

**Internet Appendix for  
“Resolving a Paradox: Retail Trades Positively Predict Returns but are Not Profitable”**

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This internet appendix contains the following additional analyses:

**Figures**

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- A2. Trading Day Returns on Retail Sales Conditional on Retail Volume and Order Imbalance
- A3. Percent of Buy versus Sell Value in Attention Grabbing Stocks by Trade Size Bins

**Tables**

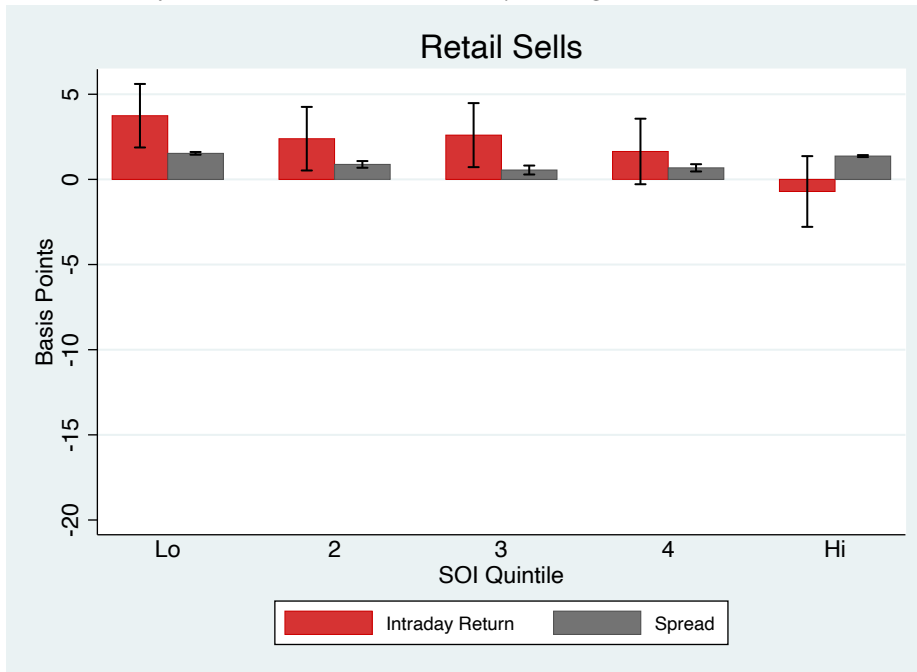
- A1. Order Imbalance, Firm Size, and Volume by Order Imbalance Quintiles
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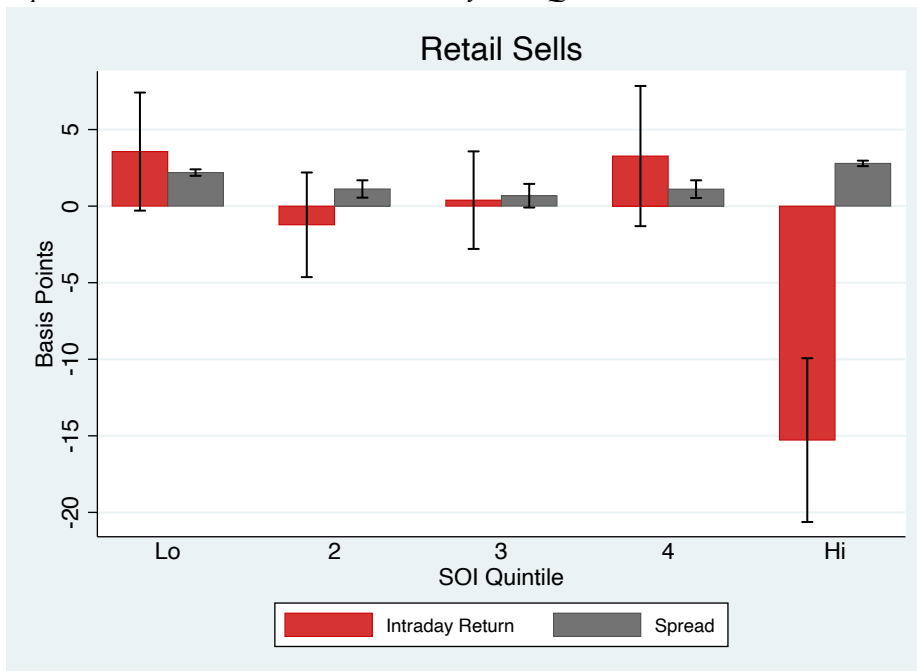
**Fig A1. Trade Size by Knowledge, Experience, Wealth, and Income**

Trade size is from more than 900,000 common stock trades between 1991 and 1996 from a large discount broker dataset in Barber & Odean (2000). Knowledge, experience, income, and wealth are self-reported. The dots in the income (wealth) graph represent mean trade size for deciles of wealth (income).

Panel A. Deciles 1-9 of Abnormal Retail Volume by SOI Quintile



Panel B. Top Decile Abnormal Retail Volume by SOI Quintile



**Fig. A2. Trading Day Returns on Retail Sales Conditional on Retail Volume and Order Imbalance**

The figure presents the mean daily Sales-weighted return on stocks sold by retail investors (red bars) and the one-way estimated spread (black bars). Panel A presents results for stocks in the bottom nine deciles of abnormal retail volume by standardized order imbalance. Panel B presents results for stocks in the top decile of abnormal retail volume by standardized order imbalance.



**Fig. A3. Percent of Buy versus Sell Value in Attention Grabbing Stocks by Trade Size Bins**

Within each trade size bin, the bars show the mean daily percentage of the total value of buys (or sells) that occur in stocks in the top retail order imbalance quintile (SOI quintile 5) and the top decile of **standardized abnormal retail volume**. Whiskers represent 95% confidence intervals.

**Table A1. Order Imbalance, Firm Size, and Volume by Order Imbalance Quintiles**

Quintile sorts are performed daily based on order imbalance (# BSI). Statistics are calculated across 2,516 trading days. We require a minimum of 10 retail trades on each stock-day. See Table 1 for detailed variable descriptions.

	# BSI Quintile				
	Q1	Q2	Q3	Q4	Q5
<i>Panel A. Mean Order Imbalance Measures</i>					
<i>SOI</i>	-3.909	-2.121	-0.411	1.552	3.671
# BSI	-0.426	-0.148	-0.012	0.117	0.378
\$ BSI	-0.364	-0.126	-0.015	0.088	0.302
<i>Panel B. Mean Market Cap and Volume Statistics</i>					
Mean Market Cap (\$B)	2.47	8.04	12.80	10.64	3.33
% Total Market Cap	6.9%	21.7%	33.9%	28.2%	9.3%
Mean Total Volume (\$000)	19,481	59,004	97,362	84,281	28,768
% Total Volume	6.8%	20.5%	33.7%	29.0%	10.0%
Mean Retail Volume (\$000)	751	2,408	4,402	4,080	1,501
% Total Retail Volume	5.7%	18.3%	33.4%	31.0%	11.5%
Mean Retail Buys (\$000)	266	1,069	2,176	2,190	906
% Total Retail Buys	4.0%	16.2%	32.9%	33.1%	13.8%
Mean Retail Sales (\$000)	484	1,339	2,226	1,890	595
% Total Retail Sales	7.5%	20.5%	33.9%	28.9%	9.2%
Mean <i>ARV</i>	0.97	0.99	1.03	1.07	1.10
Mean <i>SARV</i>	0.04	0.04	0.11	0.17	0.24
# Stocks	530.84	531.24	531.25	531.24	531.64
Stock-Day Observations	1,327,640	1,328,641	1,328,645	1,328,641	1,329,638
<i>Panel C. Mean Market Cap and Volume Statistics for the Top SARV Decile</i>					
Mean Market Cap (\$B)	3.14	6.99	10.03	10.19	5.33
% Total Market Cap	0.8%	1.6%	2.6%	2.9%	1.8%
Mean Total Volume (\$000)	43,005	103,144	158,430	149,912	67,980
% Total Volume	1.3%	3.1%	5.2%	5.3%	2.7%
Mean Retail Volume (\$000)	2,080	5,175	8,772	8,815	4,209
% Total Retail Volume	1.4%	3.4%	6.8%	7.4%	3.8%
Mean Retail Buys (\$000)	733	2,320	4,344	4,712	2,530
% Total Retail Buys	1.0%	3.0%	6.7%	8.2%	4.5%
Mean Retail Sales (\$000)	1,347	2,855	4,428	4,104	1,679
% Total Retail Sales	1.9%	4.0%	6.9%	6.5%	3.0%
Mean <i>ARV</i>	2.71	2.68	2.75	2.79	2.79
Mean <i>SARV</i>	3.30	3.37	3.52	3.51	3.38
# Stocks	53.54	53.57	53.57	53.57	53.61
Stock-Day Observations	133,897	133,985	133,981	133,985	134,074

**Table A2. Performance of Retail Order Imbalance Quintile Portfolios (Equal Weighted)**

The table presents the daily abnormal return for equal-weighted portfolios based quintiles of retail order imbalance (BSI) on day t. Stocks are further partitioned into two standardized abnormal volume groups on day t, top decile (SARV D10) versus bottom 9 deciles (SARV D1-D9). Daily abnormal returns are calculated at various holding periods (1 day, Panel A; 5 day, Panel B; 10 day, Panel C). FF6 alpha is the intercept of the regression of the portfolio excess return (portfolio return less riskfree rate) on the Fama French five-factor model plus a momentum factor. t-statistics are in parentheses.

\*\* p<0.01, \* p<0.05

	#BSI Quintile					Diff (5-1)
	Lo 1	2	3	4	Hi 5	
<i>Panel A. FF6 Daily Alpha (bps) for t+1</i>						
<i>All Stocks</i>	-1.23** (-2.61)	-0.77* (-2.11)	-0.51 (-1.31)	0.59 (1.40)	6.84** (12.42)	8.07** (15.42)
<i>SARV D1-D9</i>	-2.46** (-5.13)	-1.46** (-4.03)	-0.31 (-0.81)	1.18** (2.99)	5.42** (10.27)	7.89** (15.11)
<i>SARV D10</i>	4.90** (3.86)	1.92 (1.56)	-3.52* (-2.42)	-6.80** (-3.90)	7.08** (3.71)	2.17 (1.01)
<i>Difference</i>	7.36** (5.78)	3.38** (2.74)	-3.21* (-2.22)	-7.98** (-4.60)	1.65 (0.88)	-5.71** (-2.60)
<i>Panel B. FF6 Daily Alpha (bps) from t+1 to t+5</i>						
<i>All Stocks</i>	-0.00 (-0.01)	-0.30 (-1.02)	-0.41 (-1.33)	-0.18 (-0.53)	3.14** (6.94)	3.15** (11.04)
<i>SARV D1-D9</i>	-0.82 (-1.92)	-0.79** (-2.69)	-0.40 (-1.34)	0.01 (0.02)	2.57** (5.80)	3.39** (11.77)
<i>SARV D10</i>	3.63** (5.12)	1.44* (2.16)	-1.75* (-2.33)	-3.53** (-3.66)	2.12* (2.07)	-1.51 (-1.51)
<i>Difference</i>	4.45** (6.93)	2.23** (3.64)	-1.35 (-1.96)	-3.53** (-3.92)	-0.45 (-0.49)	-4.90** (-4.84)
<i>Panel C. FF6 Daily Alpha (bps) from t+1 to t+10</i>						
<i>All Stocks</i>	0.11 (0.26)	-0.26 (-0.93)	-0.46 (-1.58)	-0.22 (-0.69)	2.27** (5.21)	2.17** (9.45)
<i>SARV D1-D9</i>	-0.58 (-1.41)	-0.63* (-2.24)	-0.59* (-2.05)	-0.12 (-0.38)	1.83** (4.24)	2.41** (10.27)
<i>SARV D10</i>	2.82** (4.89)	1.14* (2.18)	-0.68 (-1.14)	-2.56** (-3.49)	1.52 (1.82)	-1.3 (-1.74)
<i>Difference</i>	3.40** (7.03)	1.77** (3.93)	-0.09 (-0.17)	-2.44** (-3.82)	-0.31 (-0.44)	-3.71** (-4.90)

**Table A3. The Returns on Stocks Bought v. Stocks Sold on Day of Trade v. Subsequent Days Weighted by Net Buying and Selling**

The table is analogous to Table 5. The buy portfolio consists of stocks with net buying and is weighted by the net shares purchased times the average purchase price. The sell portfolio consists of stocks with net selling and is weighted by the net shares sold times the average sales price. \*\* p<0.01, \* p<0.05

	Buys	Sells	Buys-Sells
<i>Panel A. Intraday Return on Trading Day (t)</i>			
Raw Return (bps)	-4.80*** (-4.73)	4.13*** -4.61	-8.94*** (-20.68)
<i>Panel B. Daily Alpha on t+1</i>			
Mkt Adj. Ret (bps)	-0.85 (-0.78)	-2.47** (-3.97)	1.62 (1.44)
FF6 Alpha (bps)	-0.83 (-0.81)	-2.27** (-4.37)	1.44 (1.29)
<i>Panel C. Daily Alpha from t+1 to t+5</i>			
Mkt Adj. Ret (bps)	-1.07 (-1.48)	-0.77 (-1.55)	-0.29 (-0.48)
FF6 Alpha (bps)	-1.14 (-1.94)	-0.61 (-1.71)	-0.54 (-0.90)
<i>Panel D. Daily Alpha from t+1 to t+10</i>			
Mkt Adj. Ret (bps)	-1.14 (-1.74)	-0.55 (-1.18)	-0.59 (-1.15)
FF6 Alpha (bps)	-1.23* (-2.44)	-0.39 (-1.24)	-0.84 (-1.74)
<i>Panel E. Daily Alpha from t+11 to t+21</i>			
Mkt Adj. Ret (bps)	-0.77 (-1.23)	-0.61 (-1.34)	-0.16 (-0.34)
FF6 Alpha (bps)	-0.93* (-2.05)	-0.48 (-1.64)	-0.46 (-1.07)

**Table A4. The Trade-Weighted Returns on Stocks Bought v. Stocks Sold on Day of Trade v. Subsequent Days (including trades > \$100,000)**

The table presents intraday return on the day of trade (Panel A) and the subsequent the daily abnormal return (Panels B to E) for trade-weighted portfolios (by dollars traded) based on day t trades of retail investors. In Panel A, the trade day return is calculated using the trade price and closing price on the same day. Abnormal returns after the trading day are based returns earned from the close of trading on the date of trade at various holding periods (1 day, Panel B; 5 day, Panel C; 10 day, Panel D; day 11 to 21, Panel E). Market-adjusted returns are portfolio returns minus the value-weighted market return. FF6 alpha is the intercept of the regression of the portfolio excess return (portfolio return less riskfree rate) on the Fama French five-factor model plus a momentum factor. t-statistics are in parentheses. \*\* p<0.01, \* p<0.05

	Buys	Sells	Buys-Sells
<i>Panel A. Intraday Return on Trading Day (t)</i>			
Raw Return (bps)	-1.40 (-1.33)	0.68 (0.66)	-2.08** (-29.32)
<i>Panel B. Daily Alpha on t+1</i>			
Mkt Adj. Ret (bps)	-1.27 (-1.48)	-1.51 (-1.83)	0.24* (2.23)
FF6 Alpha (bps)	-1.63* (-2.24)	-1.85** (-2.67)	0.22* (2.13)
<i>Panel C. Daily Alpha from t+1 to t+5</i>			
Mkt Adj. Ret (bps)	-0.63 (-0.82)	-0.67 (-0.91)	0.04 (0.64)
FF6 Alpha (bps)	-1.04 (-1.71)	-1.06 (-1.81)	0.02 (0.36)
<i>Panel D. Daily Alpha from t+1 to t+10</i>			
Mkt Adj. Ret (bps)	-0.42 (-0.56)	-0.40 (-0.55)	-0.02 (-0.43)
FF6 Alpha (bps)	-0.85 (-1.45)	-0.81 (-1.43)	-0.04 (-0.81)
<i>Panel E. Daily Alpha from t+11 to t+21</i>			
Mkt Adj. Ret (bps)	-0.10 (-0.14)	-0.09 (-0.12)	-0.02 (-0.38)
FF6 Alpha (bps)	-0.57 (-1.01)	-0.53 (-0.98)	-0.04 (-0.97)



**Table A5. The Trade-Weighted Dollar Profits on Stocks Bought v. Stocks Sold on Day of Trade v. Subsequent Days (including trades > \$100,000)**

The table presents intraday raw dollar profits on the day of trade (Panel A) and the subsequent the daily raw dollar profits and market adjusted dollar profits (Panels B to E) for trade-weighted portfolios (by dollars traded) based on day t trades of retail investors. In Panel A, the trade day dollar profits are calculated using the trade price and closing price on the same day. Abnormal dollar profits after the trading day are based on returns earned from the close of trading on the date of trade at various holding periods (1 day, Panel B; 5 day, Panel C; 10 day, Panel D; day 11 to 21, Panel E). t-statistics are in parentheses. \*\* p<0.01, \* p<0.05

	Buys	Sells	Buys-Sells
<i>Panel A. Intraday Raw Dollar Profits on Trading Day (t)</i>			
Raw Profit (\$000)	-1078.60 (-1.62)	-89.35 (-0.14)	-989.25** (-20.17)
<i>Panel B. Dollar Profits on t+1</i>			
Raw Profit (\$000)	1519.64 (1.11)	1430.80 (1.05)	88.84 (0.97)
Mkt Adj Profit (\$000)	-774.12 (-1.44)	-798.67 (-1.52)	24.55 (0.39)
<i>Panel C. Dollar Profits from t+1 to t+5</i>			
Raw Profit (\$000)	11382.7 (1.71)	11484.21 (1.73)	-101.51 (-0.38)
Mkt Adj Profit (\$000)	-1775.61 (-0.75)	-1579.48 (-0.68)	-196.13 (-1.19)
<i>Panel D. Dollar Profits from t+1 to t+10</i>			
Raw Profit (\$000)	23570.54 (1.79)	23799.55 (1.82)	-229.00 (-0.51)
Mkt Adj Profit (\$000)	-2435.35 (-0.53)	-1984.48 (-0.44)	-450.87 (-1.62)
<i>Panel E. Dollar Profits from t+11 to t+21</i>			
Raw Profit (\$000)	27762.85 (1.97)	27773.19 (1.99)	-10.34 (-0.02)
Mkt Adj Profit (\$000)	-1086.63 (-0.22)	-975.15 (-0.20)	-111.47 (-0.41)

**Table A6. Regression of Daily Return on Standardized Order Imbalance and Standardized Abnormal Retail Volume**

The dependent variable is the daily return (in bps) on a stock. Each column presents a regression where the dependent variable is the daily return on day  $t+1$  in column (1) to the daily return on day  $t+5$  in column (5). Retail order imbalance and retail trading activity in the stock are measured on day  $t$ .  $SOI^q_{it}$  is an indicator variables that take a value of one if the stock is in retail order imbalance quintile  $q$ ,  $q=1,5$  where quintile 1 contains the stocks most sold and quintile 5 contains the stocks most bought. We omit quintile 3 so coefficients represent variation relative to this omitted category.  $HiSARV_{it}$  is an indicator variable that takes a value of one if the stock is in the top decile of abnormal retail volume on day  $t$ , which we interact with each of the five order imbalance indicators. Robust standard errors are clustered by day.  $t$ -statistics in parentheses.

\*\*  $p < 0.01$ , \*  $p < 0.05$

VARIABLES	(1) Ret <sub>i,t+1</sub>	(2) Ret <sub>i,t+2</sub>	(3) Ret <sub>i,t+3</sub>	(4) Ret <sub>i,t+4</sub>	(5) Ret <sub>i,t+5</sub>
$SOI^5_{it} * HiSARV_{it}$	-10.07** (-4.67)	-8.49** (-4.83)	-5.04** (-3.16)	-1.01 (-0.68)	-2.07 (-1.47)
$SOI^4_{it} * HiSARV_{it}$	2.87* (2.17)	-1.64 (-1.41)	2.52* (2.19)	-0.81 (-0.75)	0.40 (0.36)
$SOI^3_{it} * HiSARV_{it}$	2.14 (1.85)	-0.89 (-0.79)	0.13 (0.12)	1.52 (1.50)	0.22 (0.21)
$SOI^2_{it} * HiSARV_{it}$	3.81** (3.04)	2.51* (2.19)	0.95 (0.89)	1.52 (1.54)	0.15 (0.14)
$SOI^1_{it} * HiSARV_{it}$	3.91** (2.69)	3.27* (2.42)	4.23** (3.48)	1.31 (1.10)	3.04* (2.53)
$SOI^5_{it}$	3.67** (6.48)	0.61 (1.12)	0.13 (0.23)	0.44 (0.81)	0.86 (1.51)
$SOI^4_{it}$	2.25** (5.32)	0.82* (1.99)	0.39 (0.94)	0.32 (0.74)	0.59 (1.37)
$SOI^2_{it}$	-1.51** (-3.61)	-0.19 (-0.45)	-0.50 (-1.22)	-0.71 (-1.71)	-0.10 (-0.23)
$SOI^1_{it}$	-2.64** (-5.09)	-1.17* (-2.34)	-0.79 (-1.49)	-1.22* (-2.35)	-1.45** (-2.76)
Observations	6,638,546	6,633,972	6,629,411	6,624,906	6,620,601
R-squared	0.101	0.101	0.102	0.102	0.102