

Institutional ownership stability and dividend payout policy

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Abstract

Purpose – The purpose of this paper is to empirically examine the link between institutional ownership stability and dividend payout ratio.

Design/methodology/approach – First, the authors estimate the propensity of a firm to pay dividend. Next, the authors perform panel fixed-effect regressions of dividend payouts on institutional ownership stability variables. The authors also compare institutional ownership between dividend paying and non-dividend paying investee firms. The authors analyze the dividend preferences of different types of institutional owners. Finally, the authors examine the cross-sectional variation in the volatility of dividend payouts.

Findings – The authors find that stable and large institutional owners favor dividend paying companies. There also exists a positive association between ownership persistence and dividend payout. Conversely, firms that change their dividend payout frequently are associated with larger deviations in institutional ownership. Additionally, the presence of pressure-sensitive institutional investors (i.e. investors that also hold business ties with the investee firm) is significantly linked to dividend payout policy. Conversely, pressure-insensitive investors use alternative forms of monitoring instead of requiring investee firms to pay dividends, which serve to reduce agency conflicts.

Originality/value – This paper considers the preferences of long-term stable institutional investors in their selection of dividend paying firms.

Keywords Dividend, Payout policy, Institutional ownership stability

Paper type Research paper

1. Introduction

Institutional investors hold more than half of the total outstanding equity of US listed companies (Tonello and Rabimov, 2010). Given their increasing economic power and clout, coupled with the fact that many of them tend to be ardent activist investors, the influence of institutional investors on corporate financial policies is attracting considerable academic interest. This paper examines how the stability in institutional investors' ownership affects dividend policy.

Various studies postulate that the study of institutional shareholdings' stability is important to fully appreciate the investment motives of these investors (Gaspar *et al.*, 2005; Chen *et al.*, 2007; Yan and Zhang, 2009; Elyasiani and Jia, 2010; Elyasiani *et al.*, 2010; Attig *et al.*, 2012; Callen and Fang, 2013; Sakaki *et al.*, 2017). Institutional investors who maintain their shareholdings at investee firms over the long run are more incentivised to monitor managers. Their ability to force dividend policies that mitigate agency conflict is directly linked to both the size and the duration of their investments. The literature evidences that dividend smoothing is more prevalent among firms that are closely monitored by institutional investors (Leary and Michaely, 2011). Gaspar *et al.* (2012) find that the frequency and amount of share repurchases – to the detriment of dividends – increase with ownership by short-term investors.

We complement the literature on the relationship between institutional ownership and dividend policy by examining the effects of institutional investors' stability. More precisely,



we measure investor's stability using two variables, i.e., volatility and persistence. Volatility is defined as the standard deviation of quarterly proportions of institutional shareholdings. Persistence is the reciprocal of volatility multiplied by the average of the quarterly proportions. Thus, institutional stability is associated with lower volatility and higher persistence.

To the extent that institutional investors prefer dividend as an instrument to mitigate the agency costs of free cash flow (Jensen, 1986), we expect to find a positive association between dividend payments and persistence in their quarterly holdings. Equally, we expect to find higher volatility in institutional ownership proportions at companies that pay little in dividend. On the contrary, if the presence of institutional investors mitigates investors' concerns that management will squander the firm's free cash flows, then investors would be indifferent to firms' dividend policy (Zeckhauser and Pound, 1990). Provided that the presence of institutional investors and the payment of dividend act as substitute mechanisms in mitigating agency concerns, then the hypothesized positive relationship between the two may not exist.

Using quarterly data on institutional ownership and dividend payments during the period 1980-2013, we document new evidence on the relationship between institutional ownership stability and firms' payout policy. First, using probit regressions, we find that dividend paying firms are associated with higher institutional ownership proportions and stability (i.e. lower volatility in their shareholdings). Second, higher payout ratios are associated with higher persistence and lower volatility in the proportions of shares held by institutional investors.

Third, firms with high volatility in institutional ownership proportions are also associated with high volatility in their dividend payout ratios. In contrast, firms with high persistence in the proportions of shares held by institutional investors are associated with lower volatility in dividend payout ratios. Overall, our findings are in agreement with the agency theory and the view that institutional investors favor both dividend paying firms and stable dividend payouts.

The extent to which institutional investors are able to influence dividend payout depends on the amount of pressure they can exert on the managers. Institutional investors who are less constrained in their ability to monitor, discipline, and impose controls (i.e. pressure-insensitive investors that include investment companies and independent investment advisors) rely less on the forces of dividend to curtail managers' largesse. We find that the relationship between dividend and institutional ownership holds only for pressure-sensitive investors, i.e., investors that engage in other business relationships with the firms, which include banks and insurance companies. To protect their business relationships they would not want to challenge managers' decisions; instead, they resort to dividends as a means of reigning in managerial excesses.

The rest of the paper is organized as follows. In the next section, we review the literature and develop our hypotheses. In Section 3, we describe the sample, data, and variables. In Section 4, we describe the methods used. We present and discuss our findings in Section 5. Section 6 concludes.

2. Literature review and hypotheses development

Studies on the relationship between shareholding and dividend policy include Rozeff (1982), Dempsey and Laber (1992), Eckbo and Verma (1994), Michaely *et al.* (1995), Moh'd *et al.* (1995), Del Guercio (1996), Strickland (1996), Brav and Heaton (1998), Jain (1999), Binay (2001), Short *et al.* (2002), Perez-Gonzalez (2003), Grinstein and Michaely (2005), Amihud and Li (2006), Hotchkiss and Lawrence (2007), among others. Rozeff (1982) and Dempsey and Laber (1992) find that the percentage of stocks held by insiders adversely affects the dividend payout ratio, while the number of shareholders positively affects it.

Eckbo and Verma (1994) find that average cash dividend yield increases significantly with corporate/institutional shareholders' ownership proportions. They find that the share ownership of dividend payers is dominated by corporate or institutional investors. Short *et al.* (2002) document a strong positive association between dividend payout policy and institutional ownership. Long-term institutional shareholders are better incentivized and equipped (i.e. they face lower costs of information gathering) to monitor firms' managers and therefore, ensure that firms commit to paying out regular and stable dividends in order to mitigate agency costs of free cash flows (Easterbrook, 1984; Jensen, 1986).

The substitution hypothesis (see Amihud and Li, 2006) suggests that corporations do not need to pay dividends if the presence of institutional investors mitigates investors' concerns that management will waste the firm's free cash flows. The presence of institutional investors and the payment of dividend act as substitutes. By virtue of their size and the fact that they are fiduciaries and invest on behalf of others, large institutional investors can allocate more resources toward monitoring a firm's management and perform a more comprehensive review of the firm's prospect. Nonetheless, smaller shareholders, who tend to free ride on the decision of larger/institutional investors, dissuade the latter from providing direct monitoring (Short *et al.*, 2002).

Moh'd *et al.* (1995) test the effects of the following variables on the dividend payout ratio: percent of common stock held by insiders, natural log of the number of shareholders, and the percent of common stock held by institutions. Based on their findings, Moh'd *et al.* (1995) establish that the payment of dividend serves two purposes: to attract large and/or institutional investors and to limit the ability of managers to squander excess cash (also see Zeckhauser and Pound, 1990).

Institutional investors favor dividend paying stocks for a number of reasons. Many institutions rely on a steady stream of dividend income to meet their ongoing liabilities (for instance, pension funds and insurance companies). Overreliance on capital gains can lead to income shortages in down markets. Dividend, on the other hand, is relatively more stable. Institutional investors who benefit from tax rebates (for instance, pension funds and endowment funds) favor dividend paying firms for their investment portfolio. Allen *et al.* (2000) argue that firms will commit to pay out dividends in order to attract an informed clientele of institutional investors who are valued for their monitoring abilities and prefer dividends (over repurchases) due to tax and regulatory (prudent-man) reasons.

Grinstein and Michaely (2005) find that institutions prefer dividend paying firms to non-dividend paying firms, but within dividend paying firms, institutions are not attracted to high dividends, which is not consistent with the clientele theory of dividends of Allen *et al.* (2000). Instead, Grinstein and Michaely (2005) find a positive relation between repurchases and institutional holdings in the sense that firms that repurchase more shares attract institutions. Their results suggest that institutions are attracted to repurchasing firms, and that these investors do not attempt to influence the firms' repurchase or dividend policies. In short, they conclude that institutions are attracted to firms with positive payout but find little evidence that ownership causes payout. We contribute to the literature on institutional ownership and dividend policy by examining how the long run stability in the shareholdings of institutional investors affects a firm's dividend policy.

Under Jensen's (1986) free cash flow hypothesis, managers' mismanagement of excess cash will lead to agency conflicts. The payment of dividend can minimize these conflicts. By transferring the company's cash to shareholders, managers are left with little money to waste on suboptimal investment projects. Under such circumstances, dividend acts as a form of discipline on incumbent managers.

In a recent paper, Crane *et al.* (2016) use a novel identification strategy that relies on an instrument for ownership based on the annual composition of the Russell 1,000 and 2,000 indices. They find that firms pay more dividends and repurchase more shares

when they have higher levels of institutional ownership, even if the institutions are not activist investors (a one percentage point “exogenous” increase in institutional ownership leads to 1 percent higher dividends, 4 percent higher repurchases, and 4 percent higher total payout). They argue that their results are consistent with the hypothesis that institutional ownership affects payout through a monitoring channel.

Companies plagued with agency conflicts would constrain institutional investors’ ability to meet their fiduciary responsibilities *vis-à-vis* their investors. To the extent that payment of dividend is a show of a firm’s cash generating strength and its intolerance for conflicts, institutional investors would favor dividend paying firms as their investments. Besides, and as argued earlier, certain institutions favor dividend paying companies for tax reasons.

Not all institutional investors benefit from the same tax advantages. For instance, banks and investment companies do not benefit from the same exemptions as pension funds. Banks are heavily regulated and are forced to abide by the prudent-man rules. These constraints will weigh heavily in their selections of target companies. Therefore, we test the relation between the holdings of the different institutional groups and the dividend payout policy.

On the assumption that the substitution hypothesis (see Zeckhauser and Pound, 1990; Amihud and Li, 2006) holds, i.e., the presence of institutional investors and the payment of dividend are substitute mechanisms to discipline managers, then it is important to differentiate between the types of institutional investors who can perform that disciplinary function. To avoid compromising their existing or potential business dealings with the firms, banks (*INV1*) and insurance companies (*INV2*) are less likely to challenge management decisions (see Brickley *et al.*, 1988; Almazan *et al.*, 2005; Chen *et al.*, 2007; Cornett *et al.*, 2007). They are known as pressure-sensitive investors. On the other hand, investment companies (*INV3*) and investment advisers (*INV4*) are not subject to these pressures and are more able to press management for changes. They are known as pressure-insensitive investors. Almazan *et al.* (2005), Chen *et al.* (2007), and Cornett *et al.* (2007) find that better corporate decisions are positively correlated to the extent of share ownership by pressure-insensitive investors.

We hypothesize that there might be a substitution effect between the payment of dividends and the presence of “pressure-insensitive” institutional investors, i.e., *INV3* and *INV4*, who can act as effective monitors and discipline firms’ managers to reduce agency costs by pressing for corporate policy changes through alternative means (other than forcing firms to change their dividend or payout policies).

In the presence of “pressure-sensitive” institutional shareholders, however, dividend payouts may constitute an alternative form of capital market monitoring (Easterbrook, 1984; Rozeff, 1982). Corporations with high payout rates will be forced to go to the market relatively more often to secure funds for new investment. This subjects the investment decisions to outside scrutiny. Thus, when pressure-sensitive institutional investors dominate the firm’s ownership pool, the market may demand other forms of monitoring – such as dividend payouts – as substitutes. To protect their business relationships, pressure-sensitive institutional investors would not want to challenge managers’ decisions by pursuing various activist strategies; instead, they would just resort to the regular payout of dividends as a means of mitigating managerial agency problems.

Size alone cannot sort out institutional investors who are in for the long haul vs institutional traders who are in for a quick profit. Gaspar *et al.* (2005) investigate how the investment horizon of a firm’s institutional shareholders impacts the market for corporate control. Target firms whose ownership is dominated by short-term shareholders receive lower premiums in M&A transactions. Managers of these firms benefit from lax monitoring. Institutional investors who favor high portfolio turnover, invest for the short-term and engage in momentum trading are less inclined to commit resources to

monitor managers at target firms (Bushee, 1998). To the extent that payment of dividend achieves a disciplinary function, then these companies do not have to make those payments. It is plausible that companies that exhibit a large volatility in the shareholdings of institutional investors – a sign of short-termism – do not pay dividend.

Besides, granted that dividend acts as a draw for institutional investors (consistent with the clientele effect of dividend policy), there should be little volatility in their shareholdings at dividend paying firms. Correspondingly, we should observe a direct association between dividends and the persistence in the shareholdings of the institutional investors. Long-term stable institutional investors who act more as “owners” than “traders” will advocate for tools that serve to discipline managers, such as, the payment of dividend.

Gaspar *et al.* (2012) analyze the relationship between payout policy and shareholder investment horizons. These authors infer institutional shareholders’ investment horizons using the churn rate of their overall stock portfolios prior to the payout decision. The lower the institutional shareholders’ portfolio turnover, the longer their investment horizons and the higher the stability and the persistence of their shareholdings. They find that the frequency and amount of repurchases – to the detriment of dividends – increase with ownership by short-term investors. Based on this finding, we would expect long-term institutional investors to be associated with dividend paying firms. Gaspar *et al.* (2012) find that ownership stakes of long-term institutional investors are associated with higher likelihoods of both dividend payments and share repurchases, whereas the ownership of short-term institutional investors is negatively associated with dividend payments, but positively associated with repurchases. Their findings are consistent with the notion that long-term investors have superior monitoring abilities (Gaspar *et al.*, 2005; Chen *et al.*, 2007).

There is a strong desire among managers to maintain dividend payments and engage in dividend smoothing. That was true decades ago (Lintner, 1956) and is still true in the twenty-first century (Brav *et al.*, 2005). Leary and Michaely (2011) find that dividend smoothing is most pronounced among firms with high agency costs, high dividend levels, and high institutional holdings consistent with the agency-based explanations of Easterbrook (1984), Jensen (1986), and Allen *et al.* (2000). Brav *et al.* (2005) find that demands by institutional investors induce nonpayers to initiate dividend payments. Thus, a company that cannot maintain its dividend or adopts an inconsistent dividend policy causes great disruption to the institutional investors. We test the hypothesis that institutional investors shun away from companies with irregular dividend payments.

3. Data and sample

Our sample includes 205,847 firm-year observations covering 21,531 firms from the COMPUSTAT database. The sample period starts in 1980 and ends in 2013. We exclude financial and utility firms (i.e. SIC codes 6000-6999 and 4900-4999, respectively) as they are regulated firms. Data on quarterly institutional stock holdings for US publicly traded firms are obtained from the Thomson-Reuters Institutional Holdings (13F) database (formerly known as CDA spectrum). The shareholdings data come from Form 13F filed by institutional managers – with \$100 million or more in assets under management – with the US Securities and Exchange Commission. The institutions include bank trusts, insurance companies, investment companies (mutual funds), investment advisors (most of the large brokerage firms), and “others” (pension funds and endowments) (also see Grinstein and Michaely, 2005).

In Table I, we present the sample distribution by industry using the Fama-French 12-sector classification (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_12_ind_port.html). Business equipment, shops and manufacturing dominate the sample representing 53.21 percent of the overall sample. 101,698 and 56,962 firm-year observations consist of nonzero values for institutional ownership proportion and dividend

	Whole sample		Institutional ownership		Dividend paying firms	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
<i>Panel A – sample distribution by Fama-French 12-sector classification</i>						
Industry						
BUSEQ	42,028	20.42	22,401	22.03	5,426	9.53
CHEMS	5,807	2.82	3,436	3.38	3,006	5.28
DURBL	6,591	3.20	3,580	3.52	2,805	4.92
ENRGY	15,670	7.61	6,350	6.24	4,178	7.33
HLTH	22,943	11.15	11,538	11.35	2,736	4.80
MANUF	27,142	13.19	15,687	15.43	12,014	21.09
NODUR	13,689	6.65	7,305	7.18	6,468	11.35
SHOPS	40,355	19.60	15,991	15.72	9,285	16.30
TELCM	23,775	11.55	11,940	11.74	8,199	14.39
OTHER	7,847	3.81	3,470	3.41	2,845	4.99
Total	205,847	100.00	101,698	100.00	56,962	56.01

Panel B – sample distribution by year

Year						
1980	3,938	1.91	1,452	1.43	2,084	3.66
1981	4,564	2.22	1,620	1.59	2,032	3.57
1982	4,615	2.24	1,707	1.68	2,096	3.68
1983	4,982	2.42	1,915	1.88	1,984	3.48
1984	5,039	2.45	2,101	2.07	1,954	3.43
1985	5,026	2.44	2,194	2.16	1,865	3.27
1986	5,266	2.56	2,282	2.24	1,768	3.1
1987	5,463	2.65	2,408	2.37	1,762	3.09
1988	5,214	2.53	2,437	2.4	1,711	3
1989	5,034	2.45	2,326	2.29	1,682	2.95
1990	4,965	2.41	2,358	2.32	1,653	2.9
1991	5,049	2.45	2,330	2.29	1,585	2.78
1992	5,268	2.56	2,536	2.49	1,590	2.79
1993	5,781	2.81	2,752	2.71	1,617	2.84
1994	6,200	3.01	3,083	3.03	1,644	2.89
1995	6,987	3.39	3,236	3.18	1,715	3.01
1996	7,567	3.68	3,633	3.57	1,698	2.98
1997	7,694	3.74	3,886	3.82	1,680	2.95
1998	7,646	3.71	4,016	3.95	1,640	2.88
1999	7,880	3.83	3,874	3.81	1,572	2.76
2000	7,893	3.83	3,942	3.88	1,450	2.55
2001	7,468	3.63	3,742	3.68	1,390	2.44
2002	7,097	3.45	3,627	3.57	1,332	2.34
2003	6,775	3.29	3,503	3.44	1,492	2.62
2004	6,699	3.25	3,451	3.39	1,581	2.78
2005	6,566	3.19	3,516	3.46	1,672	2.94
2006	6,572	3.19	3,563	3.5	1,695	2.98
2007	6,506	3.16	3,525	3.47	1,651	2.90
2008	6,177	3.00	3,534	3.47	1,599	2.81
2009	5,936	2.88	3,340	3.28	1,436	2.52
2010	5,922	2.88	3,370	3.31	1,457	2.56
2011	5,882	2.86	3,426	3.37	1,528	2.68
2012	6,124	2.98	3,433	3.38	1,705	2.99
2013	6,052	2.94	3,580	3.52	1,642	2.88

Note: This table reports the sample distribution by Fama-French 12-sector classification in Panel A and by year in Panel B

Table I.
Sample distribution

payment, respectively. Panel B contains the sample distribution by year and we observe that the sample is evenly distributed throughout the years.

We divide the sample into two, i.e., those with nonzero reported figures for institutional ownership vs those without, and compare various financial characteristics between the two.

We present our findings in Panel A of Table II. We find that there exist significant differences between the two subsamples on all the reported financial characteristics. Firms with institutional owners are larger in terms of market capitalization, have higher market-to-book ratio, retained earnings-to-total equity, total equity-to-total assets, return on assets and turnover ratio; though, their sales growth lags behind that of firms without institutional ownership.

We perform a similar analysis between dividend paying firms and non-dividend paying firms and report our findings in Panel B of Table II. Dividend paying firms are larger and more profitable. The mean values of size and the various profitability ratios are significantly higher for the subsample of dividend paying firms.

4. Methodology

4.1 Measures of dividend payout ratio

We construct three alternative measures of dividend payments. The first one is a dummy variable representing dividend paying firms. The other two capture the magnitude of the dividend payment, i.e., the dividend-to-earnings (DIV/EARN) ratio and the dividend-to-assets ratio (DIV/ASSET) ratios. We do not use the dividend yield ratio, i.e., the ratio of

Variables	<i>n</i>	Mean	Median	<i>n</i>	Mean	Median	Mean diff.	<i>t</i> -Statistics
<i>Panel A – firms with vs without institutional ownership</i>								
	Non-institutional owner firms			Institutional owner firms			Difference	
<i>MKCAP</i> . (\$mill.)	104,149	692.512	30.184	101,698	2,209.050	172.023	1,516.538	56.6***
<i>MKBK</i>	103,237	2.293	1.508	101,245	2.636	1.803	0.343	8.32***
<i>SALEGROWTH</i>	89,963	0.694	0.062	98,908	0.342	0.086	-0.352	-24.49***
<i>SYSTEMATIC</i>	102,362	0.822	0.785	101,669	1.015	0.959	0.193	14.15***
<i>IDIOSYNCRATIC</i>	101,086	0.184	0.126	101,662	0.116	0.092	-0.068	-91.15***
<i>REtoTE</i>	102,917	-0.502	0.076	100,428	-0.277	0.376	0.225	4.44***
<i>TEtoTA</i>	103,288	0.026	0.492	101,491	0.453	0.522	0.426	41.96***
<i>ROE</i>	102,831	-0.547	-0.007	101,550	-0.074	0.036	0.473	57.01***
<i>TURNOVER</i>	101,444	0.755	0.377	101,031	1.247	0.743	0.492	84.94***
<i>Panel B – dividend paying firms vs non-dividend paying firms</i>								
	Non-dividend paying firms			Dividend paying firms			Difference	
<i>MKCAP</i> . (\$mill.)	148,885	493.092	38.741	56,962	3,921.330	474.162	3,428.238	78.38***
<i>MKBK</i>	147,940	2.513	1.646	56,542	2.331	1.707	-0.182	-5.51***
<i>SALEGROWTH</i>	132,868	0.632	0.080	56,003	0.219	0.073	-0.413	-33.86***
<i>SYSTEMATIC</i>	147,113	0.921	0.905	56,918	0.912	0.866	-0.008	-0.780
<i>IDIOSYNCRATIC</i>	145,858	0.180	0.131	56,890	0.074	0.064	-0.106	-194.71***
<i>REtoTE</i>	148,004	0.354	0.001	55,341	0.580	0.687	0.224	36.87***
<i>TEtoTA</i>	147,946	0.140	0.525	56,833	0.491	0.484	0.351	49.15***
<i>ROE</i>	147,639	-0.452	-0.014	56,742	0.054	0.056	0.506	87.16***
<i>TURNOVER</i>	146,640	1.069	0.563	55,835	0.820	0.487	-0.250	-42.99***

Notes: This table provides the summary statistics of the sample firms by whether there are institutional ownership in the firms or not (in Panel A) and by whether the firms pay dividends or not (in Panel B). *MKCAP* is the firm's market capitalization, *SALEGROWTH* represent the percentage increase in sales, *SYSTEMATIC* is the standard deviation of the predicted daily returns using the Fama and French (1993) three-factor model, *IDIOSYNCRATIC* refers to the standard deviation of the residuals from the three-factor model, *REtoTE* represents the ratio of retained earnings-to-total equity, *TEtoTA* represents the ratio of total equity-to-total assets, *CASH* is the ratio of cash and bank balances-to-total assets, *ROA* is the return on assets, *TURNOVER* is the ratio of average trading volumes-to-total number of shares outstanding. *PROP*, *IOV*, and *IOP* are as institutional ownership proportion, institutional ownership proportion volatility and institutional ownership persistence, respectively. ***Significant at 1 percent level

Table II.
Sample descriptive statistics

dividend per share-to-market price per share, since managers do not exert direct and spontaneous control on the share price. To address issues with outliers, we winsorize DIV/EARN and DIV/ASSET at the 1 and 99 percent percentiles.

4.2 Measures of institutional ownership stability

Following Elyasiani *et al.* (2010), we calculate several measures of institutional ownership based on a five-year rolling period (i.e. 20 quarters). To eliminate the effects of any short-term temporary shock and to capture the delayed response of dividend policy to ownership changes, Elyasiani and Jia (2010) recommend the use of data measured over a longer-term time period, i.e., 20 quarters. The variables are as follows:

$IOP_{j,t}$ refers to the proportion of shares held by institutional investor j in quarter t (1)

$IOP_{i,t}$ refers to the proportion of shares held by all institutional investors in firm i in quarter t (2)

$\sum_{t=1}^{20} IOP_{i,t}$ refers to the proportion of shares held by all institutional investors at firm i over the last 20 quarters (3)

$\frac{\sum_{t=1}^{20} IOP_{i,t}}{20}$ refers to the average of the 20 quarterly proportions of shares held by all institutional investors at firm i . We label this measure as *PROP* (4)

σ_j refers to the standard deviation of the quarterly holdings of institutional investor j over the last 20 quarters (5)

$\sigma_i = \frac{\sum_{j=1}^J \sigma_j}{J}$ refers to the average of the standard deviations of all institutional investors in firm i . This is also our measure of institutional ownership volatility (*IOV*). (6)

$\frac{\sum_{t=1}^{20} IOP_{j,t}/20}{\sigma_j}$ is the measure of institutional investor j ownership persistence (7)

$\frac{\sum_{j=1}^J \sum_{t=1}^{20} IOP_{j,t}/20}{J}$ refers to the institutional ownership persistence (*IOP*) measure for firm i . The firm's *IOP* measure is the average *IOP* across all its institutional investors. (8)

The variables that we present in the rest of the analysis are: *PROP*, *IOV*, and *IOP*. A higher value of *PROP* suggests that more shares are held by institutional investors. The higher the value of *IOV*, the less stable are the proportions of institutional shareholdings.

Higher values of *IOP* are associated with institutional investors holding stable and large proportions of the company's stock. Institutional ownership stability is therefore associated with lower values of *IOV* and higher values of *IOP*.

4.3 Measuring the effects of institutional ownership stability on the firm's propensity to pay dividends and the magnitude of its dividend payout ratio

We first examine how institutional ownership stability affects the firm's decision to pay dividends. We estimate a firm's propensity to pay dividends by using the following model adapted from Grullon *et al.* (2002), DeAngelo *et al.* (2006), and Banyu and Kahle (2014):

$$\begin{aligned} PAYER_{i,t} = & \alpha + \beta_1 \ln(MKCAP)_{i,t} + \beta_2 MKBK_{i,t} + \beta_3 SALEGROWTH_{i,t} \\ & + \beta_4 SYSTEMATIC_{i,t} + \beta_5 IDIOSYNCRATIC_{i,t} + \beta_6 REtoTE_{i,t} \\ & + \beta_7 TEtoTA_{i,t} + \beta_8 CASH_{i,t} + \beta_9 ROA_{i,t} + \beta_{10} TURNOVER_{i,t} \\ & + \beta_{11} PROP_{i,t} + \beta_{12} IOV_{i,t} + \beta_{13} IOP_{i,t} + \epsilon_{i,t} \end{aligned} \quad (9)$$

where *PAYER* takes a value of 1 for firm-year observation with nonzero cash dividend, else it takes a value of 0; *MKCAP* is the firm's market capitalization, *MKBK* represents the firm's market-to-book ratio; *SALEGROWTH* represent the percentage increase in sales, *SYSTEMATIC* is the standard deviation of the predicted daily returns using the Fama and French (1993) three-factor model, *IDIOSYNCRATIC* refers to the standard deviation of the residuals from the three-factor model, *REtoTE* represents the ratio of retained earnings-to-total equity, *TEtoTA* represents the ratio of total equity-to-total assets, *CASH* is the ratio of cash and bank balances-to-total assets, *ROA* is the return on assets, *TURNOVER* is the ratio of average trading volumes-to-total number of shares outstanding, and *PROP*, *IOV*, and *IOP* are as defined earlier.

To estimate the logistic regression, we follow the methodology of Fama and MacBeth (1973). We estimate the regression using all firm observations in each of the 34 years comprising the sample period. We report the average coefficients of the variables in Table III and report *t*-statistics that are adjusted for serial correlation using the Newey and West (1987) procedure.

The choice of variables follows prior studies. Fama and French (2001) suggest that large firms (which we proxy by *MKCAP*), profitable ones (*ROA*) and firms with modest growth prospects (*MKBK* and *SALEGROWTH*) tend to pay dividend. Firms that are in the latter stages of their lifecycle will rely more on internal funds (DeAngelo *et al.*, 2006). We use the ratio of retained earnings-to-total equity (*REtoTE*) as a proxy for lifecycle. Firms that are at an early stage in their lifecycle will report low values of *REtoTE*, while firms that are at an advanced stage will report higher values.

Hoberg and Prabhala (2009) report that risk measures explain 40 percent of the "disappearing dividend" phenomenon. Thus, we control for a firm's systematic and idiosyncratic risks. Market factors influence the first one, while the second one is influenced by a firm's internal factors. Firms with little free cash flows (*CASH*) and highly levered ones (i.e. associated with lower values of *TEtoTA*) are constrained in their ability to pay dividends (Fama and French, 2002). Banerjee *et al.* (2007) show that firms with illiquid stocks tend to maintain dividend payments (*TURNOVER*).

To estimate the effect of institutional ownership stability on the magnitude of the dividend payout ratio, we rerun the regression on the ratios of total dividend-to-total earnings (*DIV/EARN*) and total dividend-to-total assets (*DIV/ASSET*), respectively. Instead of the logistic regression, we perform a panel fixed-effect regression on the dividend payout ratios.

	Model 1		Model 2		Model 3	
	Param	<i>t</i> -Statistics	Param	<i>t</i> -Statistics	Param	<i>t</i> -Statistics
Intercept	-1.940	-21.74***	-1.797	-18.51***	-2.073	-21.88***
<i>ln</i> (<i>MKCAP</i>)	0.571	22.86***	0.536	19.66***	0.569	22.92***
<i>MKBB</i>	-0.068	-4.36	-0.067	-4.36***	-0.068	-4.39***
<i>SALEGROWTH</i>	-0.212	-7.95***	-0.202	-7.77***	-0.208	-7.84***
<i>SYSTEMATIC</i>	-0.045	-4.55***	-0.045	-4.49***	-0.046	-4.56***
<i>IDIOSYNCRATIC</i>	-9.542	-25.28***	-9.251	-23.25***	-9.395	-25.74***
<i>REtoTE</i>	0.155	4.23***	0.149	4.16***	0.151	4.19***
<i>TEtoTA</i>	0.523	5.93***	0.502	6.16***	0.482	5.67***
<i>CASH</i>	-2.266	-32.38***	-2.173	-31.26***	-2.249	-32.06***
<i>ROA</i>	4.091	18.61***	4.069	18.75***	4.018	18.17***
<i>TURNOVER</i>	-0.707	-11.54***	-0.763	-11.49***	-0.720	-11.63***
<i>PROP</i>			1.004	6.53***		
<i>IOV</i>			-0.234	-4.99***		
<i>IOP</i>					0.115	18.31***
Average Hosmer and Lemeshow goodness-of-fit test	201.46***		188.39***		205.02***	
Average % correct classification	89.19		89.42		89.319	
Average pseudo <i>R</i> ²	0.371		0.376		0.373	
Average max-scaled pseudo <i>R</i> ²	0.531		0.538		0.535	
Number of regressions	34		34		34	
Average number of observations in each regression	1,996.5		1,996.5		1,996.500	

Notes: This table reports the results from the logistic regressions to estimate the propensity of firms to pay dividend. To estimate the logistic regression, we follow the methodology of Fama and MacBeth (1973). We estimate the regression using all firm observations in each of the 34 years comprising the sample period. We report the average coefficients of the variables in Table III and report *t*-statistics that are adjusted for serial correlation using the Newey and West (1987) procedure. The dependent variable is the dummy variable for firm-year observations with nonzero dividends (PAYER). *MKCAP* is the firm's market capitalization, *SALEGROWTH* represent the percentage increase in sales, *SYSTEMATIC* is the standard deviation of the predicted daily returns using the Fama and French (1993) three-factor model, *IDIOSYNCRATIC* refers to the standard deviation of the residuals from the three-factor model, *REtoTE* represents the ratio of retained earnings-to-total equity, *TEtoTA* represents the ratio of total equity-to-total assets, *CASH* is the ratio of cash and bank balances-to-total assets, *ROA* is the return on assets, *TURNOVER* is the ratio of average trading volumes-to-total number of shares outstanding. *PROP*, *IOV*, and *IOP* are as institutional ownership proportion, institutional ownership proportion volatility and institutional ownership persistence, respectively. ***Significant at 1 percent level

Table III.
Propensity to
pay dividend

4.4 Institutional ownership between dividend paying and non-dividend paying propensity-matched firms

We use Equation (9) to compute a propensity score for each firm, i.e., the likelihood that the firm will pay dividend. We then break the sample into two, i.e., between dividend and non-dividend paying firms based on actual (not predicted) outcome. For each dividend paying firm, we select a firm from the non-dividend paying sample with the closest propensity score. We end up with a sample of propensity-matched non-dividend paying firms. We then compare the proportion, volatility, and persistence of institutional ownerships between the dividend paying and the propensity-matched non-dividend paying samples. We also include the propensity score of all firms in the panel fixed-effect regressions (represented by the variable *INVMILLS*) to control for self-selection bias and endogeneity.

The institutions for which shareholdings data are provided in Thomson-Reuters Institutional Holdings (13F) database include bank trusts (*INV1*), insurance companies (*INV2*), investment companies (*INV3*), investment advisors (*INV4*), and others including

pension funds and endowments (*INV5*). To ensure that our findings are not driven by a particular subsample of institutional investors, we also study the effect of each subcategory separately.

4.5 Analyzing the volatility in the dividend payout ratios

We calculate the standard deviation of the dividend payout ratios of sampled firms on a five-year rolling basis. The higher the value, the less stable is the firm's dividend payments. We compare and contrast that measure between the samples of firms with low vs high institutional ownerships. We perform a panel fixed-effect regression to establish the link between the volatility in dividend payments and the stability in the shareholdings of the institutional investors. To make all the variables in the model contemporaneous, we use rolling five-year averages of the control variables in the regressions.

5. Results

5.1 Institutional ownership stability and the firm's propensity to pay dividend

We run a logistic regression on the firms' decision to pay dividends and present our findings in Table III. The coefficients of interest are *PROP*, *IOV*, and *IOP*, representing the proportions of shares held by institutional investors, institutional ownership volatility, and persistence, respectively. The coefficients of *PROP* and *IOP* are positive and significant at the 1 percent level. Thus, firms with a higher proportion of outstanding shares held by institutional investors and persistence in their shareholdings are more likely to pay dividends. The coefficient of *IOV* is negative and highly significant suggesting that high volatility in the quarterly proportions of the shares held by institutional investors is associated with a lower likelihood to pay dividend.

We also find that dividend payers are positively associated with size ($\ln(MKCAP)$), profitability ($REtoTE$ and ROE), and lower leverage ($TEtoTA$). Growth firms (*MKBK* and *SALEGROWTH*) and risky firms (*SYSTEMATIC* and *IDIOSYNCRATIC*) tend to be nonpayers. This result is consistent with previous literature which suggests that growth firms have more tendency to invest the retained earnings in potential profitable investment projects. For example, Fama and French (2001) suggest that firms with high growth prospects tend to retain profits. In addition, firms with a lot of cash resources tend to be nonpayers too as the coefficient of *CASH* is negative and highly significant. Firms in the latter stages of their lifecycle have more cash resources available in their hands and DeAngelo *et al.* (2006) show that these firms will rely more on internal funds. Hence, it is why they are nonpayers. Similarly, liquid stocks (*TURNOVER*) tend not to be dividend stocks.

Results based on the logistic regressions establish the link between dividend payers and institutional ownership. To ensure consistency we replace the dependent variable with the dividend payout ratio and run a panel fixed-effect regression involving the same independent variables and present our findings in Table IV. The panel fixed-effect regression also allows us to test the effect of institutional ownership on the magnitude of the dividend payments. In Panel A, the dependent variable is the ratio of dividend-to-total earnings ($DIV/EARN$); in panel B the dependent variable is the ratio of dividend-to-total assets ($DIV/ASSET$).

While the coefficient of *IOV* and *IOP* retain their sign and significance as in the earlier regressions, the coefficient of *PROP* is not significant anymore (consistent with Del Guercio, 1996; Grinstein and Michaely, 2005). Thus, the size of institutional shareholdings does not determine the amount of dividend to be paid. On the other hand, the stability of their shareholdings exerts a more significant influence. Volatility in the institutional shareholdings decreases the payout ratios while stability increases them. The effects of the remainder independent variables are similar to that documented in Table III.

Indep. Vars.	Panel A – Dep. Var. = Payout ratio		Panel B – Dep. Var. = Div./Asst	
	Model 1	Model 2	Model 1	Model 2
Constant	0.098 (16.494)***	0.077 (10.217)***	0.005 (17.793)***	0.005 (9.556)***
<i>ln</i> (MKCAP)	0.239 (28.784)***	0.265 (33.896)***	0.279 (23.035)***	0.317 (26.619)***
MKBK	-0.028 (-7.379)***	-0.028 (-7.466)***	0.027 (3.681)***	0.026 (3.656)***
SALEGROWTH	-0.042 (-18.639)***	-0.044 (-19.193)***	-0.031 (-7.591)***	-0.034 (-8.247)***
SYSTEMATIC	0.003 (1.459)	0.002 (0.897)	0.003 (1.051)	0.001 (0.423)
IDIOSYNCRATIC	-0.071 (-15.336)***	-0.066 (-14.508)***	-0.066 (-12.192)***	-0.060 (-11.124)***
REtoTE	-0.002 (-1.048)	-0.004 (-0.969)	-0.034 (-1.285)	-0.036 (-1.359)
TEtoTA	-0.005 (-0.896)	-0.006 (-1.022)	0.003 (0.292)	0.001 (0.151)
CASH	-0.048 (-8.642)***	-0.050 (-8.906)***	0.016 (1.803)*	0.014 (1.581)
ROE	0.012 (3.754)***	0.009 (2.829)***	0.066 (9.911)***	0.062 (9.465)***
TURNOVER	-0.162 (-32.359)***	-0.162 (-31.911)***	-0.191 (-24.038)***	-0.189 (-24.188)***
PROP	0.001 (0.077)		0.006 (0.665)	
IOW	-0.051 (-9.912)***		-0.071 (-11.687)***	
IOP		0.036 (8.052)***		0.051 (8.701)***
Overall R ²	0.113	0.112	0.132	0.130
Year fixed effects	Yes	Yes	Yes	Yes
Observations	188,871	188,871	188,871	188,871

Notes: This table reports the results from the panel fixed-effect regressions of the dividend payout ratio (in Panel A) and the dividend-to-asset ratio (in Panel B). The dependent variables are the dividend payout ratio (in Panel A) and the dividend-to-asset ratio (in Panel B), respectively. *MKCAP* is the firm's market capitalization, *MKBK* is the firm market-to-book ratio, *SALEGROWTH* represent the percentage increase in sales, *SYSTEMATIC* is the standard deviation of the predicted daily returns using the Fama and French (1993) three-factor model, *IDIOSYNCRATIC* refers to the standard deviation of the residuals from the three-factor model, *REtoTE* represents the ratio of retained earnings-to-total equity, *TEtoTA* represents the ratio of total equity-to-total assets, *CASH* is the ratio of cash and bank balances-to-total assets, *ROA* is the return on assets, *TURNOVER* is the ratio of average trading volumes-to-total number of shares outstanding. *PROP*, *IOW*, and *IOP* are as institutional ownership proportion, institutional ownership proportion volatility and institutional ownership persistence, respectively. ***Significant at 1 percent level

Table IV.
Panel fixed-effect
regressions of
dividend payout
ratio and dividend-
to-asset ratio

5.2 Comparing institutional ownership between payers and propensity-matched nonpayers

In the following sections, we focus only on dividend paying firms, while non-dividend paying firms form a control group. We break the sample into two, i.e., dividend and non-dividend paying firms. For each dividend paying firm, we select a firm from the non-dividend paying sample with the closest propensity score using Equation (9). We then compare the proportion, volatility and persistence of institutional ownerships between the dividend paying and the propensity-matched non-dividend paying samples. We perform the analysis for the overall sample of institutional investors as well as by subsamples, i.e., banks (i.e. *INV1*), insurance companies (*INV2*), investment companies and their managers (*INV3*), independent investment advisors (*INV4*), and all others (*INV5*), respectively. We present our findings in Table V.

Irrespective of the classification of the type of the institutional investor, the mean values of the proportion of institutional shareholdings (*PROP*) and the institutional ownership persistence (*IOP*) variable are significantly higher for payers than nonpayers. On the other hand, the measure of institutional ownership volatility (*IOW*) is significantly lower amongst payers compared to nonpayers.

5.3 The effects of pressure-sensitive vs pressure-insensitive investors on dividends

We repeat the analysis of Table IV using matched-firm adjusted values (i.e. we subtract the matched-firm nonpayer value from that of the dividend paying firm). Furthermore, we include the stability measure by ownership type (i.e. *INV1* and *INV5*) to see if the relationship depends

Institutional ownership variables	Dividend paying firms (1)	All non-dividend paying firms (2)	Propensity-match non-dividend paying firms (3)	(1)-(2)	<i>t</i> -Statistics	(1)-(3)	<i>t</i> -Statistics
<i>PROP</i>	0.214	0.114	0.210	0.099	84.33***	0.004	2.40***
<i>PROP1</i>	0.035	0.013	0.028	0.023	113.3***	0.008	31.96***
<i>PROP2</i>	0.010	0.004	0.009	0.006	89.28***	0.001	14.51***
<i>PROP3</i>	0.013	0.006	0.012	0.007	63.52***	0.001	7.84***
<i>PROP4</i>	0.061	0.032	0.059	0.029	79.82***	0.002	3.62***
<i>PROP5</i>	0.099	0.059	0.091	0.040	43.18***	0.008	-8.54***
<i>IOV</i>	0.406	0.427	0.425	-0.021	-7.13***	-0.019	-5.59***
<i>IOV1</i>	0.257	0.300	0.304	-0.043	-16.93***	-0.004	-1.30
<i>IOV2</i>	0.190	0.245	0.289	-0.055	-24.12***	-0.044	-15.23***
<i>IOV3</i>	0.156	0.242	0.235	-0.086	-36.38***	0.007	2.53***
<i>IOV4</i>	0.350	0.376	0.394	-0.026	-9.25***	-0.018	-5.66***
<i>IOV5</i>	0.289	0.249	0.271	0.040	17.21***	-0.023	-8.70***
<i>IOP</i>	1.553	0.901	1.265	0.651	79.97***	0.288	30.21***
<i>IOP1</i>	1.263	0.578	0.979	0.685	101.43***	0.285	35.47***
<i>IOP2</i>	0.898	0.294	0.683	0.604	103.06***	0.216	30.55***
<i>IOP3</i>	1.118	0.447	0.938	0.671	84.49***	0.180	18.50***
<i>IOP4</i>	1.310	0.730	1.118	0.580	72.13***	0.191	19.97***
<i>IOP5</i>	1.286	0.661	0.982	0.625	75.88***	0.303	31.45***

Notes: This table compares and contrasts the institutional ownership proportion, volatility and persistence between the dividend paying firms and non-dividend paying firms and propensity-matched non-dividend paying firms. Propensity-matched non-dividend paying firms are non-dividend paying firms with the closest predicted probability of paying dividend as the actual dividend paying firms, whereby the predicted probability of paying dividend is derived from model 2 of Table III. We classify institutional owners into five groups based upon the classification of Thomson Reuter, including 1 = bank, 2 = insurance company, 3 = investment companies and their managers, 4 = independent investment advisor, 5 = all others. *PROP* is the institutional ownership proportion. *PROP1*, *PROP2*, *PROP3*, *PROP4*, and *PROP5* are the ownership proportion of institutional owner types 1-5, respectively. *IOV* is the institutional ownership volatility. *IOV1*, *IOV2*, *IOV3*, *IOV4*, and *IOV5* are the ownership volatility of institutional owner types 1-5, respectively. *IOP* is the institutional ownership persistence. *IOP1*, *IOP2*, *IOP3*, *IOP4*, and *IOP5* are the ownership persistence of institutional owner types 1-5, respectively. ***Significant at 1 percent level

Table V.
Comparisons of institutional ownership between dividend paying firms and propensity-matched non-dividend paying firms

on the type of the institutional owner. We present our findings in Table VI. The analysis is restricted to dividend paying firms. The dependent variable is *DIVEARN*.

In Model 1, the variable *IOP* is positive and significant suggesting that the dividend payout ratio is directly related to the persistence of the institutional shareholdings. In Models 2-6, we present the findings based on the *IOPs* of *INV1*, *INV2*, *INV3*, *INV4*, and *INV5*, respectively. We observe that the same relationship between dividend payout and *IOP* exists in each model, except that the coefficient is not significant for *INV3* and *INV4*, which represent investment companies and independent investment advisors, respectively. They are pressure-insensitive investors and can affect managerial decisions better than pressure-sensitive investors (e.g. banks (*INV1*) and insurance companies (*INV2*)). The substitution hypothesis suggests that the presence of pressure-insensitive institutional investors and dividend payment act as substitute mechanisms to discipline management and thus the presence of these investors do not require the incumbent firms to pay dividend. It would support the findings of the statistically insignificant coefficients of *INV3IOP* and *INV4IOP*.

5.4 Institutional ownership stability and dividend payout stability

In this section, we test how volatility in the dividend payments is related to institutional ownership stability amongst dividend paying firms. To measure the volatility in dividend

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	0.030 (21.657)***	0.030 (21.039)***	0.030 (22.220)***	0.030 (21.881)***	0.030 (21.740)***	0.030 (21.784)***
Adj. <i>ln</i> (<i>MKCAP</i>)	-0.032 (-2.407)**	-0.031 (-2.322)**	-0.034 (-2.511)**	-0.033 (-2.434)**	-0.033 (-2.439)**	-0.034 (-2.481)**
Adj. <i>MKBK</i>	0.087 (7.201)***	0.086 (7.102)***	0.086 (7.183)***	0.087 (7.221)***	0.087 (7.205)***	0.087 (7.202)***
Adj. <i>SALEGROWTH</i>	-0.023 (-3.922)***	-0.023 (-3.860)***	-0.023 (-3.794)***	-0.023 (-3.891)***	-0.023 (-3.896)***	-0.022 (-3.757)***
Adj. <i>SYSTEMATIC</i>	-0.016 (-2.306)**	-0.015 (-2.288)**	-0.016 (-2.307)**	-0.016 (-2.286)**	-0.016 (-2.284)**	-0.016 (-2.376)**
Adj. <i>IDIOSYNCRATIC</i>	-0.028 (-4.046)***	-0.028 (-4.055)***	-0.028 (-4.028)***	-0.028 (-4.018)***	-0.028 (-4.032)***	-0.028 (-4.008)***
Adj. <i>RETOTE</i>	0.003 (0.237)	0.002 (0.131)	0.003 (0.253)	0.004 (0.318)	0.003 (0.288)	0.002 (0.134)
Adj. <i>TEIOTA</i>	-0.022 (-1.589)	-0.021 (-1.567)	-0.022 (-1.595)	-0.022 (-1.587)	-0.022 (-1.582)	-0.021 (-1.569)
Adj. <i>CASH</i>	0.111 (7.712)***	0.111 (7.719)***	0.111 (7.721)***	0.111 (7.704)***	0.111 (7.705)***	0.112 (7.746)***
Adj. <i>ROE</i>	0.188 (14.083)***	0.189 (14.142)***	0.189 (14.109)***	0.188 (14.060)***	0.188 (14.083)***	0.189 (14.112)***
Adj. <i>TURNOVER</i>	-0.066 (-5.309)***	-0.069 (-5.463)***	-0.070 (-5.604)***	-0.066 (-5.217)***	-0.066 (-5.288)***	-0.068 (-5.249)***
<i>INVMILLS</i>	-0.069 (-5.460)***	-0.068 (-5.378)***	-0.067 (-5.357)***	-0.070 (-5.533)***	-0.070 (-5.498)***	-0.067 (-5.296)***
Adj. <i>IOF</i>	0.013 (2.106)**	0.024 (3.046)***				
Adj. <i>IOF1</i>						
Adj. <i>IOF2</i>			0.021 (2.723)***	0.004 (0.514)	0.008 (1.288)	0.032 (4.286)***
Adj. <i>IOF3</i>						0.103
Adj. <i>IOF4</i>						Yes
Adj. <i>IOF5</i>						34,919
Overall <i>R</i> ²	0.102	0.103	0.103	0.102	0.102	0.102
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
<i>n</i>	34,919	34,817	34,919	34,919	34,919	34,919

Notes: This table reports the results from the panel fixed-effect regressions of the dividend payout ratio on the persistence of the ownership of the five types of institutional owners. The analyses in this table apply only to dividend paying firms. The dependent variables are the dividend payout ratio. We classify institutional owners into five groups based upon the classification of Thomson Reuter, including 1 = bank, 2 = insurance company, 3 = investment companies and their managers, 4 = independent investment advisor, 5 = all others. All the independent variables are the differences in the variable value of a dividend paying firm and that of a propensity-matched non-dividend paying firm as explained in Table V. *MKCAP* is the firm's market capitalization, *MKBK* is the firm market-to-book ratio, *SALEGROWTH* represent the percentage increase in sales, *SYSTEMATIC* is the standard deviation of the predicted daily returns using the Fama and French (1993) three-factor model, *IDIOSYNCRATIC* refers to the standard deviation of the residuals from the three-factor model, *RETOTE* represents the ratio of retained earnings-to-total equity, *TEIOTA* represents the ratio of total equity-to-total assets, *CASH* is the ratio of cash and bank balances-to-total assets, *ROA* is the return on assets, *TURNOVER* is the ratio of average trading volumes-to-total number of shares outstanding. *INVMILLS* is the inverse Mill's ratio. *PROF*, *IOV*, and *IOF* are as institutional ownership proportion, institutional ownership proportion volatility and institutional ownership persistence, respectively. **, ***Significant at 5, and 1 percent levels, respectively

Table VI.
Dividend payout level
and institutional
ownership persistence
by type for dividend
paying firms

payments, we compute the five-year rolling standard deviation of the *DIV/EARN* ratio. We split the sample into two, i.e., low volatility vs high volatility based on the sample mean, and we compare and contrast *PROP*, *IOV*, and *IOP* between the two (Table VII).

The mean and median values of *PROP* and *IOP* are higher in the subsample of firms with low volatility in dividend payout, and they are lower in the subsample of firms with high volatility in dividend payout (both mean and median values of the difference in *PROP* and *IOP* are highly significant). Thus, institutional owners prefer firms that exhibit low volatility in dividend payout. On the other hand, *IOV* and volatility in *DIV/EARN* are directly related. For instance, the mean and median values of *IOV* are higher (significant at the 1 percent level) in the subsample of firms with high volatility in the dividend payout ratio. The results are robust to the various classifications of the institutional investors.

We perform a multiple regression on the volatility of the dividend paying firms' *DIV/EARN* ratios and present our findings in Table VIII. In Panel A, we include all institutional owners. We find that *PROP* is inversely related to the standard deviation in the dividend payout ratio while *IOV* is positively related to the ratio. The coefficient of *PROP* is positive and highly significant. The coefficient of *IOV* is negative and significant at the 0.01 level. The results suggest that institutional investors avoid firms with volatile dividend payments and there is a high turnover in the proportions of the shares held by institutional investors at these firms.

In Model 2, the variable *IOP* is negative and significant suggesting that volatility in the dividend payout ratio is inversely related to the persistence of the institutional shareholdings.

Institutional ownership variables	Low (%)	High (%)	High-Low (%)	t-Statistics	Wilcoxon-Statistics
<i>PROP</i>	17.263	15.497	-1.766	-7.73***	-39.97***
<i>PROP1</i>	17.420	15.371	-2.049	-8.96***	-42.75***
<i>PROP2</i>	17.867	15.209	-2.658	-11.44***	-50.01***
<i>PROP3</i>	17.928	15.279	-2.649	-11.24***	-54.48***
<i>PROP4</i>	17.315	15.458	-1.857	-8.12***	-41.81***
<i>PROP5</i>	17.167	15.643	-1.524	-6.64***	-39.47***
<i>IOV</i>	15.723	17.013	1.290	5.65***	35.18***
<i>IOV1</i>	14.925	18.265	3.339	14.30***	55.73***
<i>IOV2</i>	15.236	18.910	3.674	14.35***	65.22***
<i>IOV3</i>	15.554	18.100	2.545	10.17***	50.56***
<i>IOV4</i>	15.090	17.995	2.905	12.50***	50.25***
<i>IOV5</i>	15.763	17.298	1.535	6.45***	29.43***
<i>IOP</i>	17.504	15.278	-2.226	-9.77***	-46.08***
<i>IOP1</i>	18.273	14.919	-3.354	-14.36***	-55.96***
<i>IOP2</i>	18.910	15.236	-3.674	-14.35***	-65.22***
<i>IOP3</i>	18.100	15.554	-2.545	-10.17***	-56.57***
<i>IOP4</i>	18.172	14.958	-3.214	-13.82***	-54.78***
<i>IOP5</i>	17.781	15.475	-2.306	-19.81***	-43.19***

Notes: This table compares and contrasts the dividend payout volatility between the groups of firms with higher institutional ownership proportion (*PROP*), institutional ownership volatility (*IOV*), and institutional ownership persistence (*IOP*), alternatively, and the groups with lower values of the three alternative institutional ownership variables. Dividend payout volatility is measured as the rolling five-year standard deviation of the dividend payout ratio of the firms. We classify institutional owners into five groups based upon the classification of Thomson Reuter, including 1 = bank, 2 = insurance company, 3 = investment companies and their managers, 4 = independent investment advisor, 5 = all others. *PROP* is the institutional ownership proportion. *PROP1*, *PROP2*, *PROP3*, *PROP4*, and *PROP5* are the ownership proportion of institutional owner types 1-5, respectively. *IOV* is the institutional ownership volatility. *IOV1*, *IOV2*, *IOV3*, *IOV4*, and *IOV5* are the ownership volatility of institutional owner types 1-5, respectively. *IOP* is the institutional ownership persistence. *IOP1*, *IOP2*, *IOP3*, *IOP4*, and *IOP5* are the ownership persistence of institutional owner types 1-5, respectively. ***Significant at 1 percent level

Table VII.
Dividend payout
volatility and
institutional
ownership volatility

Variables	Panel A – all institutional owners					Panel B – by institutional owner types				
	Model 1	Model 2	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6		
Constant	2.9 (5.904)***	3.317 (11.094)***	1.056 (3.482)***	1.042 (3.721)***	1.043 (2.501)**	1.039 (2.412)**	1.048 (2.568)**	1.59 (2.696)***		
Adj. <i>ln</i> (<i>MKCAP</i>)	0.078 (8.625)***	0.040 (5.252)***	-0.063 (-4.064)***	-0.059 (-3.782)***	-0.049 (-2.874)***	-0.054 (-3.443)***	-0.056 (-3.609)***	-0.056 (-3.553)***		
Adj. <i>MKBK</i>	0.005 (0.705)	0.006 (0.880)	0.036 (2.027)**	0.036 (2.040)**	0.036 (2.010)**	0.036 (2.024)**	0.036 (2.032)**	0.036 (2.018)**		
Adj. <i>SALEGROWTH</i>	-0.019 (-5.880)***	-0.016 (-4.938)***	-0.008 (-1.039)	-0.010 (-1.250)	-0.010 (-1.225)	-0.009 (-1.158)	-0.009 (-1.090)	-0.010 (-1.173)		
Adj. <i>SYSTEMATIC</i>	-0.001 (-0.848)	-0.001 (-0.676)	-0.010 (-1.607)	-0.010 (-1.604)	-0.009 (-1.553)	-0.010 (-1.587)	-0.010 (-1.616)	-0.009 (-1.549)		
Adj. <i>IDIOSYNCRATIC</i>	-0.028 (-4.751)***	-0.026 (-4.378)***	0.015 (1.164)	0.012 (0.939)	0.012 (0.917)	0.012 (0.949)	0.013 (1.021)	0.013 (1.017)		
Adj. <i>RETOTEA</i>	-0.034 (-4.954)***	-0.023 (-4.811)***	0.114 (3.506)***	0.113 (3.482)***	0.114 (3.508)***	0.114 (3.496)***	0.114 (3.520)***	0.113 (3.496)***		
Adj. <i>RETOTA</i>	0.028 (2.982)***	0.027 (2.899)***	0.041 (2.205)**	0.041 (2.179)**	0.042 (2.245)**	0.043 (2.272)**	0.043 (2.273)**	0.042 (2.244)**		
Adj. <i>CASH</i>	0.015 (2.350)**	0.020 (3.002)***	0.088 (4.980)***	0.087 (4.927)***	0.087 (4.902)***	0.087 (4.924)***	0.087 (4.944)***	0.088 (4.941)***		
Adj. <i>ROE</i>	-0.014 (-1.491)	-0.013 (-1.393)	0.056 (2.271)**	0.056 (2.250)**	0.056 (2.250)**	0.055 (2.228)**	0.056 (2.255)**	0.056 (2.271)**		
Adj. <i>TURNOVER</i>	-0.040 (-6.428)***	-0.049 (-7.862)***	-0.033 (-2.610)***	-0.032 (-2.508)**	-0.031 (-2.421)**	-0.031 (-2.409)**	-0.033 (-2.588)***	-0.033 (-2.581)***		
<i>INVMILLS</i>			-0.060 (-3.260)***	-0.059 (-3.122)***	-0.052 (-2.816)***	-0.053 (-2.808)***	-0.052 (-2.812)***	-0.056 (-2.946)***		
Adj. <i>IOP</i>	-0.074 (-9.170)***									
Adj. <i>IOP</i>	0.020 (3.291)***									
Adj. <i>IOP1</i>			-0.024 (-3.978)***	-0.040 (-4.869)***	-0.021 (-2.220)**	-0.016 (-1.612)	-0.010 (-1.486)	-0.027 (-3.333)***		
Adj. <i>IOP2</i>								0.0633		
Adj. <i>IOP3</i>								33,965		
Adj. <i>IOP4</i>										
Adj. <i>IOP5</i>										
Overall <i>R</i> ²	0.0301	0.0303	0.0632	0.0641	0.0630	0.0629	0.0628			
<i>n</i>	33,965	33,965	33,965	33,965	33,965	33,965	33,965			

Notes: This table reports the results from the panel fixed-effect regressions of the dividend payout volatility on the persistence of the five types of institutional owners. The analyses in this table apply only to dividend paying firms. The dependent variables are the dividend payout volatility. We classify institutional owners into five groups based upon the classification of Thomson Reuter, including 1 = bank, 2 = insurance company, 3 = investment companies and their managers, 4 = independent investment advisor, 5 = all others. All the independent variables are the differences in the variable value of a dividend paying firm and that of a propensity-matched non-dividend paying firm as explained in Table V. *MKCAP* is the firm's market capitalization, *MKBK* is the firm market-to-book ratio, *SALEGROWTH* represent the percentage increase in sales, *SYSTEMATIC* is the standard deviation of the predicted daily returns using the Fama and French (1993) three-factor model, *IDIOSYNCRATIC* refers to the standard deviation of the residuals from the three-factor model, *RETOTEA* represents the ratio of retained earnings-to-total equity, *RETOTA* represents the ratio of total equity-to-total assets, *CASH* is the ratio of cash and bank balances-to-total assets, *ROA* is the return on assets, *TURNOVER* is the ratio of average trading volumes-to-total number of shares outstanding. *INVMILLS* is the inverse Mill's ratio. *PROP*, *IOP*, and *IOP* are as institutional ownership proportion, institutional ownership proportion volatility, and institutional ownership persistence, respectively. **, ***Significant at 5, and 1 percent levels, respectively

Table VIII.
Dividend payout volatility and institutional ownership persistence by type for dividend paying firms

In Panel B, we present the findings based on the types of institutional owners. We observe that the same relationship between $DIV/EARN$ volatility and IOP exists in each model, except that the coefficient is not significant for $INV3$ and $INV4$, which represent investment companies and independent investment advisors, respectively. Consistent with the substitution hypothesis, pressure-insensitive investors ($INV3$ and $INV4$) can force disciplinary actions on managers without having recourse to dividends.

6. Conclusion

We study the link between the stability of institutional ownership and dividend payments at US corporations. We consistently find that persistence (defined as mean over standard deviation) in the quarterly proportions of shares held by institutional investors is positively associated with dividend paying firms, higher dividend payout ratios, and lower volatility in the dividend payout ratios. Thus, companies that pay stable dividend over time tend to attract long-term institutional investors.

The likelihood of a firm paying dividends is positively linked to the proportion and stability of the shares held by the institutional investors and is inversely linked to the volatility in the institutional shareholdings. The size of the shareholding is not linked to the amount of dividend paid. Instead, volatility is inversely linked to the firm's dividend payout ratio while persistence is positively linked to it. The substitution effect between the payment of dividend and the presence of institutional investors only holds for pressure-insensitive investors (i.e. investment companies and advisors). We find no significant relationship between either the dividend payout ratio or the volatility in that ratio and the persistence in the shareholdings of pressure-insensitive investors.

We document evidence that institutional shareholders prefer less volatility in the dividend payout ratios. Both the size and persistence of institutional shareholdings are lower amongst firms with high volatility in dividend payout ratio. We observe less stability in the proportions of shares held by institutional investors amongst firms with above average volatility in the dividend payout ratio.

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