

Institutional Investors' Stock Picking Ability and Idiosyncratic Risk

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PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE IN FINANCE

In the Master of Science in Finance Program
of the
Faculty
of
Business Administration

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SIMON FRASER UNIVERSITY

Term 2019 Fall

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Abstract

Focusing on trades of institutional investors from 1980 to 2012, this study examines the stock-picking ability of institutional investors. We find that stocks bought by institutional investors outperform stocks sold by institutional investors in the pre-1995 period. Consistent with a costly arbitrage equilibrium in which arbitrage costs insulate mispricing, the outperformance is larger for stocks with higher idiosyncratic volatility. The stock picking ability of institutional investors declines in the post-1995 period. We also find that investment firms have stronger stock-picking ability than banks and insurance companies. Overall, Banks and insurance companies show negative stock-picking ability, especially for stocks with high idiosyncratic risk. Alternatively, overall, investment firms show strong stock-picking ability for stocks with higher idiosyncratic volatility, and the ability declines in the post-1995 period.

Keywords: stock picking; institutional investors; idiosyncratic risk

Acknowledgments

We are grateful to all those who offered help during the writing of the paper. First, we would express our gratitude to our respectable supervisor, Ying Duan, who gave us patient instruction and constructive suggestions, which benefit us a lot. Then, we would be thankful to Professor Jijun Niu and all the other professors in this program. Moreover, we would like to present thanks to each other for this paper. We encouraged and helped each other during writing. Finally, we would like to thank our parents, who always support us.

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1. Introduction

During the 1980 to 2012 period, the number of institutional investors soared almost seven times from 2152 to 14005¹ (Figure 1). As institutional investors play an increasingly important role in the stock market, we start to curious: do institutional investors have stock-picking abilities? Although a large number of studies attempted to measure institutional investors' stock-picking ability in different ways, most of them focus on mutual funds, and the results vary. Mamaysky, Spiegel, and Zhang (2008), and Cremers and Petajisto (2009) argue that some actively managed funds have the stock-picking ability. In contrast, Gruber (1996), Carhart (1997), Wermers (2000), and Fama and French (2010) found little evidence of stock-picking ability from actively managed mutual funds. According to the simulation evidence from Kothari and Warner (2001), trades are better than holdings at detecting manager ability. Measuring institutional investor stock-picking ability by their trades, Chen, Jegadeesh, and Wermers (CJW, 2000), and Kacperczyk, Sialm, and Zheng (2005) found that stocks bought by funds outperform stocks sold by funds, which is an evidence of fund managers' stock-picking ability. However, Duan, Hu, and McLean (2009) find the outperformance decreased and was less significant during the 1995-2003 sample period subsequent to CJW's sample period. A few papers focus on institutional investors as a whole and find conflicting results. Lewellen (2011) finds little evidence of institutional investor stock picking ability. Puckett and Yan (2011) show strong evidence that

¹ Data used: Institutional Investor's Holding (13F)

institutional investors earn significant and persistent abnormal returns on their trades within the trading quarter. Cai and Zheng (2004) find that institutional trading predicts future stock returns. However, Yan and Zhang (2009) show that this predictability is driven by short-term institutions only.

So, we conduct comprehensive tests on trades of institutional investors, spanning from 1980 to 2012, and analyze whether they show stock-picking abilities. We find stocks bought by institutional investors outperform stocks sold by institutional investors in the subsequent year only in the pre-1995 period, but not in the post-1995 period. This provides evidence that institutional investors have the stock-picking ability, but their stock-picking ability declines after 1995.

According to the efficient market hypothesis, no one can constantly outperform the market portfolio. However, in the real world, our stock market is far from perfect, and thus positive alpha is possible to get by identifying mispriced securities. As idiosyncratic risk is the major arbitrage holding cost indicated by Pontiff (1996, 2006) and Shleifer and Vishny (1997), it hinders investors from arbitrage activities. Treynor and Black (1973) and Pontiff (2006) pointed out that a stock's weight in arbitrageurs' portfolios is negatively related to the stocks' idiosyncratic risk. Following this logic, Pontiff (1996, 2006) and Shleifer and Vishny (1997) claimed that in a costly arbitrage equilibrium, although alpha is chased toward zero, investors avoid allocating great weight on stocks with high idiosyncratic risks in their portfolios. Hence, mispricing on high-idiosyncratic-risk stocks is persistent existing, which may leave investors with positive alpha.

Consistent with this reasoning, Duan, Hu, and McLean (2009) found mutual fund managers have stronger stock picking ability for stocks with high idiosyncratic risk

comparing to the ones with low idiosyncratic risk. Vidal-García, Vidal, Boubaker, and Manita (2019) found that funds with higher levels of idiosyncratic risk have better performance in selecting stocks than funds with lower risks. It is worth noting that the value of information may also explain these results. Morck, Yeung, and Yu (2000) and Durnev, Morck, Yeung, and Zarowin (2003) indicate that stocks with high idiosyncratic volatility have more company-specific information, which helps investors in stock picking. Grossman and Stiglitz (1980) demonstrate a different explanation that costly company-specific information may help investors with more information resources outperform the market. Agarwal, Jiang, Tang, and Yang (2009) find that asset management firms earn significant abnormal returns from their confidential holdings by possessing short-lived information. However, very few studies focus on how idiosyncratic risk affects the stock-picking performance of different types of institutions and institutional investors as a whole. Our study aims to fill the gap. If institutional investor's stock-picking ability exists, it is more likely to occur to stocks with high idiosyncratic risk. We find consistent evidence that stocks bought by institutional investors outperform stocks sold by institutional investors for both stocks with low idiosyncratic risk and stocks with high idiosyncratic risk before 1995, but the outperformance is much larger for the latter group.

We also explore the stock-picking abilities of different types of institutional investors. Investment firms, including mutual funds, are considered as more active traders and the literature shows some evidence of mutual funds stock picking ability. We would expect investment firms are more likely to have stock-picking abilities than banks and insurance companies, which are less active traders. Consistently, we find that stocks bought by banks and insurance companies weakly outperform stocks sold by banks and insurance

companies before 1995, and the outperformance is stronger for stocks with high idiosyncratic volatility. However, after 1995, stocks bought by banks and insurance companies strongly underperform stocks sold by banks and insurance companies, especially for stocks with high idiosyncratic volatility and in a longer holding horizon, which may drive the result that over the whole period, banks and insurance companies show weak negative stock picking ability in 12-month horizon only for stocks with high idiosyncratic risk. Alternatively, investment firms have very strong evidence of stock picking ability overall and before 1995, and this ability is stronger for stocks with high idiosyncratic risk. Though investment firm stock picking ability declines after 1995.

The remainder of the paper proceeds as follows. Section 2 discusses our data, Section 3 reports our results, and Section 4 concludes.

2. Data

We obtain institutional investors holding data from January 1980 to December 2012 from the Security Exchange Commission (SEC) mandatory institutional quarterly portfolio holding reports (13F). The 13F drawn from Tomson Reuters contains the stocks holding information of institutional investors with over \$100 million investment discretion. We also obtain the same period monthly stock returns data from CRSP and Fama-French-Carhart four-factor data.

According to the simulation evidence from Kothari and Warner (2001), trades are better than holdings at detecting manager ability. So, in our study, we use CJW's trade proxy, which is the aggregate change in quarterly holdings of U.S. institutional investors. The CJW's trading measure (*Trades*) is shown in the following equation:

$$Trades_{i,t} = \frac{SharesHeld_{i,t}}{TotalShares_{i,t}} - \frac{SharesHeld_{i,t-1}}{TotalShares_{i,t-1}}$$

For each stock, the Trades are calculated by subtracting quarterly fractional holdings of stock *i* at time *t-1* from the quarterly fractional holdings of stock *i* at time *t*; the difference is Trades, our aggregate quarterly trading measure. Trades, therefore, measures the aggregate change in quarterly holdings of stock *i* for the institutional investor type.

To measure each stock's idiosyncratic risk, we calculated stock's standard deviation of monthly returns that are orthogonal to the Fama-French-Carhart four-factor model (Fama and French 1996; Carhart 1997). Fama-French-Carhart four-factor model has relatively high explanatory power for the stock return by accounting for the effects of market risk premium, size, book-to-market ratio, and momentum.

$$r_i = r_f + \beta_1(r_m - r_f) + \beta_2SMB + \beta_3HML + \beta_4UMD + e_i$$

For each month from January 1980 to December 2012, we regress each stock's previous 60 monthly returns on the four monthly Fama-French factors. We take the standard error of residual term e_i as stock's idiosyncratic risk measure. Only stocks with at least 12 months of past returns can be included in our sample data.

3. Result

3.1 Results based on trades

Table 1 reports the 3-, 6-, 12-month buy-and-hold subsequent gross returns for stock portfolios formed based on stocks' Trade levels. Two methods are applied to form stock portfolios. Method 1 assigns stocks with positive Trade to 'Buys' portfolio in each quarter-end, and stocks with negative Trade to 'Sells' portfolio in each quarter-end. This method divides stocks into two groups, which contain stocks that are bought and sold by institutional investors, respectively. The Second method assigns stocks into more detailed groups. It classifies stocks into quintiles based on their Trades level in each quarter-end. The top quintile (Quintile 1) contains the stocks with the highest 20 percent Trade level. The next 20 percent are assigned to Quintile 2, and so on. The first method compares the 3-, 6-, 12-month subsequent gross returns between 'Buys' and 'Sells' portfolios, while the second method compares the return between the most bought stock group and the most sold stocks group. The returns differences reported in Table 1 represent the stock-picking abilities of institutional investors in a 3-, 6-, 12-month buy-and-hold horizon.

Table 1 reports the results for the whole sample (1980-2012) and two subsamples (1980-1994, 1995-2012). Our Subsample 2 (1995-2012) is deliberately designed to be outside of CJW (2000) sample (1980-1994). Following CJW, the different portfolios' returns are weighted by the market value of each stock's trade. Since the portfolios are constructed quarterly, there is an overlap between 6- and 12-month returns. Newey and West's (1987) method is applied to adjust standard errors.

Table 1 shows a sharp contrast between Subsample 1 (1980-1994) and Subsample 2 (1995-2012) that how thoroughly institutional investors' stock picking ability disappears.

From Table 1, although both ‘Buys’ and ‘Quintile 1’ portfolios outperform the corresponding ‘Sells’ and ‘Quintile 5’ portfolios in all 3-, 6-, 12-month buy-and-hold horizon, none of the differences are statistically significant.

By comparison, the results for Subsample 1 is much stronger. The returns for the ‘Buys’ and ‘Quintile 1’ portfolio are considerably higher than the ‘Sells’ and ‘Quintile 5’ portfolio, and the differences are statistically significant. To be specific, the return differences between Top Quintile and Bottom Quintile for 3-, 6- and 12-month horizons are 0.93%, 2.60%, and 4.52% respectively, and all are significant for at least 95% confidence level with p-values of 0.041, 0.000, and 0.000.

Interestingly, in Subsample 2 (1995-2012), institutional investors seemingly have no stock-picking ability over all three buy-and-hold horizons. The return difference from the trades portfolio is not statistically significant at any holding horizon.

The decrease in stock-picking ability may be explained in two aspects. **Figure 1** presents the dramatic increase of institutional investors from the year 1980 to 2012. The number of institutional investors soared almost seven times from 2152 to 14005. On the one hand, the huge increase of institutional investors improves the efficiency of the stock market and thus reduce arbitrage opportunities. On the other hand, this phenomenon inevitably decreases the average quality of asset managers.

Table 2 reports the 3-, 6-, 12-month DGTW-adjusted return for stock portfolios formed under the same methodology as Table 1. The benchmarks used to adjust stock returns are developed by Daniel, Grinblatt, Titman, and Wermers (DGTW 1997). The DGTW adjustment takes size, book-to-market, and momentum effects into consideration. In sequence, stocks are sorted by the DGTW adjustment method on market values, book-

to-market values, and past returns. This method generated 125 different portfolios, for which monthly returns were calculated. Each DGTW-adjusted stock monthly return is calculated by subtracting the stocks' gross monthly return by the stock's corresponding DGTW portfolio's return² during the same period.

Very similar to Table 1, spanning the whole 1980-2012 period, Table 2 reports positive return difference comparing institutional investors' (most) bought stocks with the (most) sold stocks for all 3-,6-,12-month buy-and-hold horizons. However, the same as Table 1, none of those return differences is statistically significant.

While in the 1980-1994 period, the buys outperform the sells by 0.76% (p-value = 0.057), 1.74% (p-value =0.008), and 2.53% (p-value =0.020) for 3-, 6-, 12-month horizon respectively. In addition, the most bought stocks (Quintile 1) considerably outperform the most sold stocks (Quintile 5) by 1.47% (p-value =0.005) for 6-month horizon and 2.36% (p-value =0.012) for the 12-month horizon. These results are consistent with those of the CJW's study (2000).

For the 1995-2012 period, Table 2 shows no stock-picking ability or even a very weak negative stock-picking ability of institutional investors. The 12-month buy-and-hold return difference for buys and sells is negative (-2.18%) and statistically significant at 10% level. All the other return differences are not statistically significant.

3.2 Results based on trades and idiosyncratic volatility

We cross-sorted our Trades portfolios with idiosyncratic risk portfolios. As mentioned in section 2, we measure stock's idiosyncratic risk using the standard deviation of monthly

² The DGTW benchmarks are available via
<http://terpconnect.umd.edu/~wermers/ftpsite/Dgtw/coverpage.htm>

returns that are orthogonal to the Fama–French–Carhart four-factor model. For the following Tables 3, 4, 5, and 6, we assign the stocks into idiosyncratic volatility portfolio 1 to 5 based on their volatility level. The top 20% volatile stocks are assigned to portfolio 1, the next 20% to portfolio 2, and so on. All the returns showed in the following tables are DTGW-adjusted.

Table 3 reports institutional investors' 3-, 6-, 12-month DTGW-adjusted returns for stock portfolios cross-sorted based on stocks' Trade levels and idiosyncratic volatility. Panel A, B, C reports the returns for the whole sample, Subsample 1(1980-1994), and Subsample 2(1995-2012).

For Panel A, only the high idiosyncratic risk portfolio 5 shows significant buy and sell difference of 1.91% (p-value = 0.052) on the 3-month horizon. This result is consistent with the Pontiff (1996, 2006) and Shleifer and Vishny (1997) studies that arbitrageurs are less willing to take large positions in the securities with high idiosyncratic risk. As a result, mispricing opportunities are more likely to be found in those stocks.

In Panel B, the 3-month DGTW-adjusted returns report that the Buys have a positive excess return over the Sells in both the medium volatility portfolio and the high volatility portfolio 5 during the pre-1995 period. However, the excess return is 3.32% (p-value = 0.009) in high volatility portfolio 5, which is much higher and more significant than the 1.20% excess return (p-value = 0.084) in the medium volatility portfolio. We find similar results for 6-month and 12-month returns. The Buys outperform Sells by 5.22% (p-value=0.001) in the subsequent 6-month, and by 9.53% (p-value=0.002) in the subsequent 12-month for high volatility portfolio 4, but only outperform 1.53% (p-value=0.068) in the subsequent 6-month and 2.33% (p-value=0.136) in the subsequent 12-month for low

volatility portfolio 2. The results from Panel B reveals that the institutional investors have stock-picking abilities for both stocks with low idiosyncratic risk and stocks with high idiosyncratic risk, but the stock-picking ability is much stronger for the latter.

Panel C reports the buy-sell return differences spanning the 1995-2012 period. The buy and sell return differences are not significant for either low or high idiosyncratic volatility portfolios. The results in Panel C illustrate that institutional investors do not have stock-picking abilities either for stocks with high idiosyncratic risk nor stocks with low idiosyncratic risk after 1995.

Table 4 reports institutional investors' 3-, 6-, 12-month DTGW-adjusted returns for stock portfolios cross-sorted based on stocks' Trade and idiosyncratic volatility. We assign stocks into more detailed quintiles based on their trades. Panel A, B, C reports the returns for the entire sample, Subsample 1, and Subsample 2.

Overall, the results in Table 4 are similar to those in Table 3. It supports that before 1995, institutional investors have stock-picking ability for both stocks with low idiosyncratic risk and stocks with high idiosyncratic risk, but the stock-picking ability is much stronger for the latter. This ability disappears after 1995.

We would like to point out that in Panel A of Table 4, most results are consistent with no stock-picking ability for institutional investors over the whole sample period. Though the 6-month and 12-month DGTW-adjusted returns do show some outperformance of most buys (quintile 1) over most sells (quintile 5) for stocks with low idiosyncratic risk (idiosyncratic volatility portfolio 2) only. This is not consistent with the Pontiff (1996, 2006) and Shleifer and Vishny (1997) that mispricing is more likely to be found in stocks with high idiosyncratic risk. To further explore the inconsistency of results in Panel A of

Table 4, we examine the stock-picking ability and idiosyncratic risk for different types of institutional investors.

3.3 Results on different types of institutional investors

We use the Security Exchange Commission (SEC) mandatory institutional quarterly portfolio holding reports (13F) drawn from Tomson Reuters as our institutional investors holding data. Tomson Reuters divides the institutions into 5 types, which are banks (Type code = 1), insurance companies (Type code = 2), investment companies (Type code = 3), independent investment advisors (Type code = 4), and others (Type code = 5). However, since 1998, the Tomson Reuters' type code 5 became inaccurate because of considerable classification mistakes.

To solve this issue, we adopt Brain Bushee's method of classification (Bushee, 2019), which is more reliable. Bushee classify institutional investors into 8 types include bank trust (1), insurance company (2), investment company (3), independent investment advisor (4), corporate (private) pension fund (5), public pension fund (5), university and foundation endowments (5), and miscellaneous (5).

Based on Bushee's type code, we construct the classification of institution types by combining type code 1 and 2 as Banks and Insurance Company (type code 1), type code 3 and 4 as Investment Firm (type code 2) and assign all left institutions in Bushee's type code 5 as Others (type code 3). The focus of our study is on type code 1 and 2 since others only account for 11% of all institutions. All the returns in the following tables are DGTW-adjusted.

Table 5 is developed under the same method as for Table 3. It reports banks and insurance companies' 3-, 6-, 12-month DTGW-adjusted returns for stock portfolios cross-

sorted based on stocks' Trade levels and idiosyncratic volatility. Panel A, B, C reports the returns for the whole sample, Subsample 1, and Subsample 2, respectively. Stocks' standard error is orthogonal to the Fama-French-Carhart Four Factor model to measure stocks' idiosyncratic volatility, based on which the stocks are assigned to idiosyncratic volatility Portfolios 1 (highest var) to 5 (lowest var). Stocks with positive Trades are assigned to Buys portfolio, and others are assigned to the Sells.

In Panel A, the 12-month buys underperform sells in medium and high idiosyncratic volatility Portfolios 3 and 5 with significant return differences of -2.19% (p-value = 0.059) and -3.06% (p-value = 0.064). The underperformance is larger for higher idiosyncratic volatility group.

Results for Panel B are different from Panel A. The buy outperforms the sell in the high idiosyncratic volatility Portfolio 4 for all 3-, 6-, and 12-month horizons. The return differences are 1.22% (p-value = 0.074) for 3-month, 3.76% (p-value = 0.01) for 6-month, and 6.11% (p-value = 0.03) for 12-month. Also in the high idiosyncratic volatility Portfolio 5, the 3-month horizon return reports significant outperformance of 2.42% (p-value = 0.059). Buys do not outperform sells in any of the low idiosyncratic volatility portfolio.

Subsample 2 includes in Panel C shows some mixed results. The buys in idiosyncratic volatility Portfolios 3 and 5 display some outperformance over sells of 1.42% (p-value = 0.067) and 2.17% (p-value = 0.077) in 3-month horizon. Whereas in a longer investment horizon, banks and insurance companies start to show negative stock-picking ability. To be more specific, the buys for 6-month return in idiosyncratic volatility Portfolios 3 and 5 underperform sell by -2.06% (p-value = 0.059) and -3.28% (p-value = 0.029) respectively. The 12-month horizon report even more underperformance. The return differences are -

1.4% (p-value = 0.097) for low idiosyncratic volatility Portfolio 1, -3.81% (p-value = 0.046) for Portfolio 3, and -5.61% (p-value = 0.007) for high idiosyncratic risk Portfolio 5. After 1995, banks and insurance companies have negative stock-picking ability, which is stronger for stocks with higher idiosyncratic risk. The result may drive the overall negative stock picking ability results in the 12-month horizon for stocks with high idiosyncratic risk in the whole sample period.

Table 6 elaborate banks and insurance companies trades into five quintiles from Quintile 1 (most bought) to Quintile 5 (most sold) and cross sort the stocks based on their trades and idiosyncratic volatility. This method divides each quintile into five idiosyncratic volatility Portfolios 1 to 5. The differences we will discuss for Table 6 are the return differences between Quintile 1 and Quintile 5.

Table 6 presents similar results to Table 5. Before 1995, banks have weak stock-picking ability, especially for stocks with high idiosyncratic volatility. However, after 1995, stocks in Quintile 1 underperform stock in Quintile 5, especially for stocks with high idiosyncratic risk longer holding horizon, which may drive the results that over the whole time period, banks and insurance company show some negative stock picking ability in 12-month horizon only for stocks with high idiosyncratic risk.

Table 7 and **Table 8** are the results for investment firms and in the same form as Table 5 and Table 6. Both Table 7 and Table 8 show that before 1995, stocks bought by investment firms outperform stocks sold by investment firms for both stocks with low idiosyncratic risk and high idiosyncratic risk, but the outperformance is much larger for the latter group. For example, the Subsample 1 from Table 8 presents the 12-month return differences are 4.30% (p-value = 0.014), 3.70% (p-value = 0.0410, and 9.35% (p-value =

0.001) for idiosyncratic volatility Portfolios 2, 3, and 4. This is consistent with the Pontiff (1996, 2006) and Shleifer and Vishny's (1997) studies that fund managers are more likely to find arbitrage opportunities with high idiosyncratic risk stocks.

By contrast, Panel C for both Table 7 and Table 8 contain no significant difference for a 3-, 6-, and 12-month horizon. Thus, we do not observe investment firms' stock picking ability during the 1995-2012 period.

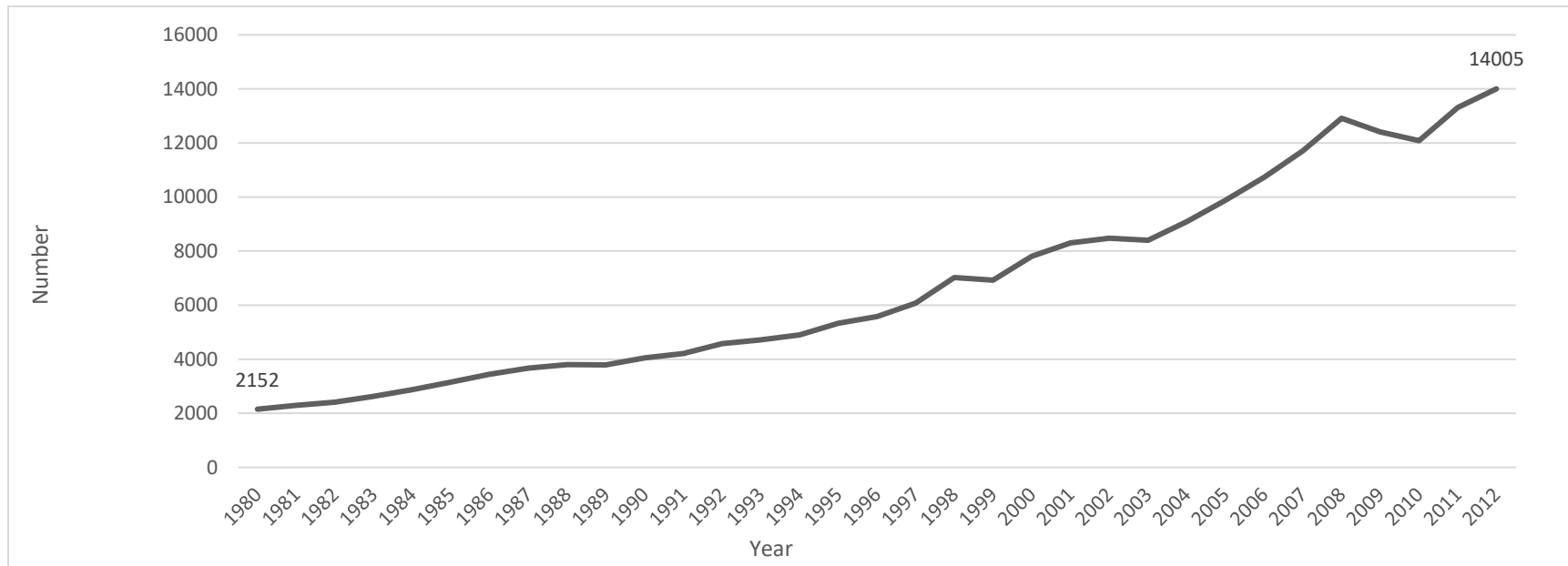
Over the whole sample period, investment firms show some stock-picking abilities for both stocks with low and high idiosyncratic risk and the ability is stronger for the latter group. Recall that over the whole time period, banks and insurance companies show some negative stock picking ability in a 12-month horizon only for stocks with high idiosyncratic risk. When we examine the stock-picking ability of institutional investors as a whole, the stock-picking ability of investment firms may be offset by the negative stock-picking ability of banks and insurance companies for stocks with high idiosyncratic risk and in longer holding horizon. Then we may only observe that institutional investors have some stock-picking ability in stocks with low idiosyncratic risk, which presented in Panel A of Table 4.

4. Conclusion

Our study provides three findings. First, we find that the stock-picking ability of institutional investors as a whole petered out between 1980 and 2012. In the pre-1995 part of our sample, institutions show significant stock picking ability. This ability is stronger for stocks with high idiosyncratic risks. In our post-1995 subsample, we find no evidence of stock-picking skills from institutional investors. Second, our study shows an overall negative stock-picking ability over the 1980-2012 period for banks and insurance companies. Banks and insurance companies had weak stock picking ability during the pre-1995 period, whereas it turns to negative stock picking ability for post-1995 subsample. In the post-1995 horizon, stocks bought by banks and insurance companies significantly underperform stocks sold by them, and the underperformance is stronger for stocks with high idiosyncratic volatility. Third, even though investment firms have much stronger evidence of stock-picking ability during the pre-1995 period, there is again no evidence that their active management provides any value for post-sample1995. Overall, investment firms have stronger stock-picking ability than banks and issuance companies, especially in stocks with high idiosyncratic risk. This result is consistent with our expectations.

Appendix

Figure 1: Number of Institutional Investors from 1980 to 2012



Notes: Figure 1 reports the number of institutional investors during the period 1980 to 2012.

Sources: The data is based on 13F downloaded from Tomson Reuters.

Table 1: Gross Returns of Stocks Traded by Institutional Investors*(p-values in parentheses)*

	Whole Sample (1980–2012)			Subsample 1 (1980–1994)			Subsample 2 (1995–2012)		
	3-Month	6-Month	12-Month	3-Month	6-Month	12-Month	3-Month	6-Month	12-Month
Buys (Trades > 0)	3.37%	6.78%	12.57%	4.53%	8.79%	16.19%	2.42%	5.14%	9.61%
Sells (Trades < 0)	2.91%	5.57%	11.47%	3.18%	6.03%	11.98%	2.68%	5.19%	11.04%
Buys – Sells	0.46%	1.21%	1.11%	1.35%**	2.76%***	4.20%***	-0.27%	-0.06%	-1.43%
	(0.326)	(0.118)	(0.374)	(0.011)	(0.005)	(0.002)	(0.718)	(0.960)	(0.422)
Quintile 1 (top)	3.45%	6.62%	12.31%	4.31%	8.66%	16.26%	2.73%	4.95%	9.07%
Quintile 2	3.34%	6.48%	11.95%	4.24%	8.28%	15.16%	2.60%	5.00%	9.32%
Quintile 3	3.47%	6.91%	14.44%	4.27%	8.21%	16.45%	2.81%	5.84%	12.79%
Quintile 4	4.13%	7.91%	14.40%	4.76%	9.87%	17.50%	3.61%	6.30%	11.86%
Quintile 5 (bottom)	2.76%	5.78%	11.21%	3.38%	6.06%	11.74%	2.25%	5.55%	10.78%
Top – Bottom	0.69%	0.84%	1.10%	0.93%**	2.60%***	4.52%***	0.49%	-0.60%	-1.71%
	(0.143)	(0.170)	(0.242)	(0.041)	(0.000)	(0.000)	(0.529)	(0.503)	(0.129)

Notes: Table 1 reports the 3-, 6-, 12-month buy-and-hold gross returns on stock portfolios built based on institutional investor Trades levels. Please see the Data section for a detailed explanation about 'Trades'. Two methods are used to form stock portfolios. Method 1 assigns stocks with positive Trades to portfolio 'Buys', and stocks with negative Trades to portfolio 'Sells'. Under Method 2, stocks are ranked by their Trades and divided into Quintiles. The top 20 percent of most bought stocks are assigned to Quintile 1, the next 20 percent to Quintile 2, and so on. Newey–West standard errors are used to adjust p-value for autocorrelation.

**Significant at the 10 percent level.*

***Significant at the 5 percent level.*

****Significant at the 1 percent level.*

Table 2: DGTW-Adjusted Returns of Stocks Traded by Institutional investors*(p-values in parentheses)*

	Whole Sample (1980–2012)			Subsample 1 (1980–1994)			Subsample 2 (1995–2012)		
	3-Month	6-Month	12-Month	3-Month	6-Month	12-Month	3-Month	6-Month	12-Month
Buys (Trades > 0)	0.08%	0.15%	-0.35%	0.57%	0.98%	0.62%	-0.33%	-0.54%	-1.19%
Sells (Trades < 0)	-0.06%	-0.25%	-0.36%	-0.19%	-0.76%	-1.91%	0.05%	0.19%	0.99%
Buys – Sells	0.14%	0.40%	0.01%	0.76%*	1.74%***	2.53%**	-0.38%	-0.73%	-2.18%*
	(0.685)	(0.471)	(0.991)	(0.057)	(0.008)	(0.020)	(0.440)	(0.375)	(0.080)
Quintile 1 (top)	0.12%	0.09%	-0.64%	0.30%	0.83%	0.55%	-0.04%	-0.54%	-1.68%
Quintile 2	-0.07%	0.04%	-0.46%	0.11%	0.32%	-0.34%	-0.22%	-0.20%	-0.57%
Quintile 3	0.40%	0.57%	2.21%	0.45%	0.79%	1.80%	0.37%	0.39%	2.56%
Quintile 4	0.73%	1.10%	1.17%	0.91%	1.53%	1.19%	0.58%	0.74%	1.14%
Quintile 5 (bottom)	-0.22%	-0.11%	-0.85%	0.03%	-0.64%	-1.81%	-0.42%	0.35%	-0.01%
Top – Bottom	0.33%	0.19%	0.20%	0.27%	1.47%***	2.36%**	0.38%	-0.89%	-1.67%
	(0.416)	(0.736)	(0.797)	(0.421)	(0.005)	(0.012)	(0.582)	(0.334)	(0.118)

Notes: Please see notes to Table 1. Table 2 reports 3-, 6-, 12-month buy-and-hold DGTW-adjusted returns on stock portfolios built based on stocks' institutional investor Trades levels. Each DGTW-adjusted return is the excess return comparing to the matching DGTW portfolio during that holding period. Please see the result session for a detailed explanation. The 3-, 6-, and 12-month buy-and-hold DGTW-adjusted returns are computed on the portfolio formed by the two methods introduced in the notes to Table 1.

**Significant at the 10 percent level.*

***Significant at the 5 percent level.*

****Significant at the 1 percent level.*

Table 3: Institutional investors' Trading Performance and Idiosyncratic Volatility (Buys and Sells)*(p-values in parentheses)*

	1 (low var)	2	3	4	5 (high var)	High - Low
A. Total Sample						
3-month DGTW-adjusted returns						
Buys (Trades > 0)	-0.03%	-0.13%	0.31%	1.03%	0.18%	0.22% (0.820)
Sells (Trades < 0)	0.27%	-0.08%	-0.48%	-0.06%	-1.73%	-2.00%** (0.048)
Buys – Sells	-0.31% (0.313)	-0.05% (0.920)	0.79% (0.163)	1.10% (0.296)	1.91%* (0.052)	
6-month DGTW-adjusted returns						
Buys (Trades > 0)	0.04%	0.13%	0.68%	2.09%	-1.08%	-1.12% (0.456)
Sells (Trades < 0)	0.23%	-0.42%	-0.71%	-0.68%	-2.78%	-3.01%** (0.050)
Buys – Sells	-0.19% (0.727)	0.55% (0.447)	1.39% (0.116)	2.77% (0.126)	1.70% (0.246)	
12-month DGTW-adjusted returns						
Buys (Trades > 0)	-0.41%	-0.18%	1.23%	3.68%	-3.20%	-2.79% (0.391)
Sells (Trades < 0)	-0.16%	-0.03%	-0.28%	-0.84%	-2.74%	-2.58% (0.383)
Buys – Sells	-0.25% (0.733)	-0.14% (0.910)	1.51% (0.408)	4.52% (0.109)	-0.46% (0.859)	
B. Subsample 1, 1980–1994						
3-month DGTW-adjusted returns						
Buys (Trades > 0)	0.24%	0.56%	0.84%	0.62%	-0.28%	-0.52% (0.639)
Sells (Trades < 0)	0.06%	-0.21%	-0.36%	-0.80%	-3.60%	-3.66%*** (0.000)
Buys – Sells	0.18%	0.77%	1.20%*	1.42%	3.32%***	

	(0.669)	(0.250)	(0.084)	(0.101)	(0.009)		
6-month DGTW-adjusted returns							
Buys (Trades > 0)	0.68%	0.61%	1.57%	2.75%	-1.55%	-2.23%	(0.264)
Sells (Trades < 0)	-0.21%	-0.92%	-0.96%	-2.47%	-5.01%	-4.81%***	(0.001)
Buys – Sells	0.89%	1.53%*	2.54%***	5.22%***	3.47%		
	(0.226)	(0.068)	(0.010)	(0.001)	(0.114)		
12-month DGTW-adjusted returns							
Buys (Trades > 0)	0.48%	0.42%	0.79%	4.29%	-4.36%	-4.84%	(0.197)
Sells (Trades < 0)	-0.95%	-1.91%	-2.38%	-5.24%	-7.07%	-6.13%**	(0.011)
Buys – Sells	1.43%	2.33%	3.17%**	9.53%***	2.71%		
	(0.220)	(0.136)	(0.012)	(0.002)	(0.616)		
C. Subsample 2, 1995–2012							
3-month DGTW-adjusted returns							
Buys (Trades > 0)	-0.26%	-0.71%	-0.13%	1.37%	0.56%	0.82%	(0.578)
Sells (Trades < 0)	0.45%	0.03%	-0.59%	0.54%	-0.17%	-0.62%	(0.713)
Buys – Sells	-0.71%	-0.74%	0.45%	0.83%	0.73%		
	(0.104)	(0.368)	(0.602)	(0.643)	(0.616)		
6-month DGTW-adjusted returns							
Buys (Trades > 0)	-0.50%	-0.27%	-0.07%	1.54%	-0.68%	-0.18%	(0.934)
Sells (Trades < 0)	0.60%	0.01%	-0.49%	0.82%	-0.89%	-1.50%	(0.558)
Buys – Sells	-1.10%	-0.28%	0.43%	0.72%	0.21%		
	(0.156)	(0.802)	(0.761)	(0.815)	(0.913)		
12-month DGTW-adjusted returns							
Buys (Trades > 0)	-1.19%	-0.70%	1.61%	3.15%	-2.19%	-1.01%	(0.845)
Sells (Trades < 0)	0.53%	1.60%	1.54%	2.97%	1.02%	0.49%	(0.922)

Buys – Sells	-1.71%	-2.29%	0.08%	0.18%	-3.21%
	(0.151)	(0.218)	(0.981)	(0.966)	(0.331)

Notes: See notes to Tables 1 and 2. Table 3 reports 3-, 6-, 12-month buy-and-hold DGTW-adjusted returns on stock portfolios built based on stocks' Trades and idiosyncratic volatility. Each DGTW-adjusted stock monthly return is calculated by subtracting the stocks' gross monthly return by the stock's corresponding DGTW portfolio's return during the same period. At the end of each quarter, in addition to the trade level of each stock, the idiosyncratic volatility of each stock held by mutual funds is computed. The idiosyncratic volatility is measured by the standard deviation of the residuals orthogonal to the Fama-French four factor model, with the value-weighted CRSP index as a market proxy. In addition to being ranked on the basis of Trades, stocks are ranked on the basis of idiosyncratic volatility, and the lowest 20 percent of stocks are assigned to Portfolio 1, the next 20 percent, to Portfolio 2, and so on. In each idiosyncratic volatility group, the 3-, 6-, and 12-month buy-and-hold DGTW-adjusted returns are computed on the aggregate portfolio of all stocks bought by funds, Buys (Trades > 0), the aggregate portfolio of all stocks sold by funds, Sells (Trades < 0), and returns on quintile portfolios formed from the ranking on Trades measures.

**Significant at the 10 percent level.*

***Significant at the 5 percent level.*

****Significant at the 1 percent level.*

Table 4: Institutional investors' Trading Performance and Idiosyncratic Volatility (Quintiles)*(p-values in parentheses)*

	1	2	3	4	5	High - Low	
	(low var)				(high var)		
A. Total Sample							
3-month DGTW-adjusted returns							
Quintile 1 (top)	0.05%	0.38%	0.50%	0.93%	-0.59%	-0.64%	(0.481)
Quintile 2	-0.23%	0.27%	0.40%	0.46%	0.34%	0.58%*	(0.064)
Quintile 3	0.00%	0.00%	0.90%	-0.16%	-1.39%	-1.40%	(0.245)
Quintile 4	0.92%	0.42%	0.11%	0.31%	-0.81%	-1.73%	(0.165)
Quintile 5 (bottom)	-0.09%	-0.51%	-0.04%	0.57%	-1.63%	-1.54%	(0.199)
Top – Bottom	0.15%	0.89%	0.54%	0.36%	1.04%		
	(0.697)	(0.174)	(0.423)	(0.736)	(0.301)		
6-month DGTW-adjusted returns							
Quintile 1 (top)	0.03%	0.66%	0.95%	1.99%	-1.20%	-1.23%	(0.467)
Quintile 2	0.06%	0.13%	0.92%	-0.21%	-0.76%	-0.82%	(0.596)
Quintile 3	0.25%	-0.02%	1.24%	-0.04%	-2.54%	-2.79%*	(0.089)
Quintile 4	0.95%	1.84%	-0.68%	1.35%	-0.97%	-1.92%	(0.348)
Quintile 5 (bottom)	0.06%	-1.03%	0.46%	1.05%	-2.27%	-2.33%	(0.221)
Top – Bottom	-0.03%	1.69%**	0.49%	0.93%	1.07%		
	(0.963)	(0.035)	(0.598)	(0.592)	(0.524)		
12-month DGTW-adjusted returns							
Quintile 1 (top)	-0.78%	0.41%	1.03%	3.22%	-2.47%	-1.69%	(0.680)
Quintile 2	-0.17%	-0.45%	1.20%	1.67%	-3.63%	-3.47%	(0.183)
Quintile 3	0.52%	0.64%	2.14%	5.24%	-6.96%	-7.48%***	(0.001)
Quintile 4	1.26%	1.74%	0.24%	2.05%	-3.43%	-4.70%	(0.120)
Quintile 5 (bottom)	-0.72%	-2.02%	0.88%	1.54%	-2.92%	-2.20%	(0.473)

Top – Bottom	-0.06%	2.44%**	0.15%	1.68%	0.45%		
	(0.942)	(0.027)	(0.924)	(0.640)	(0.884)		

B. Subsample 1, 1980–1994

3-month DGTW-adjusted returns

Quintile 1 (top)	-0.10%	0.55%	0.53%	1.09%	-0.60%	-0.50%	(0.672)
Quintile 2	0.06%	0.05%	0.09%	0.91%	1.16%	1.10%	(0.408)
Quintile 3	-0.25%	0.79%	0.55%	-0.21%	-3.41%	-3.16%**	(0.022)
Quintile 4	1.36%	0.62%	-0.57%	-1.95%	-1.94%	-3.30%***	(0.002)
Quintile 5 (bottom)	0.06%	0.15%	0.52%	-1.22%	-3.82%	-3.87%***	(0.000)
Top – Bottom	-0.16%	0.41%	0.01%	2.31%**	3.22%**		
	(0.731)	(0.510)	(0.988)	(0.035)	(0.022)		

6-month DGTW-adjusted returns

Quintile 1 (top)	0.45%	0.89%	1.63%	2.73%	-2.01%	-2.46%	(0.262)
Quintile 2	0.33%	0.11%	0.55%	0.49%	-0.85%	-1.17%	(0.513)
Quintile 3	0.47%	0.39%	0.88%	-0.75%	-5.11%	-5.57%***	(0.003)
Quintile 4	2.49%	0.58%	-1.59%	-1.34%	-2.71%	-5.21%***	(0.009)
Quintile 5 (bottom)	-0.22%	-1.14%	0.08%	-1.58%	-5.08%	-4.86%***	(0.002)
Top – Bottom	0.67%	2.03%***	1.54%	4.32%***	3.08%		
	(0.395)	(0.010)	(0.265)	(0.003)	(0.196)		

12-month DGTW-adjusted returns

Quintile 1 (top)	0.09%	2.36%	0.65%	3.38%	-5.61%	-5.70%	(0.126)
Quintile 2	0.09%	-1.00%	-0.79%	2.15%	-3.51%	-3.59%	(0.190)
Quintile 3	1.03%	-2.54%	2.71%	2.87%	-9.14%	-10.17%***	(0.000)
Quintile 4	2.58%	-0.20%	-1.15%	-4.27%	-2.73%	-5.31%	(0.109)
Quintile 5 (bottom)	-0.66%	-3.06%	-1.51%	-3.09%	-6.44%	-5.78%**	(0.033)
Top – Bottom	0.74%	5.43%***	2.16%	6.47%**	0.83%		
	(0.475)	(0.000)	(0.366)	(0.018)	(0.829)		

C. Subsample 2, 1995–2012

3-month DGTW-adjusted returns

Quintile 1 (top)	0.18%	0.24%	0.47%	0.79%	-0.57%	-0.75%	(0.577)
Quintile 2	-0.48%	0.46%	0.65%	0.10%	-0.34%	0.14%	(0.935)
Quintile 3	0.22%	-0.66%	1.18%	-0.12%	0.29%	0.07%	(0.972)
Quintile 4	0.55%	0.25%	0.67%	2.19%	0.13%	-0.42%	(0.842)
Quintile 5 (bottom)	-0.22%	-1.06%	-0.50%	2.06%	0.19%	0.40%	(0.840)
Top – Bottom	0.40%	1.30%	0.97%	-1.27%	-0.76%		
	(0.494)	(0.236)	(0.351)	(0.463)	(0.594)		

6-month DGTW-adjusted returns

Quintile 1 (top)	-0.32%	0.46%	0.37%	1.36%	-0.51%	-0.19%	(0.938)
Quintile 2	-0.17%	0.16%	1.24%	-0.80%	-0.70%	-0.53%	(0.828)
Quintile 3	0.06%	-0.36%	1.54%	0.56%	-0.38%	-0.44%	(0.862)
Quintile 4	-0.35%	2.90%	0.08%	3.63%	0.50%	0.85%	(0.799)
Quintile 5 (bottom)	0.30%	-0.94%	0.77%	3.28%	0.11%	-0.19%	(0.951)
Top – Bottom	-0.62%	1.40%	-0.40%	-1.92%	-0.62%		
	(0.505)	(0.292)	(0.753)	(0.511)	(0.792)		

12-month DGTW-adjusted returns

Quintile 1 (top)	-1.53%	-1.28%	1.36%	3.09%	0.25%	1.78%	(0.796)
Quintile 2	-0.39%	0.03%	2.92%	1.26%	-3.74%	-3.35%	(0.433)
Quintile 3	0.09%	3.41%	1.64%	7.30%	-5.06%	-5.14%	(0.142)
Quintile 4	0.12%	3.43%	1.45%	7.53%	-4.04%	-4.16%	(0.393)
Quintile 5 (bottom)	-0.77%	-1.12%	2.96%	5.55%	0.14%	0.91%	(0.859)
Top – Bottom	-0.76%	-0.16%	-1.59%	-2.47%	0.11%		
	(0.553)	(0.913)	(0.420)	(0.690)	(0.980)		

Notes: See notes to Tables 1, 2, and 3.

Table 5: Banks and Insurance Companies' Trading Performance and Idiosyncratic Volatility (Buys and Sells)*(p-values in parentheses)*

	1	2	3	4	5	High - Low	
	(low var)				(high var)		
A. Total Sample							
3-month DGTW-adjusted returns							
Buys (Trades > 0)	0.00%	-0.30%	-0.04%	1.21%	-0.61%	-0.62%	(0.157)
Sells (Trades < 0)	0.26%	-0.02%	0.40%	0.43%	-0.53%	-0.79%	(0.384)
Buys – Sells	-0.26%	-0.28%	-0.43%	0.77%	-0.08%		
	(0.339)	(0.527)	(0.407)	(0.358)	(0.925)		
6-month DGTW-adjusted returns							
Buys (Trades > 0)	0.06%	0.30%	-0.23%	2.11%	-2.23%	-2.28%*	(0.097)
Sells (Trades < 0)	0.30%	-0.09%	0.74%	0.67%	-1.58%	-1.88%	(0.244)
Buys – Sells	-0.24%	0.39%	-0.97%	1.43%	-0.64%		
	(0.592)	(0.518)	(0.201)	(0.176)	(0.568)		
12-month DGTW-adjusted returns							
Buys (Trades > 0)	-0.36%	-0.24%	-0.82%	2.75%	-4.21%	-3.85%	(0.211)
Sells (Trades < 0)	0.43%	-0.20%	1.38%	1.09%	-1.15%	-1.58%	(0.599)
Buys – Sells	-0.79%	-0.04%	-2.19%*	1.66%	-3.06%*		
	(0.212)	(0.970)	(0.059)	(0.457)	(0.064)		
B. Subsample 1, 1980–1994							
3-month DGTW-adjusted returns							
Buys (Trades > 0)	0.09%	0.02%	0.78%	0.93%	0.01%	-0.08%	(0.741)
Sells (Trades < 0)	0.43%	-0.03%	0.03%	-0.29%	-2.41%	-2.84%***	(0.004)
Buys – Sells	-0.34%	0.05%	0.75%	1.22%*	2.42%*		
	(0.394)	(0.928)	(0.263)	(0.074)	(0.059)		

6-month DGTW-adjusted returns							
Buys (Trades > 0)	0.53%	0.40%	-0.12%	2.85%	-1.51%	-2.04%	(0.226)
Sells (Trades < 0)	0.08%	-0.35%	-0.45%	-0.90%	-4.00%	-4.08%***	(0.002)
Buys – Sells	0.45%	0.75%	0.32%	3.76%***	2.49%		
	(0.460)	(0.277)	(0.754)	(0.001)	(0.113)		
12-month DGTW-adjusted returns							
Buys (Trades > 0)	0.25%	-0.40%	-1.71%	3.86%	-4.37%	-4.62%	(0.161)
Sells (Trades < 0)	0.33%	-1.21%	-1.38%	-2.24%	-4.25%	-4.58%*	(0.019)
Buys – Sells	-0.07%	0.82%	-0.33%	6.11%***	-0.12%		
	(0.937)	(0.527)	(0.782)	(0.003)	(0.963)		
C. Subsample 2, 1995–2012							
3-month DGTW-adjusted returns							
Buys (Trades > 0)	0.12%	0.00%	0.71%	1.03%	1.04%	0.91%	(0.482)
Sells (Trades < 0)	-0.07%	-0.56%	-0.71%	1.44%	-1.13%	-1.06%	(0.527)
Buys – Sells	0.19%	0.55%	1.42%*	-0.40%	2.17%*		
	(0.607)	(0.402)	(0.067)	(0.779)	(0.077)		
6-month DGTW-adjusted returns							
Buys (Trades > 0)	-0.34%	0.22%	-0.33%	1.48%	-2.83%	-2.49%	(0.240)
Sells (Trades < 0)	0.48%	0.12%	1.73%	2.00%	0.45%	-0.03%	(0.991)
Buys – Sells	-0.82%	0.09%	-2.06%*	-0.52%	-3.28%**		
	(0.196)	(0.924)	(0.059)	(0.754)	(0.029)		
12-month DGTW-adjusted returns							
Buys (Trades > 0)	-0.89%	-0.09%	-0.04%	1.77%	-4.07%	-3.18%	(0.528)
Sells (Trades < 0)	0.51%	0.69%	3.77%	3.98%	1.54%	1.03%	(0.846)
Buys – Sells	-1.40%*	-0.78%	-3.81%**	-2.21%	-5.61%***		
	(0.097)	(0.609)	(0.046)	(0.537)	(0.007)		

Table 6: Banks and Insurance Companies' Trading Performance and Idiosyncratic Volatility (Quintiles)*(p-values in parentheses)*

	1	2	3	4	5		
	(low var)				(high var)		High - Low
A. Total Sample							
3-month DGTW-adjusted returns							
Quintile 1 (top)	0.01%	-0.25%	-0.41%	1.17%	-0.83%	-0.84%	(0.402)
Quintile 2	0.08%	0.15%	0.08%	2.30%	-1.09%	-1.17%	(0.202)
Quintile 3	0.44%	0.06%	-1.28%	1.45%	-0.49%	-0.93%	(0.497)
Quintile 4	0.17%	-0.23%	1.52%	0.08%	-1.73%	-1.91%*	(0.078)
Quintile 5 (bottom)	0.01%	-0.14%	0.43%	0.40%	-0.52%	-0.52%	(0.585)
Top – Bottom	0.00%	-0.11%	-0.85%	0.77%	-0.31%		
	(0.998)	(0.839)	(0.138)	(0.367)	(0.743)		
6-month DGTW-adjusted returns							
Quintile 1 (top)	0.13%	0.17%	-0.73%	1.60%	-2.46%	-2.59%*	(0.094)
Quintile 2	0.29%	0.09%	-0.95%	4.32%	-1.22%	-1.51%	(0.346)
Quintile 3	1.58%	1.65%	-0.21%	0.71%	-2.67%	-4.25%	(0.028)
Quintile 4	-0.21%	0.31%	0.98%	0.35%	-2.27%	-2.06%	(0.230)
Quintile 5 (bottom)	0.03%	-0.12%	0.48%	1.23%	-1.36%	-1.39%	(0.386)
Top – Bottom	0.10%	0.29%	-1.21%	0.37%	-1.09%		
	(0.824)	(0.718)	(0.184)	(0.765)	(0.325)		
12-month DGTW-adjusted returns							
Quintile 1 (top)	-0.16%	-0.51%	-1.19%	2.56%	-4.22%	-4.06%	(0.264)
Quintile 2	-0.33%	0.66%	-1.34%	4.87%	-3.95%	-3.62%	(0.211)
Quintile 3	2.82%	2.81%	1.94%	2.05%	-4.35%	-7.17%**	(0.033)
Quintile 4	-0.45%	-0.36%	-1.44%	0.50%	-4.18%	-3.73%	(0.129)
Quintile 5 (bottom)	0.27%	-0.98%	0.75%	2.28%	-0.99%	-1.26%	(0.665)

Top – Bottom	-0.43%	0.47%	-1.94%	0.27%	-3.23%*		
	(0.509)	(0.632)	(0.145)	(0.911)	(0.058)		

B. Subsample 1, 1980–1994

3-month DGTW-adjusted returns

Quintile 1 (top)	-0.23%	0.26%	0.11%	0.46%	-0.29%	-0.06%	(0.954)
Quintile 2	0.19%	-0.83%	0.65%	1.49%	-1.13%	-1.31%	(0.277)
Quintile 3	0.83%	-1.00%	-0.51%	1.50%	-0.97%	-1.80%	(0.269)
Quintile 4	0.73%	-0.07%	0.80%	-0.40%	-2.32%	-3.05%***	(0.003)
Quintile 5 (bottom)	0.18%	0.00%	0.02%	-0.11%	-1.79%	-1.98%*	(0.072)
Top – Bottom	-0.41%	0.26%	0.09%	0.57%	1.50%		
	(0.306)	(0.609)	(0.905)	(0.416)	(0.272)		

6-month DGTW-adjusted returns

Quintile 1 (top)	0.47%	0.16%	-0.68%	1.84%	-1.81%	-2.27%	(0.222)
Quintile 2	0.87%	-1.37%	-0.52%	2.04%	-2.68%	-3.56%*	(0.066)
Quintile 3	1.62%	-0.44%	-0.83%	0.34%	-3.62%	-5.24%**	(0.012)
Quintile 4	0.80%	0.87%	-0.08%	1.02%	-3.53%	-4.33%**	(0.012)
Quintile 5 (bottom)	-0.24%	-0.13%	-0.64%	-0.16%	-3.05%	-2.81%*	(0.081)
Top – Bottom	0.71%	0.29%	-0.04%	2.00%*	1.24%		
	(0.262)	(0.651)	(0.971)	(0.065)	(0.485)		

12-month DGTW-adjusted returns

Quintile 1 (top)	0.08%	0.34%	-2.07%	3.12%	-4.70%	-4.78%	(0.155)
Quintile 2	0.21%	-2.99%	-3.03%	1.95%	-5.60%	-5.81%*	(0.059)
Quintile 3	4.55%	-0.64%	2.86%	-2.94%	-7.50%	-12.05%***	(0.000)
Quintile 4	1.23%	-0.92%	-2.91%	-1.81%	-3.54%	-4.78%*	(0.095)
Quintile 5 (bottom)	0.06%	-1.64%	-1.71%	-0.32%	-3.54%	-3.61%	(0.145)
Top – Bottom	0.02%	1.98%*	-0.35%	3.44%	-1.15%		
	(0.984)	(0.051)	(0.816)	(0.133)	(0.674)		

C. Subsample 2, 1995–2012

3-month DGTW-adjusted returns

Quintile 1 (top)	0.20%	-0.68%	-0.84%	1.77%	-1.28%	-1.48%	(0.353)
Quintile 2	0.00%	0.97%	-0.39%	2.98%	-1.05%	-1.05%	(0.440)
Quintile 3	0.12%	0.95%	-1.93%	1.40%	-0.10%	-0.21%	(0.920)
Quintile 4	-0.28%	-0.36%	2.13%	0.48%	-1.24%	-0.95%	(0.596)
Quintile 5 (bottom)	-0.14%	-0.26%	0.78%	0.82%	0.54%	0.68%	(0.649)
Top – Bottom	0.34%	-0.42%	-1.62%*	0.94%	-1.82%		
	(0.486)	(0.641)	(0.052)	(0.521)	(0.173)		

6-month DGTW-adjusted returns

Quintile 1 (top)	-0.16%	0.19%	-0.77%	1.39%	-3.00%	-2.85%	(0.234)
Quintile 2	-0.21%	1.33%	-1.32%	6.24%	0.01%	0.22%	(0.930)
Quintile 3	1.54%	3.42%	0.31%	1.02%	-1.87%	-3.41%	(0.273)
Quintile 4	-1.06%	-0.15%	1.88%	-0.22%	-1.21%	-0.15%	(0.957)
Quintile 5 (bottom)	0.26%	-0.11%	1.43%	2.39%	0.06%	-0.20%	(0.938)
Top – Bottom	-0.42%	0.30%	-2.20%*	-1.00%	-3.06%**		
	(0.488)	(0.833)	(0.099)	(0.631)	(0.023)		

12-month DGTW-adjusted returns

Quintile 1 (top)	-0.37%	-1.25%	-0.44%	2.07%	-3.81%	-3.44%	(0.578)
Quintile 2	-0.80%	3.84%	0.13%	7.40%	-2.53%	-1.73%	(0.714)
Quintile 3	1.33%	5.80%	1.15%	6.39%	-1.61%	-2.94%	(0.603)
Quintile 4	-1.91%	0.12%	-0.15%	2.51%	-4.74%	-2.83%	(0.466)
Quintile 5 (bottom)	0.45%	-0.40%	2.88%	4.54%	1.23%	0.78%	(0.875)
Top – Bottom	-0.83%	-0.85%	-3.32%	-2.48%	-5.04%**		
	(0.383)	(0.585)	(0.120)	(0.542)	(0.017)		

Table 7: Investment Firms' Trading Performance and Idiosyncratic Volatility (Buys and Sells)*(p-values in parentheses)*

	1 (low var)	2	3	4	5 (high var)	High - Low	
A. Total Sample							
3-month DGTW-adjusted returns							
Buys (Trades > 0)	-0.10%	0.14%	0.58%	1.21%	0.35%	0.45%	(0.633)
Sells (Trades < 0)	0.15%	-0.42%	-0.66%	0.15%	-2.12%	-2.27%**	(0.023)
Buys – Sells	-0.25% (0.374)	0.56% (0.255)	1.24%** (0.024)	1.06% (0.315)	2.47%** (0.017)		
6-month DGTW-adjusted returns							
Buys (Trades > 0)	0.04%	0.37%	0.75%	2.45%	-0.78%	-0.82%	(0.585)
Sells (Trades < 0)	0.19%	-0.60%	-1.03%	-0.23%	-3.54%	-3.73%**	(0.013)
Buys – Sells	-0.15% (0.760)	0.97% (0.144)	1.78%** (0.020)	2.68% (0.149)	2.76%* (0.082)		
12-month DGTW-adjusted returns							
Buys (Trades > 0)	-0.09%	0.30%	1.29%	4.05%	-2.40%	-2.31%	(0.466)
Sells (Trades < 0)	-0.13%	-0.58%	-1.52%	-0.67%	-4.63%	-4.50%	(0.121)
Buys – Sells	0.04% (0.960)	0.89% (0.430)	2.81%* (0.091)	4.72%* (0.067)	2.24% (0.383)		
B. Subsample 1, 1980–1994							
3-month DGTW-adjusted returns							
Buys (Trades > 0)	0.28%	0.52%	0.88%	1.28%	0.03%	-0.24%	(0.825)
Sells (Trades < 0)	0.04%	-0.56%	-0.49%	-0.32%	-3.56%	-3.60%***	(0.000)
Buys – Sells	0.23% (0.521)	1.08%* (0.065)	1.37%** (0.042)	1.60%* (0.085)	3.59%*** (0.008)		

6-month DGTW-adjusted returns							
Buys (Trades > 0)	0.72%	0.61%	1.09%	3.77%	-0.77%	-1.49%	(0.441)
Sells (Trades < 0)	0.25%	-1.37%	-1.35%	-1.65%	-5.48%	-5.72%***	(0.000)
Buys – Sells	0.47%	1.97%**	2.44%***	5.42%***	4.71%**		
	(0.525)	(0.017)	(0.005)	(0.003)	(0.048)		
12-month DGTW-adjusted returns							
Buys (Trades > 0)	0.89%	0.53%	0.24%	5.47%	-2.56%	-3.45%	(0.328)
Sells (Trades < 0)	-0.09%	-2.61%	-3.61%	-4.25%	-8.73%	-8.64%***	(0.000)
Buys – Sells	0.98%	3.14%**	3.85%***	9.72%***	6.17%*		
	(0.445)	(0.033)	(0.007)	(0.002)	(0.091)		
C. Subsample 2, 1995–2012							
3-month DGTW-adjusted returns							
Buys (Trades > 0)	-0.41%	-0.17%	0.34%	1.16%	0.006153	1.02%	(0.485)
Sells (Trades < 0)	0.24%	-0.30%	-0.81%	0.54%	-0.00921	-1.16%	(0.488)
Buys – Sells	-0.65%	0.13%	1.14%	0.62%	1.54%		
	(0.114)	(0.864)	(0.177)	(0.730)	(0.315)		
6-month DGTW-adjusted returns							
Buys (Trades > 0)	-0.53%	0.17%	0.46%	1.34%	-0.00787	-0.26%	(0.909)
Sells (Trades < 0)	0.14%	0.04%	-0.77%	0.97%	-0.0191	-2.05%	(0.410)
Buys – Sells	-0.67%	0.13%	1.23%	0.37%	1.12%		
	(0.286)	(0.898)	(0.310)	(0.903)	(0.597)		
12-month DGTW-adjusted returns							
Buys (Trades > 0)	-0.94%	0.11%	2.20%	2.81%	-2.25%	-1.32%	(0.796)
Sells (Trades < 0)	-0.17%	1.18%	0.29%	2.43%	-1.08%	-0.91%	(0.852)
Buys – Sells	-0.77%	-1.07%	1.91%	0.38%	-1.18%		
	(0.505)	(0.482)	(0.504)	(0.920)	(0.731)		

Table 8: Investment Firms' Trading Performance and Idiosyncratic Volatility (Quintiles)*(p-values in parentheses)*

	1 (low var)	2	3	4	5 (high var)	High - Low	
A. Total Sample							
3-month DGTW-adjusted returns							
Quintile 1 (top)	-0.03%	0.28%	0.78%	1.15%	-0.21%	-0.18%	(0.843)
Quintile 2	0.11%	0.01%	0.63%	1.13%	0.57%	0.46%	(0.705)
Quintile 3	0.47%	0.16%	-0.01%	2.00%	-0.21%	-0.68%	(0.610)
Quintile 4	0.70%	-0.14%	-0.02%	0.38%	0.37%	-0.34%*	(0.082)
Quintile 5 (bottom)	0.04%	-0.51%	-0.01%	0.66%	-2.34%	-2.39%**	(0.023)
Top – Bottom	-0.08%	0.79%	0.79%	0.49%	2.13%**		
	(0.835)	(0.133)	(0.166)	(0.631)	(0.027)		
6-month DGTW-adjusted returns							
Quintile 1 (top)	-0.08%	0.47%	0.79%	2.41%	-0.83%	-0.75%	(0.658)
Quintile 2	0.02%	0.26%	1.55%	0.45%	0.76%	0.74%	(0.775)
Quintile 3	0.74%	1.59%	-0.66%	2.29%	-1.79%	-2.54%	(0.192)
Quintile 4	1.11%	0.46%	-0.68%	2.07%	0.21%	-0.90%	(0.594)
Quintile 5 (bottom)	-0.04%	-0.59%	0.04%	1.04%	-3.83%	-3.79%**	(0.014)
Top – Bottom	-0.04%	1.07%	0.75%	1.38%	3.00%*		
	(0.942)	(0.169)	(0.311)	(0.478)	(0.069)		
12-month DGTW-adjusted returns							
Quintile 1 (top)	-0.56%	1.06%	1.80%	4.28%	-1.92%	-1.36%	(0.733)
Quintile 2	0.19%	0.11%	0.19%	1.24%	-0.01%	-0.20%	(0.961)
Quintile 3	0.88%	2.05%	-0.86%	5.25%	-3.46%	-4.34%	(0.139)
Quintile 4	1.16%	0.84%	-2.12%	4.13%	-3.24%	-4.40%*	(0.098)
Quintile 5 (bottom)	-1.07%	-2.02%	-0.74%	2.55%	-5.70%	-4.63%*	(0.091)

Top – Bottom	0.51%	3.08% **	2.54% *	1.73%	3.78%		
	(0.587)	(0.024)	(0.067)	(0.698)	(0.232)		

B. Subsample 1, 1980–1994

3-month DGTW-adjusted returns

Quintile 1 (top)	0.12%	0.25%	0.78%	1.98%	-0.01%	-0.13%	(0.913)
Quintile 2	0.36%	-0.26%	0.20%	0.07%	-1.08%	-1.44%	(0.087)
Quintile 3	0.95%	0.42%	-1.22%	1.93%	-0.69%	-1.64%	(0.335)
Quintile 4	0.97%	-0.06%	0.19%	-0.42%	0.28%	-0.69%	(0.712)
Quintile 5 (bottom)	0.16%	-0.12%	0.04%	-0.66%	-3.50%	-3.66% ***	((0.001))
Top – Bottom	-0.04%	0.37%	0.74%	2.63% **	3.49% **		
	(0.933)	(0.522)	(0.243)	(0.016)	(0.018)		

6-month DGTW-adjusted returns

Quintile 1 (top)	0.45%	0.47%	0.96%	4.48%	-0.96%	-1.41%	(0.504)
Quintile 2	0.52%	0.44%	0.91%	-1.65%	-2.76%	-3.27% **	(0.019)
Quintile 3	1.63%	1.79%	-2.16%	1.86%	-1.31%	-2.94%	(0.210)
Quintile 4	1.18%	-0.90%	-1.22%	1.77%	-1.23%	-2.41%	(0.185)
Quintile 5 (bottom)	0.38%	-0.74%	-0.61%	-1.68%	-5.14%	-5.52% ***	(0.000)
Top – Bottom	0.07%	1.20%	1.57%	6.16% ***	4.18%		
	(0.934)	(0.106)	(0.108)	(0.001)	(0.101)		

12-month DGTW-adjusted returns

Quintile 1 (top)	0.67%	1.48%	0.91%	5.47%	-3.68%	-4.36%	(0.251)
Quintile 2	0.65%	-0.98%	-0.53%	-3.69%	-4.54%	-5.20% **	(0.025)
Quintile 3	1.47%	0.88%	-2.01%	4.19%	-3.98%	-5.45%	(0.128)
Quintile 4	0.73%	-1.45%	-1.46%	-0.70%	-2.29%	-3.02%	(0.333)
Quintile 5 (bottom)	0.23%	-2.83%	-2.78%	-3.88%	-7.80%	-8.03% ***	(0.000)
Top – Bottom	0.44%	4.30% **	3.70% **	9.35% ***	4.11%		
	(0.712)	(0.014)	(0.041)	(0.001)	(0.297)		

C. Subsample 2, 1995–2012

3-month DGTW-adjusted returns

Quintile 1 (top)	-0.16%	0.30%	0.78%	0.47%	-0.38%	-0.22%	(0.869)
Quintile 2	-0.10%	0.23%	0.99%	2.02%	1.93%	2.03%	(0.335)
Quintile 3	0.08%	-0.05%	1.00%	2.07%	0.20%	0.12%	(0.952)
Quintile 4	0.48%	-0.20%	-0.20%	1.04%	0.44%	-0.04%	(0.982)
Quintile 5 (bottom)	-0.05%	-0.84%	-0.05%	1.76%	-1.38%	-1.33%	(0.437)
Top – Bottom	-0.11%	1.14%	0.83%	-1.30%	1.00%		
	(0.847)	(0.175)	(0.359)	(0.420)	(0.433)		

6-month DGTW-adjusted returns

Quintile 1 (top)	-0.53%	0.48%	0.65%	0.67%	-0.72%	-0.19%	(0.940)
Quintile 2	-0.39%	0.11%	2.10%	2.22%	3.73%	4.12%	(0.370)
Quintile 3	0.00%	1.43%	0.59%	2.65%	-2.20%	-2.20%	(0.464)
Quintile 4	1.05%	1.60%	-0.22%	2.32%	1.41%	0.36%	(0.894)
Quintile 5 (bottom)	-0.39%	-0.47%	0.58%	3.33%	-2.72%	-2.33%	(0.366)
Top – Bottom	-0.13%	0.95%	0.06%	-2.66%	2.00%		
	(0.878)	(0.462)	(0.954)	(0.389)	(0.349)		

12-month DGTW-adjusted returns

Quintile 1 (top)	-1.63%	0.69%	2.57%	3.25%	-0.39%	1.24%	(0.852)
Quintile 2	-0.21%	1.06%	0.81%	5.52%	3.92%	4.13%	(0.581)
Quintile 3	0.37%	3.07%	0.13%	6.17%	-3.01%	-3.39%	(0.478)
Quintile 4	1.54%	2.82%	-2.70%	8.33%	-4.06%	-5.60%	(0.186)
Quintile 5 (bottom)	-2.20%	-1.32%	1.03%	8.12%	-3.88%	-1.68%	(0.718)
Top – Bottom	0.57%	2.01%	1.54%	-4.87%	3.48%		
	(0.690)	(0.321)	(0.456)	(0.530)	(0.470)		

Notes to Tables 5, 6, 7, and 8: See notes to Tables 1, 2, and 3. The classification of institutions is based on Bushee's (2019) type code. We construct the classification of institution types by combining Bushee's type code 1 and 2 as Banks and Insurance companies, Bushee's type code 3 and 4 as Investment Firm.

**Significant at the 10 percent level.*

***Significant at the 5 percent level.*

****Significant at the 1 percent level.*

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