

Semi-Annual Presentation

**Undergraduate Student Investment
Management Fund – Team B**



Team Introduction



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Investment Strategy



Investment Thesis

Panel A: Form Portfolios on the Previous Week's Marketable Retail Order Imbalance Based on Number of Shares Traded

Holding	Full Sample				Small		Medium		Big	
	Period	Mean	t-Stat	alpha	t-Stat	alpha	t-Stat	alpha	t-Stat	alpha
1 week	0.092%	2.66	0.084%	2.43	0.403%	9.16	0.170%	6.24	0.067%	1.78
2 weeks	0.147%	2.45	0.135%	2.46	0.669%	9.01	0.292%	6.81	0.105%	1.70
4 weeks	0.223%	1.89	0.208%	2.00	1.124%	10.43	0.423%	6.36	0.143%	1.22
6 weeks	0.310%	1.72	0.277%	1.73	1.399%	13.02	0.558%	6.07	0.171%	1.05
8 weeks	0.448%	1.92	0.460%	2.26	1.709%	17.13	0.623%	4.18	0.342%	1.69
10 weeks	0.515%	1.99	0.484%	1.81	1.704%	11.17	0.578%	3.87	0.381%	1.53
12 weeks	0.588%	2.09	0.629%	1.89	1.857%	7.65	0.556%	3.20	0.477%	1.48

Boehmer, Ekkehart, Jones, Charles M., Zhang, Xiaoyan, Zhang, Xinran. "Tracking Retail Investor Activity." The Journal of Finance, 76(5), 2249-2305. <https://doi.org/10.1111/jofi.13033>.

Portfolio returns using a long-short strategy

Why Retail Activity Matters

Retail Power in the Market

- GameStop
- AMC
- Persistence in retail traders chasing stock returns moves stock prices
- We look to profit from the buying pressure of retail investors



THE WALL STREET JOURNAL.

MARKETS | FINANCE

What Inflation? Small Investors Keep Piling Into Flashy Growth Stocks

AMD, Nvidia and Apple still hold appeal for many, even as potentially higher interest rates prompt defensive moves by Wall Street pros



Review of Retail Market Order Structure



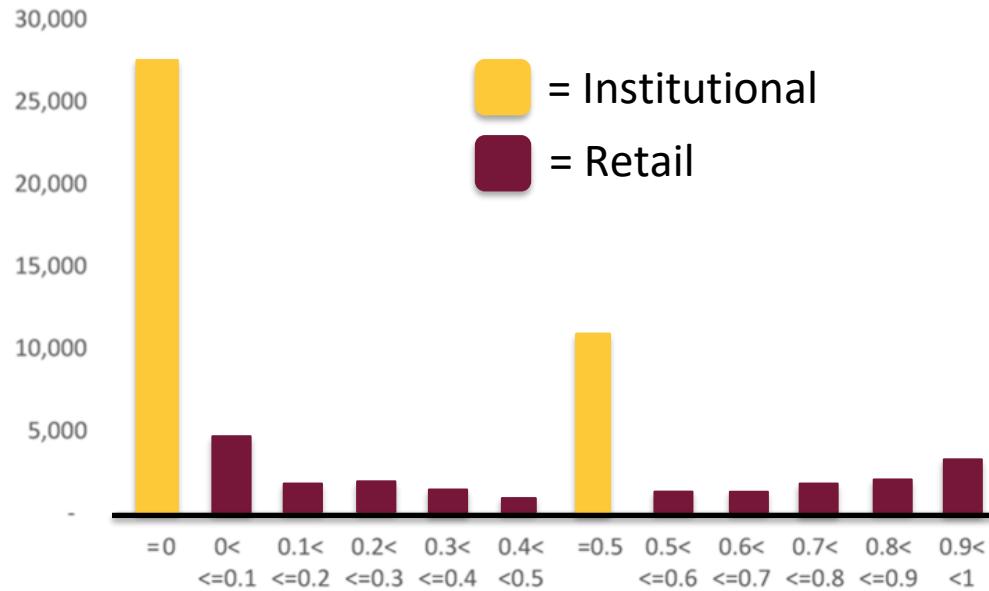
Review of Marketable Retail Order Flow Structure

Retail market orders

- Market orders
- Limit orders

Brokerage houses & Wholesalers

- Internalization
- Retail small-price improvement



Where We Find Retail Trades

Retail Trade Execution

- Retail orders are typically executed by wholesalers or via internalization
- Reported on FINRA TRF
- Executions included in “consolidated tape” of the TAQ

Reg NMS

- Requires limit orders be priced at round pennies
- We only identify marketable retail orders and not limit orders

Timestamp	SharesTraded	TransactionPrice	NBO	NBB	TICKER	PRIMEXCH
9:30:00.939206912	60596	163.01	163.4	161.2	A	N
9:30:00.939210496	60596	163.01	163.4	161.2	A	N
9:30:00.942568448	10	162.89	163.39	162	A	N
9:30:00.942668544	7	163	163.39	162	A	N
9:30:00.942723840	3	163	163.39	162	A	N
9:30:00.944282368	3	162.92	163.39	162	A	N
9:30:00.944292352	3	162.84	163.39	162	A	N
9:30:00.944402688	3	162.9	163.39	162	A	N
9:30:00.944713728	2	162.92	163.39	162	A	N
9:30:00.944713728	2	162.92	163.39	162	A	N
9:30:01.035429888	16	162.93	163.39	162.57	A	N
9:30:01.036231168	22	162.93	163.39	162.57	A	N
9:30:01.164956160	2	162.99	163.39	162.57	A	N
9:30:01.183876352	8	162.93	163.39	162.57	A	N
9:30:01.201424128	109	162.93	163.39	162.57	A	N
9:30:01.264407808	142	162.93	163.39	162.57	A	N
9:30:01.272305920	100	162.92	163.39	162.57	A	N
9:30:01.273143808	101	162.92	163.39	162.57	A	N
9:30:01.273184768	110	162.92	163.39	162.57	A	N
9:30:01.273208320	38	162.84	163.39	162.57	A	N
9:30:01.273208320	42	162.84	163.39	162.57	A	N

Measuring Retail Order Imbalances

Marketable retail buy volume

- Calculates order imbalance using the volume of shares being traded

$$mroibvol(i, t) = \frac{mrbvol(i, t) - mrsvol(i, t)}{mrbvol(i, t) + mrsvol(i, t)}$$

Marketable retail buy by trades

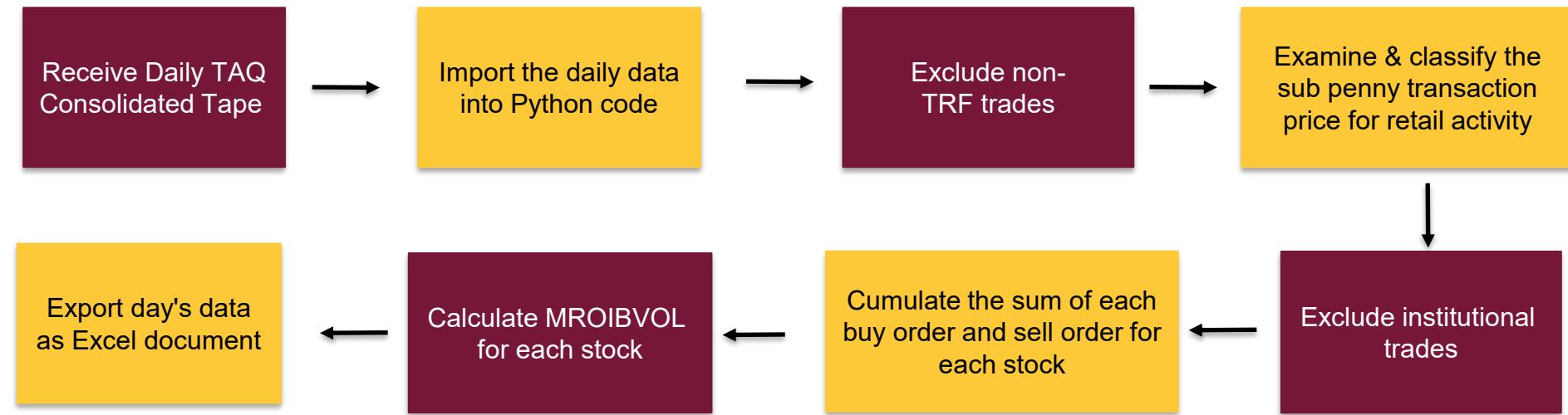
- Calculates order imbalance using the number of trades being executed

$$mroibtrd(i, t) = \frac{mrbtrd(i, t) - mrstrd(i, t)}{mrbtrd(i, t) + mrstrd(i, t)}$$

Implementation



Daily Security Analysis Process



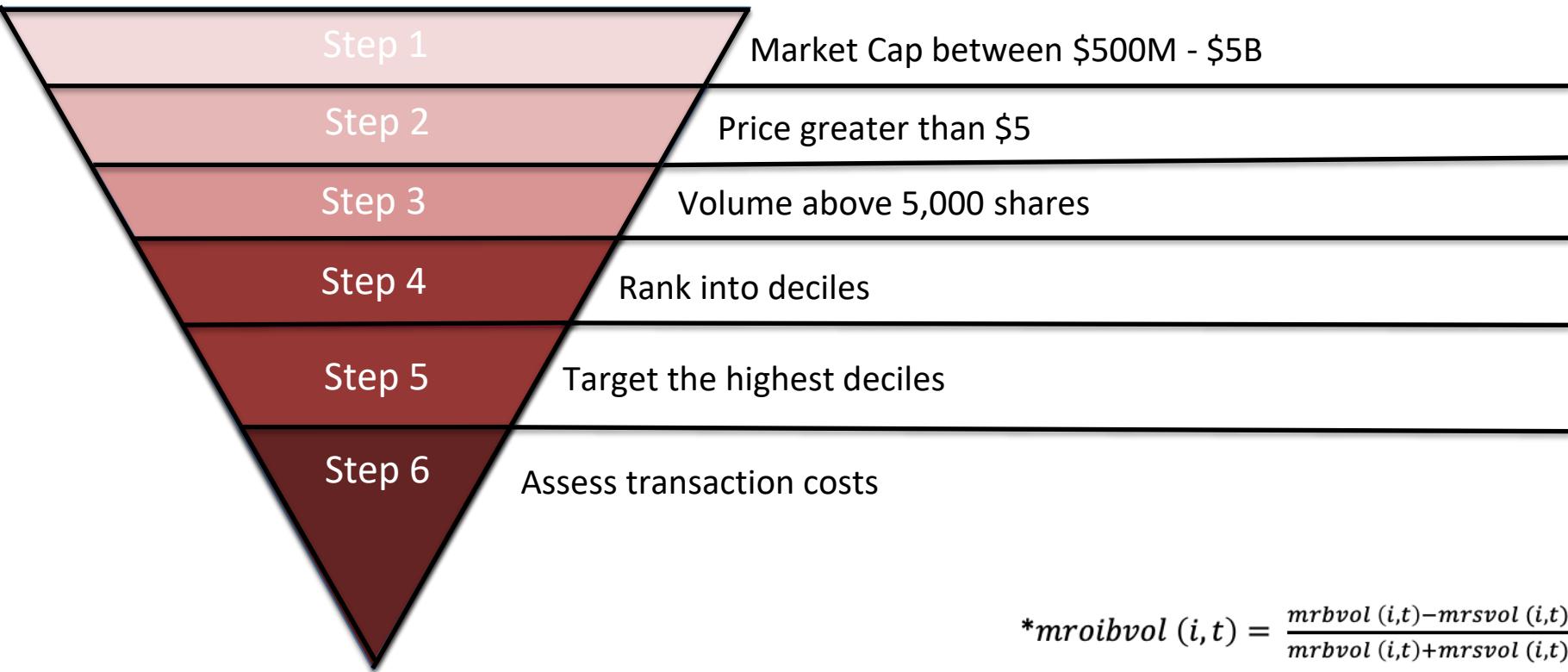
Weekly Order Imbalance

	Monday	Tuesday	Wednesday	Thursday	Friday	Weekly Average Decile Rank
Decile	a	b	c	d	e	$\frac{a + b + c + d + e}{5}$



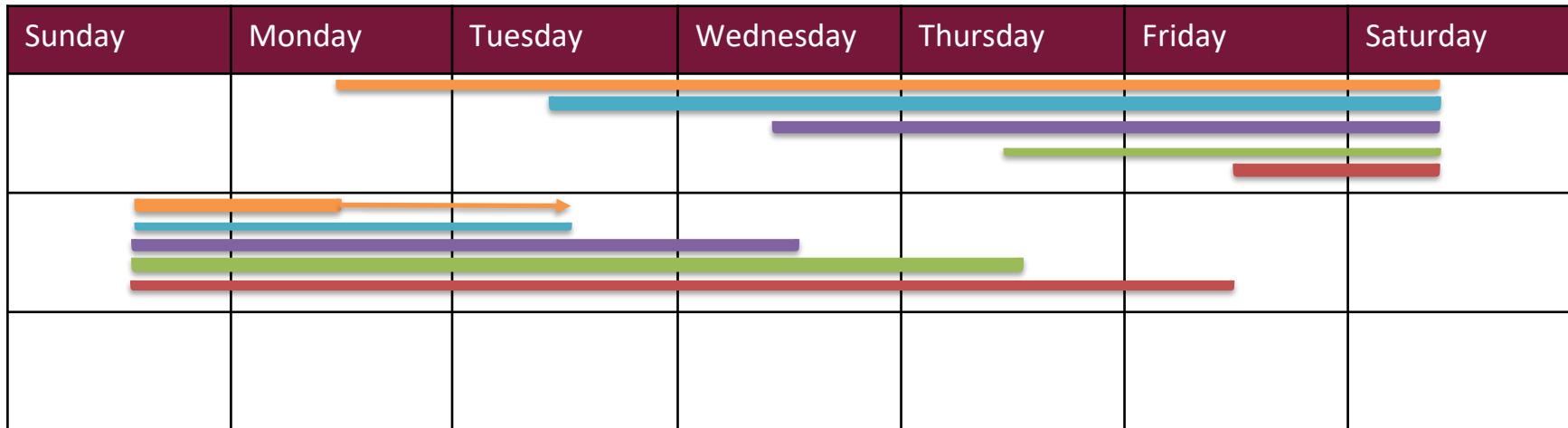
Rank by Highest Average Decile to Lowest

Daily Security Selection Process and Criteria



$$*mroibvol(i,t) = \frac{mrbbvol(i,t) - mrsvol(i,t)}{mrbbvol(i,t) + mrsvol(i,t)}$$

Concatenated Portfolios



Holding 10 securities per day, with a maximum of 50 at any period

Trading Cost Optimization

$$\frac{\text{Amount invested in Stock "A" per day}}{\text{Previous day closing price}} = \text{Equal weighted shares purchased}$$



$$\text{Equal weighted shares purchased} \times .02 = \text{Transaction Cost Stock "A"}$$



First 10 stocks that
meet criteria



Top 10 decile
ranked stocks

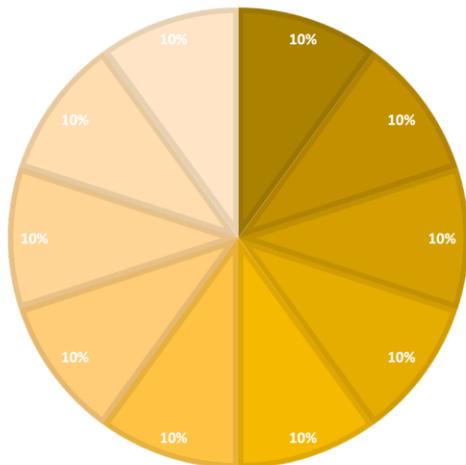


Lowest costing within
top decile that meet
criteria

Daily Portfolio Weighting

DAILY STOCK WEIGHTS

Stock A Stock B Stock C Stock D Stock E Stock F Stock G Stock H Stock I Stock J



Basic Materials
Utilities

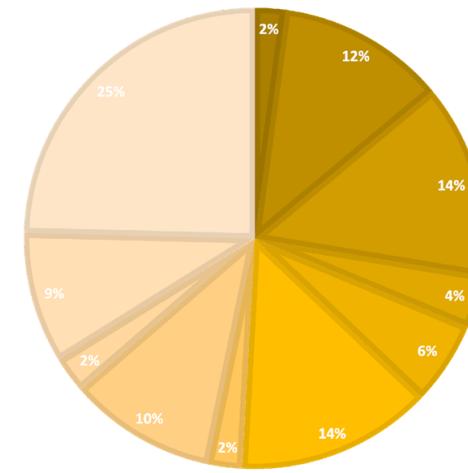
Consumer Cyclical
Communication Services

Financial Services
Energy

Real Estate
Industrials

Consumer Defensive
Technology

RUSSELL 3000 WEIGHTS



Healthcare
Technology



* Each sector will only be invested +/- 7.5% of Russell 3000 sector weightings

Market News

Match Any	Insperity Inc	Dorman Products Inc	LendingTree Inc	Sources	All Dates	Top
	TTEC Holdings Inc	Safety Insurance Grou...	NuVasive Inc			
	Bryn Mawr Bank Corp	Quanterix Corp	Celldex Therapeutics I...			
1)	TTEC Non-Deal Roadshow Set By Northland Securities for Dec. 8			BN	12/01	
2)	LendingTree Presentation Stephens Annual Investment Conference			BT	12/01	
3)	CNBC: Watch CNBC's full interview with Bryn Mawr Trust's Jeff Mills			NS1	12/01	
4)	NASDAQ: LendingTree To Present At Stephens Annual Investment Conference; Webcast At 2:00 PM ET			FM1	12/01	
5)	Avtex, A TTEC Digital Company, Wins A 2021 Tekne Award			PRN	11/30	
6)	ETF Daily News: Reviewing Trustmark (NASDAQ:TRMK) & American Bank (OTCMKTS:AMBK)			NS1	12/01	
7)	FDA: UPDATE: Potential Biocompatibility Concerns with NuVasive Specialized Orthopedics' Precice Devic...			G01	12/01	
8)	Celldex Presentation 4th Annual Evercore ISI HealthCONx Virtual			BT	11/30	
9)	TTEC Boosts Credit Line to \$1.5 Billion			BFW	11/29	
10)	ABF Journal: Wells Fargo Securities Leads Credit Facility Upsize for TTEC Holdings			NS1	11/30	
11)	Ttec Holdings, Inc.: 8-K 2021/11/23			EDG	11/29	
12)	TTEC Holdings Increases Credit Facility to \$1.5 Billion			MTN	11/29	
13)	TTFC Holdings, Inc.: 8-K 2021-11-23			EDG	11/29	

Assign securities to watch for the holding period and research on Bloomberg

Questions?



Appendix



Predicting Returns “k” Weeks Ahead

Panel A: Predict Bid-Ask Average Return k Weeks Ahead

# of Weeks Ahead	Mroibvol		Mroibtrd	
	Coef.	t-Stat	Coef.	t-Stat
1 week	0.00092	15.60	0.00076	12.30
2 weeks	0.00055	9.35	0.00048	7.89
4 weeks	0.00031	5.56	0.00026	4.66
6 weeks	0.00022	3.90	0.00015	2.60
8 weeks	0.00021	3.47	0.00011	1.75
10 weeks	0.00010	1.82	0.00002	0.35
12 weeks	0.00007	1.29	0.00009	1.52

Panel B: Predict CRSP Return k Weeks Ahead

# of Weeks Ahead	Mroibvol		Mroibtrd	
	Coef.	t-Stat	Coef.	t-Stat
1 week	0.00096	16.29	0.00081	13.20
2 weeks	0.00058	9.99	0.00052	8.57
4 weeks	0.00032	5.92	0.00028	5.05
6 weeks	0.00024	4.18	0.00017	2.93
8 weeks	0.00021	3.50	0.00011	1.80
10 weeks	0.00011	2.04	0.00005	0.81
12 weeks	0.00008	1.39	0.00010	1.76

GME Chart



Weekly portfolio return difference

