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ABSTRACT

Can Buybacks Be A Product of Shorter Shareholder Horizons?*

We examine how shareholder investment horizons influence firms' payout decisions. We find that US firms held by short-term institutional investors have a higher propensity to buybacks shares instead of using dividends. Firm managers seem to respond to the preferred payout policy of investors in their shareholder base. Share buybacks are used by if managers want to appease short-term oriented shareholders, while firms pay dividends if their stock is mostly held by long-term investors who have less need to liquidate their investment and may have a better tax treatment with dividends. We document two effects of investor pressure: for firms initiating payouts through a share buyback we find that the market reaction is lower the more short-term investors are holding the firm's stock, because such payout decisions are less well monitored; for firms that have already a payout policy at present, the market reacts more positively (and only temporarily) to a buyback in line with investor catering effects. Our findings help explain some of the puzzling recent findings relating the rise in institutional investment to a higher use of share buybacks.

JEL Classification: G32 and G35
Keywords: institutional investors, investment horizon, investor catering, payout policy, repurchases, shareholder heterogeneity and short-termism

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1. Introduction

Over the last two decades, share repurchase activity has experienced an extraordinary growth. Repurchases are now an important form of payout of U.S. firms, while the proportion of firms paying dividends has fallen [Fama and French (2001), Grullon and Michaely (2002)]. These major shifts in payout policy have occurred concurrently with the rise of institutional ownership. Institutional investors have nearly doubled their equity holdings and now represent over 50% of firm's total equity (Gompers and Metrick (2001)). These sizeable shifts in ownership structure have changed the characteristics of the 'representative' investor.

Recent research has focused on the impact of institutional investors on corporate payout policies. In particular, Grinstein and Michaely (2004) find a puzzlingly positive relation between share repurchases and institutional holdings. This runs contrary to the common belief that institutional holdings are associated with firms paying more dividends and with better governance, due to the better monitoring abilities and informational advantages of this investor group (Allen, Bernardo and Welch (2000)).

While institutional investors, as a block, hold a majority of stocks of the typical firm, they constitute a heterogeneous group. One investor characteristic that is likely to impact corporate policies is investment horizon, i.e. the length of time an investor is expected to remain a shareholder. However, this is a characteristic that is likely to vary across institutions. Some institutional money managers behave in a short-term way (acting as "speculators"), while others are more long-term oriented (or "activists"). For example, 'activist' institutions such as CALPERS and others play an increasing monitoring role on firm operations (Gillan and Starks (2000)). The average investment horizon has changed over time. For example, Bogle (2003) reports that mutual fund managers are currently holding the stock in their portfolio for an average holding period of approximately one year, versus six years in the early seventies.[1] If institutions differ in terms of their investment horizon, the predominant investment horizon of the set of institutions holding a particular firm's stock becomes an important factor for firm policies.

In this paper, we study how the investment horizon of the shareholders of a firm affects its payout policy. We propose two hypotheses. The first hypothesis ("investor monitoring hypothesis") posits that the firm's choice between a share buyback and dividend distribution is determined by the extent of investor monitoring that corporate managers are interested in being subject to. Managers realize that investors with different investment horizon have different preferences. Short-term investors who expect to liquidate their holdings soon have a preference for share buybacks because of transaction costs, as the firm's buy orders will buffer the impact of investor's selling pressure. Long-

[1] The short-term nature of institutional investors is also stressed in Stein (1989), Porter (1992), Froot, Perold and Stein (1992). See Gillan and Starks (2000) and Karpoff (1999) for a survey on "investor activism".

term investors, instead, may have tax advantages in receiving dividends and/or may follow more "prudent" policies that induce them to prefer dividend-paying stocks. Managers are also aware that investors with different investment horizon have different incentives and ability to monitor them. Short-term investors engage in less monitoring, as they have less time to reap the benefits, and are potentially less informed on corporate affairs. Therefore, managers interested in keeping long-term oriented investors with monitoring abilities pay dividends (Allen, Bernardo and Welch, (2000)). In contrast, managers who want to appease short-term oriented shareholders resort to buybacks. This suggests a positive relation between the presence of short-term investors and the use of share buybacks as a distribution method.

Under this first working hypothesis the horizon of the predominant shareholder also has implications for the way a share buyback decision affects corporate value. A buyback can destroy value if the impatience of short-term shareholders pushes the firm to buy back shares even when such decision is not economically optimal. Alternatively, a buyback may be the optimal economic decision if no other better investment opportunities exist. Long-term investors, being better at actively monitoring, can ensure that a dollar spent in a repurchase program would not otherwise have been better allocated to fund a new investment project. This implies that there should be a lower market reaction to an announcement of a repurchase by a firm held by short-term institutions.

Our second hypothesis ("investor catering hypothesis") posits that firm managers choose to buyback shares simply to cater to the preference of short-term investors. Investors play here a more passive role in payout decisions. As in the previous hypothesis, transaction costs, tax reasons and investment policies make short-term investors prefer buybacks to dividends. This delivers the same prediction that the presence of short-term investors leads to a greater use of share buybacks. Differently from the first hypothesis, however, we do not expect that investor pressures for one payout method (i.e. buybacks or for cash dividends) produce any significant impact on the firm's fundamental value. We expect only a price effect from tapping into different clienteles. Indeed, a buyback should produce a short-run positive price reaction if it matches the preferred policy of investors, i.e. if investors are short-term. That is, there should be a higher market reaction to an announcement of a repurchase by a firm held by short-term institutions. This allows us to separate empirically between the two hypotheses.

The underlying null hypothesis is that in perfect capital markets the investment horizon of the shareholders should not matter as the firm's payout choice can be undone by its shareholders through "home-made dividends" and arbitrage makes payout policy irrelevant for stock prices (Miller and Modigliani (1961)). Deviations from the assumptions of market efficiency, limits to arbitrage or asymmetric information between a firm and the market make shareholders' investment horizon potentially affect a firm's payout policy.

We investigate empirically these predictions using a broad sample of U.S. firms for the period 1984 to 2000, focusing on their payout policy decisions, namely open market repurchases and dividend increase announcements. The availability of data on institutional holdings provides a unique opportunity to infer the investment horizon from actual portfolio behavior. We characterize investors in terms of their investment horizon by looking at the average turnover level of their portfolio positions, following Gaspar, Massa and Matos (2004). Short-term investors are defined as those exhibiting a high portfolio turnover (i.e. a high volume of buying and selling of stocks relative to their average portfolio holdings). For each firm, we calculate *Investor Turnover,* which is the average portfolio turnover rate across all the institutional investors holding a firm's stock. We use this measure to cross-sectionally study how the average investment horizon of the firms' particular institutional shareholders affects the choice of the payout policy and the market reaction to such a policy.

We find that firms held by short-term investors are more likely to repurchase shares relative to increasing cash dividends. The effect is economically significant: if institutional investors hold on to their investments for just 5 months less than the average of 24 months in our sample (i.e. one standard deviation in *Investor Turnover*), the probability of the firm repurchasing stock increases by 6%. If we analyze total annual values of dividends and share repurchases, we also find that shorter investment horizons (i.e. higher *Investor Turnover*) affect positively the share of repurchases in total payouts. These findings are consistent with both of our working hypotheses.

In the second part of our study we concentrate on share buyback announcements and analyze how the stock price reaction to announcements depends on shareholder investment horizons. We condition on the degree of asymmetric information between the firm and the investors, higher in the case of firms initiating their payouts and lower in the case of firms that have a payout program in place. For firms initiating their payouts, we find that the market reaction to a stock repurchase announcement *increases* with investors' horizon (higher *Investor Turnover*). Given the high asymmetry of information, the market assigns a positive value to the better monitoring ability of the long-term investors. Therefore, it reacts positively to announcements by firms held by long-term investors, as such payout decisions are less likely to destroy value. This supports the predictions of the "investor monitoring hypothesis". However, for firms that have a payout program in place and for which the current distribution announcement is an incremental one, the market reaction *decreases* with investors' horizon. This seems to support the notion that the market reaction reflects a purely quantitative effect of catering to short term investors needs. This is in line with the predicted effects of the "investor catering hypothesis". So we conclude that the hypothesis that applies to each situation seems to depend on the degree of asymmetric information embedded in the distribution announcement.

This interpretation is also confirmed by the evidence on the post-announcement price drifts of repurchasing firms. Given that the effects of investor monitoring take place over time, the market will take some time to correctly price the implications of a share buyback. Indeed, in the case of firms

initiating payouts, we find that the post-announcement returns for repurchasing firms held by long-term institutions are indeed higher than the returns from firms held by short-term institutions. However, in the case of firms increasing payouts, for which the catering effects are expected to dominate, there is no discernible effect on post-announcement returns.

The results of our study deliver two important implications. First, the positive association between institutional holdings and share repurchases found by Grinstein and Michaely (2004) may not necessarily disprove the Allen, Bernardo and Welch (2000) theory that firms use dividends to reward monitoring institutions. If we isolate the long-term institutions that are more likely to monitor, we find indeed that a higher presence of long-term institutions is associated with firms using more dividends. Share buybacks are more used if short-term investors are present. And the fact that we observe lower market returns for repurchasing firms initiating payouts that have short-term shareholders also supports the predictions of Allen, Bernardo and Welch (2000) that long-term institutions have better monitoring skills or information.

Second, our study adds to a growing literature on how investor characteristics affect corporate policies and stock prices. Gaspar, Massa and Matos (2004) show how corporate control transactions are affected by the investment horizon of the institutions holding them. Namely, their study finds that firms held by long-term investors tend to engage in better acquisitions, while short-term shareholders provide more leeway for firm managers to overbid and carry out value-reducing acquisitions. Froot, Perold and Stein (1992) also hint at the role played by investor horizons on short-term managerial behavior, while Bushee (1998) shows that firms held by a larger proportion of transient institutional investors tend to reduce R&D expenses. Hotchkiss and Strickland (2003) find that ownership composition affects stock price behavior around the release of corporate information.

Ownership characteristics have not been a major focus of the extensive literature on payout policy with most research being focused on firm characteristics to understand the choice of the payout form (see Allen and Michaely (2003) for a detailed survey). Grinstein and Michaely (2004) constitute one of the few studies to have looked at the impact of institutional investors on payout policies. Another recent study is that of Amihud and Li (2003) which provides evidence of declining information content of dividend announcements and explain it in terms of higher percentage of institutional holdings in announcing firms. Their findings indicate that institutions are more informed than other investors. Hotchkiss and Lawrence (2003) provide evidence in favor of dividend clienteles within institutional investors. Bagwell (1992) analyses shareholder heterogeneity and documents that firms face upward sloping supply curves when repurchasing their stock.

Lastly, our paper builds on the theories that explain heterogeneity of investment horizons across institutional investors. The first source of variation across institutions is differences in the

demographics and liquidity needs of the final owners of the institutional portfolios. Employee defined-contribution plans are usually long-term while retail open-ended mutual funds are more short-term oriented because of frequent investor outflows (Edelen (1999)). A second source of variation across institutions is the extent to which the agency problems of delegated asset management are resolved. Investment horizons may be short-term because of the inability to continuously gather fresh capital to implement long-term strategies (Shleifer and Vishny (1997)) or because imperfect knowledge about the portfolio manager's ability may create an incentive for the manager to trade on short-term information (Allen and Gorton (1993), Scharfstein and Stein (1990)). Dow and Gorton (1997) argue that money managers, who otherwise would not trade, do so to show activity to their employers.

The remainder of the paper is organized as follows. Section 2 lays out our main testable hypothesis. Section 3 describes the data and the variables we use. Section 4 analyzes the impact of investor horizon on the choice of payout policy. Section 5 investigates whether the type of shareholding structure affects the market reaction to repurchase announcements by firms. A brief conclusion follows.

2. Main Hypotheses and Testable Propositions

In this section we discuss how the choice of a firm's payout policy is influenced by the investment horizon of its shareholders. Our two working hypotheses are analyzed against a Null hypothesis (H0) of absence of any effect of investor horizons on the payout policy of the firm. This is based on the irrelevancy result of Miller and Modigliani (1961) regarding payout policy for the case of perfect capital markets. If investors can produce "home-made dividends" by selling part of their equity holdings with no value-loss, then investors should be indifferent with regard to which form of payout a firm uses.

2.1 Buybacks and Monitoring Institutions (H1)

Our first hypothesis ("monitoring hypothesis") links share buybacks to managers' attitude towards shareholders' monitoring. Share buybacks are used if managers want to keep and appease short-term oriented shareholders (ST) who, by having low incentives to interfere in corporate affairs, give managers more leeway. Managers that are under the close inspection of long-term (LT) monitors choose instead to payout through dividends.

This hypothesis is based on two premises. The first is that institutional investors with different holding horizons have unequal incentives to devote resources to monitoring. Long-term (LT) investors

can afford to spend more resources in monitoring as they are more likely to remain shareholders long enough to reap the corresponding benefits. Additionally, LT investors, being there for the long run, are better informed to assess the firm's investment opportunities. The second premise is that investors with different holding horizons have divergent preferences over distribution methods. First, share buyback programs are appealing to ST investors because of transaction costs. ST investors expect to exit from the stock soon and care about the price at which they will do so. So the firm's decision to buyback its shares will help the ST investors to buffer the market impact of their selling pressure.[2] Second, LT investors may dislike stock repurchases for tax reasons. The longer holding period implies that LT investors are more likely to face a "capital gains overhang" if they sell their shares. Being "locked in" a stock, dividends may be a more appealing payout method for LT investors because it does not to force them to realize their capital gains.[3] Third, LT institutions are usually more prudent investors that exhibit a preference for stable stocks with a proved record of dividends.[4]

Allen, Bernardo and Welch (2000) theorize that firms pay dividends to attract institutional investors with monitoring abilities and who are not tax-disadvantaged by dividends. Firms signal to be of high value by paying dividends to informed institutions. The presence of these investors guarantees that firms will remain well run. In contrast, firms who do not wish (or cannot afford) the close inspection of informed institutions opt for share buybacks.

Unlike Allen, Bernardo and Welch (2000), who assume that all institutional investors possess good monitoring skills (as opposed to individual investors), we believe that these skills are mostly concentrated in long-term institutions. This is consistent with Grinstein and Michaely's (2004) argument that the low empirical support for Allen, Bernardo and Welch (2000) may be due to too much heterogeneity among institutions (and even among narrow institutional categories such as pension funds). By concentrating our predictions on investor horizons, instead of investor type, we hope to provide more power in the testing of such a model. Unlike Grinstein and Michaely (2004), we focus on how the use of share buybacks may stem from shareholder composition, and hence formulate our hypotheses around the buyback decision.

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[2] Based on institutions trade data, Chan and Lakonishok (1995) document a cost of "impatience" in that investors with short holding horizons (or equivalently, with high portfolio turnover rates) incur larger price impact and execution costs on their trades.

[3] Previous research has shown that capital gains on the profit an investor realizes when selling its stocks can induce investors to defer the sale of its position, effectively causing a "lock-in" effect. Stock selling decisions by institutional investors are shown to be negatively related to cumulative capital gains by Jin (2004). Ivkovic, Poterba and Weisbenner (2004) also find a strong lock-in effect in individual investors, which grows with the holding period of the investor because the chances of having a higher capital gain, and being subject to tax on it, are higher the more time an investor has held a stock.

[4] LT investors may be subject to institutional preferences for dividend streams as those imposed by 'prudent man' rules (Del Guercio (1996)) or constraints to cap their current expenses by the level of the dividend income that they get on their stock investments. We will control for investor institutional category in our tests below.

The previous considerations lead us to the following conjecture:

- **H1(a): The more a firm is held by short-term investors, the more likely it is that the firm will repurchase its stock, instead of paying dividends.**

The next question is whether shareholder pressure for a firm to repurchase its stock produces any value effects. We expect repurchase decisions to have different economic consequences depending on whether such actions are monitored by ST or LT investors.

We conjecture that the impatience of ST shareholders to liquidate their holdings pushes firms to buyback shares too often. This makes firms pay out cash even if the best action is to retain cash in the firm to exploit good investment opportunities. LT investors, on the other hand, can better assess the true value of the alternative uses of cash and whether the decision to buyback shares is value destroying. That is, we expect that LT investors should be associated with better decisions to distribute cash. This is in line with recent findings showing how the monitoring and informational advantage of LT investors influences investment decisions. Gaspar, Massa and Matos (2004), in the context of M&A transactions, have shown that firms held by LT investors tend to engage in better acquisitions, while ST shareholders provide more leeway for firm managers to overbid and carry out value-reducing acquisitions.

We therefore conjecture that the market reaction to repurchase announcements takes into account the different value implications depending on the investor type. The market interprets less positively repurchase announcements made by firms that are held by ST investors. In contrast, the market reacts more positively if the firm is monitored by LT investors.[5]

This leads to a second testable implication of the monitoring hypothesis:

- **H1(b): The stock price reaction to a repurchase announcement should be *less* positive for firms held by short-term investors than for firms held by long-term investors.**

[5] Interestingly, this implication is also found in the Lucas and McDonald (1998) signaling model of payout policy in the presence of shareholder heterogeneity in investment horizons. The authors find that the announcement of a share repurchase by a firm held by short-term investors should convey less positive information to the market. Repurchasing is a costly signal if the shareholders are long-term oriented, because they face a dilution cost if the current stock price is over-valued, while short-term investors would be more willing to have the firm buyback their shares in such an event.

Given that the market may take some time to learn the full value implications of a repurchase, there may be some lasting effects of monitoring from LT institutions that will be captured by the analysis of the long-run abnormal returns. We will analyze long-run returns in detail in section 5.2.

2.2 Buybacks and Investor Catering (H2)

An alternative hypothesis ("investor catering hypothesis") posits that the choice to repurchase stock is determined by just a pure attempt from managers to cater to the predominant type of investors in their shareholder base.[6] Investor horizons, however, do not influence the economic value of payout decisions. As in the previous hypothesis, considerable heterogeneity in investor preferences is assumed with respect to the best form of payout. Transaction costs and tax reasons lead ST investors to prefer share buybacks.

Under this catering hypothesis, however, institutions are not expected to exert substantial monitoring effects over payout decisions. Unlike the previous hypothesis, it is not direct monitoring that induces firms to choose the payout policy. Rather, we expect that the form of payout is influenced by the prevalent investor type as managers care about the stock price and this makes them willing to satisfy investor interests. Buybacks are announced to appease the ST investors, while dividend distributions are undertaken to appease LT shareholders.

This leads us to the following conjectured effect,

- **H2(a): The more a firm is held by short-term investors, the more likely it is that the firm will repurchase its stock, instead of paying dividends.**

This does not differ from H1(a). However, if the choice to repurchase is determined by just a pure attempt from managers to cater to the predominant type of investors in their shareholder base, the action, by itself, should not produce any significant firm value creation or destruction. The reason is that, unlike in the previous hypothesis (H1), here investors are not assumed to actively influence the economic impact of payout decisions. Share buybacks to cater to ST investors do not create or destroy more value than equivalent decisions under pressure from LT investors.

[6] In the analysis below we will control for the more general 'catering theory' of Baker and Wurgler (2003) that relates aggregate dividend policy to an overall market premium to 'dividend payers'. However, the main determinants of this premium are not pinned down and the authors speculate they might be related to either 'rational clientele' effects or fluctuations in a general 'investor sentiment'. Our identification of investor horizons as a driving force behind the form of payout may be related but we do not pursue this link in this paper.

Under the catering hypothesis, we expect only a price effect from tapping into different clienteles. The market should react more positively the better the match between a firm's action to repurchase and investor preferences. A share repurchase should boost a firm's stock price more if it has ST investors on board. LT investors, instead, will dislike this distribution and will push the price of a stock down, selling the stock and moving to dividend-paying stocks. So market prices react more positively to buybacks if ST investors are present and less so if LT investors are the predominant stockholders. We can therefore put forth the empirical prediction:

- **H2(b): The stock price reaction to a repurchase announcement should be *more* positive for firms held by short-term investors than for firms held by long-term investors.**

This differs from the conjectured effects in H1(b). Moreover, while, these investor clientele effects on market prices are expected to occur in a short event window, we have no reason to believe that there exist lasting permanent effects, unlike the long-run implications of the previous hypothesis. [7]

2.3 Further Discussion

Brenan and Thakor (1990) provide an alternative theory for how investor type affects the choice of payout policy. They suggest that adverse selection problems may lead uninformed investors to prefer dividends to repurchases. The reason is that uninformed investors are worse off with repurchases because informed investors can better select when to sell their stock in buybacks. That is, the informed investors will sell when the firm's stock is overvalued, but not when undervalued. If we assume that the short-term (ST) institutions as the less informed investor group, then firms held by ST investors are likely to use dividends as the preferred method of payment to shareholders. This would reverse the predictions of H1(a) and H2(a) above. Our tests will therefore allow us to discriminate also with respect to this hypothesis. However, while we can assume that LT investors are more informed, we find it less plausible that they would be actively selling in buybacks for the reasons argued in the two other hypotheses above. That is, LT institutions have lower liquidity needs, may face capital gain taxes and in general tend to prefer "prudent" stocks that pay dividends. We therefore believe this theory is less likely to deliver clear predictions with respect to how investment horizons can affect payout policy.

[7] As long as there are limits to arbitrage (Shleifer and Vishny (1997)), a categorization of stocks can generate significant price effects. Bagwell (1992) documents that firms face upward sloping curves when repurchasing their shares. Limited arbitrage effects have also been documented in other information-free events such as the S&P500 index additions (Shleifer(1986)).

3. Data And Empirical Testing Issues

3.1 Sample Construction

Our main data sources for payout policy are the CRSP-COMPUSTAT Merged Industrial database for the total payout dollar amounts by year for each firm, and two datasets for announcements of changes in payout policy: the Securities Data Corporation (SDC) Database for open market repurchase program announcements and CRSP Monthly Stocks for dividend announcements. Additionally, we obtain COMPUSTAT data on accounting variables for all companies, using the definitions used in Jaganathan et al (2000). A detailed description of these variables is reported in the captions of Table 1. Our analysis focuses on the period 1984-2000.

Our sample criteria are as follows. We collect data on US listed common stocks and exclude regulated utilities as well as financial firms. Following Ikenberry, Lakonishok and Vermaelen (1995), Grullon and Michaely (2002) and others we exclude the year 1987 for firm year observations and the last quarter of 1987 for announcement data, because of the exceptional nature of repurchases made after the October 87 crash. Our sample is composed of firms reporting positive payouts.[8] Moreover, we require that, for each firm-year, we have data on all our main explanatory variables. These criteria result in a total of 24,361 firm years, which constitutes the universe of our sample.

The main characteristics of the firms in our full sample are presented in Table 1 – Panel A. We take all open market repurchase announcements from the SDC database and collect the dollar value of repurchases from COMPUSTAT for only those years in which there was an announcement in SDC in that year or in one of the previous two years (Jagannathan et al. (2000)). Unless otherwise stated, all explanatory accounting variables are equal-weighted moving averages constructed from the values of the variables in the past three years. Panel B of Table 1 presents summary statistics for firms with announcements of payout increases in SDC (open market repurchases) and CRSP Monthly Stocks (dividend increase announcements). These constitute the set of events for most of the analysis in this paper. Following Amihud and Li (2003) we take only those dividend increases where the change in the dividend per share amount is at least 0.5%. The summary statistics for our accounting variables are comparable with the summary statistics reported in Jagannathan et al. (2000).

3.2 Institutional Holdings and Investor Turnover

Information on portfolio holdings of institutional investors is available from the CDA/Spectrum database, which consists of quarterly 13-F filings of qualified money managers to the United States Securities and Exchange Commission. CDA/Spectrum contains the holdings (i.e.,

[8] By a positive payout, we mean a positive repurchase, a dividend or both.

positions of more than 10,000 shares or US$200,000 in value) of all institutions with more than US$100 million dollars under discretionary management. This dataset provides for the last two decades all holdings of institutions managing other investor's assets like banks, insurance companies, mutual funds, investment advisers, endowments and pension funds. Gompers and Metrick (2001) provide a detailed analysis of this dataset.

Our analysis uses *Investor Turnover*, which measures the investment horizon of institutions holding stock in the firm prior to a distribution announcement (Gaspar, Massa and Matos (2004)). An institutional investor is 'short-term' if it has turned over its overall portfolio frequently in the past, and 'long-term' if it has held its stock positions unchanged for a considerable length of time. Having characterized each investor with positive holdings in a firm, we can then characterize the average investor 'on board' the event firms.

To calculate *Investor Turnover* we therefore follow a two-step procedure. First, we calculate each institutional investor's turnover rate as a measure of how frequently that investor rotates his positions on all stocks of his portfolio, for any given quarter. Denote by Q the set of companies held by investor i. Define the turnover rate of investor i at time t as

$$TR_{i,t} = \frac{\sum_{k=1}^{Q} \left| N_{k,i,t} P_{k,t} - N_{k,i,t-1} P_{k,t-1} - N_{k,i,t-1} \Delta P_{k,t-1} \right|}{\sum_{k=1}^{Q} \frac{N_{k,i,t} P_{k,t} + N_{k,i,t-1} P_{k,t-1}}{2}} \tag{1}$$

where $P_{k,t}$ and $N_{k,i,t}$ represent the price and the number of shares, respectively, of company k held by institutional investor i at quarter t. This definition follows the ones commonly used to assess overall portfolio rotation of mutual funds, as in Carhart (1997).[9] The quarter turnover rates are then averaged over the previous 4 quarters. This provides us with a more precise identification of which investors persistently turn over their portfolios.

As a second step, we calculate *Investor Turnover* for company k as the weighted average of the (time-averaged) turnover rates of all its institutional investors:

$$\text{Investor Turnover} = \sum_{i \in S} w_{k,i,t} \left(\frac{1}{4} \sum_{r=1}^{4} TR_{i,t-r-1} \right) \tag{2}$$

where S is the set of shareholders in company k, and $w_{k,i,t}$ as the weight of investor i in the total percentage held by institutional investors at quarter t in company k.

[9] Sometimes in the industry, 'portfolio turnover rates' are also known as 'churn rates', but these terms are the same for all our purposes.

Table 1 reports an average portfolio turnover rate of 25% in our sample. This figure means that around 12.5% of the portfolio is turned over in a quarter, or around 50% of the position is turned over in a given year.[10] One equivalent way to put it is that the median institutional investor is holding an average stock in his portfolio for a period of around 12/0.5=24 months (i.e. 2 years). It is important to note that *Investor Turnover* is defined at the portfolio level, and not based on turnover at the level of the stock of the company involved in a distribution event. This makes it less likely to be contaminated by information-based trading due to an approaching distribution announcement. Also this variable is measured at the end of the quarter immediately preceding the distribution announcement. This implies that it is constructed out-of-sample.

In our hypothesis section we assumed the investment horizon of shareholders as exogenously given. We tested this assumption by checking whether firms exhibit time-series changes in *Investor Turnover* in the quarters surrounding buyback announcements. We find no significant effects either in the quarters before or after.[11] Overall, investor turnover is stable around payout policy decisions. In section 4.2 we run additional tests on the relation between turnover changes and the use of repurchases.

4. Shareholder Horizons and the Choice Of Payout Policy

To study how the investment horizon of shareholders, proxied by the *Investor Turnover* variable, determines a firm's choice of its payout policy we start by analyzing how the share of repurchases in terms of total payouts is influenced by *Investor Turnover*, controlling for other explanatory variables. Then, as an alternative test, in section 4.3 we look at public announcements by firms of payout policy changes. We test whether shareholder horizons impacts a firm's choice to undertake a share buyback program instead of an increase in dividends.

4.1 Investor Turnover and the Ratio of Repurchases to Total Payout

We start by looking at the ratio of *Total Repurchases* to *Total Annual Payout* for the sample of COMPUSTAT firms with positive payouts (Fenn and Liang (2001)). In column (1) of Table 2, we estimate a Tobit regression of this ratio on *Investor Turnover* and a comprehensive set of variables

[10] Given that CDA/Spectrum has quarterly frequency, the estimates of turnover are naturally lower than those that would have been obtained if we had had data at a higher frequency. Note that, by construction, the range of the Investor Turnover variable is the interval [0,2]. When performing its calculation, we exclude throughout the sample investors who enter the Spectrum universe for the first time in the event quarter (for they would automatically have a maximum 'turnover rate' of 2). We also exclude from the procedure any stock of a company that has just entered the sample (for exactly the same reason).

[11] Results are available from the authors upon request.

included in previous studies.[12] The results show that *Investor Turnover* affects positively the share of repurchases. This provides first evidence that a higher proportion of short-term investors is associated with a higher recourse to buybacks in the distribution policy of a firm.

As an alternative test of our working hypotheses, we concentrate on *firms that are increasing their payouts*, that is, those firms that are either making a repurchase or increasing dividend per share (as in Jagannathan et al. (2000)). We estimate an alternative Tobit regression for the ratio of *Total Repurchases* to the *Increase in Total Payout.* The results are reported in column (4) of Table 2. We find that the coefficient on *Investor Turnover* is again positive and highly significant. This suggests that firms held by shareholders with shorter investment horizons (i.e. higher *Investor Turnover*) have a propensity to buy back their own shares, while long-term investors seem to influence firms to use more dividends.

These findings are consistent with both our working hypotheses H1 and H2.[13] It is important to also interpret the coefficients of the other explanatory variables in the regressions of Table 2. These are in line with the findings of previous literature (Fenn and Liang (2001) and Jagganathan *et al*. (2000)). The use of repurchases is found to be higher for smaller firms (smaller *Size*), with more volatile cash flow (higher *Standard Deviation of Operating Income*), with greater growth options (higher *Market-To-Book*) and with worse previous stock price performance (*Prior Stock Return*). Also, *Institutional Holdings* are positively associated with repurchases, which is consistent with the findings of Grinstein and Michaely (2004).

Specifications (2)-(3) and (5)-(6) of Table 2 also control for additional forces determining the composition of payout policy of firms, to test the robustness of the results above. The introduction of all these extra variables in Table 2 comes at a cost in terms of the number of observations for the regressions and a reduction of the period of analysis to 1992-2000, but our main results are left unchanged. *Investor Turnover* has a positive effect on the share of repurchases in both the *Total Payouts* [columns (2)-(3)] and in the *Increase in Payouts* [columns (5)-(6)] regressions. When significant, the coefficients of the additional control variables have the expected signs.

The first extra control variable is the *Tax Disadvantage of Dividends*, which measures the relative tax burden on dividends and capital gains for the terminal investor. This varies over the sample period and is an important factor in the repurchase/dividend choice of firms. Data is obtained

[12] The two-sided Tobit specification accommodates left- and right-censoring of the dependent variable and is appropriate since the share of repurchases is bounded between 0 and 1. However, using OLS regressions does not affect results in this section.

[13] These findings, however, would contradict the prediction of Brenan and Thakor (1990) as outlined in section 2.3.

from the NBER TAXSIM model. In Table 2 we see that the share of repurchases is higher at times when the *Tax Disadvantage of Dividends* is higher.

The second set of additional controls we include are the percentage of the firm's shares held by the different institutional classes of investment managers: *Category 1 (Banks)*, *Category 2 (Insurance Companies)*, *Category 3 (Mutual Funds)*, *Category 4 (Investment Advisors)* and *Category 5 (All Others*).[14] These variables control for the type of the institutional investors holding a stock. Indeed, one may argue that the *Investor Turnover* variable might simply be picking up the behavior of more 'aggressive' investors such as mutual funds and investment advisors. These variables allow us to confirm that *Investor Turnover* is not proxying for the effect of different institutional constraints that investors are subject to and tax-related rational clientele theories, unrelated to investment horizon. Using the ownership of banks, insurance companies and pension funds allows us to control for the relative weight of these sub-groups of investors, and check what is the additional explanatory power of shareholder horizons (captured by the *Investor Turnover* variable). In Table 2 we see that the share of repurchases is lower if firms are held by banks and insurance companies, and goes up with higher stakes of mutual funds and investment advisers, which may reflect dividend tax clientele theories and 'prudent man' rules.

To control for the role played by firm managers, we include *Managerial Holdings.* This is defined as the percentage of shares held by executive officers in the previous year, as reported in Standard & Poor's Execucomp database.[15] The level of manager stakes, however, may have indeterminate effects as it's hard to determine whether higher manager stakes are a sign of more managerial alignment with shareholder interests or actually of managerial entrenchment (Morck, Shleifer and Vishny (1988)). So we focus on the more high-powered incentives such as *Manager Stock Options*, which is calculated as the percentage of new stock options awarded in the year in terms of total compensation (e.g. Datta *et al*. (2000)). Stock options have been shown to play an important role in the choice of the payout policy, with the main explanation falling on the fact that executive stock options are not dividend protected and managers can have a personal incentive not to pay dividends (Fenn and Liang (2001) and Kahle (2002)). But the more options a manager is granted the more he is likely to be focused on firm's stock price. So the manager is more likely to react to investors' pressure. Also, the more executive stock options, the shorter investment of managers themselves and, in line with our predictions on investor horizons, we expect that managers tend to prefer buybacks. As predicted, in columns (2) and (5) of Table 2 we observe a positive relation between *Manager Stock Options* and the use of share buybacks.

[14] Category 5 includes institutions such as the biggest university endowments, pension funds, etc.
[15] Execucomp comprises information on compensation of the top five officers of S&P-500, S&P Midcap-400 and S&P SmallCap-600 firms, from 1992 onwards only. The sample period of regressions with these variables is therefore reduced.

As a fourth control, we also add a proxy for the level of asymmetric information between the firm and the market, namely the *Number Of Analyst Estimates* for a firm in the I/B/E/S dataset. This variable seems not to have a stable sign on the regressions on Table 2.

As a final control, we add the Baker and Wurgler (2003) value-weighted measure of the *Dividend Premium* to test whether a firm's use of buybacks is influenced by changes in the relative stock prices of dividend and non-dividend paying shares.[16] We find partial support that the use of share buyback increases when the market-wide dividend premium declines in specification (5) of Table 2 but a weak effect in specification (2).[17]

Finally, we explore in columns (3) and (6) how shareholder horizons interplay with managerial objectives. We find that the interaction of *Investor Turnover* x *Manager Stock Options* influences positively the use of repurchases by firms. As argued in the hypothesis section, this is consistent with the payout form being influenced by the prevalent investor type when managers care more about the stock price and therefore to satisfy investor interests.

4.2 Direction of Effects between Investor Turnover and the Use of Repurchases

The regressions in section 4.1 establish a link between repurchase policy and investor turnover, however they do not say whether it is shareholder horizon that cause changes in payout policy – as we have argued in the hypotheses section - or whether it is changes in policy that determine investment horizons of shareholders.

To address this issue, we run a test of causality. We first regress the current ratio of *Total Repurchases to Total Annual Payout* on the lagged value of *Investor Turnover* - i.e. *Investor Turnover (t-1)* - the lagged value of the ratio itself and all control factors as of specification (1) of Table 2.[18] Then, we run the reverse regression of *Investor Turnover*, on the lagged ratio of *Total Repurchases to Total Annual Payout (t-1).* The results are presented in equations (3) and (4).

$$\frac{\text{Repurchases}}{\text{TotalPayout}}(t) = \underset{(t=76.5)}{0.061} + \underset{(t=2.95)}{0.62} \times \frac{\text{Repurchases}}{\text{TotalPayout}}(t-1) + 0.16 \times \text{Investor\_Turnover}(t-1) + \text{controls} \qquad R^2 = 41{,}2\% \;\; N = 9{,}287 \tag{3}$$

[16] This variable is available in Jeffrey Wurgler's website.

[17] In unreported regressions we use interaction variable (*Dividend Premium* x *Investor Turnover)*. A negative coefficient of this variable in our regressions implies that firms resort more to buybacks when both shareholder structure cares about stock prices (high *Investor Turnover*) and there is a significant gap between the stock prices of non-dividend payers and payers (low *Dividend Premium*). We find some support for this. However, this intuition is contradicted in our findings of Table 5 below that market reaction is not related to the prevalent *Dividend Premium* in the market at the time of announcement.

[18] By using lagged variables we drop the Tobit functional forms of Table 2. Results on Table 2 are not dependent on the Tobit specification, Investor Turnover impacts positively the repurchase ratio variable in linear OLS regressions.

$$\text{Investor\_Turnover}(t) = 0.077 + 0.67 \times \text{Investor\_Turnover}(t-1) - 0.001 \times \frac{\text{Repurchases}}{\text{TotalPayout}}(t-1) + \text{controls} \quad (4)$$

$$(t = 79.9) \qquad (t = -1.03) \qquad R^2 = 45{,}2\% \;\; N = 9{,}772$$

The main conclusion here is that while the presence of ST investors (high lagged *Investor Turnover*) seems to determine the use of repurchases, the reverse does not seem to hold. This result supports our approach that it is investor characteristics affecting the relative use of buybacks or dividends and not vice-versa.

4.3 Investor Turnover and the Decision to Repurchase versus Increase Dividends

This section studies how ST investors affect payout policy by focusing on distribution announcements. This provides an alternative test to the evidence from payout ratios in section 4.1.

We focus on firms that made announcements of payout increases (as in Jagganathan *et al*. (2000)). We estimate a Probit regression where the dependent variable takes the value of one if the firm announces an open market repurchase and zero if it chooses to increase its cash dividend. Our specification follows closely that of Kahle (2002). Summary statistics for all dividend-increasing and repurchasing firms that enter our sample are reported in Table 1 – Panel B. The conclusions from the univariate comparisons in that table complement the results of multivariate regressions we now present.

The Probit regression results are presented in Table 3, and show that the coefficient of *Investor Turnover* is positive and highly significant. This suggests that firms held by ST investors tend to announce more repurchase programs. The effect is economically significant: an increase of one standard deviation in the *Investor Turnover* rate, which represents an increase of the average annual turnover rate of the investors' portfolios from a mean of 50% to around 64%, increases the probability of repurchasing stock by 6%. Such an increase in *Investor Turnover* is equivalent to a decrease in the investors' holding period of just 5 months from 24 to 19 months.[19] This result is consistent with both our working hypotheses (versus the null hypothesis of no effect of investor horizons) and reinforces the conclusions in section 4.1.

[19] These calculations were done as follows. The standard deviation of Investor Turnover from Table 1 – Panel B is around 0.07 per quarter. Adding this to the average value of *Investor Turnover* in the sample (i.e., 0.25 per quarter, Table 1 – Panel B), we get a value of 0.32 per quarter that represents an increase of the average annual turnover rate of the investors' portfolios from the mean of (25%/2)*4=50% to around ((25%+7%)/2)*4)=64%. In holding period terms, this change implies that the average holding period would be reduced by just 5 months from 12/(50%)=24 to 12/(64%)=19 months. We then multiply one standard deviation of Investor Turnover (0.07) by the coefficient of marginal effect of Investor Turnover of 0.87 in row (2) of Table 3. This gives an increase in probability of repurchasing a stock of 0.87*0.07=6% and makes the sample probability of repurchase of 3898/(3898+6455)=38% (the number of repurchases and dividend increases in our sample come from Table 1– Panel B) increase to 44%. Calculations are of similar magnitude with the extended model of column (3) of Table 3, which includes all the extra controls.

The coefficients of the other explanatory variables are in line with previous literature (Kahle (2002)) and the Tobit regressions of section 4.1 above. The probability of a repurchase is negatively associated with firm size, positively related to the firm having more volatile cash flows and to the firm's stock price having performed poorly in the previous year. To check the robustness of this result, column (3) presents results adding the full set of extra control variables we introduced in section 4.1. *Investor Turnover* still exhibits high explanatory power, increasing the probability of repurchases.

In column (5) of Table 3 we also add the interaction variable *Investor Turnover* x *Manager Stock Options* and find that it impacts positively the use of repurchases by firms. Again we conclude that it is the combination of ST investors and managers caring about the current stock price that makes firms more likely to opt for share buyback programs.

5. Shareholder Horizons and the Market Reaction to a Repurchase Announcement

Our two working hypotheses diverge on their predictions of how the presence of ST investors influences the stock price reactions to repurchase announcements. Under H1 we expect that the market reacts less positively to announcements by firms held by ST investors, because such payout decisions are less well monitored. Under H2, in contrast, a share buyback will be well received by stockholders if these are short-term oriented and the market will react positively in this instance.

To test the empirical support of our hypotheses, we look at whether a firm's *Investor Turnover* is an important determinant of market abnormal returns around repurchase program announcements in an event-study framework. We use two approaches. In section 5.1 we take a traditional short event-window approach. In section 5.2 we look at long-run announcement effects.

Hypotheses H1 and H2 are two mechanisms of how investor characteristics matter for price effects of firm announcement, but it's hard to posit that only one the two will prevail. Our empirical strategy is to identify situations where one of the two hypotheses is likely to play a bigger role. We expect the effects of investor monitoring (H1) to be more relevant in the case of firms who have not paid dividends in the past and face their first distribution decision. These cases are labeled 'Firms Initiating Payouts'. In contrast, we expect to find more support for the effects of 'investor catering' (H2) in situations where the marginal payout decision is likely to produce lower value effects, as is the case if firms have paid out in the past. These firm observations are labeled 'Firms Increasing Payouts'. The rationale is the following. The monitoring hypothesis focuses on differences in information that firm managers and firm investors have. The hypothesis posits that the presence of LT investors helps to alleviate such information asymmetries. On the other hand, information asymmetries play no role in

the catering theory Therefore, we expect the monitoring mechanism to produce its strongest effects in the case of firms whose buyback announcement comes at a time there is more asymmetric information. This is indeed the case when the firm initiates his first payout distributions. Conversely, in the cases in which asymmetry is lower – i.e., in the cases of already distributing firms – the catering effect may prevail.

5.1 Shareholder Investment Horizons and the Short-Term Market Reaction to Repurchases

Table 4 presents univariate evidence on the difference between firms that announce repurchase programs in the two sub-samples: 'Firms Increasing Payouts' and 'Firms Initiating Payouts'. While the average announcement return for repurchases is 1,6% for 'Firms Increasing Payouts' (column (1)), this number is nearly three times as large for the 'Firms Initiating Payouts' (4,2% - column (2)). Firms initiating payouts are also likely to be more affected by asymmetric information as these are smaller firms with less equity analysts following them (see t-value tests in column (3)). This is a strong indication of the difference in terms of the extent of asymmetric information prevalent at the time of repurchase announcements for the two situations.

To analyze the impact of *Investor Turnover* on the abnormal returns around buybacks, and control for relevant alternative determinants of market reaction, we adopt a multivariate regression framework. We run the following cross-sectional regressions for the market abnormal return:

$$\mathrm{CAR}_i = \beta\, \mathbf{X}_{Controls,\, i} + \delta\, InvestorTurnover + \varepsilon_i \qquad (5)$$

where $X_{Controls}$ is a matrix of control variables for the event firm i, which includes most of the variables employed in the payout literature. This specification follows closely Guay and Harford (2000).[20] As mentioned above, we expect that in the case of 'Firms Initiating Payouts' the presence of ST investors affects negatively announcement returns according to H1 (i.e. $\delta<0$), while in the case of 'Firms Increasing Payouts' ST investors should affect positively as predicted by H2 (i.e. $\delta>0$).

Table 5 reports the regression results. The main focus of the analysis is the coefficient of the *Investor Turnover* variable. The coefficient is positive for 'Firms Increasing Payouts' (col. (1)), supporting the 'investor catering' hypothesis (H2), while negative for the 'Firms Initiating Payouts' (col.(2)) in line with 'investor monitoring' effects (H1). These findings suggest that the presence of

[20] Cumulative Abnormal Returns (CARs) were obtained from EVENTUS using the CRSP Value-Weighted Index excluding dividends for the three-day window surrounding the announcement date.The CARs were calculated using the market model and the estimation window is from -110 to -11 days, following Nohel and Tarhan (1998). We also impose the condition that a minimum of 50 days of trading day data be available for estimation of the market model parameters. If a stock is not traded on a particular trading day, the following trading day has been omitted.

short-term versus long-term investors in repurchasing firms seems to matter differently depending on the potential economic effect of the decision.

Regarding the other variables of interest, it is worth noting that the coefficient on the Institutional Holdings is negative. This result confirms the evidence of Amihud and Li (2003) who also find that higher institutional ownership seems to be associated with lower signaling power of payout policy announcements. Payout Size is also significant, while taxes seem to play more of a role at initiation decisions.

Given that *Investor Turnover* affects the market reaction differently in each of the samples, we can estimate the differential effect by considering both samples simultaneously. This will improve the efficiency of our estimates. For this purpose we aggregate all repurchases from both sub-samples of 'Firms Initiating Payouts' and 'Firms Increasing Payouts' and run the following joint OLS regression.

$$\begin{aligned} CAR\,(\mathrm{R}epurchase) = {} & \beta\,\mathbf{X}_{Controls,\,i} + \delta\,InvestorTurnover \\ & + \theta\,Dummy_{Dividend-PayingFirm} + \phi\,Dummy_{Dividend-PayingFirm} \times InvestorTurnover + \upsilon_i \end{aligned} \tag{6}$$

where the dummy variable *Dummy* takes the value of 1 for 'Firms Increasing Payouts' and 0 otherwise. The interaction term *Dummy* x *Investor Turnover* is the focus of interest in this regression. This allows us to recast our tests in terms of δ and ϕ.That is, we test whether $\delta < 0$, $\phi > 0$ and $|\phi| > |\delta|$ such that *Investor Turnover* has negative effect for 'Firms Initiating Payouts' and a positive effect for 'Firms Increasing Payouts.'

Column (3) of Table 5 reports the results. The coefficient of *Investor Turnover* x *Dummy* is significantly positive and greater in absolute value than the negative coefficient of *Investor Turnover*. So when the *Dummy* is one - i.e., in the case of 'Firms Increasing Payouts' – we confirm the positive effect of turnover on market abnormal returns for this set of firms, as found before in col.(1) and consistent with investor catering (H2). When the *Dummy* is zero, the coefficient of *Investor Turnover* is negative, confirming our earlier results in col.(2), consistent with the monitoring effects of LT investors (H1) in this case.

We further check the robustness of this result to the inclusion of additional control variables, as done in Table 2 and Table 3, even if this comes at a cost of shrinking the sample size and the sample period covered. We introduce the percentage of the firm's shares held by each category of institutional investors, managerial holdings and executive stock options and the dividend premium. These variables were described in more detail in section 4.1. The results are shown in column (4) of Table 5. These show that these extra variables provide little additional explanatory power. The findings concerning the interaction term *Investor Turnover* x *Dummy* still hold after the introduction of all these extra control variables. So shareholder horizons still matters differently depending on the information

content of the buyback announcement. However, the interaction variable *Investor Turnover* x *Manager Stock Options* (introduced in col.(5)) does not significantly impact market returns.

5.2 Shareholder Investment Horizons and Market Under-reaction to Repurchases

As alluded to briefly in section 2.1, one important dimension of the H1 hypothesis of 'investor monitoring' is that the effects of shareholder horizons may have their full impact over longer periods. The market may take some time to learn the full value implications of a repurchase made under the pressure of either long-term or short-term investors. To address this issue, we now extend the short event window used in section 5.1 above to analyze long-run performance.

Research on the long-run performance of firms following open market repurchases has received considerable attention, with several studies indicating strong evidence of delayed market reaction (Ikenberry, Lakonishok and Vermaelen (1995)). There is, however, a methodological debate on long-run event studies and the existence of a significantly positive average post-announcement drift is not confirmed by other studies such as Mitchell and Stafford (2000). Our main focus is not whether, on average, there is a post-announcement drift but if any over-performance is related to the type shareholder structure at the time the firm announces a payout decision. We expect that if the market under-reacts initially to the fact that the repurchase is undertaken under the close control of LT monitors, this is more likely to happen in the case of 'Firms Initiating Payouts'. We have less reason to expect under-reaction in the case of repurchases by 'Firms Increasing Payouts', where 'investor catering' forces play a bigger role.

We test this prediction by looking at the long-run returns of repurchasing firms conditional on the type of shareholding structure they had before the repurchase announcement. We employ the calendar-time portfolio regression (CTPR) approach of Ikenberry, Lakonishok and Vermaelen (2000). The procedure is described in more detail in the caption of Table 6. We are interested in knowing whether the cross-sectional variation in shareholding investment horizons across repurchasing firms impacts the long-run price performance after the buyback announcement. To determine this, we form portfolios of event firms for 3 year holding periods as follows. Each month, we sort all stocks in the CRSP/COMPUSTAT/SPECTRUM universe according to their institutional shareholders' turnover (*Investor Turnover*). A repurchasing firm is considered a 'Firm with High Turnover Investors' if its *Investor Turnover* variable is in the top third of the distribution for the entire universe in the month prior to the acquisition. Conversely, a repurchasing firm is considered a 'Firm with Low Turnover Investors' if its *Investor Turnover* variable is in the bottom third.

The CTPR approach performs a time series regression of the excess returns of the portfolio of interest $R_{p,t}$ on the three Fama and French (1993) factors

$$R_{p,t} - R_{f,t} = \alpha + \beta_1 (R_{m,t} - R_{f,t}) + \beta_2 SMB_t + \beta_3 HML_t + \varepsilon_t \quad (7)$$

where the variables $R_{m,t}$, $R_{f,t}$, SMB_t, and HML_t are the returns, respectively, on the market portfolio, the riskless asset, and on the portfolios capturing the size and book-to-market factors. Abnormal performance is measured by the intercept α of this time-series regression. The results are reported in Table 6. Panel A shows that the three-year holding period returns of portfolio of all 'Firms Increasing Payouts' are, on average, not statistically significant (Panel A.1). Panel B shows that the portfolio of all 'Firms Initiating Payouts' exhibits significant positive abnormal returns (Panel B.1). As argued, this difference can reflect how events from these two samples are dissimilar in their information content.

To test our hypotheses, we form a portfolio that is long on firms with 'High Turnover Investors' and short on those with 'Low Turnover Investors'. This allows us to investigate whether there are significant performance differences between the two types of firms. Consistent with our working hypothesis, for the sample of 'Firms Initiating Payouts' (Panel B.2), we find a significantly negative wedge between the post-announcement returns of firms held by high turnover investors and those held by long-term investors of around 1,2% per month (results are of similar magnitude for equally and value-weighted portfolios). This evidence is in favor of 'investor monitoring' hypothesis (H1). It indicates that the market impounds gradually into prices the higher monitoring and better information contained in announcements made by repurchasing firms held by long-term investors.

Importantly, there is no equivalent and statistically significant difference for the case of 'Firms Increasing Payouts' (Panel A.2). This finding confirms the different role played by investor horizons for this type of firms, where the positive effect of *Investor Turnover* on short-term market returns documented in the event study in section 5 does not extend to the long term, as the stock price seems to fully adjust in the short window to the pure 'investor catering' effect (hypothesis H2).

These different findings on the market reaction of repurchasing firms that are initiating payouts versus firms increasing payout that we uncovered here and in the previous section are important in terms of the debate between rational and behavioral models of corporate finance. Investor monitoring and catering theory seem to complement each other to provide an explanation on how firm's choices are determined by the characteristics of its shareholders. The monitoring theory suggests an "information" effect that has implications for market's assessment of the corporate value impact of the buyback action. This is more relevant empirically at times in which firms initiate payments. The catering theory suggests a temporary "quantity" effect that is not related to firm fundamentals. That is, if managers cater to their shareholders, the demand of the stock should react positively and this can generate positive price reactions. This is more prevalent in case the buyback decision is less informationally loaded – i.e., when firms are increasing payouts. Which of the two effects prevails depends empirically on the likely informational content of the event.

6. Conclusion

We study how investor characteristics affect corporate payout policies. We examine the effect of institutional investor horizons on U.S. public firms' decisions to buyback shares or pay dividends over the last two decades. Using institutional ownership data we construct proxies for shareholders' investment horizons based on the frequency with which investors turn over their stock portfolios. These proxies are used to analyze how payout policy decisions are related to the type of investors that hold a firm's stock. Our results support the conclusion that shorter investment horizons of a firm's shareholders are associated with a higher propensity of the firm to repurchase its shares. This evidence suggests that firm seem to accommodate a greater preference of short-term investors for share buybacks, which offer these shareholders a chance to cash out of their investments. Firms with long-term monitoring institutions tend to pay dividends instead.

These findings allow for a reinterpretation of the recent results by Grinstein and Michaely (2004) that institutional holdings are positively associated with the use of share repurchases. The results on that study run somewhat against the common belief [and the theory of Allen, Bernardo and Welch (2000)] that institutional holdings should be associated with firms paying more dividends, and improving governance, due to the better monitoring abilities and informational advantages of this investor group. Our study shows that if we isolate the long-term institutions that are more likely to monitor effectively, we find indeed that a higher presence of long-term institutions is associated with firms using more dividends. Share buybacks are used if short-term investors are more present. The fact that we observe lower market returns for repurchasing firms initiating payouts that have short-term shareholders supports also the predictions that long-term institutions have better monitoring skills or information.

On a more speculative basis, our findings that shorter investor horizons are associated with a higher use of share buybacks hint at one potential explanation for the surge of repurchases in the last two decades. It is possible that besides our cross-sectional findings, changes in shareholder horizons may be associated with payout policy changes at the aggregate level. In the last two decades, a reduction in the investment horizons of institutional investors (Bogle (2003)) coupled with this investor group's holding a higher share of the market can potentially explain the increased popularity of share buybacks. This would offer a novel reason for the shift from dividends to share buybacks and may be a good avenue for future research.

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Table 1
Summary Statistics

Our main data sources for payout policy are CRSP-COMPUSTAT Merged Industrial database for total payout dollar amounts by year for each firm (Panel A), and two datasets for announcements of changes in payout policy: the Securities Data Corporation (SDC) Database for open market repurchase program announcements and CRSP Monthly Stocks for dividend announcements (Panel B).

For Panel A, we require that, for each firm-year, we have non-missing data on all our main explanatory variables used in regressions of Table 2 and that the firm has a positive payout in a given year. The payout variables are constructed as follows. The dollar amount of dividends have been defined as item Data21 in CRSP-COMPUSTAT while dollar amount of repurchases have been defined as Data115. Dividend increases have been defined on a per share basis and is the change in the value of the dividend per share from the previous year to the current one, measured as dollar dividend (Data21) divided by the number of shares outstanding (Data25). Total payout has been defined as the sum of dividends and repurchases (Data21 + Data115). Our treatment of the repurchase variable follows that of Jagannathan et al (2000). We take all open market repurchase announcements from SDC database and collect the dollar value of repurchases from Compustat for only those years in which there was an announcement in SDC in that year or in one of the previous two years. Share of Repurchase in Total Payout is a Tobit [0,1] variable which is the dependent variable in Table 2. It is defined as total dollar value of repurchase divided by the sum of this value and the dollar value of total dividend. Share of Repurchase in Payout Increasing Firms is our second Tobit measure where we take the same ratio as before but is only defined for firms which are increasing total payout. Increase in payout is further defined as either a repurchase or an increase in the dividend per share amount.

Accounting variables have been constructed from the CRSP – Compustat Merged database. Unless otherwise stated, all other accounting variables are equal-weighted moving averages constructed from the values of the variables in the past three years. Firm size is measured by the total assets of the firm (Data6). Market to book ratio is the average ratio of the market value of equity, given by the year end price per share multiplied by the number of shares outstanding to the book value of equity ((Data24*Data25)/ Data60). Debt to equity ratio is the ratio of long term debt to the book value of equity (Data9/Data60). Operating income is the ratio of operating income to total assets (Data13/Data6) and non-operating income is the ratio of non-operating income to total assets (Data61/Data6). Standard deviation of the operating income is the standard deviation of the ratio of operating income to the total assets measured over the past *five* years. The lagged dividend payout ratio is the ratio of total dividends to the net income available to common shareholders (Data21/Data237). Liquid assets are measured as current assets minus current liabilities divided by total assets ((Data4 -Data5)/Data6). Data specific to stock price behavior has been calculated from CRSP monthly. Stock return has been defined as the compounded monthly returns for the current year. This value was then lagged to obtain the prior year stock return. Stock liquidity has been computed as the sum of the volume traded over the calendar year divided by the number of shares outstanding at the end of the calendar year.

Data for institutional investor ownership has been obtained from the CDA/Spectrum Database. The Fraction of Institutional Ownership is calculated as the ratio of a firm's shares held by institutional investors relative to total shares outstanding. This fraction is then further split into 5 categories based on the "type codes" given in CDA/Spectrum 13-f database. *Investor Turnover* in company *k* is calculated as the weighted average of the (time-averaged) 'turnover rates' of its investors:

$$\text{Turnover of firm k} = \sum_{i \in S} w_{k,i,t} \left(\frac{1}{4} \sum_{r=1}^{4} TR_{i,t-r-1} \right),$$

where S is the set of shareholders in company k, and $w_{k,i,t}$ as the weight of investor i in the total percentage held by institutional investors at quarter t in company k.

The subcategories of institutional investor holdings as well as compensation variables and I/B/E/S data will only be used as additional controls to check the robustness of our findings. The Fraction of Institutional Ownership is split into 5 categories based on the "type codes" given in CDA/Spectrum 13-f database. Tax Disadvantage of Dividends is calculated as the different between the average marginal dividend income tax rate minus long-term capital gain tax rate the in the NBER TAXSIM Model. Managerial stock holdings and Manager Stock Options have been obtained from the Compustat Executive Compensation Database and are equal-weighted averages of the top five executives for each company in the database. Managerial stockholding has been defined as shares owned (excluding options) by the manager (given by SHROWN in the Executive Compensation Database) divided by the number of shares outstanding (given by SHRSOUT). Manager Stock Options has been defined as options granted to the executive (BLK_VALU) divided by the total compensation of the executive including option grants (measured by TDC1). The Number of Analyst Estimates, i.e. the average number of analysts following a particular stock, is constructed from I/B/E/S by taking the number of monthly end-of-the-year analyst forecasts that are available for each stock averaged over the given year.

Table 1 – Panel A - Summary Statistics on Firm-Year Observations

Type of VariableVariable	Variable	Database	N	Mean	Median	Std. Dev.
Payout Variables	Dollar amount of Repurchase	Industrial CRSP/Compustat	8,978	72.83	5.24	301.82
	Dollar amount of Dividends	Industrial CRSP/Compustat	20,942	44.11	2.74	201.23
	Total payout	Industrial CRSP/Compustat	49,255	32.03	0.00	217.52
	Dividend Increase	Industrial CRSP/Compustat	10,577	19.55	0.04	1954.67
	Share of Repurchase in Total Payout		24,361	0.48	0.43	0.44
	Share of Repurchase in Payout Increasing Firms		15,816	0.63	0.93	0.44
Accounting Variables	Size	Industrial CRSP/Compustat	49,255	713.94	61.38	3531.23
& Other Controls	M/B Ratio	Industrial CRSP/Compustat	49,255	2.82	1.94	5.68
	D/E Ratio	Industrial CRSP/Compustat	49,255	0.55	0.25	2.97
	Operating Income	Industrial CRSP/Compustat	49,255	0.08	0.12	0.39
	Non Operating Income	Industrial CRSP/Compustat	49,255	0.01	0.01	0.03
	Std. of Operating Income	Industrial CRSP/Compustat	49,255	0.09	0.05	0.60
	Payout Ratio (Prior)	Industrial CRSP/Compustat	49,255	0.36	0.00	12.96
	Liquid Assets	Industrial CRSP/Compustat	49,255	0.29	0.30	0.49
	Prior year Stock Return	CRSP Monthly Stocks	49,255	0.17	0.04	0.79
	Stock Liquidity	CRSP Monthly Stocks	49,255	1.03	0.64	1.45
Institutional Investor Variables	Investor Turnover	Calculated from CDA/Spectrum 13f	49,255	0.25	0.25	0.09
	Institutional Holdings	CDA/Spectrum 13f	49,255	0.31	0.26	0.25
	Cat.1 (Banks)	CDA/Spectrum 13f	46,665	0.06	0.04	0.07
	Cat.2 (Insurance Firms)	CDA/Spectrum 13f	35,681	0.03	0.02	0.04
	Cat.3 (Mutual Funds)	CDA/Spectrum 13f	33,703	0.07	0.05	0.08
	Cat.4 (Inv. Advisers)	CDA/Spectrum 13f	47,752	0.16	0.14	0.13
	Cat.5 (All Others)	CDA/Spectrum 13f	35,369	0.03	0.02	0.04
Additional Controls	Tax Disadvantage of Dividends	NBER Taxsim	49,255	5.42	1.84	5.40
	Managerial Holdings	Execucomp	9,213	0.05	0.01	0.10
	Manager Stock Options	Execucomp	9,301	0.33	0.30	0.25
	No. of Analyst Estimates	I/B/E/S	31,666	7.08	4.27	7.35
	Dividend Premium	Baker & Wurgler(2003)	49,255	-9.40	-7.81	8.20

Table 1 – Panel B – Summary Statistics on Payout Change Announcements in SDC and CRSP Stocks

Panel B presents summary statistics on firms that make payout change announcements for the period 1984-2000. Open market repurchases are obtained from the SDC Database. Dividend increase announcements (and the declared dividend per share amount) are obtained from CRSP Monthly Stocks. Following Amihud and Li (2003) we take only those dividend increases where the change in the dividend per share amount is at least 0.5%. The payout change announcement data were merged with the preceding quarter's data on Institutional Investor data from CDA/Spectrum, accounting information from Compustat, managerial compensation data from Execucomp and I/B/E/S data, as described in Panel A. The Cumulative Abnormal Returns for the window (-1, +1) were obtained from Eventus using CRSP Value-Weighted Index excluding dividends. The CARs were obtained using the market model and the estimation window is from -110 to -11 days (with a minimum of 50 days of trading day data for estimation of the market model). The symbols ***,**,* denote significance levels of 1%, 5% and 10%, respectively, for the T-test that the means are equal across the two sub-samples.

		All Event Firms				Repurchasing Firms		Dividend Increasing Firms		T-test of Equality of Means
Type of Variable	Variable	N	Mean	Median	Std. Dev.	N	Mean	N	Mean	
Accounting & Control Variables	Size	10,353	2,123.7	325.0	6,401.8	3,898	1,924.6	6,455	2,243.9	2.46***
	M/B Ratio	10,353	2.74	2.17	3.07	3,898	2.94	6,455	2.62	-5.20***
	D/E Ratio	10,353	0.44	0.28	1.58	3,898	0.48	6,455	0.42	-1.83*
	Operating Income	10,353	0.18	0.17	0.10	3,898	0.16	6,455	0.19	16.12***
	Non Operating Income	10,353	0.01	0.01	0.01	3,898	0.01	6,455	0.01	0.82
	Std. of Operating Income	10,353	0.04	0.03	0.06	3,898	0.05	6,455	0.03	-17.35***
	Payout Ratio (Prior)	10,353	0.73	0.24	21.11	3,898	0.80	6,455	0.69	-0.26
	Liquid Assets	10,353	0.28	0.27	0.20	3,898	0.30	6,455	0.26	-8.38***
	Prior year Stock Return	10,353	0.23	0.16	0.47	3,898	0.20	6,455	0.26	6.18***
	Stock Liquidity	10,353	0.85	0.60	0.93	3,898	1.24	6,455	0.62	-34.43***
Institutional Variables	Investor Turnover	10,353	0.25	0.24	0.07	3,898	0.26	6,455	0.24	-15.39***
	Institutional Holdings	10,353	0.46	0.47	0.08	3,898	0.46	6,455	0.46	-0.44
	Cat.1 (Banks)	10,150	0.11	0.10	0.04	3,758	0.09	6,392	0.13	25.14***
	Cat.2 (Insurance Firms)	9,153	0.04	0.04	0.07	3,370	0.04	5,783	0.04	4.29***
	Cat.3 (Mutual Funds)	9,187	0.07	0.05	0.12	3,328	0.10	5,859	0.06	-22.03***
	Cat.4 (Inv. Advisers)	10,288	0.21	0.20	0.04	3,880	0.23	6,408	0.20	-11.96***
	Cat.5 (All Others)	9,220	0.04	0.04	0.22	3,348	0.04	5,872	0.04	5.29***
Additional Controls	Tax-Disadvantage of Dividends	10,353	5.34	1.84	5.36	3,898	5.21	6,455	5.415	1.91*
	Managerial Holdings	3,591	0.045	0.008	0.093	1,543	0.047	2,048	0.043	-1.51
	Manager Stock Options	3,601	0.30	0.27	0.23	1,551	0.35	2,050	0.26	-12.56***
	No. of Analyst Estimates	9,106	11.12	8.33	9.28	3,336	9.64	5,770	11.98	11.71***
	Dividend Premium	10,353	-9.04	-7.81	7.84	3,898	-9.08	6,455	-9.02	0.39
Cumulative Abnormal Return (-1,+1)		10,353	0.015	0.008	0.065	3,898	0.029	6,455	0.007	-16.30***

Table 2
Shareholder Investment Horizons And The Choice Of Payout Policy: Tobit Regressions

This table presents the results of Tobit regressions on firm year observations. In columns (1)-(3), the dependent variable is the ratio of Repurchase to Total Payout, which is left- and right-censored at 0 and 1 respectively. In columns (4)-(6), the dependent variable is the share of Repurchases on the Total Payout Increase for firms which have increased the dividend per share from the previous year, or have made a repurchase (again left- and right-censoring). Variables are described in Table 1 – Panel A. T-statistics (in parentheses) are based on robust standard errors. The symbols ***,**,* denote significance levels of 1%, 5% and 10%, respectively.

	Firms That Have A Positive Payout Dep var.: Repurchases / Total Payout			Firms That Are Increasing Their Payout Dep var.: Repurchases / Increase in Total Payout		
	Base Specif.	Full Specif.	FSpec.+ Interaction	Base Specif.	Full Specif.	FSpec.+ Interaction
	(1)	(2)	(3)	(4)	(5)	(6)
ln(Size)	-0.1403***	-0.0354***	-0.0318***	-0.0261***	0.0395***	0.0416***
	(-23.92)	(-3.01)	(-2.69)	(-3.51)	(2.47)	(2.59)
M/B Ratio	0.035***	0.0045	0.0046	0.0341***	0.0039	0.004
	(11.39)	(1.41)	(1.45)	(8.18)	(0.85)	(0.87)
D/E Ratio	-0.0074	-0.0097*	-0.0095*	-0.0213***	-0.0107	-0.0105
	(-1.61)	(-1.73)	(-1.68)	(-3.48)	(-1.51)	(-1.47)
Operating Income	-2.3552***	0.0557	0.0777	-1.8422***	0.3535*	0.3666*
	(-24.95)	(0.39)	(0.55)	(-14.47)	(1.78)	(1.84)
Non Operating Income	-1.4291***	2.5018***	2.4877***	0.2424	3.8321***	3.817***
	(-3.57)	(2.93)	(2.92)	(0.43)	(3.29)	(3.28)
Std. of Operating Income	5.0826***	1.2119***	1.1796***	4.7804***	2.2505***	2.2222***
	(25.13)	(3.54)	(3.44)	(17.37)	(4.56)	(4.5)
Prior year Stock Return	-0.1271***	0.0067	-0.0017	-0.2912***	-0.0805***	-0.0865***
	(-9.16)	(0.3)	(-0.07)	(-14.46)	(-2.72)	(-2.9)
Payout Ratio (Prior)	-0.0005	0.0001	0.0001	0.0001	0.0004	0.0004
	(-1.21)	(0.45)	(0.46)	(0.22)	(0.92)	(0.92)
Liquid Assets	-0.1588***	0.4426***	0.437***	0.2058***	0.5069***	0.501***
	(-3.73)	(6.97)	(6.87)	(3.62)	(5.86)	(5.79)
Institutional Holdings	0.2841***			0.4697***		
	(6.54)			(8.34)		
Investor Turnover	1.843***	1.613***	0.6614*	1.4032***	0.8224**	0.1786
	(16.62)	(6.09)	(1.87)	(9.14)	(2.3)	(0.38)
Investor Turnover x Mgr Stock Options			3.2395***			2.2101**
			(4.02)			(2.04)
Tax-Disadvantage of Dividends		0.0421***	0.0427***		0.0544***	0.0548***
		(14.13)	(14.3)		(13.54)	(13.62)
Cat.1 (Banks)		-0.9582***	-0.9743***		-0.8551***	-0.861***
		(-5.48)	(-5.57)		(-3.77)	(-3.8)
Cat.2 (Insurance Firms)		-0.6294**	-0.6136**		-1.7204***	-1.724***
		(-2.13)	(-2.08)		(-4.38)	(-4.39)
Cat.3 (Mutual Funds)		0.1259	0.1075		-0.2222	-0.2304
		(0.89)	(0.76)		(-1.16)	(-1.2)
Cat.4 (Inv. Advisers)		0.3084***	0.3256***		0.4277***	0.4453***
		(2.89)	(3.05)		(2.95)	(3.06)
Cat.5 (All Others)		0.4116	0.38		1.1101***	1.0861**
		(1.24)	(1.14)		(2.35)	(2.3)
Managerial Holdings		0.1351	0.1168		-0.0948	-0.1072
		(1.14)	(0.99)		(-0.6)	(-0.68)
Manager Stock Options		0.6942***	-0.1867		0.6211***	0.0266
		(14.37)	(-0.83)		(9.51)	(0.09)
No. of Analyst Estimates		0.0034*	0.0036*		-0.0048*	-0.0046*
		(1.84)	(1.91)		(-1.92)	(-1.85)
Dividend Premium		-0.0015	-0.0015		-0.0032***	-0.0032***
		(-1.51)	(-1.57)		(-2.41)	(-2.46)
Intercept	0.7826***	-0.4279***	-0.2067	0.3515***	-0.349**	-0.2007
	(16.8)	(-3.75)	(-1.63)	(5.41)	(-2.24)	(-1.17)
Number of observations	24,361	6,046	6,046	15,816	4,579	
Pseudo R2	0.078	0.108	0.109	0.035	0.079	

Table 3
Shareholder Investment Horizons And The Choice Of Payout Policy (Alternative Tests): Probit Regressions

This table contains the results of Probit regressions where the dependent variable takes a value of 1 if a firm makes an open market share repurchase announcement (from SDC) and a value of 0 for a dividend increase announcement (CRSP Monthly Stocks). Variables are described in Table 1 – Panel B. T-statistics (in parentheses) are based on robust standard errors. The symbols ***,**,* denote significance levels of 1%, 5% and 10%.

	Dep. Variable: 1 if Repurchase, 0 if Dividend Increase					
	Base Specification		Full Specification		Full Specif. + Interaction	
	Coeff.	Marg. Effects	Coeff.	Marg. Effects	Coeff.	Marg. Effects
	(1)	(2)	(3)	(4)	(5)	(6)
ln(Size)	-0.1439***	-0.0545***	-0.1288***	-0.0506***	-0.1237***	-0.0486***
	(-12.46)		(-4.4)		(-4.19)	
M/B Ratio	0.0478***	0.0181***	-0.0083	-0.0033	-0.0073	-0.0029
	(6.2)		(-1.01)		(-0.89)	
D/E Ratio	-0.0005	-0.0002	0.0161	0.0063	0.0167	0.0066
	(-0.05)		(1.21)		(1.25)	
Operating Income	-2.4461***	-0.9259***	-1.4298***	-0.5613***	-1.3877***	-0.5453***
	(-7.73)		(-3.68)		(-3.57)	
Non Operating Income	-2.9496***	-1.1165***	6.4562***	2.5342***	6.605***	2.5955***
	(-2.99)		(2.72)		(2.78)	
Std. of Operating Income	1.6453	0.6228	4.9651***	1.949***	4.864***	1.9114***
	(1.59)		(4.67)		(4.55)	
Prior year Stock Return	-0.2718***	-0.1029***	-0.244***	-0.0958***	-0.2585***	-0.1016***
	(-7.99)		(-3.86)		(-3.99)	
Payout Ratio (Prior)	0.0002	0.0001	0.0005	0.0002	0.0005	0.0002
	(0.36)		(0.75)		(0.76)	
Liquid Assets	0.0557	0.0211	0.1594	0.0626	0.1398	0.0549
	(0.69)		(1.03)		(0.9)	
Institutional Holdings	0.777***	0.2941***				
	(9.79)					
Investor Turnover	2.2976***	0.8697***	2.0858***	0.8187***	0.2345	2.5762
	(9.87)		(3.4)		(0.28)	
Investor Turnover x Mgr Stock Options					6.5558***	0.0188***
					(3.34)	
Tax-Disadvantage of Dividends			0.047***	0.0184***	0.0477***	-0.5837***
			(6.74)		(6.81)	
Cat.1 (Banks)			-1.5658***	-0.6146***	-1.4853***	-0.4661***
			(-3.64)		(-3.4)	
Cat.2 (Insurance Firms)			-1.1071	-0.4346	-1.186	0.2379
			(-1.5)		(-1.6)	
Cat.3 (Mutual Funds)			0.6672**	0.2619**	0.6054*	0.3772*
			(2.05)		(1.83)	
Cat.4 (Inv. Advisers)			0.9508***	0.3732***	0.9599***	0.2***
			(3.89)		(3.9)	
Cat.5 (All Others)			0.6072	0.2383	0.5089	-0.0272
			(0.71)		(0.59)	
Managerial Holdings			-0.0435	-0.0171	-0.0693	-0.3682
			(-0.16)		(-0.25)	
Manager Stock Options			0.7971***	0.3129***	-0.9371*	0.0066*
			(7.07)		(-1.74)	
No. of Analyst Estimates			0.0167***	0.0066***	0.0167***	0.0023***
			(3.82)		(3.81)	
Dividend Premium			0.0061***	0.0024***	0.0058***	
			(2.63)		(2.48)	
Intercept	-0.0869		-0.4192		0.0192	
	(-0.85)		(-1.5)		(0.06)	
Number of observations	10,353		3,453		3,453	
Pseudo R2	0.079		0.117		0.119	

Table 4
Shareholder Investment Horizons and the Short-Term Market Reaction To A Distribution Announcement: Univariate Comparisons

This table presents results of the univariate comparisons between 'Firms Increasing Payouts' and 'Firms Initiating Payout' that make open-market repurchase announcements in SDC. Following Guay and Harford (2000) we define 'Firms Increasing Payouts' as those firms which have a positive COMPUSTAT dollar value of dividend in the current year. 'Firms Initiating Payout' are defined as those which have not paid a dividend in this or the previous year according to COMPUSTAT data or made a repurchase announcement before. Payout Size is defined as "percentage sought" for repurchases and "change in dividend yield" for dividend increases. Cumulative Abnormal Returns (CARs) were obtained from Eventus using CRSP Value-Weighted Index excluding dividends. The CARs were obtained using the market model and the estimation window is from -110 to -11 days where we impose the further condition that a minimum of 50 days of trading day data is available for estimation of the market model parameters. If a stock is not traded on a particular trading day, the following trading day has been omitted. The symbols ***,**,* denote significance levels of 1%, 5% and 10%, respectively, for the T-test that the means are equal across the two sub-samples.

	Firms with SDC Repurchase Announcements		
	Firms Increasing Payouts (1)	Firms Initiating Payout (2)	T-test (3)
No. of Observations	1,958	1,886	
CAR (-1,+1)	0.0161	0.0423	8.99***
Size	3,454.1	384.2	-13.73***
M/B Ratio	2.81	3.02	1.73*
D/E Ratio	0.46	0.49	0.46
Liquid Assets	0.24	0.35	16.23***
Stock Liquidity	0.82	1.67	21.96***
Payout Size	0.060	0.066	2.06**
Institutional Holdings	0.51	0.40	-14.68***
Investor Turnover	0.25	0.28	13.83***
Cat.1 (Banks)	0.12	0.05	-29.61***
Cat.2 (Insurance Firms)	0.04	0.03	-7.38***
Cat.3 (Mutual Funds)	0.09	0.11	7.80***
Cat.4 (Inv. Advisers)	0.23	0.22	-2.41***
Cat.5 (All Others)	0.05	0.03	-13.08***
Tax-Disadvantage of Dividends	4.75	5.69	6.66***
Managerial Holding	0.039	0.062	4.47***
Manager Stock Options	0.29	0.46	13.97***
No. of Analyst Estimates	12.4	6.5	-20.16***
Dividend Premium	-8.83	-9.21	-1.20

Table 5
Shareholder Investment Horizons and the Short-Term Market Reaction To Repurchase Announcements: OLS Regressions

This table presents the results of OLS regressions using White's heteroscedasticity consistent robust standard errors. The dependent variable is the Cumulative Abnormal Return (CAR) in the three day window centered around the repurchase announcement date, obtained from EVENTUS using CRSP Value-Weighted Index excluding dividends. The division of the sample between 'Firms Increasing Payouts' and 'Firms Initiating Payout' follows from Table 4. The Dummy in columns (3) and (4) takes a value of 1 for dividend paying firms and a value of 0 for non-dividend paying firms. T-statistics are in parenthesis. The symbols ***,**,* denote significance levels of 1%, 5% and 10%, respectively.

	Abnormal Return Around Repurchase Announcement Dates (-1,+1)				
	Firms Increasing Payouts	Firms Initiating Payouts	All Repurchasing Firms		
	(1)	(2)	(3)	(4)	(5)
ln (Size)	-0.0006	-0.0016	-0.0006	0.0016	0.0017
	(-0.6)	(-0.72)	(-0.54)	(0.72)	(0.77)
M/B Ratio	0.0004	-0.001	-0.0006	-0.0004	-0.0004
	(0.53)	(-1.25)	(-0.91)	(-0.56)	(-0.55)
D/E Ratio	-0.001	0.0001	-0.0002	0.0003	0.0003
	(-0.85)	(0.14)	(-0.21)	(0.09)	(0.11)
Liquid Assets	0.0105	0.0106	0.0088	0.0149	0.0144
	(1.02)	(0.85)	(0.98)	(1.18)	(1.13)
Stock Liquidity	-0.0057*	0.0022	0.0007	0.0013	0.0012
	(-1.93)	(0.73)	(0.28)	(0.51)	(0.46)
Payout Size	0.0584***	0.0663*	0.0632***	0.0151	0.0148
	(3.79)	(1.79)	(3.14)	(0.78)	(0.77)
Tax-Disadv. of Div.	0.0003	0.0012**	0.0008***	0.0002	0.0002
	(1.06)	(2.07)	(2.33)	(0.26)	(0.33)
Institutional Holdings	-0.0229**	-0.0809***	-0.0628***		
	(-2.32)	(-6.05)	(-7.32)		
Investor Turnover	0.0788**	-0.0812**	-0.091***	-0.1553	-0.2394*
	(2.01)	(-2.03)	(-2.36)	(-1.41)	(-1.93)
Dummy			-0.0562***	-0.0584**	-0.0683***
			(-4.01)	(-1.99)	(-2.34)
Investor Turnover x Dummy			0.1531***	0.1824*	0.2159**
			(3.00)	(1.79)	(2.12)
Investor Turnover x Mgr Stock Options					0.1702
					(1.15)
Cat.1 (Banks)				-0.0507*	-0.0461
				(-1.79)	(-1.61)
Cat.2 (Insurance Firms)				-0.0598	-0.0622
				(-1.25)	(-1.3)
Cat.3 (Mutual Funds)				-0.0488	-0.0483
				(-1.62)	(-1.6)
Cat.4 (Inv. Advisers)				-0.0382	-0.0372
				(-1.64)	(-1.6)
Cat.5 (All Others)				-0.0053	-0.011
				(-0.08)	(-0.16)
Managerial Holding				-0.0387	-0.0398
				(-1.31)	(-1.35)
Equity Based Comp.				0.005	-0.0429
				(0.51)	(-1.11)
No. of Analyst Estimates				0.0002	0.0002
				(0.61)	(0.64)
Dividend Premium				0	0
				(0.02)	(-0.03)
Intercept	0.0091	0.0888***	0.0846***	0.0711***	0.0934***
	(0.75)	(5.91)	(6.63)	(2.34)	(2.79)
Number of obs.	1,958	1,887	3,845	1,472	1,472
R-squared	0.058	0.057	0.063	0.020	0.021

Table 6

Shareholder Investment Horizons and Market Under-reaction to Repurchases: Long-Term Performance of Repurchasing Firms

This table presents estimates of the abnormal return for portfolios composed of firms that repurchase their own stock during the sample period, using the calendar-time portfolio regressions (CTPR) approach of Ikenberry, Lakonishok and Vermealen (2000). All calculations are based on the following procedure. For each month of the sample period, we form portfolios of firms that have just announced an open market program to repurchase their stock and keep these firms' stock in a portfolio for a 3-year holding period counted relative to the event month. We exclude multiple observations of the same firm that occur within the same holding period (Mitchell and Stafford (2000)). Portfolios are rebalanced monthly to drop all companies that have just reached the end of their holding period and add all firms that have just completed a transaction. Abnormal performance is measured by the intercept of a time-series regression. The excess return of the portfolio of acquirers is regressed on the three Fama and French (1993) factors

$$R_{p,t} - R_{f,t} = \alpha + \beta_1 \left(R_{m,t} - R_{f,t}\right) + \beta_2 SMB_t + \beta_3 HML_t + \varepsilon_t \ .$$

where the variables $R_{m,t}$, SMB_t, HML_t and $R_{f,t}$ represent the returns, respectively, on the market portfolio, on the portfolios capturing the size and the book-to-market factors and on the riskless asset. Abnormal performance is measured by the intercept α of this time-series regression (number of observations are calendar-months). The sample of repurchasing firms is split into two sub-samples: FIRMS INCREASING PAYOUTS that repurchase their stock (Panel A) and FIRMS INITIATING PAYOUTS that repurchase their stock (Panel B). Panel A.1 presents results for the portfolio composed of all FIRMS INCREASING PAYOUTS while Panel B.1 presents results for the portfolio composed of all FIRMS INITIATING PAYOUTS. The estimated alpha and the different betas are shown. The following Panels A.2 to A.4 (and B.2 to B.4) show the results for portfolios that result from following procedure: each month, we sort all stocks in the CRSP-COMPUSTAT-SPECTRUM universe according to their institutional shareholders' turnover. A repurchasing firm is considered a 'Repurchasing Firm with High Turnover Investors' if its turnover variable is in the top third of the distribution for the entire universe on the month prior to the announcement of the open market repurchase program. Inversely, an acquirer is considered a 'Repurchasing Firm with Low Turnover Investors' if its turnover variable is in the bottom third of the distribution for the entire universe on the month prior to the announcement. Panels A.2 and B.2 present results for a portfolio that buys 'Repurchasing Firm with High Turnover Investors' and sells 'Repurchasing Firm with Low Turnover Investors'. The estimated alpha and the different betas are shown. For purposes of comparison, Panels A.3 and B.3 present results for a portfolio that buys 'Repurchasing Firm with High Turnover Investors' exclusively and Panels A.4 and B.4 present results for a portfolio that buys 'Repurchasing Firm with Low Turnover Investors' exclusively. The symbols ***,**,* denote significance levels of 1%, 5% and 10%, respectively, for the two-tailed hypothesis test that the coefficient equals zero.

Table 6 (cont.)

Shareholder Investment Horizon and Market Under-reaction to Repurchases: Long-Term Performance of Repurchasing Firms

	Panel A - Portfolio of FIRMS INCREASING PAYOUTS That Repurchase Stock				Panel B - Portfolio of FIRMS INITIATING PAYOUTS That Repurchase Stock			
	Panel A.1 - All FIRMS INCREASING PAYOUTS				Panel B.1 - All FIRMS INITIATING PAYOUTS Firms			
	After 3 years		After 3 years		After 3 years		After 3 years	
	Equally-Weighted Portfolios		Value-Weighted Portfolios		Equally-Weighted Portfolios		Value-Weighted Portfolios	
	Coeff.	T-Stat	Coeff.	T-Stat	Coeff.	T-Stat	Coeff.	T-Stat
α	0.0009	0.82	0.0042	3.59 ***	0.0032	1.84 *	0.0160	6.31 ***
β_{Rm-Rf}	1.0317	35.16 ***	0.9509	34.39 ***	1.0053	27.80 ***	1.1255	17.52 ***
β_{SmB}	0.4773	8.91 ***	-0.0980	-1.82 *	1.1535	15.25 ***	0.6357	6.10 ***
β_{HmL}	0.3659	4.85 ***	0.1256	1.72 *	0.1063	1.10	-0.3273	-2.94 ***
Adj-R^2	0.91		0.87		0.87		0.77	
N	179		178		177		177	
	Panel A.2 - Portfolio of FIRMS INCREASING PAYOUTS with High Turnover Investors minus Portfolio of Firms with Low Turnover Investors				Panel B.2 - Portfolio of FIRMS INITIATING PAYOUTS with High Turnover Investors minus Portfolio of Firms with Low Turnover Investors			
$\alpha_{HTminusLT}$	-0.0029	-1.60	0.0009	0.37	-0.0118	-3.62 ***	-0.0117	-2.14 **
β_{Rm-Rf}	0.1923	3.89 ***	0.2344	3.22 ***	0.1469	1.61	0.3502	2.65 ***
β_{SmB}	0.3032	5.10 ***	0.4508	4.44 ***	-0.0644	-0.58	-0.2665	-1.26
β_{HmL}	-0.0311	-0.34	0.0586	0.44	-0.2122	-1.26	-0.4255	-2.14 **
Adj-R^2	0.25		0.22		0.04		0.08	
N	165		165		150		150	
	Panel A.3 - Portfolio of FIRMS INCREASING PAYOUTS with High Turnover Investors				Panel B.3 - Portfolio of FIRMS INITIATING PAYOUTS with High Turnover Investors			
α_{HT}	-0.0007	-0.39	0.0030	1.46	0.0005	0.20	0.0163	4.15 ***
	Panel A.4 - Portfolio of FIRMS INCREASING PAYOUTS with Low Turnover Investors				Panel B.4 - Portfolio of FIRMS INITIATING PAYOUTS with Low Turnover Investors			
α_{LT}	0.0020	1.46	0.0019	1.25	0.0109	3.86 ***	0.0237	5.46 ***