

Appendix Tables for:  
A Flow-Based Explanation for Return Predictability

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Table A1: A Horse Race between Two Definitions of *FIT*

This table reports Fama-MacBeth stocks return regressions. The dependent variable in columns 1 through 4 is the monthly stock return in quarter  $t$ , while that in columns 5 through 8 is the monthly stock return in quarters  $t+5$  to  $t+12$ . The main independent variables are  $FIT_t$ , aggregate flow-induced trading across all mutual funds in quarter  $t$  scaled by lagged total shares held mutual funds, and  $FIT2_t$ , flow-induced trading scaled by lagged shares outstanding. Both variables are standardized to have a standard deviation of one. The set of control variables includes the logarithm of firms size ( $mktcap$ ), book-to-market ratio ( $bm$ ), cumulative stock return over one year ( $ret12$ ), idiosyncratic volatility ( $idioVol$ ), proportion of institutional holdings ( $pih$ ), and share turnover ( $turnover$ ). Regression coefficients are estimated using the Fama-MacBeth approach. T-statistics, shown in parentheses, are computed based on standard errors with Newey-West corrections of twelve lags. Estimates significant at the 5% level are indicated in bold.

|                        | Monthly stock returns in<br>quarter $t$ (contemporaneous) |                        |                        |                          | Monthly stock returns in<br>quarters $t+5$ to $t+12$ |                          |                          |                          |
|------------------------|-----------------------------------------------------------|------------------------|------------------------|--------------------------|------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| (X100)                 | [1]                                                       | [2]                    | [3]                    | [4]                      | [5]                                                  | [6]                      | [7]                      | [8]                      |
| $FIT_{j,t}$            | <b>0.985</b><br>(9.64)                                    |                        | <b>0.616</b><br>(5.50) | <b>0.404</b><br>(4.50)   | <b>-0.116</b><br>(-3.69)                             |                          | <b>-0.088</b><br>(-3.26) | <b>-0.061</b><br>(-2.82) |
| $FIT2_{j,t}$           |                                                           | <b>0.671</b><br>(7.83) | <b>0.388</b><br>(3.38) | <b>0.245</b><br>(2.47)   |                                                      | <b>-0.070</b><br>(-3.29) | -0.044<br>(-1.94)        | -0.039<br>(-1.92)        |
| $\log(mktcap_{j,t-1})$ |                                                           |                        |                        | <b>-0.120</b><br>(-2.99) |                                                      |                          |                          | -0.030<br>(-1.57)        |
| $bm_{j,t-1}$           |                                                           |                        |                        | 0.160<br>(1.61)          |                                                      |                          |                          | <b>0.170</b><br>(3.04)   |
| $ret12_{j,t-1}$        |                                                           |                        |                        | <b>0.490</b><br>(2.73)   |                                                      |                          |                          | -0.120<br>(-1.75)        |
| $idioVol_{j,t-1}$      |                                                           |                        |                        | <b>-0.270</b><br>(-2.52) |                                                      |                          |                          | -0.012<br>(-0.31)        |
| $pih_{j,t-1}$          |                                                           |                        |                        | 0.110<br>(0.48)          |                                                      |                          |                          | 0.090<br>(1.24)          |
| $turnover_{j,t-1}$     |                                                           |                        |                        | -0.020<br>(-1.30)        |                                                      |                          |                          | -0.040<br>(-1.68)        |
| Adj-R <sup>2</sup>     | 0.83%                                                     | 0.49%                  | 0.94%                  | 3.16%                    | 0.26%                                                | 0.18%                    | 0.30%                    | 1.03%                    |
| # Obs.                 | 624,998                                                   | 624,998                | 624,998                | 624,998                  | 4,059,176                                            | 4,059,176                | 4,059,176                | 4,059,176                |

Table A2: The Return Pattern of Annual *FIT*

This table reports equal-weighted and value-weighted monthly portfolio returns to the hedge portfolio that goes long in stocks in the top decile and goes short in stocks in the bottom decile ranked by annual flow-induced trading (*FIT*). Annual *FIT* is calculated as the sum of quarterly *FIT* (i.e., aggregate flow-induced trading across all mutual funds scaled by lagged total shares held by mutual funds) over the previous four quarters. The portfolios are rebalanced every quarter and are held for two years. To deal with overlapping portfolios in each holding month, I follow Jegadeesh and Titman (1993) to take the equal-weighted average return across portfolios formed in different quarters. Monthly portfolio returns with different risk-adjustments are reported: the return in excess of the risk-free rate, CAPM alpha, and Fama-French three-factor alpha. The first three columns report equal-weighted portfolio returns, while the next three columns value-weighted portfolio returns. T-statistics, shown in parentheses, are computed based on standard errors with Newey-West corrections of twelve lags. Estimates significant at the 5% level are indicated in bold.

|          | Equal-weighted portfolios |                          |                          | Value-weighted portfolios |                          |                          |
|----------|---------------------------|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|
|          | excess<br>return          | 1-factor<br>alpha        | 3-factor<br>alpha        | excess<br>return          | 1-factor<br>alpha        | 3-factor<br>alpha        |
| Qtr 1    | -0.18%<br>(-0.69)         | -0.29%<br>(-1.02)        | -0.20%<br>(-0.82)        | -0.41%<br>(-1.28)         | -0.57%<br>(-1.63)        | -0.31%<br>(-0.99)        |
| Qtr 2    | -0.36%<br>(-1.41)         | -0.46%<br>(-1.61)        | -0.25%<br>(-1.01)        | -0.61%<br>(-1.90)         | <b>-0.77%</b><br>(-2.11) | -0.62%<br>(-1.83)        |
| Qtr 3    | -0.46%<br>(-1.87)         | <b>-0.57%</b><br>(-2.07) | -0.31%<br>(-1.19)        | <b>-0.85%</b><br>(-2.60)  | <b>-1.03%</b><br>(-2.77) | <b>-0.70%</b><br>(-2.03) |
| Qtr 4    | -0.45%<br>(-1.93)         | <b>-0.55%</b><br>(-2.13) | <b>-0.54%</b><br>(-2.19) | <b>-0.86%</b><br>(-2.70)  | <b>-1.02%</b><br>(-2.95) | <b>-0.74%</b><br>(-2.15) |
| Qtr 5    | -0.45%<br>(-1.95)         | <b>-0.53%</b><br>(-2.25) | <b>-0.57%</b><br>(-2.34) | <b>-0.78%</b><br>(-2.54)  | <b>-0.90%</b><br>(-2.89) | <b>-0.87%</b><br>(-2.69) |
| Qtr 6    | <b>-0.58%</b><br>(-2.73)  | <b>-0.65%</b><br>(-3.06) | <b>-0.47%</b><br>(-2.16) | <b>-0.79%</b><br>(-2.68)  | <b>-0.91%</b><br>(-3.21) | <b>-0.54%</b><br>(-2.13) |
| Qtr 7    | <b>-0.54%</b><br>(-2.60)  | <b>-0.62%</b><br>(-2.83) | -0.34%<br>(-1.50)        | <b>-0.49%</b><br>(-2.02)  | <b>-0.57%</b><br>(-2.27) | -0.28%<br>(-1.28)        |
| Qtr 8    | -0.39%<br>(-1.90)         | <b>-0.47%</b><br>(-2.30) | -0.18%<br>(-0.84)        | -0.25%<br>(-1.07)         | -0.32%<br>(-1.31)        | -0.22%<br>(-0.95)        |
| Qtrs 1-4 | -0.36%<br>(-1.64)         | -0.47%<br>(-1.92)        | -0.33%<br>(-1.53)        | <b>-0.68%</b><br>(-2.39)  | <b>-0.84%</b><br>(-2.59) | -0.60%<br>(-1.94)        |
| Qtrs 5-8 | <b>-0.49%</b><br>(-2.62)  | <b>-0.56%</b><br>(-2.99) | <b>-0.39%</b><br>(-2.32) | <b>-0.58%</b><br>(-2.51)  | <b>-0.68%</b><br>(-2.77) | <b>-0.47%</b><br>(-2.22) |
| Qtrs 1-8 | <b>-0.42%</b><br>(-2.74)  | <b>-0.51%</b><br>(-3.05) | <b>-0.36%</b><br>(-2.19) | <b>-0.63%</b><br>(-2.93)  | <b>-0.76%</b><br>(-3.42) | <b>-0.54%</b><br>(-2.52) |

Table A3: Subsample Robustness Checks

This table reports equal-weighted portfolio returns to the decile portfolios ranked by expected flow-induced trading ( $E[FIT]$ ).  $E[FIT]$  is the aggregate expected flow-induced trading across all mutual funds scaled by total shares held by mutual funds. Expected capital flows to each mutual fund are estimated from the four-factor fund alpha in the previous year. The portfolios are rebalanced every quarter and are held for one quarter. To deal with overlapping portfolios in each holding month, I follow Jegadeesh and Titman (1993) to take the equal-weighted average return across portfolios formed in different quarters. Monthly portfolio returns with different risk-adjustments are reported: the Fama-French three-factor alpha and Carhart four-factor alpha. The first four columns report monthly portfolio returns for two sub-periods: 1980-1993 vs. 1994-2006, while the next four columns report monthly portfolio returns for two sub-periods within each year: the first calendar quarter vs. the other three quarters. T-statistics, shown in parentheses, are computed based on standard errors with Newey-West corrections of twelve lags. Estimates significant at the 5% level are indicated in bold.

| Subsamples robustness checks |                   |                   |                   |                   |                   |                   |                   |                   |
|------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| decile                       | 3-facotr<br>alpha | 4-facotr<br>alpha | 3-facotr<br>alpha | 4-facotr<br>alpha | 3-facotr<br>alpha | 4-facotr<br>alpha | 3-facotr<br>alpha | 4-facotr<br>alpha |
|                              | 1980 - 1993       |                   | 1994 - 2006       |                   | First Qtr         |                   | Other Qtrs        |                   |
| 1                            | -0.17%            | -0.08%            | -0.67%            | -0.36%            | -0.49%            | -0.39%            | -0.37%            | -0.13%            |
| (low)                        | (-1.38)           | (-0.63)           | (-2.69)           | (-1.57)           | (-1.44)           | (-1.44)           | (-2.26)           | (-0.85)           |
| 2                            | -0.12%            | -0.07%            | -0.50%            | -0.29%            | -0.35%            | -0.29%            | -0.31%            | -0.16%            |
|                              | (-1.34)           | (-0.69)           | (-2.93)           | (-2.00)           | (-1.24)           | (-1.19)           | (-2.70)           | (-1.55)           |
| 3                            | -0.16%            | -0.10%            | -0.39%            | -0.23%            | -0.27%            | -0.21%            | -0.28%            | -0.17%            |
|                              | (-1.94)           | (-1.13)           | (-2.48)           | (-1.64)           | (-1.26)           | (-1.24)           | (-2.69)           | (-1.76)           |
| 4                            | -0.07%            | -0.03%            | -0.19%            | -0.08%            | -0.03%            | 0.01%             | -0.15%            | -0.09%            |
|                              | (-1.05)           | (-0.46)           | (-1.41)           | (-0.61)           | (-0.19)           | (0.10)            | (-1.76)           | (-1.17)           |
| 5                            | -0.03%            | 0.01%             | -0.08%            | 0.00%             | -0.08%            | -0.03%            | -0.05%            | -0.04%            |
|                              | (-0.39)           | (0.13)            | (-0.65)           | (-0.01)           | (-0.48)           | (-0.21)           | (-0.63)           | (-0.47)           |
| 6                            | -0.15%            | -0.12%            | -0.12%            | 0.01%             | -0.16%            | -0.09%            | -0.12%            | -0.09%            |
|                              | (-2.28)           | (-1.60)           | (-0.92)           | (0.11)            | (-0.71)           | (-0.52)           | (-1.78)           | (-1.28)           |
| 7                            | -0.01%            | 0.08%             | 0.08%             | 0.10%             | 0.16%             | 0.20%             | 0.01%             | 0.01%             |
|                              | (-0.07)           | (1.05)            | (0.68)            | (0.90)            | (1.05)            | (1.33)            | (0.19)            | (0.11)            |
| 8                            | 0.15%             | 0.20%             | 0.25%             | 0.24%             | 0.27%             | 0.27%             | 0.17%             | 0.14%             |
|                              | (2.01)            | (2.76)            | (2.09)            | (2.01)            | (1.56)            | (1.56)            | (2.04)            | (1.66)            |
| 9                            | 0.11%             | 0.10%             | 0.28%             | 0.25%             | 0.30%             | 0.32%             | 0.15%             | 0.05%             |
|                              | (1.42)            | (1.26)            | (1.90)            | (1.68)            | (1.25)            | (1.30)            | (1.49)            | (0.48)            |
| 10                           | 0.46%             | 0.40%             | 0.52%             | 0.36%             | 0.74%             | 0.69%             | 0.39%             | 0.29%             |
| (high)                       | (3.78)            | (3.65)            | (3.13)            | (2.27)            | (2.89)            | (2.89)            | (3.45)            | (2.48)            |
| 10 - 1                       | <b>0.63%</b>      | <b>0.48%</b>      | <b>1.19%</b>      | <b>0.71%</b>      | <b>1.23%</b>      | <b>1.08%</b>      | <b>0.75%</b>      | <b>0.42%</b>      |
|                              | (3.48)            | (2.92)            | (3.37)            | (3.32)            | (2.45)            | (2.77)            | (3.39)            | (1.97)            |

Table A4: Mutual Fund Performance Persistence

This table reports monthly portfolio returns to mutual fund portfolios ranked by the Carhart four-factor fund alpha in the previous year. The portfolios are rebalanced every quarter and are held for three years. To deal with overlapping portfolios in each holding month, I follow Jegadeesh and Titman (1993) to take the equal-weighted average return across portfolios formed in different quarters. Monthly portfolio returns with different risk-adjustments are reported: the return in excess of the risk-free rate, Fama-French three-factor alpha, and Carhart four-factor alpha. T-statistics, shown in parentheses, are computed based on standard errors with Newey-West corrections of twelve lags. Estimates significant at the 5% level are indicated in bold.

| Mutual funds ranked by annual fund <i>alpha</i> |                  |                   |                   |                  |                   |                   |                  |                   |                  |                   |
|-------------------------------------------------|------------------|-------------------|-------------------|------------------|-------------------|-------------------|------------------|-------------------|------------------|-------------------|
| Decile                                          | excess<br>return | 3-factor<br>alpha | 4-factor<br>alpha | excess<br>return | 3-factor<br>alpha | 4-factor<br>alpha | excess<br>return | 3-factor<br>alpha | excess<br>return | 3-factor<br>alpha |
|                                                 | Qtr 1            |                   |                   | Qtrs 1-4         |                   |                   | Qtrs 5-8         |                   | Qtrs 5-12        |                   |
| 1                                               | 0.58%            | -0.13%            | -0.09%            | 0.63%            | -0.09%            | -0.10%            | 0.75%            | 0.15%             | 0.72%            | 0.13%             |
| (low)                                           | (1.96)           | (-1.48)           | (-0.95)           | (2.20)           | (-1.38)           | (-1.37)           | (2.61)           | (2.41)            | (2.57)           | (2.41)            |
| 2                                               | 0.65%            | -0.05%            | -0.03%            | 0.67%            | -0.03%            | -0.05%            | 0.67%            | 0.07%             | 0.66%            | 0.06%             |
|                                                 | (2.35)           | (-0.81)           | (-0.54)           | (2.48)           | (-0.66)           | (-0.89)           | (2.48)           | (1.41)            | (2.51)           | (1.32)            |
| 3                                               | 0.66%            | -0.04%            | -0.02%            | 0.69%            | -0.01%            | -0.02%            | 0.61%            | 0.01%             | 0.62%            | 0.01%             |
|                                                 | (2.44)           | (-0.69)           | (-0.39)           | (2.64)           | (-0.12)           | (-0.35)           | (2.35)           | (0.27)            | (2.46)           | (0.21)            |
| 4                                               | 0.69%            | 0.01%             | 0.02%             | 0.70%            | 0.01%             | 0.00%             | 0.63%            | 0.02%             | 0.63%            | 0.02%             |
|                                                 | (2.60)           | (0.28)            | (0.34)            | (2.70)           | (0.14)            | (-0.01)           | (2.43)           | (0.65)            | (2.55)           | (0.60)            |
| 5                                               | 0.71%            | 0.04%             | 0.04%             | 0.70%            | 0.02%             | 0.02%             | 0.63%            | 0.02%             | 0.63%            | 0.02%             |
|                                                 | (2.71)           | (0.83)            | (0.80)            | (2.74)           | (0.45)            | (0.38)            | (2.47)           | (0.66)            | (2.58)           | (0.49)            |
| 6                                               | 0.70%            | 0.02%             | 0.01%             | 0.73%            | 0.05%             | 0.04%             | 0.64%            | 0.03%             | 0.62%            | 0.01%             |
|                                                 | (2.64)           | (0.55)            | (0.30)            | (2.82)           | (1.42)            | (1.07)            | (2.50)           | (0.90)            | (2.53)           | (0.24)            |
| 7                                               | 0.73%            | 0.06%             | 0.05%             | 0.76%            | 0.07%             | 0.07%             | 0.66%            | 0.05%             | 0.65%            | 0.03%             |
|                                                 | (2.74)           | (1.39)            | (1.16)            | (2.92)           | (1.86)            | (1.71)            | (2.58)           | (1.52)            | (2.63)           | (0.83)            |
| 8                                               | 0.78%            | 0.12%             | 0.09%             | 0.78%            | 0.11%             | 0.10%             | 0.65%            | 0.03%             | 0.66%            | 0.04%             |
|                                                 | (2.81)           | (2.57)            | (1.96)            | (2.94)           | (2.55)            | (2.28)            | (2.46)           | (0.73)            | (2.62)           | (0.92)            |
| 9                                               | 0.83%            | 0.17%             | 0.14%             | 0.82%            | 0.15%             | 0.13%             | 0.68%            | 0.08%             | 0.66%            | 0.04%             |
|                                                 | (2.87)           | (3.35)            | (2.52)            | (2.94)           | (3.17)            | (2.65)            | (2.50)           | (1.58)            | (2.52)           | (0.83)            |
| 10                                              | 1.04%            | 0.40%             | 0.30%             | 0.98%            | 0.33%             | 0.27%             | 0.66%            | 0.09%             | 0.67%            | 0.07%             |
| (high)                                          | (2.98)           | (4.28)            | (3.05)            | (2.95)           | (4.47)            | (3.39)            | (2.08)           | (1.16)            | (2.23)           | (0.97)            |
| 10 - 1                                          | <b>0.46%</b>     | <b>0.52%</b>      | <b>0.39%</b>      | <b>0.35%</b>     | <b>0.42%</b>      | <b>0.37%</b>      | -0.08%           | -0.06%            | -0.05%           | -0.07%            |
|                                                 | (3.36)           | (4.00)            | (3.19)            | (3.32)           | (4.51)            | (3.89)            | (-0.95)          | (-0.68)           | (-0.74)          | (-0.76)           |

Table A5: The Smart Money Effect

This table reports monthly portfolio returns to mutual fund portfolios ranked by capital flows (as a fraction of lagged total net assets) in the previous quarter. The portfolios are rebalanced every quarter and are held for three years. To deal with overlapping portfolios in each holding month, I follow Jegadeesh and Titman (1993) to take the equal-weighted average return across portfolios formed in different quarters. Monthly portfolio returns with different risk-adjustments are reported: the return in excess of the risk-free rate, Fama-French three-factor alpha, and Carhart four-factor alpha. T-statistics, shown in parentheses, are computed based on standard errors with Newey-West corrections of twelve lags. Estimates significant at the 5% level are indicated in bold.

| Mutual funds ranked by quarterly <i>flow</i> |                  |                   |                   |                  |                   |                   |                  |                   |                  |                   |
|----------------------------------------------|------------------|-------------------|-------------------|------------------|-------------------|-------------------|------------------|-------------------|------------------|-------------------|
| Decile                                       | excess<br>return | 3-factor<br>alpha | 4-factor<br>alpha | excess<br>return | 3-factor<br>alpha | 4-factor<br>alpha | excess<br>return | 3-factor<br>alpha | excess<br>return | 3-factor<br>alpha |
|                                              | Qtr 1            |                   |                   | Qtrs 1-4         |                   |                   | Qtrs 5-8         |                   | Qtrs 5-12        |                   |
| 1                                            | 0.69%            | -0.06%            | -0.05%            | 0.79%            | 0.05%             | 0.02%             | 0.75%            | 0.14%             | 0.73%            | 0.12%             |
| (low)                                        | (2.40)           | (-0.82)           | (-0.67)           | (2.84)           | (0.82)            | (0.27)            | (2.69)           | (2.79)            | (2.70)           | (2.66)            |
| 2                                            | 0.69%            | -0.01%            | 0.02%             | 0.73%            | 0.02%             | 0.00%             | 0.73%            | 0.12%             | 0.70%            | 0.09%             |
|                                              | (2.52)           | (-0.20)           | (0.33)            | (2.73)           | (0.40)            | (0.07)            | (2.70)           | (2.71)            | (2.66)           | (2.16)            |
| 3                                            | 0.71%            | 0.01%             | 0.03%             | 0.72%            | 0.02%             | 0.01%             | 0.67%            | 0.05%             | 0.66%            | 0.04%             |
|                                              | (2.61)           | (0.21)            | (0.48)            | (2.75)           | (0.41)            | (0.10)            | (2.55)           | (1.36)            | (2.60)           | (1.14)            |
| 4                                            | 0.72%            | 0.04%             | 0.06%             | 0.72%            | 0.04%             | 0.04%             | 0.62%            | 0.01%             | 0.63%            | 0.01%             |
|                                              | (2.67)           | (0.97)            | (1.22)            | (2.76)           | (0.97)            | (0.99)            | (2.40)           | (0.24)            | (2.50)           | (0.17)            |
| 5                                            | 0.72%            | 0.04%             | 0.05%             | 0.72%            | 0.04%             | 0.04%             | 0.64%            | 0.03%             | 0.63%            | 0.02%             |
|                                              | (2.65)           | (1.02)            | (1.16)            | (2.73)           | (0.91)            | (0.85)            | (2.45)           | (0.92)            | (2.52)           | (0.52)            |
| 6                                            | 0.70%            | 0.04%             | 0.02%             | 0.72%            | 0.04%             | 0.03%             | 0.62%            | 0.02%             | 0.61%            | 0.01%             |
|                                              | (2.54)           | (0.81)            | (0.49)            | (2.70)           | (1.08)            | (0.76)            | (2.36)           | (0.49)            | (2.44)           | (0.17)            |
| 7                                            | 0.71%            | 0.03%             | 0.01%             | 0.72%            | 0.03%             | 0.02%             | 0.65%            | 0.04%             | 0.63%            | 0.02%             |
|                                              | (2.56)           | (0.73)            | (0.12)            | (2.68)           | (0.80)            | (0.54)            | (2.47)           | (1.11)            | (2.47)           | (0.40)            |
| 8                                            | 0.73%            | 0.07%             | 0.03%             | 0.74%            | 0.06%             | 0.04%             | 0.64%            | 0.02%             | 0.65%            | 0.02%             |
|                                              | (2.61)           | (1.51)            | (0.60)            | (2.70)           | (1.49)            | (0.88)            | (2.38)           | (0.51)            | (2.51)           | (0.60)            |
| 9                                            | 0.78%            | 0.11%             | 0.06%             | 0.75%            | 0.06%             | 0.03%             | 0.61%            | 0.00%             | 0.63%            | 0.00%             |
|                                              | (2.70)           | (2.34)            | (0.82)            | (2.68)           | (1.39)            | (0.66)            | (2.24)           | (0.03)            | (2.42)           | (0.08)            |
| 10                                           | 0.86%            | 0.22%             | 0.10%             | 0.78%            | 0.12%             | 0.06%             | 0.60%            | -0.01%            | 0.61%            | -0.01%            |
| (high)                                       | (2.85)           | (3.29)            | (1.25)            | (2.71)           | (2.39)            | (0.97)            | (2.12)           | (-0.19)           | (2.27)           | (-0.18)           |
| 10 - 1                                       | 0.17%            | <b>0.28%</b>      | 0.15%             | -0.01%           | 0.08%             | 0.04%             | <b>-0.15%</b>    | <b>-0.15%</b>     | <b>-0.13%</b>    | <b>-0.13%</b>     |
|                                              | (1.72)           | (2.74)            | (1.58)            | (-0.08)          | (1.27)            | (0.61)            | (-3.05)          | (-2.63)           | (-3.26)          | (-2.68)           |