**Andriosopoulos, Dimitris and De Cesari, Amedeo and Stathopoulos, Konstantinos (2016) Overpayment, Financial Distress, and Investor Horizons. Working paper. Social Science Research Network, Glasgow. ,**

# Overpayment, Financial Distress, and Investor Horizons

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12 January, 2016

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## Abstract

This study finds that firms that follow excessive payout policies (over-payers) have significantly higher financial distress risk and lower survival compared to under-payers. Moreover, ceteris paribus, institutional investors with a long-term investment horizon influence firms into over-paying. Our findings, which are robust to a range of financial distress measures and alternative definitions of over-payment, are consistent with risk shifting by long-term investors. The link between over-payment, distress risk, and reduced firm survival persists across alternative matching estimators that reduce the impact of observable confounding effects. Following the extant literature, we study the investment choices of indexer institutional investors to address potential endogeneity in the institutional investment and payout policy relation.

Keywords: payout policy, financial distress, firm survival, institutional investor, over-payers, corporate governance.

JEL Classifications: G23, G32, G33, G34, G35

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We thank Shantanu Banerjee, Murillo Campello, Sudipto Dasgupta, Robert Faff, Daniel Ferreira, David Hillier, Aneel Keswani, Meziane Lasfer, Alberto Manconi, Andrew Marshall, Patrick McColgan, Karin Thorburn, participants at the 3rd Paris Financial Management Conference, and seminar participants at Strathclyde Business School, Lancaster University Management School, and Adam Smith School of Business Glasgow for helpful comments. All remaining errors are our own.

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*"It concerns us that, in the wake of the financial crisis, many companies have shied away from investing in the future growth of their companies….*Too many companies have cut capital expenditure and even increased debt to boost dividends and increase share buybacks. Many commentators lament the short-term *demands of the capital markets…We share those* concerns, and believe it is part of our collective role as actors in the global capital markets to *challenge that trend…* We certainly believe that returning cash to shareholders should be part of a balanced capital strategy; however, when done for the wrong reasons and at the expense *of capital investment, it can* jeopardize *a company's ability to generate sustainable long*-term *returns."* Larry Fink CEO of BlackRock, Open letter to shareholders, Reuters and Wall Street Journal, March 26, 2014.

## 1. Introduction

The current focus of market participants is on payout levels with the financial press[1] anticipating that the shareholders of the biggest US companies will receive $1tn during 2015, a new record in corporate payouts. The steep increase in corporate payouts has led the chief economist of the Bank of England to voice his concerns on its adverse effect on long-term investment and the implied increase in firms' discount rates (Haldane, 2015), which together should raise firm risk. In this paper, we argue that in order to understand trends in payout policy, their determinants and impact on firm risk, one should focus on excessive payout policies. It is overpayment that could lead to a significant reduction in liquid assets and retained earnings, which reduces financial flexibility and increases distress risk. By building a simple model of optimal payout based on standard accounting, financial, and market variables, we

[1] "Shareholders in the biggest US companies stand to receive a record $1tn in cash this year, as blue chips' concerns over the global economic outlook have diverted cash away from investment and is driving a boom in buybacks and dividends." – Platt and MacKenzie (2015)

identify over-payers and examine their distress risk as well as their future survival compared to under-payers. We then look at shareholder preferences regarding excessive payout policies and offer evidence consistent with the risk shifting incentives of long-term institutional investors driving overpayment.

Prior academic work on the relation between payout policy and firm risk focuses almost exclusively on the level of (or change to) payout and refrains from investigating the potential costs of excess payouts. For example, there is comprehensive evidence that the initiation or increase of dividends conveys information to the market that market risk (Grullon et al., 2002; v.Eije et al., 2014) or default risk (Charitou et al., 2011) is reduced and is a strong indicator of sustainable earnings, dividend payments, and growth (Lintner, 1956; DeAngelo et al., 2006). Similarly, Lee et al. (2011) show an inverse relationship between dividends and firm risk. However, given the negative impact of excess payouts on financial flexibility one would expect a positive relation between overpayment and distress risk. Prior evidence supports this conjecture. Chen and Wang (2012) report that financially constrained firms have a significant increase in distress risk following their buyback announcement compared to unconstrained firms. Maxwell and Stephens (2003) find that larger buyback programs lead to greater negative bond price reactions, which they interpret as evidence of wealth transfer from bondholders to shareholders. They also find that this wealth transfer is more pronounced in firms with higher distress risk. Pryschepa et al. (2013) show that financially distressed firms which are not yet identified as such by the market are less likely to reduce their payouts to shareholders, hence continue transferring wealth from creditors to shareholders. In other words, shareholders have strong risk shifting incentives related to the firm's payout policy. We use this framework in explaining overpayment.

Dividend payouts benefit shareholders against debtholders as firms transfer wealth from the latter to the former (Bulan and Hull, 2013) and the ability of shareholders to extract rents from other claimholders gives them an advantage as the probability of default increases (Garlappi et al., 2008). Harford et al. (2015) find that firms with long-term institutional investors increase their payouts, which is similar to Grinstein and Michaely's (2005) findings on share repurchases. Institutional investors' investment horizons are important in this context since long-term institutional investors have a "strong voice" in a firm (Aghion et al., 2013), therefore managers cater to their preferences (Gaspar et al., 2012).

Contrary to long-term institutional investors, short-term institutional investors place greater emphasis on short-term performance and earnings leading to misvaluations (Bushee, 2001); have less incentives to invest resources for monitoring and time for learning about a firm (Gaspar et al., 2005); invest more in firms with disclosure improvements leading to an increase in stock volatility (Bushee and Noe, 2000); and adopt more aggressive and short-term trading strategies that can push managers to adopt a myopic behaviour (Bushee and Goodman, 2007). Meanwhile, long-term institutional investors have the resources and motivation for better monitoring managers (Harford et al., 2015), hold on average well-diversified portfolios (Bushee, 1998; 2001), and are not significantly affected by corporate disclosure practices (Bushee and Noe, 2000). Therefore, long-term institutional investors are likely to be rather insensitive to firm specific risk and are expected to have very strong risk shifting incentives.

Using the above arguments, we analyze all publicly listed US firms from 1975 to 2013 and employ a set of variables established in the payout literature to identify firms that pay out more (less) than expected, based on the optimal payout model we construct. We label these firms as over-payers (under-payers). We recognize that there is no unambiguous model of "optimal" payout, therefore we use several definitions of overpayment to classify our firms. Moreover, we hypothesize that and test whether over-paying can serve as a strong indicator of financial distress and reduced firm survival. To do so we employ a comprehensive set of accounting-based and market-based financial distress and involuntary delisting measures. Our findings suggest that over-paying firms are on average higher on the financial distress risk spectrum and have a shorter life span as opposed to under-paying firms. The findings we report are also economically significant as the average over-payer has a market capitalization, at December 2013 prices, of $1.8bn with more than double the average default probability, based on Bharath and Shumway's (2008) Merton's distance to default model, of 5.31% for over-payers compared with 2.3% for under-payers.

Having identified those firms that over-pay and their association with financial distress and survivability, we turn our focus on the determinants of the decision to over-pay. We find that long-term institutional investors increase the likelihood of overpayment. A one standard deviation increase in the shareholdings of long-term institutional investors leads to a 2.6% increase in the likelihood of a firm becoming an over-payer. In contrast, short-term investors decrease the likelihood of overpayment, consistent with their loss-aversion behavior. Our findings suggest that firms cater to their long-term institutional investors by overpaying even if that translates into being higher on the financial distress spectrum. Given that long-term institutional investors have strong risk shifting incentives, our findings are consistent with risk shifting being an important driver of overpayment.

In order to support this conjecture we control for competing hypotheses and find that our results regarding shareholder risk shifting preferences remain intact. In particular, we explore whether catering to shareholders' time varying demands (Baker et al., 2011; Kulchania, 2013) and peer pressure (Popadak, 2014) influence firms into becoming over-payers. We find that both effects have significant impact on excess payouts. For example, a one standard deviation increase in the dividend premium is associated with an increase in the likelihood to over-pay by 5.8%. However, our results regarding the impact of institutional investor horizons remain unchanged.

We acknowledge that our results may be sensitive to possible misclassification of over-payers as well as potential confounding effects driving the relation between overpayment and financial distress. Furthermore, the investment choices of institutional investors could be endogenous to firm payout policy, which could lead to spurious results. We address each of these problems using a series of robustness tests. To avoid misclassifying over-payers, we not only look at those firms that deviate marginally from "optimal" payout levels but also classify our cross-section into tercile portfolios. This tercile portfolio classification is based on the residuals of the optimal payout model and define as over-payers only the firms that belong to the highest tercile portfolio. Additionally, in order to ensure that we identify "persistent" over-payers we alternatively define them as firms that pay above the expected payout for three consecutive years. Regarding confounding effects affecting the reported relation between overpayment and distress risk, we use a range of distress risk measures to confirm our findings. These measures are bound to be affected differently by omitted observable characteristics, therefore the fact we get consistent results across these different specifications reduces the probability that some common omitted factor is driving the relation. More importantly, we run a covariate matching method to match over-payers to under-payers and our results remain unchanged. This alleviates the concern of omitted observable factors driving our results. Finally, in order to mitigate the impact of endogeneity in the institutional investor-payout relation, we follow the extant literature (e.g., Harford et al., 2015) and use the holdings of quasi-indexer institutional investors to confirm our findings. Quasi-indexers are typically passive long-term investors that do not self-select into particular investments based on firm characteristics, e.g., payout policy, given that they have to mimic an index. Because of their inability to actively shift their portfolios they have strong incentives to affect firm policy (Appel et al., 2015). We find that quasi-indexer institutional investors have a significant influence in the decision to over-pay. A one standard deviation increase in ownership by quasi-indexers is associated with an increase in the probability of a firm becoming an over-payer by approximately 8.5%. Moreover, dedicated investors also increase the likelihood of a firm becoming an over-payer. For instance, a one standard deviation increase in ownership by dedicated investors increases the likelihood of over-paying by 2.5%. Our results, support Appel et al. (2015) who argue that passive investors even though they cannot “vote with their feet” and exit investments they still have a “voice” and influence firms decisions. Given that our findings are confirmed for quasi-indexers, we argue that our main results are not driven by investors self-selecting into investing in overpaying firms.

The paper proceeds as follows. Section 2 introduces the data and presents the descriptive statistics. Section 3 develops the baseline empirical model. Section 4 discusses the results on the relationship between over-payers and financial distress. Section 5 provides the results on the model sensitivity. Section 6 discusses the channel that explains the decision to over-pay. Section 7 concludes.

## 2. Sample and Data

### 2.1 Data

We construct our sample by including all publicly traded U.S. firms in the Center for Research in Security Prices (CRSP) / Compustat merged (CCM) database between 1975 and 2013. Following the extant literature, we exclude financial firms (SIC 6000-6999), utilities (SIC codes 4900-4949), and securities other than common stock. We identify dividends as the dollar value of common dividends (Compustat item DVC). Repurchases is estimated as purchase of common and preferred stock (Compustat item PRSTKC) minus the reduction in the book value of preferred stock (Compustat item PSTKRV). Total payout is estimated as the sum of dividends and repurchases. Consistent with prior studies (e.g. Dittmar, 2000; Leary and Michaely, 2011; Desai and Jin, 2011; Bonaimé et al., 2013), we scale dividends, share repurchases, and total payout by market capitalization. We consider market capitalization preferable to the book value of total assets or earnings since our objective is to reliably identify companies that provide comparatively larger or small payouts. Compared to total assets, market capitalization reflects relevant information in a more timely manner, including information on intangible assets. Earnings are problematic since they can also be negative, implying that the payout variable may not be defined. CCM also contains the information we need to construct all firm level control variables, other than institutional ownership. We also use the dividend premium from Kulchania (2013)[2] estimated as the annual difference of the logs of the average market-to-book (M/B) ratios between payers and non-payers of dividends, as in Baker and Wurgler (2004). The total payout estimation sample extends until 2008 to allow the analysis of a firm's delisting probability over a leading five-year period on a rolling basis with 2013 being the final year of the analysis. The final sample results to 76,392 firm-year observations comprising of 11,510 unique U.S. industrial firms between 1975 and 2008.

For the institutional ownership data we use the universe of the Thomson-Reuters Institutional Holdings (13F) database to collect quarterly institutional holdings during the 1981-2008 period. Thomson-Reuters collects information contained in Form 13F proxy statement filed with the Securities and Exchange Commission (SEC). All institutional investors with \$100m or more in assets under management are by law required to file the 13F form with the SEC. The Thomson-Reuters data help us not only calculate ownership levels for different institutional investor classifications but also to construct the investor turnover measures used in Gaspar et al. (2005; 2013) for capturing institutional investors' investment horizons. In order to enhance the information on institutional investor types and investment styles, we merge the

[2] In alternative estimations, untabulated for brevity, we use the payout premia estimated as the annual differences in the logarithms of the value-weighted market-to-book ratios (M/B) of payers and non-payers of dividends and share repurchases, as reported in Kulchania (2013). The results remain unaltered.

13F data with Brian Bushee's institutional investor classifications.[3] All relevant variables included in this paper are defined in the Appendix.

2.2. Descriptive statistics

Figure 1 shows the historical trends of corporate payouts scaled by market capitalization. We observe that total corporate payouts declined during the early 1990s and 2000s. Since then, total payouts have an upward trend surpassing the historical highs of the late 1970s. Moreover, dividends have declined steadily and stabilizing towards the late 2000s, with share repurchases driving mostly the corporate payouts. In terms of ownership (Figure 2), institutional investors show a persistent increase in their shareholdings, though dedicated institutional investors have remained relatively stable since 1981. Meanwhile, the turnover of institutional investors has declined from a high of approximately 22% in 1983 to 15% in 1990, after which it peaked at approximately 23% and 22% in 1996 and 2007 respectively.

Table 1 provides the summary statistics for the variables[4] used in this paper. Panel A shows that across our sample period firms pay out on average approximately 2.3% of their market capitalization to their shareholders, of which around 1% is paid in the form of cash dividends and 1.3% in the form of share repurchases. Panel B shows that the average firm has a leverage ratio of 0.18, 12.26% of cash holdings, a market-to-book ratio of 1.7, and is publicly trading for an average of 14 years. Interestingly, the average retained earnings are negative at -11.62% while the median retained earnings are positive at 16.33%.

**[Insert Table 1 about here]**

In order to assess financial distress we employ a comprehensive array of established accounting-based and market-based measures of risk and financial distress. Panel B reports the descriptive statistics of the financial distress measures we use in this study. The average interest

[3] Available at http://acct.wharton.upenn.edu/faculty/bushee/IIclass.html
[4] All variables, with the exception of binary variables, are winsorized at the 1% and 99% tails.

coverage ratio is approximately 2.17. In addition, following Brockman et al. (2010) and Pryschepa et al. (2013) we use the Z-score dummy[5] – based on Altman's Z-score with 1.81 being the cut-off value. The average Z-score dummy of our sample is 0.84, similar to Brockman et al. (2010). As alternative financial distress measures we consider Zmijewski's (1984) score, and Ohlson's (1980) O-score with the average values in our sample being -1.18 and -3.76 respectively. Consistent with Bharath and Shumway (2008), we also estimate Merton's distance to default and respective default probability; the average distance to default is 6.42 similar to Anantharaman and Lee (2014) and Chava and Purnanandam (2010). Following Derrien et al. (2014), we also estimate the Campbell et al. (2008) CHS-score and associated default probability (CHS) with the mean values being -6.92 and 1.96 respectively.

We also examine a firm's mortality and survival in relation to its payout. Therefore, we consider both voluntary and involuntary delistings over a five year period following year t in our sample firms. Following Bhattacharya et al. (2015), for voluntary delistings we assess the payout policies for firms that are involved in (a) mergers and acquisitions; and (b) exchange transactions. For involuntary delistings we assess the payout policies for firms that are (c) liquidated, where firms are forced to cease operations and sell their assets; (d) dropped from a stock exchange, where firms are dropped for reasons other than liquidation or voluntary delisting; and (e) a combination of firms that are liquidated or dropped from the exchange, as in Bhattacharya et al. (2015). The average voluntary delisting over a five-year period due to mergers and exchange transactions is 0.1873 and 0.0097 respectively. However, the focus of our study is on involuntary delistings. The average firm-year liquidation and dropping from the exchange is 0.0027 and 0.1379 respectively, with the combined group being at 0.1406 over the period 1975 to 2013.

[5] We use the Z-score dummy which is a binary variable that equals one if Altman's (1968) z-score is higher than 1.81 and zero otherwise. We do this due to the skewness of the distribution of Altman's Z-score in our sample.

As shown in Panel C, across our sample period institutional investors have an average ownership of 34.61% with a mean portfolio turnover of 19.21%, similar to that reported in Gaspar et al. (2012) and Derrien et al. (2013). When splitting institutional investors based on their investment horizons we see that institutional ownership is mostly driven by mid- and high-turnover investors with an average ownership of 15.26% and 12.44% respectively. Moreover, dedicated institutions hold on average 4.78%, though, it is the quasi-indexing institutional investors that hold a significant ownership of 22%.

## 3. Identifying over-payers and under-payers.

We employ a standard Tobit model to identify what is the expected payout based on a set of established variables commonly used in the literature (e.g. Fama and French, 2001; DeAngelo et al., 2006; Jiang et al., 2013; Grinstein and Michaely, 2005), hence rely on the following:

$$\begin{aligned} Payout_{i,t} = {} & \alpha + \beta_1 Cash\ Flow_{i,t} + \beta_2 Market - to - Book_{i,t} + \beta_3 Firm\ Size_{i,t} \\ & + \beta_4 Leverage_{i,t} + \beta_5 Retained\ Earnings_{i,t} + \beta_6 Cash\ Holdings_{i,t} \\ & + \beta_7 Idiosyncratic\ Risk_{i,t} + \beta_8 Systematic\ Risk_{i,t} + \beta_9 Firm\ Age_{i,t} + u_{i,t} \end{aligned}$$

Where Payout[6] is the total payout measured as the sum of total common dividends and purchase of common and preferred shares minus the reduction in the book value of preferred stock. To be consistent with the literature (e.g. Dittmar, 2000; Leary and Michaely, 2011; Desai and Jin, 2011; Bonaimé et al., 2013), payout is scaled by market capitalization. The payout determinants we use are: a) cash flow estimated as operating income divided by total assets; b) market-to-book estimated as firm market value over total assets; c) firm size estimated as the natural log of inflation-adjusted market capitalization; d) leverage estimated as long-term debt plus long-term debt due in one year over market capitalization; e) retained earnings deflated by total

[6] Our results remain unaltered to alternative specifications replacing total payout with dividends and buybacks respectively. We also replicate the model with one year lagged control variables and the results remain the same.

assets; f) cash holdings estimated as cash and short-term investments over total assets; g) idiosyncratic risk estimated as the standard deviation of the residuals retrieved by regressing the daily stock returns in excess of risk free rate on the value-weighted market return; h) systematic risk estimated as the standard deviation of the predicted value retrieved by regressing the daily stock returns in excess of risk free rate on the value-weighted market return; and i) firm age estimated as the number of years from a firm's first appearance in CRSP. Finally, we control for the 49 industries in Fama and French (1997) and year fixed effects, while the standard errors are clustered at the firm level. The results in Table 2 show that larger and more mature firms, with higher cash and retained earnings levels payout more to their shareholders. In addition, we find that value and lower growth stocks that have lower risk, both idiosyncratic and systematic risk, make larger payouts.

**[Insert Table 2 about here]**

If firm i makes no payout in year t we classify it as a non-payer. Based on the Tobit estimations on the expected and actual payout we classify each firm as an over-payer or under-payer. For instance, if the residual $u_{i,t}$ is positive then we classify firm i at year t as an over-payer and if it is negative we classify that firm as an under-payer[7]. Based on this classification method some firms may be marginally classified as over-payers or under-payers by construction. To ensure our results are robust we use an alternative classification method as well. In particular, we split the set of observations into equal terciles based on the model residuals and classify them into three main categories: under-payers, moderate-payers, and over-payers. Meanwhile, firms that make no payouts at year t are classified as non-payers. A firm may pay more than expected only once, either by miscalculation or on purpose. However,

[7] As explained above, we rely on market capitalization as the denominator of our payout variable in order to precisely identify over- and under-payers. In untabulated robustness tests, we repeat our analyses by additionally requiring that the residual from a model of total payout over total assets is also positive (negative) to classify a firm as an over-payer (under-payer) in a particular year. Similarly, we jointly consider residuals from models in which payouts are scaled by market capitalization and earnings. Overall, we obtain qualitatively similar findings.

we wish to identify purposeful over-payers. Therefore, we further ensure our results our robust and not driven from possible misclassification by classifying our sample firms based on the consistency of their payout policy. In particular, if a firm is identified by the Tobit estimations for three consecutive years as having the same relationship between actual and expected payout, we classify it into each of the following four categories: consistent non-payers, consistent under-payers, consistent over-payers, and other payers (unclassified) which includes all remaining observations.

Table 3 provides the average actual and predicted payout yields for each classification of non-payers, moderate/unclassified-payers, under-payers, and over-payers. Our focal point is the over-payers and under-payers. The results show that firms classified as under-payers pay out significantly less than expected and especially for the mid-point and terciles classifications under-payers pay out almost half of the expected payout level. Moreover, it is clear that for the mid-point and terciles classification over-payers are expected to pay out less than under-payers. In fact, over-payers pay out almost double the expected payout level. Overall, these findings suggest that over-payers are firms that pay out excessive amounts of cash which are higher than the optimal payout amount suggested by their characteristics and are clearly distinguishable from under-payers.

**[Insert Table 3 about here]**

## 4. Over-payers, financial distress, and firm survival

Dividend payouts benefit shareholders against debtholders as firms transfer wealth from the latter to the former (Bulan and Hull, 2013) and the ability of shareholders to extract rents from other claimholders gives them an advantage and leads to a lower equity risk as the probability of default increases (Garlappi et al., 2008). Moreover, an inverse dividend change during financial difficulties will signal the persistence of such difficulties (Charitou et al., 2011), while distress risk increases significantly following share repurchase announcements (Chen and

Wang, 2012). However, firms that are financially distressed but are not yet identified as such by the market are less likely to reduce their payouts (Pryschepa, 2013) while a slow reduction of dividends during market downturns can signal firm quality (Hull, 2013).

**[Insert Table 4 about here]**

The previously reported relationship between firm payouts and financial distress leads us to assess whether over-payers (under-payers) have higher (lower) financial distress. Table 4 reports the results from the univariate analysis for a number of financial distress risk measures across different classifications of firms: non-payers, moderate/unclassified payers, under-payers, and over-payers. The focal point of our analysis is primarily the contrasting performance between over-payers and under-payers.

The results show that across all risk measures, over-payers have significantly higher financial distress compared with under-payers. The same findings apply when classifying firms into terciles. In particular, we find that over-payers have consistently higher financial distress compared to under-payers, but also firms making moderate payouts. Firms that are persistent over-payers also have higher financial distress compared to persistent under-payers. For instance, for the mid-point classification, over-payers are on average 3% more likely to default, having more than twice the average default probability (5.3%) compared to under-payers (2.3%). Yet over-payers pay more than what the market would expect based on their publicly available characteristics. Overall, we find consistent evidence suggesting that over-payers are higher on the financial distress spectrum, with a caveat that this does not suggest a causality between over-payers and financial distress.

**[Insert Table 5 about here]**

Since over-payers are more financially distressed we assess whether over-paying firms are more likely to delist compared to under-paying firms. The univariate tests in Table 5 show that firms that over-pay are more likely to merge over a five-year period following the payout compared to under-payers. The results also show that non-payers on average delist and drop from the exchange more frequently compared to firms making payouts, which is expected as non-paying firms are typically smaller, riskier, and have higher growth as opposed to firms making payouts (DeAngelo et al., 2006; Fama and French, 2001). Most importantly though, the results show that firms that are forced into liquidation or drop from the exchange, suggesting involuntary delisting (Bhattacharya et al., 2015), are on average significantly more common among over-payers compared to under-payers. This suggests that over-payers are more likely to involuntarily delist and therefore have on average a shorter lifespan. In summary, the evidence shows that firms which over-pay are more financially distressed, and are more likely to involuntarily delist over a five-year period following the excess payout.

## 5. Model sensitivity and covariate matching

In order to address any potential issues of model sensitivity and selection bias we ensure the robustness of our results via adequate counterfactuals by matching each over-payer from our sample with a suitable set of under-payers. We use henceforth the mid-point classification as this allows for a larger sample-size and time-variant shift from over-paying to under-paying and the interpretation of the results is more intuitive. However, the results based on the other two classification, terciles and persistent, remain unaltered. We exclude from the sample of untreated firms those firms that do not pay dividends and/or buy back shares, as payers differ significantly from non-payers on a number of characteristics such as growth, age, profitability, size, cash reserves, and earned relative to contributed capital mix among others (Bulan et al., 2007; DeAngelo et al., 2006; Banyi and Kahle, 2014; Fama and French, 2001). We match each firm year observation identified as over-payer (treated) with an under-payer (untreated) using a one-to-one nearest neighbor covariate matching method with replacement[8] and based on the

[8] The matching is performed with the command “PSmatch2” in Stata.

expected level of payout (predicted). Alternatively, we repeat the matching process based on the similarity of the firm specific characteristics (all controls), relying on the non-binary independent variables in Table 2. Hence, we test whether there are still significant differences in financial distress and firm survival between over-payers and under-payers.

The results in Table 6 show there is a significant reduction in bias owing to the matching procedure, resulting in a bias after the matching of 0.0007 when matched based on the expected payout (Panel A) and of 2.4248 based on all controls (Panel B). Moreover, with the exception of interest coverage, the results clearly show that the treatment effect of over-paying has a consistent and positive effect on financial distress and the likelihood that a stock is forced to be delisted from a stock exchange. Overall, this non-parametric quasi-experimental analysis shows that over-paying is associated with higher financial distress and risk of involuntary delisting.

**[Insert Table 6 about here]**

## 6. Determinants of over-paying

Institutional investors can influence firms' decision making when they are dedicated or transient investors (Aghion et al., 2013) and passive investors can also influence firms' decision making by influencing corporate governance as they incur low monitoring costs (Appel et al, 2015). Moreover, institutional investors select firms based on their dividend policy, while managers cater to the preferences of the institutional investors (Desai and Jin, 2011). Therefore, we assess whether institutional investors overall and the type of institutional investor, namely, dedicated and quasi-indexer influence firms into becoming over-payers.

We employ a standard logit model where the dependent variable is a binary variable equal to one if a firm is an over-payer and zero if a firm is an under-payer based on the mid-point classification method discussed earlier. Table 7 provides an overview of the intuitional ownership variables for firms making a payout (under-payers and over-payers). Overall, institutional investors hold approximately 41% of firms that make a payout and their average portfolio turnover is approximately 19%. Moreover, long-term investors hold approximately 8% with quasi-indexers having significantly higher holdings of approximately 27% of firms that make payouts to their shareholders.

**[Insert Table 7 about here]**

The results from the logistic regression, provided in Table 8, show that overall, total institutional ownership reduces the likelihood of a firm becoming an over-payer. For instance, a one standard deviation increase in institutional investors' shareholdings decreases the likelihood of over-paying by approximately 6%. However, after controlling for total institutional ownership, we find that a one standard deviation increase in ownership of long-term investors increases the likelihood of over-paying by approximately 2.6%. Moreover, a one standard deviation decrease in investor turnover increases the likelihood of over-paying by approximately 2.2%. This suggests that, compared to short-term investors, long-term investors increase the likelihood of a firm becoming an over-payer. One explanation for this is that long-term investors are confident of their monitoring skills and invest in firms that strive to signal their potential quality by over-paying, hence, attracting institutional investors. Another explanation is that long-term investors influence firms to increase their payouts to excessive levels, which in turn increases firms' financial distress. Alternatively, long-term investors are aware that some firms they invest in have higher financial distress risk and therefore influence their payout decisions in order to transfer wealth from credit holders to shareholders as argued by Fan and Sundaresan (2000). We test which of the two explanations hold and control for self-selection by including quasi-indexer institutional investors as in Harford et al. (2015). Since quasi-indexer investors track an index they do not shift their portfolios often nor do they actively choose the firms they invest in since they replicate the index. Therefore, they are not active investors but can have a significant influence in firms' decision making as shown by

Appel et al. (2015), which allows us to test whether long-term institutional investors select firms that are already over-payers or influence firms into over-paying.

The results show that both dedicated and quasi-indexer institutional investors have a positive relationship with over-paying. A one standard deviation increase in ownership held by dedicated and quasi-indexer institutions increases the likelihood of over-paying by approximately 2.5% and 8.5% respectively. The results suggest that long-term investors influence firms into over-paying. Even though transient institutional investors are arguably linked with short-term performance, they are more loss-averse and may try to reduce the likelihood of over-paying (Li et al., 2014). Our findings are consistent with Harford et al. (2015) who find that investors with longer investor horizons push firms to increase their payouts to shareholders. Our results, are also in line with Faccio et al. (2011) who find that well diversified investors lead to greater corporate risk-taking as manifested in our results from the fact that quasi-indexers increase the likelihood of over-paying which is in turn linked to a higher default risk. Contrary to Aghion et al. (2013) suggesting that quasi-indexers do not have a "strong voice" that can influence firms' decision making, we find that passive investors can also exert influence consistent with Appel et al. (2015).

**[Insert Table 8 about here]**

In Table 8, Models 5-8, we control for alternative explanations for over-paying, in order to lend further support to our conjectures regarding the influence of institutional ownership. Financially vulnerable firms with overconfident CEOs are more likely to increase dividends when peer influence is high (Popadak, 2014). However, Leary and Roberts (2014) find that it is only small, non-dividend-paying, and financially constrained firms which want to build their reputation that are more sensitive to peer influence. Moreover, firms' dividend policy in terms of dividend initiation and level of dividend payout is significantly driven by their geographical location and local shareholder clientele (Becker et al., 2011); remotely based firms have stronger dividend recommitments and increase their dividend more often (John et al., 2011). Moreover, neighboring firms can significantly influence firms' financial policy decision making (Gao et al., 2011). Therefore, we assess the influence of peer firms and location on the propensity to overpay. We do so by including the variable city propensity to overpay estimated as the average value of the binary variable over-payer for firms headquartered in the same city, excluding the firm under consideration. Also, we control for the influence of geographical clustering and include the variable industry propensity to overpay estimated as the average value of the binary variable over-payer for firms belonging in each of the Fama and French (1997) 49 industries, excluding the firm under consideration.

Baker and Wurgler (2004) find that firms' dividend policy is driven by their investors' time varying demands and cater to their needs. Moreover, the payout choice between dividends and buybacks is driven by the dividend and buyback premiums (Jiang et al., 2013), while a higher buyback premium relative to the dividend premium increases the likelihood of firms shifting to buybacks (Kulchania, 2013). We control for the influence of catering on the decision to over-pay and follow Baker and Wurgler (2004) and Kulchania (2013) by using the dividend premium in our analysis.

Therefore, we assess whether peer influence, geographical clustering, and catering by controlling for dividend premium,[9] influence the decision to over-pay. The results on peer-influence and catering show there is a positive relationship with over-payers. In particular, a one standard deviation increase in within industry peer influence and geographical clustering increases the likelihood of a firm becoming an over-payer by approximately 4.6% and 0.6% respectively. Moreover, a higher premium increases a firm's propensity to over-pay, as a one standard deviation increase in premium increases the likelihood to over-pay by approximately

[9] Since a higher share buyback premium relative to the dividend premium can influence firms into shifting to buybacks (Kulchania, 2013) we repeat our estimations (unreported) with the share buyback premium, instead of dividend premium due to their high correlation, and our results remain unaltered.

6%, suggesting that catering to shareholders is a significant driver in the decision to over-pay. Importantly, our results on institutional ownership remain unaffected after controlling for these alternative explanations.

Overall, the results show that dedicated and passive institutional investors increase the likelihood of overpaying while over-paying firms are shown to have higher financial distress risk and on average shorter life-span. Meanwhile, peer-pressure and a higher dividend premium increase the likelihood of firms over-paying as they cater to their investors' time-variant demands.

## 7. Conclusion

Despite the rise of firm payouts over the years and the continuous pressure managers face there is limited evidence on the potential costs of "excessive" levels of payouts such as financial inflexibility. With a comprehensive sample of all publicly-listed US firms we use a set of commonly accepted variables to identify firms that pay out more than expected, which we label as over-payers. We find that over-payers pay significantly more than expected. Moreover, we use a comprehensive set of accounting- and market-based financial distress variables and firm survival measures and find that over-payers face higher financial distress and are more likely to involuntarily delist. Our results are robust when matching over-payers with suitable under-payers and show that over-payers have consistently higher financial distress and a shorter life span.

Since there is evidence suggesting that investors can influence firms' payout policy, we test whether institutional investors' ownership can be a channel that explains the firm behavior of over-paying even though such payout policies are linked to higher distress and shorter life span. We test whether institutional ownership overall and the investors' horizon influence firms into over-paying while controlling for peer-influence and geographical clustering. The results show that institutional investors overall, reduce the likelihood of overpaying. But, all else equal, it is long-term investors that push firm into over-paying contrary to short-term investors who focus on short-term gains and performance and are more loss-averse, hence, discourage firms from over-paying. Finally, we find that quasi-indexers have a more pronounced effect on increasing the likelihood of over-paying, which is in turn linked to a higher default risk, suggesting that even though quasi-indexers are passive investors that do not have a "strong voice" still exert significant influence in firms' decision making.

## References


Aghion Philippe, John Van Reenen, and Luigi Zingales, 2013, Innovation and Institutional Ownership, American Economic Review, 103, 277–304.

Allen, Franklin, Antonio E. Bernardo, and Ivo Welch, 2000, A Theory of Dividends Based on Tax Clienteles, Journal of Finance, 55, 2499-2536.

Altman, Edward I., 1968, Financial ratios, discriminant analysis and the prediction of corporate bankruptcy, Journal of Finance 23, 589–609.

Anantharaman, Divya, and Yong Gyu Lee, 2014, Managerial risk taking incentives and corporate pension policy, Journal of Financial Economics, 111, 328-351.

Andres, Christian, Markus Doumet, Erik Fernau, and Erik Theissen, 2015. The Lintner model revisited: Dividends versus total payouts, Journal of Banking and Finance, (forthcoming)

Appel, Ian R., Todd A. Gormley, and Donald B. Keim, 2015, Passive Investors, Not Passive Owners, Working Paper, The Wharton School, University of Pennsylvania.

Baker, Malcolm, and Jeffrey Wurgler, 2004, A catering Theory of Dividends, Journal of Finance, 59, 1125-1165.

Banyi, L. Monica and Kathleen M. Kahle, 2014, Declining propensity to pay? A re-examination of the lifecycle theory, Journal of Corporate Finance, 27, 345–366.

Becker, Bo, Zoran Ivković, and Scott Weisbenner, 2011, Local dividend clienteles, Journal of Finance 66, 655–683.

Benartzi, Shlomo, Roni Michaely, and Richard Thaler, 1997, Do Changes in Dividends Signal the Future or the Past? Journal of Finance, 52, 1007-1034.

Bhattacharya, Utpal, Alexander Borisov, and Xiaoyun Yu, 2015, Firm Mortality and Natal Financial Care, Journal of Financial and Quantitative Analysis, 50, 61-88.

Blau, Benjamin M., and Kathleen P. Fuller, 2008, Flexibility and dividends, Journal of Corporate Finance, 14, 133-152.

Bonaimé, Alice A., Kristine Watson Hankins, and Jarrad Harford, 2013, Financial Flexibility, Risk Management, and Payout Choice, Review of Financial Studies, 27, 1074-1101.

Brav, Alon, Wei Jiang, Frank Partnoy, and Randall Thomas, 2008, Hedge Fund Activism, Corporate Governance, and Firm Performance, Journal of Finance, 63, 1729-1775.

Brockman, Paul, Xiumin Martin, and Emre Unlu, 2010, Executive Compensation and the Maturity Structure of Corporate Debt, Journal of Finance, 65, 1123-1161.

Bulan, Laarni, and Tyler Hull, 2013, The impact of technical defaults on dividend policy, Journal of Banking and Finance, 37, 814-823.

Bulan, Laarni, Narayanan Subramanian, and Lloyd Tanlu, 2007, On the Timing of Dividend Initiations, Financial Management, 36, 31-65.

Bushee, Brian J., 1998, The Influence of Institutional Investors on Myopic R&D Investment Behavior, Accounting Review, 73, 305–33.

Bushee, Brian J., 2001, Do Institutional Investors Prefer Near-Term Earnings over Long-Run Value? Contemporary Accounting Research, 18, 207-246.

Bushee, Brian J., and Christopher F. Noe, 2000, Corporate Disclosure Practices, Institutional Investors, and Stock Return Volatility, Journal of Accounting Research, 38, 171-202.

Bushee, Brian J., and Theodore H. Goodman, 2007, Which Institutional Investors Trade Based on Private Information About Earnings and Returns? Journal of Accounting Research, 45, 289-322.

Campbell, J.Y., Jens Hilscher, Jan Szilagyi, 2008, In Search of Distress Risk, Journal of Finance 63, 2899-2939.

Charitou, Andreas, Neophytos Lambertides, and Giorgos Theodoulou, 2011, Dividend Increases and Initiations and Default Risk in Equity Returns, Journal of Financial and Quantitative Analysis, 46, 1521-1543.

Chava, Sudheer, and Amiyatosh Purnanandam, 2010, Is Default Risk Negatively Related to Stock Returns? Review of Financial Studies, 23, 2523-2559.

Chen, Sheng-Syan, and Yanzhi Wang, 2012, Financial constraints and share repurchases, Journal of Financial Economics, 105, 311-331.

Cornelli, Francesca, Zbigniew Kominek, and Alexander Ljungvist, 2013, Monitoring Managers: Does It Matter? Journal of Finance, 68, 431-481.

DeAngelo, Harry, and Linda DeAngelo, 1990, Dividend Policy and Financial Distress: An Empirical Investigation of Troubled NYSE Firms, Journal of Finance, 45, 1415-1431.

DeAngelo, Harry, Linda DeAngelo, and René M. Stulz, 2006, Dividend Policy and the earned/contributed capital mix: a test of the life-cycle theory, Journal of Financial Economics, 81, 227-254.

Derrien, François, Ambrus Kecskés, and David Thesmar, 2013, Investor Horizons and Corporate Policies, Journal of Financial and Quantitative Analysis, 48, 1755-1780.

Desai, Mihir A., and Li Jin, 2011, Institutional tax clienteles and payout policy, Journal of Financial Economics, 100, 68-84.

Dittmar, Amy K., 2000, Why do firms repurchase stock? Journal of Business, 73, 331-355.

Eisdorfer, Assaf, 2008, Empirical Evidence of Risk Shifting in Financially Distressed Firms, Journal of Finance, 63, 609-637.

Eric, Platt, and Michael MacKenzie, 2015, US companies on course to return $1tn to shareholders in 2015, Financial Times, April 12. http://www.ft.com/cms/s/0/2c1a34d8dfa511e4a06a00144feab7de.html#axzz3X634h4Bf.

Faccio, Mara, Maria-Teresa Marchica, and Roberto Mura, 2011, Large Shareholder Diversification and Corporate Risk-Taking, Review of Financial Studies, 24, 3601-3641.

Fama, Eugene F., and Kenneth R. French, 1997, Industry costs of equity. Journal of Financial Economics, 43, 153–193.

Fama, Eugene F., and Kenneth R. French, 2001, Disappearing dividends: changing firm characteristics or lower propensity to pay? Journal of Financial Economics, 60, 31-43.

Fan, Hua, and Suresh M. Sundaresan, 2000, Debt Valuation, Renegotiation, and Optimal Dividend Policy, Review of Financial Studies, 13, 1057-1099.

Faulkender, Michael, and Rong Wang, 2006, Corporate Financial Policy and the Value of Cash, Journal of Finance, 61, 1957-1990.

Fazzari, Steven M., R. Glenn Hubbard, and Bruce C. Petersen, 1988, Financing constraints and corporate investment, Brooking Papers on Economic Activity, 1, 141–195.

Fuller, Kathleen P., and Michael A. Goldstein, 2011, Do dividends matter more in declining markets? Journal of Corporate Finance, 17, 457-473.

Gao, Wenlian, Lilian Ng, and Qinghai Wang, 2011. Does corporate headquarters location matter for corporate financial policies? Financial Management 40, 113–138.

Garlappi, Lorenzo, Tao Shu, and Hong Yan, 2008, Default Risk, Shareholder Advantage, and Stock Returns, Review of Financial Studies, 21, 2743-2778.

Gaspar, Jose-Miguel, Massimo Massa, and Pedro Matos, 2005, Shareholder investment horizons and the market for corporate control, Journal of Financial Economics, 76, 135-165.

Gaspar, Jose-Miguel, Massimo Massa, Pedro Matos, Rajdeep Patgiri, and Zahid Rehman, 2012, Payout Policy Choices and Shareholder Investment Horizons, Review of Finance, 17, 261-320.

Grinstein, Yaniv, and Roni Michaely, 2005, Institutional Holdings and Payout Policy, Journal of Finance, 60, 1389-1426.

Grullon, Gustavo, Roni Michaely, and Bhaskaran Swaminathan, 2002, Are Dividend Changes a Sign of Firm Maturity? Journal of Business, 75, 387-424.

Haldane, Andrew, 2015, Who owns a company? Speech available at http://www.bankofengland.co.uk/publications/Pages/speeches/2015/833.aspx

Harford, Jarrad, Ambrus Kecskés, and Sattar Mansi, 2015, Do Long-Term Investors Improve Corporate Decision Making? Working Paper. Available at SSRN: http://ssrn.com/abstract=2505261

Harris, E. Lawrence, Samuel M. Hartzmark, and David H. Solomon, 2015, Juicing the dividend yield: Mutual funds and the demand for dividends, Journal of Financial Economics, 116, 433-451.

Hull, Tyler J., 2013, Does the timing of dividend reductions signal value? Empirical evidence, Journal of Corporate Finance, 22, 193–208.

Jiang, Zhan, Kenneth A. Kim, Erik Lie, and Sean Yang, 2013, Share repurchases, catering, and dividend substitution, Journal of Corporate Finance, 21, 36-50.

John, Kose, Anzhela Knyazeva, and Diana Knyazeva, 2011, Does geography matter? Firm location and corporate payout policy, Journal of Financial Economics, 101, 533-551.

Kaplan, Steven, and Bernadette Minton, 2012, How Has CEO Turnover Changed? International Review of Finance, 12, 57-87.

Kay, John, 2012, The Kay review of UK equity markets and long-term decision making, available at: https://www.gov.uk/government/news/kay-review-publishes-report-on-uk-financial-sector.

Kim, Kihun, and Jinho Byun, 2013, Dividend Catering, Investor Protection, and Sentiment: A Cross-Country Analysis, Working paper, Available at SSRN: http://ssrn.com/abstract=2323947.

Kulchania, Manoj, 2013, Catering driven substitution in corporate payouts, Journal of Corporate Finance, 21, 180-195.

Leary, Mark T., and Michael R. Roberts, 2014, Do Peer Firms Affect Corporate Financial Policy? Journal of Finance, 69, 139-178.

Leary, Mark T., and Roni Michaely, 2011, Determinants of Dividend Smoothing: Empirical Evidence, Review of Financial Studies, 21, 3197-3249.

Lee, Cheng-Few, Manak C. Gupta, Hong-Yi Chen, and Alice C. Lee, 2011, Optimal payout ratio under uncertainty and the flexibility hypothesis: Theory and empirical evidence, Journal of Corporate Finance, 17, 483-501.

Li, Sailu, Anan Zhuang, and Dmitry Shapiro, 2014, Dividend Payout Policy and Institutional Investors Ownership: Theory and Empirical Evidence, Working Paper, Belk College of Business.

Li, Wei, and Erik Lie, 2006, Dividend changes and catering incentives, Journal of Financial Economics, 80, 293-308.

Lintner, John, 1956, Distribution of incomes of corporations among dividends, retained earnings, and taxes, American Economic Review, 46, 97-113.

Manconi, Alberto, and Massimo Massa, 2013, A Servant to Many Masters: Competing Shareholder Preferences and Limits to Catering, Journal of Financial and Quantitative Analysis, 48, 1693–1716.

Maxwell, William, and Clifford Stephens, 2003, The Wealth Effects of Repurchases on Bondholders, Journal of Finance, 58, 895-919.

Merton, Robert C., 1974, On the pricing of corporate debt: The risk structure of interest rates, Journal of Finance, 29, 449–470.

Michaely, Roni, Richard H. Thaler, and Kent Womack, 1995, Price reactions to dividend initiations and omissions: Overreaction or drift? Journal of Finance, 50, 573-608.

Mikkelson, Wayne H., and Megan M. Partch, 2003, Do persistent large cash reserves hinder performance? Journal of Financial and Quantitative Analysis, 38, 275-294.

Myers, Stewart C., and Nicholas S. Majluf, 1984, Corporate financing and investment decisions when firms have information that investors do not have, Journal of Financial Economics, 13, 187-221.

Ohlson, James A., 1980, Financial ratios and the probabilistic prediction of bankruptcy, Journal of Accounting Research, 18, 109–131.

Popadak, Jillian, 2014, Dividend payments as a response to peer influence, Working paper, Duke University.

Porter, Michael, 1992, Capital Disadvantage: America's Failing Capital Investment System, Harvard Business Review, 70, 65–82.

Pryschepa, Oksana, Kevin Aretz, and Shantanu Banerjee, 2013, Can investors restrict managerial behavior in distressed firms? Journal of Corporate Finance, 23, 222-239

Rapp, Marc S., Thomas Schmid, and Daniel Urban, 2014, The value of financial flexibility and corporate financial policy, Journal of Corporate Finance, 29, 288-302.

Skinner, Douglas J., 2008. The evolving relation between earnings, dividends, and stock repurchases, Journal of Financial Economics, 87, 582–609.

The Influence of Institutional Investors on Myopic R&D Investment Behavior, Accounting Review, 73, 305–33.

von Eije, Henk, Abhinav Goyal, and Cal B. Muckley, 2014, Does the information content of payout initiations and omissions influence firm risks? Journal of Econometrics, 183, 222-229.

Yan, Xuemin, and Zhe Zhang, 2009, Institutional Investors and Equity Returns: Are Short-term Institutions Better Informed? Review of Financial Studies, 22, 893-924.

Zmijewski, Mark E., 1984, Methodological issues related to the estimation of financial distress prediction models, Journal of Accounting Research 22, 59–82.

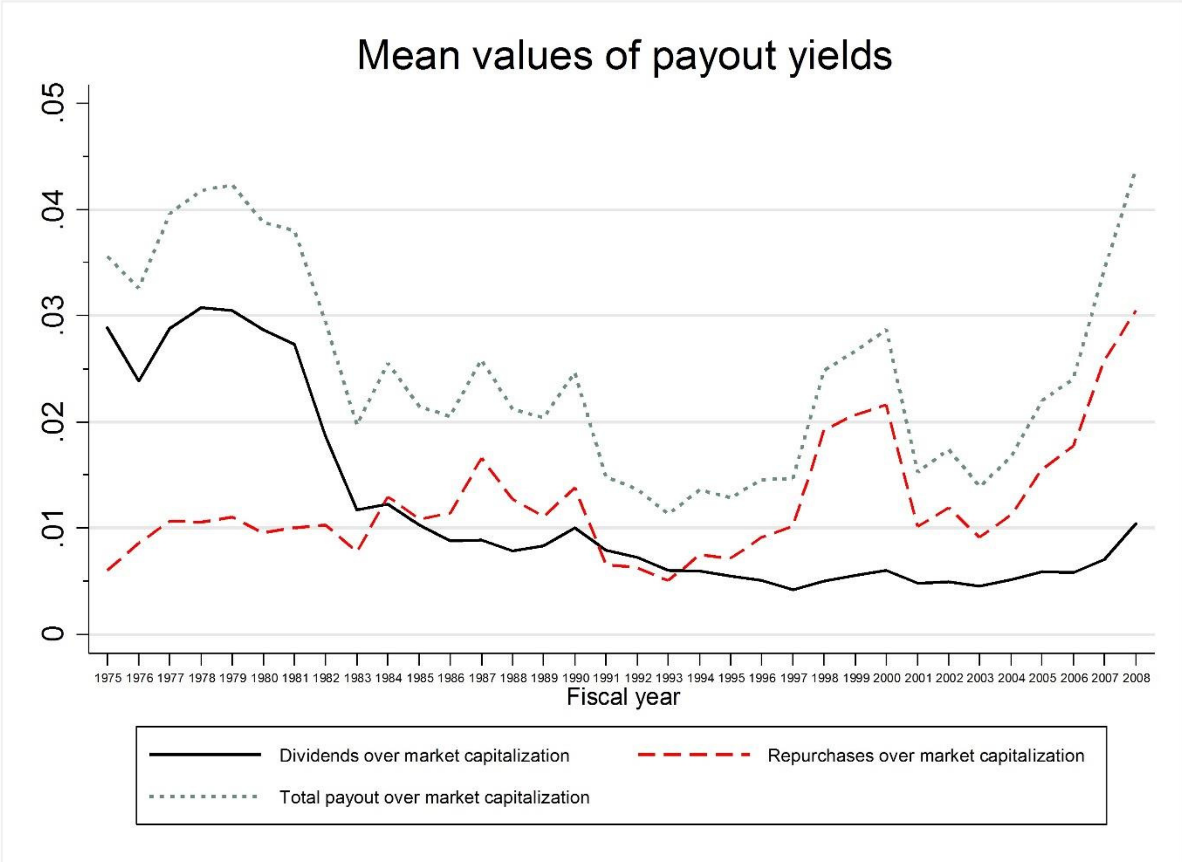


**Figure 1. Payout yields over time.** The graph shows the annual dividend yield, share repurchases, and total payout yield, scaled by market capitalization of US listed firms from 1975 to 2008.

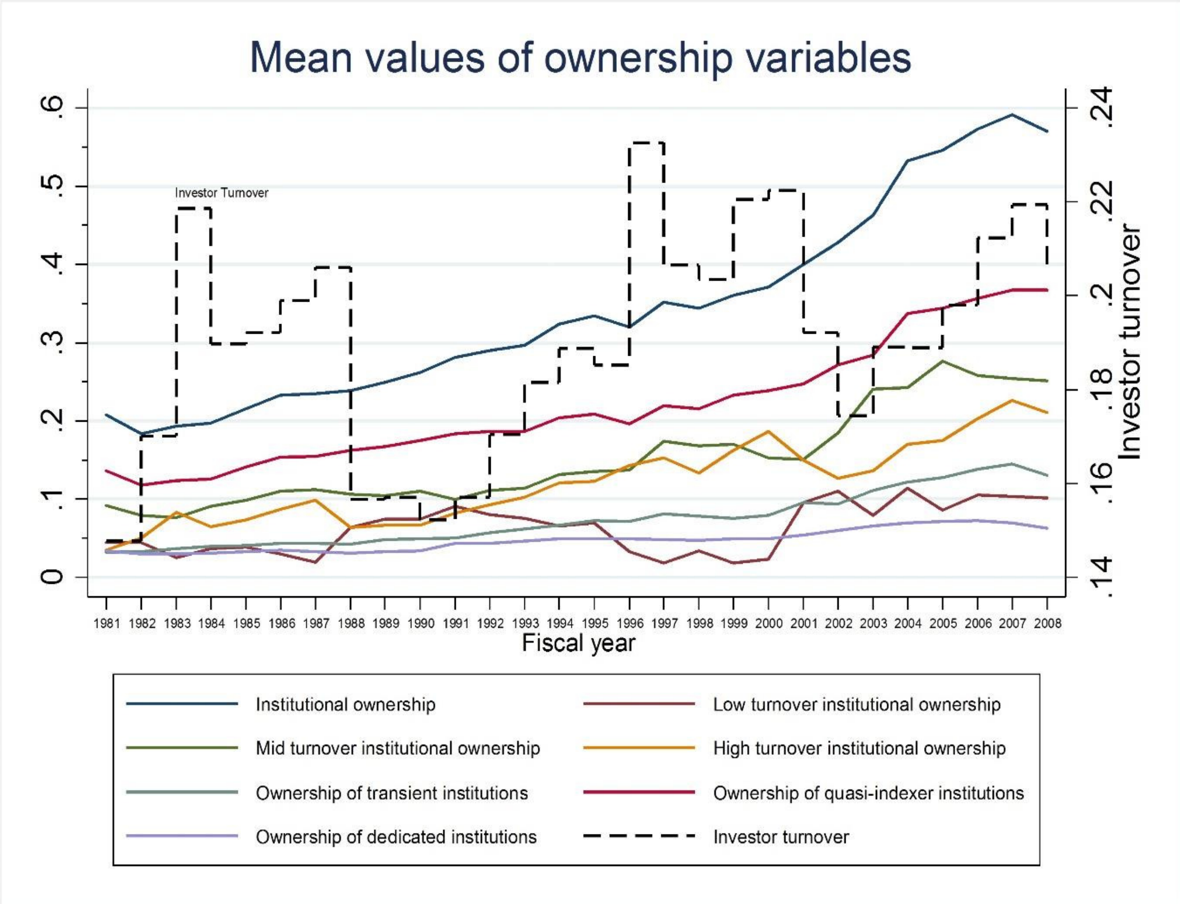


**Figure 2. Institutional ownership and investor turnover over time.** The graph shows the annual shareholdings of institutional investors from 1981 to 2008. The institutional ownership data are collected from the quarterly institutional holdings reported in the Thomson-Reuters Institutional Holdings (13F) database. The institutional investor holdings and classifications are estimated by merging the Thomson-Reuters Institutional Holdings (13F) database with Brian Bushee's institutional investor classifications. The measure of investor turnover and the classifications of low, moderate and high turnover are estimated as in Gaspar et al. (2012).

**Table 1. Summary Statistics**

This table presents summary statistics for the sample used in this study. The main data source is the CRSP / Compustat merged database of firm-level data for all US-listed firms during 1975-2013. We exclude financial firms (SIC 6000-6999), utilities (SIC codes 4900-4949), and securities other than common stock. Panel A reports the annual common dividends, share repurchases, and total payout (measure as the sum of dividends and share repurchases) scaled by capitalization. Also reported, are the variables used for identifying the expected payout estimated in Table 2. Panel B reports an array of alternative financial distress and firm survival (voluntary and involuntary delisting) measures. Panel C reports the institutional ownership variables from Thomson-Reuters Institutional Holdings (13F) database and Brian Bushee's institutional investor classifications. The measure of investor turnover and the classifications of low, moderate and high turnover are estimated as in Gaspar et al. (2012). All variables, except binary variables, are winsorized at the 1% and 99% tails and are defined in the Appendix.

**Panel A. Payouts and Payout Controls**

| | N | Mean | Median | St. Dev. | Min | Max |
|---|---|---|---|---|---|---|
| Total payout | 76,392 | 0.0227 | 0.0015 | 0.0419 | 0.0000 | 0.2601 |
| Cash flow | 76,392 | 0.0788 | 0.1184 | 0.1903 | -0.9068 | 0.3661 |
| Market-to-book | 76,392 | 1.7087 | 1.2905 | 1.2934 | 0.5821 | 8.6793 |
| Firm size | 76,392 | 4.2795 | 4.1218 | 2.0969 | 0.0217 | 9.6440 |
| Leverage | 76,392 | 0.1802 | 0.1371 | 0.1671 | 0.0000 | 0.6875 |
| Retained earnings | 76,392 | -0.1162 | 0.1633 | 1.0486 | -6.3279 | 0.7817 |
| Cash holdings | 76,392 | 0.1226 | 0.0590 | 0.1569 | 0.0002 | 0.7689 |
| Idiosyncratic risk | 76,392 | 0.0372 | 0.0309 | 0.0230 | 0.0096 | 0.1286 |
| Systematic risk | 76,392 | 0.0073 | 0.0059 | 0.0061 | 0.0001 | 0.0327 |
| Firm age | 76,392 | 14.7198 | 10.0000 | 14.4223 | 1.0000 | 83.0000 |

**Panel B. Financial Distress and Firm Survival**

| | N | Mean | Median | St. Dev. | Min | Max |
|---|---|---|---|---|---|---|
| Interest coverage | 56,088 | 2.1685 | 1.9233 | 1.0350 | 0.7584 | 5.9086 |
| Z-score-Dummy | 76,392 | 0.8425 | 1 | 0.3642 | 0 | 1 |
| Zmijewski-score | 76,392 | -1.1788 | -1.4454 | 1.8820 | -4.1175 | 7.5445 |
| O-score | 76,392 | -3.7629 | -4.1207 | 2.6351 | -9.0832 | 6.5054 |
| Distance to default | 76,392 | 6.4234 | 5.1752 | 5.5749 | -1.7371 | 27.9035 |
| Default probability | 76,392 | 6.7592 | 0.0000 | 18.9284 | 0.0000 | 95.8819 |
| CHS-score | 76,392 | -6.9231 | -7.5094 | 1.8952 | -9.1169 | 1.3044 |
| Default probability (CHS) | 76,392 | 1.9630 | 0.0548 | 9.8732 | 0.0110 | 78.6575 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Merger and acquisition (year +5) | 76,392 | 0.1873 | 0 | 0.3901 | 0 | 1 |
| Exchange transaction (year +5) | 76,392 | 0.0097 | 0 | 0.0981 | 0 | 1 |
| Liquidation (year +5) | 76,392 | 0.0027 | 0 | 0.0516 | 0 | 1 |
| Exchange dropped (year +5) | 76,392 | 0.1379 | 0 | 0.3448 | 0 | 1 |
| Liquidation and Exchange dropped (year +5) | 76,392 | 0.1406 | 0 | 0.3476 | 0 | 1 |

**Panel C. Institutional Ownership**

| | N | Mean | Median | St. Dev. | Min | Max |
|---|---|---|---|---|---|---|
| Institutional ownership | 52,056 | 0.3461 | 0.2968 | 0.2709 | 0.0007 | 0.9523 |
| Investor turnover | 52,056 | 0.1921 | 0.1899 | 0.0631 | 0.0446 | 0.4186 |
| Low turnover institutional ownership | 52,056 | 0.0615 | 0.0385 | 0.0680 | 0.0000 | 0.3148 |
| Mid turnover institutional ownership | 52,056 | 0.1526 | 0.1212 | 0.1368 | 0.0000 | 0.5366 |
| High turnover institutional ownership | 52,056 | 0.1244 | 0.0844 | 0.1293 | 0.0000 | 0.5315 |
| Ownership of dedicated institutions | 52,056 | 0.0478 | 0.0181 | 0.0648 | 0.0000 | 0.3026 |
| Ownership of quasi-indexer institutions | 52,056 | 0.2200 | 0.1811 | 0.1805 | 0.0000 | 0.6761 |

**Table 2. Payout Tobit models**

This table presents Tobit regression results on a panel data set of firm-year total payout and a set of established payout determinants for all US-listed firms during 1975-2008, as per the following equation:

$$Total\ Payout_{i,t} = \alpha + \beta_1 Cash\ Flow_{i,t} + \beta_2 Market - to - Book_{i,t} + \beta_3 Firm\ Size_{i,t} + \beta_4 Leverage_{i,t} + \beta_5 Retained\ Earnings_{i,t} + \beta_6 Cash\ Holdings_{i,t} + \beta_7 Idiosyncratic\ Risk_{i,t} + \beta_8 Systematic\ Risk_{i,t} + \beta_9 Firm\ Age_{i,t} + u_{i,t}$$

We exclude financial firms (SIC 6000-6999), utilities (SIC codes 4900-4949), and securities other than common stock. All variables, except binary variables, are winsorized at the 1% and 99% tails. All variables are defined in the Appendix. The regression includes industry and year controls. Industries are defined using the Fama and French (1992) 49 industries classification. We use standard errors clustered by firm to accommodate heteroskedasticity and within-firm autocorrelation. The robust standard errors are reported in parentheses. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

| | Total payout |
|---|---|
| Cash flow | 0.0210*** |
| | (0.0037) |
| Market-to-book | -0.0094*** |
| | (0.0005) |
| Firm Size | 0.0058*** |
| | (0.0003) |
| Leverage | -0.0019 |
| | (0.0029) |
| Retained earnings | 0.0061*** |
| | (0.0009) |
| Cash holdings | 0.0251*** |
| | (0.0029) |
| Idiosyncratic risk | -0.5930*** |
| | (0.0315) |
| Systematic risk | -1.0180*** |
| | (0.0749) |
| Firm age | 0.0005*** |
| | (0.0000) |
| Constant | 0.0164*** |
| | (0.0062) |
| Industry & Year controls | ✓ |
| Observations | 76,392 |
| Pseudo $R^2$ | -0.373 |

**Table 3. Non-payers, under-payers, moderate-payers, and over-payers**

This table presents the average actual and predicted payout yields for all US-listed firms during 1975-2008. We exclude financial firms (SIC 6000-6999), utilities (SIC codes 4900-4949), and securities other than common stock. The mean payout yield is the total payout of firm i at year t, measured as the sum of total common dividends and purchase of common and preferred shares minus the reduction in the book value of preferred stock, scaled by market capitalization. The predicted payout yield is the residual $u_{i,t}$ estimated from the Tobit regression as shown in Table 2, based on which we use three alternative classifications to identify over-payers and under-payers. The Mid-point classification identifies firm i at year t as an over-payer if the residual $u_{i,t}$ is positive, as an under-payer if the residual $u_{i,t}$ is negative, and as a non-payer if there is no payout at year t. The Terciles classification identifies firm i at year t as an over-payer if the residual $u_{i,t}$ is in the top tercile, as a moderate-payer if if the residual $u_{i,t}$ is in the middle tercile, as an under-payer if the residual $u_{i,t}$ is in the lower tercile, and as a non-payer if there is no payout at year t. The Persistent classification identifies firm i at year t as an over-payer if the residual $u_{i,t}$ is positive over three consecutive years, as an under-payer if the residual $u_{i,t}$ is negative over three consecutive years, as a non-payer if there is no payout over three consecutive years, and all other payers are labelled as unclassified.

| | N | Mean payout yield | Mean predicted payout yield |
|---|---|---|---|
| **Mid-point classification** | | | |
| Non-payers | 35,617 | 0.0000 | 0.0152 |
| Under-payers | 23,740 | 0.0181 | 0.0354 |
| Over-payers | 17,035 | 0.0764 | 0.0313 |
| **Terciles classification** | | | |
| Non-payers | 35,617 | 0.0000 | 0.0152 |
| Under-payers | 13,592 | 0.0158 | 0.0408 |
| Moderate-payers | 13,592 | 0.0243 | 0.0287 |
| Over-payers | 13,591 | 0.0874 | 0.0317 |
| **Persistent classification** | | | |
| Non-payers | 13,718 | 0.0000 | 0.0000 |
| Under-payers | 7,714 | 0.0202 | 0.0174 |
| Unclassified | 19,876 | 0.0338 | 0.0171 |
| Over-payers | 3,932 | 0.0757 | 0.0589 |

**Table 4. Total payout and financial distress.**

This table presents the average values for a range of financial distress variables for all US-listed firms during 1975-2008. We exclude financial firms (SIC 6000-6999), utilities (SIC codes 4900-4949), and securities other than common stock. The average values and the differences in means are reported for each firm type based on three alternative classifications. The Mid-point classification identifies firm i at year t as an over-payer if the residual $u_{i,t}$ is positive, as an under-payer if the residual $u_{i,t}$ is negative, and as a non-payer if there is no payout at year t. The Terciles classification identifies firm i at year t as an over-payer if the residual $u_{i,t}$ is in the top tercile, as a moderate-payer if if the residual $u_{i,t}$ is in the middle tercile, as an under-payer if the residual $u_{i,t}$ is in the lower tercile, and as a non-payer if there is no payout at year t. The Persistent classification identifies firm i at year t as an over-payer if the residual $u_{i,t}$ is positive over three consecutive years, as an under-payer if the residual $u_{i,t}$ is negative over three consecutive years, as a non-payer if there is no payout over three consecutive years, and all other payers are labelled as unclassified. All financial distress variables, except binary variables, are winsorized at the 1% and 99% tails. All variables are defined in the Appendix. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

| | Non-payers (1) | Under-payers (2) | Moderate/ Unclassified Payers (3) | Over-payers (4) | Difference in means | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | (1) vs (2) | (1) vs (3) | (1) vs (4) | (2) vs (3) | (2) vs (4) | (3) vs (4) |
| **Interest Coverage** | | | | | | | | | | |
| **Mid-point:** | 2.0039 | 2.2905 | - | 2.2311 | -0.287*** | - | -0.227*** | - | 0.0594*** | - |
| **Terciles:** | 2.0039 | 2.2862 | 2.2933 | 2.2185 | -0.282*** | -0.289*** | -0.215*** | -0.0071 | 0.0678*** | 0.0749*** |
| **Persistent** | 1.9627 | 2.3334 | 2.1490 | 2.2089 | -0.371*** | -0.186*** | -0.246*** | 0.184*** | 0.125*** | -0.0599** |
| **Z-Score - Dummy** | | | | | | | | | | |
| **Mid-point:** | 0.7602 | 0.9309 | - | 0.8916 | -0.171*** | - | -0.131*** | - | 0.0393*** | - |
| **Terciles:** | 0.7602 | 0.9410 | 0.9138 | 0.8887 | -0.181*** | -0.154*** | -0.129*** | 0.0272*** | 0.0522*** | 0.0250*** |
| **Persistent** | 0.7608 | 0.9514 | 0.8740 | 0.9293 | -0.191*** | -0.113*** | -0.168*** | 0.0774*** | 0.0221*** | -0.0553*** |
| **Zmijewski-score** | | | | | | | | | | |
| **Mid-point:** | -0.7496 | -1.6523 | - | -1.4162 | 0.903*** | - | 0.667*** | - | -0.236*** | - |
| **Terciles:** | -0.7496 | -1.6733 | -1.5766 | -1.4110 | 0.924*** | 0.827*** | 0.661*** | -0.0967*** | -0.262*** | -0.166*** |
| **Persistent** | -0.7975 | -1.7239 | -1.3454 | -1.4641 | 0.926*** | 0.548*** | 0.667*** | -0.378*** | -0.260*** | 0.119*** |
| **O-score** | | | | | | | | | | |
| **Mid-point:** | -2.8327 | -4.7988 | - | -4.2644 | 1.966*** | - | 1.432*** | - | -0.534*** | - |
| **Terciles:** | -2.8327 | -5.0052 | -4.4540 | -4.2674 | 2.172*** | 1.621*** | 1.435*** | -0.551*** | -0.738*** | -0.187*** |
| **Persistent** | -3.0237 | -5.1388 | -4.1763 | -4.4103 | 2.115*** | 1.153*** | 1.387*** | -0.963*** | -0.729*** | 0.234*** |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | **Default probability** | | | | | |
| **Mid-point:** | 10.455 | 2.2553 | - | 5.3088 | 8.200*** | - | 5.146*** | - | -3.053*** | - |
| **Terciles:** | 10.4549 | 1.6663 | 3.2324 | 5.6943 | 8.789*** | 7.222*** | 4.761*** | -1.566*** | -4.028*** | -2.462*** |
| **Persistent** | 10.6421 | 1.4443 | 6.1954 | 3.6118 | 9.198*** | 4.447*** | 7.030*** | -4.751*** | -2.167*** | 2.584*** |
| | | | | | **Default probability (CHS)** | | | | | |
| **Mid-point:** | 3.4090 | 0.3071 | | 1.2473 | 3.102*** | | 2.162*** | - | -0.940*** | - |
| **Terciles:** | 3.4090 | 0.1224 | 0.7129 | 1.2644 | 3.287*** | 2.696*** | 2.145*** | -0.591*** | -1.142*** | -0.551*** |
| **Persistent** | 2.9931 | 0.1344 | 1.2070 | 0.5716 | 2.859*** | 1.786*** | 2.421*** | -1.073*** | -0.437*** | 0.635*** |

**Table 5. Total payout and firm survival.**

This table presents the average values for a range of firm survival variables for all US-listed firms during 1975-2013. We exclude financial firms (SIC 6000-6999), utilities (SIC codes 4900-4949), and securities other than common stock. As in Bhattacharya et al. (2015) we consider two types of delistings: voluntary and involuntary delistings. As voluntary delistings we consider firms that are involved in (a) mergers and acquisitions (Merger) and (b) Exchange Transactions. As involuntary delistings we consider firms that are (c) liquidated, where firms are forced to cease operations and sell their assets (Liquidation); (d) dropped from a stock exchange, where firms are dropped for reasons other than liquidation or voluntary delisting (Exchange dropped); and (e) a combination of firms that are liquidated or dropped from the exchange (Liquidation and Exchange dropped). The average firm survival values and the differences in means are reported for each firm type based on three alternative classifications. The Mid-point classification identifies firm i at year t as an over-payer if the residual $u_{i,t}$ is positive, as an under-payer if the residual $u_{i,t}$ is negative, and as a non-payer if there is no payout at year t. The Terciles classification identifies firm i at year t as an over-payer if the residual $u_{i,t}$ is in the top tercile, as a moderate-payer if if the residual $u_{i,t}$ is in the middle tercile, as an under-payer if the residual $u_{i,t}$ is in the lower tercile, and as a non-payer if there is no payout at year t. The Persistent classification identifies firm i at year t as an over-payer if the residual $u_{i,t}$ is positive over three consecutive years, as an under-payer if the residual $u_{i,t}$ is negative over three consecutive years, as a non-payer if there is no payout over three consecutive years, and all other payers are labelled as unclassified. All firm survival variables are defined in the Appendix. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

| | Non-payers (1) | Under-payers (2) | Moderate/ Unclassified Payers (3) | Over-payers (4) | Difference in means | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | (1) vs (2) | (1) vs (3) | (1) vs (4) | (2) vs (3) | (2) vs (4) | (3) vs (4) |
| **Panel A. Voluntary delisting** | | | | | | | | | | |
| | | | | | **Merger and acquisition (year +5)** | | | | | |
| **Mid-point:** | 0.1873 | 0.1857 | | 0.1893 | 0.0016 | | -0.002 | | -0.0036 | |
| **Terciles:** | 0.1873 | 0.1814 | 0.1898 | 0.1904 | 0.0059 | -0.0025 | -0.0031 | -0.0084 | -0.0090 | -0.0006 |
| **Persistent** | 0.1892 | 0.1667 | 0.1953 | 0.1798 | 0.0225*** | -0.0061 | 0.0094 | -0.0286*** | -0.0131 | 0.0155* |
| | | | | | **Exchange transaction (year +5)** | | | | | |
| **Mid-point:** | 0.0061 | 0.0125 | | 0.0133 | -0.00636*** | | -0.00718*** | | -0.00082 | |
| **Terciles:** | 0.0061 | 0.0121 | 0.0143 | 0.0121 | -0.00592*** | -0.00820*** | -0.00599*** | -0.0023 | -0.0001 | 0.0022 |
| **Persistent** | 0.0051 | 0.0131 | 0.0102 | 0.0160 | -0.0079*** | -0.00506*** | -0.0109*** | 0.00293* | -0.0029 | -0.00586** |
| **Panel B. Involuntary delisting** | | | | | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | **Liquidation (year +5)** | | | | | |
| **Mid-point:** | 0.0024 | 0.0027 | | 0.0033 | -0.0003 | | -0.0009 | | -0.00059 | |
| **Terciles:** | 0.0024 | 0.0025 | 0.0032 | 0.0032 | -0.0001 | -0.0008 | -0.0008 | -0.0007 | -0.0007 | 0.0000 |
| **Persistent** | 0.0015 | 0.0023 | 0.0024 | 0.0010 | -0.0009 | -0.0009 | 0.0004 | 0.0000 | 0.0013 | 0.00135* |
| | | | | | **Exchange dropped (year +5)** | | | | | |
| **Mid-point:** | 0.2242 | 0.0487 | | 0.0819 | 0.176*** | | 0.142*** | | -0.0332*** | |
| **Terciles:** | 0.2242 | 0.0334 | 0.0717 | 0.0826 | 0.191*** | 0.153*** | 0.142*** | -0.0383*** | -0.0492*** | -0.0109*** |
| **Persistent** | 0.2030 | 0.0239 | 0.0998 | 0.0509 | 0.179*** | 0.103*** | 0.152*** | -0.0759*** | -0.0270*** | 0.0489*** |
| | | | | | **Liquidation and Exchange dropped (year +5)** | | | | | |
| **Mid-point:** | 0.2242 | 0.0487 | | 0.0819 | 0.176*** | | 0.142*** | | -0.0332*** | |
| **Terciles:** | 0.2242 | 0.0334 | 0.0717 | 0.0826 | 0.191*** | 0.153*** | 0.142*** | -0.0383*** | -0.0492*** | -0.0109*** |
| **Persistent** | 0.2030 | 0.0239 | 0.0998 | 0.0509 | 0.179*** | 0.103*** | 0.152*** | -0.0759*** | -0.0270*** | 0.0489*** |

**Table 6. Covariate matching.**

This table reports the results on the average treatment effect on the treated (ATT) for an array of financial distress variables and an involuntary delisting measure for all US-listed firms during 1975-2013. We exclude financial firms (SIC 6000-6999), utilities (SIC codes 4900-4949), and securities other than common stock. The mid-point classification is used for matching each firm year observation of an over-payer (treated) with a suitable under-payer (untreated), by using a one-to-one nearest neighbor covariate matching method with replacement. Non-payers are excluded from the matching process. Panel A reports the results on matching treated and untreated firms based on the expected level of payout (predicted). Panel B reports the results on matching treated and untreated firms based on the similarity of the firm specific characteristics (all controls), relying on the non-binary independent variables of the Tobit regression as shown in Table 2. All financial distress variables, except binary variables, are winsorized at the 1% and 99% tails. All variables are defined in the Appendix. t-statistics are reported in parentheses. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

| **Panel A. Predicted**<br>No of treated=17,035; Bias before = 24.34236; Bias after = 0.000733 | **ATT** | **t-stat** |
|---|---|---|
| Interest Coverage | -0.0927*** | (-5.557) |
| Z-Score - Dummy | -0.0283*** | (-7.313) |
| O-score | 0.3316*** | (12.212) |
| Zmijewski-score | 0.1723*** | (8.999) |
| Default probability | 2.4781*** | (13.345) |
| Default probability (CHS) | 0.7510*** | (9.915) |
| Liquidation and Exchange dropped (year +5) | 0.0193*** | (5.554) |
| **Panel B. All Controls**<br>No of treated=17,035; Bias before = 24.34236; Bias after = 2.424859 | **ATT** | **t-stat** |
| Interest Coverage | -0.0089 | (-0.539) |
| Z-Score - Dummy | -0.0214*** | (-5.477) |
| O-score | 0.1789*** | (6.612) |
| Zmijewski-score | 0.1203*** | (6.313) |
| Default probability | 1.4405*** | (7.370) |
| Default probability (CHS) | 0.6539*** | (8.451) |
| Liquidation and Exchange dropped (year +5) | 0.0121*** | (3.394) |

**Table 7. Over-payers and under-payers: Sample overview**

This table presents summary statistics on the channels that explain the likelihood to over-pay (in table 8) for the reduced sample of over-payers and under-payers (i.e. excluding non-payers) based on the mid-point classification. The main data source is the CRSP / Compustat merged database of firm-level data for all US-listed firms during 1975-2008. We exclude financial firms (SIC 6000-6999), utilities (SIC codes 4900-4949), and securities other than common stock. Panel A reports the institutional ownership variables from Thomson-Reuters Institutional Holdings (13F) database and Brian Bushee's institutional investor classifications. The measure of investor turnover and the classifications of low, moderate and high turnover are estimated as in Gaspar et al. (2012). All variables are winsorized at the 1% and 99% tails and are defined in the Appendix.

| | **Determinants of over-payers** | | | | | |
|---|---|---|---|---|---|---|
| | N | Mean | Median | St. Dev. | Min | Max |
| Institutional ownership | 27,619 | 0.4134 | 0.4016 | 0.2665 | 0.0007 | 0.9523 |
| Investor turnover | 27,619 | 0.1894 | 0.1878 | 0.0531 | 0.0446 | 0.4186 |
| Low turnover institutional ownership | 27,619 | 0.0778 | 0.0588 | 0.0737 | 0.0000 | 0.3148 |
| Ownership of dedicated institutions | 27,619 | 0.0561 | 0.0316 | 0.0669 | 0.0000 | 0.3026 |
| Ownership of quasi-indexer institutions | 27,619 | 0.2738 | 0.2642 | 0.1827 | 0.0000 | 0.6761 |
| Dividend premium | 18,641 | -0.0947 | -0.0780 | 0.0917 | -0.3320 | 0.0320 |
| Industry propensity to overpay | 18,641 | 0.4222 | 0.4222 | 0.1289 | 0.0000 | 1.0000 |
| City propensity to overpay | 18,641 | 0.4177 | 0.4000 | 0.3091 | 0.0000 | 1.0000 |

**Table 8. Determinants of over-paying.**

This table presents logit regression results on a panel data set of all US-listed firms during 1981-2008. We exclude financial firms (SIC 6000-6999), utilities (SIC codes 4900-4949), and securities other than common stock. The dependent variable is a binary variable that takes the value of 1 if firm i at year t is identified as an over-payer and 0 if it is identified as an under-payer based on the Mid-point classification. The Mid-point classification identifies firm i at year t as an over-payer if the residual $u_{i,t}$ is positive, as an under-payer if the residual $u_{i,t}$ is negative, and as a non-payer if there is no payout at year t. The independent variables are a set of institutional ownership, peer-influence, and geographical-clustering variables. All variables, are winsorized at the 1% and 99% tails and are defined in the Appendix. Regressions include industry and year controls. Industries are defined using the Fama and French (1992) 49 industries classification. We use standard errors clustered by firm to accommodate heteroskedasticity and within-firm autocorrelation. Marginal effects are reported in brackets and robust standard errors are reported in parentheses. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | Over-payers dummy | | | | | | | |
| Institutional ownership | -0.969*** | -0.910*** | -1.209*** | -2.450*** | -0.871*** | -0.807*** | -1.102*** | -2.316*** |
| | [-0.2293] | [-0.2148] | [-0.2855] | [-0.5779] | [-0.2032] | [-0.1877] | [-0.2567] | [-0.5384] |
| | (0.0816) | (0.0829) | (0.0942) | (0.230) | (0.0967) | (0.0983) | (0.112) | (0.269) |
| Investor turnover | | -1.777*** | | | | -1.916*** | | |
| | | [-0.4197] | | | | [-0.4457] | | |
| | | (0.309) | | | | (0.384) | | |
| Low turnover institutional ownership | | | 1.496*** | | | | 1.484*** | |
| | | | [0.3535] | | | | [0.3456] | |
| | | | (0.330) | | | | (0.401) | |
| Ownership of dedicated institutions | | | | 1.579*** | | | | 1.524*** |
| | | | | [0.3725] | | | | [0.3542] |
| | | | | (0.372) | | | | (0.450) |
| Ownership of quasi-indexer institutions | | | | 1.993*** | | | | 1.966*** |
| | | | | [0.4700] | | | | [0.4570] |
| | | | | (0.298) | | | | (0.350) |
| Dividend premium | | | | | 2.726*** | 2.994*** | 2.670*** | 2.722*** |
| | | | | | [0.6354] | [0.6966] | [0.6217] | [0.6327] |
| | | | | | (0.545) | (0.548) | (0.545) | (0.549) |
| Industry propensity to overpay | | | | | 1.535*** | 1.514*** | 1.527*** | 1.514*** |
| | | | | | [0.3579] | [0.3523] | [0.3555] | [0.3519] |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.152) | (0.151) | (0.151) | (0.152) |
| City propensity to overpay | | | | | 0.0894* | 0.0943* | 0.0886* | 0.0945* |
| | | | | | [0.0208] | [0.0220] | [0.0206] | [0.0220] |
| | | | | | (0.0530) | (0.0531) | (0.0530) | (0.0532) |
| Constant | -0.821** | -0.609 | -0.861** | -0.840** | -0.411 | -0.124 | -0.470 | -0.372 |
| | (0.364) | (0.375) | (0.375) | (0.370) | (0.380) | (0.401) | (0.413) | (0.368) |
| Industry & Year controls | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Observations | 27,619 | 27,619 | 27,619 | 27,619 | 18,641 | 18,641 | 18,641 | 18,641 |
| Pseudo $R^2$ | 0.018 | 0.020 | 0.019 | 0.020 | 0.027 | 0.028 | 0.028 | 0.029 |

# Appendix. Variable Definitions

| Payout variables | Definitions |
|---|---|
| Dividends | Common dividends (Compustat item DVC) over Market capitalization |
| Repurchases | Purchase of common and preferred stock (Compustat item PRSTKC) minus the reduction in the book value of preferred stock (Compustat item PSTKRV), all scaled by Market capitalization |
| Total payout | Sum of Dividends and Repurchases |
| Market capitalization | Market capitalization at the end of the fiscal year (Compustat item PRCC times item CSHO) |

| Payout determinants | Definitions |
|---|---|
| Cash flow | Operating income before depreciation (Compustat item OIBDP) over total assets (Compustat item AT) |
| Preferred stock | Preferred stock is the liquidating value of preferred stock (Compustat item PSTKL) or the redemption value of preferred stock (Compustat item PSTKRV) or the par value of preferred stock (Compustat item PSTK). If items PSTKL, PSTKRV, and PSTV are not available, preferred stock is set to zero |
| Book equity | Book equity is stockholders' equity (Compustat item SEQ) or book common equity (Compustat item CEQ) plus book preferred stock (Compustat item PSTK) or total assets (Compustat item AT) minus total liabilities (Compustat item LT), minus Preferred stock, plus deferred taxes and investment tax credit (Compustat item TXDITC), if available, minus the postretirement benefit asset (Compustat item PRBA), if available |
| Firm market value | Total assets (Compustat item AT) minus Book equity plus Market capitalization |
| Market-to-book | Firm market value over total assets (Compustat item AT) |
| Firm size | Natural log of inflation-adjusted Market capitalization (using the consumer price index CPIAUCSL from FRED) |
| Leverage | Long-term debt (Compustat item DLTT) plus long-term debt due in one year (Compustat item DD1) over Firm market value |
| Retained earnings | Retained earnings (Compustat item RE) over total assets (Compustat item AT) |
| Cash holdings | Cash and short-term investments (Compustat item CHE) over total assets (Compustat item AT) |
| Idiosyncratic risk | Standard deviation of the residuals from a regression of the daily stock return (source: CRSP) in excess of the risk free rate (from Prof. Kenneth French's website) on the market factor based on the value-weighted market return (source: CRSP). Daily returns over the fiscal year are used |
| Systematic risk | Standard deviation of the predicted value from a regression of the daily stock return (source: CRSP) in excess of the risk free rate (from Prof. Kenneth French's website) on the market factor based on the value-weighted market return (source: CRSP). Daily returns over the fiscal year are used |

| | |
|---|---|
| Firm age | Years since the firm's first appearance in CRSP |
| **Financial distress variables** | **Definitions** |
| Interest coverage | Natural log of one plus the sum of interest expenses (Compustat item XINT) and operating income after depreciation (Compustat item OIADP) over interest expenses. The variable is set to missing if operating income after depreciation is not positive |
| Z-score – Dummy | A binary variable that equals one if Altman's (1968) z-score is higher than 1.81 and zero otherwise. The z-score is computed as follows: Z-score = 3.3 * (item OIADP / item AT) + 1.2 * ((item ACT - item LCT) / item AT) + item SALE / item AT + 0.6 * ((item CSHO * item PRCC) / (item DLTT + item DLC)) + 1.4 * (item RE / item AT). All items are from Compustat |
| Zmijewski-score | -4.336 - 4.513 * (item NI / item AT) + 5.679 * (item LT / item AT) + 0.004 * (item ACT / item LCT) All items are from Compustat |
| Funds from operations | Total funds from operations (Compustat item FOPT) or cash flow from operating activities (Compustat item OANCF) minus increase in accounts payable and accrued liabilities (Compustat item APALCH) minus decrease in inventory (Compustat item INVCH) minus decrease in accounts receivable (Compustat item RECCH) minus increase in accrued income taxes (Compustat item TXACH) minus net increase in other liabilities (Compustat item AOLOCH) |
| Change in net income | Change in net income (Compustat item NI) over the sum of the absolute values of the current and lagged net income |
| O-score | -1.32 - 0.407 * log((item AT * 1,000,000) / GNP price-level index) + 6.03 * (item LT / item AT) - 1.43 * ((item ACT - item LCT) / item AT) + 0.076 * (item LCT / item ACT) - 1.72 * Negative equity dummy - 2.37 * (item NI / item AT) - 1.83 * (Funds from operations / item LT) + 0.285 * Dummy losses - 0.521 * Change in net income All items are from Compustat. The GNP price-level index is from FRED and is set to 100 for the year 1968 |
| Dummy losses | Binary variable that equals one if the sum of the current and lagged net income (Compustat item NI) is negative. Otherwise, it equals zero |
| Negative equity dummy | Binary variable equals one if total liabilities (Compustat item LT) are larger than total assets (Compustat item AT). Otherwise, it equals zero |
| Distance to default | Bharath and Shumway's (2008) Merton's distance to default measure |
| Default probability | N(- Distance to default) * 100 |
| CHS-score | Score computed using the coefficients from Column 4 in Table IV of Campbell et al. (2008) |
| Default probability (CHS) | (1 / (1 + exp(- CHS-score))) * 100 |
| **Firm survival variables** | **Definitions** |
| Merger and acquisition (year +5) | Binary variable that equals one if the stock is delisted due to a merger (source: CRSP delisting codes 200-290) in the subsequent 5 calendar year(s). Otherwise, it equals zero |

| | |
|---|---|
| Exchange transaction (year +5) | Binary variable that equals one if the stock is delisted due to an exchange transaction (source: CRSP delisting codes 300-390) in the subsequent 5 calendar year(s). Otherwise, it equals zero |
| Liquidation (year +5) | Binary variable that equals one if the stock is delisted due to a liquidation (source: CRSP delisting codes 400-490) in the subsequent 5 calendar year(s). Otherwise, it equals zero |
| Exchange Dropped (year +5) | Binary variable that equals one if the stock is delisted due to being dropped from the exchange (source: CRSP delisting codes 500-591) in the subsequent 5 calendar year(s). Otherwise, it equals zero |
| Liquidation and Exchange dropped (year +5) | Binary variable that equals one if the stock is delisted due to being liquidated or dropped from the exchange (source: CRSP delisting codes 400-490 or 500-591) in the subsequent 5 calendar year(s). Otherwise, it equals zero |

| **Institutional ownership variables** | **Definitions** |
|---|---|
| Institutional ownership | Fraction of common shares outstanding held by institutional investors (source: Thomson Reuters Institutional Holdings database) |
| Investor turnover | Gaspar et al.'s (2012) investor turnover measure (source: Thomson Reuters Institutional Holdings database) |
| Low turnover institutional ownership | Ownership of low turnover institutional investors defined as in Gaspar et al. (2012) (source: Thomson Reuters Institutional Holdings database) |
| Mid turnover institutional ownership | Ownership of mid turnover institutional investors defined as in Gaspar et al. (2012) (source: Thomson Reuters Institutional Holdings database) |
| High turnover institutional ownership | Ownership of high turnover institutional investors defined as in Gaspar et al. (2012) (source: Thomson Reuters Institutional Holdings database) |
| Ownership of dedicated institutions | Ownership of dedicated institutions (sources: classifications from Prof. Brian Bushee's website; Thomson Reuters Institutional Holdings database) |
| Ownership of quasi-indexer institutions | Ownership of quasi-indexer institutions (sources: classifications from Prof. Brian Bushee's website; Thomson Reuters Institutional Holdings database) |
| Dividend Premium | The annual difference in the logarithm of the value-weighted market-to-book ratio (M/B) of dividend payers and non-payers (Kulchania, 2013). |
| Buyback Premium | The annual difference in the logarithm of the value-weighted market-to-book ratio (M/B) of repurchasing and non-repurchasing firms (Kulchania, 2013). |
| Industry propensity to overpay | The annual average value of the over-payer binary variable for firm-year observations from the same industry based on Fama and French (1997) 49 industries, excluding the firm under consideration. |
| City propensity to overpay | The annual average value of the over-payer binary variable for firm-year observations from firms headquartered in the same city (based on data from Compustat), excluding the firm under consideration. |