Dividend Clientele and Return Comovement

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Abstract

Stocks that start paying dividends tend to co-move more with other dividend paying stocks and co-move less with stocks that are non-dividend payers. These changes in return co-movement do not come from variations in firm fundamentals or characteristics. Instead, we find strong evidence that the return comovement generated by dividend decisions is related to ownership and institutional trading. Mutual funds that have an explicit preference for dividends hold more of the dividend initiators and flows to these funds move the prices of dividends payers in tandem. Our findings support a clientele-based explanation for return comovement.

Keywords: Dividend Clientele; Return Comovement; Style Investing

JEL classifications: G12, G35, H20

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1. Introduction

The pioneering work by Barberis and Shleifer (2003) presents a model where investors allocate capital at the level of asset categories rather than individual stocks. These categories could be based on small and large market capitalization stocks, value and growth stocks, index and non-index stocks, or simply different investment styles. They show that category investing generates co-movement in stock returns as investor capital flows in and out of specific categories creates demand pressure for stocks within the style. Consistent with this argument, follow-on empirical studies show that stocks added to the index co-vary more with other stocks already in the index, and the increased co-movement cannot be explained by changes in fundamental correlations in the stocks (Barberis, Shleifer, and Wurgler, 2005; Greenwood, 2008; Boyer, 2011). Barberis, Shliefer and Wurgler (2005) also suggest that stocks that have similar investor clientele co-move more, reflecting the trading habitat of the shareholder type. However, Chen, Singal and Whitelaw (2015) cast doubt on excess co-movement stemming from index additions (Barberis, Shleifer and Wurgler (2005)) or stock splits (Green and Hwang (2009)), arguing that the changes in co-movement are driven by prior stock return performance.

In this paper, we investigate the role of the investor preference for dividends as a source of return co-movement. Do investors view dividend characteristic of a stock as salient category and move their funds in and out of the category, causing stocks within the category to move together? The seminal paper by Miller and Modigliani (1961) postulates that firms that pay low (high) dividends attract investors who dislike (like) dividend income, and this matches corporate dividend policy with their dividend clienteles. Theoretical studies attribute dividend clientele to investor characteristics such as tax status, age or income preference (Miller and Modigliani, 1961; Edwin and Gruber, 1970; Allen, Bernardo, and Welch, 2000). For instance, tax-exempt institutional investors and retail investors with low marginal tax rates prefer stocks paying more dividends, establishing dividend tax clienteles (e.g. Poterba (2004) and Graham and Kumar (2006), and Kawano (2014)).[2] Desai and Jin (2011) draw significant association between institutional clientele, and their tax and dividend preferences. There

[2] Evidence on dividend tax clienteles in non-U.S. markets is documented in Lee, Liu, Roll and Subrahmanyam (2005), Rantapuska (2008) and Dahlqvist, Robertson and Rydqvist (2014).

are also non-tax reasons for dividend clienteles. Hotchkiss and Lawrence (2007) find that some institutions consistently hold high (or low) dividend yield stocks and adjust their holdings in response to changes in firms' dividend policy, confirming the presence of institutional dividend clienteles. They argue that the observed clientele may be tax related or is driven by persistent institutional investment styles.

We investigate whether dividend clientele induces excess covariation in returns of stocks that belong to the same dividend category, as investors allocate capital and trade by category. Using dividend initiations by firms trading on NYSE/AMEX and NASDAQ over the period 1983 to 2012, we find strong evidence linking return comovement to dividend clientele. Specifically, we find that returns on firms that initiate dividend payments co-move more with other dividend paying firms and co-move less with firms that do not pay dividends. For example, the sensitivity (or beta) of stock returns to the portfolio of dividend paying stocks increases from 0.19 to 0.34 (a difference of 0.14 (t=2.79)) for firms that initiate dividends and their beta with respect to the portfolio of non-dividend payers decreases from 0.33 to 0.22 (a difference of -0.11 (t=-4.73)). These changes in return comovement when firms decide to start paying dividends are large and economically significant. It should be noted that these beta estimates are after purging the commonality in returns due to the Fama-French and Carhart four factor model: market, size and book-to-market and momentum factors.

It is important to note that our findings are not due changes in fundamentals of firms that start making dividend payments. We address the potential issue in several ways. We start by constructing a control sample of firms that share the same firm characteristics and propensity to initiate dividends as our primary (treatment) firms, following Fama and French (2001), Baker and Wurgler (2004, 2004b) and Hoberg and Prabhala (2009)). In addition, we also match firms by their prior stock returns, to account for the changes in beta documented in Chen, Singal and Whitelaw (2015). Consistent with the notion that our findings are not driven by fundamentals or firm characteristics, the matched sample of control firms do not exhibit similar changes in return co-movement. This is confirmed by the difference-in-difference tests of the changes in return comovement of the dividend initiators and the matched firms. Moreover, the co-movement results are unaffected by adjustment for exposure to common risk factors (Fama-French (1993) and the momentum factor (Jegadeesh and Titman (1993)) and are robust across variations in the return specifications.

Next, we use a tax reform that is exogenous to firm fundamentals but affects dividend clientele as an identification strategy. As noted in Chetty and Saez (2005), the Jobs and Growth Tax Relief Reconciliation Act of 2003 in the United States (hereafter, the “2003 Tax Cut”) is relatively exogenous to firm fundamental but increases firms’ incentive to cater to investor demand for dividend stocks (see also Lin and Flannery (2013) and Kawano (2014)). We exploit the 2003 Tax Cut to identify dividend initiations that is not motivated by firm fundamentals, and measure the change in return co-movement around the event. We select the control firms, matched on firm characteristics, from the pool of firms that already pay dividends prior to the 2003 Tax Cut. As expected, these control firms co-move significantly with the index of dividend paying stocks, and not with the non-dividend paying stocks and the co-movement betas do not change around the 2003 Tax Cut. More importantly, we find that firms that initiate dividends after the 2003 Tax Cut co-move significantly more (less) with other firms that consistently pay (do not pay) dividends. For example, the co-movement beta for dividend initiators with the portfolio of dividend paying firms increases by 0.59 (t=3.39), and the estimates are larger in magnitude than the overall sample period. These results are also robust to difference-in-difference tests and in various controls for fundamental sources that may give rise to stocks moving together. Hence, our findings reinforce the prediction that changes in dividend category affect return co-movement.

Additionally, placebo tests are introduced to see if the dividend initiations are unique in affecting changes in the stock return co-variations. We estimate the co-movement in stock returns in one, three and five years after the initiations, with the expectations that we should not see any subsequent changes in co-movement. This is indeed what we find. The stocks that initiate dividends co-move with other dividend paying stocks in the next period, but we do not any further changes in co-movement in subsequent years – both in terms of its comovement with the index of dividend paying and the index of non-dividend paying stocks.

To complete our understanding regarding the role of corporate pay-out in shaping investor clientele, we carry on our analysis using share repurchase initiation events. Unlike dividend initiations, we do not find evidence of change in comovement around repurchase initiations, suggesting that dividend based clientele effects are different from those arising from other forms of payouts.

It is interesting to note that some funds seem to have a preference for dividends, which are also explicitly stated in the fund objectives. For example, Lipper classifies as Equity Income Funds (code "EI" or "EIEI" or "GI") those funds that invest primarily in dividend-paying equity securities, and whose "gross or net yield is greater than 125% of the average gross or net yield of the U.S. diversified equity fund universe". As plotted in Figure 1, the asset under management (AUM) of these income funds defined by Lipper varies from US$800billion to US$2.4trillion over the period 1998 to 2014. As a fraction of total AUM, these funds account for about 8 to 15 percent during the same period (see Figure 1). Hence, there is large interest in dividend stocks among some mutual funds and this preference do vary over time.

Next, we investigate whether there are changes in the investor base in response to changes in corporate dividend policies. Specifically, we examine the idea that exposure of mutual funds to fund flows as a mechanism that generates common movement based on dividend clienteles. We find that mutual funds that historically prefer high (low) dividends tilt their portfolio holdings towards (away from) the dividend initiators. Moreover, we find that dividend paying stocks are exposed to mutual fund flows associated with the new investor clientele. Specifically, we find that returns of dividend paying stocks are (not) significantly associated with flow-induced trading by funds that historically prefer (low) high dividends. Similarly, zero-dividend paying stocks are more exposed to flows into and out of funds that are averse to dividends. Hence, the change in the institutional investor clientele and their corresponding exposure to flows contribute to dividend based return co-movement.

Overall, we present fresh evidence consistent with the category or habitat based theories of return co-movement advocated in Barberis and Shleifer (2003) and Barberis, Shliefer and Wurgler (2005). Our contributions are threefold: first, we complement recent studies on the consequence of style investing. For example, return comovement has been shown to be influenced by investment style categories (Teo and Woo (2004) and Wahal and Yavuz (2013)) and commonality in shared firm ownership (Antón and Polk (2014)). We also broadens the salient "style" classifications used by investors beyond index constitutes (Barberis, Shleifer, and Wurgler, 2005; Greenwood, 2008; Boyer, 2011) and geographical location (Chan, Hameed, and Lau, 2003). Second, we offer new evidence on the presence of dividend clienteles. In addition to the evidence on investor preferences for dividends based on retail investors (Graham and Kumar (2006)) and institutional investors (Grinstein and Michaely (2005) and Desai and Jin (2011)), we show that the dividend clientele also affects excess return comovement. Finally, our findings has interesting implications for dividend policy decisions. Since a vast majority of stocks (e.g. constituent stocks of the S&P500 index) are dividend payers, the decision to initiate dividends may affect the firm value via its impact on the firm's systematic risk, and hence, it cost of equity capital. We leave the exploration of the valuation effects for future research.

The paper is organized as follows. Section 2 presents the empirical methodology to test for excess return comovement related to dividend clientele using dividends initiations. Section 3 provides evidence based on ownership by mutual funds with varying preference for dividends, and provides evidence on mutual fund flow associated with the investor clienteles. Section 4 presents excess return comovement related to dividend clientele using the 2003 Tax Cut as the exogenous event. Section 5 concludes.

2. Dividend Initiations and Return Comovement

2. 1 Data and Methodology

We use the dividend per share reported in the annual financial reports obtained from COMPUSTAT to identify firms that initiate dividends (item "DVPSX_F" in COMPUSTAT). Each year, we identify dividend initiators as firms that pay dividends in the current year, but not in the previous year. We consider all common stocks with shares codes of 10 and 11 trading on NYSE/AMEX and NASDAQ. These firms are labelled as initiators or treatment firms. Stock returns data come from CRSP. Our sample period is from year 1983 to 2012. For each firm *i* that initiates dividend in year *t*, we examine the co-movement of stock *i*'s daily returns with the daily returns on two benchmark portfolios. The first portfolio consists of stocks that pay regular dividends in the four years leading to year t (i.e., those that pay dividends from year t-3 to t), denoting the (equal-weighted) portfolio return in day *d* as $MKT_{DD,d}$. The second portfolio consists of stocks that did not distribute any dividends in the four years prior to t (i.e., zero dividends from year t-3 to t), with the corresponding daily (equal-weighted) portfolio return denoted as $MKT_{ND,d}$. We require that stocks in the benchmark portfolios have at least 200 daily return observations each year to avoid the effect of non-synchronous trading. Firms that are classified into these benchmark portfolios are held constant when we estimate the comovement coefficients around dividend initiations. The firms that initiate dividends are, of course, in neither benchmark portfolios.

To measure excess comovement with the two benchmark portfolios, we regress stock returns of dividend initiators on the two benchmark portfolio returns, purging the effects of common risk factors. Specifically, we estimate the following bivariate regression model using daily returns:

$$Ret_{i,d} = \alpha_i + \beta_i * MKT_{DD_{RES},d} + \gamma_i * MKT_{ND_{RES},d} + \delta * X_d + \varepsilon_{i,d}, \quad (1)$$

where $Ret_{i,d}$ is the return on dividend initiator *i* on day *d*; $MKT_{DD_{RES},d}$ ($MKT_{ND_{RES},d}$) refer to residuals of the dividend (non-dividend) paying benchmark portfolio returns regressed on the Fama-French-Carhart four-factor model comprising of excess market return, small-minus-big firm factor (SMB), high-minus-low book-to-market factor (HML), and the Carhart momentum factor (MOM). X refers to a vector of the same four risk factors. Equation (1) is estimated for the pre-dividend initiation year (April of year *t-1* to March of year *t*, denoted *Pre*) and in the post-initiation year (April of year *t+1* to March of year *t+2*, denoted *Post*). Hence, for each dividend initiator firm *i* (in each year t), we obtain four estimates of the comovement measures: comovement with dividend paying stocks in the pre and post periods (β_i^{Pre} and β_i^{Post}) and the comovement with non-dividend paying stocks in the pre and post periods (γ_i^{Pre} and γ_i^{Post}) .

The key tests involve gauging the changes in return comovement around the dividend initiation events. To do this, we average the changes in the regression coefficients across all n dividend initiators i in the pre and post periods:

$$\Delta\overline{\beta} = \sum_{i=1}^{n} (\beta_i^{Post} - \beta_i^{Pre})/n, \quad (2a)$$

$$\Delta\overline{\gamma} = \sum_{i=1}^{n} (\gamma_i^{Post} - \gamma_i^{Pre})/n, \quad (2b)$$

The joint hypotheses of dividend clienteles and the clientele based return comovement predict that firms that initiate dividends will experience an increase in return comovement with other dividend paying stocks ($\Delta\overline{\beta} > 0$) and a decrease in comovement with non-dividend paying stocks ($\Delta\overline{\gamma} < 0$). On the other hand, the fundamental based return comovement predicts that both $\Delta\overline{\beta}$ and $\Delta\overline{\gamma}$ should be zero if there is no significant change in fundamentals. To summarize, we test the following predictions about the excess comovement of returns on firms switching from non-payer to dividend payer with regard to the two benchmark portfolios:

(i) $\Delta\overline{\beta} > 0$,

(ii) $\Delta\overline{\gamma} < 0$.

2.2 Base Results

The main findings on the changes in return comovement for stocks that initiate dividends are presented in Table 1. The sample consists of 2,434 dividend initiations during the period 1983 to 2012. As shown in Table 1, Panel A, the returns on dividend initiating firms co-vary more with returns on other dividend paying stocks after they start paying dividends. After accounting for the common factors represented by Fama-French-Carhart four-factor model, the initiator stocks register an increase in comovement with dividend-paying stocks from 0.19 to 0.34, and the change in comovement is significant, $\Delta\overline{\beta}$ =0.142 (t=2.79). There is also a simultaneous decrease in comovement with non-dividend paying stocks from 0.33 to 0.22, and, $\Delta\overline{\gamma}$=-0.106 (t=-4.73). The magnitude of changes in the return comovement is also economically significant for $\Delta\overline{\beta}$ and $\Delta\overline{\gamma}$,and are comparable to the magnitude of return co-movement induced by S&P addition/deletion (Barberis, Shleifer, and Wurgler, 2005) , or Growth/Value label induced return comovement (Boyer (2011)).

More specifically, during the pre-event window, these stocks co-move more with non-dividend stocks as expected, $\bar{\beta} - \bar{\gamma}$ = -0.132 (t=-3.14), and the comovement changes dramatically after they initiate dividend payments, $\bar{\beta} - \bar{\gamma}$ = 0.115 (t=3.01). Hence, we observe a striking change in the return comovement when firms start paying dividends, providing evidence in favour of dividend clientele based comovement. The difference-in-difference (diff-in-diff) results, $\Delta\overline{\beta} - \Delta\overline{\gamma} = 0.248$ (t=4.69), show that there is dramatic change in co-movement around the dividend initiation event.

Our main findings are highly robust. In unreported results, we obtain similar results when we define the dividend initiators as the firms that do not pay dividends in one or more of the prior years or when we require that the firms pay dividends in multiple subsequent years. Our findings remain intact when we use these alternative definitions of dividend initiators. For example, we obtain the net change in comovement betas (i.e. $\Delta\overline{\beta} - \Delta\overline{\gamma}$) of 0.24 (t=4.01) or 0.28 (t=4.86) when we require that the dividend initiators pays dividends in years *t* and *t+1* or when we stipulated that the firm did not pay dividends in years *t-1* and *t-2* respectively. We also find that the results hold in three equal sub-periods, 1983~1992, 1993~2002, and 2003~2012. The change in return comovement is statistically significant in each sub-period, while the magnitude of coefficient for the diff-in-diff test (i.e. $\Delta\overline{\beta} - \Delta\overline{\gamma}$) is similar across sub-periods (ranging from 0.23 to 0.27) and is slightly higher in the first decade from 1983 to 1992. Finally, we find that our results are similar when we replace daily returns with weekly returns in estimating the comovement coefficients. Again, the net change the coefficient of $\Delta\overline{\beta} - \Delta\overline{\gamma}$ using weekly data is 0.25, which is significant with a t-statistics of 3.09. The results reported in Table 1 are based on yearly observation in the pre and post dividend initiation period defined as April of the year to March of the following year. When we define the year starting in January (July) to December (June of the following year), the average $\Delta\overline{\beta} - \Delta\overline{\gamma}$ coefficient continue to be significant at 0.23 (0.18) with a t-statistics of 4.14 (3.55). When we replace the excess market returns in equation (1) with the unadjusted (raw) returns on the two indexes and obtain an average

$\Delta\overline{\beta} - \Delta\overline{\gamma}$ of 0.18 (t=5.53). Finally, to rule out the effect of outliers, we remove from the sample the firms that have extreme stimates of β and γ, where we consider values above |2| as outliers and delete them. Our results are unchanged and are also unaffected by other definitions of outliers. In all these different experiments, we obtain an increase in the comovement of dividend initiators with other dividend paying stocks and a decrease in co-movement with non-dividend paying stocks.

2. 3 Firms matched by propensity to initiate dividends

We supplement our control for fundamental characteristics of firms initiating dividends using a matched sample of control firms with similar propensity to initiate dividends. For each dividend initiator in our sample, we identify a comparable control firm that does not pay dividends (i.e. from the group of non-dividend paying firms) but has similar ex-ante propensity to initiate dividends. Specifically, we estimate the likelihood of each firm to be a dividend initiator using the logit model based on firm characteristics that are related to the propensity for firms to initiate dividends. Following Fama and French (2001), Baker and Wurgler (2004a, 2004b), and Hoberg and Prabhala (2009), we consider the following firm characteristics in the prior year to predict dividend initiation: total assets, the ratio of market to book value of equity, return on assets, idiosyncratic volatility and leverage (these variables are defined in the Appendix). Given the recent findings in Chen, Singal and Whitelaw (2015) that changes in return comovement are related to past stock returns, we add past one year stock returns as an additional firm characteristic to match. We match each dividend initiator to a control firm that has the closest propensity to initiate dividends and require the difference in propensity between treatment and control firms to be less than 5 percent. We delete dividend initiating firms that do not have a corresponding control firm, which reduces the sample to 1,398 initiator firms. As shown in Table 2, Panel A, the matched sample of control firms have firm characteristics that are similar to our treatment sample. The mean and median firm characteristics are close in values across the two groups and the mean values are not significantly different from each other along all characteristics. Panel A confirms that we are able to identify firms with similar propensity to initiate dividends in the control group, but these firms did not start paying dividends.

Similar to the regression specification in equation (1) for the dividend initiators, we estimate the regression coefficients for the group of control firms:

$$Ret_{c,d} = \alpha_c + \beta_c * MKT_{DD_{RES,d}} + \gamma_c * MKT_{ND_{RES,d}} + \delta_c * X_d + \varepsilon_{c,d}, \quad (3)$$

where $Ret_{c,d}$ is the return on the control firm c on day d and all the independent variables are identical to those defined in equation (1). Similar to the approach outlined in Section 2.1, we again calculate the average comovement coefficients around dividend initiations across all control firms, denoting the average changes in the coefficients in the control group as $\Delta\overline{\beta}^C$ and $\Delta\overline{\gamma}^C$. The clientele based comovement hypothesis predicts that the increase in the comovement of the initiator stocks with other dividend-paying (non-dividend) stocks is higher (lower) than that for the control firms:

(iii) $\Delta\overline{\beta} - \Delta\overline{\beta}^C > 0,$

(iv) $\Delta\overline{\gamma} - \Delta\overline{\gamma}^C < 0,$

(v) $\left(\Delta\overline{\beta} - \Delta\overline{\beta}^C\right) - \left(\Delta\overline{\gamma} - \Delta\overline{\gamma}^C\right) > 0,$

Table 2 panel B presents the results based on the propensity matched sample. Panel B1 of Table 2 confirms that the change in return comovement for initiator stocks remain intact for the reduced sample of initiator stocks with a corresponding matching firm in the control group. These firms experience a significant increase in β and a significant decrease in γ. More importantly, firms in the control sample do not exhibit similar pattern of comovement although they have ex-ante similar likelihood of initiating dividends. As expected, these firms have higher comovement with non-dividend paying stocks in both the pre and post event windows. We do not find evidence of significant increase in the comovement of these control firms with other dividend paying stocks (i.e. $\Delta\overline{\beta}^C = -0.089$ $(t = -1.22)$. Moreover, these control firms also do not exhibit significant decrease in their comovement with other non-dividend paying stocks. Finally, the difference-in-difference results in Panel B2 confirms that there is no significant change in comovement measures for the control sample, i.e. $\Delta\overline{\beta}^C - \Delta\overline{\gamma}^C = -0.081$ (t=-1.06).

Panel B3 of Table 2 presents the relative changes in return comovement between the dividend initiators (treatment firms) and control firms. We find that the dividend initiators experience increase in their comovement with other dividend-paying stocks that are larger than those for the control firms, i.e., $\Delta\overline{\beta} - \Delta\overline{\beta}^{C} = 0.266$ (t=2.67). Similarly, the decrease in comovement of dividend initiators with non-dividend benchmark portfolio is also significant relative to that for the control firms: $\Delta\overline{\gamma} - \Delta\overline{\gamma}^{C} = -0.080$ (t=-1.88). The grand diff-in-diff in the estimated coefficients, i.e. $\left(\Delta\overline{\beta} - \Delta\overline{\beta}^{C}\right) - \left(\Delta\overline{\gamma} - \Delta\overline{\gamma}^{C}\right)$, is a positive 0.346 and this estimate is significant, with t=3.37. The primary difference in the comovement between the dividend initiators and the control group comes from the post period rather than the pre-period, as one would expect. Hence, the control experiment reinforces our contention that the changes in return comovement of dividend initiating firms are not driven by changes in firm fundamentals.

The findings in Table 2 are also robust to the stock selection process. We conduct alternative matching procedure by requiring that the control firms belong to the same industry as the dividend initiator. This additional requirement reduces the sample number of firms by about 1/3, but we obtain qualitatively and quantitatively similar results in the return comovement tests.

2.4 Tests based on non-dividend initiators

We introduce a set of tests based on stocks for which there is no dividend initiation. We do this by estimating the comovement measures for dividend initiators in a randomly selected year and compare the coefficients during the year with that in the previous year. Specifically, for a stock that initiated dividends in year t, we estimate equation (1) for these firms in year *t+k* and *t+k+1*. We consider *k*=1, 3 and 5years and report the estimates in Table 3. Since these firms initated dividends in year t, we expect the firms to be dividend payers in the subsequent years. This implies that they are likely to continue to exhibit higher comovement with other dividend paying stocks in year *t+k*. Similarly, they are also likely to have lower exposure to movements in the non-dividend paying stocks in these years. The main prediction is that we should not observe any changes in the return comovement for these stocks between year *t+k* and *t+k+1* (i.e $\Delta\overline{\beta} - \Delta\overline{\gamma}$= 0).

As shown in Table 3, Panel A, in one year after dividend initiations (*k*=1), we find that β is 0.34 is the year t+1, which is significantly higher than γ, which is 0.23. These co-movement estimates do not change in the following year. The $\Delta\overline{\beta}$ and $\Delta\overline{\gamma}$ estimates are both small and insignificant at 0.04 and 0.03 respectively. The grand difference-in-difference, $\Delta\overline{\beta} - \Delta\overline{\gamma}$, is even smaller at 0.01 and is not distinguishable from zero.

In Panels B and C of Table 3, we repeat the analysis with *k*=3 or 5. We find similar results: the stocks do not exhibit any change in comovement if the event year is not the year the firm starts to pay dividends. Interestingly, we note that the comovement of the firms with other dividend initiators increase in the subsequent year. The β estimate jumps to 0.8 and 0.9 in year t+3, and remains at similar levels in year *t+5*, suggesting that comovement with other dividend paying stocks takes time. The latter finding is consistent with slow adjustment in the investor clientele and the adjustment may take more than a year. Hence, there is nothing mechanical about the estimation process that generates any change in the coefficient estimates. The estimated coefficients make economic sense and are consistent with the notion that dividend initiators undergo significant changes in return co-movement.

2.5. Stock Repurchase Initiations and Return Co-movement

This section extends the analysis to stock repurchases as an alternate corporate pay-out event. Specifically, we study the effect of stock repurchase initiations on return comovement. If investors view repurchase as similar to dividend payment, then we would expect repurchase initiators to experience (decreases) increases in comovement with other (non-) dividend paying stocks. On the other hand, if dividend represents a unique and salient characteristic that segregates investor clienteles, the repurchase initiations is a good placebo test for our study.

For each repurchase initiator, we report coefficients estimated from the regression based on daily returns in per and post event periods. For firms that initiate repurchase in year *t*, Pre-event period starts from April in year *t*-1 to Mar in year *t*. Post-event period starts from April in year *t*+1 to Mar in year t+2. Initiator stock *i* is not included in any of the portfolios. Again, we estimate equation (1) for these repurchase initiators.

Following Fama and French (2001), repurchase is defined as follows: if the firm uses the treasury stock method for repurchases, we measure repurchases for year t as the change in common treasury stock from year $t-1$ to year t. If the firm uses the retirement method instead, which is inferred from treasury stock equal to zero in the current and prior years, we take repurchases for year t to be the difference between purchases and sales of common and preferred stock in year t. If either of these amounts is negative, we set repurchases to zero[3]. *Repurchase Dummy* equals to one if the repurchase amount is larger than zero, otherwise equals to zero.

Firms with repurchase initiation in year t refer to firms that do not repurchase in t -1, but repurchase in t. Table 4 presents the results. We find that the diff-in-diff result is insignificant, 0.002 (t=0.08). This evidence, $\Delta\overline{\beta} - \Delta\overline{\gamma} \approx 0$, indicates that investors react to dividend initiation and repurchase initiation differently, while the later does not cause significant relative changes in return comovement. In unreported resutls, we define repurchase initiation if the dollar value of repurchase exceeds 1% of the firm's market value, following Gong, Louis, and Sun (2008). This alternate definition of repurchase initiation does not change the results in Table 4. Overall, we find that dividend payment is a unique form of payout that attracts different investor clientele and demand pressures from the investors generate return comovement.

3. Investor Habitat, Dividends and Return Comovement: Evidence from Mutual Funds

In this section, we explore a specific mechanism that could explain the changes in return comovement around dividend initiations, namely, the return comovement induced by mutual fund flows. To do this, we extract the quarterly mutual fund holdings for all U.S. equity mutual funds from Thomas Reuters CDA/Spectrum database. Data on mutual fund flows are calculated from the CRSP Survivorship Bias Free Mutual Fund Database. The sample period is from 1983 to 2012.

3.1 Changes in Mutual Fund Ownership

[3] This definition is also used by Huang and Thakor (2013).

In an effort to link the change in return comovement around dividend initiation to investor habitat, we examine the changes in the mutual fund holdings of stocks that initiate dividends. The habitat view of stock comovement relies on investor preference for specific stock characteristics (dividends). If investors trade in the stocks that share common dividend characteristic in a similar fashion, this would in turn create demand shocks as they buy or sell the same assets in tandem. We empirically measure the preference of mutual funds for dividend paying stocks by looking at their historical holdings. Specifically, we calculate the cross-sectional average of stock dividend yield across all stocks held in each fund. Because we are interested in how mutual funds change their portfolio weights in stocks that initiate dividend, we estimate the fund preference for dividend using the fund holding information as of the first quarter of the year. In unreported results, we find that our results are unaffected if we use fund holding as of the last quarter of the previous year. The dividend preference of fund *i* in year t is calculated as:

$$Fund\_Dyd_{i,t} = \sum_{j \in \emptyset_{i,t}} \frac{StkYield_{j,t-1} * DHldg_{i,j,t}}{\sum_{j \in \emptyset_{i,t}} DHldg_{i,j,t}}, \quad (4)$$

where $StkYield_{j,t-1}$ is dividend yield (the ratio of dividend per share to stock price) for stock *j* in year *t*-1, and $DHldg_{i,j,t}$ is the dollar holding of fund *i* in stock *j* as of the first quarter in year *t*. $\emptyset_{i,t}$ in equation (4) is the set of stocks held by fund *i* in the first quarter in year *t*. To calculate the number of shares held by each mutual fund at the end of the quarter, we assume that the fund manager does not trade between the report date and the quarter-end (adjusting for stock splits).

Each year, we sort funds into quintiles and study how funds in each quintile group change their portfolio weights in dividend initiators. For each fund *i* in year *t*, we measure the change in portfolio weights of dividend initiators relative to their holdings of these stocks one year ago (i.e., fraction of fund dollar assets invested in firms that initiate dividends in year *t+1* relative to the corresponding weights in year *t*) as follows:

$$\Delta Hld_{i,t \sim t+1} = \sum_{j \in Dividend\ Initiator\ in\ t} \frac{DHldg_{i,j,t+1}}{\sum_{j \in \emptyset_{i,t+1}} DHldg_{i,j,t+1}}$$

$$- \sum_{j \in Dividend\ Initiator\ in\ t} \frac{DHldg_{i,j,t}}{\sum_{j \in \emptyset_{i,t}} DHldg_{i,j,t}}, \quad (5)$$

We view stocks with dividend initiations in year *t* as a specific asset class, and examine how funds change their portfolio weights in this asset class between two snapshots (one is before the initiation, and the other is after the initiation). Since the exact dividend initiations date are in different months for initiators in year t, we use fund holding as of the first quarter of year t+1 relative to the first quarter of year t to calculate the change in fund holdings. The first (second) component $\Delta Hld_{i,t \sim t+1}$ in (5) denotes the portfolio weight in dividend initiators after (before) their initiations in year t. Positive (negative) $\Delta Hld_{i,t \sim t+1}$ indicates that fund *i* increases (decreases) its dollar holdings, as a proportion of its asset under management, in the firms that initiate dividends.

Table 5, Panel A presents the changes in fund holdings for funds ranked into quintiles based on their preference for dividends. *Fund_Dyd rank*=5 (1) refers to funds with highest (lowest) preference for dividend yield. We find that for funds with the lowest preference in dividend yield (rank=1), the average fund weight in initiators is 2.89 percent in the year prior to dividend initiation. However, the portfolio weight decreases to 2.57 percent after dividend initiation. The decrease in fund weight is -0.33% and is statistically significant (t=-5.9). It suggests that funds that are averse to dividend stocks tilt their capital away from stocks that switch from non-dividend payers to dividend payers.

In contrast, for funds with the highest dividend preference (rank=5), the average fund weight in the dividend initiators is 0.73 percent prior to the initiation, but increases to 0.99 percent after the firms initiate dividends. The increase in fund weight of 0.26 percent is statistically significant (t=9.8). This suggests that after dividend initiation, funds that historically have preference for dividends tilt their holdings toward these initiators. In other words, these initiators attract capital from funds that have a strong preference for dividends. The increase in holdings of dividend initiators by funds that prefer dividends and decrease in holdings by dividend averse funds provide fresh evidence of changes in institutional investor clientele around dividend initiation. In the last row of Table 5, Panel A, the difference-in-difference result in terms of portfolio weight changes for funds with the highest and lowest preference for dividends is a net increase of 0.59 percent (t=9.6). The latter finding indicates significant changes in the composition of shareholders when firms initiate dividends.

Panel B of Table 5 presents the same results across three 10-year sub-periods: 1983-1992, 1993-2002 and 2003-2012. We find persistent evidence that funds with the highest preference for dividend yield increases portfolio weights around dividend initiations in each of the three sub-periods. The difference-in-difference between funds with the highest and lowest preference for dividends is positive in all sub-periods, while the economic magnitude and statistical significance are strongest at 0.93 percent in the 2003-2012 sub-period. The larger changes in fund holdings in response to dividend initiations in more recent years are consistent with greater specialization in trading styles of mutual funds as well as other asset management institutions (e.g. Harris, Hartzmark and Solomon (2015)). Table 5 also suggests that dividend clientele effects are not disappearing over time. The evidence is consistent with changes in mutual fund based dividend clientele (and possibly changes in their trading patterns) as a channel that generates excess return co-movement between dividend initiators and other dividend paying stocks.

3.2 Dividend Clientele and Mutual Fund Flows

Having provided evidence on changes in type of mutual funds holding the stocks that initiate dividends, we explore whether dividend paying stocks are exposed to price changes associated with fund flows experienced by mutual funds that prefer dividend stocks in their portfolio. We first classify all mutual funds into dividend-prone funds and dividend-averse funds based on the average dividend yield of stocks held by each fund, in each quarter. *Fund Div Yield (q)* is the cross-sectional investment value-weighted average of dividend yield (dividend per share/price) across all stocks held in a fund portfolio as reported in quarter *q*. We classify funds whose *Fund Div Yield (q)* is above the median across all funds in the sample as dividend-prone funds (*DivProne Funds*); while those below the median as dividend-averse funds (*DivAverse Funds*). We derive the monthly mutual fund flow from mutual funds' total net assets and net monthly returns obtained from the Center for Research in

Security Prices (CRSP) Survivorship-bias-free mutual fund database. The net flow to fund *i* during month *m* ($Flows_{i,m}$) is defined as:

$$Flows_{i,m} = \frac{TNA_{i,m} - TNA_{i,m-1}(1 + R_{i,m)} - MergeTNA_{i,m}}{TNA_{i,m-1}},$$

where $TNA_{i,m}$ is the total net asset (TNA) at the end of month m, $R_{i,m}$ is the fund's return for month m, and $MergeTNA_{i,m}$is the increase in the TNA due to mergers during month m. The data starts from 1991, when the database started reporting monthly TNAs.

Next, we construct two stock-level flow-induced trading measures similar to Lou (2012): the first measure, *FIT*, uses flows associated with all dividend-prone funds that hold the stock. For stock *j* and fund *i* in month *m*, we define the stock level flow-induced trading as:

$$FIT_{j,m} = \sum_{i \in DivProne\ Funds} Flows_{i,m} * \frac{Shares_{i,j,m}}{\sum_{i \in all\ funds} Shares_{i,j,m}}, \quad (5)$$

The second measure, *NFIT*, uses flows for all dividend-averse funds that hold the stock:

$$NFIT_{j,m} = \sum_{i \in DivAverse\ Funds} Flows_{i,t} * \frac{Shares_{i,j,m}}{\sum_{i \in all\ funds} Shares_{i,j,m}}, \quad (6)$$

where $Shares_{i,j,m}$ is the number of stock *j* held by fund *i* as of month m. $Flows_{i,m}$ is the monthly flow for fund *i* in month *m*.

Higher *FIT* (*NFIT*) implies that dividend-prone (dividend-averse) mutual funds that hold the stock experience higher inflows. We expect *FIT* to be more significantly associated with stock returns for dividend stocks than *NFIT*. This is because dividend-prone funds are more likely to allocate new money (positive inflows) to dividend stocks, due to their dividend preference, compared to dividend-averse funds. Thus, inflows (outflow) to dividend-prone funds are more likely associated with positive (negative) return for dividend paying stocks.

Table 6 reports monthly stock returns on mutual funds flow-induced trading pressure for dividend stocks (those that are dividend payers in year *t* and *t*+1). After we identify a dividend stock in year *t*, we run monthly regression using returns in year t+1 to t+3 as dependent variable, and use the monthly flow-induced trading measures as main explanatory variables. In addition to Fama-French-Carhart four risk factors (MKT, SMB, HML, UMD), we also use three orthogonalized portfolio returns as control variables: *Industry Ret*, the concurrent value-weighted monthly industry return; *Industry Ret-DIV (Industry Ret--NONDIV)*, the industry returns consisting of only dividend payers (non-dividend payers) in the industry. We exclude firm *j* from the industry that it belongs to, and use portfolio returns orthogonal to FFC four risk factors in the regressions. Finally, we consider lagged values of *FIT* and *NFIT* as additional independent variables. The sample period is from 1991 to 2012 as monthly mutual fund flow data is only available from 1991.

Each year, we obtain the cross-sectional average of coefficients (regressing stock return on flow-induced trading measures and other concurrent control variables) for all dividend stocks. As shown in Table 6, we find that stock returns for constant dividend stocks are positively and significantly associated with concurrent flow-induced trading constructed based on fund flows of dividend-prone funds. The coefficient for *FIT* is 0.22 (t=3.73) in column 1, after controlling for common factors. When we include industry return as additional controls in column 2, and coefficient for *FIT* decreases to 0.18 but remains statistically significant (t=3.23). Specification in column 2 mitigates the concern that the flow-induced trading is driven by industry effects. In column 3, we further decompose the orthogonalized industry return into those based on dividend stocks (exclude the firm itself) and non-dividend stocks. This specification helps us to further distinguish whether the relation between *FIT* and stock returns is driven by fundamentals about dividend stocks in the same industry. We find that the coefficient of *FIT* is reliably positive at 0.18 (t=2.87) in column 3, suggesting that the effect of flow-induced trading on prices of dividend stocks is robust to comovement due to dividend paying stocks within the same industry. In columns 4 to 6, we add lagged *FIT* and *NFIT* as additional control variables and find similar results. In contrast, the fund-flow-induced trading by dividend-averse funds (*NFIT*) do not affect stock price in all specifications. Hence, dividend paying stocks are exposed to the fund flow risk associated with funds that are prone to invest in dividend stocks, consistent with the dividend clientele hypothesis.

We repeat the analysis for the set of firms that are zero dividend stocks. Similar to Panel A, we obtain cross-sectional average coefficients by regressing monthly returns on zero-dividend paying stocks (all non-dividend payers in the year) on the flow induced trading measures for dividend prone funds (*FIT*) and dividend averse funds (*NFIT*). This time we find that stock returns of non-dividend paying stocks are affected by the flows to dividend averse funds (*NFIT*) but not the funds that are in *FIT*. These results are also robust to various changes in the specification as reported in Panel B of Table 6.

4. Dividend Initiations and Return Comovement: 2003 Tax Cut Evidence

The Jobs and Growth Tax Relief Reconciliation Act of 2003 was introduced in the United States to effectively reduce the top tax rate on corporate dividend income to 15 percent. Although the Act (which we will label the "2003 Tax Cut") was enacted on May 28, 2003, the tax cut on individual's dividend income was effective from the January 2003, when it was first proposed by the U.S. President. A reduction in dividend tax makes the dividend incomes more attractive to taxable investors. The 2003 Tax Cut favors the valuation of dividend stocks by their taxable investors, pushing the valuation of dividend higher. Several studies have examined the effect of the unanticipated 2003 Tax Cut on corporate and individual behaviour. For example, Chetty and Saez (2005) report a huge increase in the number of firms that initiate dividends immediately after the enactment of the law, starting from third quarter of 2003. Their findings show that the corporate dividend initiations were in response to the 2003 Tax Cut and are not confounded by other factors that may influence the payout decision.[4] We confirm these observations in unreported tables. We find that the number of dividend paying firms decline from 1996 to 2002 (see, for example, Fama and French (2001)) before surging in 2003 and 2004, although the total number of firms declined modestly starting from 2002. The increase in dividend payers is also consistent with prior studies arguing for tax status as a major driver for dividend clientele (Edwin and Gruber, 1970; Allen, Bernardo, and Welch, 2000; Graham, 2003; Poterba, 2004).

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[4] However, Brav, Graham, Harvey and Michaely (2008) argue that the 2003 Tax Cut had only a second-order effect on the payout decision by corporations as the increase in dividend initiations did not last long. This criticism does not explain the return comovement results that we report for the propensity matched sample.

We focus on the firms that initiate dividends in the 2003 fiscal year, and investigate how the return comovement changes for these initiators. These initiation decisions, after 2003 Tax Cut Act enacted in May *2003*, are relatively unrelated to firm-specific fundamentals, as argued by Chetty and Saez (2005). Therefore, analysing changes in return comovement around these dividends initiation can help to distinguish the sentiment- or friction-based view from the fundamentals-based view of return comovement.

We adopt a bivariate regression approach using a matched sample, similar to the analysis in Section 2. Treatment firms consist of firms that initiate dividends in the *2003* fiscal year. We find control firms for each initiator firm using the propensity score matching algorithm. Unlike Section 2, we now choose the control firms among those that constantly pay dividend in four years prior to *2003*. We match each initiator to a control firm that has the same firm characteristics as measured by the closest propensity with the initiator and require the propensity difference between treatment and control firms to be less than 5 percent. Similar to the approach described in Section 2, we require that the control firms and dividend initiators to be similar in the following dimensions in year *2002*: Total Assets, the ratio of market to book value of equity, return on assets, idiosyncratic risk, leverage and past one year stock return. We find valid control firms corresponding to 94 initiator firms, which make up our final sample. It is important to note that the control firms are dividend payers prior to 2002 and the dividend initiators share the firm characteristics as the control firms, but initiated dividends following the 2003 Tax Cut (an exogenous event).

Panel A of Table 7 shows the dividend initiator and controls firms are similar in fundamental firms characteristics. We report coefficients estimated from the regressions in equations (1) and (3) for dividend initiators and control firms for the pre-event (from April *2002* to Mar *2003)* and the post-event windows (from April 2004 to Mar 2005). As before, the dividend initiators are excluded from the two benchmark portfolios. The mean and median of the treatment and control samples are very close and none of the characteristics are significantly different between the two groups. Hence, the set of sample firms that we identify as dividends initiators after the tax cut in 2003 are similar to the set of control firms that are dividend payers prior to the tax cut.

Table 7, Panel B presents the level and change of return co-movement with dividend and non-dividend portfolios. The dividend initiators exhibit significant increases in the comovement with other dividend stocks, $\Delta\overline{\beta} = 0.585$ (t=3.39). The diff-in-diff test for the effect of dividend initiation is also significant, $\Delta\overline{\beta} - \Delta\overline{\gamma} = 0.629$(t=3.58) as shown in Panel B1. Panel B2 shows that the comovement estimates for the control firms are not affected in a similar way, $\Delta\overline{\beta}^{C} - \Delta\overline{\gamma}^{C} = -0.007$(t=-0.04). In comparing the changes in comovement for the dividend initiators relative to the changes in the control firms, $\left(\Delta\overline{\beta} - \Delta\overline{\beta}^{C}\right) - \left(\Delta\overline{\gamma} - \Delta\overline{\gamma}^{C}\right), = 0.636$ the net increase in return comovement of dividend initiators with other dividend paying stocks is a dramatic 0.636 percent (t=2.60), providing strong support for the clientele explanation of return comovement.

We also repeat the experiment on the changes in mutual fund holdings around dividend initiations in the setting of the 2003 Tax Cut and obtain similar evidence. In unreported results, we find that dividend prone mutual funds increase their holdings of dividend initiators by 0.20 percent (from 0.49 to 0.69 percent) in the year after the 2003Tax Cut, while dividend averse funds reduce their holdings of these stocks by 0.44 percent, generating a net change of 0.64 percent in share ownership. Overall, the findings based on the natural experiment of the 2003 Tax Cut are slightly stronger than those reported for the full sample in Table 5. Though not reported, we also find that the Equity Income Funds defined by Lipper (see Figure 1) also display an increase in their holdings of dividend initiators in both the overall sample and around the 2003 Tax Cut.

5. Conclusion

We provide new evidence in support of the friction- or sentiment-based view of return comovement. At the margin, firms that initiate dividend payment affect their investor clientele, attracting investors with a preference for dividend stocks. These stocks display a significant shift in their return comovement: they exhibit stronger (weaker) return co-movement with other dividend paying (non-paying) stocks. Our finding of a dividend clientele based return co-movement is robust to a range of tests that control for variation in firm fundamentals. Our findings demonstrates that dividend is a salient characteristic used by investors to trade as a category. Investors, who prefer high dividends, trade in a subset of stocks that pay dividends, and their trading in and out of the subset of stocks as a group generates co-movement in returns. The excess return comovement caused by dividend clientele supplement recent studies about style investing. For instance, past style returns help explain future stock returns after controlling for fundamentals (Wahal and Yavuz, 2013), degree of shared ownership predicts cross-sectional variation in return comovement (Antón and Polk, 2014). It also broadens our understandings of potential “style” or category classifications used by investors. For instance, prior studies use index constituents (Barberis, Shleifer, and Wurgler, 2005; Greenwood, 2008; Boyer, 2011) and geographical location (Chan, Hameed, and Lau, 2003) as styles. It talks to recent works about the interplay of corporate dividend policy and holding or trading by institutional investors (Harris, Hartzmark, and Solomon, 2014; Desai and Jin, 2011; Grinstein and Michaely, 2005). We complement the evidence on changes in dividend yield in holdings by household (Kawano, 2014) and retail investors (Graham and Kumar, 2006), by showing that changes in dividend clientele affects the comovement of stock returns as well.

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Table 1: Dividend Initiation and Return Co-movement

This table presents the return co-movement with market-level dividend index and non-dividend index for dividend initiators. Initiators in year *t* refer to firms that do not pay dividend in *t*-1 but pay in *t*. For each initiator, we report coefficients estimated from the following regression based on daily returns in PRE/POST initiation period separately. For firms that initiate dividend in year *t*, Pre-event period starts from April in year *t*-1to Mar in year *t*. Post-event period starts from April in year *t*+1to Mar in year t+2. Initiator stock *i* is not included in any of the portfolios.

$$Ret_{i,d} = \alpha_i + \beta_i * MKT_{DD_{RES,d}} + \gamma_i * MKT_{ND_{RES},d} + \delta * X + \varepsilon_{i,t}, \quad (1)$$

Where $Ret_{i,d}$ is the return on dividend initiator *i* on day *d*. We calculate two equal-weighted daily portfolio returns for the two market portfolios, all firms that pay dividends every year around the event, i.e., [t-3 ~ t] and all firms that never pay dividends around the event, respectively.$MKT_{DD_{RES,d}}$ and $MKT_{ND_{RES},d}$ refer to residuals of these two portfolio returns using the Carhart four-factor model. X refers to four risk factors (Market, SMB, HML, Momentum). There are 2,434 dividend initiations.

	PRE		POST		POST - PRE	
	Mean	t-value	Mean	t-value	Mean	t-value
β_i	0.193	4.79	0.335	9.27	0.142	2.79
γ_i	0.326	17.78	0.220	12.65	-0.106	-4.73
$\beta_i - \gamma_i$	-0.132	-3.14	0.115	3.01	0.248	4.69

Table 2: Matched Sample - Dividend Initiation and Return Co-movement

We find a control firm for each initiator firm using propensity score matching. We select control from non-dividend firms that do not initiate dividend in year *t*, and we require that control and initiators should be similar in the following dimensions in year *t*-1: *Log Total Asset, Market/Book ratio, One Year Return, Idiosyncratic Risk, Leverage,* and *Return on Asset (ROA)*. We estimate the likelihood of each firm to be an initiator using a logit model. Then we match each initiator to a control firm that has the closest propensity with the initiator (require the propensity difference between treatment and control less than 5 percentage points). Panel A shows the comparison of initiator and controls firms after matching. Panel B shows the level and change of return co-movement with market-level dividend index and non-dividend index. We report coefficients estimated from the following regression for treatment firms and control firms in each period separately. For firms that initiate dividend in year *t*, Pre-event period starts from April in year *t*-1to Mar year *t*. Post-event period starts from April in year *t*+1to Mar year *t*+2. We find valid control firms for 1,398 initiator firms. Initiator stock *i* is not included in any of the portfolios. We exclude control firms from the index compositions when constructing index returns.

$$Ret_{i,d} = \alpha_i + \beta_i * MKT_{DD_{RES},d} + \gamma_i * MKT_{ND_{RES},d} + \delta * X + \varepsilon_{i,t}, \quad (1)$$

$$Ret_{c,d} = \alpha_c + \beta_c * MKT_{DD_{RES},d} + \gamma_c * MKT_{ND_{RES},d} + \delta_c * X_d + \varepsilon_{c,d}, \quad (3)$$

where $Ret_{i,d}$ ($Ret_{c,d}$) is the return on dividend initiator *i* (the control firm *c*) on day *d*.

Panel A: Firm Characteristics

	Treatment		Control		Diff in Mean	t-value of
Matching Var.	Mean	Median	Mean	Median	(T- C)	diff
Log(Asset)	5.520	5.44	5.512	5.493	0.008	0.12
M/B	2.093	1.525	2.177	1.532	-0.084	-1.19
One Year Return	0.017	0.015	0.016	0.011	0.001	0.41
Idiosyncratic Risk	0.030	0.026	0.032	0.027	-0.002	-1.80
Leverage	0.162	0.105	0.164	0.105	-0.002	-0.36
ROA	0.116	0.112	0.111	0.112	0.005	1.31

Panel B: Difference-in- Difference-in-Difference test

B.1 Treatment

	PRE		POST		POST - PRE	
	Mean	t-value	Mean	t-value	Mean	t-value
β_i	0.181	3.39	0.359	7.61	0.177	2.59
γ_i	0.302	12.63	0.214	9.42	-0.088	-2.97
$\beta_i - \gamma_i$	-0.121	-2.14	0.144	2.88	0.265	3.74

B.2 Control

	PRE		POST		POST - PRE	
	Mean	t-value	Mean	t-value	Mean	t-value
${\beta_i}^C$	0.101	1.79	0.012	0.23	-0.089	-1.22
${\gamma_i}^C$	0.370	14.78	0.363	13.71	-0.008	-0.25
${\beta_i}^C - {\gamma_i}^C$	-0.269	-4.49	-0.350	-6.01	-0.081	-1.06

B.3 Treatment – Control

	PRE (Treat - Control)		POST (Treat - Control)		POST - PRE	
	Mean	t-value	Mean	t-value	Mean	t-value
$\beta_i - {\beta_i}^C$	0.081	1.07	0.346	4.88	0.266	2.67
$\gamma_i - {\gamma_i}^C$	-0.068	-2.18	-0.148	-4.43	-0.080	-1.88
$\beta_i - {\beta_i}^C - (\gamma_i - $	0.149	1.92	0.495	6.62	0.346	3.37

Table 3: Dividend Initiation and Return Co-movement – Initiators in Non-initiating Years

This table presents the return co-movement with market-level dividend index and non-dividend index for dividend initiators **in non-initiating years**. Initiators in year *y* refer to firms that do not pay dividend in y-1 but pay in y. For each initiator in year y (i.e., actual event year), we select a pseudo year *t* that is different from its actual initiation year, and report its return co-movement around this pseudo-event year. We report coefficients estimated from the following regression based on daily returns in PRE/POST pseudo year separately. For pseudo year *t*, Pre-event period starts from April in year *t-1* to Mar in year *t*. Post-event period starts from April in year *t*+1to Mar in year t+2.

$$Ret_{i,d} = \alpha_i + \beta_i * MKT_{DD_{RES},d} + \gamma_i * MKT_{ND_{RES},d} + \delta * X + \varepsilon_{i,t}, \quad (1)$$

Where $Ret_{i,d}$ is the return on dividend initiator i on day d. We calculate two equal-weighted daily portfolio returns for the two market portfolios, all firms that pay dividends every year around the event, i.e., [t-3 ~ t] and all firms that never pay dividends around the event, respectively.$MKT_{DD_{RES},d}$ and $MKT_{ND_{RES},d}$ refer to residuals of these two portfolio returns using the Carhart four-factor model. X refers to four risk factors (Market, SMB, HML, Momentum).

Pseudo Event Year *t* = Actual Event Year *y* + 1

	PRE		POST		POST - PRE	
	Mean	t-value	Mean	t-value	Mean	t-value
β_i	0.344	6.35	0.387	7.01	0.043	0.57
γ_i	0.226	9.36	0.255	10.55	0.029	0.94
$\beta_i - \gamma_i$	0.118	2.25	0.132	2.25	0.014	0.18

Pseudo Event Year *t* = Actual Event Year *y* + 3

	PRE		POST		POST - PRE	
	Mean	t-value	Mean	t-value	Mean	t-value
β_i	0.814	12.12	0.906	12.09	0.092	0.97
γ_i	0.296	10.85	0.328	10.69	0.032	0.87
$\beta_i - \gamma_i$	0.517	7.47	0.578	7.71	0.061	0.64

Pseudo Event Year *t* = Actual Event Year *y* + 5

	PRE		POST		POST - PRE	
	Mean	t-value	Mean	t-value	Mean	t-value
β_i	0.786	10.94	0.777	11.61	-0.009	-0.10
γ_i	0.351	10.26	0.314	8.55	-0.037	-0.86
$\beta_i - \gamma_i$	0.435	5.61	0.463	6.37	0.028	0.28

Table 4: Stock Repurchase Initiations and Return Co-movement

This table reports firms that initiate repurchase in year *t* (i.e., do not repurchase in year *t-1*, but repurchase in year *t*). This table use the same procedure as Table 1. For each repurchase initiator, we report coefficients estimated from the following regression based on daily returns in PRE/POST event period separately. For firms that initiate repurchase in year *t*, Pre-event period starts from April in year *t*-1to Mar in year *t*. Post-event period starts from April in year *t*+1to Mar in year t+2. Repurchase initiator stock *i* is not included in any of the portfolios.

$$Ret_{i,d} = \alpha_i + \beta_i * MKT_{DD_{RES,d}} + \gamma_i * MKT_{ND_{RES,d}} + \delta * X + \varepsilon_{i,t},,$$

where $Ret_{i,d}$ is the return on repurchase initiator i on day d. We calculate two equal-weighted daily portfolio returns for the two market portfolios, all firms that pay dividends every year around the event, i.e., [*t*-3 ~ *t*] and all firms that never pay dividends around the event, respectively.$MKT_{DD_{RES,d}}$ and $MKT_{ND_{RES},d}$ refer to residual of these two portfolio returns using the Carhart four-factor model. X refers to four risk factors (Market, SMB, HML, Momentum).

	PRE		POST		POST - PRE	
	Mean	t-value	Mean	t-value	Mean	t-value
β_i	0.381	23.24	0.356	22.55	-0.025	-1.18
γ_i	0.450	55.30	0.423	51.84	-0.027	-2.81
$\beta_i - \gamma_i$	-0.068	-3.77	-0.067	-3.72	0.002	0.08

Table 5: Changes of Mutual Fund Holdings of Initiator Stocks - Fund Level Analysis

This table presents $\Delta Hld_{i,t\sim t+1}$ the change of fund *i*'s holding of firms that initiate dividend in year *t* (i.e., fraction of fund dollar assets invested in these initiators) around their initiations. For each fund *i*, and year *t*, we calculate

$$\Delta Hld_{i,t\sim t+1} = \sum_{j\in Dividend\ Initiator\ in\ t} \frac{DHldg_{i,j,t+1}}{\sum_{k\in\emptyset_{i,t+1}} DHldg_{i,k,t+1}} - \sum_{j\in Dividend\ Initiator\ in\ t} \frac{DHldg_{i,j,t}}{\sum_{k\in\emptyset_{i,t}} DHldg_{i,k,t}}$$

$\emptyset_{i,t}$ is the set of stocks held by fund *i* in the first quarter in year *t*. $DHldg_{i,j,t\_Q1}$ is the dollar holding of fund *i* in stock *j* as of the first quarter in year *t*.

We sort funds into quintile groups based on average dividend yield of stock they hold as of the Qtr 1 of year *t*,

$$Fund\_Dyd_{i,t} = \sum_{j\in\emptyset_{i,t}} \frac{StkYield_{j,t-1} * DHldg_{i,j,t}}{\sum_{k\in\emptyset_{i,t}} DHldg_{i,k,t}},$$

where $StkYield_{j,t-1}$ is dividend yield for stock j in year *t*-1.Then we report $\Delta Hld_{i,t\sim t+1}$ separately for funds in each quintile group (*Fund_Dyd rank* =5 refers to funds with highest average dividend yield). The fund's fraction of total dollar assets invested in initiators is presented in percentage points.

Panel A: Fund Holdings in Initiators in PRE/POST Initiation Period

Lagged Fund Dividend Yield Rank	Holding (PRE, *t*)	Holding (POST, *t+1*)	$\Delta Hld_{t\sim t+1}$ (POST – PRE)	*t*-value
1(Low Yield Fund)	2.893	2.566	-0.327	-5.89
2	2.275	2.210	-0.065	-1.99
3	1.858	1.910	0.051	2.02
4	1.464	1.586	0.122	4.76
5 (High Yield Fund)	0.728	0.991	0.263	9.84
HIGH-LOW			0.590	9.58

Panel B: ΔHld (POST – PRE) in sub-periods

	1983~1992		1993~2002		2003~2012	
Lagged Fund Dividend Yield Rank	$\Delta Hld_{t\sim t+1}$	t-value	$\Delta Hld_{t\sim t+1}$	t-value	$\Delta Hld_{t\sim t+1}$	t-value
1(Low Yield Fund)	0.024	0.22	-0.059	-0.93	-0.595	-6.36
2	0.092	1.24	0.102	3.08	-0.214	-3.86
3	0.269	4.29	0.170	6.97	-0.076	-1.74
4	0.184	3.27	0.213	7.53	0.049	1.12
5 (High Yield Fund)	0.228	4.31	0.176	6.27	0.336	7.36
HIGH-LOW	0.204	1.70	0.235	3.40	0.931	8.95

Table 6: Flow induced Trading and Stock Returns

This table reports the effect of mutual funds flow-induced trading pressure on monthly stock returns. We construct two stock-level flow-induced trading measures similar to Lou (2012): the first measure, *FIT*, uses flows for all dividend-prone funds that hold this stock; the second measure, *NFIT*, uses flows for all dividend-averse funds that hold this stock. For stock *j* and fund *i* in month *t*, we get stock level flow-induced trading:

$$FIT_{j,m} = \sum_{i \in DivProne\ Funds} Flows_{i,m} * \frac{Shares_{i,j,m}}{\sum_{i \in all\ funds} Shares_{i,j,m}}$$

$$NFIT_{j,m} = \sum_{i \in DivAverse\ Funds} Flows_{i,m} * \frac{Shares_{i,j,m}}{\sum_{i \in all\ funds} Shares_{i,j,m}}$$

Div. Prone (Averse) Funds refer to funds with average dividend yield above (below) median. Fund dividend yield is defined in Table 5. $Shares_{i,j,m}$ is the number of stock *j* held by fund *i* as of month *m*. $Flows_{i,m}$ is the monthly flow for fund *i* in month *m*. In Panel A, for each year *t*, we obtain the cross-sectional average of coefficients (regress stock return on flow-induced trading measures and other concurrent control variables) for all dividend stocks (only retain dividend payers that do not terminate dividends in *t*+1).Then we get time-series means of coefficient for each year. We report estimated coefficients of *FIT* and *NFIT* that are in the same month as the stock return, and *LAGFIT*, *LAGNFIT* that are lagged by one month. *Industry Ret* is the concurrent value-weighted monthly industry return. *Industry Ret-DIV (-NONDIV)* is the industry returns consisting of only dividend payers (non-payers) in the industry. We exclude firm *j* from the industry that it belongs to, and use portfolio returns orthogonal to FFC four risk factors in the regressions. We repeat the same estimation process for the non-dividend paying stocks (stocks that do not pay any dividend in the year) and report them in Panel B. The sample period is from 1991 to 2012 (monthly flow data is available from 1991). Newey-West adjusted *t* -statistics are reported in parentheses.

Panel A

VAR	MODEL1	MODEL2	MODEL3	MODEL4	MODEL5	MODEL6
FIT	0.217***	0.178***	0.180***	0.271***	0.217***	0.182***
	(3.73)	(3.23)	(2.87)	(4.87)	(4.93)	(4.05)
NFIT	-0.128	0.009	0.004	-0.103	0.065	0.015
.	(-0.86)	(0.11)	(0.06)	(-0.54)	(0.58)	(0.13)
Industry Ret		0.449***			0.444***	
.		(23.32)			(23.04)	
Industry Ret-DIV			0.355***			0.354***
			(30.41)			(30.50)
Industry Ret-NONDIV			0.118***			0.117***
.			(9.61)			(9.85)
LAGFIT				-0.255***	-0.107	-0.120*
				(-3.00)	(-1.45)	(-1.74)
LAGNFIT				0.013	-0.024	-0.055
.				(0.06)	(-0.13)	(-0.27)
MKT	0.852***	0.854***	0.853***	0.853***	0.855***	0.857***
	(38.44)	(34.03)	(33.39)	(34.94)	(31.63)	(31.78)
SMB	0.427***	0.429***	0.429***	0.429***	0.429***	0.432***
	(15.73)	(16.01)	(15.57)	(15.28)	(15.75)	(15.07)
HML	0.389***	0.397***	0.397***	0.397***	0.404***	0.408***
	(6.03)	(6.05)	(5.89)	(6.02)	(6.18)	(6.20)
UMD	-0.076***	-0.076***	-0.076***	-0.076**	-0.078***	-0.078***
	(-3.03)	(-3.42)	(-3.30)	(-2.83)	(-3.31)	(-3.12)
Intercept	0.001	0.001	0.001	0.001	0.001	0.001
	(0.82)	(1.02)	(1.01)	(1.05)	(1.06)	(1.04)
RSQ	0.447	0.514	0.552	0.519	0.581	0.618

Panel B

VAR	MODEL1	MODEL2	MODEL3	MODEL4	MODEL5	MODEL6
FIT	0.146	-0.097	-0.736	0.232	0.287	2.171
	(0.24)	(-0.14)	(-0.87)	(0.24)	(0.26)	(1.45)
NFIT	0.484***	0.445***	0.468***	0.357**	0.480***	0.662***
.	(8.70)	(5.38)	(5.14)	(2.81)	(2.98)	(8.01)
Industry Ret		0.403***			0.396***	
.		(13.21)			(8.52)	
Industry Ret-DIV			0.140***			0.089
			(5.80)			(1.37)
Industry Ret-NONDIV			0.313***			0.277***
.			(20.07)			(13.77)
LAGFIT				-1.683**	-1.155	-2.523
				(-2.41)	(-1.25)	(-1.53)
LAGNFIT				-0.460**	-0.432*	-0.326
.				(-2.67)	(-1.90)	(-1.72)
Mkt Ret	1.062***	1.055***	1.059***	1.093***	1.074***	1.141***
	(35.71)	(39.99)	(35.62)	(58.65)	(49.86)	(43.85)
SMB	0.926***	0.921***	0.930***	0.941***	0.915***	0.931***
	(26.66)	(24.71)	(28.32)	(18.69)	(18.26)	(16.74)
HML	0.023	0.036	0.005	0.098**	0.071	0.120**
	(0.69)	(0.97)	(0.14)	(2.57)	(1.68)	(2.23)
UMD	-0.167***	-0.166***	-0.156***	-0.170***	-0.161***	-0.256***
	(-4.25)	(-4.47)	(-3.76)	(-5.93)	(-4.44)	(-9.43)
Intercept	-0.001	-0.001	-0.001	-0.001	-0.001	0.000
	(-0.60)	(-0.74)	(-0.87)	(-0.70)	(-0.90)	(0.14)
RSQ	0.646	0.722	0.793	0.785	0.860	0.930

Table 7: Dividend Initiation after 2003 Tax Cut - Matched Sample

This table presents results using dividend initiation immediately after 2003 Tax Cut Act enacted in May *2003*. Treatment consists of firms that initiate dividends in *2003* fiscal year. We find a control firm for each initiator firm using propensity score matching. We select control from firms that always pay dividend in four years up to *2003*, and we require that control and initiators should be similar in the following dimensions in year *2002*: Log Total Asset, Market/Book ratio, Lagged Return, ROA, Idiosyncratic Risk and Leverage. We estimate the likelihood of each firm to be an initiator using a logit model. Then we match each initiator to a control firm that has the closest propensity with the initiator (require the propensity difference between treatment and control less than 5 percentage points). Panel A shows the comparison of initiator and controls firms after matching. Panel B shows the level and change of return co-movement with market-level dividend index and non-dividend index. We report coefficients estimated from the following regression for treat firms and control firms in each period separately. Pre-event period starts from April *2002* to Mar *2003*. Post-event period starts from April *2004* to Mar 2005. We find valid control firms for 94 initiator firms. Initiator stock *i* is not included in any of the portfolios. We exclude control firms from the index compositions when constructing index returns.

$$Ret_{i,d} = \alpha_i + \beta_i * MKT_{DD_{RES},d} + \gamma_i * MKT_{ND_{RES,d}} + \delta * X + \varepsilon_{i,t}, \quad (1)$$

$$Ret_{c,d} = \alpha_c + \beta_c * MKT_{DD_{RES,d}} + \gamma_c * MKT_{ND_{RES,d}} + \delta_c * X_d + \varepsilon_{c,d}, \quad (3)$$

where $Ret_{i,d}$ ($Ret_{c,d}$) is the return on dividend initiator *i* (the control firm *c*) on day *d*.

Panel A: Difference in characteristics after matching

Matching Var.	Treatment		Control		Diff in Mean	t-value of
	Mean	Median	Mean	Median	(T- C)	diff
Log(Asset)	6.266	6.025	6.418	6.239	-0.152	-0.72
M/B	1.978	1.568	1.959	1.550	0.019	0.10
One Year Return	0.003	0.004	0.004	0.007	-0.001	-0.24
Idiosyncratic Risk	0.025	0.024	0.024	0.023	0.001	0.35
Leverage	0.152	0.103	0.172	0.142	-0.02	-0.94
ROA	0.126	0.128	0.122	0.12	0.004	0.32

Panel B: Difference-in- Difference-in-Difference test

B.1 Treatment

	PRE		POST		POST - PRE	
	Mean	t-value	Mean	t-value	Mean	t-value
β_i	0.054	0.43	0.639	4.81	0.585	3.39
γ_i	0.295	4.39	0.251	3.41	-0.044	-0.53
$\beta_i - \gamma_i$	-0.241	-1.83	0.388	2.78	0.629	3.58

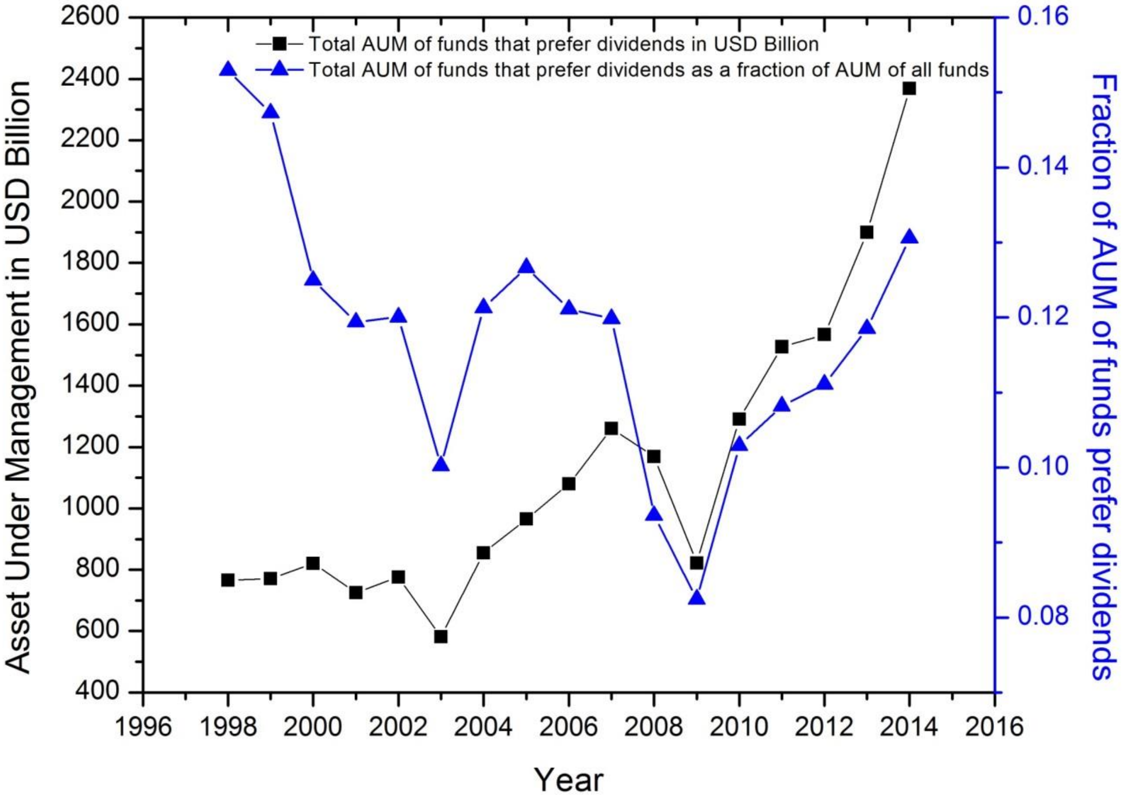
B.2 Control

	PRE		POST		POST - PRE	
	Mean	t-value	Mean	t-value	Mean	t-value
${\beta_i}^C$	0.541	3.70	0.498	4.41	-0.044	-0.26
${\gamma_i}^C$	-0.014	-0.23	-0.051	-0.89	-0.037	-0.57
${\beta_i}^C - {\gamma_i}^C$	0.555	3.46	0.549	4.56	-0.007	-0.04

B.3 Treatment – Control

	PRE (Treat - Control)		POST (Treat - Control)		POST - PRE	
	Mean	t-value	Mean	t-value	Mean	t-value
$\beta_i - {\beta_i}^C$	-0.487	-2.39	0.141	0.84	0.628	2.40
$\gamma_i - {\gamma_i}^C$	0.309	3.52	0.302	3.35	-0.007	-0.07
$\beta_i - {\beta_i}^C - (\gamma_i - {\gamma_i}^C)$	-0.796	-3.76	-0.160	-0.98	0.636	2.60

Figure 1: Asset Under Management of Equity Income Funds (Lipper)



Appendix: Variable Definition

Variable	Description
Log(Asset)	Log (1 + Total Asset in Million Dollars) (COMPUSTAT items log (1+at))
M/B	The ratio of market capitalization book equity (COMPUSTAT items abs(prcc_f)*csho/at)
One Year Return	Average monthly return in one year immediately before the initiation year
Idiosyncratic Risk	Standard deviation of residuals estimated from a CAPM model using daily returns in one year
Leverage	The ratio of long term debt to Total Asset (COMPUSTAT items dltt/at).
ROA	The ratio of operating income become depreciation to total assets (COMPUSTAT items oibdp/at)