argues that the dividend policy has no effect on a company's stock price or capital structure and that a company's value is determined by the investment policy. Even though MM's dividend theory of irrelevance might hold in the theoretical world with perfect capital markets, there is compelling cause for debate regarding the relevance of payout policy as reality is far from perfect.

Black (1976) problematizes the debate further by arguing that the dividend picture is a complex puzzle with pieces that do not fit together. On the contrary, DeAngelo and DeAngelo (2006) claim that Black's dividend puzzle is a non-puzzle, as his assumptions are rooted in the mistaken idea that MM's irrelevance theorem is applicable to payout and retention decisions.

The bird in the hand theory argues that investors seek after stocks with large dividends, as they value a dividend today higher than uncertain capital gains in the future. This line of argument also serves as a counterpoint to MM's irrelevance theorem, as MM insists that investors are indifferent to stock returns in the shape of dividends or capital gains.

One could argue that taxable investors would prefer that companies reinvest excess cash in profitable growth opportunities if cash dividends are subject to double taxation or that companies repurchase shares if the dividend tax rate is higher than the tax rate applied to capital gains. This preference of taxable investors should have been somewhat mitigated by the 2003 U.S. dividend tax cut, which, among other provisions, reduced the maximum dividend tax rate from 38% to 15% (Amromin, Harrison and Sharpe, 2006).

Jagannathan, Stephens and Weisbach (2000) suggest that dividends are paid out by companies with higher "permanent" operating cash flows, while repurchases are made by companies with higher "temporary" non-operating cash flows. Moreover, they highlight that repurchases are often made in conjunction with poor stock performance, and dividends are paid out following periods of good performance. Previous research that sought to explain why companies repurchase shares has found that companies repurchase shares opportunistically when they believe the company's stock to be undervalued (Dittmar, 2000). By studying 384 CFOs and treasurers, Brav et al. (2005) argue that executives increasingly consider repurchases to be a more flexible tool than dividend payouts and that repurchases are mainly made due to perceived undervaluation or in an attempt to increase EPS.

By gathering data on U.S. listed companies during 1971-2019, Kahle and Stulz (2021) found that annual aggregate payouts are more than three times higher during 2000-2019 compared to 1971-1999, whereof 63% of that increase is accounted for by increased payouts, and 37% is due to increased operating income. They also underline the fact that average dividends only increased from 14.39% to 14.42% of operating income between those two time periods, while repurchases increased from 4.80% to 19.27%. These findings suggest that the increased corporate payouts during the 21$^{st}$ century are mainly driven by increased share repurchases, while dividends have largely increased in conjunction with operating income.

## 2.2 Executive stock incentives

Executive stock and stock option awards are commonly used as a way of aligning the interests of executives with the ones of shareholders. Executive compensation has increased rapidly during the last decades. Due to this rapid growth, Frydman and Jenter (2010) studied the evolution of CEO compensation and found that both executive power and competitive market forces were important determinators of the increase, but neither is consistent with the available evidence to a full extent.

Lang and Litzenberger (1986) and Lambert et al. (1989) highlight the fact that executive stock options are generally not dividend protected. Murphy (1999) studied 618 CEOs of large companies in 1992 that were awarded stock options and found that only seven of those were granted dividend protected ones. Furthermore, Lang and Litzenberger (1986) argue that executives reduce dividends to preserve the value of their non-dividend protected stock options. Due to accounting rules, companies are strongly incentivized to use fixed-plan options, which do not allow for dividend protection, instead of using variable-plan options (Fenn and Liang, 2001).

U.S. regulations governing executive compensation disclosure rules have changed over time. In 1992, the SEC adopted extensive alterations to its executive compensation rules, making such data publicly available in definitive proxy agreements. In addition, the SEC amended the executive compensation disclosure rules further in 2006, with the aim of further decreasing information asymmetry. The 2009 financial crisis provided cause to amend the executive compensation rules further, which ultimately resulted in additional amendments made by the SEC during the same year.

## 2.3 Agency problem

Jensen (1986) formulated the free cash flow hypothesis, which can be considered the main agency problem relating to the relationship between executive stock incentives and corporate payout policy. According to Jensen, free cash flow is cash in excess of that required to fund all NPV positive investments.

By payouts to shareholders, the amount of resources under executive control is reduced, which in length decreases their power. In comparison to internal financing, companies are subject to closer monitoring and greater risk of available or unavailable capital at higher prices when required to raise funds externally from capital markets, which further motivates executives to retain excess cash. Furthermore, executives are incentivized to grow companies beyond their optimal sizes because more resources under executive control imply increased power. (Jensen, 1986) Larger company size is also empirically proven to increase executives' compensation, which further is cause for retaining excess cash in order to grow the company larger (Murphy, 1985). Baker, Gibbs and Holmstrom (1993) found that promotions seem to be the main source of monetary reward for managers, which also suggests an organizational bias towards growth in company size.

Jensen (1986) argues that the conflict of interest between executives and shareholders over corporate payout policies is most severe for companies with high levels of free cash flow. More specifically, the conflict of interest refers to the problem that executives invest the free cash flow below the cost of capital or on other inefficiencies rather than distributing the excess cash to shareholders.

# 3 Data description

The data sample is collected from the S&P's Compustat and Execucomp databases. We use the Compustat database as the source for cash dividends, stock repurchases and firm characteristics. Compustat's data is extracted from companies' 10-K (annual) and 10-Q (quarterly) SEC filings. Moreover, we use the Execucomp database for data on executive stock and stock option ownership. Execucomp's data is extracted from the SEC form DEF 14A (definitive proxy agreement). Data from Execucomp covers up to nine executives annually per company. However, most companies only report data on five executives. The titles of the executives covered by the data can vary, but in general, it includes the company's CEO and the Chief Financial Officer (CFO) or anyone acting in those roles during the fiscal year, regardless of compensation level. Other than the CEO and CFO, the company's three highest-paid executives are included.

## 3.1 Sample selection

First, 2015-2019 fiscal year-end data is collected from Compustat and Execucomp on companies included in the S&P 1500, which includes the S&P 400, S&P 500 and S&P 600 Indices. After combining the two datasets, we then eliminate all annual observations with missing values for any of our data variables.

Further, we eliminate financial, utility and telephone companies from the dataset. Financial companies are excluded for a number of arguments, but most importantly, because Compustat does not provide data on financial companies' stock repurchases. Utility and telephone companies are eliminated because the heavy regulation may have a significant impact on their corporate payout policies (Smith and Watts, 1992). Subsequently, we are left with 3893 annual observations for 1037 companies, with one to five annual observations per company.

As this study focuses on average corporate payout policy over a longer-term than two years, we exclude all companies with only one or two annual observations. This exercise leaves us with a final sample size of 3598 annual observations for 849 companies, where 196 companies have three annual observations, 255 companies have four annual observations, and 398 companies have five annual observations. Lastly, we adjust for extreme outliers by performing a 98% winsorization of all data variables.

## 3.2 Data variables

Our payout variables include cash dividends, stock repurchases and total payout. Dividend payout is calculated by dividing cash dividends on common and preferred stock (Compustat item DV) with the market value of common stock (Compustat item MKVALT). Repurchase payout is calculated by dividing purchase of common and preferred stock (Compustat item PRSTKC) by the market value of common stock. Lastly, the total payout is given by the sum of cash dividends and stock repurchases.

The executive stock incentive variables include executive stock and stock option ownership. Executive stock ownership is calculated by dividing the total shares owned by executives, excluding stock options (Execucomp item SHROWN_EXCL_OPTS) divided by the total shares outstanding. Executive stock option ownership is calculated by dividing the sum of unexercised exercisable options (Execucomp item OPT_UNEX_EXER_NUM) and unexercised unexercisable options (ExecuComp item OPT_UNEX_UNEXER_NUM) with the total shares outstanding.

Table 1. Sample distribution

*The sample comprises 849 companies included in the S&P 1500 with three or more observations during the sample period 2015-2019. Other than observations that are missing values, we have excluded financial firms (GICS=40), utilities (GICS=55) and telephone companies (SIC=4813). Dividends refer to cash dividends and repurchases, and market value and shares outstanding refer to common stock. Data on executives' shares and options are extracted from Execucomp and cover up to nine executives annually per company. However, most companies only report data on the top five executives. Except for EBIT volatility, all data are averages on a firm basis over the sample period. EBIT volatility is the standard deviation of EBIT on a firm basis over the sample period.*

| | | | Percentlie | | | | |
|---|---|---|---|---|---|---|---|
| Variable | Mean | Standard deviation | Minimun | 25th | 50th | 75th | Maximum |
| *a. Payouts variables* | | | | | | | |
| Dividends/market value | 0.014 | 0.016 | 0.000 | 0.000 | 0.010 | 0.021 | 0.100 |
| Repurchases/market value | 0.026 | 0.025 | 0.000 | 0.006 | 0.019 | 0.040 | 0.153 |
| Total payout/market value | 0.040 | 0.031 | 0.000 | 0.015 | 0.036 | 0.058 | 0.215 |
| Repurchases/total payout | 0.647 | 0.325 | 0.000 | 0.386 | 0.682 | 1.000 | 1.000 |
| *b. Executive stock incentive variables* | | | | | | | |
| Executive shares/shares outstanding | 0.027 | 0.053 | 0.000 | 0.003 | 0.007 | 0.020 | 0.309 |
| Executive options/shares outstanding | 0.011 | 0.014 | 0.000 | 0.001 | 0.006 | 0.015 | 0.079 |
| *c. Other explanatory variables* | | | | | | | |
| Net operating cash flow/assets | 0.096 | 0.076 | -0.227 | 0.061 | 0.090 | 0.132 | 0.352 |
| Market-to-book assets | 2.381 | 1.485 | 0.840 | 1.419 | 1.910 | 2.766 | 10.113 |
| Log of assets | 3.534 | 0.677 | 2.051 | 3.048 | 3.459 | 3.988 | 5.327 |
| Debt/assets | 0.275 | 0.190 | 0.000 | 0.136 | 0.261 | 0.376 | 0.986 |
| EBIT volatility/assets | 0.037 | 0.045 | 0.003 | 0.013 | 0.023 | 0.042 | 0.304 |

Lastly, we use a set of control variables. Companies with relatively higher levels of free cash flow will have a more generous corporate payout policy, according to agency cost-related theories. As high levels of free cash flow imply a heightened risk of pursuing value-destroying investments, companies with such characteristics have more to gain from payouts to shareholders through dividends or repurchases. We use capital expenditures subtracted from earnings before interest, tax, and depreciation (EBITDA), stated as "Net operating cash flow" in the tables, divided by assets as one of our control variables for free cash flow.

Furthermore, fewer NPV positive investment opportunities suggest larger payouts, according to agency cost-related theories. Therefore, we use the commonly applied measure of market-to-book assets as an estimate of investment opportunities available to companies.

As companies with a lower marginal cost of financing recognize that they can raise funds at a relatively lower cost in the future if needed, due to negative profit shocks or more available NPV positive investments opportunities than anticipated, they are prone to pursue a more generous corporate payout policy. We use company size as a control variable for external financing costs, which is measured by the log of assets. The line of argument here is that larger companies are more stable in terms of cash flow and less information asymmetrical, which implies a lower cost of financing (Smith and Watts, 1992; Opler and Titman, 1993).

Moreover, we use the debt to assets ratio as a control variable, even though it is not exogenous. With higher levels of leverage, there is an increased likelihood of financial distress, which in turn increases the marginal cost of financing.

As uncertainty over future earnings can increase the need to withhold cash for the future and thus reduce payouts, we use the volatility (standard deviation) of earnings before interest and taxes (EBIT) over the sample period divided by assets as our final control variable.

## 3.3 Sample distribution

The descriptive statistics of our payout, executive stock incentive and control variables are displayed in Table 1. In comparison to Fenn and Liang's (2001) findings, which were based on a similar sample size of companies included in the S&P 1500 during the time period 1993-1997, the average total payout relative to market value has increased by 0.015, with a modest increase in standard deviation as well. Furthermore, the mean repurchase share of total payouts is 0.647. Fenn and Liang (2001) reported a mean repurchase share of total payouts of 0.478, with a slightly higher standard deviation. This difference is in accordance with the empirical evidence that underlines that share repurchase is the main driver of the increase in payouts during the 21$^{st}$ century (Kahn and Stulz, 2021).

The means of both executive stock incentive variables in relation to total shares outstanding in our sample are just over halved in relation to the means presented in Fenn and Liang's (2001) sample, accompanied by lower standard deviations in our sample. A plausible explanation for this relative decrease is increased transparency as a consequence of stricter executive compensation disclosure rules adopted by the SEC over time. For instance, it became mandatory for companies to detailly report and describe all equity-based awards to executives in a "Summary Compensation Table" after the SEC amended the executive compensation disclosure rules (Securities and Exchange Commission, 2006). With increased readily accessible information available to key stakeholders, it would be conceivably easier to monitor and dispute questionable executive compensation packages. On the other hand, the relative decrease in executive stock incentives in relation to total shares outstanding could be explained by the substantial increase in the market value of companies included in the S&P 1500 since the 1990s, whereas the executive stock incentives might not have increased proportionally.

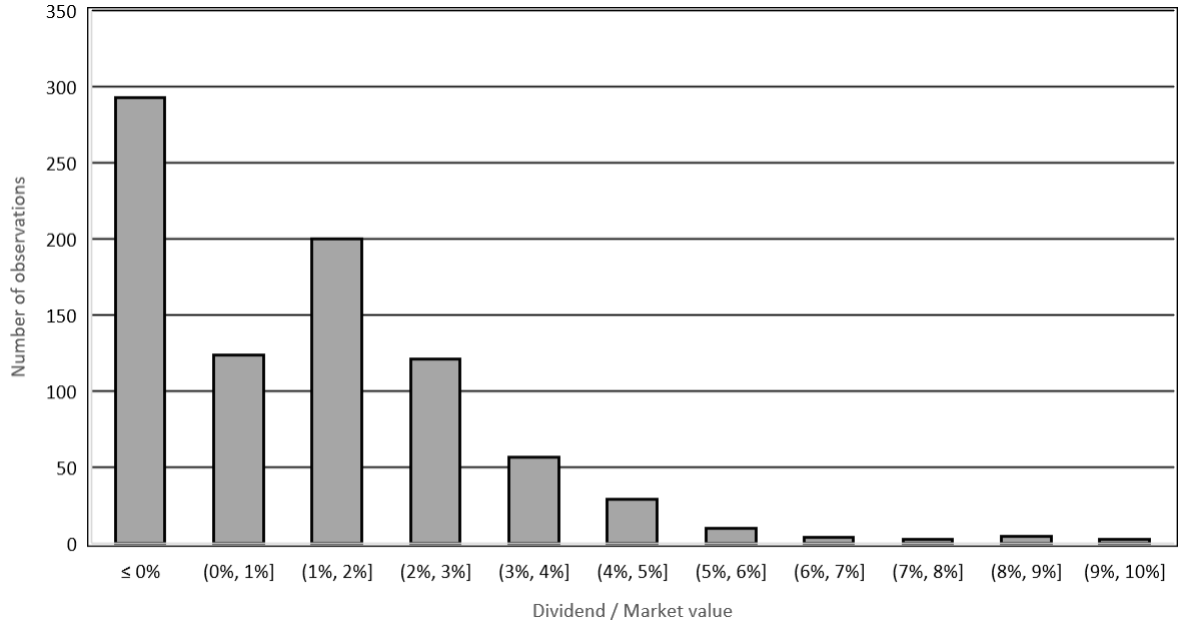
Despite the fact that the mean of executive stock ownership relative to total shares outstanding is about 2.45 times the mean of executive stock option ownership relative to total shares outstanding, the median of the first-mentioned quota is only 1.16 times the median of the latter mentioned one. This distribution of our sample is similar to Fenn and Liang's (2001) and is due to some extreme outliers that are partially addressed by the winsorization of the dataset.

Compared to Fenn and Liang's (2001) sample distribution of payouts, there is a similar share of the sample that is non-dividend-paying (Graph 1), while there is a smaller portion in our sample that does not repurchase shares (Graph 2). Consequently, there are relatively few companies that do not distribute any cash at all to shareholders through either dividends or share repurchases (Graph 3).

As opposed to the distribution of executive stock incentives as a percentage of total shares outstanding in Fenn and Liang's (2001) sample, there is a notable portion of companies with executives that do not hold any executive stocks or stock options at all in our sample (Graph 4 and 5). More specifically, the number of companies that do not grant any stock options to their executives seems to have increased.

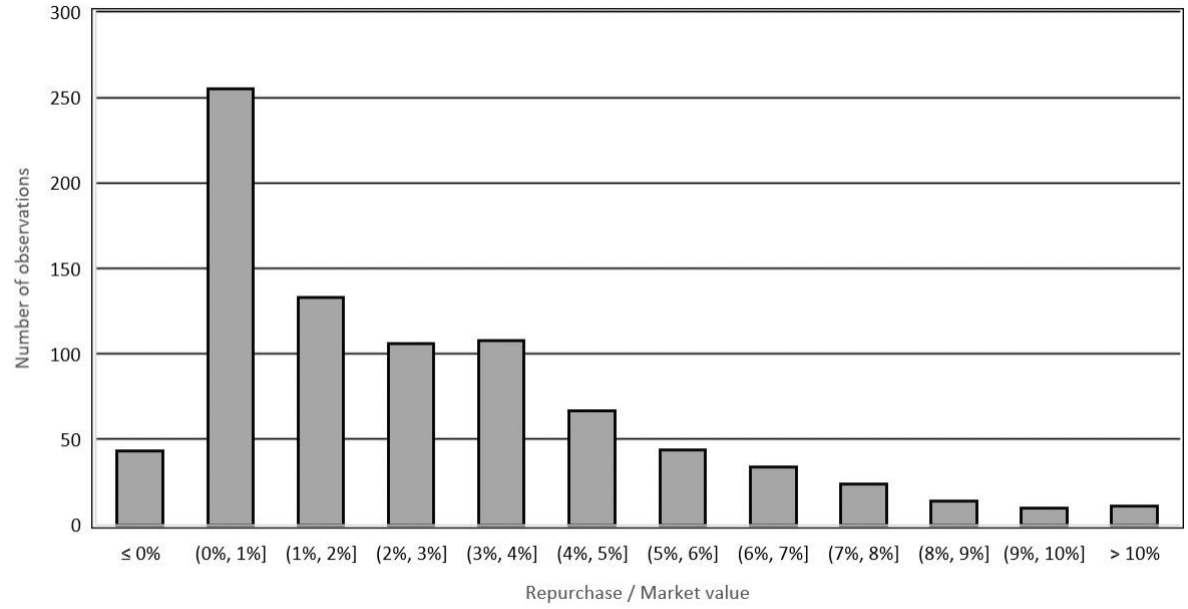
Graph 1. Dividend payout distribution

*The below table shows the distribution of dividend payout as a percentage of market value. The sample comprises 849 companies included in the S&P 1500 with three or more observations during the sample period 2015-2019.*



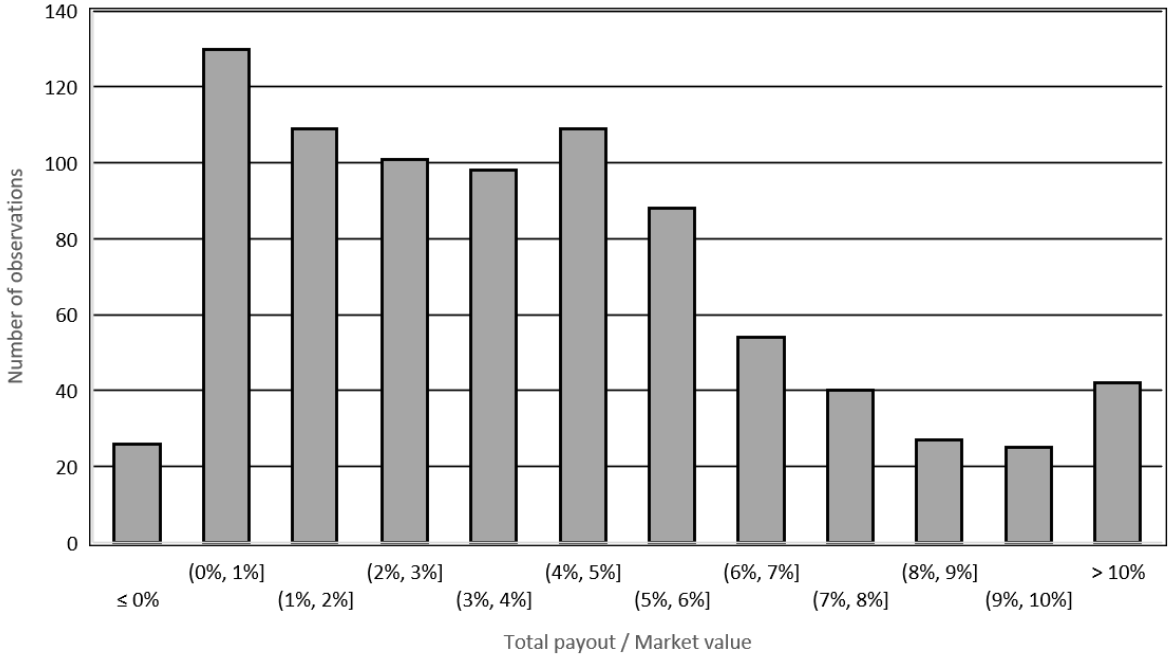

Graph 2. Repurchase payout distribution

*The below table shows the distribution of repurchase payout as a percentage of market value. The sample comprises 849 companies included in the S&P 1500 with three or more observations during the sample period 2015-2019.*



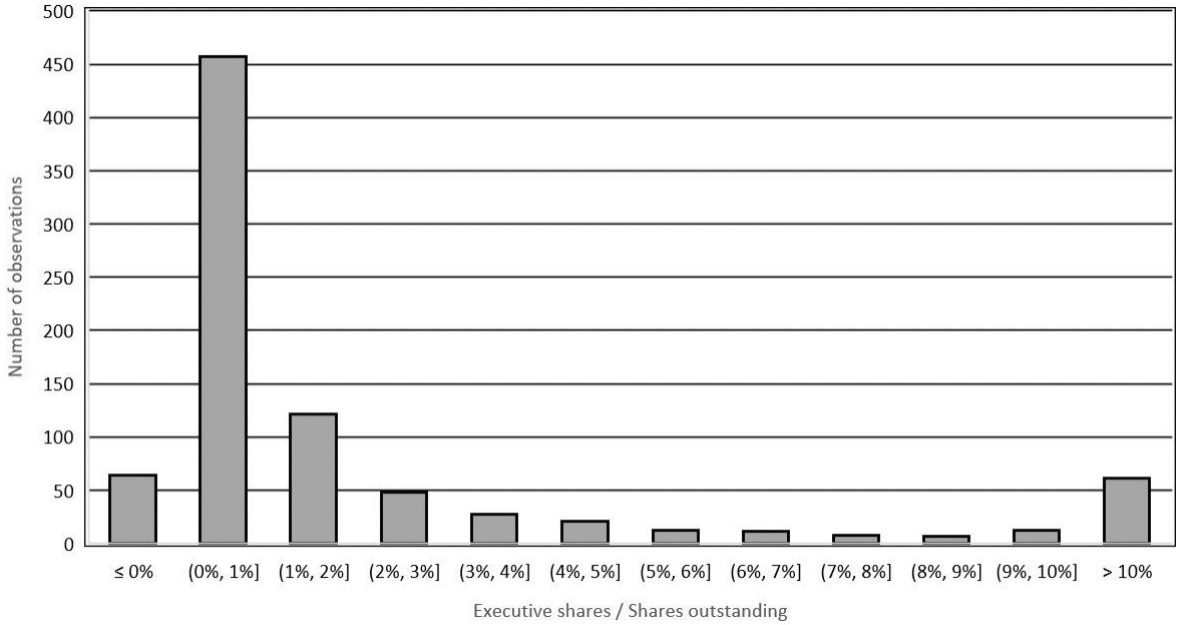
Graph 3. Total payout distribution

*The below table shows the distribution of total payout (e.g., the sum of dividend and repurchase) as a percentage of market value. The sample comprises 849 companies included in the S&P 1500 with three or more observations during the sample period 2015-2019.*



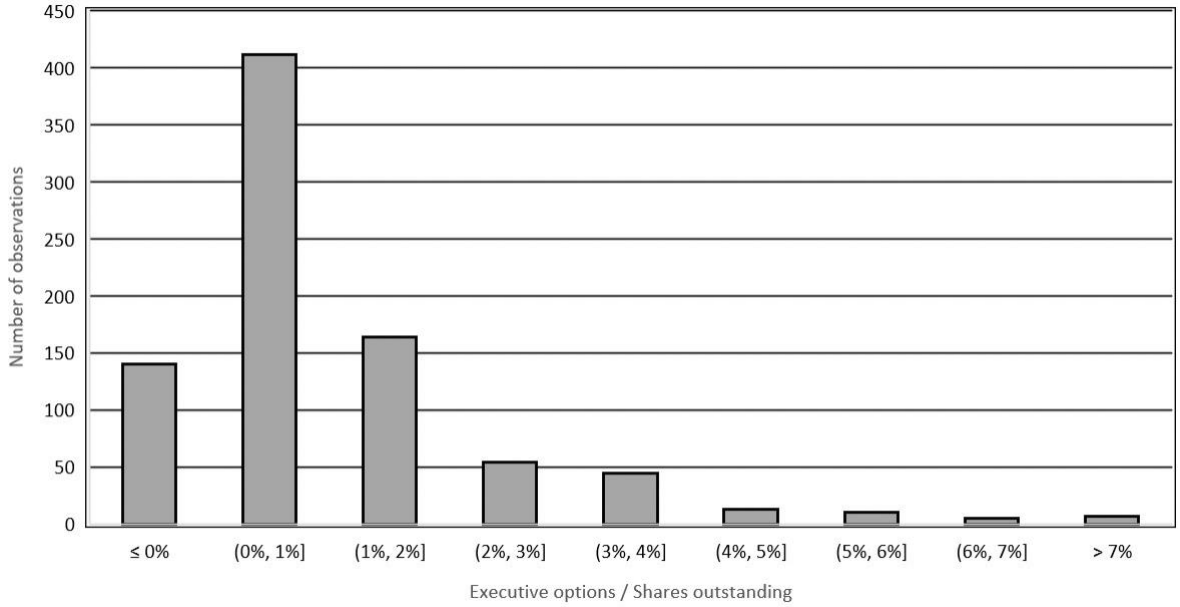

Graph 4. Distribution of executive shares as a percentage of shares outstanding

*The below table shows the distribution of executive held shares as a percentage of the total number of shares outstanding. The sample comprises 849 companies included in the S&P 1500 with three or more observations during the sample period 2015-2019.*



Graph 5. Distribution of executive options as a percentage of shares outstanding

*The below table shows the distribution of executive held stock options as a percentage of the total number of shares outstanding. The sample comprises 849 companies included in the S&P 1500 with three or more observations during the sample period 2015-2019.*




## 3.4 Data limitation

Even though Execucomp offers a robust set of data on executive compensation, owing to the SEC's compensation disclosure rules, there is no possibility to obtain more granular data on options from the definitive proxy agreements that, for instance, distinguish dividend protected option grants from non-dividend protected ones. By being able to control for dividend protection, it would be possible to enhance the controlling for the endogenous effect that option holding executives have on dividend payout policy. Due to this data granularity limitation, we rely on the notion that executive held stock options are rarely dividend protected (Lang and Litzenberger, 1986; Lambert et al., 1989; Murphy, 1999).

Compustat item PRSTKC (purchase of common and preferred stock), used as a measure for stock repurchases, includes repurchase and redemption of both common and preferred stock. Moreover, this item exaggerates actual repurchases because it may include a notable amount of other common stock repurchases that are subject to premiums and made for other reasons than to distribute cash to shareholders, such as self-tender offers and privately negotiated transactions that are related to take-over defenses and greenmailing. Lastly, this item aggregates several other classes of securities that are converted into common and preferred stock. (Stephens and Weisbach, 1998; Jagannathan et al., 2000).

Fenn and Liang (2001) addressed the exaggeration of the item by manually investigating all repurchases that are larger than 5% of the company's market value for the occurrence of any undesirable transactions described above, arguing that the selected cutoff would capture most cases of an overstatement. This exercise resulted in the identification of 65 annual observations of repurchases, roughly 1.4% of the full sample, that were treated as

missing values. An alternative approach to this issue is suggested by Stephens and Weisbach (1998), who use the monthly decrease in total shares outstanding reported by the Center for Research in Security Prices and exclude other activities that affect the outstanding number of shares, for example, stock splits. We take the item's overstating of repurchases into account to some extent by performing an arguably conservative 98% winsorization of the dataset. Compustat item PRSTKCC (purchase of common stock) provides a limited amount of data, with missing values for a vast majority of the annual observations and is therefore not a viable data item for our sample.

Similarly, the Compustat item DV (cash dividends on common and preferred stock) exaggerates regular cash dividend payouts, as it also includes special dividend payments and cash dividends on preferred stock. Although special dividends were customary several decades ago, DeAngelo, DeAngelo and Skinner (2000) underline that they are seldomly paid out nowadays. In a similar fashion to repurchases, Fenn and Liang (2001) manually investigated all dividends payouts that are larger than 5% of the company's market value for any special dividend payments. This exercise resulted in the identification of four annual observations, almost 0.1% of the full sample that were treated as missing values and therefore deleted. Our 98% winsorization of the dataset aims to take these extreme outliers, in the shape of special dividend payments, into consideration. Compustat item CDVC (cash dividends on common stock) only provides data for utility companies and is therefore not usable for this study.

# 4 Methodology

For the purpose of examining whether the deployment of cash flows is correlated with executive stock incentives, we use data on U.S. companies included in the S&P 1500 and a similar methodology to the one employed in the study made by Fenn and Liang (2001).

The decision to use a sample with U.S. companies has various benefits attached to it. First, the U.S. is the world's largest economy. The companies included in the S&P 1500 correspond to more than 90% of the U.S. market capitalization (S&P Global, 2020), and in turn, the U.S. economy accounted for 55.9% of the world's total equity market value in January 2021 (Statista, 2021). Thus, S&P 1500 provides a large scope for the study. Second, the high accessibility of data for U.S. firms limits the number of observations we must exclude from our sample due to missing values and, consequently, too few annual observations, as we eliminate companies with less than three annual observations. Lastly, U.S. companies are all subject to the same federal regulations. If we instead were to conduct our study on European companies, there is a risk of the sample being skewed as companies from different countries face different legislation on a national level, both with respect to executive compensation disclosure rules and corporate payout policy.

For the means of this study, we have chosen to exclude data from 2020 and onwards due to the Covid-19 pandemic's large impact on firms' corporate payout policies (Awad, Ferreira, Jociene and Riedweg, 2021). In order for the study to reflect a steady market environment, we have investigated our research question from 2015 through 2019, during which no unexpected events resulting in many major outliers occurred. After adjustments, our sample consisted of 849 companies included in the S&P 1500 during the sample period. The dataset was used to examine how dividend payouts, share repurchases and total payout (the sum of dividends and repurchases), on average per company during the sample period, were affected by executive stock incentives and firm characteristics. As the study aims to capture

the long-term payout policy of companies, our sample only includes companies with three or more annual observations. That way, we account for the impact of undesirable transactions, such as dividend payments made to signal high earnings or repurchases caused by a belief of undervaluation (Fenn and Liang, 2001).

To answer the research question, we estimate one Tobit regression model for each of our four payout determinants; the dollar value of dividends, repurchases and total payout (sum of dividends and repurchases) divided by market value as well as the repurchase dollar share of total payouts (Table 2). Since dividends and repurchases cannot be negative amounts, thus having a lower bound of zero, the Tobit regressions for dividend, repurchase and total payout are all censored at zero. For similar reasons, as repurchases must be between zero and a hundred percent of total payouts, the Tobit regression model for the repurchase share of total payouts is left-censored at zero and right-censored at one.

$$DIV\_MV_i = y_i^* = \beta_0 + \beta_1 SHARES\_SO_i + \beta_2 OPTIONS\_SO_i + \beta_3 NOCF\_ASSETS_i + \beta_4 MTBASSETS_i + \beta_5 LOG\_ASSETS_i + \beta_6 DEBT\_ASSETS_i + \beta_7 EBITVOL\_ASSETS_i + \varepsilon_i$$

$$where y_i = \begin{cases} y_i^* \ for \ y_i > 0 \\ 0 \ for \ y_i \leq 0 \end{cases}$$

$$REP\_MV_i = y_i^* = \beta_0 + \beta_1 SHARES\_SO_i + \beta_2 OPTIONS\_SO_i + \beta_3 NOCF\_ASSETS_i + \beta_4 MTBASSETS_i + \beta_5 LOG\_ASSETS_i + \beta_6 DEBT\_ASSETS_i + \beta_7 EBITVOL\_ASSETS_i + \varepsilon_i$$

$$where y_i = \begin{cases} y_i^* \ for \ y_i > 0 \\ 0 \ for \ y_i \leq 0 \end{cases}$$

$$TOTPO\_MV_i = y_i^* = \beta_0 + \beta_1 SHARES\_SO_i + \beta_2 OPTIONS\_SO_i + \beta_3 NOCF\_ASSETS_i + \beta_4 MTBASSETS_i + \beta_5 LOG\_ASSETS_i + \beta_6 DEBT\_ASSETS_i + \beta_7 EBITVOL\_ASSETS_i + \varepsilon_i$$

$$where y_i = \begin{cases} y_i^* \ for \ y_i > 0 \\ 0 \ for \ y_i \leq 0 \end{cases}$$

$$REP\_TOTPO_i = y_i^* = \beta_0 + \beta_1 SHARES\_SO_i + \beta_2 OPTIONS\_SO_i + \beta_3 NOCF\_ASSETS_i + \beta_4 MTBASSETS_i + \beta_5 LOG\_ASSETS_i + \beta_6 DEBT\_ASSETS_i + \beta_7 EBITVOL\_ASSETS_i + \varepsilon_i$$

$$where \ y_i = \begin{cases} 1 \ for \ y_i \geq 1 \\ y_i^* for \ 0 < y_i < 1 \\ 0 \ for \ y_i \leq 0 \end{cases}$$

Reported are the marginal effects and the marginal effects times one standard deviation of the explanatory variable, both multiplied by 100 in order for them to reflect a one percentage point change in the payout variables. The purpose for multiplying the marginal effect with the standard deviation of the explanatory variables is to reflect the impact a one standard deviation change in the independent variable has on the payout variable.

Further, we examine the effects of executive ownership in the firms with possibly the greatest exposure to agency problems. The alignment between executives and shareholders can be argued to increase with stock incentives to a point where the executives are fully aligned with shareholders' interest, after which additional executive stock incentives will not have an effect. Thus, the subsample only includes companies with low executive ownership, defined by Morck, Shleifer and Vishny (1988) as less than 5%. Moreover, the log of dollar-value executive shares that are below the sample median is used as the relative definition for low executive ownership. To control for the firms within which agency problems are the most present, we employ the definition for high free cash flow firms by Opler and Titman (1993); included are companies that both have net operating cash flow above the sample median and market-to-book assets below the sample median.

$$DIV\_MV_i = y_i^* = \beta_0 + \beta_1 SHARES\_SO_i + \varepsilon_i$$

$$where y_i = \begin{cases} y_i^* \; for \; y_i > 0 \\ 0 \; for \; y_i \leq 0 \end{cases}$$

$$REP\_MV_i = y_i^* = \beta_0 + \beta_1 SHARES\_SO_i + \varepsilon_i$$

$$where y_i = \begin{cases} y_i^* \; for \; y_i > 0 \\ 0 \; for \; y_i \leq 0 \end{cases}$$

$$TOTPO\_MV_i = y_i^* = \beta_0 + \beta_1 SHARES\_SO_i + \varepsilon_i$$

$$where y_i = \begin{cases} y_i^* \; for \; y_i > 0 \\ 0 \; for \; y_i \leq 0 \end{cases}$$

Another way of separating high agency costs firms from the sample would be to extract companies with a market value of assets less than their book values, i.e., market-to-book assets of less than one, applying this conventional cutoff used in Fenn and Liang (2001). However, that measure includes companies that historically have had low earnings and consequently lack cash flows, as well as problems finding proper growth opportunities. From that perspective, the definition provided by Opler and Titman (1993), which instead considers the net operating cash flows of companies, seems to be a superior option. Moreover, when extracting the companies with market-to-book assets of less than one from our subsample, we were left with only eighteen companies for each of the definitions for low executive ownership. Using the same sample but for the time period 1993 to 1997, Fenn and Liang (2001) had 224 and 99 companies with market-to-book assets of less than one for the two measures for low executive

ownership, respectively. The decrease in the number of companies fulfilling those requisites could find its explanation in the decrease in interest rates between the two sample periods, driving higher company valuations. Anyhow, we would not be able to draw any conclusions from the subsample using market-to-book assets of one cutoff as a measure of high agency costs, given the small number of observations.

To control for the limitations to investigating our research question with the methodology described above, we test for robustness. As industry-specific aspects might impact payout policy and other characteristics of firms, we find it sensible to control for these issues. Taking the systematic differences between industries into account, we perform an OLS regression which controls for industry fixed effects, using the GIC industry classification codes.

$$DIV\_MV_i = y_i^* = \beta_0 + \beta_1 SHARES\_SO_i + \beta_2 OPTIONS\_SO_i + \beta_3 NOCF\_ASSETS_i + \beta_4 MTBASSETS_i + \beta_5 LOG\_ASSETS_i + \beta_6 DEBT\_ASSETS_i + \beta_7 EBITVOL\_ASSETS_i + FE_n + \varepsilon_i$$

$$REP\_MV_i = y_i^* = \beta_0 + \beta_1 SHARES\_SO_i + \beta_2 OPTIONS\_SO_i + \beta_3 NOCF\_ASSETS_i + \beta_4 MTBASSETS_i + \beta_5 LOG\_ASSETS_i + \beta_6 DEBT\_ASSETS_i + \beta_7 EBITVOL\_ASSETS_i + FE_n + \varepsilon_i$$

$$TOTPO\_MV_i = y_i^* = \beta_0 + \beta_1 SHARES\_SO_i + \beta_2 OPTIONS\_SO_i + \beta_3 NOCF\_ASSETS_i + \beta_4 MTBASSETS_i + \beta_5 LOG\_ASSETS_i + \beta_6 DEBT\_ASSETS_i + \beta_7 EBITVOL\_ASSETS_i + FE_n + \varepsilon_i$$

The variables of the above models are defined as follows:

| | |
|---|---|
| *DIV_MV* | *= Dividend payout divided by market value* |
| *REP_MV* | *= Repurchase payout divided by market value* |
| *TOTPO_MV* | *= Total payout divided by market value* |
| *REP_TOTPO* | *= Repurchase share of total payout* |
| *SHARES_SO* | *= Executive shares as a percentage of shares outstanding* |
| *OPTIONS_SO* | *= Executive options as a percentage of shares outstanding* |
| *NOCF_ASSETS* | *= Net operating cash flow divided by assets* |
| *MTBASSETS* | *= Market-to book assets* |
| *LOG_ASSETS* | *= Log of assets* |
| *DEBT_ASSETS* | *= Debt divided by assets* |
| *EBITVOL_ASSETS* | *= EBIT volatility divided by assets* |
| $FE_n$ | *= Industry fixed effects as defined by GIC industry codes* |

# 5 Empirical results

The findings primarily constituting the empirical results obtained through this study are reported in Table 2. The table includes a tobit regression for each of the four payout variables, of which dividend payout, repurchase payout and total payout are left-censored at zero, and the repurchase share of total payout is censored between zero and one. Displayed in the table are the marginal effects (first entry) at the mean of the exogenous variables and the marginal effect multiplied with one standard deviation of the explanatory variable (second entry). Both values are multiplied by 100 to reflect basis point changes in the payout variables.

The results for executive stock ownership are reported in the first row of Table 2. The findings show no indications that executive held stocks would imply a change in total payout nor in repurchases. However, with a significance level of 3%, executive stock holdings seem to correlate positively with dividend payouts. One standard deviation increase in executive stock ownership suggests an 11 basis point increase in dividend payout. Reflected in the results for executive stock ownership is also a negative correlation with the repurchase share of total payout, consistent with the positive marginal effect of dividend payout.

Moving on to the second row of Table 2, we find a strong negative correlation between executive stock option ownership and dividend payouts, showing that a one standard deviation increase in executive stock option ownership implies a 22 basis point decrease in dividend payouts. Further, we observe a positive relation of similar magnitude between executive option holdings and repurchase payouts. A one standard deviation increase in executive held stock options implies a 17 basis point increase in repurchase payouts, suggesting that approximately three-quarters of the decrease in dividends induced by executive options are directed towards repurchases. No visible link between executive stock option ownership and total payout is to be found. However, in consistency with the finding that executive stock option ownership is positively (negatively) correlated with repurchases (dividends), executive option ownership shows a strong positive association with the repurchase share of total payout.

Both dividends and repurchases grow in conjunction with companies' net operating cash flow and are positively correlated with the log of assets, implying that low external financing costs increase payouts. The results estimate that one standard deviation decrease in net operating cash flow implies increases in dividends and repurchases of 43 and 73 basis points, respectively, and that one standard deviation increase in the log of assets suggests increases of 33 and 44 basis points in dividends and repurchases respectively. The changes in dividends and repurchases for both net operating cash flow and log of assets explain most of their corresponding increase in total payouts of 117 and 72 basis points, respectively. Further, market-to-book assets correlate negatively with payouts, which proposes that payouts are higher in companies with few investment opportunities. Similarly, the 63 basis point decrease in total payout, induced by one standard deviation increase in market-to-book assets, could to a large extent be explained by decreases in dividends and repurchases, showing negative responses of 29 and 33 basis points respectively to a one standard deviation increase in market-to-book assets.

Total payout in the sample seems to correlate positively with both debt to assets and the volatility of EBIT to assets. However, with the exception of the positive relation between debt to assets and dividend payouts, neither of the explanatory variables shows significant results with the remaining payout variables. Moreover, debt to assets, or leverage, is not exogenous and therefore could correlate with error terms of our regression, which might be a plausible explanation for the positive correlation. Fenn and Liang (2001) hypothesize that companies with little to no debt have that capital structure as a consequence of their risk profile and face a greater cost of financing, while highly leveraged companies are close to their debt capacity

and have a high cost of financing around their limit, which could cause a u-shaped relationship. Because of that, leverage and payouts may correlate positively at lower levels of leverage, which is in line with our results and is, therefore, a conceivable explanation for the observed positive associations between leverage and payouts.

Table 2. Tobit estimates of payout determinants

*The sample comprises 849 companies included in the S&P 1500 with three or more observations during the sample period 2015-2019. The regression for repurchase share excludes companies with no payouts. Except for EBIT volatility, all data are averages on a firm basis over the sample period. EBIT volatility is the standard deviation of EBIT on a firm basis over the sample period. Reported in the table are the marginal effect (first entry) and the marginal effects times the standard deviation of the exogenous variable (second entry). Both are multiplied by 100 to reflect basis point changes in the endogenous variable. The p-value is reported in parentheses. The regressions for all payout variables, except for the repurchase share of total payout, which is censored between 0 and 1, are left-censored at 0.*

| Independent Variables | Dividend payout | Repuchase payout | Total payout | Repurchase share |
|---|---|---|---|---|
| *Executive stock incentive variables* | | | | |
| 1. Executive shares/shares outstanding | 2.05* | -1.45 | 0.69 | -52.63* |
| | 0.11 | -0.08 | 0.04 | -2.80 |
| | (0.03) | (0.32) | (0.70) | (0.02) |
| 2. Executive options/shares outstanding | -16.62** | 12.70* | 1.22 | 444.32** |
| | -0.22 | 0.17 | 0.02 | 6.01 |
| | (0.00) | (0.04) | (0.87) | (0.00) |
| *Other explanatory variables* | | | | |
| 3. Net operating cash flow/assets | 5.71** | 9.57** | 15.39** | -51.17** |
| | 0.43 | 0.73 | 1.17 | -3.89 |
| | (0.00) | (0.00) | (0.00) | (0.01) |
| 4. Market-to-book assets | -0.29** | -0.33** | -0.63** | 3.40** |
| | -0.43 | -0.49 | -0.94 | 5.05 |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| 5. Log of assets | 0.49** | 0.66** | 1.06** | -7.69** |
| | 0.33 | 0.44 | 0.72 | -5.21 |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| 6. Debt/assets | 0.98** | 0.68 | 2.09** | -7.88 |
| | 0.19 | 0.13 | 0.40 | -1.49 |
| | (0.00) | (0.10) | (0.00) | (0.20) |
| 7. Volatility of EBIT/assets | 1.86 | -0.77 | 5.09* | -13.70 |
| | 0.08 | -0.03 | 0.23 | -0.61 |
| | (0.15) | (0.69) | (0.03) | (0.65) |
| Number of observations | 849 | 849 | 849 | 825 |
| Mean of independent variable times 10^2 | 1.36 | 2.63 | 4.03 | 64.70 |
| Log likelihood | 1148.8 | 1692.1 | 1701.9 | -581.7 |

**Statistically significant at 1% level.
*Statistically significant at 5% level.

## 5.1 Executive stock incentives' potential to mitigate agency problems

This study intends to examine whether executive stock incentives can help mitigate the free cash flow problem defined by Jensen (1986). The empirical results from Table 2 provide evidence for the presence of agency problems, as executive stock incentives, especially executive held stock options, have an impact on the composition of payouts. However, we find no support that neither executive stock nor stock option ownership mitigates these problems, given the insignificance in the results for total payouts.

One possible explanation of this could be non-linearity between the payout variables and executive ownership. Morck et al. (1988) argue that the alignment of interests between executives and shareholders through executive stock incentives will increase to a point where the executives pursue a corporate payout policy in line with the preferences of shareholders. Nevertheless, the positive correlation between executive stock incentives and payouts could be argued to be most significant at low levels of executive stock incentive ownership.

Correspondingly, executive stock incentives could be debated to have the most impact on and be of most importance to companies where agency costs of free cash flow problems are the greatest. Thus, aligned with this purpose, we find it interesting to investigate how executive stock incentives affect payouts for firms where the free cash flow problem is most present.

Table 3. Tobit estimates, subsample

*Included are only firms with below-median market-to-book assets and above-median net operating cash flow. The upper panel comprises companies with less than 5% executive ownership, and the bottom panel include companies with below-median dollar-value executive shares. Reported in the table are the marginal effect (first entry) and the marginal effects times the standard deviation of the exogenous variable (second entry). Both are multiplied by 100 to reflect basis point changes in the endogenous variable. The p-value is reported in parentheses. The regressions for all payout variables are left-censored at 0.*

| Independent Variables | Dividend payout | Repuchase payout | Total payout |
|---|---|---|---|
| *a. Executive ownership variable: executive shares/shares outstanding* | | | |
| Executive shares <5% | -21.18 | 21.43 | -0.62 |
| High free cash flow | -0.22 | 0.23 | -0.01 |
| (n=163) | (0.30) | (0.50) | (0.99) |
| *b. Executive ownership variable: log (dollar-value executive shares)* | | | |
| Dollar-value executive shares < median | -1.20 | 1.54 | -1.03 |
| High free cash flow | -0.45 | 0.57 | -0.38 |
| (n=107) | (0.11) | (0.10) | (0.43) |

**Statistically significant at 1% level.

*Statistically significant at 5% level.

Aiming to examine whether executive stock incentives can help mitigate agency costs in firms with possibly the most severe free cash flow problem, we construct a sub-sample containing companies with low executive stock ownership and high agency costs. Using the high free cash flow firm definition by Opler and Titman (1993) as a measure for high agency cost firms, we only include firms with below-median market-to-book assets and above-median net operating cash flow in the sub-sample. Baker and Hall (1998) find that dollar-value executive ownership is a better measure for many incentive-based issues, like those examined in this study. Thus, we test for low executive ownership both percentual, for companies with less than five percent executive ownership, and monetarily, for companies with below-median log dollar-value executive shares, in the sub-sample reported in Table 3 above.

The results show no significant link between executive stock ownership and total payouts for any of the definitions of low executive ownership. Thus, neither non-linearity in the relationship between executive stock ownership and payouts nor higher effect of executive ownership in firms with serious agency problems seem to provide a sole explanation for the absence of apparent links between stock ownership and total payouts for the full sample.

While our results strongly reflect the presence of agency problems, such as the free cash flow problem, we cannot find any support for executive stock incentives mitigating these problems. Based on the results of this study, executive stocks and stock options seem to have large effects on the composition of payouts but not on the total payouts of the firm. This contrasts with the findings of Fenn and Liang (2001), who conclude that executive stock ownership actually is associated with increases in total payouts for companies with low executive ownership and possibly the most extreme agency problems.

## 5.2 Executive stock incentives' effect on the composition of payouts

As reflected by the results in Table 2, dividend payouts correlate positively with executive held shares. A plausible explanation for this could be that executives who are heavily invested in their employer and thus under-diversified in their personal portfolio would prefer dividends' liquidity benefits. By using dividends as a means for liquidating parts of their ownership in the company and enabling investments in other assets, executives avoid selling shares, which could reflect negatively on the company and its share price.

Contrarily, executive option ownership shows a strong negative correlation with dividend payout. The fact that executive stock options generally are not dividend protected (Lang and Litzenberger 1986; Lambert et al., 1989; Murphy, 1999) could be an explanation for the distinct results. When not dividend protected, the exercise price of the stock option does not decrease when dividends are paid out, leading to such stock options losing value as the stock price decreases. Hence, executives holding non-dividend protected stock options are financially incentivized to prefer repurchases over dividends as a method of payout. According to Fenn Liang (2001), the main reason for the norm of not dividend protecting executive options is a matter of accounting rules. If dividend protected, executive options must be treated as expenditures on the income statement, which is not the case if they are not. Hence, companies are strongly incentivized not to dividend protect their executives' options.

Furthermore, executive stock option ownership shows a positive relationship, with a marginal effect of similar magnitude to dividend payouts but positive, with repurchases. The dilution created by executive stock option grants provides support for the strong correlation, considering the dilution counteracting effect generated by share repurchases; companies compensate for the dilutive effect options have on earnings per share through share repurchase (Dittmar, 2000). Another plausible explanation for the positive relationship between executive

stock option ownership and repurchases is the usage of repurchases to offset the option-caused reduction in dividends, as predicted by Fenn and Ling (2001).

Lastly, the magnitudes of the negative marginal effects on dividends and positive marginal effects of repurchases in correlation with increases in executive held stock options suggest a substitutive relation between dividends and repurchases. With one standard deviation increase in executive options, dividends are estimated to decrease by 22 basis points, while repurchases are estimated to increase by 17 basis points. The results imply that most of the decrease in dividends is substituted to repurchase, hence supporting the matter of substitutability between the two. This is in accordance with the empirical evidence showing that the increase in payouts is driven by increased share repurchases (Kahle and Stulz, 2021).

## 5.3 Robustness

### 5.3.1 Endogeneity

In this study, the executive stock incentives, including executive held stocks and stock options, are treated as exogenous variables, while the corporate payout policy variables are considered to be endogenous. One could argue that this creates an endogeneity problem, as the relationships between executive stock incentives and corporate payout policy may be affected by unobservable characteristics or be subject to reverse causality.

According to Fenn and Liang (2001), the reverse causality narrative would suggest that the dollar value of executive stock incentives increases in conjunction with firm value as a consequence of exogenous changes in payouts. The reverse causality narrative would imply that executives exercise their stock options when the firm value increases as a result of higher dividend payouts. This narrative could explain that we observe negative associations between executive stock options and dividend payouts.

However, we observe a strong and positive relationship between executive stock options and repurchases, which suggests that executive stock incentives may cause executives to influence the corporate payout policy. Furthermore, this endogeneity problem is addressed when controlling for companies with potentially greatest agency problems – those with low executive stock ownership and relatively few investment opportunities or high levels of free cash flow.

### 5.3.2 Industry fixed effects

With the purpose of controlling whether the findings from the censored regressions reported in Table 2 and Table 3 are just mechanical or if there is robustness in the results, we perform an OLS regression using industry fixed effects. More specifically, we want to investigate whether and how the links found in previous tests are present when accounting for industry-specific differences. A limitation when performing regressions on samples including companies acting in various industries is the risk of skewness due to systematic differences between the industries. This issue could possibly have a substantial impact on our study considering that, for example, performance and risk within an industry could affect dividend policy or capital structure. Further, specific industries could for different reasons be associated with, for instance, higher margins, fewer investment opportunities or higher volatility in earnings, which ultimately could have an impact on our results.

The dummy variables for industries are defined using the GIC industry definition. Table 6 displays the results for each industry, showing strong correlations between some industries and the payout variables, whereas other industries do not seem to have any apparent links to the magnitude or the composition of payouts.

Table 4. OLS regression with industry fixed effects

*The sample comprises 849 companies included in the S&P 1500 with three or more observations during the sample period 2015-2019. The regression for repurchase share excludes companies with no payouts. Except for EBIT volatility, all data are averages on a firm basis over the sample period. EBIT volatility is the standard deviation of EBIT on a firm basis over the sample period. Reported in the table are the regression coefficients. The p-value is reported in parentheses.*

| Independent Variables | Dividend payout | Repuchase payout | Total payout | Repurchase share |
|---|---|---|---|---|
| *Executive stock incentive variables* | | | | |
| 1. Executive shares/shares outstanding | 0.02 | -0.03 | -0.01 | -0.67** |
| | (0.09) | (0.11) | (0.67) | (0.00) |
| 2. Executive options/shares outstanding | -0.08* | 0.24** | 0.16* | 3.07** |
| | (0.05) | (0.00) | (0.04) | (0.00) |
| *Other explanatory variables* | | | | |
| 3. Net operating cash flow/assets | 0.04** | 0.09** | 0.15** | -0.30 |
| | (0.00) | (0.00) | (0.00) | (0.12) |
| 4. Market-to-book assets | 0.00** | -0.00** | -0.01** | 0.01 |
| | (0.00) | (0.00) | (0.00) | (0.27) |
| 5. Log of assets | 0.00** | 0.01** | 0.01** | -0.07** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| 6. Debt/assets | 0.00 | 0.01** | 0.02** | 0.10 |
| | (0.33) | (0.01) | (0.00) | (0.11) |
| 7. Volatility of EBIT/assets | 0.03* | 0.00 | 0.07* | -0.18 |
| | (0.02) | (0.92) | (0.01) | (0.58) |
| Number of observations | 849 | 849 | 849 | 825 |
| Adjusted R-squared | 0.56 | 0.64 | 0.74 | 0.84 |
| Industry fixed effects | Yes | Yes | Yes | Yes |

**Statistically significant at 1% level.

*Statistically significant at 5% level.

The results displayed in Table 4 are similar to those computed in the tobit regression models reported in Table 2. Executive stock incentives' impact on the repurchase share of total payout shows the same signs. Furthermore, increases in stock options held by executives suggest higher repurchases at the expense of lower dividends. That is also in line with the findings from the tobit regression models, suggesting decreases in dividends, possibly due to the absence of dividend protection, as well as increases in repurchases when the proportion of executive options increases.

Somewhat surprisingly, we find a weaker or no link between increases in executive shares and dividend payout. While the negative correlation between executive shares and the repurchase share of total payout suggests that increases in stocks held by executives increase the proportion of dividends in relation to repurchases, the results show a positive correlation between executive stocks and dividend payout only at a 9% significance level. With regards to the stronger links in the tobit regression model in Table 2, we argue that executives' desire to liquidate parts of their assets in their employer without the negative effects of selling shares could explain a positive relationship between executive stock and dividend payouts. While the weaker links imply that this might not be the case, the OLS regression not being censored could potentially constitute a flaw with the regression model.

Noteworthy is also that executive options show positive associations with total payout. With the absence of apparent links between the executive stock incentive variables and total payout from the computations in Table 2 and Table 3, we argued that executive stock incentives have limited or no mitigating effect on the free cash flow problem. However, the findings from the OLS regression reported in Table 4 could, despite being relatively weak at a 4 percent significance level, imply some mitigating impact from executive held options. In practice, the positive correlation between executive held options and total payout suggests that executives, whose interests are better aligned with the ones of shareholders through option holdings, are more prone to distribute excess cash instead of using them for serving their own interests; hence mitigating the free cash flow problem as defined by Jensen (1986).

The findings for the firm characteristic variables are rather similar to those of the censored regression models with a few exceptions; we find weaker correlations between the repurchase share of total payout and both net operating cash flow and market-to-book assets. Also, we find stronger, positive links between repurchase and leverage as well as dividend and EBIT volatility.

While we find some noteworthy variations in the results, the OLS regressions do not account for payouts having a lower bound of zero and the repurchase share of total payout being truncated between zero and one, possibly affecting the results. Altogether, the OLS regression with industry fixed effects shows results similar to those of our main analysis, suggesting robustness in the findings of this study.

# 6 Conclusion

Using data on 849 companies included in the S&P 1500, with three to five annual observations per company from the fiscal year 2015 through the fiscal year 2019, we observe several important findings. We observe a strong negative relationship between executive stock options grants and dividends, which could be explained by the fact that executive stock options are rarely dividend protected. Moreover, we find a positive relationship between executive stock options and repurchases, which could be for several reasons. First, executives with stock options might promote repurchases to offset the option-caused reduction in dividends. Second, repurchases counter the dilutive effect of stock option grants and increase EPS, which is commonly used to measure performance.

We find that executive stock ownership is strongly and positively related to dividend payouts. A plausible explanation for this positive relationship is the liquidity benefits of dividends; executives desire to liquidize parts of their ownership without having to publicly report stock sales and risk negative market reactions, as they are heavily invested in their employer and wish to diversify.

Executive stock incentives' notable impact on the composition of payouts suggests that agency problems are present. However, our results indicate that executive stock incentives have no or a weak mitigating effect on the free cash flow problem. This is further supported by the absence of significant relationships between executive stock incentives and corporate payout policy when controlling for companies facing possibly the most severe agency problems.

We recommend that further research on the relationship between executive stock incentives and corporate payout policy is focused on the effects of the Covid-19 pandemic, as the crisis resulted in renewed scrutiny of executive compensation and payouts. Federal financial assistance packages that were accepted by companies during the Covid-19 crisis were accompanied by restrictions on executive compensation and payouts (U.S. Department of the Treasury, 2021). By using the Covid-19 pandemic and the associated crisis as an exogenous shift in scrutiny and legislation of executive compensation and corporate payout policy, such study would serve as an extension of ours.

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# 8 Appendices

## 8.1 Tables

Table 5. Correlation of payout variables and executive stock incentive variables

*The sample comprises 849 companies included in the S&P 1500 with three or more observations during the sample period 2015-2019. Other than observations with missing values, we have excluded financial firms (GICS=40), utilities (GICS=55) and telephone companies (SIC=4813). Dividends refer to cash dividends and repurchases, and market value and shares outstanding refer to common stock. Data on executives' shares and options are extracted from Execucomp and cover up to nine executives annually per company. However, most companies only report data on the top five executives. The data reported are correlation coefficients with the p-values in parentheses.*

| Variable | Dividends/ market value | Repurchases/ market value | Executive shares/ shares outstanding | Executive options/ shares outstanding |
|---|---|---|---|---|
| *a. Full sample (n=849)* | | | | |
| Dividends/market value | - | | | |
| Repurchases/market value | 0.07* | - | | |
| | (0.04) | | | |
| Executive shares/shares outstanding | -0.04 | -0.10** | - | |
| | (0.24) | (0.01) | | |
| Executive options/shares outstanding | -0.20** | -0.05 | 0.12** | - |
| | (0.00) | (0.13) | (0.00) | |
| *a. Subsample with executive shares <5% (n=737)* | | | | |
| Dividends/market value | - | | | |
| Repurchases/market value | 0.07 | - | | |
| | (0.07) | | | |
| Executive shares/shares outstanding | -0.16** | -0.16** | - | |
| | (0.00) | (0.00) | | |
| Executive options/shares outstanding | -0.21** | -0.06** | 0.20 | - |
| | (0.00) | (0.12) | (0.00) | |

**Statistically significant at 1% level.

*Statistically significant at 5% level.

Table 6. Full OLS regression with industry fixed effects

*The sample comprises 849 companies (repurchase share regression = 825 firms) included in the S&P 1500 with three or more observations during the sample period 2015-2019. Except for EBIT volatility, all data are averages on a firm basis over the sample period. EBIT volatility is the standard deviation of EBIT on a firm basis over the sample period. Reported in the table are the regression coefficients. The p-value is reported in parentheses.*

| | Dividend payout | Repurchase payout | Total payout | Repurchase Share |
|---|---|---|---|---|
| Executive shares/ | 0.02 | -0.03 | -0.01 | -0.67** |
| shares outstanding | (0.09) | (0.11) | (0.67) | (0.00) |
| Executive options/ | -0.08* | 0.24** | 0.16* | 3.07** |
| shares outstanding | (0.05) | (0.00) | (0.04) | (0.00) |
| Net operating cash | 0.04** | 0.09** | 0.15** | -0.30 |
| flow/assets | (0.00) | (0.00) | (0.00) | (0.12) |
| Market-to-book assets | 0.00** | 0.00** | -0.01** | 0.01 |
| | (0.00) | (0.00) | (0.00) | (0.27) |
| Log of assets | 0.00** | 0.01** | 0.01** | -0.07** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Debt/assets | 0.00 | 0.01** | 0.02** | 0.10 |
| | (0.33) | (0.01) | (0.00) | (0.11) |
| EBIT volatility/assets | 0.03* | 0.00 | 0.07* | -0.18 |
| | (0.02) | (0.92) | (0.01) | (0.58) |
| factor(industry)101010 | 0.01 | -0.01 | -0.01 | 0.59** |
| | (0.29) | (0.14) | (0.45) | (0.00) |
| factor(industry)101020 | 0.00 | 0.00 | 0.00 | 0.75** |
| | (0.94) | (0.65) | (0.68) | (0.00) |
| factor(industry)151010 | 0.00 | -0.01* | -0.01 | 0.67** |
| | (0.96) | (0.02) | (0.06) | (0.00) |
| factor(industry)151020 | -0.01 | -0.01 | -0.02 | 0.83** |
| | (0.27) | (0.52) | (0.26) | (0.00) |
| factor(industry)151030 | 0.00 | -0.01 | -0.01 | 0.66** |
| | (0.64) | (0.12) | (0.26) | (0.00) |
| factor(industry)151040 | 0.00 | -0.02* | -0.01 | 0.66** |
| | (0.30) | (0.04) | (0.51) | (0.00) |
| factor(industry)151050 | 0.01 | -0.01 | -0.01 | 0.69** |
| | (0.49) | (0.38) | (0.63) | (0.00) |
| factor(industry)201010 | 0.00 | -0.01 | -0.01 | 0.87** |
| | (0.30) | (0.29) | (0.14) | (0.00) |
| factor(industry)201020 | 0.00 | -0.01 | -0.01 | 0.87** |

| | | | | |
|---|---|---|---|---|
| | (0.30) | (0.44) | (0.19) | (0.00) |
| factor(industry)201030 | -0.01* | -0.01 | -0.02* | 0.96** |
| | (0.03) | (0.26) | (0.03) | (0.00) |
| factor(industry)201040 | 0.00 | -0.01 | -0.01 | 0.73** |
| | (1.00) | (0.12) | (0.18) | (0.00) |
| factor(industry)201050 | 0.01 | -0.02 | -0.01 | 0.71** |
| | (0.29) | (0.26) | (0.73) | (0.00) |
| factor(industry)201060 | 0.00 | -0.01 | -0.01 | 0.69** |
| | (0.51) | (0.08) | (0.07) | (0.00) |
| factor(industry)201070 | 0.00 | -0.02 | -0.02 | 0.91** |
| | (0.43) | (0.08) | (0.05) | (0.00) |
| factor(industry)202010 | 0.01 | -0.02* | -0.01 | 0.60** |
| | (0.17) | (0.03) | (0.27) | (0.00) |
| factor(industry)202020 | 0.00 | 0.00 | -0.01 | 0.82** |
| | (0.63) | (0.61) | (0.45) | (0.00) |
| factor(industry)203010 | -0.01 | -0.01 | -0.02 | 0.96** |
| | (0.35) | (0.36) | (0.20) | (0.00) |
| factor(industry)203020 | -0.01 | 0.02 | 0.01 | 1.07** |
| | (0.13) | (0.06) | (0.46) | (0.00) |
| factor(industry)203030 | 0.01 | -0.02 | -0.01 | 0.38 |
| | (0.48) | (0.42) | (0.75) | (0.20) |
| factor(industry)203040 | -0.01 | 0.00 | 0.00 | 0.87** |
| | (0.32) | (0.85) | (0.74) | (0.00) |
| factor(industry)251010 | -0.01 | -0.01 | -0.02* | 0.95** |
| | (0.09) | (0.15) | (0.02) | (0.00) |
| factor(industry)251020 | 0.01 | -0.01 | 0.00 | 0.57** |
| | (0.19) | (0.22) | (0.71) | (0.00) |
| factor(industry)252010 | 0.00 | -0.01 | -0.02 | 0.90** |
| | (0.33) | (0.14) | (0.07) | (0.00) |
| factor(industry)252020 | 0.00 | -0.01 | -0.02 | 0.70** |
| | (0.80) | (0.21) | (0.19) | (0.00) |
| factor(industry)252030 | -0.01 | 0.00 | -0.01 | 1.02** |
| | (0.07) | (0.63) | (0.50) | (0.00) |
| factor(industry)253010 | 0.00 | 0.01 | 0.01 | 0.84** |
| | (0.52) | (0.42) | (0.36) | (0.00) |
| factor(industry)253020 | -0.01 | -0.01 | -0.02* | 0.85** |
| | (0.20) | (0.14) | (0.03) | (0.00) |
| factor(industry)255010 | 0.00 | -0.02 | -0.03 | 0.82** |

| | | | | |
|---|---|---|---|---|
| | (0.63) | (0.09) | (0.09) | (0.00) |
| factor(industry)255020 | -0.01 | 0.00 | 0.00 | 0.93** |
| | (0.42) | (0.75) | (0.88) | (0.00) |
| factor(industry)255030 | 0.00 | 0.01 | 0.01 | 1.01** |
| | (0.88) | (0.60) | (0.62) | (0.00) |
| factor(industry)255040 | 0.00 | 0.02** | 0.02** | 0.96** |
| | (0.50) | (0.00) | (0.01) | (0.00) |
| factor(industry)301010 | 0.00 | -0.01 | -0.01 | 0.96** |
| | (0.55) | (0.55) | (0.41) | (0.00) |
| factor(industry)302010 | 0.00 | -0.02 | -0.02 | 0.73** |
| | (0.81) | (0.15) | (0.18) | (0.00) |
| factor(industry)302020 | 0.00 | -0.02** | -0.02 | 0.72** |
| | (0.49) | (0.01) | (0.07) | (0.00) |
| factor(industry)302030 | 0.04** | -0.04** | 0.00 | 0.30 |
| | (0.00) | (0.00) | (0.92) | (0.07) |
| factor(industry)303010 | 0.00 | -0.02* | -0.02 | 0.75** |
| | (0.63) | (0.04) | (0.13) | (0.00) |
| factor(industry)303020 | 0.00 | 0.00 | -0.01 | 0.79** |
| | (0.71) | (0.81) | (0.60) | (0.00) |
| factor(industry)351010 | -0.01 | -0.02** | -0.03** | 0.91** |
| | (0.14) | (0.00) | (0.00) | (0.00) |
| factor(industry)351020 | -0.01* | -0.01 | -0.02* | 1.02** |
| | (0.01) | (0.17) | (0.01) | (0.00) |
| factor(industry)351030 | 0.00 | -0.01 | -0.01 | 0.95** |
| | (0.58) | (0.52) | (0.41) | (0.00) |
| factor(industry)352010 | -0.01 | -0.01 | -0.02 | 0.97** |
| | (0.24) | (0.25) | (0.07) | (0.00) |
| factor(industry)352020 | -0.01 | -0.02** | -0.03** | 0.91** |
| | (0.16) | (0.00) | (0.00) | (0.00) |
| factor(industry)352030 | -0.01* | -0.01 | -0.02* | 0.97** |
| | (0.02) | (0.10) | (0.01) | (0.00) |
| factor(industry)451020 | -0.01 | -0.01 | -0.01 | 0.99** |
| | (0.18) | (0.29) | (0.10) | (0.00) |
| factor(industry)451030 | -0.01 | 0.00 | -0.01 | 1.06** |
| | (0.12) | (0.87) | (0.49) | (0.00) |
| factor(industry)452010 | -0.01 | 0.00 | -0.01 | 1.04** |
| | (0.17) | (0.83) | (0.59) | (0.00) |
| factor(industry)452020 | 0.00 | 0.03** | 0.03* | 1.05** |

| | | | | |
|---|---|---|---|---|
| | (0.52) | (0.01) | (0.02) | (0.00) |
| factor(industry)452030 | -0.01* | -0.01 | -0.02* | 1.00** |
| | (0.02) | (0.41) | (0.04) | (0.00) |
| factor(industry)453010 | -0.01 | 0.00 | -0.01 | 0.99** |
| | (0.07) | (0.68) | (0.17) | (0.00) |
| factor(industry)501010 | 0.01 | -0.03* | -0.02 | 0.35 |
| | (0.29) | (0.02) | (0.20) | (0.06) |
| factor(industry)501020 | -0.01 | -0.04* | -0.05* | 0.68** |
| | (0.51) | (0.02) | (0.02) | (0.00) |
| factor(industry)502010 | 0.00 | -0.01 | -0.01 | 0.77** |
| | (0.59) | (0.28) | (0.62) | (0.00) |
| factor(industry)502020 | 0.00 | -0.02* | -0.02* | 0.75** |
| | (0.49) | (0.05) | (0.05) | (0.00) |
| factor(industry)502030 | -0.01 | -0.02 | -0.04* | 1.06** |
| | (0.12) | (0.07) | (0.02) | (0.00) |
| factor(industry)601010 | 0.02** | -0.03** | 0.00 | 0.41** |
| | (0.00) | (0.01) | (0.94) | (0.00) |
| factor(industry)601020 | -0.01 | -0.02 | -0.03* | 0.99** |
| | (0.08) | (0.18) | (0.04) | (0.00) |
| Number of observations | 849 | 849 | 849 | 825 |
| Adjusted R-Square | 0.56 | 0.64 | 0.74 | 0.84 |
| Industry fixed effects | Yes | Yes | Yes | Yes |

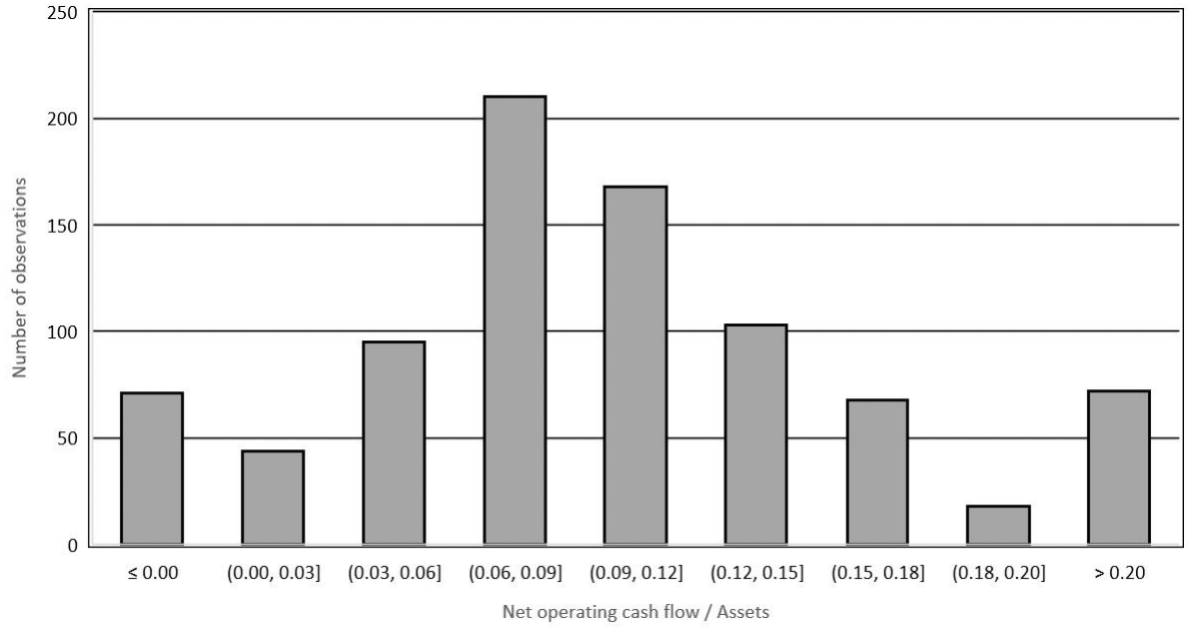
** Statistically significant at 1% level

*Statistically significant at 5% level

## *8.2* Distribution graphs

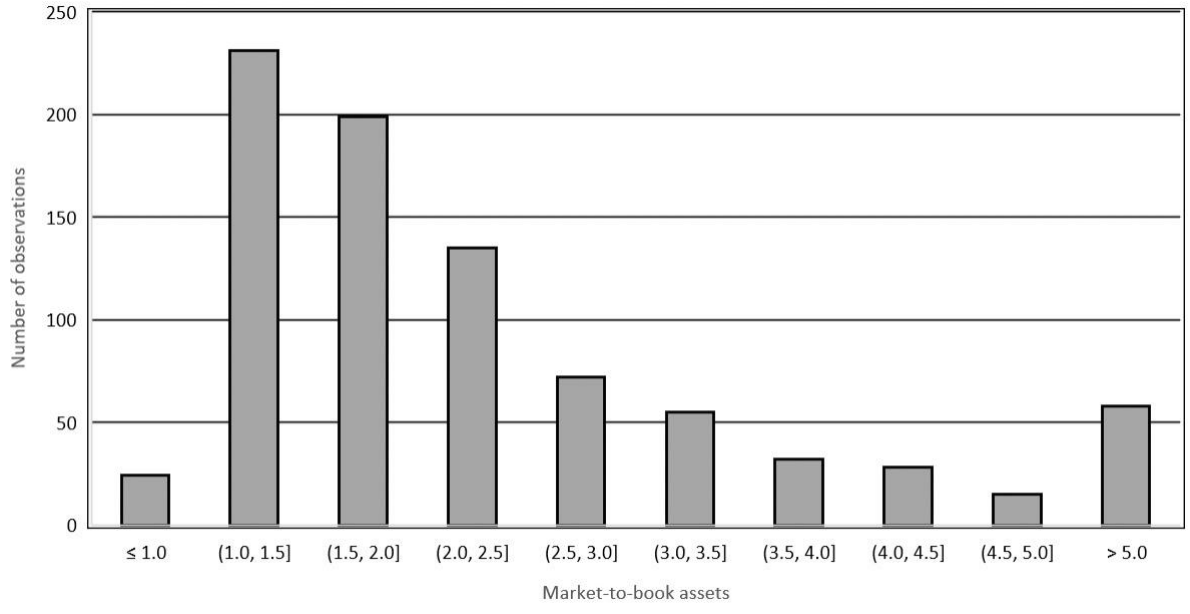
Graph 6. Net operating cash flow to assets distribution

*The below table shows the distribution of net operating cash flow divided by assets. The sample comprises 849 companies included in the S&P 1500 with three or more observations during the sample period 2015-2019.*



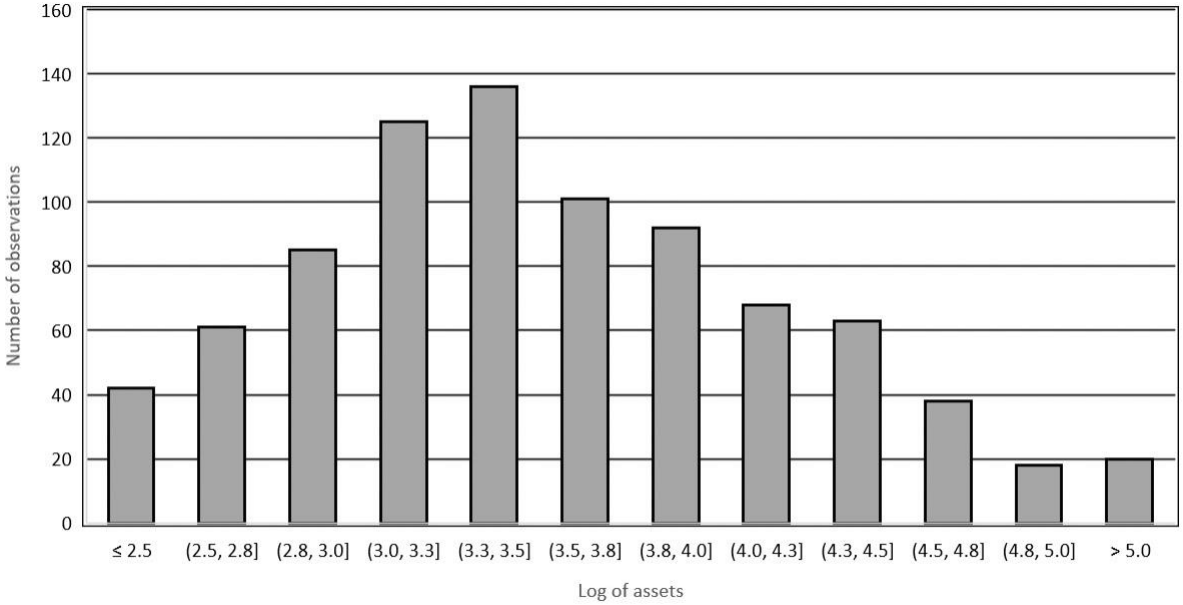

Graph 7. Market-to-book assets distribution

*The below table shows the distribution of market-to-book assets, used as a measure of the number of investment opportunities. The sample comprises 849 companies included in the S&P 1500 with three or more observations during the sample period 2015-2019.*



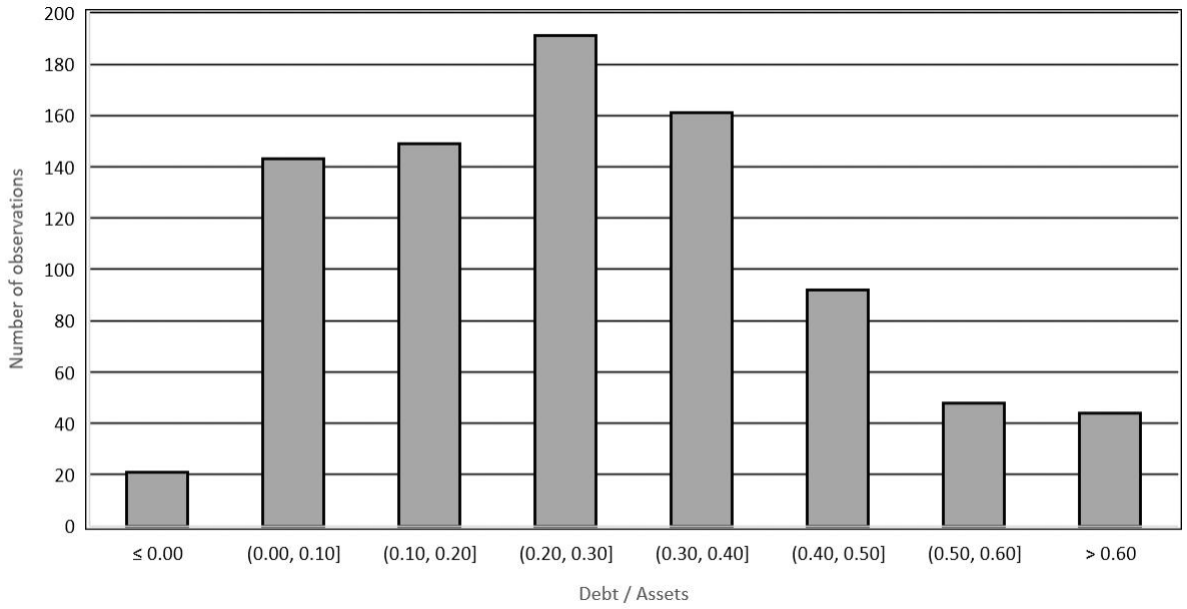
Graph 8. Log of assets distribution

*The below table shows the distribution of log of assets, using firm size as a measure for external financing costs. The sample comprises 849 companies included in the S&P 1500 with three or more observations during the sample period 2015-2019.*




Graph 9. Debt to assets distribution

*The below table shows the distribution of debt to assets as a measure of leverage. The sample comprises 849 companies included in the S&P 1500 with three or more observations during the sample period 2015-2019.*



Graph 10. EBIT volatility to assets distribution

*The below table shows the distribution of EBIT volatility divided by assets. EBIT volatility is the standard deviation of annual EBIT observations during the sample period. The sample comprises 849 companies included in the S&P 1500 with three or more observations during the sample period 2015-2019.*