Corporate Insiders and Investment Horizon

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Abstract

Prior literature shows that sophisticated investors may focus on stock investments that yield short-term returns even if there are better long-term investment opportunities. According to Shleifer and Vishny (1997) this is because of the risk associated with holding stocks in the long run. We examine the trading horizon of a special class of investors, i.e. corporate insiders. Corporate insiders have lesser information uncertainty with respect to their own firm relative to all other investors. This should enable them to make investments in their firm's stock with a view to longer horizon returns. We use an exogenous public signal of short-term and long-term return realization i.e., classification of the firm in momentum or value portfolios. We find that managers tend to buy the firm's stock in their personal account when its classified as a value stock and do not trade in a way to exploit momentum returns. In contrast, we find that stock repurchases, purchases in the firm account by managers, tends to be more momentum driven. Overall, our evidence is consistent with managers acting as long-horizon investors while trading in the stock of their firm as a personal investment.

JEL classification: G11, G14, G30, G32, G34, G35

Keywords: Momentum, Value, Insider trade, Stock Repurchase.

1. Introduction

Sophisticated investors are expected to invest in stocks over a horizon that should maximize returns based on their information advantage. However, Bushee (2001) argues that institutions may adopt a short-term focus in response to competitive pressures to maximize near-term returns from their portfolio in order to attract new money to their funds. Shleifer and Vishny (1997) show that arbitrageurs must consider the risk of the funds' investors withdrawing their capital before a mispricing has been resolved. More recently, Bushee, Goodman, and Sunder (2019) find evidence that poor financial reporting quality at investee firms reduces the net benefits of a value strategy to the short-term investor and tilts their investments towards momentum investing strategies. Shleifer and Vishny (1997) model such behavior and show that investors rationally focus on investments that will yield short-term returns even if there are better long-term investment opportunities. They ascribe the investor behavior to the increase in risk associated with holding stocks in the long run.

The information uncertainty faced by investors could partly explain the risk of holding stocks over the longer horizons. One way to test this conjecture would be to see whether investor horizon is longer when information uncertainty is reduced. We address the question of how information uncertainty affects trading horizon by focusing on stock trading behavior of corporate insiders. Corporate insiders are possibly the most informed of traders and we provide evidence on the investment horizon of managers when they trade in their own firm's stock.

We primarily focus on open market stock purchases by corporate insiders because prior literature has shown that these trades are information based. Insiders are restricted from purchases by blackout rules and the SEC's Short Swing Rule. Blackout rules restrict insiders from trading in a company's stock over certain days in a quarter. The SEC's Short Swing Rule requires insiders to surrender profits from round trip transactions (buy and subsequent sell) in the company's stock within six months. Jointly, these restrictions will weaken the correlation between information possessed by the insiders and the propensity for insider

stock purchases in the short run. The correlation between insider information and purchases is expected to be stronger where purchases are being made as a long horizon investment.

To proxy for trading horizon incentives, we examine insider investing horizons in response to public signals manifested in well-known return anomalies with varying holding periods. We classify firms into momentum and value deciles as a proxy for a public and market-based signal of the horizon over which abnormal returns are expected to be realized. The classification is not controllable by the firm and its managers because it is based on returns and market-to-book value profile of the firm relative to the entire universe of firms. Firms that are classified as momentum stocks generate significant returns in the short run, i.e. within six months, and firms classified as value generate significant returns beyond the horizon of six months. Momentum is one of the most robust sources of short term abnormal returns in the asset pricing literature if managers were to have a short investing horizon. Therefore, we expect that if managers have a short horizon, insider stock purchases would be increasing as the firm is classified into higher momentum deciles. To the extent that managers face short term-term trading constraints, their investment horizon may more likely manifest itself as being short-horizon. If managers have a long investment horizon, we should expect insider stock purchases to be increasing in the firm's classification in value deciles. Since the managers are better informed than the market, we expect that they can be more patient investors (i.e. value investors) because of their lower information uncertainty about the firm's future prospects.

We find that insider buys are negatively associated with the momentum decile of the firm (higher decile implying higher momentum in the stock), i.e. insider buying is lower when the firm is classified as being in a higher momentum decile. Separately, insider sells are positively associated with the momentum decile of the firm implying that insiders sell more when the stock is classified in a higher momentum decile. Firms that are classified in higher momentum deciles generate significant returns in the short run. Our result implies that managers avoid exploiting short-run returns in executing stock purchase in their personal account. This effect persists even after controlling for the prior one year return of the stock and equity incentives of managers which may influence insider trades. However, from their selling behavior it appears that they are also averse to holding the stock in response to short run expected return run-up.

Firms classified as high-value stocks yield abnormal returns over longer holding periods. We find that insider buying is positively correlated with the decile classification of the firms on the basis of value. This implies that higher the ranking in the value stock classification, higher is the propensity for insider buying. Overall, the momentum and value stock classification results are consistent with managers having longer investment horizons on average while making stock buying decisions in their personal account.

We examine the pattern of insider purchases and sales, separately, in the four quarters after the firm is classified in the momentum and value portfolios. We find that consistent with what would be expected from an investor implementing a value strategy, insiders buy more in the quarter in which the stock is classified as value, and, sell less in all four quarters over which a value portfolio is supposed to be held. This lends credence to our hypothesis that insiders have a longer investing horizon as private investors and thus reduce their buying activity and increase their selling activity in response to higher momentum in the stock while increasing their buying activity and reducing their selling activity in response to the stock being classified as value. As managers of the firm on the other hand, insiders seem to have a shorter investing horizon and increase repurchases in response to higher momentum in the stock which is consistent with the well documented market timing motivation behind repurchase activity.

One explanation for our findings could be that perhaps managers are unaware of momentum and do not try to time it. To provide evidence that managers are aware of momentum strategy, we exploit the fact that managers also purchase stock in the firm account through stock repurchases. The investing constraints that managers face in the personal account are not applicable in case of stock repurchases. Stock repurchase decisions are used to signal undervaluation of the firm. They are also part of the firm's payout policy, provide price support for insider sales, replenish treasury stock to meet the demand from executive option exercises. We expect that when faced with no constraints on when to make stock purchases, managers may act in a manner that is consistent with information available with respect to investment horizon. We examine the stock buying behavior of managers through repurchases in the firm account. Contrary to the trades in the personal account, the firm seems to make stock repurchases in the same

direction as momentum. Repurchases increase for stocks that have higher momentum. The results hold in multivariate analysis as well and repurchases are positively associated with the momentum decile of the firm. Thus contrary to the buying in the personal account, managers tend to trade on the momentum in the firm account. Given the fact that market timing is one of the most important factors driving repurchase decisions, these results are consistent with the hypothesis that managers are aware of the fact that momentum generates abnormal returns in the short run and the motivation to time the market for repurchases is stronger. It is interesting to see that when managers are free from the constraints of short horizon purchases, they act in a manner consistent with short horizon investors.

In additional analysis we focus on two classes of insiders who are most likely to best informed about the firm prospects, namely, the CEO and the CFO. We find that when the sample is restricted to insider trades of CEOs and CFOs only, their trades exhibit the same negative relationship with the momentum decile of the firm as is observed in the full sample.

An alternate explanation for managers trading against momentum and with value strategy is that managers are over exposed to own stock in momentum stocks due to recent run up in stock price and underweight in value stocks due to poor prior performance. To examine this hypothesis, we test whether our results vary with insiders equity exposure. We find that our results are similar for high and low option firms. Further, our results are also robust to controls for total options and stock holding of insiders. These results rule out alternate explanation that options holding could affect the investment horizon.

Overall our study makes several contributions to the literature. First, we show that managers tend to behave like long-horizon investors with respect to purchases in this personal account. This implies that as information uncertainty is lower, investors could potentially make investment decisions with a longer horizon. Second, we show a systematic negative relationship between stock repurchases and insider purchases. This is consistent with managers acting more opportunistically in the firm account and shows that while they may not necessarily be timing the market in their personal account, they do so while making stock repurchase decisions. The rest of the paper describes our data, research methodology, results, and conclusions.

2. Data

We begin with all firm-quarters in the CRSP-Compustat merged database from 1988 through 2016 and exclude firm-quarters with missing or negative total assets and quarters for which we cannot calculate repurchases. This gives us a sample of 848,865 firm-quarters. Further, we estimate insider trades from Thomson-Reuters insider data file[1]. Conditional on presence in Compustat and CRSP databases, we have insider trade data for 463,413 firm quarters. We use Execucomp to get options and stock holding of the top 5 executives of the firm. To minimize the effect of outliers, all continuous variables are winsorized at the 1st and the 99th percentile.

2.1 Key variables

2.1.1 Repurchases

Following Banyi, Dyl, and Kahle (2008), we measure quarterly repurchases as the expenditure on the repurchase of common and preferred stock (*prstkcy* for the 1st quarter and *prstkcy – lag(prstkcy*) for the 2nd, 3rd, and 4th quarters) and then subtract the reduction in preferred stock outstanding (*pstkq*).

2.1.2 Insider trades

We use Thomson-Reuters insider ownership database to get open market trades by insiders. Following prior literature (e.g., Rozeff and Zaman, 1998; Piotroski and Roulstone, 2005), our definition of insider trades includes trades by all executives who are either a director, CEO, CFO, or president. Insider trades are aggregated in two ways. We aggregate insider trades over the portfolio holding month for the momentum portfolio, of which the firm is a constituent. Since repurchase data is available on a quarterly basis, for tests where variables related to repurchases

[1]Following prior literature, we delete duplicate observations, observations with missing reported price data and filings with cleanse indicators of "A" and "S". Filings where the reported transaction date is missing and has been inferred by Thompson Reuters are excluded. We also delete observations where the reported price differs from CRSP prices by more than 20%. Since our analysis focusses on the purchase and/or sale decision of insiders only, the error in transaction prices reported for such purchases and/or sales has little bearing on this study. Accordingly, we also perform our analysis on the sample including filings where there is a divergence between reported and CRSP prices. Our results and inference remains qualitatively unchanged.

are used, we aggregate insider trades over the fiscal quarter whose first month is the portfolio holding month for the momentum portfolio of which the firm is a constituent. Insider trades are also aggregated quarterly in tests where variables related to the value anomaly are used. We then define insider trades in two ways. Insider net buys are measured as total number of shares bought less total number of shares sold by insiders, divided by sum of shares bought and shares sold. If both, the number of shares bought and sold are zero in a quarter, we define insider net buys as zero. As an alternate measure, we divide insider net buys by total shares outstanding.

2.1.3 Momentum and Value

We follow conventions laid down in the literature for construction of anomaly portfolios. For Value portfolios, stocks are ranked on Book-to-Market at the end of June each year based on latest annual data reported before that date. Value stocks are sorted in to deciles and held for a year.

For each month, momentum portfolio portfolios are formed by sorting stocks based on their returns in the twelve month period that precedes the previous month. For example, the momentum portfolio to be held for the month of June is formed based on the returns of stocks in the twelve month period spanned by April previous year and April this year. Momentum stocks are sorted in to deciles and Momentum portfolios are rebalanced monthly. A visual representation of the time line and portfolio formation process for Value and Momentum is outlined in Figures 1 and 2.

3. Empirical results

3.1 Insider trades and Momentum

We first examine the insider behavior in response to the classification of the firm as a momentum stock. Since stocks in the high momentum deciles have higher expected returns compared to stocks in the lower momentum deciles, an investment strategy that aims to exploit

these short term returns would be for insiders to buy more of their firm stock when it is classified in a higher momentum decile and vice versa.

Table 2 reports univariate results outlining the pattern of insider trading in response to the firm's classification in to ten momentum deciles with stocks being classified in decile ten having highest momentum and therefore highest short term expected abnormal returns. We split insider trades in to insider buys, insider sells and net buys. We examine both the quantity of shares bought/sold by insiders as well as their dollar amounts. The dollar amount of insider trades are scaled by the dollar amount of their total trades in that period. The quantity of shares traded by insiders are scaled by the total number of shares outstanding in that period. Columns 1 to 3 include all observations in our sample including those where no insider trades occur in the given period while columns 7 to 9 pertain only to those observations where insider trades occur in the given period.

Columns 1 and 2 show that while insider buys are declining almost monotonically in the momentum decile, insider sells are increasing in the momentum decile. The difference between insider buys/sells between the highest and lowest momentum decile is large and statistically significant. These patterns hold when insider trades are measured in terms of the number of shares bought/sold (columns 4 to 6) and also for subsamples conditioned on the occurrence of at least one insider trade in the given period (columns 7 to 9). This supports the hypothesis that insiders have a longer investing horizon and eschew the momentum strategy which generates abnormal returns in the short run.

We further examine these results in a multivariate setting. We regress our measures on insider trading on momentum deciles and control for firm characteristics, prior returns, and include firm and quarter-year fixed effects. Table 3, Panel A reports the results. Models 1, 2, and 3 regress

insider buys, sells, and net buys respectively on a variable for momentum deciles. The variable takes a value between 1 to 10, with 10 being the top momentum decile (prior winners) and 1 being the bottom momentum decile (prior losers). In the regression for insider net buys (Model 1), the coefficient of momentum deciles is negative for each decile move from low momentum towards high momentum, insider buys decline by 0.01 standard deviations and insider sells increase by 0.02 standard deviations.. The results are consistent across all measures of insider trading and subsamples conditioned on the occurrence of at least one insider trade in the given period. Results outlined in Panel B use variables that divide stocks in to three momentum categories: top 30%, middle 40%, and bottom 30%, based on prior returns. Insider buys are 0.05 and 0.03 standard deviation lower when the stock moves from the bottom 30% category to the top 30% and middle 40% categories respectively. Insider sells increase by 0.10 and 0.06 standard deviations, as stock moves from the bottom 30% category to the top 30% and middle 40% categories respectively. Thus, our results are robust to the alternate classification of momentum and different measurements of insider trades.

These results strongly support the hypothesis that insiders do not have a short investing horizon. While momentum as a public signal of future abnormal performance is strong and robust, legal restrictions may constrain insiders from exploiting it even if they have short trading horizon. This leads us to expect that if insiders have short investing horizons, the classification of a stock in to high momentum decile should have either a positive effect or no effect on insider buys (and vice versa for insider sells). However we find that insiders actively trade against momentum by selling more of high momentum stocks and buying more of low momentum stocks thereby rejecting the hypothesis that insiders have short investing horizons.

3.2 Insider trades and Value

In order to confirm the intuition from previous results that insiders have a long investing horizon , we examine insider trades in response to the classification of the firm in to a value decile. The value anomaly, which entails buying high book-to-market stocks, is very well known and has a holding period of a year. This implies that if insiders have a longer investing horizon, and are aware of the value anomaly, they should increase their buys and decrease their sells as their firm is classified in to a higher value decile (high book-to-market).

Table 4 displays univariate results outlining the pattern of insider trading in response to the classification of their stock in to various value deciles with value increasing in the decile. All definitions and measures of insider trading activity are same as the previous section. Columns 1 and 2 show that insider buys increase almost monotonically in value while insider sells decrease even more dramatically for higher value deciles compared to lower value deciles. The difference in insider buys/sells between stocks in the high and low value deciles is large and statistically significant. Like in the previous section, these results are robust to various scaling and sampling assumptions. These results provide preliminary evidence to support the hypothesis that insiders have a longer investing horizon because in contrast to the momentum anomaly, they react to value by increasing their buys and decreasing their sells.

In a multivariate setting, we regress our measures of insider trading on value deciles with controls for firm characteristics, prior returns, and include firm and quarter-year fixed effects. Table 5, Panel A reports the results. In columns 1, 4 and 7 insider buys are positively correlated to the value decile in which the stock is classified. In columns 2, 5 and 8 insider sells are negatively associated with the value decile in which the stock is classified. A negative coefficient on insider sells therefore implies that higher the value decile in which a stock is classified lower are the sales by insiders. These results are robust to the inclusion of market-to-book as a control variable.

Therefore, the effect of the value classification on insider activity is over and above the well documented effect of market-to-book on insider trading.

Table 5, Panel B reports results from an alternate grouping criterion for value stocks. Instead of deciles, value stocks are grouped in to the top 30%, the mid 40% and bottom 30%. For the top 30% value stocks, the results are similar for both insider buys and insider sells. For the mid 40% value stocks, insiders sell less but do not buy more. These results are qualitatively similar to those in Panel A and support the hypothesis that insiders have a long investment horizon and act as value investors.

3.3 Insider trades in the Value Holding Period

A value strategy requires buying and holding the stock for a year. In the previous section we have documented that insiders buy more and sell less in response to the stock being classified as value. In this section we investigate if insiders actually implement a value strategy by holding on to stocks bought in response to their classification as value for the duration of a year over which a value strategy has been documented to yield abnormal returns. If insiders do indeed follow a value strategy, we expect them to increase buys immediately following the classification of the stock in to value and then decrease sells in the subsequent quarters, during the holding period. This would be consistent with value strategy as it would imply that insiders buy more immediately in response to value and then hold more (sell less) in the following quarters.

To test this in a multivariate setting, we examine insider trades in the four quarters following the classification of the stock in to a value portfolio. We then create interaction terms by interacting the book-to-market decile with each of the four quarters in which the trade occurred after the classification of the stock in to one of the value deciles. We regress insider trades on these

interaction terms along with the controls and fixed effects in the previous regressions. Table 6 outlines the results of this test. Row 1 of Columns 1 and 2 shows that insider buys in the quarter immediately following the firms classification in to value portfolios are positively associated with the book-to-market decile while insider sells are negatively associated with the book-to-market decile. This is consistent with results in the previous section where insiders react to value by buying more and selling less of the stock. In rows 2 to 4 we see that while insider buys are no longer positively associated with value in the subsequent quarters, insiders sells remain negatively associated with value in all subsequent quarters till the end of the yearly holding period for a value strategy. This implies that once a stock is classified as value, insider buys decrease after a quarter while insider sells keep on decreasing through the year following such classification. This means that insiders buy immediately in response to value and then hold on to stock (sell less) for the duration of a year over which returns from a value strategy have been documented to be realized. This evidence is consistent with the hypothesis that insiders act as value investors and have a longer investing horizons

3.4 Repurchases and Momentum

Insiders take trading decisions in the stock of the firm not only in their personal account but also on behalf of the firm in the form of repurchase decision. While these decision pertain only to buying the stock, they provide a good setting to test the robustness of our main results on insider investing horizons. While insiders trade against momentum, it is still unclear if they are aware of momentum at the time of trade. In order to test if they are aware of momentum, we examine repurchase decisions taken by mangers in response to the firm's classification in to momentum deciles. There are competing forces in this setting in the form of the market timing motivation for repurchases which should induce short termism in managers and the inherent long term investing

horizon of insiders. If managers are unaware of momentum, their repurchase decision should remain unaffected by the firm's momentum classification. If they repurchase against momentum, it would substantiate our main findings that insiders have long investing horizons. If they repurchase with momentum, however, it would imply that they are aware of momentum but the market timing motivation of repurchases (which has been shown to be robust in the literature) has a stronger effect of the repurchase decision compared to investing horizons.

Table 7, Panel A outlines patterns in repurchases in response to momentum in a univariate setting. Consistent with literature, repurchases are scaled by assets. In contrast to insider trades, repurchases are increasing in the momentum decile of the stock and the difference between repurchases for stocks in the highest and lowest momentum decile is large and significant. This implies that insiders as managers of the firm increase repurchases in response to momentum.

In Table 7, Panel B we examine repurchases in response to momentum in a multivariate setting with firm controls and fixed effects. Consistent with univariate results, Repurchases are positively associated with the momentum decile implying that firms repurchase more as the firm is classified in to a higher momentum decile. These results, though counterintuitive, are not surprising. Importantly, they establish that managers are aware of the momentum anomaly and react to it both as private investors and as firm managers. Repurchases increase in response to momentum,consistent with market timing being an important motivation for repurchases, as shown by Dittmar and Field (2015).. Overall, these results support our main hypothesis and further substantiate the importance of market timing as a motivation for repurchases.

3.5 Robustness tests

In this section we conduct various tests to examine alternate hypotheses. Prior literature (e.g., Kahle, 2002; Fenn and Liang, 2001) finds that controlling EPS dilution is one of the key reasons why firms repurchase. As employees exercise stock options, number of shares outstanding increases. This leads to dilution of earnings per share. By repurchasing, firms control the number of shares outstanding, thus mitigating the EPS dilution. Stock options are more likely to be in the money following stock price run up. As a result, insiders would be more likely to exercise their options and hence firms would repurchase more. Insider on the other hand would be more likely to sell the shares that they get upon exercise of options. To examine this hypothesis, we divide out sample into firms with high and low options based on the number of stock options outstanding in the year prior to the portfolio formation. Panels A and B in Table 8 show that our results hold separately for high and low option firms, which helps mitigate concerns that dilution hypothesis is driving our results.

An alternate reason for insiders trading against momentum could be that insider are unwilling to buy prior winners. Insiders have high exposure to their own company stocks on account of their equity incentives. Because of the recent run up in stock prices, they may already be overweight in the company stock. Therefore, they do not to want to buy more stocks to reduce their personal risks. To mitigate these concerns, we control for executive equity incentives by including value of options and stocks held by top five executives in the firm (from Execucomp) in our baseline regressions. Table 8 Panel C and Panel D report results for momentum and value anomalies respectively. Our results are not affected by controlling for executives' ex-ante equity exposure to the company stock.

Another concern with our assertion is that while repurchase decision is taken by the whole board of directors; personal trade decisions are taken by the individuals. Therefore, our results for

insiders could be just because different executives choose to trade differently. Therefore, we examine trades by just the CEOs and the CFOs. CEOs and CFOs play important role in the repurchase decisions. Further, by focusing on just two persons, we reduce the risk of collective versus individual decisions. Table 9 shows that results for trades by CEOs and CFOs are similar to our base case (all insiders). CEOs/CFOs also act as value investors and trade against momentum in their personal portfolios. Thus, we show that our results are not driven by the differences in people involved in personal trades and repurchase decisions.

4. Conclusion

We examine the trading horizon of corporate insiders in their information based trades. We focus on the purchases in their personal account by corporate insiders. We find that when the mis-valuation is short lived, managers refrain from insider buying. However, managers act as long term investors by buying stocks that are classified as value stocks. We also examine the stock repurchase decisions and the managers appear to purchase in the firm account by timing the market in terms of momentum.

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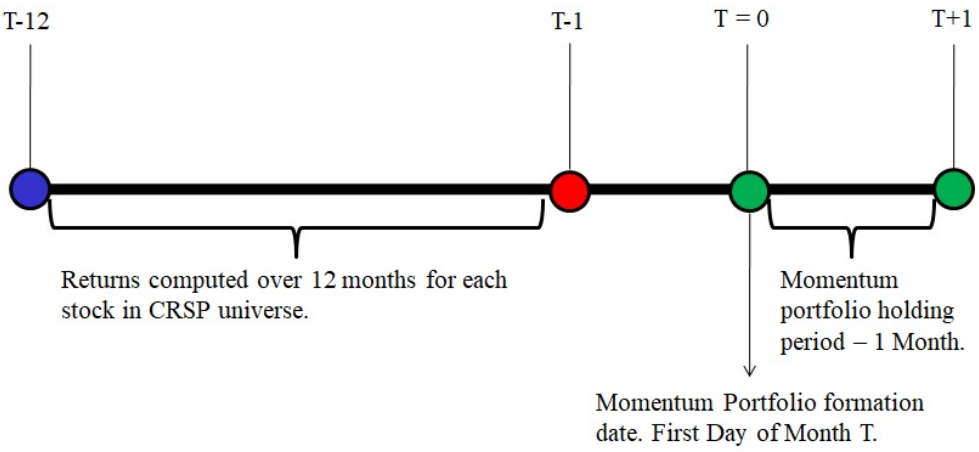
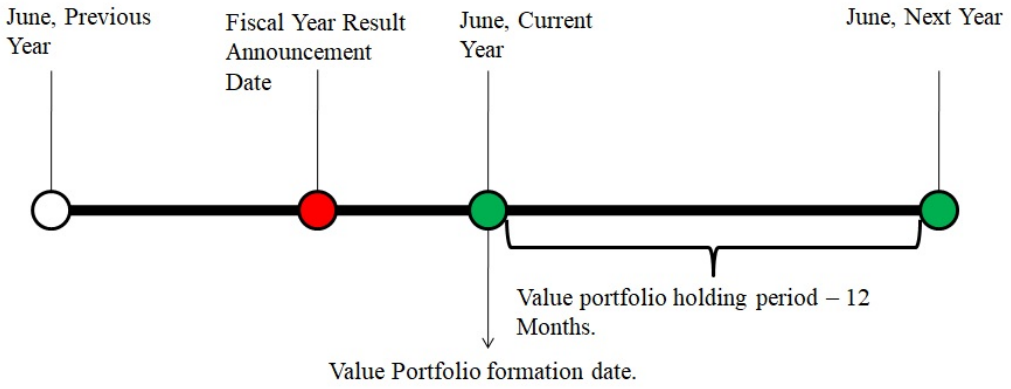
Fig 1: Timeline for momentum and value portfolio formation

This figure outlines the timelines for the construction and holding of Value and Momentum portfolios. For Value portfolios, stocks are ranked on Book-to-Market at the end of June each year based on latest annual data reported before that date. Value stocks are sorted in to deciles and held for a year. For each month, momentum portfolio portfolios are formed by sorting stocks based on their returns in the twelve month period that precedes the previous month. Momentum stocks are sorted in to deciles and Momentum portfolios are rebalanced monthly.



Timeline For Constructing Momentum Portfolios



Time Line For Constructing Value Portfolios

Appendix: Variable definitions and data sources

Compustat Quarterly

Cash: Cash and short-term investments (CHEQ), divided by total assets (ATQ).

Leverage: Sum of Long term debt (DLTTQ) and short-term debt (DLCQ), divided by total assets (ATQ).

Market capitalization: Shares outstanding (CSHOQ) times stock price (PRCCQ).

Market to book: Market capitalization plus long-term debt (DLTTQ) plus debt in current liabilities (DLCQ) plus preferred stock (PSTKQ), divided by the book value of assets (ATQ).

Operating income: Operating income (OIBDPQ), divided by book value of assets (ATQ).

Repurchases: The expenditure on the repurchase of common and preferred stock (PRSTKCY for the first fiscal quarter and PRSTKCY– lag(PRSTKCY) for the second, the third, and the fourth fiscal quarters) minus any reduction in the value of preferred stock outstanding (PSTKQ), as a fraction of beginning total assets (ATQ).

ΔRepurchases: Change in repurchases over prior quarter.

ROA: Operating income (OIBDPQ), divided by total assets (ATQ).

CRSP

Momentum deciles: Deciles of the returns in the prior twelve months [-13,-1], determined at the beginning of each quarter. Decile one includes stocks with the lowest prior returns and decile 10 includes stocks with the highest prior returns.

Value deciles: Deciles of the book-to-market, determined at the end of June every year. Decile one includes stocks with the lowest book-to-market and decile 10 includes stocks with the highest book-to-market.

Prior year returns: Buy-and-hold return over the prior twelve months.

Age: Years since the firm appears for the first time on CRSP database.

Thompson Reuters (Insider database)

Insider buys: Open market dollar value/number of shares bought by the insiders, aggregated at monthly level. We include trading by the insiders that hold a position of the CEO, the CFO, the board member, and the president of the firm. These are standardized in two ways; as a fraction of total dollar value of shares traded (shares bought plus shares sold by insiders) and as a fraction of total shares outstanding.

Insider Sells: Open market dollar value/number of shares bought by the insiders, aggregated at monthly level. We include trading by the insiders that hold a position of the CEO, the CFO, the board member, and the president of the firm. These are standardized in two ways; as a fraction of total dollar value of shares traded (shares bought plus shares sold by insiders) and as a fraction of total shares outstanding.

Insider net buys: Open market net dollar value/number of shares bought by the insiders (shares bought less shares sold), aggregated at monthly level. We include trading by the insiders that hold a position of the CEO, the CFO, the board member, and the president of the firm. These are standardized in two ways; as a fraction of total dollar value of shares traded (shares bought plus shares sold by insiders) and as a fraction of total shares outstanding.

Table 1: Summary statistics

This Table reports the summary statistics for all firm-quarters in our sample over 1988-2016. Insider trading data is aggregated at a monthly level. All controls/firm characteristics are measured at a quarterly level. Please see appendix for the detailed variable definition.

Monthly data				
	N	Mean	Median	Std deviation
Insider buys/Total insider trades	1,106,722	7.460%	0.000%	25.830%
Insider sells/Total insider trades	1,106,722	14.170%	0.000%	34.540%
Insider buys/Shares outstanding	1,106,722	0.007%	0.000%	0.042%
Insider sells/Shares outstanding	1,106,722	0.022%	0.000%	0.101%

Quarterly data				
	N	Mean	Median	Std deviation
Repurchases	420,868	0.211%	0.000%	0.794%
Log (mkt cap)	420,492	5.239	5.146	2.231
Cash	423,422	16.246%	6.313%	24.257%
Leverage	423,422	25.170%	17.807%	38.274%
Market to book	392,463	1.804	1.060	4.490
Prior returns	365,457	1.265%	6.252%	47.310%
Operating income	369,087	0.804%	2.321%	12.739%
Log (age)	463,491	2.271	2.485	1.144
Return on assets	416,240	-2.76%	0.57%	254.73%

Table 2: Insider trades across momentum deciles

This table reports the variation in insider trades across momentum deciles during the month following the formation of momentum portfolios. Momentum deciles are determined at the beginning of each month based on the returns in the prior twelve months [-13,-1]. In Columns 1-3 and 7-9, we measure insider net buys as the ratio of net dollar buys divided by total dollar trades and insider buys (sells) as the ratio of dollar buys (sells) divided by total dollar trades. In Columns 4-6 we standardize number of shares bought/sold by shares outstanding. Insider trades include trades by the insiders that hold a position of the CEO, the CFO, the board member, and the vice president during each month. First six columns include all firm-months and last three columns include data for positive trades i.e. the months in which insider either buys or sells some stock. Please refer to the Appendix for detailed variable definitions; ***, ** and * denote significance at 1%, 5% and 10% respectively.

	Insider buys/ Total insider trades	Insider Sells/ Total insider trades	Insider net buys / Total insider trades	Insider buys / shares outstanding	Insider sells / shares outstanding	Insider net buys / shares outstanding	Insider buys/ Total insider trades	Insider Sells/ Total insider trades	Insider net buys / Total insider trades
1 - Low momentum	9.455%	7.528%	1.927%	0.014%	0.017%	-0.003%	55.67%	44.33%	11.34%
2	9.011%	9.802%	-0.791%	0.011%	0.016%	-0.005%	47.90%	52.10%	-4.20%
3	8.397%	11.754%	-3.357%	0.009%	0.017%	-0.008%	41.67%	58.33%	-16.66%
4	7.972%	12.777%	-4.805%	0.007%	0.017%	-0.010%	38.42%	61.58%	-23.16%
5	7.618%	13.122%	-5.504%	0.006%	0.017%	-0.011%	36.73%	63.27%	-26.54%
6	6.998%	13.809%	-6.811%	0.005%	0.018%	-0.013%	33.63%	66.37%	-32.74%
7	7.048%	14.821%	-7.772%	0.005%	0.020%	-0.014%	32.23%	67.77%	-35.54%
8	6.657%	16.560%	-9.902%	0.005%	0.023%	-0.018%	28.67%	71.33%	-42.65%
9	6.212%	18.589%	-12.378%	0.005%	0.029%	-0.024%	25.05%	74.95%	-49.91%
10 - High momentum	5.881%	20.657%	-14.775%	0.006%	0.045%	-0.038%	22.16%	77.84%	-55.68%
High - Low	-3.57%***	13.12%***	-16.70%***	-0.008%***	0.028%***	-0.035%***	-33.51%***	33.51%***	-67.02%***
p-value of difference	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 3: Insider trades in response to momentum

This table reports the results of OLS regressions of insider trades on momentum deciles. The dependent variables in Models 1-3 and Model 7-9 are dollar buys/ dollar sells/ net dollar buys divided by total insider trades (sum of dollar buys and dollar sold) and in Models 4-6 number of shares traded are divided by total shares outstanding. Panel A uses momentum decile which takes a value from 1 (lowest prior returns) to 10 (highest prior returns). Panel B divides momentum deciles into the top 30% [deciles 8 to10], the mid 40% [deciles 4 to 7] and the bottom deciles of the prior returns. Panel B includes all controls, but omitted for brevity. All control variables are measured in the prior quarter. All variables are standardized to have a mean of zero and standard deviation of one. Please see Appendix for the detailed variable definition. All models include firm and month fixed effects. OLS standard errors are clustered by firm. T-statistics are in parentheses; ***, ** and * denote significance at 1%, 5% and 10% respectively.

Panel A: Momentum portfolio divided in deciles of the prior returns

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	All firm-months						Months with positive trades		
	Buys/Total trades	Sells/Total trades	Net buys/Total trades	Shares bought / shares os	Shares sold / shares os	Net buys / shares os	Buys/Total trades	Sells/Total trades	Net buys/Total trades
Momentum deciles (1- 10)	-0.007***	0.018***	-0.018***	-0.003***	0.021***	-0.021***	-0.038***	0.029***	-0.044***
	(-9.77)	(20.52)	(-20.77)	(-4.01)	(19.58)	(-19.49)	(-15.78)	(15.78)	(-15.78)
Log(Market capitalization)	-0.072***	0.299***	-0.270***	-0.150***	0.034***	-0.092***	-0.711***	0.532***	-0.816***
	(-8.83)	(31.30)	(-29.16)	(-17.31)	(4.54)	(-12.04)	(-24.25)	(24.25)	(-24.25)
Cash	-0.010***	-0.003	-0.004	-0.005	0.013***	-0.014***	-0.039***	0.029***	-0.045***
	(-3.02)	(-0.58)	(-0.93)	(-1.23)	(3.33)	(-3.54)	(-3.25)	(3.25)	(-3.25)
Leverage	0.018***	0.006	0.006	0.007	-0.002	0.005	0.045***	-0.033***	0.051***
	(4.95)	(1.39)	(1.43)	(1.58)	(-0.67)	(1.45)	(3.76)	(-3.76)	(3.76)
Market to book	-0.009**	0.032***	-0.030***	0.008*	0.071***	-0.064***	-0.041***	0.031***	-0.047***
	(-2.46)	(6.52)	(-6.41)	(1.79)	(14.33)	(-12.83)	(-3.65)	(3.65)	(-3.65)
Prior year return	-0.002	-0.006**	0.003	-0.005*	-0.007**	0.005	-0.040***	0.030***	-0.046***
	(-1.02)	(-2.46)	(1.34)	(-1.95)	(-2.20)	(1.60)	(-5.58)	(5.58)	(-5.58)
Operating income	-0.017***	0.030***	-0.033***	-0.021***	0.048***	-0.053***	-0.112***	0.084***	-0.129***
	(-5.05)	(8.35)	(-8.92)	(-4.64)	(11.95)	(-12.66)	(-8.53)	(8.53)	(-8.53)
Log(Age)	0.006	-0.051***	0.042***	0.034***	-0.009	0.021***	0.050*	-0.037*	0.057*
	(0.73)	(-4.91)	(4.29)	(4.50)	(-1.20)	(2.74)	(1.68)	(-1.68)	(1.68)
ROA	-0.001	0.008***	-0.006**	-0.005	0.000	-0.003	-0.039***	0.029***	-0.045***
	(-0.33)	(3.05)	(-2.39)	(-1.42)	(0.13)	(-0.96)	(-3.88)	(3.88)	(-3.88)
Constant	-0.251***	-0.401***	0.164***	-0.160***	-0.258***	0.180***	4.418***	-1.034***	3.329***
	(-20.76)	(-24.12)	(10.48)	(-13.84)	(-20.97)	(14.73)	(174.82)	(-54.74)	(114.78)
Number of observations	907,443	907,443	907,443	907,442	907,442	907,442	212,090	212,090	212,090
Firm/Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.04	0.10	0.05	0.02	0.03	0.03	0.107	0.107	0.107

Panel B: Momentum portfolios divided in the Top 30%, Mid 40%, and bottom 30% of prior returns

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	All firm-months						Months with positive trades		
	Buys/Total	Sells/Total	Net	Shares	Shares	Net buys /	Buys/Total	Sells/Total	Net buys/Total
Top 30% (prior winners)	-0.048***	0.103***	-0.107***	-0.019***	0.104***	-0.106***	-0.234***	0.175***	-0.268***
	(-10.16)	(20.60)	(-21.08)	(-3.79)	(18.18)	(-18.20)	(-15.80)	(15.80)	(-15.80)
Mid 40%	-0.026***	0.057***	-0.059***	-0.013***	0.047***	-0.048***	-0.158***	0.118***	-0.181***
	(-6.53)	(14.64)	(-14.55)	(-2.97)	(11.61)	(-11.62)	(-12.65)	(12.65)	(-12.65)
Number of observations	907,443	907,443	907,443	907,442	907,442	907,442	212,090	212,090	212,090
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.0441	0.101	0.0520	0.0192	0.0319	0.0281	0.107	0.107	0.107

Table 4: Insider trades across value deciles

This table reports the variation in insider trades during the month following value portfolio formation. Value deciles are determined using the book-to-market ratios calculated at the end of June each year, using the last reported book value of assets. In Columns 1-3 and 7-9, we measure insider net buys as the ratio of net dollar buys divided by total dollar trades and insider buys (sells) as the ratio of dollar buys (sells) divided by total dollar trades. In Columns 4-6 we standardize number of shares bought/sold by shares outstanding. First six columns include all firm-months and last three columns include data for positive trades i.e. the months in which insider either buys or sells some stock.Insider trades include trades by the insiders that hold a position of the CEO, the CFO, the board member, and the vice president during each month. Please refer to the Appendix for detailed variable definitions; ***, ** and * denote significance at 1%, 5% and 10% respectively.

	Insider buys/ Total insider trades	Insider Sells/ Total insider trades	Insider net buys / Total insider trades	Insider buys / shares outstanding	Insider sells / shares outstanding	Insider net buys / shares outstanding	Insider buys/ Total insider trades	Insider Sells/ Total insider trades	Insider net buys / Total insider trades
1-Growth	4.206%	21.416%	-17.210%	0.005%	0.036%	-0.030%	16.415%	83.585%	-67.170%
2	4.334%	21.081%	-16.748%	0.004%	0.030%	-0.026%	17.052%	82.948%	-65.896%
3	4.840%	17.883%	-13.043%	0.004%	0.025%	-0.022%	21.299%	78.701%	-57.402%
4	5.690%	15.230%	-9.540%	0.003%	0.020%	-0.016%	27.199%	72.801%	-45.601%
5	6.626%	12.673%	-6.047%	0.005%	0.016%	-0.012%	34.333%	65.667%	-31.334%
6	6.932%	10.116%	-3.184%	0.005%	0.013%	-0.008%	40.660%	59.340%	-18.679%
7	7.878%	8.899%	-1.021%	0.006%	0.013%	-0.007%	46.958%	53.042%	-6.085%
8	7.642%	6.927%	0.716%	0.007%	0.012%	-0.005%	52.456%	47.544%	4.912%
9	8.260%	5.519%	2.741%	0.010%	0.010%	-0.001%	59.948%	40.052%	19.896%
10 - Value	7.060%	3.995%	3.065%	0.010%	0.010%	0.000%	63.864%	36.136%	27.728%
Value-growth	2.85%***	-17.42%***	20.28%***	0.005%***	-0.027%***	0.030%***	47.45%***	-47.45%***	94.90%***
P-value of difference	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

Table 5: Insider trades in response to value classification

This table reports the results of OLS regressions of insider trades on book-to-market deciles. The dependent variables in Models 1-3 and Model 7-9 are dollar buys/ dollar sells/ net dollar buys divided by total insider trades (sum of dollar buys and dollar sold) and in Models 4-6 number of shares traded are divided by total shares outstanding. Panel A uses book-to-market deciles which takes a value from 1 (lowest prior returns) to 10 (highest prior returns). Panel B divides book-to-market deciles into the top 30% [deciles 8 to10], the mid 40% [deciles 4 to 7] and the bottom deciles of the prior returns. Control variables from Table 1 are included but omitted for brevity. All variables are standardized to have a mean of zero and standard deviation of one. Please see Appendix for the detailed variable definition. All models include firm and month fixed effects. OLS standard errors are clustered by firm. T-statistics are in parentheses; ***, ** and * denote significance at 1%, 5% and 10% respectively.

Panel A: Portfolios divided in deciles of the book-to-market ratios

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	All firm-months						Months with positive trades		
	Buys/Total trades	Sells/Total trades	Net buys/Total trades	Shares bought / shares os	Shares sold / shares os	Net buys / shares os	Buys/Total trades	Sells/Total trades	Net buys/Total trades
Book-to-market (1-10)	0.007**	-0.017***	0.017***	0.003	-0.018***	0.018***	0.094***	-0.070***	0.107***
	(2.42)	(-6.26)	(6.23)	(1.19)	(-6.37)	(6.33)	(7.10)	(-7.10)	(7.10)
Market to book	-0.005	0.035***	-0.030***	0.024***	0.062***	-0.049***	0.044	-0.033	0.051
	(-0.68)	(3.91)	(-3.58)	(3.05)	(6.42)	(-5.16)	(1.62)	(-1.62)	(1.62)
Number of observations	73,426	73,426	73,426	73,426	73,426	73,426	14,453	14,453	14,453
Firm/Year FE/Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.038	0.078	0.039	0.013	0.027	0.023	0.103	0.103	0.103

Panel B: Portfolios divided in the top 30%, middle 40% and bottom 30% of the book-to-market ratios

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	All firm-months						Months with positive trades		
	Buys/Total trades	Sells/Total trades	Net buys/Total trades	Shares bought / shares os	Shares sold / shares os	Net buys / shares os	Buys/Total trades	Sells/Total trades	Net buys/Total trades
Book-to-market (top 30%)	0.038***	-0.100***	0.099***	0.014	-0.094***	0.093***	0.385***	-0.288***	0.442***
	(2.60)	(-6.45)	(6.57)	(0.99)	(-5.76)	(5.80)	(5.74)	(-5.74)	(5.74)
Book-to-market (mid 40%)	-0.005	-0.069***	0.050***	-0.007	-0.065***	0.058***	0.071	-0.053	0.082
	(-0.49)	(-5.25)	(4.02)	(-0.64)	(-4.79)	(4.45)	(1.58)	(-1.58)	(1.58)
Market to book	-0.010	0.035***	-0.033***	0.020**	0.065***	-0.052***	-0.005	0.004	-0.006
	(-1.45)	(3.90)	(-3.94)	(2.58)	(6.64)	(-5.50)	(-0.18)	(0.18)	(-0.18)
Number of observations	73,426	73,426	73,426	73,426	73,426	73,426	14,453	14,453	14,453
Firm/Year FE/Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.038	0.078	0.039	0.013	0.027	0.023	0.102	0.102	0.102

Table 6: Insider trades over four quarters following value classification

This table reports the results of OLS regressions of insider trades on book-to-market deciles. We interact book-to-market deciles with indicator variables Q0, Q1, Q2, and Q3, which takes a value of one respectively for the first, second, third, and fourth quarter following the value portfolio formation. Insider buys/sells are defined as dollar value of shares bought/sold divided by total value of shares traded during the quarter. Control variables from Table 2 are included but omitted for brevity. All variables are standardized to have a mean of zero and standard deviation of one. OLS standard errors are clustered by firm. T-statistics are in parentheses; ***, ** and * denote significance at 1%, 5% and 10% respectively.

	(1)	(2)	(3)
	Insider buys/Total trades	Insider sells/Total trades	Insider net buys/Total trades
Book-to-market decile (1-10) * Q0	0.005***	-0.013***	0.011***
	(2.71)	(-6.08)	(5.68)
Book-to-market decile (1-10) * Q1	0.003*	-0.008***	0.007***
	(1.68)	(-3.47)	(3.29)
Book-to-market decile (1-10) * Q2	-0.000	-0.006***	0.004*
	(-0.09)	(-2.80)	(1.78)
Book-to-market decile (1-10) * Q3	0.001	-0.007***	0.005**
	(0.28)	(-3.18)	(2.38)
Q0	0.006	0.027***	-0.014
	(0.68)	(2.77)	(-1.46)
Q1	0.021**	0.039***	-0.013
	(2.11)	(3.88)	(-1.33)
Q2	-0.002	0.013	-0.008
	(-0.22)	(1.34)	(-0.92)
Number of observations	295,458	295,458	300,001
Firm/ Quarter-year FE/ Controls	Yes	Yes	Yes
Adjusted R-squared	0.074	0.184	0.079

Table 7: Repurchases in response to momentum

Panel A reports the variation in repurchases across momentum deciles during the quarter following the formation of momentum portfolios. Panel B reports the results of an OLS regression of repurchases on momentum deciles and control variables. In panel B, the first two columns include all firm-quarters between 1988-2016 and columns 3-4 include firm-quarters for which insider trading data is available. Momentum deciles are determined at the beginning of each month based on the returns in the prior twelve months [-13,-1].Repurchases are estimated from Compustat Quarterly data as the purchase of common and preferred stock minus any reduction in the value of preferred stock outstanding, divided by total assets. All variables for regression are standardized to have a mean of zero and standard deviation of 1. Please refer to the Appendix for detailed variable definitions; ***, ** and * denote significance at 1%, 5% and 10% respectively.

Panel A: Variation in repurchases across momentum deciles (Univariate)

	Repurchases
1 - Low momentum	0.083%
2	0.163%
3	0.190%
4	0.210%
5	0.228%
6	0.228%
7	0.236%
8	0.244%
9	0.251%
10 - High momentum	0.205%
High - Low	0.122%***
Pvalue of difference	0.000

Panel B: Variation in repurchases across momentum deciles (OLS)

	Repurchases			
	(1)	(2)	(3)	(4)
Momentum deciles (1- 10)	0.004***		0.003**	
	(4.60)		(2.26)	
Top 30% (prior winners)		0.039***		0.039***
		(8.21)		(5.88)
Mid 40%		0.037***		0.031***
		(6.55)		(3.95)
Log(Market capitalization)	0.197***	0.195***	0.227***	0.225***
	(19.20)	(19.11)	(15.96)	(15.87)
Cash	0.042***	0.042***	0.041***	0.041***
	(8.70)	(8.72)	(5.74)	(5.75)
Leverage	-0.062***	-0.062***	-0.074***	-0.074***
	(-13.77)	(-13.75)	(-10.37)	(-10.36)
Market to book	-0.001	-0.001	-0.007	-0.006
	(-0.48)	(-0.38)	(-0.58)	(-0.51)
Prior year return	-0.031***	-0.032***	-0.032***	-0.034***
	(-11.77)	(-12.92)	(-8.17)	(-9.26)
Operating income	0.033***	0.033***	0.044***	0.044***
	(8.98)	(9.00)	(5.89)	(5.93)
Log(Age)	0.045***	0.045***	0.079***	0.079***
	(4.47)	(4.41)	(5.70)	(5.64)
RoA	-0.002	-0.003*	-0.012**	-0.012**
	(-1.61)	(-1.66)	(-2.23)	(-2.26)
Constant	0.010	0.007	0.084***	0.075**
	(0.44)	(0.30)	(2.65)	(2.42)
Number of observations	487,555	487,555	279,793	279,793
Firm fixed effects	Yes	Yes	Yes	Yes
Quarter-year fixed effects	Yes	Yes	Yes	Yes
Adjusted R-squared	0.028	0.028	0.033	0.033

Table 8: Insider trades: High versus low options

Panels A and B estimate the variation in insider trades in response to momentum and value anomalies separately for high and low option firms. We divide our sample into low options (below median) and high options (above median) firms based on number of stock options held by top five executives (divided by total shares outstanding) in a year. Panels B and D include controls for stocks options and stocks held by top five executive of the firms at the end of the prior year. Control variables from Table 2 are included but omitted for brevity. All variables are standardized to have a mean of zero and standard deviation of one. Please refer to the Appendix for detailed variable definitions. OLS standard errors are clustered by firm. T-statistics are in parentheses; ***, ** and * denote significance at 1%, 5% and 10% respectively.

Panel A: High versus low options: in response to momentum anomaly

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Buys/Total trades		Sells/Total trades		Buys/Total trades		Sells/Total trades	
	High options	Low options	High options	Low options	High options	Low options	High options	Low options
Momentum deciles (1- 10)	-0.004**	-0.005***	0.031***	0.027***				
	(-2.52)	(-2.62)	(12.58)	(9.86)				
Top 30% (prior winners)					-0.027***	-0.021*	0.173***	0.143***
					(-2.78)	(-1.88)	(12.27)	(9.88)
Mid 40%					-0.021**	-0.008	0.088***	0.091***
					(-2.49)	(-0.84)	(8.09)	(7.96)
Number of observations	156,159	140,932	156,159	140,932	156,159	140,932	156,159	140,932
Firm/Month FE/Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.037	0.040	0.107	0.103	0.0369	0.039	0.106	0.103

Panel B: High versus low options: in response to value

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Buys/Total trades		Sells/Total trades		Buys/Total trades		Sells/Total trades	
	High options	Low options	High options	Low options	High options	Low options	High options	Low options
Book-to-Market deciles (1- 10)	0.014*	0.010*	-0.034***	-0.037***				
	(1.93)	(1.78)	(-4.19)	(-3.67)				
Book-to-market (top 30%)					0.063*	0.009*	-0.142***	-0.194***
					(1.75)	(1.69)	(-3.36)	(-3.90)
Book-to-market (mid 40%)					-0.011	-0.010	-0.059*	-0.120***
					(-0.50)	(-0.37)	(-1.78)	(-3.26)
Number of observations	12,743	11,622	12,743	11,622	12,743	11,622	12,743	11,622
Firm/Month FE/Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.030	0.037	0.078	0.076	0.030	0.036	0.077	0.076

Panel C: Controls for executive options and stock holding: momentum

	(1)	(2)	(3)	(4)
	Insider buys	Insider sells	Insider buys	Insider sells
Momentum deciles (1- 10)	-0.005***	0.030***		
	(-3.95)	(16.48)		
Top 30% (prior winners)			-0.028***	0.166***
			(-3.83)	(16.21)
Mid 40%			-0.017***	0.093***
			(-2.79)	(11.65)
Executive options holding	-0.018***	0.044***	-0.018***	0.046***
	(-2.94)	(5.76)	(-2.97)	(5.89)
Executive stock holding	-0.011**	0.020**	-0.011**	0.021**
	(-2.23)	(2.34)	(-2.24)	(2.38)
Number of observations	297,091	297,091	297,091	297,091
Firm/Month FE/Controls	Yes	Yes	Yes	Yes
Adjusted R-squared	0.0391	0.111	0.0391	0.110

Panel D: Controls for executive options and stock holding: value

	(1)	(2)	(3)	(4)
	Insider buys	Insider sells	Insider buys	Insider sells
Book-to-Market deciles (1- 10)	0.011**	-0.034***		
	(2.20)	(-5.48)		
Book-to-market (top 30%)			0.036*	-0.163***
			(1.68)	(-5.18)
Book-to-market (mid 40%)			-0.011	-0.091***
			(-0.67)	(-3.77)
Executive options holding	0.006	0.032**	0.006	0.032**
	(0.57)	(2.41)	(0.54)	(2.43)
Executive stock holding	-0.015	0.008	-0.016*	0.009
	(-1.59)	(0.55)	(-1.66)	(0.62)
Number of observations	24,365	24,365	24,365	24,365
Firm/Month FE/Controls	Yes	Yes	Yes	Yes
Adjusted R-squared	0.033	0.078	0.033	0.078

Table 9: Trade by CEOs/CFOs in response to momentum and value

This table reports results for the relation between trades by CEOs and CFOs in response to momentum and value anomalies. Panels A and B report the results for momentum and value anomalies respectively. Control variables from Table 2 and 5 are included but omitted for brevity. All variables are standardized to have a mean of zero and standard deviation of one. Please refer to the Appendix for detailed variable definitions. OLS standard errors are clustered by firm. T-statistics are in parentheses; ***, ** and * denote significance at 1%, 5% and 10% respectively.

Panel A: CEO/CFO tradesin response to momentum anomaly

	(1)	(2)	(3)	(4)
	Buys/Total trades	Sells/Total trades	Buys/Total trades	Sells/Total trades
Momentum deciles (1- 10)	-0.005***	0.016***		
	(-7.34)	(16.37)		
Top 30% (prior winners)			-0.035***	0.092***
			(-7.66)	(15.95)
Mid 40%			-0.020***	0.044***
			(-5.17)	(10.46)
Number of observations	899,883	825,668	899,883	825,668
Firm/Month FE/Controls	Yes	Yes	Yes	Yes
Adjusted R-squared	0.0143	0.0367	0.014	0.037

Panel B: CEO/CFO trades in response to value

	(1)	(2)	(3)	(4)
	Buys/Total trades	Sells/Total trades	Buys/Total trades	Sells/Total trades
Book-to-Market deciles (1- 10)	0.006**	-0.009***		
	(2.08)	(-3.07)		
Book-to-market (top 30%)			0.025*	-0.065***
			(1.70)	(-3.90)
Book-to-market (mid 40%)			-0.011	-0.062***
			(-1.05)	(-4.38)
Number of observations	72,863	66,941	72,863	66,941
Firm/Month FE/Controls	Yes	Yes	Yes	Yes
Adjusted R-squared	0.0097	0.0288	0.010	0.029