Institutional Investor Heterogeneity and the Information Content of Dividends

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ABSTRACT

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Bixuan Zhang

Based on Amihud and Li's (2006) and DeAngelo, DeAngelo, and Skinner's (2004) findings on the "disappearing dividends" phenomenon documented by Fama and French (2001), we examine the relation between institutional holdings and information content of dividends across different payer groups. We find that the increase of institutional holdings mainly contribute to firms' declining information content of dividend change announcements, and this effect is stronger and concentrated in bottom payers. Furthermore, the change of holdings owned by institutional investors with different incentive to monitor a firm's governance has distinct effects on the decline of information content across top and bottom payers. Our results indicate that for top payers, only the increase of ownership held by motivated monitors is negatively associated with the information content of dividends. On the contrary, the information content conveyed by dividends in bottom payers is sensitive to all kinds of institutional holdings, including that are generally regarded as unconcerned about firms' governance.

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1. Introduction

Despite the tax disadvantage to dividends, publicly traded industrial firms in the U.S. have historically had a preference to distribute cash to their shareholders through dividends. However, Fama and French (2001) report a general decline in the number of dividend-paying corporations and in the firms' propensity to pay since 1978, which is referred to as the "disappearing dividends" phenomenon. Subsequently, several studies have advanced possible explanations for this phenomenon, but the debate remains unresolved. Some commonly proposed explanations to interpret this puzzle include the substitution of repurchases for dividends (Grullon and Michaely, 2002; Skinner, 2008), the increasing influence of institutional holdings (Amihud and Li, 2006), and the catering theory of dividends (Baker and Wurgler, 2004a; 2004b). On the other hand, DeAngelo, DeAngelo, and Skinner (2004) argue that dividends never disappeared. They find that despite the percentage of dividend payers having decreased since 1980s, the aggregate dollar dividends and real dividends have increased. The divergence between the decreasing number of dividend payers and the increasing dollar dividends denotes that dividends are highly concentrated in a minority of companies that display the largest proportion of aggregate earnings in the market. Amihud and Li (2006) hypothesize and find evidence that the growth in institutional investor holdings in publicly traded firms over the past few decades has reduced the information content of dividends, leading to a lower propensity to pay dividends. Because institutional investors are more informed and sophisticated, their trades "leak" a part of the information contained in dividends before dividends are announced. The information effect of institutional holdings leads to a disequilibrium such that the value of the information content cannot match its cost – the higher tax rate on dividends. Consequently, firms diminish their dividend payments.

The purpose of this paper is two-fold. First, we argue that if the information content has declined for dividend payers as a result of more institutional holdings, this effect should be stronger and concentrated in the sample of bottom payers. Similar to DeAngelo et al. (2004), we observe that nearly 89.1 percent of the aggregate dividends are paid by the top 200 payers (top payers) while an additional 7.2% are paid by the next 200 firms (middle payers). Less than 4 percent of the aggregate dividend are paid by firms ranked 401 and above (bottom payers). Bottom payers tend to be firms with low profitability and high growth opportunities. By contrast, top and middle payers are large firms that have historically maintained a robust dividend policy. In our sample, the median number of institutions in large, middle and bottom payers is 392, 150 and 39, respectively. In addition, the top and middle payers hold a significantly high proportion of the outstanding equity and have a smaller change in the dividend yield compared to the bottom payers. The overall finding of a negative association between institutional holdings and the information content of dividends documented in Amihud and Li (2006) is, therefore, likely to be concentrated among the bottom payers. In other words, firms that have maintained a regular and consistent dividend policy and have had more institutional shareholders, on average, should observe little change in the information content of dividends over time. Second, we observe that Amihud and Li (2006) treat institutional holdings as a homogenous group. The heterogeneity among institutional investors, based on their investment horizon and investment preferences, can significantly affect the relation between institutional holdings and the information content of dividends. We classify institutional investors into different groups by their incentive to monitor a firm's governance (following Fich, Harford, and Tran, 2015; and Bushee, 1998; 2001). Considering their roles in alleviating agency costs, if an institution is identified as motivated monitors by Fich et al. or dedicated institutions by Bushee, we categorize it into the group of strong-monitoring institutions; if it is identified as quasi-indexers or transient institutions by Bushee, we categorize it into the weak-monitoring group. Moreover, we contend that the information content of dividends is only sensitive to the change of strong-monitoring institutional holdings.

To test our hypotheses, we regress the cumulative abnormal return (*CAR*) around a dividend increase, a measurement of information content, on the institutional holdings, denoted by *INST*, across the top, middle and bottom payers. We find that, in line with Amihud and Li's results, higher *INST* leads to lower *CAR* at dividend increase announcements for the full sample. Parsing the data into top, middle and bottom payers, we find that the negative relation between *INST* and *CAR* is concentrated among bottom payers. Both the range of growth and the influence of an increase in one unit in *INST* are more significant among bottom payers than top payers. Next, we split *INST* into strong-monitoring holdings (held by motivated monitors, denoted *INST_MONITOR*, or dedicated institutions, denoted *INST_DED*) and weak-monitoring holdings (held by quasi-indexers, denoted *INST_QIX*, or transient institutions, denoted *INST_TRA*), and find the following: (i) for top payers, only *INST_MONITOR* has significantly negative effect on CAR at dividend increase announcements; (ii) for bottom payers, besides *INST_MONITOR*, higher weak-monitoring institutional holdings also causes a significant decline in CAR. These results partly support our hypotheses that the willingness of top payers to pay dividends lessens when the institutional holdings of motivated monitors rise, whereas the propensity of bottom payers to pay is negatively associated with overall institutional holdings.

Our study proceeds as follows. In section 2, we review relevant literature and propose our hypotheses. In section 3 we describe our sample and the definition of variables we use to examine the effect of institutional holdings on information content. Section 4 provides the methodology, and our empirical results and Section 5 contains our conclusions.

2. Literature review and hypotheses

2.1 Debate on disappearing dividends

2.1.1 Disappearing dividends

In their empirical study among US firms, Fama and French (2001) firstly document the phenomenon of disappearing dividends and show that the proportion of cash dividend payers decreased dramatically from 66.5% to 20.8% from 1978 to 2000. Denis and Osobov (2008) provide international evidence of disappearing dividends in Canada, UK, Germany, and France. Besides regular cash dividends, DeAngelo, DeAngelo, and Skinner (2000) find that special dividends are also disappearing. To interpret this trend, Fama and French explore two aspects of the decline: (i) the surge of new listings which have low profitability and strong growth opportunities – typical characteristics of non-payers, and (ii) the firms' declining propensity to pay cash dividends over time.

One strand of literature argues that the substitution of stock repurchases for cash dividends can explain firms' increasing reluctance to pay dividends. Grounded on the dividend irrelevance theorem of Miller and Modigliani (1961), Grullon and Michaely (2002) propose the tax-motivated substitution hypothesis. They reckon that newly-listed companies are inclined to choose repurchases to transfer cash to shareholders, and although mature corporations do not halt payment of cash dividends, they are also more likely to increase share repurchases payout. Bagwell and Shoven (1989), and Boukoudh, Michaely, Richardson, and Roberts (2007) present evidence that a surge of repurchases begins in the early 1980s accompanied by the sharp decline of dividends that Fama and French (2001) documented. Furthermore, Skinner (2008) confirms the findings of Grullon and Michaely (2002) and reports that the number of corporations which only pay regular dividends declined rapidly, while the number of regular repurchases payers has been going up. Driven by the strong link with earnings, repurchases increasingly become the dominant form of cash payout regardless of which form the firm selected before. Besides, companies can use total payout to convey information (Bhattacharya, 1979; Miller and Rock, 1985) or minimize agency cost (Easterbrook, 1984; Jensen, 1986), whether through dividends or repurchases. These theories partly support the substitution hypothesis.

However, the replacement between repurchases and dividends can explain the disappearance of dividends to what extent is still not uniform. Grullon, Paye, Underwood, and Weston(2011) in their empirical research admit the substitution effect of repurchase, but they also find that the increase of repurchase cannot fully offset the decline of dividends. That is to say, the substitution of repurchases for the dividends can only partly settle the problem. John and Williams (1985) propose that there is a signaling equilibrium between dividends and dilution, that is, dividends are regarded as the signal of valuable inside information, and the higher taxes on them are costs of the information in this equilibrium. Thus, dividends will not be substituted by repurchases in a market with asymmetric information and taxes. In line with the conclusion of John and Williams (1985), Bernheim (1991) assume that the only difference between share repurchases and dividends is taxes, but he still supposes that firms will pay dividends rather than make repurchases. Moreover, Brav, Graham, Harvey, and Michaely (2005) examine the determinants of dividend and repurchase decisions, and find that dividend payments have continuity associated with sustainable earnings while repurchases fluctuate with temporary cash flows (coinciding with Jagannathan, Stephens, and Weisbach, 2000; Guay and Harford, 2000). These findings contradict the substitution of repurchases for dividends from their nature.

Apart from the repurchase substitution hypothesis, Baker and Wurgler (2004a, 2004b) assert that the dividend payment decisions are determined by investors' preferences. As investors on the market prefer dividend paying firms, they will put a premium and vice versa. The empirical evidence also supports their conclusion not only in the post-1978 disappearing trend of dividends. They identify four distinct trends from 1963-2000 related to the relationship between the investors' preference and the firms' propensity to pay: the dividend premiums are positive in the mid-1960s and mid-1970s when firms are more willing to pay; and during the periods of 1969-1975 and 1978-2000, the dividend premiums go negative with the decreasing number of dividend payers.

Finally, Amihud and Li (2006) provide another inference to address the disappearing dividends problem, which stems from the signaling theory. They attribute the disappearance of dividends to the decline of information content that dividend change announcements contain. The authors contend that dividends have declined as the information content of dividends has decreased over time with increasing institutional holdings. Generally, institution investors are considered as more informed and sophisticated.[1] Thus, because institutional investors trade on their privileged information, the more ownership held by institutions, the larger part of the information contained by dividends will be corroded before the announcement. In other words, when a dividend change is announced, the cumulative abnormal return (CAR) around this announcement is smaller for firms that have a higher level of institutional holdings. Consequently, managers will be less likely to use dividends as a signaling method because the low information content is not worth its cost – higher taxes on dividends.

In summary, there is no single convincing explanation that can interpret the declining propensity of dividend payers completely. All the same, researchers have advanced several major interpretations to solve the disappearing dividends puzzle. First argument is based on the substitution of increasing share repurchases for the dividends payment. According to recent literature, repurchases have become a more desirable method for managers to distribute cash to shareholders, especially for growing firms with low profitability. Second explanation is premised on the implied investors' decreasing demand for dividends. Based on the catering theory, managers will pay dividends when investors put a premium on them. Thus, if this premium becomes negative, firms' propensity to pay will drop. Lastly, researchers have argued that the information content of dividend announcements has declined over time. The decline is due to the increase of ownership held by institutions that are more informed and sophisticated. They can access and process information before the dividend announcements are made, which leads to the use of dividends to convey information less efficiently and more costly.

2.1.2 Non-disappearing Dividends

Many scholars argue that corporations' willingness to payout cash cannot simply be measured by the payouts of cash dividends or the number of dividend payers. DeAngelo, DeAngelo,

[1] Empirically supported by Nofsinger and Sias (1999), Wermers (2000), Chen, Jegadeesh, and Wermers (2000), and Bennett, Sias, and Starks (2003).

and Skinner (2004) state that although the proportion of cash dividend payers experienced a significant decline as presented by Fama and French (2001), the total amount of dollar dividends and real dollar dividends have been climbing. This has resulted a high concentration of earnings and dividends among the most profitable industrial companies. However, they do not reject the assertion that firms' propensity to pay cash dividends has declined. Skinner (2008) shows that managers are less likely to pay dividends since they use repurchases instead. Therefore, according to the findings of DeAngelo et al. (2004) and Skinner (2008), dividends never disappeared but firms are becoming more reluctant to pay dividends.

Instead of using the cash dividend or repurchase payout alone, Grullon, Paye, Underwood, and Weston (2011) argue that the net cash payout is a more appropriate indicator to reflect a corporation's cash distribution to its shareholders. The net payout is measured as dividends plus share repurchases minus equity issues. The research shows that despite firms' propensity to pay dividends having decreased, their propensity to pay net cash has not changed that much. In other words, although the reluctance of managers to pay dividends has increased in the last three decades, it does not mean firms' net cash disbursements are reducing.

Some recent literature provides evidence that cash dividends just disappeared temporarily and the trend is now reversing. Julio and Ikenberry (2004) propose that not only the proportion of dividend payers but also the firms' propensity to pay dividends have rebounded since it dropped to the lowest point in 2001. They suggest five plausible reasons: First, they focus on the impact of the Job and Growth Tax Relief Reconciliation Act of 2003, and find support that tax-cut is associated with this resurgence. This finding is also confirmed in studies of Blouin, Ready, and Shackelford (2004) and Chetty and Saez (2004). However, since the reversal occurs two years before the announcement of the tax cut, the explicit explanatory power of the tax-cut act is a matter of debate. Second, the authors argue that as an after effect of the Enron scandal of 2002, large firms with fewer growth opportunities need to use dividends again as a method to convey "high-quality" commitments and relieve agency conflicts. Third, based on the life-cycle theory, the authors note that newly listed firms with high growth and low profitability developed over a period and by early 2000s they were mature enough to transform to dividend paying companies. Fourth, a firm's investment opportunities may influence its payout policy. They predict that firms should "pay out whatever cannot be reinvested to earn the cost of capital" (p.91), yet their empirical results do not support this hypothesis, and hence rule this out as a possible explanation. Finally, consistent with

Baker and Wurgler's (2004b) catering theory, they test the relationship between the premiums and dividend payments but find no supporting evidence.

With regard to prior literature discussing possible reasons for the disappearing dividends phenomenon, we focus on the findings of DeAngelo et al. (2004) and Amihud and Li (2006). Both papers acknowledge that the number of dividend-paying firms and their propensity to pay has experienced a downward tendency over the past few decades, consistent with the empirical evidence in Fama and French (2001). The difference is that DeAngelo et al. (2004) do not consider this decline in conjunction with dividends' disappearance. They observe that the aggregate dollar dividends and real dollar dividends are on the rise and have become more concentrated, driven by more concentrated earnings. Specifically, dividends are dominated by the top payers that generate over half of industrial earnings, whereas the decreased number of payers mainly occurs among small payers that have poor performance and little contribution to the dividend payments. Despite the concentration in earnings and dividends, there has been a reduction in the propensity to pay dividends even among top payers. Whereas 100% of firms with more than 250 million dollars in real earnings paid dividends in 1978, this proportion dropped to 78.7% in 2000. This decline, however, is much less than the overall reduction in the proportion of dividend payers reported by Fama and French (2001) which is a decline from above 70% to below 30%. Because top payers tend to be large firms, maintain a consistent and robust dividend policy, and have more institutional investors, the change in information content of dividends for this group is expected to be small over time. The negative relation between institutional holdings and the information content of dividends, as documented by Amihud and Li (2006) will vary among the top and bottom payers. We state our first hypothesis as follows:

H1: *After controlling for profitability and growth opportunities, the information content of dividends will be lower for firms with greater institutional holdings. This relation is expected to be stronger when the firms are bottom payers.*

2.2 Information content of dividends and institutional investor heterogeneity

The concept of the information content of dividends derives from asymmetric information and signaling theory. Ample literature establishes the rationale that dividends contain information in addition to that conveyed by earnings or other accounting indicators (e.g. Ross, 1977;

Bhattacharya, 1979; Kalay, 1980; Miller and Rock, 1985). Building on the information content hypothesis, some empirical evidence supports the view that information effect of dividend changes can be reflected by stock price response. Handjinicolaou and Kalay (1984) find that dividend decreases negatively affect stock returns. Similarly, Woolridge (1983) proposes that dividend increase announcements lead to positive abnormal returns and dividend decrease announcements are associated with negative abnormal returns. Thus, the abnormal returns can be used as a proxy to measure information content.

From this standpoint, Amihud and Li (2006) extend the study to the information effect of institutional holdings. They contend that the dividend is a costly signal when the firm attempts to obtain a signaling equilibrium. However, institutional investors' trade corrodes the information conveyed by dividends due to their information that is inaccessible for other participants in the market. As a result of the increasing institutional holdings, the costs of dividends – higher tax liabilities– are not endurable for managers, and the signaling balance is broken. Their empirical results show the negative correlation between the institutional holdings and the information content. Put another way, Boehmer and Kelley (2009) examine the relation between institutional holdings and the informational efficiency of stock prices, finding that a higher level of institutional ownership mitigates the information asymmetry through more informational efficient prices. Their work indirectly verifies Amihud and Li's findings.

In both articles, Amihud and Li (2006) and Boehmer and Kelley (2009) treat institutional ownership as homogeneous. However, more recent studies distinguish institutional investors by their natures and assert that their trading and governance behaviors are distinct from each other. Yan and Zhang (2009) claim that institutional investors with different investment horizons are differentially informed. Short-term institutions are more active with better predictions of future stock returns and future earnings. Rather than simply differentiate investment horizons by using short- and long-term investors, Bushee (1998, 2001) sets up a system and classifies institutional investors into three categories: Dedicated, Quasi-indexers, and Transient institutions. Contrary to the dedicated investors, transient institutions with short-term trading and high portfolio turnover rates are less likely to monitor firms' operating performance. Bushee and Goodman (2007) also add institutions' preference for growth or value companies as a criterion into their identification system. Similarly, Fich, Harford and Tran (2015) and Nagel, Qayyum and Roskelley (2015) define monitoring institutions as those whose ownerships of a stock rank in the top 10% of their portfolio allocation. They show that the ownership held by monitoring institutions is positively associated with the firm's future payouts and performance.

Our next hypotheses relate dividends to explicitly classified institutional holdings. Following the classifications of Fich et al. (2015) and Bushee (1998, 2001), we categorize institutional investors into motivated monitors, dedicated institutions, quasi-indexers, and transient institutions. Bushee (1998) argues that similar to the motivated monitors, dedicated institutions have more monitoring incentive compared with quasi-indexers and transient institutions. We assume that the motivated monitors and dedicated institutions provide strong monitoring, while quasi-indexers and transient institutions provide weak monitoring. In line with Amihud and Li's (2006) rationale, institutions with higher motivation to monitor should incorporate more private information in their trades, i.e., the information conveyed by the dividend change announcements will be less, which has a negative effect on the information content of dividends. Accordingly, we hypothesize that the greater the ownership of strong-monitoring institutions the lower the information content of dividends. Based on the heterogeneous structure of institutional ownership, we state and test the following hypotheses:

H2: *After controlling for profitability and growth opportunities, the information content of dividends is negatively related to the ownership of the strong-monitoring institutions (ownership held by motivated monitors and dedicated institutions. We expect this relation to be stronger when the firms are bottom payers.*

H3: *After controlling for profitability and growth opportunities, the information content of dividends is not related to the ownership of weak-monitoring institutions (ownership held by quasi-indexers and transient institutions).*

3. Data description and definition of variables

3.1 Data selection

We start with all regular dividend distributions on ordinary common stocks announced during 1981-2013 from the Center for Research in Security Prices (CRSP) monthly file. Only cash dividends paid quarterly (CRSP distribution code 1232), monthly (1212), semi-annually (1222), and with unspecified frequency (1242) are defined as regular dividend distributions. We also require that there are no announcements of other distributions or dividend distributions other than regular cash dividends in the -15 to +15 day window surrounding our dividend change announcement (Amihud and Li, 2006). Our initial events sample excludes all firms in financial (Standard Industrial Codes (SIC) ranges 4900-4949) or utilities industry (6000-6999). Following Fama and French (2001), the data consist of publicly traded NYSE, AMEX, and NASDAQ firms with CRSP share codes 10 or 11, which excludes REITs, American Depository Receipts (ADRs), closed-end funds, and firms not incorporated in the United States. Furthermore, announcements of firms without valid accounting data on Compustat (main tests sample) or missing December share price and quantity data are eliminated from our sample. These selection criteria generate a dividend change events sample comprising 13,675 dividend increase cases and 4066 dividend decrease cases over the whole period. We focus on the dividend increase announcements because in a certain year the number of dividend decrease announcements are not enough to conduct our tests. To analyze the discrepancy between top payers and bottom payers, we rank all firms by their total dollar dividends paid in each year in descending order and group them into top payers (ranked in top 200), middle payers (201-400), and bottom payers (401+).

Next, we match the dividend increase events data with the institutional holdings data. We obtain the data from the quarterly reports in Form 13F to the SEC, which is gathered by Thomson-Reuters Institutional Holdings 13F database (formerly known as CDA/Spectrum). All institutional investors with holdings of greater than $100 million or more in assets under management must disclose their common stock positions. The data of institutional investors who hold ADRs of a firm (Stock class description is "AR") are deleted from the sample.

In addition, we introduce the institutions' classification developed by Bushee (1998) into our tests.[2] This system classifies all institutional investors into Transient/Quasi-indexer/Dedicated institutions over 1981-2013. To be included in our final sample, a dividend increase announcement must have available financial statement data from Compustat and valid institutional holding data. This selection results in a final sample of 10,605 events over the whole period.

[2] Our data source is Brian Bushee’s website (http://acct.wharton.upenn.edu/faculty/bushee/IIclass.html).

3.2 Definition of variables and descriptive statistics

3.2.1 Main variables

Based on Woolridge's (1983) conclusions, we employ cumulative abnormal returns (CARs) around the dividend increase announcement day as a proxy of the information content. The variables CAR_(-1, +1), CAR_(0, +1), and CAR_(-11, +1) represent the cumulative abnormal returns over the window (-1, +1), (0, +1), and (-11, +1) where day 0 is defined as the dividend increase announcement day. The CARs are calculated with the market model in Eventus using data directly from CRSP stock databases.

Following Amihud and Li (2006), our main regressions adopt the change in dividend yield ($DDIVY_j$) and institutional holdings ($INST_j$) as independent variables. The change in dividend yield, $DDIVY_j$, is calculated as $4 * \Delta DIVAMT_q/PRC$, where $\Delta DIVAMT_q$ is the difference between dividend cash amount per share (*DIVAMT*) of current quarter and previous quarter, and *PRC* is the price at the end of the month when the dividend change is announced. The institutional holdings, $INST_j$, is the proportion of ownership held by institutional investors to the firm's total shares outstanding at the end of the quarter before the dividend change announcement.

Concerning the effect of institutional investors' monitoring, we further classify institutional investors into strong- and weak-monitoring institutions through two methods. The first is proposed by Fich et al. (2015) to identify motivated monitors. If an institution assigns a weight to a firm when it constructs a portfolio, and this weight ranks in the top 10 percent of the institution's portfolio allocation, then the institution is classified as a motivated monitor of this firm. The portion of ownership held by all motivated monitors to the total shares outstanding of a firm is the firm's monitoring institutional holdings (*INST_MONITOR*), and the number of all motivated monitors in it is the number of monitoring institutions (*NO_MONITOR*). Because motivated monitors focus efforts on the stock with high weights in their portfolio, we reckon that these institutional investors supply strong monitoring. The second approach follows Bushee's (1998, 2001) classification method of institutions. Based on their past investment patterns, including portfolio turnover, diversification, and momentum trading, this approach categorizes institutional investors into three groups: dedicated, quasi-indexer, and transient. Dedicated institutional owners are partly similar to the motivated monitors we formerly defined. Thus, this kind of institutions is regarded as strong-monitoring institutions as well. Quasi-indexer and transient owners are weak-monitoring institutions. Quasi-indexers mimic a certain index and adopt a passive buy-and-hold strategy with little portfolio turnover. Transient institutions are the most active group with a short term focus and high portfolio turnover. Both these groups have minimal incentives to provide strong monitoring. We calculate the percentage of shares owned in the firm by these three kinds of institutions (*INST_DED, INST_QIX,* and *INST_TRA*) and the number of each kind of these institutions (*NO_DED, NO_QIX,* and *NO_TRA*), respectively. These variables are used to examine our Hypothesis 2 and 3.

Panel A of Table 1 presents summary statistics of all variables for every payer group. Compared with that of top payers, the information content at dividend changes announced by bottom payers is more left-skewed. For instance, the mean CAR for the window (0, +1) in bottom payers is 0.75%, and the median CAR is 0.32%, while this differential between the average and the median CAR among top payers is only 0.08%. The skewness in abnormal returns reflects that among bottom payers half the dividend change announcements contain a lower level of information content. This indicates that relative to other groups of dividend payers, bottom payers may have less motivation to pay dividends as a signal.

Turning to the institutional holdings and monitoring proxies, we find that the percent of shares held by top payers and middle payers are broadly equal but significantly larger than that held by bottom payers. Meanwhile, the number of institutional investors of top payers is greater than the other two groups, reflecting that the ownership is more diverse among top payers. This fact is also proved by the motivated monitoring institutional holdings. On average, 108 motivated monitoring institutions account for 39.4% of top payers' ownership, whereas only about two institutions that hold 6.3% of shares have the incentive to monitor bottom payers.

Panel B shows the significant difference tests of each variable between the top payer and bottom payers. As can be seen from the table, except the median of CARs, every variable of top payers essentially differs from that of bottom payers. This may confirm our hypothesis that the investment patterns of institutional investors of the top payers and bottom payers are different.

3.2.2 Control variables

To control for firm characteristics possibly related to payout policy, we include five control variables into our multivariate regression analysis (Nagel et al., 2015; Grullon et al., 2011):

1. Firm size (*SIZE*), calculated as the natural logarithm of total sales (Compustat item 12) in millions of dollars;

2. Return on assets (*ROA*), calculated as the ratio of the operating income before depreciation (Compustat item 13) to the book value of total assets (Compustat item 6);

3. Retained earnings (*RE*), calculated as the retained earnings (Compustat item 36) divided by the book value of total assets (Compustat item 6);

4. Market-to-Book ratio (*MB*), calculated as the market value of equity scaled by the book value of common equity (Compustat item 60), where the market value of equity is measured as common shares outstanding (Compustat item 25) times the fiscal year price (Compustat item 199);

5. Average sales growth rate (*SGR*), calculated as the mean of three-year sales growth rate, which is the annual change in total sales (Compustat item 12).

We use these variables to control a firm's capitalization (firm size), profitability (return on assets and retained earnings), and growth opportunities (market-to-book value and average sales growth rate). The descriptive statistics and comparison tests between the top and bottom payers for the control variables are also presented in Table 1.

4. Methodology and empirical results

4.1 Model design

Following Amihud and Li (2006), we employ two methods of multivariate regression analysis to test our hypotheses, namely, pooled regression and the Fama-MacBeth method. For pooled regressions, we use all observations in the regression and define a series of dummy variables to control for industry and year fixed effect. For Fama-MacBeth regressions, we firstly estimate the cross-sectional regressions year by year, and then compute the weighted average of annual coefficients for each variable, using their squared standard errors got from the annual regressions as the weights.[3]

To examine our first hypothesis, especially to investigate whether the distinct effect between the top payers and bottom payers exists, we not only regress the model on the full sample

[3] In order to control for heteroscedasticity, we use heteroscedasticity-consistent standard errors (also known as White standard errors) in our calculations.

with group dummies and interactions that indicate the occurrence of top, middle, or bottom payers, but also conduct the regressions on the subsamples, splitting the full sample into three payer groups. The regressions are formulated as follow.

The pooled regression models on the full sample are

(4-1) $CAR_j = \alpha_0 + \alpha_1 DDIVY_j + \alpha_2 INST_j + \alpha_3 SIZE_j + \alpha_4 RE_j + \alpha_5 ROA_j + \alpha_6 MB_j + \alpha_7 SGR_j + \sum_{m=1}^{12} \alpha_{8m} IND_{jm} + \sum_{n=1}^{33} \alpha_{9n} YEAR_{jn} + e_j$

(4-2) $CAR_j = \alpha_0 + \alpha_1 DDIVY_j + \alpha_2 INST_j + \alpha_3 Dummy\_TOP + \alpha_4 Dummy\_MID + \alpha_5 SIZE_j + \alpha_6 RE_j + \alpha_7 ROA_j + \alpha_8 MB_j + \alpha_9 SGR_j + \sum_{m=1}^{12} \alpha_{10m} IND_{jm} + \sum_{n=1}^{33} \alpha_{11n} YEAR_{jn} + e_j$

(4-3) $CAR_j = \alpha_0 + \alpha_1 DDIVY_j + \alpha_2 INST_j + \alpha_3 DDIVY\_TOP + \alpha_4 INST\_TOP + \alpha_5 DDIVY\_MID + \alpha_6 INST\_MID + \alpha_7 SIZE_j + \alpha_8 RE_j + \alpha_9 ROA_j + \alpha_{10} MB_j + \alpha_{11} SGR_j + \sum_{m=1}^{12} \alpha_{12m} IND_{jm} + \sum_{n=1}^{33} \alpha_{13n} YEAR_{jn} + e_j$

The Fama-MacBeth regressions on the full sample for each year are identical with the regressions above but drop year dummies ($YEAR_j$). The model is estimated for CARs on three time windows: days -1 to +1 (CAR_(-1, +1)), days 0 to +1 (CAR_(0, +1)), and days -11 to +1 (CAR_(-11, +1)). *Dummy_TOP* and *Dummy_MID* are dummy variables that identify payers. If a firm ranks as a top payer, then *Dummy_TOP* equals 1; if it ranks as a middle payer, then *Dummy_MID* equals 1; otherwise, both variables equal 0. *DDIVY_TOP, INST_TOP, DDIVY_MID* and *INST_MID* are interactions obtained with *DDIVY* and *INST* interact with *Dummy_TOP* and *Dummy_MID.*[4] The model includes year dummies in the pooled regressions and industry dummies in both methods. $YEAR_{jn}$ equals 1 if the dividend change announcement of firm *j* is made in year n, otherwise equals 0. IND_{jm} controls industry fixed effect. If the firm *j* that announces a dividend change is in industry m, then the dummy variable equals 1, otherwise equals 0. We split all firms into 13 industry groups, using two digit SIC code (following Lo and Wang, 2006).

Based on the findings in Amihud and Li's (2006), for Hypothesis 1, we expect that $\alpha_1 > 0$ and $\alpha_2 < 0$. Based on our hypothesis, we expect the coefficients of group dummies (α_3 and α_4 in regression 4-2) to be positive. That is to say, compared with bottom payers, institutional holdings

[4] Detailed definition can be seen in Appendix 1.

in top payers and middle payers have a less negative effect on the information content. Furthermore, the interaction terms in regression 4-3 examine the differences in the three payer groups after controlling for change in dividend yield and institutional holdings for each payer group.

For regressions on subsamples, we conduct regressions (4-1) on top payer, middle payer, and bottom payers, comparing the coefficients and their significance of each variable across the three groups. We predict that α_2 in bottom payers is negative and significant, and its absolute value is larger than those of the other two groups.

To study whether the ownership held by strong-monitoring institutional investors affects the information content of dividend changes differently compared to weak-monitoring institutional investors, we combine variables for motivated monitors and institutions labeled by Bushee's classification with payer group dummies. Therefore, the equations we estimate are as follows.

The pooled regressions on the full sample are

(4-4) $$CAR_j = \beta_0 + \beta_1 DDIVY_j + \beta_2 NO\_MONITOR_j + \beta_3 Dummy\_TOP + \beta_4 Dummy\_MID + \beta_5 SIZE_j + \beta_6 RE_j + \beta_7 ROA_j + \beta_8 MB_j + \beta_9 SGR_j + \sum_{m=1}^{12} \beta_{10m} IND_{jm} + \sum_{n=1}^{33} \beta_{11n} YEAR_{jn} + e_j$$

(4-5) $$CAR_j = \beta_0 + \beta_1 DDIVY_j + \beta_2 INST\_MONITOR_j + \beta_3 Dummy\_TOP + \beta_4 Dummy\_MID + \beta_5 SIZE_j + \beta_6 RE_j + \beta_7 ROA_j + \beta_8 MB_j + \beta_9 SGR_j + \sum_{m=1}^{12} \beta_{10m} IND_{jm} + \sum_{n=1}^{33} \beta_{11n} YEAR_{jn} + e_j$$

(4-6) $$CAR_j = \beta_0 + \beta_1 DDIVY_j + \beta_2 NO\_INST\_DED_j + \beta_3 NO\_INST\_QIX_j + \beta_4 NO\_INST\_TRA_j + \beta_5 Dummy\_TOP + \beta_6 Dummy\_MID + \beta_7 SIZE_j + \beta_8 RE_j + \beta_9 ROA_j + \beta_{10} MB_j + \beta_{11} SGR_j + \sum_{m=1}^{12} \beta_{12m} IND_{jm} + \sum_{n=1}^{33} \beta_{13n} YEAR_{jn} + e_j$$

(4-7) $$CAR_j = \beta_0 + \beta_1 DDIVY_j + \beta_2 INST\_DED_j + \beta_3 INST\_QIX_j + \beta_4 INST\_TRA_j + \beta_5 Dummy\_TOP + \beta_6 Dummy\_MID + \beta_7 SIZE_j + \beta_8 RE_j + \beta_9 ROA_j + \beta_{10} MB_j + \beta_{11} SGR_j + \sum_{m=1}^{12} \beta_{12m} IND_{jm} + \sum_{n=1}^{33} \beta_{13n} YEAR_{jn} + e_j$$

The Fama-MacBeth regressions on the full sample for each year are identical with the regressions above but drop year dummies ($YEAR_j$). The monitoring effect of institutional investors is measured by the number of each kind of institutions and the percentage of ownership they hold. As stated in Hypothesis 2 and 3, if the strong-monitoring institutional holdings make dividend change announcements less informative, we expect that $\beta_2 < 0$ in all regressions. The influence of weak-monitoring institutional investors is tested in regression (4-6) and (4-7) at the same time. By contrast, we expect the estimations of weak-monitoring institutions (β_3, β_4, β_5, *and* β_6) are insignificant. The reduced models without group dummies (*Dummy_TOP* and *Dummy_MID*) are also regressed on the subsamples to examine these assumptions. The prospect resembles Hypotheses 2 and 3, i.e., larger strong-monitoring institutional holdings in bottom payers diminish more information conveyed by dividend change announcement than top payers, which is not applicable to weak-monitoring institutions.

4.2 Empirical results

4.2.1 Effect of overall institutional holdings

We firstly examine the pattern of dividend payers over time in accordance with DeAngelo et al. (2004). Figure 1 tracks the number of all payers, financial and utility industry payers, and industrial payers from 1975 to 2014. Conforming to Fama and French (2001), there exists a notable "disappearance" among industrial firms that tend to pay dividends over 1982-2002, yet the tendency of dividend-paying financials and utilities rises first and then falls over the period. As stated by DeAngelo et al., this mismatching precludes a unified external factor that causes the decline in the number of industrial firms, such as tax law changes. Moreover, on top of it, the figure refutes the "reappearing dividends" as well. Although the reduction of dividend-paying industrial corporations seems to end in 2002, the reversal does not actually appear thereafter.[5]

In DeAngelo et al.'s study, dividend-paying is concentrated in a handful of top payers, while large numbers of small dividend payers halt their payments, accounting for the decline in the number of dividend payers. Thus, we inspect the dividend concentration for each year and present it in Table 2. As can be seen from the table, there is an upward tendency of the concentration in dividends paid by industrial firms ranked as top 200 over time, from 85.93% in 1975 to the peak of 94.75% in 2002, but the range is slight. The proportion of dividends paid by bottom payers (firms ranked 401 and above) is relatively stable, around 3.71% on average, which partly weakens the explanatory power of DeAngelo et al.'s interpretation.

[5] For robustness, we conduct comparison tests on the cumulative abnormal returns before and after 2002, the results show that the there is no significant reversal trend in the so-called "reappearing" period.

The results of Amihud and Li (2006) cast light on this situation. They contend that disappearing dividends are due to the loss of information conveyed by dividend, resulting from the surge of institutional holdings. Figure 2 demonstrates the trends of institutional holdings, and our innovative effort here is dividing the sample into top, middle, and bottom payer groups corresponding to what DeAngelo et al. have done. The institutional holdings across all three groups have virtually increased. While the percentage of shares owned by institutional investors in top payers rose from 44.07% in 1980 to 72.74% in 2014, the bottom payers' institutional holdings have quadrupled over time from 15.69% to 67.90%. The figure partially supports the information effect of institutional holdings on the dividend change announcements and our first hypothesis that the variations of institutional holdings for different payer groups are not the same, leading to a distinctly negative effect on information content.

Furthermore, we formally test the effect of an increase of one unit in institutional holdings on the information content across groups by regressing CARs on it. Table 3 reports the estimated regressions on the full sample. Hypothesis 1 is partly supported by the results of pooled regressions in Panel A. The coefficient of *INST* is significantly negative, which is consistent with Amihud and Li's (2006) conclusions. However, the coefficients of top group dummy and its interaction item multiplied by *INST* are marginally significant. That is to say, the negative effect of each unit increase of institutional holdings brings to the CARs is barely the same across the top and bottom payers. There may be two interpretation for this divergence from our expectation: (i) most of information effect is captured by *INST* as the magnitude of institutional holdings' increase is different across groups (presented in Fig 2); (ii) because the ownership held by institutions are not homogeneous, only the change of certain segment of institutional holdings will act on the information content. These findings can also be seen from Fama-MacBeth regressions on CAR_(-11, +1), $\alpha_2 = -0.0202$ (t = -3.97) for model (4-1), $\alpha_2 = -0.0203$ (t = -4.18) for model (4-2), and $\alpha_2 = -0.0175$ (t = -3.20) for model (4-3). Although not all the coefficients of *INST* in regressions on the other two time windows are significant, the signs of them are consistent with our hypothesis.

To clarify the effect of institutional holdings across all three payer groups more specifically, we re-estimate regression (4-1) on subsamples by splitting the sample into three groups: the top, middle, and bottom payers. The results of pooled regressions in Panel A of Table 4 strongly support Hypothesis 1. For instance, in regressions of the time window (0, +1), a 100 basis point increase in institutional holding among bottom payers would generate a 0.0109% decrease in CAR.

Nevertheless, the change of top payers' CAR responds to the increase of institutional holding by the same scale would be almost zero. However, the results for Fama-MacBeth regressions in Panel B are as not expected. The estimations of *INST* across three groups are not significantly different from each other, and even opposite in their signs. We suppose that this may result from the effect of extreme values for certain years with large standard errors used to calculate the weighted average. Thus, we contend that when the institutional holdings increase by 1%, its negative effect on information content will be more remarkable among bottom payers. Therefore, it is necessary to explore the distinctive effect of different segments of institutional investors, to test if it is consistent with our Hypotheses 2 and 3.

4.2.2 Effect of institutional holdings with distinct incentive to monitor

We plot the annual average ownership held by motivated monitors (*INST_MONITOR*), dedicated institutions (*INST_DED*), quasi-indexers (*INST_QIX*), and transient institutions (*INST_TRA*) across payer groups from 1981 to 2013 in Figure 3, similar to what was done on the overall institutional holdings (*INST*). Figure 3 shows that although all four kinds of institutions increased their holdings over the period, the patterns of strong-monitoring investors' ownership (held by motivated monitors and dedicated institutions) across groups are not as expected. Specifically, in contrast to the pattern of overall institutional holdings, the percentage of motivated monitors' holding in top payers has the biggest jump from 18.68% in 1981 to 48.94% in 2013, while the change of bottom payers is only 5.71% (graph (a) in Fig. 3). For dedicated institutions, they occupy the slightest portion of ownership (less than 12%) among all three institution groups throughout the period. As can be seen from the graph (b) in Fig. 3, the percentage of shares owned by dedicated institutions goes up to the peak in the mid-2000s and then falls sharply to almost the same level in early 1980s in all three groups. Whereas, the trend of quasi-indexers' holdings is quite the same as that of the overall institutional holdings shown in graph (c). The average proportion of quasi-indexers' ownership to the total shares outstanding in the bottom dividend-paying firms increases by 33.62%, which is more than the 18.46% of top payers and the 26.94% of middle payers. An upward tendency of transient institutions' holdings is also observed across all payer groups in the graph (d).

To examine our Hypothesis 2 and 3, we regress CARs on two kinds of proxies that measure the motivation of institutions with different incentives to monitor: the number and proportional holdings of motivated monitors, and the number and proportional holdings owned by institutions categorized by Bushee's (1988, 2001) classification. Table 5 provides details for regressions using variables for motivated monitors on the full sample. For pooled regressions (Panel A), the coefficients of *INST_MONITOR* and *Dummy_TOP* are significant and opposite in signs as expected; that is, the increase of motivated monitors' holdings negatively associated with CARs, and the negative effect is less among top payers. This finding is verified by results of regressions conducted on subsamples (Panel A in Table 6). Once again, the institutional holdings of motivated monitors have a negative relation with CARs, and not only that, the absolute value of the estimations in bottom payers are larger than those in top payers. As graph (a) of Fig. 3 shows, the holdings of motivated monitors has increased sharply over time resulting in a reduction in the information content of dividends. However, the results of Fama-MacBeth regressions on the full sample and subsamples (Panel B of Table 5 and Table 6) are still not consistent with our expectation. Thus, combining the pooled regressions' results in Table 5 and Table 6, we conclude that the increase of shares owned by motivated monitors lower the information content conveyed by dividend change announcements, and the same scale of monitoring institutional holdings' increase leads to larger information content decline among bottom payers.

Table 7 shows results of model estimations using institutional variables defined by Bushee's classification on the full sample. In these regressions, we categorize dedicated institutions as strong-monitoring institutions, quasi-indexers and transient institutions as weak-monitoring investors. From the table, we can find that the coefficients of *NO_DED* are insignificant, while the coefficients of *NO_QIX* and *NO_TRA* are significant or marginally significant for both methods. This relation can also be seen in the pooled regressions of institutional holdings variables across institution groups on CARs. The unexpected result may partly due to the distribution of these three kinds of institutional holdings (see graph (b), (c), and (d) in Fig 3). The holdings held by dedicated institutions take up the smallest proportions of a firm's total shares outstanding, which fluctuate between 3% and 12% throughout the whole period across all three groups. However, the increasing sum of shares owned by quasi-indexers and transient institutions accounts for over half of the total ownership.

Although the results are contradictory to our expectation, we still test the models on subsamples. In Panel A of Table 8, the significance level of coefficients of *INST_QIX* and *INST_TRA* in bottom payers is higher than the other two groups, especially top payers. Although this relation is not explicit in Fama-MacBeth regressions, these findings can partly indicate that the impact of weak-monitoring institutional holdings' change is not insignificant. The information content of dividend changes in bottom payers is corroded by the increase of ownership held by all kinds of institutional investors, including transient institutions which are widely considered as with no regard to firms' governance. Overall, these results partly reject our Hypothesis 3.

5. Conclusions

Plenty of studies have investigated the disappearing dividends phenomenon documented by Fama and French (2001) and proposed various theories to explain it. Nonetheless, the evidence presented seems inconclusive. In their empirical study, DeAngelo et al. (2004) suppose that the decline in the number of dividend-paying firms does not mean that dividends have disappeared. They find that the aggregate dollar dividends and real dollar dividends are increasing and concentrated among a handful of highly profitable firms. Conversely, Amihud and Li (2006) trace the decrease of firms' propensity to pay to the decline of information content at dividend news. Furthermore, they argue that this decline is caused by increasing institutional holdings whose trades lessen the information contained by dividends. Based on the findings of both articles, we conjecture that the increase of institutional holdings mainly contribute to firms' declining information content of dividend change announcements, and the scale of this negative effect is different between top payers and bottom payers. Besides, the change of shares held by institutional investors with different incentive to monitor a firm's governance has distinct effects on the decline of information content across top and bottom payers.

We test our hypotheses by multivariate regressions. Our results show that (i) a higher level of institutional holdings is negatively associated with the information content of dividend change announcements, measured by cumulative abnormal returns, across all kinds of payers. Moreover, compared to that of top payers, the effect of increasing one unit at institutional holdings is larger in bottom payers; (ii) the negative impact of the overall institutional holdings' change is mixed in top payers. By recognizing institutions' incentive to monitor, it can be seen that only the increase of ownership held by motivated monitors drives the decline of information content in top payers; (iii) contrary to that of top payers, the information content conveyed by dividends in bottom payers is sensitive to all kinds of institutional holdings, including that are generally regarded as unconcerned about firms' governance. These findings support our expectation that despite the growth of dollar dividends that are mostly paid by top payers, the propensity of top payers to pay is declining due to the decrease of information content of dividend changes caused by the rise of motivated monitoring institutions' holdings. Also for bottom payers, the overall institutional holdings, not only the strong-monitoring institutional holdings, have a greater negative impact on firms' information content at dividend change news.

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Appendix

Appendix 1 Definition of variables

Variable	Definition	Source
Dependent variables		
CAR_(-1, +1)	The cumulative abnormal return over the window (-1,+1)	CRSP; Eventus
CAR_(0, +1)	The cumulative abnormal return over the window (0,+1)	CRSP; Eventus
CAR_(-11, +1)	The cumulative abnormal return over the window (-11,+1)	CRSP; Eventus
Independent variables		
$DDIVY_j$	The increase in dividend yield of firm j, which is calculated as ($DIVAMT_j$ of current year – $DIVAMT_j$ of previous year)/ $Price_j$.	CRSP
$INST_j$	The institutional holdings of firm j, which is calculated as the total institutional ownership of firm j/ the total shares outstanding of firm j.	Thomson Reuters (13f)
Monitoring variables		
$NO\_MONITOR_j$	The number of institutions whose holding value of firm j is in the top 10% of the institution's portforlio (following Fich, Harford, and Tran (forthcoming)).	Thomson Reuters (13f)
$INST\_MONITOR_j$	The total ownership of monitoring institutions as a proportion of the total shares outstanding of firm j (following Fich, Harford, and Tran (forthcoming)).	Thomson Reuters (13f)
NO_DED_j	The number of institutions who hold value of firm j and be classified as "dedicated" by Bushee (2001).	Thomson Reuters (13f); Bushee's dataset
$INST\_DED_j$	The quarterly ownership held by dedicated institutions,which is calculated as the institutional ownership held by dedicated institutions of firm j/ the total shares outstanding of firm j.	Thomson Reuters (13f); Bushee's dataset
NO_QIX_j	The number of institutions who hold value of firm j and be classified as "quasi-indexer" by Bushee (2001).	Thomson Reuters (13f); Bushee's dataset
$INST\_QIX_j$	The quarterly ownership held by quasi-indexer institutions,which is calculated as the institutional ownership held by quasi-indexer institutions of firm j/ the total shares outstanding of firm j.	Thomson Reuters (13f); Bushee's dataset
NO_TRA_j	The number of institutions classified as who hold value of firm j and be "transient" by Bushee (2001).	Thomson Reuters (13f); Bushee's dataset
$INST\_TRA_j$	The quarterly ownership held by transient institutions,which is calculated as the institutional ownership held by transient institutions of firm j/ the total shares outstanding of firm j.	Thomson Reuters (13f); Bushee's dataset
Dummy variables and Interactions		
Dummy_TOP	Equals 1 if the payer ranks in the top 200 in given year, otherwise equals 0.	Compustat; CRSP
Dummy_MID	Equals 1 if the firm announced dividend before 2002, otherwise equals 0.	Compustat; CRSP
$Dummy\_year_i$	Equals 1 if the firm made announcement in the year i, otherwise equals 0.	Compustat; CRSP
$Dummy\_group_n$	Equals 1 if the firm that announced dividend is in industry group n, which is classified according to Lo and Wang (2001); otherwise equals 0.	Compustat; CRSP
DDIVY_TOP	DDIVY multiplied by the dummy variable Dummy_TOP.	Compustat; CRSP
INST_TOP	INST multiplied by the dummy variable Dummy_TOP.	Compustat; CRSP; Thomson Reuters (13f)
DDIVY_MID	DDIVY multiplied by the dummy variable Dummy_MID.	Compustat; CRSP
INST_MID	INST multiplied by the dummy variable Dummy_MID.	Compustat; CRSP; Thomson Reuters (13f)
Control variables		
$SIZE_j$	The natural logarithm of total sales of firm j.	Compustat
ROA_j	The ratio of EBITDA to total asset of firm j.	Compustat
RE_j	The ratio of retained earnings to total asset of firm j.	Compustat
MB_j	The firm j's market value of equity divided by the its book value of equity.	Compustat
SGR_j	The average of growth rate in sales over the most recent 3 years preceding the dividend announcement.	Compustat

Tables and Figures

Table 1: Descriptive Statistics

This table presents the descriptive statistics and comparison ttest statistics between top payers and bottom payers. Our sample contains all the dividend increase announcements without other distributions in a (-15, +15) window over 1981 to 2013. The whole sample is divided into three subsamples: top payers, middle payers, and bottom payers, by cash dividends paid in certain year. Firms are defined as top or middle payers if they rank in top 200 or 201-400 in year i, otherwise are defined as bottom payers. Panel A reports the descriptive statistics of all variables we used in main regressions, and Panel B reports the significant difference of mean and median between top and bottom payers. The definitions of all variables are given in Appendix.

Panel A: Descriptive statistics summary							**Panel B: Comparison ttest statistics Top Payers vs Bottom Payers**			
Variables	**Top**		**Middle**		**Bottom**		**Mean**		**Median**	
	Mean	**Median**	**Mean**	**Median**	**Mean**	**Median**	**t-value**	**p-value**	**z-value**	**p-value**
Dependent variables										
CAR_(-1, +1)	0.0053	0.0044	0.0040	0.0019	0.0081	0.0034	-2.98	0.0029	-0.1709	0.8643
CAR_(0, +1)	0.0048	0.0040	0.0036	0.0021	0.0075	0.0032	-3.29	0.001	-0.5179	0.6045
CAR_(-11, +1)	0.0054	0.0064	0.0042	0.0038	0.0084	0.0038	-1.86	0.0631	0.1337	0.8936
Main variables										
DDIVY	0.0051	0.0024	0.0058	0.0021	0.0068	0.0025	-2.09	0.037	-2.9913	0.0028
INST	0.6420	0.6598	0.6181	0.6406	0.4343	0.4065	42.88	<.0001	35.2148	<.0001
NO_INST	482.7472	392	173.2733	150	59.5782	39	68.3	<.0001	71.0379	<.0001
Monitor variables										
INST_MONITOR	0.3940	0.4045	0.1852	0.1567	0.0633	0.0239	95.89	<.0001	68.0341	<.0001
NO_MONITOR	108.3371	54	11.7146	7	1.9959	1	38.44	<.0001	73.0731	<.0001
INST_DED	0.0748	0.0572	0.0721	0.0517	0.0516	0.0230	13.55	<.0001	27.7677	<.0001
NO_DED	11.6895	10	5.2525	5	2.2345	2	68.96	<.0001	67.9644	<.0001
INST_QIX	0.4475	0.4542	0.4129	0.4218	0.2925	0.2732	44.55	<.0001	37.8665	<.0001
NO_QIX	345.8570	274	115.5880	101	39.4814	27	67.2	<.0001	71.5865	<.0001
INST_TRA	0.1065	0.0980	0.1214	0.1046	0.0821	0.0559	15.11	<.0001	22.5193	<.0001
NO_TRA	100.5945	85	44.9636	35	15.7036	8	62.43	<.0001	64.3651	<.0001
Control variables										
SIZE	9.0571	8.9631	7.3912	7.3908	5.6567	5.6839	116.56	<.0001	71.0027	<.0001
RE	0.3958	0.3889	0.4134	0.4096	0.4204	0.4138	-4.1	<.0001	-6.1466	<.0001
ROA	0.1836	0.1759	0.1858	0.1761	0.1787	0.1705	2.87	0.0041	4.3467	<.0001
MB ratio	3.3273	2.8337	2.8691	2.4811	2.2425	1.9006	26.47	<.0001	29.1222	<.0001
SGR	0.0953	0.0757	0.1039	0.0886	0.1150	0.0967	-6.26	<.0001	-9.3828	<.0001
NO. of Events	**2895**		**2558**		**5152**					

Figure 1 The number of dividend payers on CRSP

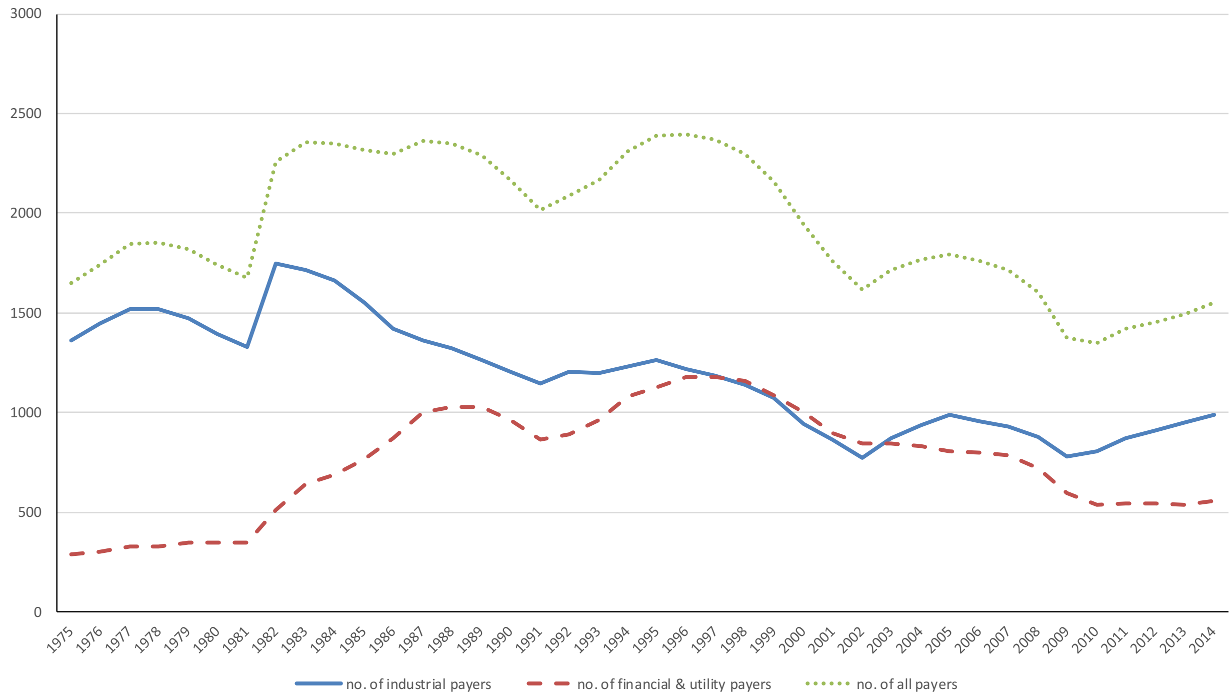

Fig.1. The number of dividend payers on CRSP, 1975-2014. The CRSP sample includes firms who pay regular cash dividends (CRSP distribution code is 1212, 1222, 1232 or 1242) and be traded on NYSE, AMEX, and NASDAQ with share codes of 10 or 11. Firms must have non-missing December price and quantity data in the given year. We define industrial payers as firms whose SIC ranges out of 4900-4949 (financial firms) and 6000-6999 (utilities).

Table 2: Concentration of total dividends paid by industrial payers, 1975-2014

This table shows the concentration of aggregate dollar dividends from 1975 to 2014. Firms are ranked by the total dollar dividends paid in each year in descending order. The sample includes NYSE, NASDAQ, and AMEX firms with share codes 10 and 11 on CRSP. Firms with SIC codes in the ranges 4900-4949 and 6000-6999 or missing cash dividends, earnings before extraordinary items on Compustat, December share price and quantity data are excluded from the sample.

	Percent of Total Dividends (%)								
	Dividend Ranking								
	Top Payers			Middle Payers			Bottom Payers		
Year	**Top 100**	**101-200**	**Subtotal**	**201-300**	**301-400**	**Subtotal**	**401-500**	**≥500**	**Subtotal**
1975	74.63	11.30	85.93	5.44	2.87	8.30	2.07	3.70	5.77
1976	72.64	11.90	84.55	5.77	3.29	9.06	2.24	4.15	6.39
1977	71.92	12.39	84.31	5.91	3.39	9.30	2.26	4.13	6.39
1978	72.23	12.36	84.59	5.78	3.39	9.17	2.25	4.00	6.24
1979	73.95	11.95	85.90	5.61	3.17	8.78	2.00	3.33	5.32
1980	74.58	11.96	86.53	5.39	3.17	8.56	1.95	2.95	4.90
1981	76.17	11.26	87.43	5.34	2.88	8.22	1.80	2.56	4.36
1982	75.13	11.06	86.19	5.29	2.94	8.23	1.85	3.74	5.59
1983	76.29	10.51	86.80	4.95	2.80	7.75	1.79	3.66	5.45
1984	75.52	11.18	86.70	5.01	2.82	7.83	1.93	3.54	5.47
1985	76.07	10.99	87.06	5.28	2.77	8.04	1.71	3.18	4.90
1986	77.06	11.05	88.12	5.01	2.65	7.66	1.54	2.68	4.22
1987	77.98	10.62	88.60	4.92	2.62	7.54	1.43	2.43	3.86
1988	75.70	11.62	87.32	5.65	2.98	8.62	1.60	2.45	4.05
1989	76.07	11.63	87.70	5.25	3.03	8.28	1.64	2.38	4.02
1990	76.14	11.87	88.01	5.32	2.86	8.18	1.52	2.28	3.81
1991	76.35	11.68	88.03	5.17	2.86	8.03	1.57	2.37	3.94
1992	77.35	10.77	88.12	5.04	2.80	7.85	1.60	2.44	4.04
1993	77.51	10.59	88.10	5.15	2.66	7.82	1.55	2.54	4.09
1994	76.92	11.29	88.20	5.24	2.57	7.82	1.48	2.50	3.98
1995	77.08	11.32	88.40	5.10	2.47	7.57	1.47	2.55	4.03
1996	76.27	11.48	87.74	5.26	2.59	7.85	1.60	2.81	4.40
1997	76.79	11.29	88.08	5.17	2.63	7.80	1.53	2.59	4.12
1998	78.06	11.20	89.26	4.75	2.55	7.30	1.38	2.06	3.44
1999	80.27	10.93	91.20	4.13	2.10	6.23	1.12	1.45	2.57
2000	82.41	9.86	92.26	3.88	1.88	5.76	0.97	1.01	1.98
2001	83.98	9.55	93.53	3.35	1.57	4.92	0.84	0.71	1.55
2002	86.54	8.22	94.75	2.76	1.30	4.06	0.70	0.48	1.19
2003	86.30	7.84	94.14	2.87	1.47	4.34	0.83	0.69	1.52
2004	83.34	8.89	92.23	3.61	1.87	5.48	1.10	1.19	2.29
2005	85.27	7.56	92.83	3.26	1.68	4.95	1.01	1.21	2.22
2006	81.48	9.92	91.40	3.85	2.09	5.94	1.22	1.44	2.66
2007	81.88	9.83	91.71	3.64	2.11	5.76	1.22	1.32	2.53
2008	81.84	10.14	91.98	3.72	1.99	5.71	1.14	1.17	2.31
2009	84.34	8.90	93.24	3.51	1.68	5.19	0.88	0.69	1.57
2010	82.64	9.30	91.94	3.99	1.97	5.96	1.13	0.98	2.10
2011	81.27	10.20	91.47	4.19	2.06	6.25	1.17	1.12	2.28
2012	76.55	12.14	88.69	4.82	2.78	7.61	1.68	2.03	3.71
2013	78.99	10.85	89.84	4.56	2.49	7.05	1.50	1.61	3.11
2014	81.82	9.81	91.63	4.05	2.18	6.22	1.16	0.99	2.15
Mean	78.43	10.68	89.11	4.67	2.50	7.17	1.49	2.23	3.71

Figure 2 The yearly average proportion of institutional holdings across groups

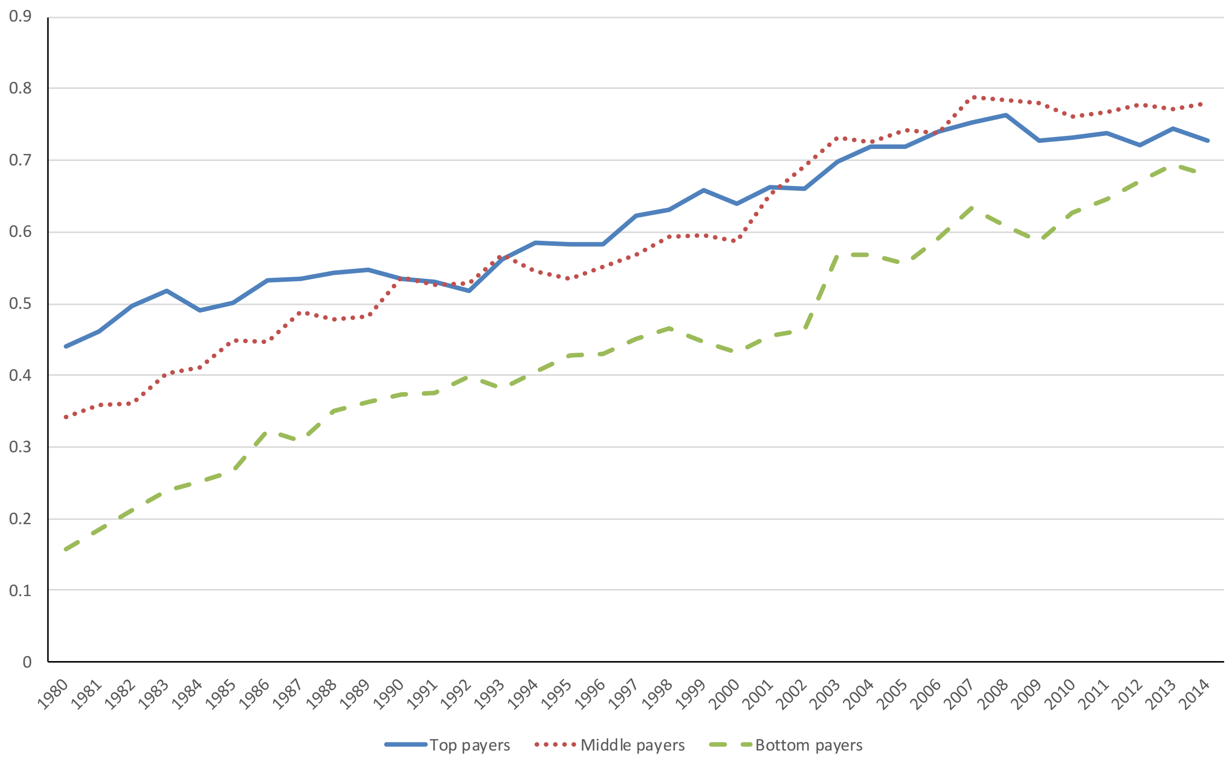

Fig. 2. The yearly average proportion of institutional holdings across groups, 1980-2014. The institutional holdings are calculated as the ratio of ownership held by institutional investors to the firm's total number of shares outstanding. The solid line depicts the trend of institutional holdings of top payers. The point line and dash line represent middle payers and bottom payers, respectively.

Table 3 : Regressions on Full Sample

This table shows the results of regressions on the full sample from 1981 to 2013. Estimation is by pooled time-series (Panel A) and by Fama-MacBeth method (Panel B). Regressions are CARs, the cumulative abnormal return over the window (-1,+1), (0,+1), and (-11, +1), on the change of dividend yield, institutional holding, and a set of interactions that denote the impact of dividend paying capacity. DDIVY is the increase in dividend yield of firm j; INST is the a ratio of instituional holding to the total shares ourstanding of firm j at the end of the quarter before dividend increase is annouced; Dummy_TOP is a dummy variable, which equals 1 if the firm is top payers when the dividend increase announcement made, 0 otherwise; Dummy_MID equals 1 if the firm is middle payer, 0 otherwise; DDIVY_TOP and INST_TOP are interactions calculated as DDIVY and INST multiplied by Dummy_top respectively; DDIVY_MID and INST_MID are Dummy_mid multiplied by DDIVY and INST. The control variables include SIZE (the natural logrithm of total sales of firm j), ROA (the ratio of EBITDA to total asset of firm j), RE (the ratio of retained earnings to total asset of firm j), MB ratio (firm j's mark value of equity divided by its book value of equity), and SGR (the average of growth rate in sales over the most recent 3 years preceding the dividend increase announcement). Additionally, all regressions control for year and industry fixed effects. We use two-digit SIC to define industries (following Lo and Wang (2001)). ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively.

Panel A: Pooled Regressions

	Window (-1, +1)			Window (0, +1)			Window (-11, +1)		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Intercept	0.0131***	0.0159***	0.0151***	0.0145***	0.0165***	0.0157***	0.0185***	0.0231***	0.0215***
	(3.78)	(4.13)	(3.92)	(5.03)	(4.96)	(4.77)	(3.3)	(3.73)	(3.48)
DDIVY	0.0903***	0.0885***	0.1275***	0.0895***	0.0883***	0.1306***	0.1179***	0.1146***	0.1582***
	(3.78)	(3.69)	(4.57)	(3.58)	(3.52)	(4.76)	(3.88)	(3.77)	(5.17)
INST	-0.0093***	-0.0084***	-0.0088***	-0.0077***	-0.0068***	-0.0070***	-0.0206***	-0.0200***	-0.0209***
	(-3.65)	(-3.28)	(-3.18)	(-3.38)	(-2.99)	(-2.81)	(-4.82)	(-4.63)	(-4.52)
Dummy_TOP		0.0031*			0.0022			0.0051*	
		(1.74)			(1.36)			(1.8)	
Dummy_MID		-0.0007			-0.0010			0.0012	
		(-0.54)			(-0.89)			(0.58)	
DDIVY_TOP			-0.0783*			-0.0851*			-0.0806
			(-1.69)			(-1.82)			(-1.04)
INST_TOP			0.0045*			0.0034			0.0062
			(1.83)			(1.47)			(1.56)
DDIVY_MID			-0.0807**			-0.0881**			-0.0940
			(-1.97)			(-2.01)			(-1.61)
INST_MID			-0.0004			-0.0007			0.0015
			(-0.19)			(-0.37)			(0.44)
SIZE	-0.0008***	-0.0014***	-0.0013***	-0.0008***	-0.0012***	-0.0011***	-0.0005	-0.0014*	-0.0011
	(-2.95)	(-3.02)	(-3.12)	(-3.07)	(-2.82)	(-2.94)	(-0.98)	(-1.92)	(-1.6)
RE	-0.0075***	-0.0077***	-0.0076***	-0.0067***	-0.0069***	-0.0068***	-0.0043	-0.0046	-0.0044
	(-3.94)	(-4.03)	(-4.06)	(-3.92)	(-3.98)	(-4.05)	(-1.4)	(-1.51)	(-1.45)
ROA	0.0095	0.0094	0.0102	0.0088	0.0089	0.0096	-0.0019	-0.0027	-0.0014
	(1.23)	(1.23)	(1.32)	(1.29)	(1.31)	(1.4)	(-0.15)	(-0.21)	(-0.11)
MB ratio	0.0002	0.0001	0.0002	-0.000004	-0.0001	-0.00004	0.0001	-0.00002	0.00004
	(0.62)	(0.36)	(0.46)	(-0.01)	(-0.21)	(-0.12)	(0.2)	(-0.03)	(0.06)
SGR	-0.0048	-0.0041	-0.0041	-0.0091**	-0.0087**	-0.0086**	-0.0120*	-0.0108*	-0.0110*
	(-1.22)	(-1.06)	(-1.05)	(-2.53)	(-2.41)	(-2.39)	(-1.92)	(-1.73)	(-1.77)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-square	0.0143	0.0148	0.0157	0.0172	0.0177	0.019	0.0168	0.017	0.0172
No. of Obv	10452	10452	10452	10452	10452	10452	10452	10452	10452
Overall P-value	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001

Table 3 (continued)

Panel B: Fama-MacBeth Regressions

	Window (-1, +1)			Window (0, +1)			Window (-11, +1)		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Intercept	0.0129**	0.0145***	0.0183***	0.0139***	0.0157***	0.0179***	0.0123**	0.0076	0.0030
	(2.73)	(2.74)	(3.32)	(3.10)	(3.17)	(3.54)	(2.37)	(1.049)	(0.39)
DDIVY	1.1004***	1.0282***	0.6726**	1.1970***	1.1780***	1.1411***	2.9616***	2.9808***	5.2447***
	(5.55)	(5.05)	(2.48)	(7.49)	(7.17)	(8.55)	(9.25)	(9.54)	(11.07)
INST	-0.0059*	-0.0049	-0.0046	-0.0032	-0.0026	-0.0024	-0.0202***	-0.0203***	-0.0175***
	(-1.93)	(-1.44)	(-1.21)	(-1.05)	(-0.80)	(-0.77)	(-3.97)	(-4.18)	(-3.20)
DUMMY_TOP		0.0006			0.0002			-0.0030	
		(0.29)			(0.10)			(-0.70)	
DUMMY_MID		-0.0028*			-0.0020			-0.0003	
		(-1.80)			(-1.52)			(-0.10)	
DDIVY_TOP			-2.3495***			-1.2411***			-9.8432***
			(-2.87)			(-3.01)			(-4.72)
INST_TOP			0.0042			0.0047			0.0009
			(1.22)			(1.22)			(0.21)
DDIVY_MID			-1.1676***			-0.7570			0.7366
			(-3.52)			(-1.29)			(0.61)
INST_MID			-0.0038			-0.0026			-0.0040
			(-1.48)			(-1.48)			(-0.82)
SIZE	-0.0006*	-0.0009*	-0.0011**	-0.0008**	-0.0009	-0.0010**	0.0004	0.0008	0.0010
	(-1.86)	(-1.78)	(-2.59)	(-2.14)	(-1.68)	(-2.14)	(0.75)	(0.71)	(1.03)
RE	-0.0047**	-0.0049**	-0.0050***	-0.0041**	-0.0040**	-0.0041**	-0.0017	-0.0008	-0.0007
	(-2.70)	(-2.65)	(-2.76)	(-2.28)	(-2.27)	(-2.33)	(-0.47)	(-0.21)	(-0.17)
ROA	0.0072	0.0069	0.0074	-0.0004	-0.0002	0.0013	-0.0008	-0.0042	-0.0051
	(0.10)	(0.96)	(1.05)	(-0.06)	(-0.02)	(0.17)	(-0.05)	(-0.25)	(-0.30)
MB ratio	0.0011**	0.0008	0.0009*	0.0014***	0.0011*	0.0012**	-0.0015*	-0.0018**	-0.0017**
	(2.13)	(1.59)	(1.73)	(2.75)	(1.99)	(2.06)	(-2.03)	(-2.49)	(-2.34)
SGR	-0.0307***	-0.0307***	-0.0315***	-0.0362***	-0.0364***	-0.0365***	-0.0323***	-0.0331***	-0.0356***
	(-3.43)	(-3.50)	(-3.49)	(-4.10)	(-4.13)	(-4.16)	(-3.95)	(-4.24)	(-4.21)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-square	0.0288	0.0286	0.0286	0.0384	0.0393	0.0392	0.0256	0.0268	0.0300
No. of Obv	10452	10452	10452	10452	10452	10452	10452	10452	10452

Table 4: Regressions on Subsamples

This table shows the results of regressions on the subsamples from 1981 to 2013. Estimation is by pooled time-series (Panel A) and by Fama-MacBeth method (Panel B). Regressions are CARs, the cumulative abnormal return over the window (-1,+1), (0,+1), and (-11, +1), on the change of dividend yield, institutional holding, and a set of interactions that denote the impact of dividend paying capacity. DDIVY is the increase in dividend yield of firm j; INST is the a ratio of instituional holding to the total shares ourstanding of firm j at the end of the quarter before dividend increase is annouced; The control variables include SIZE (the natural logrithm of total sales of firm j), ROA (the ratio of EBITDA to total asset of firm j), RE (the ratio of retained earnings to total asset of firm j), MB ratio (firm j's mark value of equity divided by its book value of equity), and SGR (the average of growth rate in sales over the most recent 3 years preceding the dividend increase announcement). Additionally, all regressions control for year and industry fixed effects. We use two-digit SIC to define industries (following Lo and Wang (2001)). ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively.

Panel A: Pooled Regressions

	Top			Middle			Bottom		
	(-1, +1)	(0, +1)	(-11, +1)	(-1, +1)	(0, +1)	(-11, +1)	(-1, +1)	(0, +1)	(-11, +1)
Intercept	0.0158*	0.0128*	0.0297**	0.0184*	0.0260***	0.0201	0.0093	0.0094*	0.0234**
	(1.94)	(1.89)	(2.05)	(1.93)	(2.92)	(1.21)	(1.58)	(1.9)	(2.56)
DDIVY	0.0551	0.0500	0.0744	0.0458	0.0404	0.0680	0.1224***	0.1267***	0.1571***
	(1.4)	(1.27)	(1.04)	(1.49)	(1.14)	(1.32)	(4.29)	(4.49)	(5.07)
INST	0.0012	0.0008	-0.0184*	-0.0049	-0.0021	-0.0213**	-0.0119***	-0.0109***	-0.0182***
	(0.23)	(0.17)	(-1.97)	(-0.98)	(-0.44)	(-2.36)	(-3.1)	(-3.25)	(-2.84)
SIZE	-0.0007	-0.0003	-0.0008	-0.0013	-0.0022**	-0.0006	-0.0013*	-0.0007	-0.0023*
	(-0.95)	(-0.49)	(-0.63)	(-1.09)	(-2.13)	(-0.29)	(-1.77)	(-1.09)	(-1.95)
RE	-0.0050	-0.0043	-0.0023	-0.0056	-0.0066*	-0.0016	-0.0086***	-0.0075***	-0.0051
	(-1.55)	(-1.5)	(-0.45)	(-1.36)	(-1.72)	(-0.22)	(-3.11)	(-3.07)	(-1.17)
ROA	-0.0200	-0.0149	-0.0231	-0.0081	0.0015	-0.0351	0.0254**	0.0191*	0.0179
	(-1.35)	(-1.27)	(-0.97)	(-0.55)	(0.11)	(-1.22)	(2.23)	(1.91)	(0.97)
MB ratio	0.0012**	0.0010**	0.0012	0.0001	-0.0003	-0.0006	0.00003	-0.0001	0.0002
	(2.24)	(2.21)	(1.22)	(0.16)	(-0.55)	(-0.46)	(0.05)	(-0.22)	(0.2)
SGR	0.0095	0.0044	-0.0010	0.0025	0.0017	-0.0025	-0.0114**	-0.0177***	-0.0166*
	(1.42)	(0.77)	(-0.08)	(0.41)	(0.31)	(-0.25)	(-2.06)	(-3.47)	(-1.79)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-square	0.0096	0.014	0.0274	0.0073	0.0073	0.0169	0.0228	0.0276	0.0163
No. of Obv	2870	2870	2870	2530	2530	2530	5052	5052	5052
Overall P-value	0.0079	0.0004	<.0001	0.0437	0.0433	0.0002	<.0001	<.0001	<.0001

Panel B: Fama-MacBeth Regressions

	Top			Middle			Bottom		
	(-1, +1)	(0, +1)	(-11, +1)	(-1, +1)	(0, +1)	(-11, +1)	(-1, +1)	(0, +1)	(-11, +1)
Intercept	0.0017	0.0074	0.0137	-0.0088	0.0166	0.0211	0.0230**	0.0299**	-0.0296**
	(0.19)	(0.76)	(0.51)	(-0.48)	(1.09)	(0.77)	(2.18)	(2.70)	(-2.35)
DDIVY	0.6509	0.1339	-6.1933**	4.6589***	2.7383***	4.0466**	0.4703*	1.0667***	6.1370***
	(0.98)	(0.38)	(-2.63)	(4.97)	(3.01)	(2.40)	(1.78)	(7.49)	(10.34)
INST	0.0167**	0.0076	-0.0143	-0.0008	0.0021	-0.0201**	-0.0114**	-0.0072	-0.0174*
	(2.62)	(1.68)	(-1.23)	(-0.13)	(0.30)	(-2.33)	(-2.30)	(-1.55)	(-1.79)
SIZE	0.0002	-0.0009	0.0028	0.0017	-0.0017	0.0003	-0.0015	-0.0012	0.0024
	(0.19)	(-1.03)	(0.92)	(0.81)	(-1.02)	(0.091)	(-1.60)	(-1.20)	(1.15)
RE	0.0110	0.0145	0.0156	-0.0080	-0.0092*	0.0117	-0.0109**	-0.0088**	0.0049
	(1.29)	(1.64)	(1.36)	(-1.23)	(-1.82)	(0.94)	(-2.60)	(-2.46)	(0.68)
ROA	-0.0544**	-0.0342**	0.0028	-0.0101	0.0081	-0.0687**	0.0147	-0.0204	0.0115
	(-2.51)	(-2.11)	(0.07)	(-0.61)	(0.53)	(-2.25)	(0.92)	(-0.96)	(0.48)
MB ratio	-0.0014**	-0.0012	-0.0079***	0.0015	0.0007	-0.0024	0.0022**	0.0026**	0.0020
	(-2.32)	(-1.69)	(-3.83)	(1.26)	(0.79)	(-1.46)	(2.16)	(2.68)	(1.54)
SGR	-0.0142	-0.0099	-0.0086	-0.0097	-0.0034	0.0206	-0.04685***	-0.0507***	-0.0504***
	(-0.98)	(-0.83)	(-0.48)	(-0.89)	(-0.32)	(0.87)	(-4.88)	(-5.30)	(-3.54)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-square	0.0445	0.0561	0.0492	0.0074	-0.0029	0.0081	0.0270	0.0438	0.0240
No. of Obv	2870	2870	2870	2530	2530	2530	5052	5052	5052

Figure 3 The yearly average ownership held by four kinds of institutions

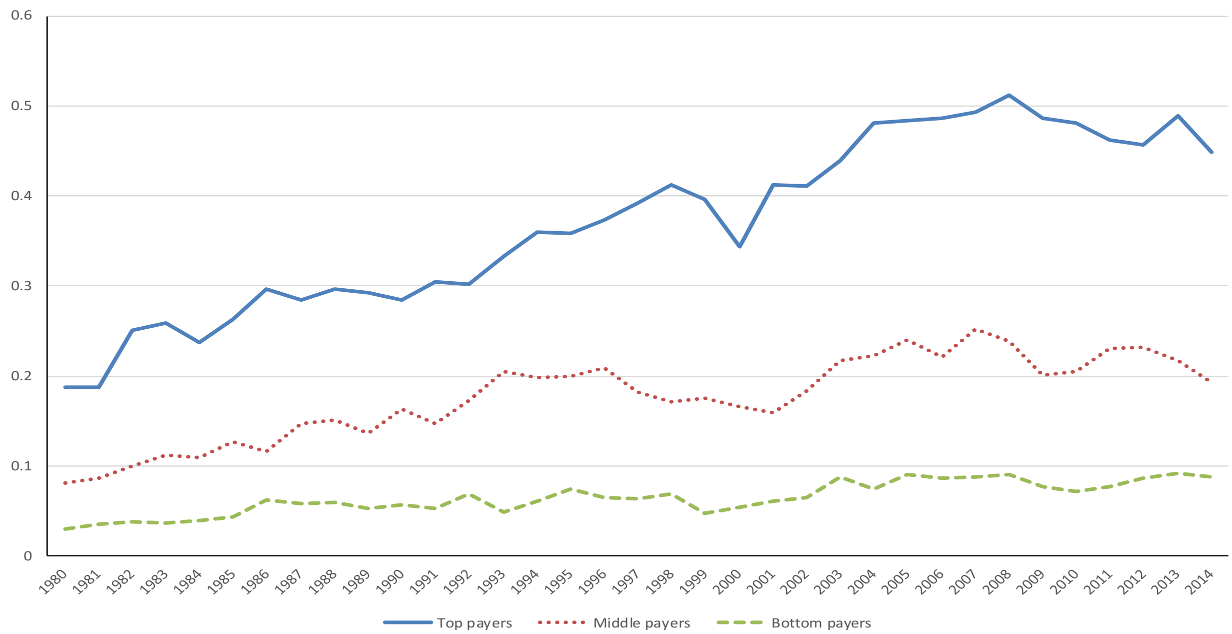

Fig 3 (a). The yearly average ownership held by motivated monitors (*INST_MONITOR*) across groups, 1980-2014. The motivated monitors are defined as instutions whose holding value of the firm ranks in the 10% of its portfolio allocation. The ownership held by motivated monitors is the shares owned by all motivated monitors in the firm as a proportion of the firm's total shares outstanding. The solid line dispicts mean *INST_MONITOR* for top payers, the point line is for middle payers, and the dash line is for bottom payers.

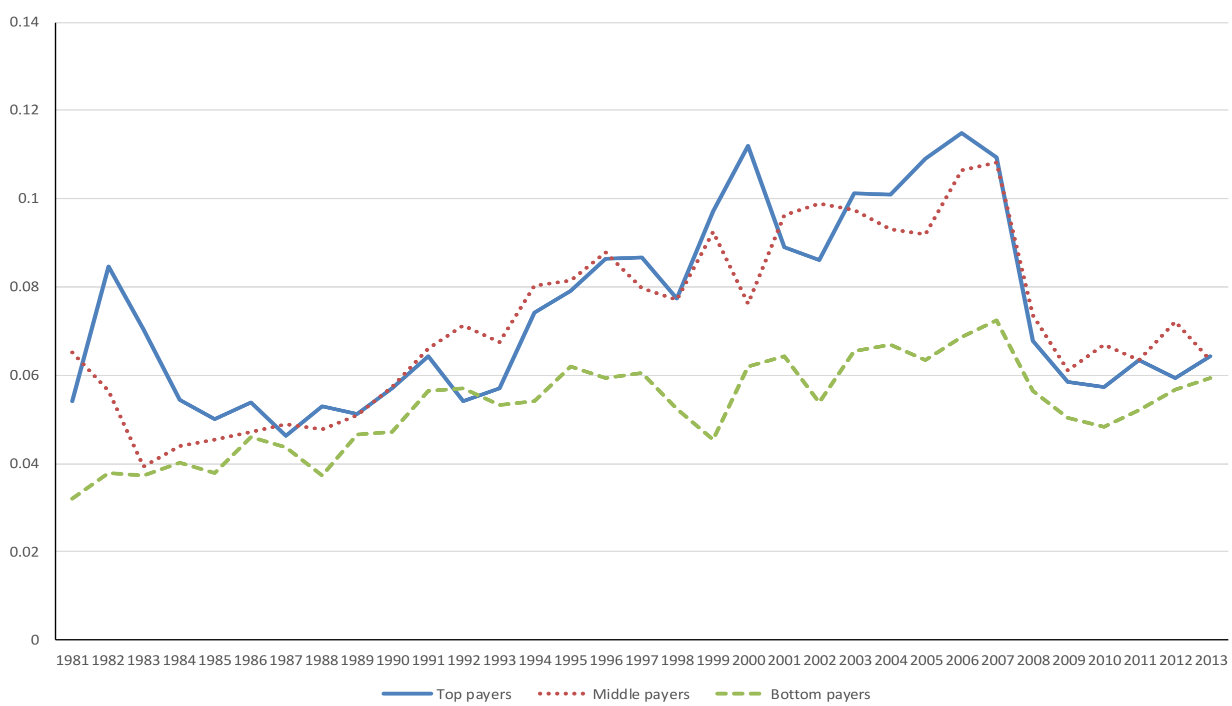

Fig 3 (b). The yearly average ownership held by dedicated institutions (*INST_DED*) across groups, 1980-2014. The classification of institutional investors is from Bushee's (1998, 2001) work. The dedicated instiutions are regarded as those who have the incentive to monitor the firm. The solid line dispicts mean *INST_DED* for top payers, the point line is for middle payers, and the dash line is for bottom payers.

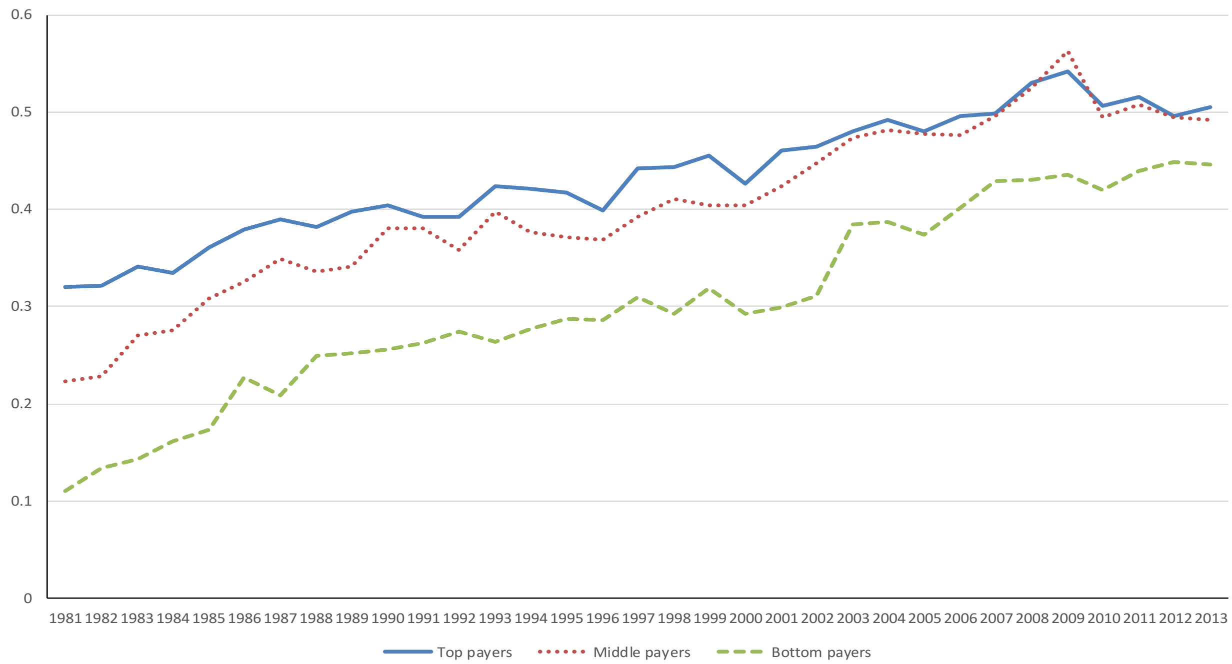

Fig 3 (c). The yearly average ownership held by quasi-indexers (*INST_QIX*) across groups, 1980-2014. The classification of institutional investors is from Bushee's (1998, 2001) work. The solid line dispicts annual mean *INST_QIX* for top payers, the point line is for middle payers, and the dash line is for bottom payers.

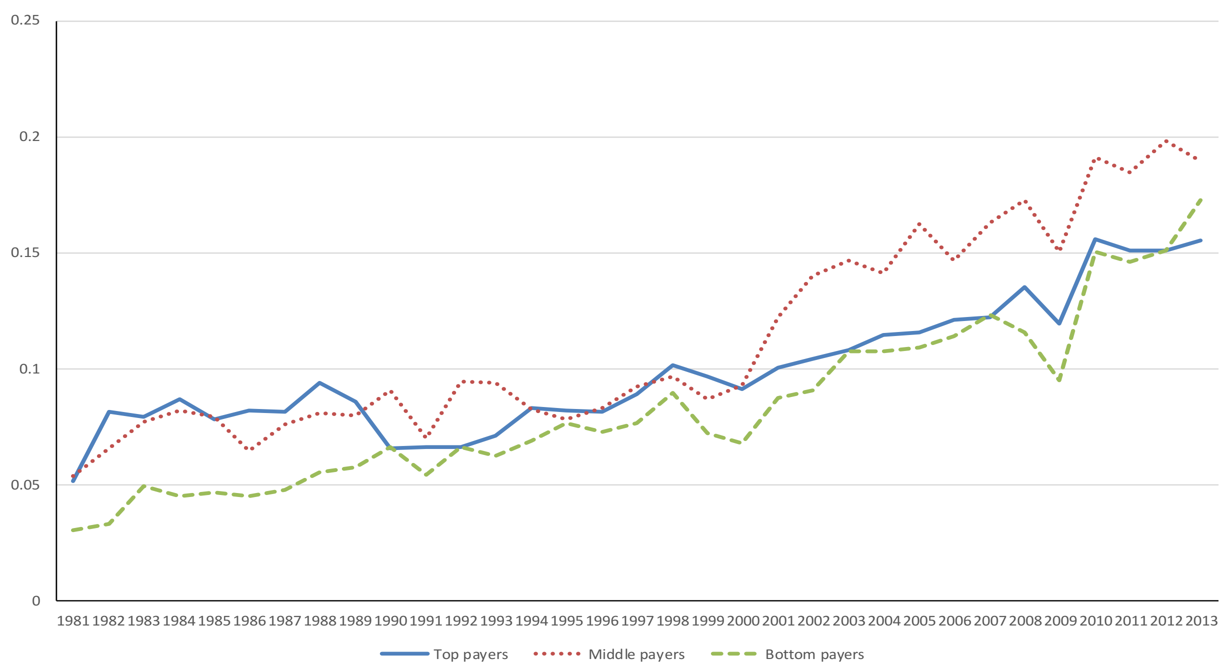

Fig 3 (d). The yearly average ownership held by transient institutional investors (*INST_TRA*) across groups, 1980-2014. The classification of institutional investors is from Bushee's (1998, 2001) work. The transient instituions are regarded as those who care little about the firm's governance. The solid line dispicts annual mean *INST_TRA* for top payers, the point line is for middle payers, and the dash line is for bottom payers.

Table 5: Regressions with Motivated Monitoring Institutional Variables on Full Sample

This table shows the results of regressions on the full sample with motivated monitoring institutional variables from 1981 to 2013. Estimation is by pooled time-series (Panel A) and by Fama-MacBeth method (Panel B). Regressions are CARs, the cumulative abnormal return over the window (-1,+1), (0,+1), and (-11, +1), on the change of dividend yield, institutional holding, and institutional investor monitoring variables. DDIVY is the increase in dividend yield of firm j; INST is the a ratio of instituional holding to the total shares ourstanding of firm j at the end of the quarter before dividend increase is annouced;NO_MONITOR is the number of institutions whose holding value of firm j is in the top 10% of the institution's portfolio; INST_MONITOR is the ownership of monitoring institutions as a proportion of the total shares outstanding of firm j; Dummy_TOP is a dummy variable, which equals 1 if the firm is top payers when the dividend increase announcement made, 0 otherwise; Dummy_MID equals 1 if the firm is middle payer, 0 otherwise. The control variables include SIZE (the natural logrithm of total sales of firm j), ROA (the ratio of EBITDA to total asset of firm j), RE (the ratio of retained earnings to total asset of firm j), MB ratio (firm j's mark value of equity divided by its book value of equity), and SGR (the average of growth rate in sales over the most recent 3 years preceding the dividend increase announcement). Additionally, all regressions control for year and industry fixed effects. We use two-digit SIC to define industries (following Lo and Wang (2001)). ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively.

	Panel A: Pooled Regressions						**Panel B: Fama-MacBeth Regressions**					
	Window(-1, +1)		Window(0, +1)		Window(-11, +1)		Window(-1, +1)		Window(0, +1)		Window(-11, +1)	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Intercept	0.0169***	0.0132***	0.0178***	0.0142***	0.0245***	0.0154**	0.0145**	0.0126**	0.0162***	0.0141***	0.0031	-0.0036
	(4.07)	(3.22)	(4.91)	(3.97)	(3.72)	(2.34)	(2.73)	(2.56)	(3.22)	(2.86)	(0.41)	(-0.51)
DDIVY	0.0894***	0.0881***	0.0888***	0.0879***	0.1170***	0.1131***	1.1778***	1.1704***	1.2400***	1.2034***	3.3925***	3.3946***
	(3.7)	(3.61)	(3.52)	(3.45)	(3.75)	(3.6)	(5.49)	(5.48)	(7.05)	(6.87)	(9.42)	(9.76)
NO_MONITOR	0.000002		0.000004		-0.000002		0.00001		-0.00001		-0.00001	
	(0.35)		(1.06)		(-0.18)		(1.32)		(-1.56)		(-0.51)	
INST_MONITOR		-0.0119***		-0.0102***		-0.0325***		-0.0080**		-0.0065*		-0.0321***
		(-3.27)		(-3.09)		(-5.22)		(-2.08)		(-1.66)		(-4.65)
DUMMY_TOP	0.0033*	0.0051***	0.0023	0.0039**	0.0056**	0.0106***	0.0006	0.0015	0.0007	0.0008	-0.0039	0.0010
	(1.85)	(2.85)	(1.46)	(2.43)	(1.97)	(3.57)	(0.32)	(0.79)	(0.33)	(0.42)	(-0.89)	(0.23)
DUMMY_MID	-0.0011	-0.0008	-0.0012	-0.0011	0.0001	0.0011	-0.0027*	-0.0025*	-0.0018	-0.0017	-0.0018	-0.0004
	(-0.81)	(-0.63)	(-1.01)	(-0.97)	(0.05)	(0.55)	(-1.80)	(-1.77)	(-1.33)	(-1.31)	(-0.58)	(-0.12)
SIZE	-0.0020***	-0.0013**	-0.0017***	-0.0011**	-0.0026***	-0.0011	-0.0016**	-0.0012*	-0.0015**	-0.0012**	-0.0003	0.0012
	(-3.63)	(-2.53)	(-3.49)	(-2.28)	(-3.09)	(-1.28)	(-2.65)	(-2.00)	(-2.64)	(-2.17)	(-0.29)	(1.02)
RE	-0.0078***	-0.0077***	-0.0071***	-0.0068***	-0.0048	-0.0044	-0.0059***	-0.0051***	-0.0048**	-0.0040**	-0.0018	0.00004
	(-4.06)	(-3.99)	(-4.05)	(-3.94)	(-1.56)	(-1.45)	(-3.00)	(-2.76)	(-2.63)	(-2.22)	(-0.46)	(0.01)
ROA	0.0100	0.0096	0.0094	0.0090	-0.0011	-0.0025	0.0092	0.0085	0.0016	0.0016	0.0024	-0.0031
	(1.31)	(1.25)	(1.38)	(1.32)	(-0.09)	(-0.19)	(1.25)	(1.19)	(0.21)	(0.21)	(0.14)	(-0.18)
MB ratio	0.00005	0.0002	-0.0001	0.000001	-0.0002	0.0002	0.0003	0.0007	0.0007	0.0010*	-0.0024***	-0.0018**
	(0.14)	(0.57)	(-0.47)	(0)	(-0.28)	(0.34)	(0.67)	(1.27)	(1.40)	(1.82)	(-3.11)	(-2.39)
SGR	-0.0040	-0.0040	-0.0085**	-0.0086**	-0.0106*	-0.0105*	-0.0287***	-0.0294***	-0.0351***	-0.0357***	-0.0302***	-0.0314***
	(-1.03)	(-1.02)	(-2.38)	(-2.38)	(-1.73)	(-1.7)	(-3.31)	(-3.34)	(-4.04)	(-4.05)	(-3.95)	(-4.10)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-square	0.0137	0.0146	0.0167	0.0175	0.0146	0.0171	0.0257	0.0270	0.0357	0.0381	0.0248	0.0273
No. of Obv	10452	10452	10452	10452	10452	10452	10452	10452	10452	10452	10452	10452
Overall P-value	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	-	-	-	-	-	-

Table 6: Regressions with Motivated Monitoring Institutional Variables on subsample

This table shows the results of pooled time-series and Fama-MacBeth regressions on the subsamples with motivated monitoring variables from 1981 to 2013. The whole sample is divided into three subsamples: top payers, middle payers, and bottom payers, by cash dividends paid in certain year. Firms are defined as top or middle payers if they rank in top 200 or 201-400 in year i, otherwise are defined as bottom payers. Regressions are CARs, the cumulative abnormal return over the window (-1,+1), (0,+1), and (-11, +1), on the change of dividend yield, institutional holding, and institutional investor monitoring variables. DDIVY is the increase in dividend yield of firm j; INST is the a ratio of instituional holding to the total shares ourstanding of firm j at the end of the quarter before dividend increase is annouced;NO_MONITOR is the number of institutions whose holding value of firm j is in the top 10% of the institution's portfolio; INST_MONITOR is the ownership of monitoring institutions as a proportion of the total shares outstanding of firm j; The control variables include SIZE (the natural logrithm of total sales of firm j), ROA (the ratio of EBITDA to total asset of firm j), RE (the ratio of retained earnings to total asset of firm j), MB ratio (firm j's mark value of equity divided by its book value of equity), and SGR (the average of growth rate in sales over the most recent 3 years preceding the dividend increase announcement). Additionally, all regressions control for year and industry fixed effects. We use two-digit SIC to define industries (following Lo and Wang (2001)). ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively.

Panel A: Pooled Regressions

	Top Payers						Middle Payers						Bottom Payers					
	Window (-1, +1)		Window (0, +1)		Window (-11, +1)		Window (-1, +1)		Window (0, +1)		Window (-11, +1)		Window (-1, +1)		Window (0, +1)		Window (-11, +1)	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
INTERCEPT	0.0051	0.0121	0.0077	0.0101	-0.0109	0.0030	0.0086	0.0139	0.0194**	0.0234**	-0.0137	0.0038	0.0104*	0.0103*	0.0107**	0.0100*	0.0221**	0.0206**
	(0.55)	(1.56)	(1.01)	(1.55)	(-0.67)	(0.22)	(0.80)	(1.36)	(1.96)	(2.48)	(-0.74)	(0.22)	(1.69)	(1.69)	(2.05)	(1.95)	(2.32)	(2.22)
DDIVY	0.0555	0.0505	0.0503	0.0468	0.0770	0.0618	0.0461	0.0455	0.0404	0.0400	0.0698	0.0.0673	0.1236***	0.1241***	0.1277***	0.1283***	0.1590***	0.1607***
	(1.45)	(1.33)	(1.29)	(1.21)	(1.09)	(0.89)	(1.51)	(1.48)	(1.15)	(1.13)	(1.38)	(1.3)	(4.37)	(4.35)	(4.55)	(4.54)	(5.12)	(5.23)
NO_MONITOR	-0.00002**		-0.00001		-0.00004***		-0.0001**		-0.0001		-0.0005***		-0.0004*		-0.0003*		-0.0010***	
	(-2.48)		(-1.42)		(-3.36)		(-2.09)		(-1.6)		(-4.06)		(-1.95)		(-1.8)		(-2.88)	
INST_MONITOR		-0.0119**		-0.0085*		-0.0368***		-0.0085		-0.0052		-0.0302**		-0.0212**		-0.0215***		-0.0600***
		(-2.22)		(-1.78)		(-3.84)		(-1.21)		(-0.80)		(-2.51)		(-2.57)		(-2.9)		(-4.44)
SIZE	0.0009	0.0001	0.0004	0.0003	0.0034**	0.0022	-0.0002	-0.0008	-0.0014	-0.0019	0.0030	0.0009	-0.0020***	-0.0019**	-0.0014**	-0.0012*	-0.0028**	-0.0023**
	(0.86)	(0.17)	(0.49)	(0.38)	(1.96)	(1.59)	(-0.13)	(-0.61)	(-1.18)	(-1.62)	(1.29)	(0.39)	(-2.6)	(-2.5)	(-1.99)	(-1.72)	(-2.36)	(-1.99)
RE	-0.0039	-0.0052	-0.0037	-0.0044	0.0014	-0.0020	-0.0047	-0.0051	-0.0060	-0.0063	0.0018	0.0005	-0.0090***	-0.0091***	-0.0079***	-0.0079***	-0.0054	-0.0054
	(-1.16)	(-1.6)	(-1.27)	(-1.54)	(0.28)	(-0.39)	(-1.13)	(-1.21)	(-1.55)	(-1.62)	(0.24)	(0.07)	(-3.24)	(-3.27)	(-3.22)	(-3.23)	(-1.24)	(-1.25)
ROA	-0.0172	-0.0209	-0.0137	-0.0155	-0.0101	-0.0193	-0.0061	-0.0078	0.0028	0.0016	-0.0282	-0.0340	0.0270**	0.0262**	0.0205**	0.0198**	0.0206	0.0184
	(-1.17)	(-1.42)	(-1.17)	(-1.34)	(-0.41)	(-0.81)	(-0.42)	(-0.53)	(0.2)	(0.12)	(-0.99)	(-1.19)	(2.38)	(2.31)	(2.06)	(1.99)	(1.12)	(1)
MB ratio	0.0013**	0.0013**	0.0010**	0.0011**	0.0015	0.0016*	0.0003	0.0002	-0.0002	-0.0003	-0.00002	-0.0003	-0.00003	0.00001	-0.0002	-0.0001	0.0003	0.0005
	(2.52)	(2.51)	(2.37)	(2.41)	(1.58)	(1.65)	(0.4)	(0.28)	(-0.35)	(-0.45)	(-0.02)	(-0.24)	(-0.04)	(0.02)	(-0.34)	(-0.21)	(0.27)	(0.43)
SGR	0.0095	0.0096	0.0044	0.0044	0.00001	0.0002	0.0036	0.0027	0.0024	0.0018	0.0015	-0.0017	-0.0104*	-0.0107*	-0.0168***	-0.0171***	-0.0148	-0.0155*
	(1.41)	(1.4)	(0.77)	(0.77)	(0)	(0.02)	(0.6)	(0.44)	(0.46)	(0.33)	(0.16)	(-0.17)	(-1.89)	(-1.94)	(-3.32)	(-3.35)	(-1.63)	(-1.7)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-square	0.0115	0.0115	0.0146	0.0153	0.0294	0.0316	0.0086	0.0076	0.0082	0.0075	0.0207	0.0171	0.0216	0.0221	0.0262	0.0271	0.0162	0.0181
No. of Obv	2870	2870	2870	2870	2870	2870	2530	2530	2530	2530	2530	2530	5052	5052	5052	5052	5052	5052
Overall P-value	0.0024	0.0024	0.0003	0.0002	<.0001	<.0001	0.0240	0.0385	0.0286	0.0392	<.0001	0.0002	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001

Table 6 (continued)

Panel B: Fama-MacBeth Regressions

	Top Payers						Middle Payers						Bottom Payers					
	Window (-1, +1)		Window (0, +1)		Window (-11, +1)		Window (-1, +1)		Window (0, +1)		Window (-11, +1)		Window (-1, +1)		Window (0, +1)		Window (-11, +1)	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Intercept	0.0101	0.0102	0.0047	-0.0030	-0.0259	-0.0329	-0.0348	-0.0116	-0.0009	0.0135	-0.0303	0.0116	0.0233**	0.0215*	0.0291**	0.0286**	-0.0515***	-0.0447***
	(0.99)	(1.20)	(0.39)	(-0.30)	(-0.87)	(-1.10)	(-1.66)	(-0.60)	(-0.06)	(0.89)	(-1.12)	(0.39)	(2.14)	(1.84)	(2.62)	(2.42)	(-3.55)	(-3.15)
DDIVY	-0.3317	-1.5549**	0.3362	-0.5964	-4.5063*	-6.9132***	2.6386***	3.4615***	0.2211	1.0648	3.1948	4.0808**	0.8291***	0.8306***	1.2425***	1.2819***	6.3719***	6.4988***
	(-0.44)	(-2.08)	(0.87)	(-1.11)	(-1.78)	(-2.85)	(3.48)	(-0.73)	(0.23)	(1.25)	(1.65)	(2.25)	(3.02)	(3.16)	(9.36)	(9.17)	(10.03)	(9.22)
NO_MONITOR	0.00005***		0.00003*		-0.0001***		-0.0008***		-0.0005***		-0.0014***		0.0004		0.0006		-0.0025**	
	(3.16)		(1.95)		(-3.29)		(-6.79)		(-3.57)		(-8.70)		(0.48)		(1.04)		(-2.34)	
INST_MONITOR		-0.0141**		-0.0114*		-0.0436***		-0.0058		-0.0012		-0.0316**		0.0305*		0.0360**		-0.0515*
		(-2.20)		(-1.89)		(-3.51)		(-0.73)		(-0.15)		(-2.21)		(1.97)		(2.21)		(-1.78)
SIZE	-0.0005	0.0002	-0.0012	0.00001	0.0055	0.0056	0.0052**	0.0023	0.0011	-0.0010	0.0058*	0.0004	-0.0027**	-0.0026**	-0.0026**	-0.0022**	0.0024	0.0021
	(-0.38)	(0.26)	(-0.90)	(0.01)	(1.45)	(1.67)	(2.13)	(0.97)	(0.59)	(-0.56)	(1.81)	(0.12)	(-2.50)	(-2.29)	(-2.60)	(-2.18)	(1.34)	(1.16)
RE	0.0155	0.0120	0.0186*	0.0161*	0.0287**	0.0252**	-0.0049	-0.0120	-0.0082*	-0.0102*	0.0186	0.0070	-0.0105**	-0.0103**	-0.0091**	-0.0089**	0.0072	0.0071
	(1.63)	(1.35)	(2.02)	(1.79)	(2.35)	(2.18)	(-0.72)	(-1.65)	(-1.78)	(-2.01)	(1.64)	(0.51)	(-2.56)	(-2.35)	(-2.48)	(-2.42)	(1.01)	(0.95)
ROA	-0.0493**	-0.0607***	-0.0305*	-0.0323**	-0.0157	0.0040	-0.0133	-0.0083	0.0108	0.0081	-0.0624**	-0.0638**	0.0174	0.0089	-0.0139	-0.0218	0.0267	0.0237
	(-2.09)	(-2.99)	(-1.75)	(-2.13)	(-0.35)	(0.10)	(-0.77)	(-0.49)	(0.73)	(0.53)	(-2.09)	(-2.07)	(1.00)	(0.52)	(-0.65)	(-1.01)	(1.13)	(0.97)
MB ratio	-0.0027***	-0.0011	-0.0021**	-0.0009	-0.0067***	-0.0066***	0.0032**	0.0017	0.0010	0.0009	-0.0002	-0.0023	0.0018	0.0027**	0.0019*	0.0022**	0.0012	0.0010
	(-3.64)	(-1.63)	(-2.55)	(-1.21)	(-3.16)	(-2.98)	(2.45)	(1.45)	(1.19)	(1.03)	(-0.14)	(-1.39)	(1.55)	(2.04)	(1.84)	(2.18)	(0.89)	(0.81)
SGR	-0.0148	-0.0177	-0.0102	-0.0136	-0.0061	-0.0069	0.0007	-0.0095	0.0037	-0.0044	0.0248	0.0164	-0.0446***	-0.0445***	-0.052***	-0.0500***	-0.0383***	-0.0408***
	(-1.04)	(-1.26)	(-0.83)	(-1.14)	(-0.32)	(-0.38)	(0.07)	(-0.83)	(0.34)	(-0.40)	(1.11)	(0.65)	(-4.85)	(-4.87)	(-5.60)	(-5.45)	(-2.89)	(-3.12)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-square	0.0453	0.0468	0.0570	0.0590	0.0518	0.0554	0.0105	0.0032	-0.0057	-0.0082	0.0083	0.0080	0.0266	0.0272	0.0443	0.0450	0.0236	0.0245
No. of Obv	2870	2870	2870	2870	2870	2870	2530	2530	2530	2530	2530	2530	5052	5052	5052	5052	5052	5052

Table 7:Regressions with Bushee Classification on Full Sample

This table shows the results of pooled time-series and Fama-Macbeth regressions on the full sample with monitor variables from 1981 to 2013. Regressions are CARs, the cumulative abnormal return over the window (-1,+1), (0,+1), and (-11, +1), on the change of dividend yield, institutional holding, and institutional investor monitoring variables. DDIVY is the increase in dividend yield of firm j; INST is the a ratio of instituional holding to the total shares ourstanding of firm j at the end of the quarter before dividend increase is annouced; NO_DED is the number of dedicated institutions who hold value of firm j; INST_DED is the quarterly ownership held by dedicated instituions as a proportion of the total shares outstanding of firm j; NO_QIX is the number of quasi-indexer institutions who hold value of firm j; INST_QIX is the quarterly ownership held by quasi-indexer as a proportion of the total shares outstanding of firm j; NO_TRA is the number of transient institutions who hold value of firm j; INST_TRA is the quarterly ownership held by transient institutions as a proportion of the total shares outstanding of firm j; Dummy_TOP is a dummy variable, which equals 1 if the firm is top payers when the dividend increase announcement made, 0 otherwise; Dummy_MID equals 1 if the firm is middle payer, 0 otherwise. The control variables include SIZE (the natural logrithm of total sales of firm j), ROA (the ratio of EBITDA to total asset of firm j), RE (the ratio of retained earnings to total asset of firm j), MB ratio (firm j's mark value of equity divided by its book value of equity), and SGR (the average of growth rate in sales over the most recent 3 years preceding the dividend increase announcement). Additionally, all regressions control for year and industry fixed effects. We use two-digit SIC to define industries (following Lo and Wang (2001)). ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively.

	Panel A: Pooled regressions						Panel B: Fama-MacBeth regressions					
	Window(-1, +1)		Window(0, +1)		Window(-11, +1)		Window(-1, +1)		Window(0, +1)		Window(-11, +1)	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Intercept	0.0138***	0.0154***	0.0164***	0.0163***	0.0177**	0.0210***	0.0117**	0.0146***	0.0157***	0.0161***	-0.0051	0.0042
	(3.16)	(3.98)	(4.26)	(4.89)	(2.54)	(3.38)	(2.04)	(2.78)	(2.86)	(3.24)	(-0.72)	(0.52)
DDIVY	0.0877***	0.0880***	0.0878***	0.0880***	0.1138***	0.1133***	1.1889***	1.0136***	1.2455***	1.1680***	3.0461***	2.9767***
	(3.64)	(3.67)	(3.49)	(3.51)	(3.64)	(3.75)	(5.51)	(5.04)	(7.08)	(7.12)	(8.55)	(9.29)
NO_INST_DED	0.0001		0.0002*		-0.0004*		0.0001		-0.00004		0.0002	
	(1.05)		(1.83)		(-1.83)		(0.47)		(-0.13)		(0.34)	
NO_INST_QIX	0.00001*		0.00001		0.0001***		-0.00003*		-0.000004		0.0002***	
	(1.82)		(1.2)		(4.71)		(-1.95)		(-0.33)		(5.95)	
NO_INST_TRA	-0.00007***		-0.00003		-0.0002***		-0.0002***		-0.0001**		-0.0011***	
	(-2.69)		(-1.6)		(-5.13)		(-3.48)		(-2.35)		(-6.38)	
INST_DED		-0.0052		-0.0069		-0.0102		-0.0061		-0.0167**		-0.0113
		(-1.03)		(-1.55)		(-1.19)		(-1.02)		(-2.57)		(-1.45)
INST_QIX		-0.0074**		-0.0060*		-0.0085		-0.0053		-0.0021		-0.0003
		(-2.04)		(-1.85)		(-1.45)		(-1.43)		(-0.57)		(-0.03)
INST_TRA		-0.0151*		-0.0109		-0.0637***		-0.0157*		-0.0026		-0.1104***
		(-1.92)		(-1.53)		(-4.83)		(-2.03)		(-0.36)		(-4.21)
DUMMY_TOP	0.0030*	0.0028	0.0017	0.0020	0.0068**	0.0037	0.0015	0.0003	0.0011	0.0004	-0.0033	-0.0058
	(1.72)	(1.59)	(1.04)	(1.27)	(2.31)	(1.28)	(0.80)	(0.17)	(0.55)	(0.19)	(-0.73)	(-1.31)
DUMMY_MID	-0.0012	-0.0007	-0.0014	-0.0010	0.0011	0.0010	-0.0027*	-0.0029*	-0.0021	-0.0020	0.0001	-0.0015
	(-0.91)	(-0.57)	(-1.26)	(-0.89)	(0.5)	(0.49)	(-1.94)	(-1.88)	(-1.63)	(-1.56)	(0.03)	(-0.49)
SIZE	-0.0016***	-0.0014***	-0.0017***	-0.0012***	-0.0015	-0.0014*	-0.0010	-0.0009*	-0.0014**	-0.0010*	0.0014	0.0008
	(-2.71)	(-2.96)	(-3.04)	(-2.79)	(-1.54)	(-1.82)	(-1.51)	(-1.87)	(-2.23)	(-1.86)	(1.26)	(0.66)
RE	-0.0083***	-0.0080***	-0.0074***	-0.0071***	-0.0068**	-0.0070**	-0.0062***	-0.0063***	-0.0047**	-0.0044**	-0.0098**	-0.0078*
	(-4.21)	(-4.16)	(-4.13)	(-4.05)	(-2.15)	(-2.26)	(-2.76)	(-3.23)	(-2.39)	(-2.35)	(-2.58)	(-1.90)
ROA	0.0117	0.0103	0.0101	0.0093	0.0059	0.0024	0.0112	0.0092	0.0015	-0.0008	0.0159	0.0061
	(1.52)	(1.35)	(1.47)	(1.36)	(0.45)	(0.19)	(1.44)	(1.28)	(0.18)	(-0.10)	(0.99)	(0.36)
MB ratio	0.00005	0.0001	-0.0002	-0.0001	-0.0002	-0.00001	0.0007	0.0007	0.0011*	0.0010*	-0.0017**	-0.0019**
	(0.14)	(0.36)	(-0.51)	(-0.21)	(-0.4)	(-0.02)	(1.31)	(1.45)	(1.85)	(1.90)	(-2.08)	(-2.48)
SGR	-0.0033	-0.0039	-0.0080**	-0.0085**	-0.0085	-0.0088	-0.0230***	-0.0300***	-0.0309***	-0.0364***	-0.0230***	-0.0271***
	(-0.84)	(-0.99)	(-2.25)	(-2.32)	(-1.4)	(-1.43)	(-3.10)	(-3.64)	(-4.04)	(-4.34)	(-3.40)	(-3.83)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-square	0.0144	0.0148	0.0171	0.0176	0.0166	0.0186	0.0244	0.0261	0.0356	0.0370	0.0307	0.0304
No. of Obv	10452	10452	10452	10452	10452	10452	10452	10452	10452	10452	10452	10452
Overall P-value	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	-	-	-	-	-	-

Table 8: Regressions with Bushee Classification Variables on Subsamples

This table shows the results of pooled time-series and Fama-MacBeth regressions on the subsample with monitor variables from 1981 to 2013. The whole sample is divided into three subsamples: top payers, middle payers, and bottom payers, by cash dividends paid in certain year. Firms are defined as top or middle payers if they rank in top 200 or 201-400 in year i, otherwise are defined as bottom payers. Regressions are CARs, the cumulative abnormal return over the window (-1,+1), (0,+1), and (-11, +1), on the change of dividend yield, institutional holding, and institutional investor monitoring variables. DDIVY is the increase in dividend yield of firm j; INST is the a ratio of instituional holding to the total shares ourstanding of firm j at the end of the quarter before dividend increase is annouced; NO_DED is the number of dedicated institutions who hold value of firm j; INST_DED is the quarterly ownership held by dedicated instituions as a proportion of the total shares outstanding of firm j; NO_QIX is the number of quasi-indexer institutions who hold value of firm j; INST_QIX is the quarterly ownership held by quasi-indexer as a proportion of the total shares outstanding of firm j; NO_TRA is the number of transient institutions who hold value of firm j; INST_TRA is the quarterly ownership held by transient institutions as a proportion of the total shares outstanding of firm j; The control variables include SIZE (the natural logrithm of total sales of firm j), ROA (the ratio of EBITDA to total asset of firm j), RE (the ratio of retained earnings to total asset of firm j), MB ratio (firm j's mark value of equity divided by its book value of equity), and SGR (the average of growth rate in sales over the most recent 3 years preceding the dividend increase announcement). Additionally, all regressions control for year and industry fixed effects. We use two-digit SIC to define industries (following Lo and Wang (2001)). ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively.

Panel A: Pooled Regressions

	Top payers						Middle payers						Bottome payers					
	Window(-1, +1)		Window(0, +1)		Window(-11, +1)		Window(-1, +1)		Window(0, +1)		Window(-11, +1)		Window(-1, +1)		Window(0, +1)		Window(-11, +1)	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Intercept	0.0057	0.0160**	0.0095	0.0135**	-0.0035	0.0301**	0.0024	0.0197**	0.0171*	0.0280***	-0.0231	0.0171	0.0059	0.0075	0.0093	0.0084*	0.0196*	0.0192**
	(0.59)	(1.97)	(1.19)	(1.97)	(-0.2)	(2.09)	(0.22)	(2.00)	(1.71)	(3.07)	(-1.25)	(1.02)	(0.9)	(1.26)	(1.63)	(1.68)	(1.86)	(2.06)
DDIVY	0.0505	0.0573	0.0481	0.0515	0.0672	0.0771	0.0414	0.0453	0.0374	0.0390	0.0589	0.0671	0.1227***	0.1214***	0.1273***	0.1261***	0.1588***	0.1547***
	(1.34)	(1.38)	(1.24)	(1.26)	(0.96)	(1.02)	(1.38)	(1.49)	(1.08)	(1.11)	(1.17)	(1.27)	(4.35)	(4.25)	(4.53)	(4.48)	(4.99)	(5.10)
NO_INST_DED	0.0001		0.0001		-0.0001		0.0001		0.0002		-0.0002		-0.0007		-0.0005		-0.0022***	
	(0.62)		(0.44)		(-0.5)		(0.4)		(0.75)		(-0.27)		(-1.54)		(-1.33)		(-3.09)	
NO_INST_QIX	0.000003		0.000002		0.00002*		-0.00004*		-0.00004**		-0.00002		-0.00002		0.00002		0.0002**	
	(0.43)		(0.37)		(1.78)		(-1.88)		(-2.13)		(-0.67)		(-0.38)		(0.38)		(2.07)	
NO_INST_TRA	-0.0001*		-0.00003		-0.0002***		-0.00003		0.00002		-0.0003***		-0.00009		-0.0001		-0.0004***	
	(-1.94)		(-1.04)		(-3.19)		(-0.56)		(0.37)		(-2.91)		(-0.93)		(-1.04)		(-2.94)	
INST_DED		-0.0140		-0.0116		-0.0437**		-0.0041		0.0025		-0.0108		0.0019		-0.0058		0.0080
		(-1.47)		(-1.42)		(-2.31)		(-0.38)		(0.25)		(-0.58)		(0.28)		(-0.99)		(0.69)
INST_QIX		0.0095		0.0056		0.0003		-0.0096		-0.0100		-0.0159		-0.0115**		-0.0077		-0.0080
		(1.37)		(0.94)		(0.02)		(-1.46)		(-1.63)		(-1.41)		(-2.13)		(-1.62)		(-0.92)
INST_TRA		-0.0157		-0.0103		-0.0675***		0.0086		0.0171		-0.0429*		-0.0248**		-0.0254**		-0.0723***
		(-1.09)		(-0.81)		(-2.85)		(0.58)		(1.26)		(-1.69)		(-2.15)		(-2.43)		(-3.77)
SIZE	0.0005	-0.0008	0.00003	-0.0004	0.0024	-0.0012	0.0007	-0.0014	-0.0011	-0.0024**	0.0046*	-0.0004	-0.0010	-0.0012	-0.0010	-0.0007	-0.0019	-0.0020*
	(0.45)	(-1.2)	(0.03)	(-0.71)	(1.25)	(-1.01)	(0.54)	(-1.17)	(-0.91)	(-2.23)	(1.94)	(-0.19)	(-1.05)	(-1.59)	(-1.2)	(-0.99)	(-1.28)	(-1.66)
RE	-0.0052	-0.0061*	-0.0045	-0.0050*	-0.0032	-0.0051	-0.0033	-0.0043	-0.0044	-0.0045	0.0003	-0.0033	-0.0086***	-0.0090***	-0.0081***	-0.0081***	-0.0073	-0.0073*
	(-1.49)	(-1.83)	(-1.48)	(-1.72)	(-0.59)	(-0.99)	(-0.78)	(-1.06)	(-1.11)	(-1.21)	(0.04)	(-0.44)	(-3.00)	(-3.21)	(-3.19)	(-3.25)	(-1.61)	(-1.65)
ROA	-0.0165	-0.0195	-0.0135	-0.0149	-0.0068	-0.0219	-0.0057	-0.0111	0.0005	-0.0027	-0.0178	-0.0288	0.0275**	0.0276**	0.0213**	0.0205**	0.0251	0.0241
	(-1.11)	(-1.33)	(-1.15)	(-1.28)	(-0.28)	(-0.91)	(-0.37)	(-0.79)	(0.03)	(-0.19)	(-0.6)	(-1.03)	(2.41)	(2.42)	(2.13)	(2.05)	(1.36)	(1.3)
MB ratio	0.0012**	0.0012**	0.0010**	0.0010**	0.0013	0.0012	0.0004	0.0001	-0.0001	-0.0003	-0.0001	-0.0006	0.0002	0.0001	-0.0002	-0.0001	0.0003	0.0004
	(2.35)	(2.28)	(2.22)	(2.24)	(1.32)	(1.25)	(0.62)	(0.18)	(-0.14)	(-0.54)	(-0.11)	(-0.52)	(0.31)	(0.17)	(-0.25)	(-0.14)	(0.24)	(0.38)
SGR	0.0110	0.0109*	0.0051	0.0052	0.0038	0.0026	0.0028	0.0019	0.0016	0.0005	-0.0002	-0.0023	-0.0108**	-0.0115**	-0.0169***	-0.0172***	-0.0141	-0.0152*
	(1.64)	(1.65)	(0.9)	(0.93)	(0.31)	(0.22)	(0.47)	(0.30)	(0.3)	(0.08)	(-0.02)	(-0.23)	(-1.96)	(-2.07)	(-3.35)	(-3.36)	(-1.59)	(-1.72)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-square	0.0111	0.0108	0.0138	0.0145	0.0289	0.0301	0.0098	0.0072	0.0087	0.0085	0.0213	0.0166	0.0221	0.0233	0.026	0.0278	0.0176	0.0187
No. of Obv	2870	2870	2870	2870	2870	2870	2530	2530	2530	2530	2530	2530	5052	5052	5052	5052	5052	5052
Overall P-value	0.0035	0.0043	0.0006	0.0004	<.0001	<.0001	0.0149	0.0489	0.0252	0.0266	<.0001	0.0003	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001

Table 8 (continued)

Panel B: Fama-MacBeth Regressions

	Top payers						Middle payers						Bottome payers					
	Window(-1, +1)		Window(0, +1)		Window(-11, +1)		Window(-1, +1)		Window(0, +1)		Window(-11, +1)		Window(-1, +1)		Window(0, +1)		Window(-11, +1)	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Intercept	0.0035	-0.0128	-0.0160	0.0011	-0.0368	-0.0002	-0.0184	-0.0083	0.0068	0.0250	-0.0311	0.0161	0.0199	0.0235**	0.0260**	0.0262**	-0.0391***	-0.0284**
	(0.30)	(-1.25)	(-1.14)	(0.12)	(-1.15)	(-0.01)	(-1.09)	(-0.44)	(0.46)	(1.58)	(-1.08)	(0.57)	(1.53)	(2.21)	(2.08)	(2.42)	(-3.16)	(-2.28)
DDIVY	0.8668	1.0361	1.1404***	0.6062	-5.6493**	-5.3769**	3.2820***	5.2360***	1.5363**	2.7865***	4.5843**	3.8040**	0.6148**	0.6020**	1.0932***	1.0630***	6.2435***	6.3152***
	(1.21)	(1.40)	(2.99)	(1.67)	(-2.29)	(-2.27)	(5.21)	(4.88)	(2.04)	(3.18)	(2.30)	(2.16)	(2.40)	(2.29)	(8.04)	(7.99)	(10.21)	(10.46)
NO_INST_DED	-0.0009*		-0.0007		-0.0014**		0.0013**		0.0005		0.0011		-0.0001		-0.0005		0.0015	
	(-1.71)		(-1.49)		(-2.19)		(2.29)		(0.84)		(1.016)		(-0.11)		(-0.72)		(1.26)	
NO_INST_QIX	-0.00001		-0.00007		0.0002***		-0.0001**		-0.00008*		0.0001		-0.00001		0.0001		0.0005***	
	(-0.12)		(-1.46)		(3.47)		(-2.28)		(-1.70)		(0.91)		(-0.18)		(1.52)		(3.44)	
NO_INST_TRA	0.0002		0.0004**		-0.0005**		-0.0002**		-0.0002**		-0.0021***		-0.0002		-0.0001		-0.0020***	
	(1.68)		(2.69)		(-2.10)		(-2.40)		(-2.15)		(-4.71)		(-0.72)		(-0.60)		(-5.52)	
INST_DED		0.0168		0.0004		-0.0293		0.0765***		0.0670***		0.0333		-0.0390**		-0.0547***		0.0329
		(1.32)		(0.04)		(-1.05)		(2.80)		(2.75)		(0.89)		(-2.51)		(-2.95)		(1.48)
INST_QIX		0.0407***		0.0186**		0.0421**		-0.0192***		-0.0191***		-0.0243		-0.0142**		-0.0031		0.0115
		(3.27)		(2.15)		(2.25)		(-2.96)		(-3.22)		(-1.60)		(-2.38)		(-0.45)		(0.62)
INST_TRA		-0.0551**		-0.0395**		-0.1584***		-0.0018		0.0065		-0.0959**		-0.0198		-0.0055		-0.1980***
		(-2.41)		(-2.14)		(-4.70)		(-0.10)		(0.33)		(-2.46)		(-1.52)		(-0.41)		(-4.63)
SIZE	0.0007	0.0008	0.0018	-0.0003	0.0064*	0.0023	0.00408*	0.0023	0.0006	-0.0023	0.0075*	0.0019	-0.0019	-0.0014	-0.0026*	-0.0012	0.0032	0.0023
	(0.55)	(0.82)	(1.19)	(-0.36)	(1.69)	(0.73)	(1.95)	(1.05)	(0.33)	(-1.26)	(1.97)	(0.59)	(-1.18)	(-1.54)	(-1.77)	(-1.25)	(1.67)	(1.08)
RE	0.0186	0.0180*	0.0244**	0.0196*	0.0154	0.0126	-0.0065	-0.0037	-0.0065	-0.0051	0.0110	0.0078	-0.0096**	-0.0124***	-0.0089**	-0.0094**	-0.0006	-0.0021
	(1.68)	(1.80)	(2.26)	(2.02)	(1.20)	(1.07)	(-0.97)	(-0.61)	(-1.27)	(-1.03)	(1.07)	(0.63)	(-2.24)	(-2.85)	(-2.41)	(-2.49)	(-0.09)	(-0.29)
ROA	-0.0575**	-0.0848***	-0.0436**	-0.0522**	0.0208	-0.0211	0.0041	-0.0260	0.0141	-0.0069	-0.0331	-0.0634*	0.0168	0.0156	-0.0084	-0.0172	0.0263	0.0197
	(-2.34)	(-3.10)	(-2.36)	(-2.69)	(0.39)	(-0.50)	(0.21)	(-1.41)	(0.86)	(-0.41)	(-0.88)	(-1.89)	(0.95)	(0.97)	(-0.37)	(-0.76)	(0.95)	(0.76)
MB ratio	-0.0012*	-0.0017**	-0.0002	-0.0013	-0.0061**	-0.0078***	0.0020*	0.0013	0.0012	0.0005	-0.0020	-0.0007	0.0035***	0.0023**	0.0030**	0.0025**	0.0037***	0.0019
	(-1.70)	(-2.38)	(-0.17)	(-1.68)	(-2.33)	(-3.81)	(1.82)	(1.07)	(1.30)	(0.55)	(-1.07)	(-0.36)	(2.74)	(2.22)	(2.39)	(2.56)	(2.77)	(1.40)
SGR	-0.0125	-0.0087	-0.0107	-0.0067	0.0194	0.0023	0.0026	-0.0026	0.0070	-0.0031	0.01831	0.0337	-0.0279***	-0.0466***	-0.0378***	-0.0528***	-0.0256*	-0.0460***
	(-0.93)	(-0.57)	(-1.05)	(-0.53)	(0.82)	(0.11)	(0.24)	(-0.27)	(0.72)	(-0.34)	(0.83)	(1.47)	(-3.80)	(-4.63)	(-4.90)	(-5.10)	(-2.00)	(-3.42)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-square	0.0483	0.0462	0.0568	0.0560	0.0618	0.0515	0.0032	0.0060	-0.0129	-0.0012	0.0231	0.0409	0.0279	0.0219	0.0453	0.0413	0.0284	0.0282
No. of Obv	2870	2870	2870	2870	2870	2870	2530	2530	2530	2530	2530	2530	5052	5052	5052	5052	5052	5052