Cost Structure and Payout Policy

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Abstract

We investigate the effects of firms' proportion of fixed and variable cost on its payout policy. We find that firms with high fixed costs pay less in dividends and share repurchases and hold more cash. Among firms that payback, those with higher fixed costs choose to return a higher fraction of their payout via share repurchases. Results are robust to several alternate specifications and known firm controls. Firms with higher fixed costs also have significantly higher future cash flow volatility and more variable operating income. These results show that firms' cost structure plays a significant role in payout policy and that firms with high fixed costs choose a payout method that offers greater flexibility.

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1. Introduction

In 2011 alone, U.S. firms paid back their shareholders more than $800 billion in dividends and share repurchases. Payout remains an important financial policy decision for managers (Brav, Graham, Harvey, and Michaely (2005)). Share repurchases and dividends are the two most common ways of paying back shareholders (Allen and Michaely (2003)) and many factors decide the method chosen e.g. taxes, agency issues, signaling, maturity, catering, etc.[1] We examine a heretofore unexplored link to firms' payout policy choices – *operating cost structure*.

Fixed costs, by definition, do not change by units of output while variable costs do. If the proportion of fixed costs for a firm is high, an increase in sales leaves residual cash for payout. Lower sales, on the other hand, make it difficult for firms with high fixed costs to have excess cash for payout. Hence, firms with low fixed costs can be more comfortable with a steady payout which they can consistently pay even when sales change. Jagannathan, Stephens, and Weisbach (2000) finds that sources of income (operating vs. non-operating) drive payout choices, and Guay and Harford (2000) finds that permanence (temporary vs. permanent) of cash flow shocks affect payout choices. We hypothesize that a firm's cost structure, which may be related to production technology, input costs, product mix, etc., also affects payout policy. While research has linked variability in and sources of cash flow to payout policy, looking at firms' operating cost structure might address some of the *cause*s of the observed variation in cash flow.

Using a sample of U.S. firms between 1987 and 2011 from the Compustat database, we compute a firm's *Cost structure.* Intuitively, cost structure measures a firm's sensitivity of changes in operating costs to changes in sales. We construct the cost structure measure similar to

[1] See Allen and Michaely (2003), DeAngelo, DeAngelo and Skinner (2008), and Ferre-Mensa, Michaely, and Schmalz (2014) for detailed reviews of payout policy

Kahl, Lunn and Nilsson (2012). Firms with high values of cost structure are those that change their operating costs drastically as sales change. Firms with low (high) values of cost structure are those that tend to have a high (low) fraction of their operating costs as fixed.

In this paper we investigate if a firm's cost structure plays a role in payout policy. More specifically, we investigate if the cost structure affects the decision to pay (whether to pay), the amount of payout (how much to pay) and the form of payment (e.g. dividends vs. repurchases). The rationale for payout policy choices proposed in this paper are not directly related to either excess valuation or to distribution of excess cash flow motives explored in prior literature (e.g., see Ikenberry, Lakonishok, and Vermaelen (1995), Lie (2000), Grullon and Michaely (2002), Baker and Wurgler (2004)). While we do not rule out any other motivation for payout, we hypothesize that cost structure also affects payout policy choices.[2]

The first question we address is whether cost structure affects the propensity to pay dividends or repurchase shares. After controlling for size, capital structure, growth opportunities, cash flows, etc., we find that firms with high fixed costs have a lower propensity to pay dividends or to repurchase shares. We also find that firms with high fixed cost spend fewer dollars on dividends and share repurchase. This is consistent with firms preserving more cash to meet their higher fixed cost obligations. Next, we investigate the payout behavior of firms that either pay dividends or repurchase shares. We find that among firms that choose to pay back their shareholders, firms with higher fixed costs are more likely to choose repurchases over dividends. This suggests a preference for a method of payout that gives the high fixed cost firms higher flexibility in payout decision.

[2] Look at Fama and French (2001); DeAngelo, DeAngelo, and Skinner (2008); Skinner(2008); and Farre-Mensa, Michaely, and Schmalz (2014) for discussions on characteristics of firms that pay using different payout methods and those that do not pay at all. These studies also discuss changing propensity to pay among U.S. firms and the factors drive the propensity to pay dividends. Many firm characteristics, including earning, cash flow, growth opportunities, leverage, cash, etc., decide whether a firm pays its shareholders.

Dividends, once initiated, are difficult to cut, but share repurchases offer great flexibility in the exact timing, initiation, continuation or suspension (Jagannathan, Stephens, and Weisbach (2000)). Firms with low fixed costs might feel more comfortable committing to a steady and regular payout that dividends appear to be. Also, firms with higher fixed costs might feel comfortable committing to small dividend payouts and paying the rest using repurchases. John and Knyazeva (2006) argues that dividends significantly constrain managers and finds dividends to be similar to debt obligations. If dividends constrain a firm, managers of firms with high fixed costs might naturally prefer the more flexible form of payout i.e. repurchases. Chen, Harford, and Kamara (2014) finds that inflexible operating costs reduce a firm's ability to pay its debt and increase the likelihood of default. They find such firms choose lower financial leverage, ex-ante. We find that the effects of cost structure extend beyond leverage decision and on to payout policy.

We also look at the investor reaction to announcements of changes in dividend payments by firms. We find that when firms with high fixed costs announce increases in dividends, thereby increasing the burden of "sticky" repeated payout to shareholders, the investor reaction is significantly less positive than if firms without higher fixed costs announce dividend increase. This shows that investors pay attention to firms' cost structure when reacting to announcements of dividend changes.

Our results are robust to control for industry effects and year trends. Results also hold when we control for financial constraints (Denis and Sibilkov (2010)), quality of industry competition (Herfindahl-Hirschmann Index), advertising expenses (Titman (1984)), and unobserved firm fixed-effects. This suggests that the results are not driven entirely by financial constraints, leverage, or industry characteristics. We get results supporting our main hypothesis

when using an EBIT based measure of cost structure (calculated as in O'Brien and Vanderheiden (1987)) or using an operating cost flexibility measure (calculated as in Chen Harford and Kamara (2014)).

We find that firms with high fixed costs have more variable *future* cash flow and a more uncertain *future* operating income. Novy-Marx (2011) has linked operating leverage to stock returns and investment risk. In this respect, cost structure poses a potential future risk. This may be one of the reasons why investors care about cost structure. We find that firms with higher cost structure also have higher cash holdings. In unreported results we also find that firms with high fixed costs spend more on property, plant and equipment, R&D expenses, and capital expenditures, compared to firms with low fixed costs. We also find that higher fixed costs are associated with higher profitability and low excess capacity (as captured by sales/net PP&E). These observations are also supported by findings in Chen, Harford and Kamara (2014). Given this, firms may find it more valuable to hold cash and manage payout decisions with an eye to preserving financial flexibility. Choosing to pay via repurchases is one way in which such high fixed cost firms preserve financial flexibility.[3]

A related question is whether cost structure drives payout policy decision or do payout policy decisions drive a firm's cost structure. Typically, real choices drive financial choices and as such, we think a firm has a cost structure in place and then they decide the payout policy. Survey evidence from Brav, Graham, Harvey, and Michaely (2005) also points to payout policy being decided at a later stage than investment decisions. We also find that cost structure is remarkable persistent.[4] Considering firms self-select a cost structure, our inferences are

[3] Bonaime, Hankins and Harford (2014) finds that risk management and payout policy are related to financial flexibility. Our paper connects payout policy to operational flexibility.

[4] In our sample, firms classified once as having a high fixed cost are reclassified as having low fixed costs only in about 10% of the cases, showing that cost structure does not change very often.

vulnerable to selection concern. We take a two-pronged approach to address this selection issue. First, we use a propensity-score matching approach to find the nearest-neighbor of a high fixed cost firm from among firms that are similar to it in many aspects, but have a different cost structure. We find that firms with high fixed cost spend more of their payout on share repurchases as compared to another similar firm with without a high fixed cost structure. Second, we find that firms spend a higher fraction of their payout on share repurchases when they transition to a higher fixed cost structure. We also find, similar to Chen, Harford and Kamara (2014), that when firms transition to a higher fixed cost, they increase their cash holdings and reduce debt.

Overall, the evidence that firms increase cash, reduce debt, and decrease dividend payouts and share repurchases when they transition to higher fixed cost suggests that firms act in a way so as to preserve financial flexibility. These results extend the already established linkage between operating costs, cash policy and debt level to choices firm make in their payout policy.

We make several contributions to the literature. Firstly, we document that cost structure is a significant determinant in the decision to pay dividends and to repurchases shares. Cost structure is also related to the amount firms pay through different methods. Jagannathan, Stephens and Weisbach (2000), and Guay and Harford (2000) discuss operating and non-operating income, whereas we focus on cost structure. That cost structure has not been identified as a source of variability in payout methods in finance literature makes our contribution unique.

Secondly, we contribute to the existing literature on operating cost structure. Lev (1974) looks at operating leverage and risk. More recently, Kahl, Lunn and Nilsson (2012), and Chen, Harford and Kamara (2014) look at the effects of operating leverage on financial leverage, while Novy-Marx (2011) looks at relations between operating leverage and the cross-section of stock

returns. This literature has so far linked cost structure to financial leverage, pointing out that firms having high operating leverage choose more conservative financial policy. More broadly, Carlson, Fisher and Giammarino (2004) use operating leverage into a real options model to study the value premium, Novy-Marx (2011) extends that model to show strong within industry effects of the value premium. Eisfeldt and Papanikolaou (2013) uses operating leverage as a proxy for organizational capital and Chen, Harford and Kamara (2014) study operating leverage and its effect on capital structure. None of these studies, however, talk about the effects of operating leverage or cost structure on payout policy.

Thirdly, we also contribute to the literature on cash holdings. Bates, Kahle, and Stulz (2009) reports that cash holdings of U.S. firms has been steadily increasing. Chen, Harford and Kamara (2014), Novy-Marx (2011) report that firms with high operating leverage hold higher cash holdings. Our evidence, that firms with higher fixed costs hold more cash, pay less dividends and repurchase fewer shares compared to firms with lower fixed costs, shows payout as an additional channel potentially responsible for the high cash holdings of U.S. firms.

This paper proceeds as follows. In Section 2, we develop the hypothesis to be tested. We describe our sample construction, variables, and summary statistics in Section 3. We report results in Section 4 and consider issues related to sample selection in section 5. We offer a concluding discussion in Section 6.

2. Hypothesis development

Cash flow of firms having high fixed costs has high sensitivity to sales. In periods of high sales, cash flows of high fixed cost firms are particularly high because revenues do not get consumed by variable costs. However, when sales are low, such firms cannot reduce costs

drastically because fixed costs remain high even when variable costs fall. Firms having high variable costs, when faced with lower sales, can adjust faster to lower their overall costs by cutting variable costs. The mix of fixed and variable cost can thus decide how much the firm has left over to pay its shareholders.

Imagine two firms that are identical in all measurable aspects (e.g. sales, financial leverage, operating performance, etc.) in a particular year, except on the dimension of their cost structure. Firm A, say, has higher fixed costs (lower value of the cost structure variable) than firm B. This difference may arise for a variety of reasons, e.g., difference in production technology, R&D projects that require longer investment cycle, etc. Given firm A's cost structure, it might feel more secure with a level of cash that is higher than what firm B might feel secure with. When deciding whether to pay back at all, given the lower fixed cost structure, manager of firm B is more likely to pay back its shareholders. Manager at firm B is more likely to repurchase shares and (or) to pay dividends, as compared to her peers at firm A. When deciding how much to pay, manager of firm A will likely choose to spend less on dividend payout and (or) share repurchases. In line with the manager at firm A choosing a more conservative payout policy, this leads to our main hypothesis. We call this the *flexibility hypothesis*:

Firms with higher fixed costs are less likely to repurchase shares or to pay dividends. Firms with higher fixed costs pay less in dividends and share repurchases, compared to their peers in firms with lower fixed costs.

Now let us consider a slightly different case where two firms, say C and D, are similar on many aspects but have different cost structures. Firm D has a higher fixed cost structure

compared to firm C. Managers at both these firms are at a point in the decision tree where they have decided that they are going to pay their shareholders back this year. These firms are now deciding *how* to payback. The two most common ways of paying back shareholders are share repurchases and dividend payouts (Allen and Michaely (2003)). Within these options, given the distinct flexibility that share repurchases as a payout mechanism offer over dividend payments (Brav, Graham, Harvey, and Michaely (2005)), we hypothesize that firm D will prefer to repurchase shares than to pay dividends. Holding all else constant, firms with high fixed costs will shun from taking on an additional fixed payment to shareholders. Dividends can be sticky and cutting dividends has a negative effect on stock price (Fama and French (2001)). So, committing to dividends might increase the already high burden of fixed costs. Repurchases, on the other hand, give managers the flexibility to initiate, suspend, accelerate or eliminate payout (Stephens and Weisbach (1998)). This leads to the another prediction of the *flexibility hypothesis*:

Among firms that pay, firms with high fixed costs are more likely to repurchase shares. Conversely, firms with high fixed costs are less likely to pay via dividends.

Alternately, the null is that cost structure is irrelevant to managers when they are deciding payout policy and once we control for size, performance, operating income, sales, etc., cost structure will have no additional explanatory power or significance in explaining the decision to pay, how much to pay, or the choice between paying dividends or repurchasing shares.

Overall, the *flexibility hypothesis* leads to several testable implications. First, we expect a firm's cost structure to be significantly related to payout policy decisions. We expect firms with high fixed costs to be less likely to repurchase shares or pay dividends. Among firms that pay

their shareholders, we expect firms with high (low) fixed costs to be more likely to repurchase shares (pay dividends). We also expect the fraction of share repurchases in the firm's total payout to be related to its cost structure. Firms with high fixed costs are likely to spend a higher fraction of their total payout on share repurchases.

3. Sample construction and summary statistics

Data used in this study is from U.S. firms in the Compustat database between 1987 and 2011. The data excludes firms operating in the financial and regulated industries, as identified by the Standard Industrial Classification (SIC) codes (between 6000-6999 and 4900-4999, respectively). For a firm to be included in the sample, it also should have been in the Centre for Research in Security Prices (CRSP) database so that we can get stock price and returns information. Sample firms have non-missing asset values and positive sales. Missing values of research and development (R&D) are set to zero. Extreme values of all variables are winsorized at the 99th percentile and the 1st percentile level.

We construct the Cost structure variable following Kahl, Lunn and Nilsson (2012). Details of the construction are as explained in Appendix A. Intuitively, cost structure is the sensitivity of change in operating costs to changes in sales. The higher the cost structure of a firm, the more sensitive the operating costs are to changes in sales and the lower is the proportion of fixed costs for the firm. We also define dummy variables to capture the lowest (highest) tercile of cost structures in a given year. High (low) fixed cost takes a value of one if the firm is categorized as one having a high (low) fixed cost in a given year. The other variables are as defined in Appendix B. Table 1 shows the summary statistics of main variables. On average firms spend 0.6% (1.1%) of assets on dividends (share repurchases). For a firm that pays back its shareholders, repurchases amount to 54% of the total payout (repurchase plus dividends). The

average cost structure for sample firms is 0.84.

Next, we order the sample firms by the cost structure measure to see if there are differences in payout characteristics of firms as the cost structure changes. In Panel B, we show the average payout characteristics of firms in each quartile of cost structure. Firms in the lowest quartile of cost structure spend a significantly lower fraction of their assets in share repurchases and dividend payouts, compared to firms in the highest quintile of cost structure. In summary, results in table 1 suggest that the more inflexible a firm's cost structure is, the higher is the fraction of the total payout it spends on share repurchases. These univariate results support the *flexibility hypothesis*.

4. Results

4.1. Payout and Cost Structure

We next investigate if the payout behavior of firms can be explained by their cost structure in a multivariate setting. We create several variables to control for known effects that affect payout behavior (e.g., Grullon and Michaely (2002); Jagannathan, Stephens and Weisbach (2000); Grullon, Paye, Underwood and Weston (2011)). All control variables are as of the end of the fiscal year prior to the choice of a particular payout or the amount spent using a particular payout method in a given year. After controlling for size, market-to-book ratio, cash holdings, debt, operating and non-operating income, R&D expense, stock market volatility, and recent stock performance, we find that the cost structure measure is significant in explaining the choice of dividend payouts and share repurchases. Cost structure is also significantly related to the amount firms pay via dividends and repurchases. Table 2 shows results of these regressions. Specifications 1 model the firms' decision to pay (using either dividends or share repurchases)

using logit regression where the dependent variable takes a value of one if the firm paid dividends or repurchased shares in a given year, and zero otherwise. Our results show that the cost structure is significantly related to the payout choice. Firms are more likely to payout if the cost structure is high (i.e. the fraction of fixed costs in the overall cost structure is low). Specification 2 (3) models the decision to pay dividends (repurchase shares) among the sample firms. Firms are less likely to choose dividends (or to repurchase shares) when they have higher fixed costs. Tests ascertaining magnitude indicate that as cost structure increases by one standard deviation, the probability of repurchasing shares (paying dividends) decreases by 11.2% (6.9%).

In specification 5 (6), we show results of OLS regressions explaining the amount firms spend on dividends (share repurchases), as a fraction of total assets. In both cases, the coefficient on the cost structure variable is positive and significant. As cost structure increases by one standard deviation, the amount spent on repurchasing shares (paying dividends) decreases by 6.4% (11.4%) of assets. Results show that firms having higher fixed costs pay less in dividends and in share repurchases. The same relation applies to the total payout, as seen in specification 4.

Table 3 shows results of regressions similar to those in table 2 but further establishing support for flexibility hypothesis. Specifications 1 and 2 introduce the High (Low) fixed cost variable. Firms with high (low) fixed cost pay less (more) dividends and repurchase fewer (more) shares. Specification 3 and 4 show both these binary variables together when modeling the amount firms spend on dividends and share repurchases. Results show that firms with low (high) fixed costs spend more (less) in dividends and share repurchases.

Overall, these results show that firms with high inflexibility in their cost structure appear

to payback less to their shareholders. Cost structure is related not only to the decision to repurchase shares or to pay dividends but also to the amount paid. These result show support for the *flexibility hypothesis*.[5]

4.2. Firms that payback

Given that the decision to pay dividends or to repurchase shares is not an either or decision, Fama and French (2001) argue that many firms repurchase stock as well as pay dividends. In the next set of regressions results, shown in table 4, we investigate the relation between cost structure and payout policy for firms that either repurchase shares, pay dividends or both. We model the decision to pay dividends (specification 1) and to repurchase shares (specification 2) from sample of firm-year observations when firms payback. To the extent that firms can pick between share repurchases and dividend payouts, this is an attempt to model the choice of a particular payout by firms that have decided to pay. In this sample, an interesting pattern emerges. Firms that have lower fixed costs are more likely to pay dividends and those with higher fixed costs are more likely to repurchase shares. In specifications 3 through 5, the dependent variable is the fraction of total payout done via share repurchases. As evidence from the tobit regression in specification 3 and 4, we find that firms with higher fixed costs are likely to spend a higher fraction of their total payout via share repurchases. Controlling for unobserved firm variation through the firm fixed-effects specification (5) shows similar result.

This change in relationship between payout and cost structure when looking in this sub-sample is interesting. These results suggest that the payout choice is a two level choice. The

[5] To test robustness of these results, we create an additional binary variable, *Repeat Repurchaser*, which takes a value of one if firm repurchased shares in the current and the immediately preceding years, and zero otherwise. Results of logit regression, similar to specification 3 of table 2, modeling repeat repurchases, shows that firms with higher cost structure are more likely to repeat repurchase.

results in tables 2 and 3 capture the first level of that choice – whether to pay or not. In table 4, we observe the second level of that choice – which method to pick (dividend payouts or share repurchases). To further delineate the nature of this choice, we model the payout behavior using the classic Heckman (1976) two-stage regression. We model the propensity to pay, using probit regression specification similar to the one used in specification 1 of table 2, as the first stage choice. These results are not shown for brevity. Next, we calculate the inverse mills ratio from this first stage regression and include this as an added variable in the second stage regression when modeling what fraction of the payout is paid via share repurchases. Results of the second stage regression are shown in specification 6. The coefficient on the inverse mills ratio is significant, indicating that the choice to pay plays an important role in the payout decision.[6] The coefficient on the cost structure variable is also significant, indicating that firms with high fixed costs pay a higher fraction of payout via repurchases. Results support the view that cost structure plays an important role not only in the decision to pay but also in the decision of how much to pay via repurchases. Firms with higher fixed costs are less likely to pay but when they do, they are more likely to pay via share repurchases.

4.3. Market reaction to dividend changes

So far, our evidence supports a role for cost structure in deciding the payout policy of firms. It seems reasonable to assume that, in an efficient market, investors will notice a firm's action through the prism of cost structure. A valid question that is still unanswered is whether investors reward firms that act as per their cost structure realities. More specifically, when a firm with high cost structure announces a change in payout policy to save more cash, do investors

[6] We also try a specification where the High fixed cost and the Low fixed cost variables are also included, together with the inverse mills ratio. This results in the coefficient on the High fixed cost being +0.0097, with a p-value of 0.000 and the coefficient on the Low fixed cost variable being -0.0005, with a p-value of 0.1521.

take note and reward that firm with a more positive announcement return, all else constant? Prior research documents that dividend increases are largely seen as positive news and dividend decreases are largely seen as negative news and that dividends tend to be "sticky" (e.g. see Grullon and Michaely (2002)). To get around these stylized facts about dividends, we look only at announcements that result in a change in dividend. Our hypothesis predicts a positive (negative) relation between cost structure and investor reaction to announcements of dividend reductions (increases). Results of this analysis are presented in table 5.

The dependent variable is the three-day cumulative abnormal return (CAR) calculated between days (-1,+1), where day zero is the day of announcement of share repurchase program.[7] We look at announcement of dividend changes. For this we separate announcements of quarterly cash dividends from the CRSP database. We identify announcement that result in changes in dividends compared to the dividend announced in the prior quarter. We define Percent dividend change as the percentage change in dividend, relative to the dividend paid in the prior quarter. Understandably, we find that a bigger change in dividend leads to a bigger change in CAR. However, the coefficient on the cost structure variable is positive. The positive sign suggests that investors reward firms that announce dividend changes but have low fixed costs. It is also true that the CARs for dividend increases are almost always positive and dividend decreases are almost always negative. In specification 2, we include a dummy variable, *Increase dividend*, which takes a value of one when the announcement of the dividend change results in a increase of dividend, and zero otherwise. The coefficient on this dummy variable is positive and significant, capturing the empirical reality of dividend changes (that announcements of dividend increases are rewarded by investors). To further identify how announcements of dividend

[7] The CRSP value-weighted market return is used as the market returns and factors are calculated using data over at least a 100 days, ending 46 days before the announcement of the repurchase event, using standard event study methodology (Brown and Warner (1985)).

increases and cost structure of individual firms are together treated by investors, we introduce an interaction term between the two variables. When this interaction term is included in the regression (specification 3), the coefficient on this term is negative and significant. This indicates that investors penalize firms with high fixed cost when these firms increase dividends. Kahl, Lunn and Nilsson (2012) finds similar result when analyzing the value of additional dollar of cash holdings (as computed using a methodology similar to Faulkender and Wang (2006)) of high fixed cost firms. They find that equity holders value cash holdings of high fixed cost firms higher than those of low fixed cost firms. Our result suggests that equity holders treat dividend increases, which may result in lower cash holdings, less positively.

Overall, these results show that investors pay attention to cost structure of firms when firms announce changes to their dividend payments. Announcements of dividend increases are generally rewarded by investors. However, investor response to announcements of dividend increases by high fixed cost firms is less positive. This further suggests that investors take the cost structure of firms into account when reacting to payout policy announcements and suggests an important role for cost structure in firms' payout policies.

4.3. Robustness Checks

In this section, we describe some robustness checks to rule out that the results relating cost structure and payout policy are spurious. Recent literature (e.g. Kahl, Lunn and Nilsson (2012); Chen, Harford and Kamara (2014)) has related cost structure to debt. This literature finds that firms with high operating leverage have lower debt. We first note that we already control for firm level debt in all our regressions and still find support for our flexibility hypothesis. All our regressions also control for the variability in operating income (Std. dev.

OpIncome), risk as captured by variability in returns (Volatility), operating performance, size, etc. Our results are strong in the presence of these controls. We start the robustness checks to see if unobserved firm characteristics are driving these results. Specification 1 of table 6 shows results for a firm fixed-effects regression and find results to support the flexibility hypothesis. Next we test if we are picking up some industry or year specific variation not already captured by the industry and year dummies used in our regressions. To further test if these results are driven by industry variations, we create an industry adjusted value of our cost structure measure. This industry adjusted measure, used in specification 2, subtracts the average industry (as captured by 3-digit SIC) cost structure from the firm's cost structure. Results show that this adjustment does not alter results.

In specification 3, we test if the results are driven by some financial constraint effects. We introduce *Paper constrained* as a dummy variable that takes a value of zero if the firm has rated short term commercial paper available in the market (and thereby not financially constrained, see Denis and Sibilkov (2010) for details) and one, otherwise.[8] In unreported results we also introduce dummies related to availability of long-term rated debt (see similar criteria in Denis and Sibilkov (2010)). Results on the cost structure variable keep the same sign and strong significance in all cases. These results suggest that the cost structure effects are not fully captured by the variables explaining financial constraints. Even after controlling for financial constraints, cost structure affects payout policy.

Grullon and Michaely (2007), Hoberg, Phillips, and Prabhala (2014) argue that product market competition plays a role in payout policy. Others show that firms in more consolidated

[8] Our results show that financially constrained firms spend a larger fraction of their payout on share repurchases. This is similar to the financial constrained literature (e.g. Denis and Sibilkov (2010) etc.) that finds that financially constrained firms do not pay dividends. Also note that we control for size, another proxy used in Denis and Sibilkov for financial constraints, in all our regressions.

industry spend more on share repurchases (e.g., Massa, Rehman and Vermaelen (2007)). To control for effects of competition, we use the industry concentration, as captured by the Hirshmann-Herfindahl Index (HHI). Controlling for industry concentration does not alter our result. Note that the coefficient on the HHI is positive and significant, indicating that firms in more concentrated industries pay higher dividends.

Another plausible reason for the linkage between cost inflexibility and payout policy may be via the product market competition. Considering that industry concentration (HHI) is significant and positively related to dividends paid, a possible critique of the cost structure measure is that it is just capturing some effect already captured by known proxies of product market competition. In this regard, a recently used measure is the product market *fluidity* (see Hoberg, Phillips, and Prabhala (2014)). This measure captures changes in rival firms' products relative to a firm's products. They find that fluidity decreases firm's propensity to payout via dividends or repurchases and increases the cash held by firms, especially for firms with less access to financial markets. We control for fluidity in specification 5 and still find the cost structure to be significantly related to the dividend paid.[9,10]

We also see if advertising expenses affect the relationship between cost structure and payout policy. These results are shown in specifications 6. Titman and Wessels (1988) use advertising expenses to capture product uniqueness, arguing that firms having higher advertising

[9] We download the fluidity values for firm-year observations from the website provided by Gerard Hoberg at http://alex2.umd.edu/industrydata/industryconcen.htm. Fluidity and Cost structure are significantly correlated with a correlation coefficient of 0.376.

[10] In unreported results, we tried an additional test where we run a two stage regression. First, we regress cost structure on fluidity. We then calculate the residual term from this first stage regression. We interpret the residual from this regression to capture the component of cost structure after accounting for fluidity. In the second stage of this test, we regress the payout variables on firm level controls and the residual, as obtained from the first stage regression. We find that the residual from the first stage regression is positive related to and significant in explaining the amount of dividends and repurchases in spite of the loss in observations because of the limited availability of the fluidity measure for our sample. We also run logit regressions modeling the choice to repurchase shares and the choice to pay dividends in We find that the residual cost inflexibility term is significant in predicting the choice to repurchase shares and the choice to pay dividends. So, cost inflexibility is related to the fluidity measure.

produce unique products. Adding this control does not change our main results.

In unreported results, following Kahle (2002), we create compensation variables (using data from Execucomp database) related to stock options exercised and exercisable by the top management of firms and include them as control variables in regressions reported in tables 3 and 4. This does change the sign or significance of the cost structure or the high/low fixed cost variables, albeit the number of observations drops drastically. We also introduce the logarithm of Amihud (2002) illiquidity measure to control for any firm level information asymmetry.[11]

Furthermore, we also calculate the degree of operating leverage using a method similar to O'Brien and Vanderheiden (1987). We get similar results supporting our main hypothesis when using this measure of operating leverage[12]. We test the validity of the main result using another measure of the operating cost variable, defined as selling, general and administrative expenses divided by total assets, as in Chen, Harford, and Kamara (2014) and find similar sign and significance supporting our hypothesis. These results are not shown for brevity.

4.4. Cost structure and cash holdings

We next investigate how cash is related to cost structure. We model firms' cash holdings using our cost structure variable and control variables known from literature (see Bates, Kahle and Stulz (2009)). Results of this analysis are shown in Table 7. We find that cost structure is

[11] We have also run OLS regressions, similar to those reported in table 3, on a subset of manufacturing firms only, and find that all results hold in that subsample as well. Manufacturing firms with high fixed cost pay significantly higher portion of their payout via share repurchases.

[12] Calculating the degree of operating leverage (DOL) using O'Brien and Vanderheiden (1987) requires a ten-year lagged period of positive Earnings before interest and taxes and results in a significant reduction in sample size (to 26,788 firm-year observations for our sample period from 1987 to 2011). The result using this proxy is qualitatively similar as we observe but is significant at a five-percent level, rather than the less than one-percent level we observe using cost structure variable. One problem with the DOL measure is that it is a more "noisy" proxy because it picks up fluctuations due to changes in profit margins, even if the cost structure does not change (Kahl, Lunn and Nilsson (2012)).

negatively related to cash holdings. This shows that firms with higher (lower) fixed costs hold higher (lower) levels of cash. This result holds when we consider the full sample (specifications 1, through 3) as well as the subset of firms that pay via repurchases or dividends (specifications 3 through 6). The negative and significant coefficient on the cost structure variable suggests that firms that have higher fixed costs hold more cash. Results in specification 3 and 6 also show that firms that reduce their payout hold more even more cash. Prior research (e.g., Chen, Harford and Kamara (2014), Novy-Marx (2011)) shows that firms with high operating leverage save more cash. Our results provide further evidence supporting the existing research. These results show that the relation between cash and operating costs extends to payout policy as well. Firms with higher fixed costs save even higher fraction of their assets as cash, supporting the flexibility hypothesis. The evidence also links saving from reduced payout as an additional channel that contributes to the higher cash holdings. These results show that cost structure and savings from payout provide partial explanation to the observed high cash holdings of U.S. firms.

4.5. Cost structure, future performance and firm risk

A related question that remains unanswered is why firms pay attention to cost structure while deciding their payout policy. Prior research has explored the idea of a relationship between variability in cash flow and the precautionary motivation for holding cash (e.g. see Bates, Kahle, and Stulz (2009)). If firms are sensitive to holding cash in the face of uneven cash flow, that has direct implication on payout policy. Jaganathan, Stephens and Weisbach (2000) and others have argued that when firms' steady component of cash flow (operating income) increases, they tend to pay through dividends but one-off increases led by increases in non-operating income are paid through share repurchases. However, the sources of uncertainty in

cash flow have been largely unexplored. We propose that one of the sources of uncertainty is that stemming from the proportion of fixed and variable cost. Operating leverage has been known to make firms more risky (Mandelker and Rhee (1984)) and introduces variability in cash flow (which in turn may decide the payout choice, as shown in Jagannathan, Stephens and Weisbach (2000)). We test to see how the future variability in cash flow and operating income evolve for firms that have high fixed cost. We test these in a three and a five year window. We find that the future variability in cash flow (between years +1 and year +5, where year 0 represents the year when all control variables are measured) for firms with high fixed cost is 0.091 and for firms with low fixed costs is 0.045. This difference is statistically significant (*p*-value of a t-test of difference being significantly different from zero is 0.000). To test this in a multivariate setting, we calculate the future standard deviation of cash flow and that of operating income of sample firms using the corresponding data between years [t+1, t+3] and another measure using data between years [t+1, t+5], where year t represents the current year. We then regress these measures on firm level controls in year t, including cost structure. Our goal is to see if firm characteristics, especially cost structure, affect future variation in cash flow and operating income.

Results of these tests are shown in table 8. In specifications 1 and 2, we run OLS regressions with the firm's future variability in cash flow as the dependent variable. After controlling for firm risk, as captured by volatility in stock returns, and other firm level controls, we find that firm's cost structure is positively and significantly related to the future variability in cash flow when using a three and five year windows. In specification 3, we show the result when the dependent variable is the standard deviation in operating income. We find similar result supporting the case that future cash flow and operating income is riskier for firms with

lower current cost structure. Firms with high fixed costs have more future volatile cash flow and operating income. Novy-Marx (2011) has also linked operating flexibility to stock returns and investment risk.

This linkage between cost structure and future risk in operating income and cash flow may suggests a potential reasons why firms choose a particular way to fund payouts. Dividends, being sticky, are difficult to cut or change without adverse effects on stock price. So, assuming perfect foresight, managers faced with high future uncertainty in cash flow will likely choose share repurchases because this will preserve their flexibility in changing the payout amount and timing.[13] Managers of firms with low future cash flow risk will likely be more comfortable with dividends because they feel confident that the uncertainty in cash flow is not going to require them to cut dividends (which investors dislike, e.g. see Brav, Graham, Harvey, and Michaely (2005)). This provides a rational reason why cost structure might be related to payout policy.

In unreported results we also find that firms with high fixed costs spend more on property, plant and equipment, R&D expenses, and capital expenditures, compared to firms with low fixed costs. Chen, Harford and Kamara (2014) also find that higher operating costs are associated with higher profitability and low excess capacity (as captured by sales/net PP&E). These results suggests that there may be valid reasons (profitability, funding R&D, etc.) for a firm to choose a cost structure with high fixed costs. Thus, choosing smaller payouts and preserving cash is one way in which such high fixed cost firms preserve financial flexibility. When paying back, choosing repurchases preserves flexibility as compared to paying dividends. Given that the cost structure is difficult to change, preserving financial flexibility is important and we believe this is one of the channels that links cost structure and payout policy.

[13] Grullon and Michaely (2004) finds that future risk in firms that announce share repurchases. Others find no change (e.g. Denis and Kadlac (1994)), or weak change (e.g. Bartov (1991)) in risk following repurchase announcements.

5. Sample selection issues

The choice of a cost structure is, obviously, not exogenous. Results so far confirm a relation between cost structure and payout policy but it is difficult to say whether cost structure causes the firm to adopt a particular payout policy or is it the payout policy choice that forces the firm to pick a particular cost structure. It is reasonable to assume that most firms pick a cost structure based on technological, financial, etc. needs of the product they make and the environment they operate in. However, many of the same concerns also drive payout policy (Hoberg, Phillips, and Prabhala (2014)) choices. To account for the possible selection effects we take a multi-pronged approach: (1) implementing a propensity score-matching based on observable firm characteristics; (2) using the time period when firms switch from a being classified as one without a high fixed cost structure to being classified as one with.

5.1. Propensity score-matched sample

We employ a matching technique to investigate differences in the dividends paid, shares repurchased, and the total payout between firms that have a high fixed cost and those that do not. Our matching procedure controls for selection based on observable firm characteristics. We have a large pool of potential matches among firms that do not have a high fixed cost structure. Hence, our approach of matching firms in the treatment group of high fixed cost firms to those in the control group of firms that do not have a high fixed cost structure is ideal. We employ a one-to-one nearest-neighbor matching with replacement (Heckman, Ichimura, and Todd (1997)). We first use a probit regression, using three different specifications, to capture the choice of having a high fixed cost structure. The control variables used in each specification are: (1) Ln(assets), with industry and firm-fixed effects; (2) Ln(assets), operating cash flow, cash flow volatility,

cash, debt, with industry and firm-fixed effects; (3) Ln(assets), operating cash flow, cash flow volatility, sales growth, operating income, non-operating income, cash, debt, with industry and firm-fixed effects. Then using the predicted probabilities – propensity scores – from the estimated probit regressions, we match a firm with a high fixed cost structure to another firm that is not classified as having a high fixed cost structure so as to minimize the absolute value of the difference between propensity scores.

Table 9 shows the differences in the fraction of payout used for repurchasing shares between high fixed cost firms and matched non-high-fixed cost firms. We find that firms that have a high fixed cost use a significantly higher fraction of their payout dollars towards share repurchases. The difference in dividend payments and shares repurchased between the two groups is also statistically significant. Firms with higher fixed costs pay less in dividends and share repurchases compared to the matched non-high-fixed-cost firms. However, firms with high fixed costs spend a greater fraction of their total payout as share repurchases.

5.2. Transition to high fixed cost structure

We examine the payout behavior of firms that transition from being classified as one not having a high fixed cost structure to one having a high fixed cost structure. Using this transition directly addresses the sample selection concern on time-invariant unobservable firm characteristics. We identify a sample of 2,409 firms that saw this transition in our sample. Table 10 shows the fraction of payout a firm in this sample used for share repurchases between years -2 to +2, where year 0 represents the year the firm transitioned to the high fixed cost group. Firms undergoing this transition to a higher fixed cost structure spent a higher fraction of their payout on share repurchases. The fraction of payout used for share repurchases between year -1 and year +1 increases by 140 basis points and this difference is statistically significant with a p-value

of 0.007. We also find that around the time when firms undergo this transition to a higher fixed cost structure, they spend 15.4% less on total payout while their cash holdings increases by 1.1% of the level before the transition. During the same time, debt changes by 1.3%. The evidence is consistent with the interpretation that when undergoing a transition to higher fixed costs, firms save more cash from their total payout. Firms also alter their payout to pay a larger fraction of the payout via share repurchases.

Overall, these results[14] indicate a significant shift in the payout behavior of firms when they transition into a higher fixed cost structure. While the total payout decreases significantly, the proportion of share repurchases increases. These results seem to suggest that high fixed costs cause firms to adopt a payout policy with a higher share of repurchases and not the other way around.

6. Conclusion

Not all costs of firms are equally sensitive to changes in sales. As fixed costs increase, firms' profits become more sensitive to revenues. A firm with higher fixed costs is more susceptible to decreased profits when sales decrease. Extant literature has related operating leverage to financial leverage. In this paper, we document an unexplored link between cost structure and payout policy. We note that cost structure is significantly related to the decision to pay dividends or to repurchase shares. We find that firms with high fixed costs pay lower dividends, repurchase fewer shares and hold more cash. We also find that firms having high fixed costs spend a larger fraction of their payout dollars through share repurchases. This is in

[14] We perform a propensity score matched analysis, like the one described above, matching firms with high fixed costs and those with low fixed cost. We also test the changes in payout behavior as firms move from a low fixed cost to high fixed cost. In each case, the results for differences in payout behavior are even stronger when comparing these two extreme groups of cost structure, compared to those presented here comparing high fixed cost firms with those that are not high fixed cost.

line with firms preserving flexibility in their commitments to payout. In line with our *flexibility hypothesis*, firms that have high fixed costs prefer the flexibility offered by repurchases.

We test our main result using several alternate specifications and proxies and find robust evidence supporting our hypothesis. We also find that investors pay attention to cost structure of firms when the firms announce payouts. When investors with higher fixed costs announce dividend increases, investors treat the news less enthusiastically. We find that future uncertainties (in cash flow and operating income) are positively related to current cost structure. Firms with high fixed cost have significantly higher future cash flow risk and have more uncertain future operating income.

References

Allen, F., and Michaely, R., 2003. Payout policy. In: Constantinides, G., Harris, M., Stulz, R. (Eds.), Handbooks of Economics, North-Holland, pp. 337–429.

Amihud, Y., 2002. Illiquidity and stock returns: cross-section and time-series effects. Journal of Financial Markets, 5(1), 31–56.

Baker, M., and Wurgler, J., 2004. Appearing and disappearing dividends: The link to catering incentives. Journal of Financial Economics, 73, 271–288.

Bartov, E., 1991. Open-market stock repurchases as signals for earnings and risk changes. Journal of Accounting and Economics 14, 275–294.

Bates, T. W., Kahle, K. M., and Stulz, R. M., 2009. Why do US firms hold so much more cash than they used to? The Journal of Finance 64, 1985–2021.

Bonaime, A., Hankins, K., Harford, J., 2014. Financial flexibility, risk management, and payout policy. Review of Financial Studies 27, 1047–1101.

Brav, A., Graham, J. R., Harvey, C. R., and Michaely, R., 2005. Payout policy in the 21st century. Journal of Financial Economics 77, 483–527.

Brown, S. J., and Warner, J. B., 1985. Using daily stock returns: The case of event studies. Journal of Financial Economics 14, 3–31.

Carlson, M., Fisher, A., and Giammarino, R., 2004. Corporate investment and asset price dynamics: implications for the cross-section of returns. The Journal of Finance 59, 2577-2603.

Chen, Z., Harford, J., and Kamara, A., 2014. Operating inflexibility, profitability and capital structure. Profitability and Capital Structure, Unpublished working paper, University of Reading and University of Washington.

DeAngelo H, DeAngelo L, and Skinner D. J., 2008. Corporate payout policy. Foundations and Trends in Finance 3, 95–287.

Denis, D. J., and Kadlec, G. B., 1994. Corporate events, trading activity, and the estimation of systematic risk: Evidence from equity offerings and share repurchases. The Journal of Finance 49, 1787–1811.

Denis, D. J., and Sibilkov, V., 2010. Financial constraints, investment, and the value of cash holdings. Review of Financial Studies 23, 247–269.

Dittmar, A., 2000. Why do firms repurchase stock? Journal of Business 73, 331–355.

Eisfeldt, A. L., and Papanikolaou, D., 2013. Organization capital and the cross-section of expected returns. The Journal of Finance 68, 1365–1406.

Fama, E. F., and French, K. R., 2001. Disappearing dividends: changing firm characteristics or lower propensity to pay? Journal of Financial Economics 60, 3–43.

Fama, E. F., and French, K. R., 2002. The equity premium. The Journal of Finance 57, 637–659.

Farre-Mensa, J., Michaely, R., and Schmalz, M. C., 2014. Payout Policy. Unpublished working paper, Harvard Business School, Cornell University and University of Michigan.

Grullon, G., and Michaely, R., 2002. Dividends, share repurchases, and the substitution hypothesis. Journal of Finance 57, 1649–1684.

Grullon, G., and Michaely, R., 2004. The information content of share repurchase programs. Journal of Finance 59, 651–680.

Grullon, G., and Michaely, R., 2007. Corporate payout policy and product market competition. Unpublished working paper, Cornell University.

Grullon, G., Paye, B., Underwood, S. and Weston, J., 2011. Has the propensity to pay out declined? Journal of Financial and Quantitative Analysis 46, 1–24.

Guay, W., and Harford, J., 2000. The cash-flow permanence and information content of dividend increases versus repurchases. Journal of Financial Economics 57, 385–415.

Heckman, J. J., Ichimura, H., and Todd, P. E., 1997. Matching as an econometric evaluation estimator: Evidence from evaluating a job training programme. The Review of Economic Studies 64, 605–654.

Hoberg, G., Phillips, G., and Prabhala, N. (2014). Product market threats, payouts, and financial flexibility. The Journal of Finance, 69, 293–324.

Ikenberry, D., Lakonishok, J., and Vermaelen, T., 1995. Market underreaction to open market share repurchases. Journal of financial economics 39, 181–208.

Jagannathan, M., Stephens, C.P., and Weisbach, M.S., 2000. Financial flexibility and the choice between dividends and stock repurchases. Journal of Financial Economics 57, 355–384.

John, K., Knyazeva, A., 2006. Payout policy, agency conflicts, and corporate governance. Unpublished working paper, New York University.

Kahl, M., Lunn, J., and Nilsson, M., 2012. Operating leverage and corporate financial policies. Unpublished working paper, University of Colorado.

Kahle, K.M., 2002. When a buyback isn't a buyback: open market repurchases and employee options. Journal of Financial Economics 63, 235–261.

Lev, B., 1974. On the association between operating leverage and risk. Journal of Financial and Quantitative Analysis, 627–641.

Lie, E., 2000. Excess funds and agency problems: an empirical study of incremental cash disbursements. Review of Financial Studies, 13, 219–248.

Mandelker, G. N., and Rhee, S. G., 1984. The impact of the degrees of operating and financial leverage on systematic risk of common stock. Journal of Financial and Quantitative Analysis 19, 45–57.

Massa, M., Rehman, Z., and Vermaelen, T., 2007. Mimicking repurchases. Journal of Financial Economics 84, 624–666.

Novy-Marx, R. (2011). Operating leverage. Review of Finance 15, 103–134.

O'Brien, T. J., and Vanderheiden, P. A., 1987. Empirical measurement of operating leverage for growing firms. Financial Management, 45–53.

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

Stephens, C. P., and Weisbach, M. S., 1998. Actual share reacquisitions in open-market repurchase programs. Journal of Finance 53, 313–333.

Appendix A. Construction of Cost structure measure

We construct a measure of operating leverage following Kahl, Lunn and Nilsson (2012). We begin by estimating the ex-*ante* expectations of operating costs and sales, based on the geometric growth rate over the prior two years:

$$E[S_{it}] = S_{i,t-1}\sqrt{\left(\frac{S_{i,t-1}}{S_{i,t-3}}\right)} \text{ ; and } E[C_{it}] = C_{i,t-1}\sqrt{\left(\frac{C_{i,t-1}}{C_{i,t-3}}\right)} \quad (1)$$

where $S_{i,t}$ and $C_{i,t}$ represent sales and operating costs, respectively, for firm *i* in year *t*. In the COMPUSTAT database, these represent items SALE and XOPR, respectively.

To generate the innovations in growth rates, we calculate difference from the expected value (as follows):

$$\left[\cup_{S\,it}\right] = \frac{\left[S_{i,t} - E[S_{it}]\right]}{S_{i,t-1}} \text{ ; and } \left[\cup_{C\,it}\right] = \frac{\left[C_{i,t} - E[C_{it}]\right]}{C_{i,t-1}} \quad (2)$$

Finally we run a firm level regression using seven years of innovations to obtain our measure:

$$\cup_{C\,it} = Cost\ structure\ X\ \cup_{S\,it} + \epsilon_{i,t}\ , t\ \varepsilon\ [-6,0] \quad (3)$$

So, *Cost structure* is the coefficient on the innovations in growth rate of sales in the regression of innovations of growth of operating costs on the innovations in growth of sales (using a rolling window of data from years -6 to 0). It captures the sensitivity of operating cost growth to sales growth, after accounting for growth trends. Firms with higher proportions of fixed costs to total operating costs are expected to show lower sensitivities and consequently lower estimates of *Cost structure*. Conversely, firms with higher estimates of *Cost structure* will be those having more variable costs relative to total costs. An estimated value of *Cost structure* below zero does not have a natural economic interpretation and so we exclude such observations from the sample. We also winsorize *Cost structure* at the 1st and 99th percentiles level to remove outliers.

We also construct two binary variables from this proxy, namely, *High fixed cost* and *Low fixed cost*. High fixed cost takes a value of 1 for a firm-year if the value of Cost structure is in the bottom tercile of cost structures for that given year, and zero otherwise. Low fixed cost takes a value of 1 for a firm-year if the value of cost structure is in the top tercile of cost structures for that given year, and zero otherwise. Note that an alternative could be to calculate sensitivities based on a log-log regression of sales and operating costs. However, if sales and operating costs follow similar growth trends, then the coefficients calculated using a log-log regression tend to cluster around a value of one (O'Brien and Vandenheiden (1987)). Lev (1974) runs a time-series regression of costs on physical output or sales and uses the estimated coefficient on output (or sales) as measure of a firm's operating leverage. Also note that our measure of cost structure is different from the operating inflexibility measure used in Chen, Harford and Kamara (2014) which measures sensitivity of cost to *negative* sales shocks. O'Brien and Vanderhaiden (1987) calculates degree of operating leverage using ten-year lagged period of positive EBIT. An advantage of our measure of *Cost structure* is that it can be calculated for firms with negative EBIT.

Appendix B: Variable definitions

Cost structure: Sensitivity of growth in operating costs to growth in sales. See Appendix A for calculation. When used other than reporting summary statistics, the sensitivity obtained is scaled by 100.

High fixed cost: Dummy variable that takes a value of 1 if a firm has cost structure in the lowest tercile of values in sample for the year.

Low fixed cost: Dummy variable that takes a value of 1 if a firm has cost structure in the highest tercile of values in sample for the year.

Dividends/TA: Common Dividends (Compustat data item: DVC) plus preferred dividends (DVP) scaled by total assets (AT).

Dividend Payer: Dummy variable that takes a value of 1 if firm paid common dividends, zero otherwise.

Repurchases/TA: The Purchase of common and preferred stock (PRSTKC) adjusted by decreases in the preferred stock redemption value (PSTKRV) from the year before and then scaled by value of total assets.

Repurchaser: Dummy variable that takes a value of 1 if firm repurchased shares, zero otherwise.

Total Payout: Repurchase/TA plus Dividends/TA.

Percent Repurchases: Repurchases/TA divided by the sum of Dividends/TA and Repurchases/TA. Percent Repurchases is not defined if the firm did not pay dividends and did not repurchase shares. This variable is bound between 0 and 1.

Retained earnings: Retained earnings (RE) scaled by equity (CEQ).

Return: Return on stock in the last year, calculated using fiscal year-end stock prices.

Volatility: Standard deviation of stock returns calculated using monthly returns on the stock over the twelve months in the calendar year. Prices are obtained from the Center for Research in Stock Prices (CRSP) monthly file.

Cash: Cash and marketable securities (CHE) scaled by total assets.

Operating income: Average operating income before depreciation (OIBDP) scaled by total assets, averaged over the last three years.

Std. dev. OpIncome: Standard deviation of OIBDP calculated using last five years of data.

Market to book: Book value of assets minus book value of equity plus market value of equity, divided by the book value of total assets.

LnAssets: Natural logarithm of inflation adjusted (in 2011 dollars) book value of total assets.

Debt: Long-term debt (DLTT) plus debt in current liabilities (DLC) divided by book value of assets.

Capex: Capital expenditure (CAPX) divided by book value of assets.

R&D/Sales: Research and development expense (XRD; zero when missing) divided by sales (SALE).

Non-operating income: Average Non-operating income (NOPI) scaled by total assets, averaged over the prior three years.

CAR3: The three-day cumulative abnormal return (CAR) calculated between days (-1,+1), where day zero is the day of announcement of the payout event. Abnormal returns are calculated using a market model where the CRSP Value-Weighted market returns are used as the market returns and the factors are calculated using data over at least 100 days, ending 46 days before the announcement (Brown and Warner (1985)). The announcement is the announcement of changes in regular cash dividends dividend (obtained from CRSP database, see Grullon and Michaely (2002)).

Percentage dividend change: Change in dividend, calculated as a percentage of the dividend paid in the prior quarter. Announcement of dividends is obtained from CRSP database looking at quarterly common dividend paid in cash.

Increase dividend: Dummy variable that takes a value 1 if the dividend announcement leads to an increase in dividend from the prior common dividend paid in cash, zero otherwise.

Illiquidity: Logarithm of the Amihud (2002) illiquidity measure.

Industry adjusted Cost structure: Cost structure adjusted by the average industry (based on 3 digit SIC) Cost structure.

Paper constrained: Dummy variable that takes a value of 1 if the firm issued commercial paper that is rated, zero otherwise. See Denis and Sibilkov (2010).

HHI: Herfindahl-Hirschmann Index is calculated as the sum of the square of the individual market share of the 50 largest firms in a particular industry. This data is available from the Bureau of Economic Analysis (BEA) every five years after 1982. We backfill two years and front fill three years to complete the series.

Fluidity: Fluidity is as defined in Hoberg, Phillips, and Prabhala (2014).

Advertising costs: Advertising expense (XAD) scaled by total assets.

Cash flow: Operating Income before Depreciation (OIBDP) minus interest (XINT) minus taxes (TXT) minus common dividends (DVC), scaled by total assets.

Table 1: Summary statistics

Sample consists of all COMPUSTAT firms that are also in the CRSP database, are incorporated in the United States and have positive values for total assets and sales revenue. Financial firms (SIC code 6000-6999) and utilities (SIC codes 4900-4999) are excluded. Sample period is from 1987 to 2011. Variables are as defined in Appendix B. Panel A shows the summary statistics of key payout variables and the Cost structure measure. Mean, Median and Standard deviation of the variables over the sample period are shown. Panel B shows the average value of payout variables in each of the five quartiles of the sample ranked by cost structure. Difference shows the difference between the lowest and the highest quartile. A t-test is conducted to see if the difference is significantly different from zero. ***, **, and * denote significance at the 0.01, 0.05 and 0.10 levels, respectively.

Panel A:

Variable	Mean	Median	Std. Dev.
Cost structure	0.860	0.908	0.459
Dividends/TA	0.006	0.001	0.008
Repurchases/TA	0.011	0.000	0.012
Percent Repurchases	0.537	0.623	0.340
Illiquidity	-2.102	-2.087	3.661
Total Payout	0.016	0.001	0.090
Dividend payer	0.411	0.000	0.492
Repurchaser	0.375	0.000	0.484
Dividend yield	0.057	0.000	2.033
Retained earnings	-0.161	0.129	1.240
Return	0.001	0.001	0.003
Volatility	0.042	0.034	0.031
Cash	0.159	0.077	0.212
Std. dev. OpIncome	0.081	0.045	0.109
Market-to-book	1.690	1.395	1.065
LnAssets	5.138	5.055	2.175
Debt	0.242	0.205	0.224
Capex	0.059	0.039	0.063
R&D/Sales	0.072	0.000	0.076
Operating income	0.069	0.111	0.239
Non-operating income	0.011	0.007	0.033
High fixed cost	0.329	0.000	0.470
Low fixed cost	0.314	0.000	0.464

Panel B:

	Lowest quartile	2nd quartile	3rd quartile	Highest quartile	Difference
Total Payout	0.011	0.017	0.023	0.030	0.019**
Dividends/TA	0.004	0.007	0.010	0.015	0.011***
Repurchases/TA	0.008	0.011	0.015	0.019	0.011***
Percent Repurchases	0.639	0.546	0.489	0.410	-0.228***
Cash	0.206	0.197	0.147	0.110	-0.096***
Debt	0.253	0.286	0.312	0.346	0.092***

Table 2. Cost structure and payout

Specifications 2 and 3 show results of logit regressions modeling the decision to pay dividends and to repurchase shares, respectively. Specification 1 models the decision to pay by either dividends or repurchases. The dependent variable *Dividend Payer* takes a value of one if the firm paid regular dividends in a particular year. *Repurchaser* takes a value of one if the firm repurchased shares in a particular year. Payout takes a value of one if either Dividend Payer or Repurchaser is one and zero otherwise. Specifications 4, 5 and 6 show results of OLS regression when the dependent variables are *Total Payout, Dividends/TA* or *Repurchases/TA, respectively*. Variables are as defined in Appendix B. All independent variables are calculated as of the end of the prior fiscal year. All regressions control for year fixed-effects and industry fixed-effects (as captured by 2-digit Standard Industrial Classification (SIC) codes). Reported p-values are based on robust standard errors, clustered by firm. ***, **, and * denote significance at the 0.01, 0.05 and 0.10 levels, respectively.

Specification	(1)	(2)	(3)	(4)	(5)	(6)
Type of Regression:	Logit	Logit	Logit	OLS	OLS	OLS
Dependent variable:	Payout	Dividend Payer	Repurchaser	Total Payout	Dividends/TA	Repurchases/TA
Cost structure	14.600***	18.544***	5.550***	0.187***	0.143***	0.069**
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.026]
Retained earnings	-0.015*	1.699***	0.011	-0.000	-0.000	0.000
	[0.073]	[0.000]	[0.496]	[0.545]	[0.496]	[0.867]
Return	-17.809***	-31.860***	-11.022*	-0.084	-0.051	-0.020
	[0.000]	[0.000]	[0.057]	[0.399]	[0.363]	[0.815]
Volatility	-12.905***	-45.027***	-13.548***	-0.139***	-0.072***	-0.113***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Cash	-0.427***	-0.889***	0.464***	0.008***	0.006**	0.012***
	[0.000]	[0.001]	[0.000]	[0.004]	[0.033]	[0.001]
Std. dev. OpIncome	0.421*	-4.669***	-0.607**	0.024***	0.010	0.024***
	[0.057]	[0.000]	[0.015]	[0.000]	[0.132]	[0.000]
Market-to-book	-0.002	-0.077***	-0.066***	0.005***	0.002***	0.005***
	[0.850]	[0.007]	[0.000]	[0.000]	[0.000]	[0.000]
LnAssets	0.315***	0.322***	0.179***	0.003***	0.001***	0.002***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Debt	-1.051***	-0.750***	-1.109***	-0.017***	-0.005**	0.004
	[0.000]	[0.000]	[0.000]	[0.000]	[0.014]	[0.211]
Capex	-0.438*	-1.389***	-0.827***	-0.025***	-0.010*	-0.014***
	[0.093]	[0.001]	[0.001]	[0.000]	[0.077]	[0.005]
R&D/Sales	-0.039*	-4.518***	-0.033	-0.001***	-0.001***	-0.000
	[0.053]	[0.006]	[0.239]	[0.001]	[0.001]	[0.560]
Operating income	0.832***	3.684***	2.569***	0.043***	0.019***	0.037***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Non-operating income	2.213***	4.927***	4.109***	0.038***	0.018**	0.029**
	[0.000]	[0.000]	[0.000]	[0.008]	[0.026]	[0.011]
Constant	0.648**	1.056**	-1.019***	0.003	0.007**	-0.004
	[0.042]	[0.033]	[0.001]	[0.523]	[0.017]	[0.594]
Observations	61,269	61,269	61,269	61,269	61,269	61,269
Pseudo R2	0.159	0.415	0.131	-	-	-
Adjusted R-squared				0.151	0.033	0.056

Table 3. Dividends and Repurchases

Table shows results OLS regression on sample COMPUSTAT firms from 1987-2011. Dependent variables are as shown. High (Low) fixed cost is a binary variable that takes a value of 1 if the firm is in the lowest (highest) tercile of cost structure for the year. Other independent variables are as defined in Appendix B. All independent variables are calculated as of the end of the prior fiscal year. All regressions control for year fixed-effects and industry fixed-effects (as captured by 2-digit SIC codes). Reported p-values are based on robust standard errors, clustered by firm. ***, **, and * denote significance at the 0.01, 0.05 and 0.10 levels, respectively.

Specification	(1)	(2)	(3)	(4)
Type of Regression:	OLS	OLS	OLS	OLS
Dependent variable:	Dividends/TA	Dividends/TA	Dividends/TA	Repurchases/TA
Retained earnings	-0.001	-0.001	-0.001	0.001
	[0.567]	[0.508]	[0.597]	[0.839]
Return	-0.052	-0.050	-0.052	-0.020
	[0.356]	[0.376]	[0.357]	[0.816]
Volatility	-0.070***	-0.071***	-0.070***	-0.113***
	[0.000]	[0.000]	[0.000]	[0.000]
Cash	0.006**	0.006**	0.006**	0.013***
	[0.026]	[0.031]	[0.024]	[0.001]
Std. dev. OpIncome	0.011	0.010	0.011	0.024***
	[0.104]	[0.135]	[0.102]	[0.000]
Market-to-book	0.002***	0.002***	0.002***	0.005***
	[0.000]	[0.000]	[0.000]	[0.000]
LnAssets	0.001***	0.001***	0.001***	0.002***
	[0.001]	[0.001]	[0.002]	[0.000]
Debt	-0.005**	-0.005**	-0.005**	0.004
	[0.017]	[0.014]	[0.017]	[0.207]
Capex	-0.009	-0.010*	-0.009	-0.014***
	[0.107]	[0.078]	[0.110]	[0.006]
R&D/Sales	-0.001***	-0.001***	-0.001***	-0.000
	[0.002]	[0.001]	[0.002]	[0.572]
Operating income	0.019***	0.019***	0.019***	0.037***
	[0.000]	[0.000]	[0.000]	[0.000]
Non-operating income	0.018**	0.019**	0.018**	0.029**
	[0.027]	[0.025]	[0.027]	[0.011]
High fixed cost	-0.004***		-0.003***	-0.002***
	[0.000]		[0.000]	[0.008]
Low fixed cost		0.003***	0.001***	0.001***
		[0.000]	[0.007]	[0.009]
Constant	0.009***	0.007**	0.009***	-0.003
	[0.002]	[0.013]	[0.003]	[0.666]
Observations	61,269	61,269	61,269	61,269
Adjusted R-squared	0.033	0.033	0.033	0.056

Table 4. Behavior of firms that pay dividends or repurchase shares

Table shows results of regressions for a sample of COMPUSTAT firms that either repurchase shares, pay dividends or both, between 1987 and 2011. Specifications 1 (2) shows result of logit regression where the dependent variable is Dividend Payer (Repurchaser). Specifications 3 and 4 show results for tobit regressions where the dependent variable is Percent Repurchases. This is the fraction of dollars spent by the firm on share repurchases over the sum spent on share repurchases and dividend payouts. Specification 5 shows results of regression with firm fixed-effects. All regressions have year fixed-effects and industry fixed-effects (as captured by 2-digit SIC codes). Specification 6 shows results for second stage of a two-stage Heckman (1976) model where the first stage models the decision to pay (either by dividends or share repurchases) using a probit regression (estimating probability of paying via repurchases or dividedends) and the second stage regression models an OLS regression where the dependent variable is Percent Repurchases. The value of the inverse-mills ratio from the first stage regression is included in the second stage regression. The first stage regression is similar to the one shown in Table 2, specification 1. All other independent variables are as defined in Appendix B. All independent variables are calculated as of the end of the prior fiscal year. Reported p-values are based on robust standard errors, clustered by firm. ***, **, and * denote significance at the 0.01, 0.05 and 0.10 levels, respectively.

Specification	(1)	(2)	(3)	(4)	(5)	(6)
Type of Regression:	Logit	Logit	Tobit	Tobit	Firm FE	Heckman
Dependent variable:	Dividend Payer	Repurchaser		Percent Repurchases		
Retained earnings	-0.057***	0.035*	-0.232***	-0.220***	0.004*	0.007**
	[0.006]	[0.063]	[0.000]	[0.000]	[0.054]	[0.020]
Return	1.769	6.456	10.897***	10.998***	1.632**	7.702***
	[0.721]	[0.142]	[0.002]	[0.002]	[0.034]	[0.000]
Volatility	-4.326***	-0.400	14.836***	14.609***	0.813***	-1.540***
	[0.000]	[0.630]	[0.000]	[0.000]	[0.000]	[0.000]
Cash	-1.970***	1.026***	0.701***	0.669***	0.012	-0.208***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.507]	[0.000]
Std. dev. OpIncome	0.886***	-1.181***	1.260***	1.175***	-0.028	-0.199***
	[0.009]	[0.000]	[0.000]	[0.000]	[0.565]	[0.000]
Market-to-book	0.119***	-0.200***	-0.009	-0.010	-0.012***	-0.009***
	[0.000]	[0.000]	[0.166]	[0.110]	[0.000]	[0.001]
LnAssets	0.255***	0.026*	-0.028***	-0.025***	-0.014***	-0.021***
	[0.000]	[0.096]	[0.000]	[0.000]	[0.000]	[0.000]
Debt	-0.066	-0.475***	0.093**	0.077**	-0.052***	0.120***
	[0.618]	[0.000]	[0.012]	[0.037]	[0.001]	[0.000]
Capex	-0.817**	0.316	0.106	0.059	-0.042	0.131**
	[0.038]	[0.336]	[0.374]	[0.619]	[0.323]	[0.025]
R&D/Sales	-0.010	0.009	0.350***	0.321***	-0.016**	-0.007*
	[0.766]	[0.767]	[0.000]	[0.000]	[0.046]	[0.061]
Operating income	-1.180***	0.716***	-0.361***	-0.406***	-0.100***	-0.111***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.004]
Non-operating income	-0.632	1.603**	-0.575*	-0.557*	-0.196*	-0.436***
	[0.447]	[0.034]	[0.080]	[0.089]	[0.077]	[0.001]
Total payout	0.516***	17.243***	0.539***	0.554***	0.473***	0.523***
	[0.001]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Cost structure	18.771***	-7.193***	-8.011***			
	[0.000]	[0.000]	[0.000]			
High fixed cost				0.246***	0.025***	
				[0.000]	[0.000]	
Low fixed cost				-0.010	-0.005	
				[0.423]	[0.221]	
Inverse mills ratio						-1.862***
						[0.000]
Constant	2.020**	-0.540*	-0.541***	-0.662***	0.447***	1.743***
	[0.010]	[0.081]	[0.000]	[0.000]	[0.000]	[0.000]
Observations	43,242	43,242	43,242	43,242	43,242	43,242
Pseudo R2	0.152	0.129	0.136	0.138	-	0.135
Adjusted R-squared					0.091	

Table 5. Abnormal returns around announcements of dividend changes

Table reports results of OLS regression. Sample includes announcements of changes in regular cash dividends, collected from the CRSP database, between 1987 and 2011. CAR3 is the three-day abnormal return around announcements of share repurchases or dividend changes. All variables are as described in Appendix B. Only non-missing regular cash dividend *changes* are considered as changes in dividends for this test. Increase dividend variable is interacted with High fixed cost variable. All independent variables are calculated as of the end of the prior fiscal year. All regressions have year fixed-effects and industry fixed-effects as captured by 2-digit SIC codes. Reported p-values are based on robust standard errors, clustered by firm. ***, **, and * denote significance at the 0.01, 0.05 and 0.10 levels, respectively.

Specification	(1)	(2)	(3)
Dependent variable:	CAR3	CAR3	CAR3
Cost structure	0.114**		
	[0.027]		
High fixed cost		-0.002**	-0.002**
		[0.015]	[0.035]
Increase dividend		0.014***	0.013***
		[0.000]	[0.000]
Increase dividend X High fixed cost			-0.002**
			[0.033]
Percent dividend change	0.002***	0.001	0.001
	[0.001]	[0.606]	[0.621]
Return	1.767***	1.812***	1.804***
	[0.000]	[0.000]	[0.000]
Operating income	0.018*	0.014	0.014
	[0.076]	[0.175]	[0.168]
Cash	0.011*	0.009	0.009
	[0.089]	[0.148]	[0.149]
Market-to-book	-0.001	-0.001	-0.001
	[0.413]	[0.529]	[0.525]
LnAssets	0.001	0.000	0.000
	[0.404]	[0.679]	[0.662]
Debt	-0.007	-0.007	-0.007
	[0.122]	[0.143]	[0.136]
Capex	-0.017	-0.015	-0.015
	[0.270]	[0.328]	[0.337]
R&D/Sales	0.027*	0.027*	0.028*
	[0.075]	[0.073]	[0.072]
Volatility	0.277***	0.295***	0.295***
	[0.001]	[0.001]	[0.001]
Illiquidity	0.001	0.001	0.001
	[0.153]	[0.198]	[0.190]
Std. dev. OpIncome	-0.047**	-0.031	-0.031
	[0.027]	[0.143]	[0.147]
Constant	-0.015	-0.022*	-0.021*
	[0.236]	[0.075]	[0.090]
Observations	6,741	6,741	6,741
Adjusted R-squared	0.035	0.047	0.047

Table 6. Robustness checks

Table reports results of several robustness checks. Dependent variable for all specifications is Dividends/TA. All variables are as described in the Appendix B. All independent variables are calculated as of the end of the prior fiscal year. All regressions have year fixed-effects and control for industry fixed-effects as captured by 2-digit SIC codes. Specification 1 also has firm fixed-effects. Reported p-values are based on robust standard errors, clustered by firm. ***, **, and * denote significance at the 0.01, 0.05 and 0.10 levels, respectively.

Specification	(1)	(2)	(3)	(4)	(5)	(6)
Type of Regression:	Firm FE	OLS	OLS	OLS	OLS	OLS
Dependant variable:				Dividends/TA		
Retained earnings	-0.074*	-0.000	-0.000	-0.000	-0.000	0.000
	[0.094]	[0.493]	[0.973]	[0.524]	[0.472]	[0.905]
Return	-0.039***	-0.051	-0.059	-0.053	-0.205***	-0.121
	[0.005]	[0.365]	[0.304]	[0.345]	[0.003]	[0.210]
Volatility	0.009***	-0.072***	-0.077***	-0.071***	-0.090***	-0.100***
	[0.002]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Cash	0.011	0.006**	0.007**	0.006**	0.012***	0.010*
	[0.133]	[0.034]	[0.018]	[0.030]	[0.002]	[0.078]
Std. dev. OpIncome	0.001***	0.010	0.008	0.010	0.017**	0.024
	[0.000]	[0.134]	[0.257]	[0.123]	[0.046]	[0.141]
Market-to-book	-0.002***	0.002***	0.002***	0.002***	0.001***	0.003***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
LnAssets	0.003	0.001***	-0.000*	0.001***	0.000**	0.000
	[0.325]	[0.000]	[0.063]	[0.000]	[0.035]	[0.156]
Debt	0.002	-0.005**	-0.004**	-0.005**	-0.003	-0.001
	[0.579]	[0.014]	[0.045]	[0.014]	[0.208]	[0.866]
Capex	-0.000	-0.010*	-0.009	-0.010*	-0.011***	-0.023***
	[0.134]	[0.077]	[0.122]	[0.095]	[0.005]	[0.001]
R&D/Sales	0.013***	-0.001***	-0.001***	-0.001***	-0.001**	-0.002***
	[0.000]	[0.001]	[0.002]	[0.001]	[0.036]	[0.008]
Operating income	-0.001	0.019***	0.019***	0.019***	0.013***	0.027***
	[0.929]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Non-operating income	0.002***	0.018**	0.018**	0.018**	0.022***	0.011
	[0.000]	[0.026]	[0.032]	[0.026]	[0.007]	[0.437]
Cost structure	0.086***		0.131***	0.142***	0.133***	0.143***
	[0.001]		[0.000]	[0.000]	[0.000]	[0.000]
Industry-adjusted Cost structure		0.138***				
		[0.000]				
Paper constrained			-0.011***			
			[0.000]			
HHI				0.003***		
				[0.006]		
Fluidity					-0.001***	
					[0.000]	
Advertising costs						0.001***
						[0.008]
Constant	0.013**	0.008***	0.020***	0.005*	0.011***	0.005
	[0.026]	[0.006]	[0.000]	[0.066]	[0.000]	[0.336]
Observations	61,269	61,269	61,269	61,269	35,289	26,158
Adjusted R-squared	0.224	0.033	0.036	0.033	0.035	0.070

Table 7. Cost structure and cash holdings

Table shows results of OLS regressions where the dependent variable if Cash. ΔTotal Payout is the change in total payout (repurchases plus dividends) between year t-1 and t. All other independent variables are as described in Bakes, Kahle and Stulz (2009) and in Appendix B. All independent variables are calculated as of the end of the prior fiscal year. All regressions have year fixed-effects and industry fixed-effects as captured by 2-digit SIC codes. Reported p-values are based on robust standard errors, clustered by firm. ***, **, and * denote significance at the 0.01, 0.05 and 0.10 levels, respectively.

Specification	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:				Cash		
Net NWC	0.412***	0.411***	0.414***	0.449***	0.449***	0.452***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Industry sigma	0.157***	0.154***	0.141***	0.101***	0.098***	0.089***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Market to book	0.020***	0.020***	0.020***	0.024***	0.023***	0.023***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Real size	0.003***	0.003***	0.003***	0.004***	0.004***	0.005***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Cash flow/assets	-0.180***	-0.178***	-0.177***	-0.220***	-0.219***	-0.218***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Capex	-0.140***	-0.145***	-0.147***	-0.100***	-0.104***	-0.107***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Leverage	-0.068***	-0.069***	-0.068***	-0.100***	-0.101***	-0.103***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
R&D/sales	0.026***	0.025***	0.026***	0.027***	0.027***	0.027***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Dividend Payer	-0.021***	-0.019***	-0.020***	-0.030***	-0.029***	-0.029***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Acquisition activity	-0.126***	-0.126***	-0.132***	-0.076***	-0.076***	-0.079***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Cost structure	-0.744***			-0.610***		
	[0.000]			[0.000]		
High fixed cost		0.021***	0.021***		0.015***	0.015***
		[0.000]	[0.000]		[0.000]	[0.000]
Low fixed cost		-0.006***	-0.007***		-0.006***	-0.006***
		[0.000]	[0.000]		[0.003]	[0.003]
ΔTotal Payout			-0.010***			-0.003***
			[0.007]			[0.006]
Constant	0.021	0.008	0.012	0.017	0.008	0.012
	[0.195]	[0.617]	[0.490]	[0.395]	[0.696]	[0.560]
Observations	61,269	61,269	61,269	43,242	43,242	43,242
Adjusted R-squared	0.579	0.581	0.586	0.566	0.567	0.574

Table 8. Cost structure and future risk

Table shows results of OLS regressions. Dependent variable in specification 1 and 2 (3and 4) is the standard deviation of cash flow (operating income) scaled by assets, calculated using data from year *t+1* to *t+3* (*t+1* to *t+5*). All independent variables are as described in Appendix B. All independent variables are calculated as of year *t*. All regressions have year fixed-effects and fixed-effects as captured by 2-digit SIC codes. Reported p-values are based on robust standard errors, clustered by firm. ***, **, and * denote significance at the 0.01, 0.05 and 0.10 levels, respectively.

Specification	(1)	(2)	(3)	(4)
Dependant variable:	Future Std. dev Cash flow (1,3)	Future Std. dev Cash flow (1,3)	Future Std. dev OpIncome (1,5)	Future Std. dev OpIncome (1,5)
Cost structure	-0.289***		-0.490***	
	[0.005]		[0.000]	
High fixed cost		0.005***		0.007***
		[0.003]		[0.000]
Low fixed cost		-0.003**		-0.006***
		[0.019]		[0.000]
HHI	0.039***	0.038***	0.050***	0.048***
	[0.000]	[0.000]	[0.000]	[0.000]
Retained earnings	-0.012***	-0.012***	-0.009***	-0.008***
	[0.000]	[0.000]	[0.000]	[0.000]
Volatility	0.476***	0.472***	0.481***	0.473***
	[0.000]	[0.000]	[0.000]	[0.000]
LnAssets	-0.009***	-0.009***	-0.010***	-0.009***
	[0.000]	[0.000]	[0.000]	[0.000]
Cash	0.027***	0.026***	0.021***	0.019***
	[0.000]	[0.000]	[0.000]	[0.000]
Market-to-book	0.007***	0.007***	0.006***	0.006***
	[0.000]	[0.000]	[0.000]	[0.000]
Debt	0.026***	0.026***	0.003	0.002
	[0.000]	[0.000]	[0.537]	[0.632]
Capex	0.035**	0.033**	0.051***	0.048***
	[0.025]	[0.033]	[0.001]	[0.001]
R&D/Sales	0.013***	0.012***	0.019***	0.019***
	[0.000]	[0.000]	[0.000]	[0.000]
Constant	0.046***	0.043***	0.069***	0.064***
	[0.000]	[0.000]	[0.000]	[0.000]
Observations	21,496	21,496	18,240	18,240
Adjusted R-squared	0.343	0.343	0.366	0.367

Table 9. Propensity-score matched sample

Table shows results of difference in payout between the firms classified as high fixed costs and a propensity score matched sample of firms that are not classified as high fixed cost. Firms with a high fixed cost are matched to firms that do not have such a cost structure using a one-to-one nearest-neighbor matching with replacement (Heckman, Ichimura and Todd, 1997). The first stage uses a probit regression, using three different specifications to capture the choice of having a high fixed cost structure. The control variables used in each specification are: (1) Ln(assets), with industry and firm-fixed effects; (2) Ln(assets), operating cash flow, cash flow volatility, cash, debt, with industry and firm-fixed effects; (3) Ln(assets), operating cash flow, cash flow volatility, sales growth, operating income, non-operating income, cash, debt, with industry and firm-fixed effects. Next, using the predicted probabilities – propensity scores – from the estimated probit regressions, a firm with a high fixed cost structure was matched to another firm that is not classified as having a high fixed cost structure so as to minimize the absolute value of the difference between propensity scores. Differences in (Δ) Percent Repurchases, Dividends, Repurchases and Total Payout between the sample and propensity score-matched sample are reported. Reported p-values (in brackets) are based on bootstrapped standard errors. ***, **, and * denote significance at the 0.01, 0.05 and 0.10 levels, respectively.

Specification	(1)	(2)	(3)
ΔPercent Repurchases	0.122***	0.113***	0.118***
	[0.006]	[0.006]	[0.003]
ΔDividends/TA	-0.006***	-0.006***	-0.006***
	[0.001]	[0.001]	[0.001]
ΔRepurchases/TA	-0.004***	-0.004***	-0.004***
	[0.001]	[0.001]	[0.001]
ΔTotal Payout	-0.008***	-0.008***	-0.008***
	[0.001]	[0.001]	[0.001]

Table 10. Payout when cost structure changes

Table shows the levels of Percent Repurchases, Total Payout, Cash and Debt at a specific time in our sample firm's history. Time 0 represents the fiscal year in which a sample firm changes its cost structure and increases the proportion of fixed costs so as to earn the classification of being a high fixed cost firm. Time -2, -1, +1 and +2 represent times two years before, one year before, one year after and two years after the transition, respectively. Difference (-1, +1) shows the difference in level of variables between year -1 and year +1. Significance of the difference being different than zero is tested using a t-test. ***, **, and * denote significance at the 0.01, 0.05 and 0.10 levels, respectively.

	Year					Difference (-1, +1)
	-2	-1	0	+1	+2	
Percent Repurchases	0.611	0.614	0.623	0.628	0.628	0.014***
Total Payout	0.026	0.026	0.025	0.022	0.021	-0.004**
Cash	0.197	0.200	0.201	0.203	0.207	0.002**
Debt	0.225	0.224	0.226	0.221	0.216	-0.003*