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Online appendix

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Revisiting Boehmer et al. (2021): Recent period, alternative method, different conclusions

Online appendix

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Abstract : We reassess Boehmer et al. (2021, BJZZ)'s seminal work on the predictive power of retail order imbalance (ROI) for future stock returns. First, we replicate their 2010–2015 analysis in the more recent 2016–2021 period. We find that the ROI's predictive power weakens significantly. Specifically, past ROI can no longer predict weekly returns on large-cap stocks, and the long-short strategy based on past ROI is no longer profitable. Second, we analyze the effect of using the alternative quote midpoint (QMP) method to identify and sign retail trades on their main conclusions. While the results based on the QMP method align with BJZZ's findings in 2010–2015, the two methods provide different conclusions in 2016–2021. Our study shows that BJZZ's original findings are sensitive to the sample period and the approach to identify ROIs.

Keywords : Retail investor, retail order imbalance, return predictability, quote midpoint method, replication

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This online appendix provides the following supplemental contents:

- Tables A1–A8: Replication results of Tables I to VIII in BJZZ.
- Tables A9–A15: Full set of results of Tables 2 to 8 presented in the main paper.

Table A1: Summary statistics

Panel A: Original Results Reported in BJZZ	N	Mean	Std	Median	Q1	Q3
Mrbvol	4,628,957	42,481	280,474	5,165	1,200	20,681
Mrsvol	4,628,957	42,430	264,704	5,635	1,369	21,828
Mrbtrd	4,628,957	110	410	22	5	79
Mrstrd	4,628,957	108	355	24	6	81
Mroibvol	4,628,957	-0.038	0.464	-0.027	-0.301	0.217
Mroibtrd	4,628,957	-0.032	0.437	-0.010	-0.276	0.205
Panel B: Replication Results	N	Mean	Std	Median	Q1	Q3
Mrbvol	4,348,327	39,840	278,026	4,899	1,130	19,165
Mrsvol	4,348,327	39,655	262,689	5,302	1,300	20,185
Mrbtrd	4,348,327	99	386	21	5	72
Mrstrd	4,348,327	97	330	22	6	74
Mroibvol	4,348,327	-0.036	0.470	-0.025	-0.304	0.224
Mroibtrd	4,348,327	-0.031	0.443	-0.007	-0.280	0.213

Table A2: Determinants of marketable retail order imbalances

Panel A: Original Results Reported in BJZZ	Mroibvol Bid-Ask Return		Mroibvol CRSP Return		Mroibtrd Bid-Ask Return		Mroibtrd CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	−0.4013	−20.03	−0.4065	−20.19	−0.4326	−22.00	−0.4357	−22.01
Mroib$(w-1)$	0.2200	92.53	0.2201	92.57	0.2865	150.01	0.2866	150.06
Ret$(w-1)$	−0.9481	−40.60	−0.9620	−41.43	−0.9003	−35.92	−0.9156	−36.74
Ret$(m-1)$	−0.2778	−19.24	−0.2784	−19.30	−0.2258	−14.84	−0.2262	−14.87
Ret$(m-7,m-2)$	−0.0586	−11.49	−0.0584	−11.46	−0.0380	−6.50	−0.0378	−6.48
Lmto	0.0003	5.31	0.0003	5.19	0.0002	3.93	0.0002	3.83
Lvol	0.8100	8.37	0.8478	8.79	0.4366	4.24	0.4633	4.51
Size	0.0154	12.06	0.0157	12.31	0.0209	16.37	0.0211	16.48
Lbm	−0.0275	−17.66	−0.0274	−17.61	−0.0274	−18.09	−0.0273	−18.05
Adj.R^2	6.00%		6.01%		9.49%		9.50%	
Panel B: Replication Results	**Mroibvol Bid-Ask Return**		**Mroibvol CRSP Return**		**Mroibtrd Bid-Ask Return**		**Mroibtrd CRSP Return**	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	−0.2833	−22.23	−0.2848	−22.13	−0.2866	−21.02	−0.2868	−20.91
Mroib$(w-1)$	0.1982	71.81	0.1982	71.82	0.2698	91.06	0.2698	91.07
Ret$(w-1)$	−0.8302	−35.91	−0.8311	−36.26	−0.7782	−31.41	−0.7811	−31.85
Ret$(m-1)$	−0.1680	−13.08	−0.1681	−13.08	−0.1214	−8.91	−0.1213	−8.91
Ret$(m-7,m-2)$	−0.0252	−5.20	−0.0252	−5.20	−0.0080	−1.44	−0.0080	−1.44
Lmto	0.0007	11.73	0.0007	11.84	0.0006	9.52	0.0006	9.70
Lvol	0.5684	6.43	0.5794	6.53	0.3049	3.18	0.3008	3.18
Size	0.0151	10.89	0.0152	10.95	0.0200	14.36	0.0200	14.32
Lbm	−0.0211	−16.95	−0.0211	−16.95	−0.0218	−17.77	−0.0218	−17.79
Adj.R^2	5.06%		5.06%		8.66%		8.66%	

Table A3: Predicting next-week returns using marketable retail order imbalances

	Panel A: Original Results Reported in BJZZ							
	Mroibvol Bid-Ask Return		Mroibvol CRSP Return		Mroibtrd Bid-Ask Return		Mroibtrd CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	0.0050	2.58	0.0056	2.85	0.0050	2.58	0.0056	2.85
Mroib$(w-1)$	0.0009	15.60	0.0010	16.29	0.0008	12.30	0.0008	13.20
Ret$(w-1)$	−0.0185	−5.83	−0.0220	−6.85	−0.0186	−5.88	−0.0222	−6.91
Ret$(m-1)$	0.0006	0.35	0.0006	0.34	0.0005	0.29	0.0005	0.29
Ret$(m-7, m-2)$	0.0008	1.16	0.0008	1.16	0.0008	1.12	0.0008	1.12
Lmto	0.0000	−3.37	−0.0000	−3.76	−0.0000	−3.36	−0.0000	−3.75
Lvol	−0.0223	−1.41	−0.0205	−1.31	−0.0217	−1.37	−0.0198	−1.27
Size	−0.0001	−0.86	−0.0001	−0.92	−0.0001	−0.90	−0.0001	−0.96
Lbm	−0.0001	−0.39	−0.0000	−0.07	−0.0001	−0.42	−0.0000	−0.10
Adj.R^2	3.85%		3.85%		3.84%		3.84%	
IQR	1.1888		1.1888		1.2292		1.2292	
IQR w. ret. diff	0.1089%		0.1144%		0.0931%		0.0997%	
	Panel B: Replication Results							
	Mroibvol Bid-Ask Return		Mroibvol CRSP Return		Mroibtrd Bid-Ask Return		Mroibtrd CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	0.0033	2.24	0.0036	2.42	0.0033	2.23	0.0036	2.40
Mroib$(w-1)$	0.0009	15.14	0.0009	14.55	0.0008	11.93	0.0008	11.41
Ret$(w-1)$	−0.0172	−5.45	−0.0206	−6.50	−0.0174	−5.50	−0.0208	−6.56
Ret$(m-1)$	−0.0001	−0.03	−0.0003	−0.16	−0.0001	−0.07	−0.0004	−0.20
Ret$(m-7, m-2)$	0.0007	1.07	0.0007	1.04	0.0007	1.05	0.0007	1.01
Lmto	−0.0000	−2.79	−0.0000	−2.90	−0.0000	−2.76	−0.0000	−2.87
Lvol	−0.0133	−0.81	−0.0109	−0.68	−0.0130	−0.79	−0.0106	−0.66
Size	−0.0000	−0.11	−0.0001	−0.40	−0.0000	−0.17	−0.0001	−0.45
Lbm	0.0002	1.12	0.0002	1.08	0.0002	1.10	0.0002	1.06
Adj.R^2	3.75%		3.73%		3.74%		3.72%	
IQR	1.1950		1.1950		1.2279		1.2279	
IQR w. ret. diff	0.1116%		0.1079%		0.0977%		0.0939%	

Table A4: Marketable retail return predictability within subgroups

Panel A: Original Results Reported in BJZZ

	Mroibvol				Mroibtrd			
	Coef.	t-Stat	IQR	W.R. Diff.	Coef.	t-Stat	IQR	W.R. Diff.
Market-cap subgroups								
Small	0.0013	13.90	1.6630	0.219%	0.0012	11.58	1.7360	0.207%
Medium	0.0007	9.18	1.3230	0.087%	0.0004	5.63	1.3460	0.059%
Big	0.0003	3.68	0.8920	0.026%	0.0002	2.52	0.9290	0.019%
Share-price subgroups								
Low	0.0014	13.34	1.4320	0.205%	0.0012	10.34	1.5860	0.185%
Medium	0.0008	10.00	1.2890	0.089%	0.0005	7.56	1.3090	0.070%
High	0.0002	3.23	0.9610	0.020%	0.0002	2.19	0.9610	0.015%
Turnover subgroups								
Low	0.0011	15.60	1.8370	0.205%	0.0011	14.71	1.7770	0.195%
Medium	0.0008	10.21	1.2190	0.094%	0.0006	7.05	1.2280	0.071%
High	0.0007	4.98	0.9100	0.065%	0.0004	2.55	1.0050	0.015%

Panel B: Replication Results

	Mroibvol				Mroibtrd			
	Coef.	t-Stat	IQR	W.R. Diff.	Coef.	t-Stat	IQR	W.R. Diff.
Market-cap subgroups								
Small	0.0013	13.87	1.6010	0.205%	0.0011	11.12	1.6768	0.184%
Medium	0.0005	6.70	1.2386	0.068%	0.0004	4.89	1.2411	0.054%
Big	0.0003	3.79	0.8746	0.028%	0.0003	2.85	0.8972	0.023%
Share-price subgroups								
Low	0.0015	13.40	1.4088	0.205%	0.0012	10.43	1.5648	0.182%
Medium	0.0006	7.76	1.2672	0.074%	0.0005	5.87	1.2700	0.062%
High	0.0002	3.37	0.9495	0.023%	0.0002	2.62	0.9275	0.019%
Turnover subgroups								
Low	0.0010	14.99	1.7156	0.176%	0.0010	13.22	1.6539	0.158%
Medium	0.0008	8.32	1.1589	0.090%	0.0006	5.87	1.1577	0.069%
High	0.0009	5.19	0.8681	0.074%	0.0006	3.29	0.9684	0.055%

Table A5: Predicting returns k weeks ahead

Panel A: Original Results Reported in BJZZ				
	Mroibvol		Mroibtrd	
	Coef.	t-Stat	Coef.	t-Stat
Bid-ask average returns				
1 week	0.0009	15.60	0.0008	12.30
2 weeks	0.0006	9.35	0.0005	7.89
4 weeks	0.0003	5.56	0.0003	4.66
6 weeks	0.0002	3.90	0.0002	2.60
8 weeks	0.0002	3.47	0.0001	1.75
10 weeks	0.0001	1.82	0.0000	0.35
12 weeks	0.0001	1.29	0.0001	1.52
CRSP returns				
1 week	0.0010	16.29	0.0008	13.20
2 weeks	0.0006	9.99	0.0005	8.57
4 weeks	0.0003	5.92	0.0003	5.05
6 weeks	0.0002	4.18	0.0002	2.93
8 weeks	0.0002	3.50	0.0001	1.80
10 weeks	0.0001	2.04	0.0001	0.81
12 weeks	0.0001	1.39	0.0001	1.76

Panel B: Replication Results				
	Mroibvol		Mroibtrd	
	Coef.	t-Stat	Coef.	t-Stat
Bid-ask average returns				
1 week	0.0009	15.14	0.0008	11.93
2 weeks	0.0006	9.48	0.0005	7.77
4 weeks	0.0003	5.64	0.0003	5.40
6 weeks	0.0003	4.53	0.0002	3.31
8 weeks	0.0002	3.96	0.0002	2.43
10 weeks	0.0000	0.78	-0.0001	-0.87
12 weeks	0.0001	2.48	0.0002	2.68
CRSP returns				
1 week	0.0009	14.55	0.0008	11.41
2 weeks	0.0006	9.37	0.0005	7.58
4 weeks	0.0003	5.67	0.0003	5.41
6 weeks	0.0003	4.67	0.0002	3.43
8 weeks	0.0002	3.83	0.0001	2.34
10 weeks	0.0000	0.75	-0.0001	-0.89
12 weeks	0.0002	2.52	0.0002	2.74

Table A6: Long-short strategy returns based on marketable retail order imbalances

	Panel A: Original Results Reported in BJZZ									
	All Stocks				Small		Medium		Big	
	Mean	t-Stat	Alpha	t-Stat	Alpha	t-Stat	Alpha	t-Stat	Alpha	t-Stat
Form Portfolios on the Previous Week's Mroibvol										
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
Form Portfolios on the Previous Week's Mroibtrd										
1 week	0.056%	1.34	0.061%	1.44	0.343%	7.04	0.104%	3.52	0.055%	1.42
2 weeks	0.137%	1.72	0.143%	1.89	0.557%	6.72	0.194%	4.02	0.119%	1.61
4 weeks	0.238%	1.61	0.251%	1.88	0.880%	6.98	0.277%	3.75	0.214%	1.61
6 weeks	0.311%	1.50	0.350%	1.93	1.145%	6.25	0.313%	2.62	0.304%	1.84
8 weeks	0.427%	1.58	0.523%	2.26	1.468%	6.40	0.353%	1.91	0.449%	2.19
10 weeks	0.454%	1.41	0.529%	1.74	1.442%	5.37	0.292%	1.56	0.483%	1.64
12 weeks	0.529%	1.47	0.667%	1.70	1.672%	5.30	0.228%	1.05	0.567%	1.51
	Panel B: Replication Results									
	All Stocks				Small		Medium		Big	
	Mean	t-Stat	Alpha	t-Stat	Alpha	t-Stat	Alpha	t-Stat	Alpha	t-Stat
Form Portfolios on the Previous Week's Mroibvol										
1 week	0.095%	3.27	0.083%	2.77	0.437%	10.39	0.175%	5.59	0.051%	1.52
2 weeks	0.124%	2.38	0.090%	1.81	0.613%	8.68	0.270%	5.01	0.052%	1.04
4 weeks	0.226%	2.67	0.167%	2.04	0.852%	7.15	0.377%	4.46	0.125%	1.54
6 weeks	0.347%	2.84	0.285%	2.56	0.909%	6.54	0.471%	3.88	0.193%	1.76
8 weeks	0.465%	2.69	0.412%	2.57	0.992%	4.96	0.523%	3.07	0.297%	2.03
10 weeks	0.510%	2.31	0.373%	1.73	0.905%	3.68	0.406%	2.58	0.263%	1.40
12 weeks	0.599%	2.33	0.564%	2.07	0.988%	4.02	0.364%	2.05	0.416%	1.64
Form Portfolios on the Previous Week's Mroibtrd										
1 week	0.072%	1.97	0.061%	1.65	0.342%	7.13	0.117%	3.76	0.047%	1.26
2 weeks	0.150%	2.15	0.118%	1.83	0.528%	6.39	0.167%	3.32	0.097%	1.44
4 weeks	0.250%	2.25	0.190%	1.98	0.638%	5.02	0.262%	3.68	0.176%	1.61
6 weeks	0.388%	2.70	0.323%	2.76	0.605%	3.60	0.333%	3.12	0.252%	2.01
8 weeks	0.508%	2.59	0.443%	2.53	0.620%	2.95	0.330%	1.91	0.346%	1.94
10 weeks	0.515%	2.11	0.404%	1.75	0.480%	1.70	0.147%	0.86	0.351%	1.33
12 weeks	0.577%	2.07	0.516%	1.62	0.506%	1.81	0.064%	0.31	0.464%	1.34

Table A7: Predictability decomposition

Panel A: Original Results Reported in BJZZ

First Stage of Projecting Order Imbalance on Persistence and Past Returns

	Mroivol$(w-1)$ Bid-Ask Return		Mroivol$(w-1)$ CRSP Return		Mroitrd$(w-1)$ Bid-Ask Return		Mroitrd$(w-1)$ CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	−0.1413	−24.66	−0.1408	−24.61	−0.1054	−17.23	−0.1049	−17.19
Mroivol$(w-2)$	0.2227	96.20	0.2228	96.20	0.2906	149.82	0.2907	149.85
Ret$(w-2)$	−0.9286	−38.93	−0.9422	−39.80	−0.8926	−34.92	−0.9076	−35.81
Ret$(m-1)$	−0.2029	−13.93	−0.2025	−13.90	−0.1591	−10.72	−0.1588	−10.70
Ret$(m-7, m-2)$	−0.0267	−4.98	−0.0268	−4.99	−0.0054	−0.86	−0.0055	−0.88
Adj.R^2	5.62%		5.63%		8.99%		9.00%	

Second-Stage Decomposition of Order Imbalance's Predictive Power

	Mroivol(w) Bid-Ask Return		Mroivol(w) CRSP Return		Mroitrd(w) Bid-Ask Return		Mroitrd(w) CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	0.0046	2.25	0.0052	2.54	0.0046	2.23	0.0052	2.52
PERS	0.0027	8.75	0.0029	9.41	0.0018	7.80	0.0019	8.56
CONT	−0.0044	−0.42	−0.1310	−1.46	−0.0073	−0.73	0.0328	1.62
OTHER	0.0008	14.47	0.0009	15.48	0.0006	10.51	0.0007	11.64
Ret$(w-1)$	−0.0176	−5.41	−0.0206	−6.27	−0.0177	−5.45	−0.0207	−6.30
Ret$(m-1)$	−0.0060	−0.67	0.0002	0.03	0.0017	0.56	0.0093	1.13
Ret$(m-7, m-2)$	−0.0009	−0.65	−0.0127	−1.12	0.0017	0.95	−0.0008	−0.34
Lmto	0.0000	−3.49	0.0000	−3.80	0.0000	−3.48	0.0000	−3.78
Lvol	−0.0230	−1.48	−0.0231	−1.50	−0.0224	−1.44	−0.0225	−1.46
Size	−0.0001	−0.61	−0.0001	−0.67	−0.0001	−0.65	−0.0001	−0.72
Lbm	−0.0001	−0.46	0.0000	−0.14	−0.0001	−0.56	−0.0001	−0.23
Adj.R^2	4.26%		4.27%		4.25%		4.26%	
	IQR	R. Diff	IQR	R. Diff	IQR	R. Diff	IQR	R. Diff
PERS	0.2591	0.0688%	0.2593	0.0739%	0.3498	0.0620%	0.3500	0.0679%
CONT	0.0627	−0.0277%	0.0631	−0.8265%	0.0614	−0.0445%	0.0619	0.2031%
OTHER	1.1141	0.0915%	1.1141	0.0977%	1.1326	0.0718%	1.1327	0.0792%

Table A7: Predictability decomposition (continued)

Panel B: Replication Results

First Stage of Projecting Order Imbalance on Persistence and Past Returns

	Mroivol$(w-1)$ Bid-Ask Return		Mroivol$(w-1)$ CRSP Return		Mroitrd$(w-1)$ Bid-Ask Return		Mroitrd$(w-1)$ CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	−0.1351	−23.28	−0.1350	−23.27	−0.1127	−12.63	−0.1126	−12.62
Mroivol$(w-2)$	0.2014	78.12	0.2015	78.13	0.2743	97.13	0.2744	97.13
Ret$(w-2)$	−0.8235	−36.14	−0.8250	−36.49	−0.7798	−31.83	−0.7833	−32.29
Ret$(m-1)$	−0.1228	−9.91	−0.1228	−9.90	−0.0857	−6.75	−0.0856	−6.74
Ret$(m-7, m-2)$	−0.0052	−1.12	−0.0053	−1.13	0.0143	2.62	0.0143	2.61
Adj.R^2	4.69%		4.69%		8.20%		8.21%	

Second-Stage Decomposition of Order Imbalance's Predictive Power

	Mroivol(w) Bid-Ask Return		Mroivol(w) CRSP Return		Mroitrd(w) Bid-Ask Return		Mroitrd(w) CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	0.0032	2.04	0.0035	2.19	0.0032	2.00	0.0034	2.15
PERS	0.0030	8.14	0.0028	6.75	0.0019	7.35	0.0018	6.11
CONT	−0.0114	−0.42	0.0056	0.43	−0.0227	−0.82	0.0305	1.04
OTHER	0.0008	13.02	0.0008	12.72	0.0006	9.73	0.0006	9.55
Ret$(w-1)$	−0.0167	−5.20	−0.0195	−6.03	−0.0168	−5.24	−0.0196	−6.07
Ret$(m-1)$	0.0000	0.00	−0.0002	−0.12	−0.0002	−0.08	−0.0004	−0.20
Ret$(m-7, m-2)$	0.0007	1.07	0.0007	1.06	0.0007	1.04	0.0007	1.03
Lmto	0.0000	−2.71	0.0000	−2.82	0.0000	−2.67	0.0000	−2.78
Lvol	−0.0152	−0.93	−0.0127	−0.79	−0.0146	−0.89	−0.0121	−0.75
Size	0.0000	0.01	0.0000	−0.22	0.0000	−0.03	0.0000	−0.27
Lbm	0.0002	1.14	0.0002	1.10	0.0002	1.09	0.0002	1.05
Adj.R^2	4.12%		4.10%		4.11%		4.10%	
	IQR	R. Diff	IQR	R. Diff	IQR	R. Diff	IQR	R. Diff
PERS	0.2319	0.0692%	0.2319	0.0648%	0.3305	0.0636%	0.3305	0.0588%
CONT	0.0358	−0.0408%	0.0369	0.0207%	0.0328	−0.0743%	0.0339	0.1036%
OTHER	1.1260	0.0902%	1.1261	0.0885%	1.1333	0.0734%	1.1333	0.0721%

Table A8: Marketable retail order imbalance and contemporaneous returns

Panel A: Original Results Reported in BJZZ	Intense Selling		Selling		Buying		Intense Buying	
	Mean	t-Stat	Mean	t-Stat	Mean	t-Stat	Mean	t-Stat
Cumulative Market-Adjusted Return								
$k=-20$	0.0067**	5.48	0.0063**	8.10	−0.0111**	−19.00	−0.0129**	−12.49
$k=-15$	0.0056**	5.62	0.0055**	8.71	−0.0096**	−20.87	−0.0109**	−12.91
$k=-10$	0.0041**	5.40	0.0042**	9.04	−0.0074**	−20.83	−0.0084**	−12.93
$k=-5$	0.0027**	6.06	0.0028**	10.07	−0.0047**	−24.09	−0.0053**	−15.62
$k=0$	−0.0024**	−5.30	−0.0019**	−5.65	0.0011**	4.02	0.0011**	2.69
$k=5$	−0.0016**	−3.89	−0.0012**	−5.07	0.0018**	9.58	0.0024**	6.99
$k=10$	−0.0023**	−3.16	−0.0018**	−4.35	0.0028**	8.38	0.0036**	5.89
$k=15$	−0.0025*	−2.45	−0.0022**	−3.97	0.0036**	8.39	0.0046**	5.51
$k=20$	−0.0030*	−2.36	−0.0025**	−3.63	0.0043**	8.89	0.0057**	5.74
Weekly Market-Adjusted Return								
$k=-20$	0.0010**	2.75	0.0008**	3.36	−0.0016**	−8.15	−0.0019**	−5.90
$k=-15$	0.0016**	4.12	0.0014**	5.66	−0.0022**	−12.70	−0.0026**	−7.97
$k=-10$	0.0014**	3.59	0.0015**	5.88	−0.0028**	−12.66	−0.0030**	−7.62
$k=-5$	0.0027**	6.06	0.0028**	10.07	−0.0047**	−24.09	−0.0053**	−15.62
$k=0$	−0.0024**	−5.30	−0.0019**	−5.65	0.0011**	4.02	0.0011**	2.69
$k=5$	−0.0016**	−3.89	−0.0012**	−5.07	0.0018**	9.58	0.0024**	6.99
$k=10$	−0.0006	−1.51	−0.0006*	−2.42	0.0010**	5.38	0.0013**	3.68
$k=15$	−0.0001	−0.21	−0.0004	−1.74	0.0009**	4.61	0.0010**	2.77
$k=20$	−0.0005	−1.34	−0.0003	−1.29	0.0006**	3.84	0.0010**	2.80

Panel B: Replication Results	Intense Selling		Selling		Buying		Intense Buying	
	Mean	t-Stat	Mean	t-Stat	Mean	t-Stat	Mean	t-Stat
Cumulative Market-Adjusted Return								
$k=-20$	0.0074**	7.33	0.0066**	8.18	−0.0127**	−15.39	−0.0166**	−19.30
$k=-15$	0.0071**	9.34	0.0064**	10.94	−0.0108**	−17.91	−0.0137**	−21.05
$k=-10$	0.0059**	10.89	0.0055**	13.04	−0.0083**	−19.19	−0.0103**	−20.67
$k=-5$	0.0039**	12.56	0.0035**	15.59	−0.0051**	−19.37	−0.0064**	−20.74
$k=0$	−0.0026**	−6.49	−0.0021**	−6.30	0.0016**	4.82	0.0021**	5.44
$k=5$	−0.0017**	−6.58	−0.0012**	−5.96	0.0018**	9.12	0.0026**	10.34
$k=10$	−0.0028**	−6.04	−0.0021**	−6.46	0.0027**	7.70	0.0039**	9.09
$k=15$	−0.0039**	−6.10	−0.0028**	−5.98	0.0032**	6.72	0.0049**	8.36
$k=20$	−0.0047**	−5.38	−0.0036**	−5.28	0.0034**	4.82	0.0052**	6.27
Weekly Market-Adjusted Return								
$k=-20$	0.0007*	2.48	0.0006*	2.44	−0.0018**	−8.18	−0.0028**	−10.48
$k=-15$	0.0014**	4.69	0.0012**	6.01	−0.0024**	−10.00	−0.0033**	−12.31
$k=-10$	0.0021**	6.47	0.0020**	7.83	−0.0031**	−13.25	−0.0039**	−13.42
$k=-5$	0.0039**	12.56	0.0035**	15.59	−0.0051**	−19.37	−0.0064**	−20.74
$k=0$	−0.0026**	−6.49	−0.0021**	−6.30	0.0016**	4.82	0.0021**	5.44
$k=5$	−0.0017**	−6.58	−0.0012**	−5.96	0.0018**	9.12	0.0026**	10.34
$k=10$	−0.0011**	−3.97	−0.0009**	−4.91	0.0009**	3.91	0.0013**	4.83
$k=15$	−0.0010**	−3.85	−0.0007**	−3.64	0.0007**	3.56	0.0012**	4.49
$k=20$	−0.0007*	−2.48	−0.0005**	−2.72	0.0004	1.84	0.0004	1.71

Table A9: Determinants of marketable retail order imbalances

(a) BJZZ 2010-2015	Mroibvol Bid-Ask Return		Mroibvol CRSP Return		Mroibtrd Bid-Ask Return		Mroibtrd CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	−0.2833	−22.23	−0.2848	−22.13	−0.2866	−21.02	−0.2868	−20.91
Mroib($w-1$)	0.1982	71.81	0.1982	71.82	0.2698	91.06	0.2698	91.07
Ret($w-1$)	−0.8302	−35.91	−0.8311	−36.26	−0.7782	−31.41	−0.7811	−31.85
Ret($m-1$)	−0.1680	−13.08	−0.1681	−13.08	−0.1214	−8.91	−0.1213	−8.91
Ret($m-7, m-2$)	−0.0252	−5.20	−0.0252	−5.20	−0.0080	−1.44	−0.0080	−1.44
Lmto	0.0007	11.73	0.0007	11.84	0.0006	9.52	0.0006	9.70
Lvol	0.5684	6.43	0.5794	6.53	0.3049	3.18	0.3008	3.18
Size	0.0151	10.89	0.0152	10.95	0.0200	14.36	0.0200	14.32
Lbm	−0.0211	−16.95	−0.0211	−16.95	−0.0218	−17.77	−0.0218	−17.79
Adj.R^2	5.06%		5.06%		8.66%		8.66%	

(b) QMP 2010-2015	Mroibvol Bid-Ask Return		Mroibvol CRSP Return		Mroibtrd Bid-Ask Return		Mroibtrd CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	−0.3593	−22.43	−0.3599	−22.25	−0.2998	−21.00	−0.2977	−20.75
Mroib($w-1$)	0.2360	84.01	0.2361	84.04	0.2889	92.19	0.2890	92.19
Ret($w-1$)	−0.9157	−38.83	−0.9178	−39.30	−0.8286	−34.99	−0.8323	−35.41
Ret($m-1$)	−0.1599	−12.39	−0.1595	−12.38	−0.0730	−5.74	−0.0723	−5.71
Ret($m-7, m-2$)	−0.0163	−3.25	−0.0165	−3.28	0.0098	1.81	0.0096	1.78
Lmto	0.0009	14.15	0.0009	14.31	0.0006	10.24	0.0007	10.50
Lvol	0.7436	7.84	0.7287	7.59	0.1224	1.31	0.0785	0.85
Size	0.0220	13.72	0.0221	13.66	0.0225	15.39	0.0223	15.20
Lbm	−0.0264	−21.48	−0.0264	−21.47	−0.0242	−21.75	−0.0243	−21.78
Adj.R^2	7.11%		7.12%		9.90%		9.90%	

(c) BJZZ 2016-2021	Mroibvol Bid-Ask Return		Mroibvol CRSP Return		Mroibtrd Bid-Ask Return		Mroibtrd CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	−0.2072	−27.82	−0.2075	−27.68	−0.1472	−19.54	−0.1468	−19.54
Mroib($w-1$)	0.0983	57.30	0.0984	57.30	0.2237	84.06	0.2238	84.08
Ret($w-1$)	−0.3567	−25.85	−0.3538	−25.83	−0.4100	−28.71	−0.4076	−28.66
Ret($m-1$)	−0.0933	−12.49	−0.0928	−12.40	−0.1023	−13.87	−0.1016	−13.72
Ret($m-7, m-2$)	−0.0225	−6.72	−0.0226	−6.73	−0.0122	−4.34	−0.0123	−4.37
Lmto	0.0000	2.14	0.0000	2.45	0.0001	4.82	0.0001	5.14
Lvol	0.4199	6.59	0.4008	6.36	0.5800	9.73	0.5392	9.01
Size	0.0151	18.36	0.0152	18.33	0.0140	14.52	0.0140	14.60
Lbm	−0.0085	−10.13	−0.0086	−10.13	−0.0099	−12.57	−0.0100	−12.65
Adj.R^2	1.41%		1.41%		6.14%		6.14%	

(d) QMP 2016-2021	Mroibvol Bid-Ask Return		Mroibvol CRSP Return		Mroibtrd Bid-Ask Return		Mroibtrd CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	−0.3968	−33.48	−0.3979	−33.47	−0.2280	−23.28	−0.2262	−23.09
Mroib($w-1$)	0.1729	80.38	0.1730	80.38	0.2978	128.10	0.2980	128.29
Ret($w-1$)	−0.5704	−30.34	−0.5699	−30.65	−0.5363	−31.47	−0.5365	−31.82
Ret($m-1$)	−0.1475	−14.92	−0.1466	−14.78	−0.0823	−9.47	−0.0807	−9.23
Ret($m-7, m-2$)	−0.0296	−6.86	−0.0297	−6.86	0.0024	0.75	0.0022	0.68
Lmto	0.0002	6.04	0.0002	6.46	0.0001	6.40	0.0002	6.97
Lvol	1.2780	13.83	1.2269	13.63	0.8878	11.30	0.8018	10.35
Size	0.0282	26.06	0.0284	26.30	0.0220	19.40	0.0219	19.37
Lbm	−0.0173	−18.01	−0.0173	−18.06	−0.0186	−21.69	−0.0187	−21.82
Adj.R^2	4.28%		4.27%		10.68%		10.67%	

Table A10: Predicting next-week returns using marketable retail order imbalances

(a) BJZZ 2010-2015

	Mroibvol Bid-Ask Return		Mroibvol CRSP Return		Mroibtrd Bid-Ask Return		Mroibtrd CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	0.0033	2.24	0.0036	2.42	0.0033	2.23	0.0036	2.40
Mroib$(w-1)$	0.0009	15.14	0.0009	14.55	0.0008	11.93	0.0008	11.41
Ret$(w-1)$	−0.0172	−5.45	−0.0206	−6.50	−0.0174	−5.50	−0.0208	−6.56
Ret$(m-1)$	−0.0001	−0.03	−0.0003	−0.16	−0.0001	−0.07	−0.0004	−0.20
Ret$(m-7, m-2)$	0.0007	1.07	0.0007	1.04	0.0007	1.05	0.0007	1.01
Lmto	−0.0000	−2.79	−0.0000	−2.90	−0.0000	−2.76	−0.0000	−2.87
Lvol	−0.0133	−0.81	−0.0109	−0.68	−0.0130	−0.79	−0.0106	−0.66
Size	−0.0000	−0.11	−0.0001	−0.40	−0.0000	−0.17	−0.0001	−0.45
Lbm	0.0002	1.12	0.0002	1.08	0.0002	1.10	0.0002	1.06
Adj.R^2	3.75%		3.73%		3.74%		3.72%	
IQR	1.1950		1.1950		1.2279		1.2279	
IQR w. ret. diff	0.1116%		0.1079%		0.0977%		0.0939%	

(b) QMP 2010-2015

	Mroibvol Bid-Ask Return		Mroibvol CRSP Return		Mroibtrd Bid-Ask Return		Mroibtrd CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	0.0034	2.33	0.0037	2.52	0.0033	2.26	0.0036	2.44
Mroib$(w-1)$	0.0010	14.84	0.0010	13.96	0.0009	12.13	0.0008	11.25
Ret$(w-1)$	−0.0181	−5.73	−0.0217	−6.82	−0.0183	−5.79	−0.0219	−6.87
Ret$(m-1)$	−0.0001	−0.04	−0.0003	−0.17	−0.0002	−0.13	−0.0005	−0.25
Ret$(m-7, m-2)$	0.0007	1.01	0.0007	0.98	0.0007	0.96	0.0007	0.94
Lmto	−0.0000	−2.83	−0.0000	−2.94	−0.0000	−2.76	−0.0000	−2.88
Lvol	−0.0132	−0.80	−0.0106	−0.66	−0.0124	−0.75	−0.0098	−0.61
Size	−0.0000	−0.17	−0.0001	−0.49	−0.0000	−0.18	−0.0001	−0.49
Lbm	0.0002	1.10	0.0002	1.08	0.0002	1.05	0.0002	1.03
Adj.R^2	3.76%		3.74%		3.75%		3.73%	
IQR	1.2014		1.2014		1.1984		1.1984	
IQR w. ret. diff	0.1210%		0.1144%		0.1031%		0.0961%	

(c) BJZZ 2016-2021

	Mroibvol Bid-Ask Return		Mroibvol CRSP Return		Mroibtrd Bid-Ask Return		Mroibtrd CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	0.0041	2.24	0.0045	2.42	0.0042	2.25	0.0045	2.43
Mroib$(w-1)$	0.0006	7.95	0.0006	7.54	0.0007	4.86	0.0006	4.49
Ret$(w-1)$	−0.0138	−3.73	−0.0174	−4.74	−0.0138	−3.74	−0.0174	−4.74
Ret$(m-1)$	−0.0019	−0.98	−0.0020	−1.03	−0.0019	−0.97	−0.0020	−1.02
Ret$(m-7, m-2)$	−0.0001	−0.19	−0.0001	−0.23	−0.0001	−0.20	−0.0001	−0.24
Lmto	−0.0000	−0.81	−0.0000	−1.01	−0.0000	−0.82	−0.0000	−1.02
Lvol	0.0125	0.73	0.0174	1.04	0.0123	0.72	0.0172	1.03
Size	−0.0002	−1.08	−0.0002	−1.36	−0.0002	−1.12	−0.0002	−1.40
Lbm	0.0001	0.62	0.0001	0.66	0.0001	0.63	0.0001	0.67
Adj.R^2	4.35%		4.33%		4.37%		4.35%	
IQR	0.9863		0.9863		0.8114		0.8114	
IQR w. ret. diff	0.0602%		0.0577%		0.0548%		0.0510%	

(d) QMP 2016-2021

	Mroibvol Bid-Ask Return		Mroibvol CRSP Return		Mroibtrd Bid-Ask Return		Mroibtrd CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	0.0044	2.38	0.0047	2.55	0.0042	2.26	0.0045	2.44
Mroib$(w-1)$	0.0010	10.17	0.0009	9.34	0.0007	4.81	0.0006	4.13
Ret$(w-1)$	−0.0141	−3.82	−0.0177	−4.83	−0.0140	−3.80	−0.0177	−4.81
Ret$(m-1)$	−0.0018	−0.91	−0.0019	−0.96	−0.0019	−0.97	−0.0020	−1.03
Ret$(m-7, m-2)$	−0.0001	−0.18	−0.0001	−0.21	−0.0001	−0.23	−0.0002	−0.26
Lmto	−0.0000	−0.84	−0.0000	−1.04	−0.0000	−0.83	−0.0000	−1.02
Lvol	0.0110	0.65	0.0158	0.95	0.0121	0.71	0.0169	1.01
Size	−0.0002	−1.14	−0.0002	−1.42	−0.0002	−1.10	−0.0002	−1.37
Lbm	0.0001	0.73	0.0002	0.76	0.0001	0.73	0.0002	0.75
Adj.R^2	4.38%		4.35%		4.39%		4.37%	
IQR	1.0746		1.0746		0.9831		0.9831	
IQR w. ret. diff	0.1069%		0.1008%		0.0699%		0.0608%	

Table A11: Marketable retail return predictability within subgroups

	(a) BJZZ 2010-2015							
	Mroibvol				Mroibtrd			
	Coef.	t-Stat	IQR	W.R. Diff.	Coef.	t-Stat	IQR	W.R. Diff.
Market-cap subgroups								
Small	0.0013	13.87	1.6010	0.205%	0.0011	11.12	1.6768	0.184%
Medium	0.0005	6.70	1.2386	0.068%	0.0004	4.89	1.2411	0.054%
Big	0.0003	3.79	0.8746	0.028%	0.0003	2.85	0.8972	0.023%
Share-price subgroups								
Low	0.0015	13.40	1.4088	0.205%	0.0012	10.43	1.5648	0.182%
Medium	0.0006	7.76	1.2672	0.074%	0.0005	5.87	1.2700	0.062%
High	0.0002	3.37	0.9495	0.023%	0.0002	2.62	0.9275	0.019%
Turnover subgroups								
Low	0.0010	14.99	1.7156	0.176%	0.0010	13.22	1.6539	0.158%
Medium	0.0008	8.32	1.1589	0.090%	0.0006	5.87	1.1577	0.069%
High	0.0009	5.19	0.8681	0.074%	0.0006	3.29	0.9684	0.055%
	(b) QMP 2010-2015							
	Mroibvol				Mroibtrd			
	Coef.	t-Stat	IQR	W.R. Diff.	Coef.	t-Stat	IQR	W.R. Diff.
Market-cap subgroups								
Small	0.0014	14.47	1.6209	0.223%	0.0012	11.74	1.6507	0.194%
Medium	0.0005	5.73	1.2353	0.065%	0.0004	4.06	1.2038	0.047%
Big	0.0004	4.43	0.8804	0.037%	0.0003	3.54	0.8741	0.030%
Share-price subgroups								
Low	0.0016	13.39	1.4106	0.219%	0.0013	10.66	1.5044	0.192%
Medium	0.0006	7.89	1.2606	0.080%	0.0005	5.61	1.2160	0.056%
High	0.0003	4.38	0.9703	0.032%	0.0003	3.68	0.9312	0.029%
Turnover subgroups								
Low	0.0011	15.46	1.7491	0.193%	0.0010	13.55	1.6621	0.169%
Medium	0.0009	9.18	1.1550	0.101%	0.0007	6.28	1.1194	0.074%
High	0.0009	4.84	0.8661	0.075%	0.0006	3.09	0.9306	0.054%
	(c) BJZZ 2016-2021							
	Mroibvol				Mroibtrd			
	Coef.	t-Stat	IQR	W.R. Diff.	Coef.	t-Stat	IQR	W.R. Diff.
Market-cap subgroups								
Small	0.0007	6.4400	1.3347	0.098%	0.0008	4.6500	1.1714	0.094%
Medium	0.0004	4.0300	1.0890	0.045%	0.0006	3.4800	0.8699	0.053%
Big	0.0002	1.5400	0.6799	0.014%	-0.0001	-0.6600	0.5317	-0.006%
Share-price subgroups								
Low	0.0012	7.7900	1.1461	0.133%	0.0012	5.7100	1.1059	0.138%
Medium	0.0002	2.3100	1.1309	0.025%	0.0001	0.9900	0.9184	0.011%
High	0.0000	0.0600	0.7410	0.000%	-0.0001	-0.8600	0.5278	-0.006%
Turnover subgroups								
Low	0.0006	7.4800	1.4643	0.082%	0.0006	5.5900	1.1037	0.065%
Medium	0.0007	4.7200	0.9304	0.064%	0.0005	2.6200	0.7114	0.037%
High	0.0007	2.6900	0.7346	0.049%	0.0009	2.4100	0.6842	0.064%
	(d) QMP 2016-2021							
	Mroibvol				Mroibtrd			
	Coef.	t-Stat	IQR	W.R. Diff.	Coef.	t-Stat	IQR	W.R. Diff.
Market-cap subgroups								
Small	0.0014	10.3500	1.4216	0.197%	0.0010	5.2500	1.2979	0.129%
Medium	0.0005	4.3000	1.1385	0.058%	0.0005	3.5200	0.9929	0.054%
Big	0.0001	0.5500	0.7859	0.006%	-0.0003	-1.3100	0.7494	-0.019%
Share-price subgroups								
Low	0.0018	10.6300	1.2062	0.216%	0.0013	5.9300	1.1805	0.158%
Medium	0.0004	3.6000	1.1889	0.047%	0.0002	1.1100	1.0324	0.016%
High	0.0003	3.1300	0.8662	0.029%	0.0003	1.6900	0.7770	0.021%
Turnover subgroups								
Low	0.0011	12.4100	1.5670	0.176%	0.0009	9.0100	1.2908	0.122%
Medium	0.0008	5.2800	1.0188	0.084%	0.0005	2.5300	0.8883	0.044%
High	0.0010	3.8500	0.7951	0.078%	0.0004	1.1700	0.8280	0.036%

Table A12: Predicting returns k weeks ahead

	(a) BJZZ 2010-2015				*(b) QMP 2010-2015*			
	Mroibvol		Mroibtrd		Mroibvol		Mroibtrd	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Bid-ask average returns								
1 week	0.0009	15.14	0.0008	11.93	0.0010	14.84	0.0009	12.13
2 weeks	0.0006	9.48	0.0005	7.77	0.0006	9.00	0.0005	7.09
4 weeks	0.0003	5.64	0.0003	5.40	0.0003	5.52	0.0003	5.59
6 weeks	0.0003	4.53	0.0002	3.31	0.0003	4.64	0.0002	3.67
8 weeks	0.0002	3.96	0.0002	2.43	0.0002	2.51	0.0001	1.96
10 weeks	0.0000	0.78	-0.0001	-0.87	0.0000	0.21	-0.0001	-0.87
12 weeks	0.0001	2.48	0.0002	2.68	0.0002	2.92	0.0002	3.30
CRSP returns								
1 week	0.0009	14.55	0.0008	11.41	0.0010	13.96	0.0008	11.25
2 weeks	0.0006	9.37	0.0005	7.58	0.0006	8.96	0.0005	7.01
4 weeks	0.0003	5.67	0.0003	5.41	0.0003	5.57	0.0003	5.63
6 weeks	0.0003	4.67	0.0002	3.43	0.0003	4.63	0.0002	3.64
8 weeks	0.0002	3.83	0.0001	2.34	0.0002	2.45	0.0001	1.84
10 weeks	0.0000	0.75	-0.0001	-0.89	0.0000	0.20	-0.0001	-0.89
12 weeks	0.0002	2.52	0.0002	2.74	0.0002	2.86	0.0002	3.21

	(c) BJZZ 2016-2021				*(d) QMP 2016-2021*			
	Mroibvol		Mroibtrd		Mroibvol		Mroibtrd	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Bid-ask average returns								
1 week	0.0006	7.95	0.0007	4.86	0.0010	10.17	0.0007	4.81
2 weeks	0.0003	3.46	0.0003	2.27	0.0004	4.19	0.0002	1.54
4 weeks	0.0002	2.02	0.0003	1.79	0.0004	3.91	0.0003	2.03
6 weeks	0.0002	2.10	0.0002	1.61	0.0002	2.20	0.0001	0.99
8 weeks	0.0001	1.79	0.0003	1.97	0.0002	1.81	0.0001	1.01
10 weeks	0.0002	2.74	0.0003	2.49	0.0003	3.61	0.0003	2.47
12 weeks	0.0002	2.55	0.0003	2.20	0.0004	3.73	0.0003	2.21
CRSP returns								
1 week	0.0006	7.54	0.0006	4.49	0.0009	9.34	0.0006	4.13
2 weeks	0.0003	3.25	0.0003	2.16	0.0004	4.02	0.0002	1.45
4 weeks	0.0002	2.21	0.0003	1.86	0.0004	3.82	0.0003	1.90
6 weeks	0.0002	2.08	0.0002	1.58	0.0002	2.20	0.0001	0.93
8 weeks	0.0001	1.66	0.0002	1.81	0.0001	1.64	0.0001	0.83
10 weeks	0.0002	2.63	0.0003	2.35	0.0003	3.48	0.0003	2.27
12 weeks	0.0002	2.41	0.0003	2.07	0.0003	3.65	0.0003	2.09

Table A13: Long-short strategy returns based on marketable retail order imbalances

	(a) BJZZ 2010-2015									
	All Stocks				Small		Medium		Big	
	Mean	t-Stat	Alpha	t-Stat	Alpha	t-Stat	Alpha	t-Stat	Alpha	t-Stat
Form Portfolios on the Previous Week's Mroibvol										
1 week	0.095%	3.27	0.083%	2.77	0.437%	10.39	0.175%	5.59	0.051%	1.52
2 weeks	0.124%	2.38	0.090%	1.81	0.613%	8.68	0.270%	5.01	0.052%	1.04
4 weeks	0.226%	2.67	0.167%	2.04	0.852%	7.15	0.377%	4.46	0.125%	1.54
6 weeks	0.347%	2.84	0.285%	2.56	0.909%	6.54	0.471%	3.88	0.193%	1.76
8 weeks	0.465%	2.69	0.412%	2.57	0.992%	4.96	0.523%	3.07	0.297%	2.03
10 weeks	0.510%	2.31	0.373%	1.73	0.905%	3.68	0.406%	2.58	0.263%	1.40
12 weeks	0.599%	2.33	0.564%	2.07	0.988%	4.02	0.364%	2.05	0.416%	1.64
Form Portfolios on the Previous Week's Mroibtrd										
1 week	0.072%	1.97	0.061%	1.65	0.342%	7.13	0.117%	3.76	0.047%	1.26
2 weeks	0.150%	2.15	0.118%	1.83	0.528%	6.39	0.167%	3.32	0.097%	1.44
4 weeks	0.250%	2.25	0.190%	1.98	0.638%	5.02	0.262%	3.68	0.176%	1.61
6 weeks	0.388%	2.70	0.323%	2.76	0.605%	3.60	0.333%	3.12	0.252%	2.01
8 weeks	0.508%	2.59	0.443%	2.53	0.620%	2.95	0.330%	1.91	0.346%	1.94
10 weeks	0.515%	2.11	0.404%	1.75	0.480%	1.70	0.147%	0.86	0.351%	1.33
12 weeks	0.577%	2.07	0.516%	1.62	0.506%	1.81	0.064%	0.31	0.464%	1.34

	(b) QMP 2010-2015									
	All Stocks				Small		Medium		Big	
	Mean	t-Stat	Alpha	t-Stat	Alpha	t-Stat	Alpha	t-Stat	Alpha	t-Stat
Form Portfolios on the Previous Week's Mroibvol										
1 week	0.091%	2.81	0.072%	2.18	0.411%	9.99	0.180%	5.25	0.033%	1.02
2 weeks	0.133%	2.44	0.087%	1.72	0.607%	8.11	0.257%	4.63	0.047%	0.89
4 weeks	0.260%	2.74	0.182%	1.97	0.769%	7.30	0.366%	4.23	0.124%	1.35
6 weeks	0.391%	2.83	0.272%	2.26	0.871%	5.85	0.453%	3.83	0.214%	1.80
8 weeks	0.512%	2.72	0.341%	2.09	0.983%	5.28	0.514%	3.11	0.253%	1.61
10 weeks	0.488%	1.96	0.226%	1.02	0.893%	3.96	0.373%	2.23	0.101%	0.53
12 weeks	0.609%	2.06	0.384%	1.32	0.878%	3.60	0.331%	1.83	0.203%	0.81
Form Portfolios on the Previous Week's Mroibtrd										
1 week	0.064%	1.72	0.047%	1.28	0.299%	6.55	0.105%	3.21	0.017%	0.47
2 weeks	0.159%	2.15	0.125%	1.81	0.464%	5.75	0.185%	3.18	0.086%	1.27
4 weeks	0.311%	2.55	0.260%	2.45	0.523%	4.50	0.333%	4.04	0.156%	1.39
6 weeks	0.493%	2.98	0.431%	3.39	0.531%	3.54	0.425%	4.25	0.256%	1.84
8 weeks	0.624%	2.83	0.550%	3.01	0.623%	3.01	0.434%	2.93	0.318%	1.70
10 weeks	0.622%	2.30	0.500%	1.98	0.393%	1.31	0.272%	1.56	0.263%	0.99
12 weeks	0.697%	2.31	0.592%	1.73	0.298%	0.93	0.211%	1.02	0.302%	0.85

Table A13: Long-short strategy returns based on marketable retail order imbalances (continued)

(c) BJZZ 2016-2021

	All Stocks				Small		Medium		Big	
	Mean	*t*-Stat	Alpha	*t*-Stat	Alpha	*t*-Stat	Alpha	*t*-Stat	Alpha	*t*-Stat
Form Portfolios on the Previous Week's **Mroibvol**										
1 week	−0.008%	−0.18	−0.021%	−0.48	0.143%	3.16	0.067%	1.61	−0.042%	−0.91
2 weeks	0.063%	1.04	0.004%	0.07	0.177%	2.54	0.025%	0.41	−0.075%	−1.10
4 weeks	0.105%	0.99	−0.018%	−0.20	0.381%	2.75	−0.013%	−0.14	−0.114%	−1.01
6 weeks	0.086%	0.58	−0.126%	−1.02	0.424%	2.56	−0.128%	−1.24	−0.211%	−1.62
8 weeks	0.078%	0.42	−0.241%	−1.36	0.171%	0.73	−0.199%	−1.52	−0.260%	−1.34
10 weeks	0.021%	0.09	−0.243%	−1.00	0.097%	0.38	−0.221%	−1.41	−0.187%	−0.70
12 weeks	0.069%	0.25	−0.255%	−0.86	−0.014%	−0.04	−0.284%	−1.82	−0.214%	−0.77
Form Portfolios on the Previous Week's **Mroibtrd**										
1 week	−0.019%	−0.23	−0.030%	−0.38	0.061%	1.02	0.110%	1.84	−0.019%	−0.25
2 weeks	−0.063%	−0.42	−0.104%	−0.86	0.128%	1.11	0.103%	1.06	−0.074%	−0.65
4 weeks	0.002%	0.01	−0.053%	−0.26	0.364%	1.67	0.190%	1.45	0.011%	0.05
6 weeks	0.087%	0.20	0.052%	0.17	0.539%	1.67	0.167%	1.03	0.051%	0.17
8 weeks	0.172%	0.28	0.149%	0.38	0.306%	0.60	0.058%	0.30	−0.055%	−0.14
10 weeks	0.144%	0.19	0.211%	0.36	0.241%	0.37	−0.060%	−0.20	0.007%	0.01
12 weeks	0.188%	0.19	0.241%	0.29	0.061%	0.08	−0.191%	−0.61	0.075%	0.10

(d) QMP 2016-2021

	All Stocks				Small		Medium		Big	
	Mean	*t*-Stat	Alpha	*t*-Stat	Alpha	*t*-Stat	Alpha	*t*-Stat	Alpha	*t*-Stat
Form Portfolios on the Previous Week's **Mroibvol**										
1 week	0.002%	0.03	−0.009%	−0.17	0.295%	5.11	0.098%	1.97	−0.043%	−1.01
2 weeks	0.015%	0.21	−0.060%	−0.92	0.347%	3.44	0.116%	1.56	−0.100%	−1.32
4 weeks	0.054%	0.40	−0.145%	−1.18	0.507%	3.06	0.074%	0.70	−0.161%	−1.15
6 weeks	0.088%	0.41	−0.254%	−1.52	0.644%	3.51	−0.020%	−0.13	−0.336%	−2.08
8 weeks	0.027%	0.10	−0.353%	−1.57	0.526%	2.62	−0.222%	−1.44	−0.420%	−1.97
10 weeks	0.005%	0.02	−0.361%	−1.28	0.293%	1.63	−0.388%	−2.08	−0.415%	−1.60
12 weeks	0.069%	0.18	−0.442%	−1.23	0.083%	0.49	−0.524%	−2.36	−0.458%	−1.35
Form Portfolios on the Previous Week's **Mroibtrd**										
1 week	0.028%	0.29	−0.026%	−0.32	0.120%	1.61	0.060%	1.03	−0.053%	−0.71
2 weeks	0.052%	0.32	−0.050%	−0.38	0.128%	1.01	0.029%	0.30	−0.094%	−0.79
4 weeks	0.211%	0.71	−0.024%	−0.11	0.162%	0.70	0.112%	0.72	−0.093%	−0.50
6 weeks	0.416%	0.90	−0.004%	−0.01	0.090%	0.28	0.158%	0.68	−0.100%	−0.38
8 weeks	0.481%	0.75	−0.005%	−0.01	−0.127%	−0.27	0.024%	0.08	−0.240%	−0.68
10 weeks	0.425%	0.54	−0.137%	−0.23	−0.510%	−0.84	−0.225%	−0.57	−0.393%	−0.80
12 weeks	0.553%	0.55	−0.187%	−0.23	−0.735%	−0.94	−0.490%	−0.99	−0.473%	−0.71

Table A14: Predictability decomposition

(a) BJZZ 2010-2015

First Stage of Projecting Order Imbalance on Persistence and Past Returns

	Mroivol$(w-1)$ Bid-Ask Return		Mroivol$(w-1)$ CRSP Return		Mroitrd$(w-1)$ Bid-Ask Return		Mroitrd$(w-1)$ CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	−0.1351	−23.28	−0.1350	−23.27	−0.1127	−12.63	−0.1126	−12.62
Mroivol$(w-2)$	0.2014	78.12	0.2015	78.13	0.2743	97.13	0.2744	97.13
Ret$(w-2)$	−0.8235	−36.14	−0.8250	−36.49	−0.7798	−31.83	−0.7833	−32.29
Ret$(m-1)$	−0.1228	−9.91	−0.1228	−9.90	−0.0857	−6.75	−0.0856	−6.74
Ret$(m-7, m-2)$	−0.0052	−1.12	−0.0053	−1.13	0.0143	2.62	0.0143	2.61
Adj.R^2	4.69%		4.69%		8.20%		8.21%	

Second-Stage Decomposition of Order Imbalance's Predictive Power

	Mroivol(w) Bid-Ask Return		Mroivol(w) CRSP Return		Mroitrd(w) Bid-Ask Return		Mroitrd(w) CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	0.0032	2.04	0.0035	2.19	0.0032	2.00	0.0034	2.15
PERS	0.0030	8.14	0.0028	6.75	0.0019	7.35	0.0018	6.11
CONT	−0.0114	−0.42	0.0056	0.43	−0.0227	−0.82	0.0305	1.04
OTHER	0.0008	13.02	0.0008	12.72	0.0006	9.73	0.0006	9.55
Ret$(w-1)$	−0.0167	−5.20	−0.0195	−6.03	−0.0168	−5.24	−0.0196	−6.07
Ret$(m-1)$	0.0000	0.00	−0.0002	−0.12	−0.0002	−0.08	−0.0004	−0.20
Ret$(m-7, m-2)$	0.0007	1.07	0.0007	1.06	0.0007	1.04	0.0007	1.03
Lmto	0.0000	−2.71	0.0000	−2.82	0.0000	−2.67	0.0000	−2.78
Lvol	−0.0152	−0.93	−0.0127	−0.79	−0.0146	−0.89	−0.0121	−0.75
Size	0.0000	0.01	0.0000	−0.22	0.0000	−0.03	0.0000	−0.27
Lbm	0.0002	1.14	0.0002	1.10	0.0002	1.09	0.0002	1.05
Adj.R^2	4.12%		4.10%		4.11%		4.10%	
	IQR	R. Diff	IQR	R. Diff	IQR	R. Diff	IQR	R. Diff
PERS	0.2319	0.0692%	0.2319	0.0648%	0.3305	0.0636%	0.3305	0.0588%
CONT	0.0358	−0.0408%	0.0369	0.0207%	0.0328	−0.0743%	0.0339	0.1036%
OTHER	1.1260	0.0902%	1.1261	0.0885%	1.1333	0.0734%	1.1333	0.0721%

Table A14: Predictability decomposition (continued)

(b) QMP 2010-2015

First Stage of Projecting Order Imbalance on Persistence and Past Returns

	Mroivol$(w-1)$ Bid-Ask Return		Mroivol$(w-1)$ CRSP Return		Mroitrd$(w-1)$ Bid-Ask Return		Mroitrd$(w-1)$ CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	−0.1507	−21.98	−0.1505	−21.97	−0.1094	−13.80	−0.1092	−13.79
Mroibvol$(w-2)$	0.2417	91.63	0.2418	91.64	0.2945	98.54	0.2946	98.53
Ret$(w-2)$	−0.9146	−39.00	−0.9175	−39.46	−0.8332	−35.86	−0.8379	−36.31
Ret$(m-1)$	−0.1056	−8.48	−0.1055	−8.47	−0.0459	−3.87	−0.0458	−3.86
Ret$(m-7, m-2)$	0.0095	1.92	0.0095	1.90	0.0344	6.34	0.0343	6.33
Adj.R^2	6.52%		6.52%		9.32%		9.33%	

Second-Stage Decomposition of Order Imbalance's Predictive Power

	Mroivol(w) Bid-Ask Return		Mroivol(w) CRSP Return		Mroitrd(w) Bid-Ask Return		Mroitrd(w) CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	0.0034	2.19	0.0036	2.32	0.0032	2.07	0.0034	2.20
PERS	0.0026	8.32	0.0024	6.37	0.0018	6.89	0.0016	5.36
CONT	0.0057	0.69	−0.0133	−1.17	−0.0105	−0.27	0.0820	1.43
OTHER	0.0009	13.28	0.0008	12.76	0.0007	10.47	0.0007	9.98
Ret$(w-1)$	−0.0173	−5.38	−0.0201	−6.22	−0.0174	−5.41	−0.0202	−6.25
Ret$(m-1)$	0.0000	−0.01	−0.0002	−0.13	−0.0002	−0.13	−0.0005	−0.25
Ret$(m-7, m-2)$	0.0006	0.93	0.0006	0.91	0.0006	0.88	0.0006	0.86
Lmto	0.0000	−2.82	0.0000	−2.96	0.0000	−2.73	0.0000	−2.86
Lvol	−0.0150	−0.91	−0.0120	−0.74	−0.0138	−0.84	−0.0107	−0.66
Size	0.0000	−0.09	−0.0001	−0.34	0.0000	−0.08	0.0000	−0.32
Lbm	0.0002	1.08	0.0002	1.05	0.0001	0.99	0.0001	0.96
Adj.R^2	4.11%		4.09%		4.09%		4.08%	
	IQR	R. Diff	IQR	R. Diff	IQR	R. Diff	IQR	R. Diff
PERS	0.2836	0.0745%	0.2837	0.0687%	0.3466	0.0635%	0.3467	0.0569%
CONT	0.0401	0.0229%	0.0415	−0.0553%	0.0358	−0.0375%	0.0372	0.3046%
OTHER	1.1190	0.0953%	1.1192	0.0919%	1.0977	0.0788%	1.0976	0.0752%

Table A14: Predictability decomposition (continued)

(c) BJZZ 2016-2021

First Stage of Projecting Order Imbalance on Persistence and Past Returns

	Mroivol$(w-1)$ Bid-Ask Return		Mroivol$(w-1)$ CRSP Return		Mroitrd$(w-1)$ Bid-Ask Return		Mroitrd$(w-1)$ CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	−0.0804	−22.69	−0.0803	−22.70	−0.0209	−4.70	−0.0208	−4.68
Mroibvol$(w-2)$	0.1003	60.92	0.1003	60.92	0.2281	89.64	0.2281	89.63
Ret$(w-2)$	−0.3506	−26.56	−0.3483	−26.59	−0.4036	−29.31	−0.4016	−29.34
Ret$(m-1)$	−0.0697	−10.75	−0.0698	−10.76	−0.0676	−10.67	−0.0677	−10.68
Ret$(m-7, m-2)$	−0.0130	−4.04	−0.0130	−4.05	−0.0031	−1.09	−0.0031	−1.11
Adj.R^2	1.20%		1.20%		5.70%		5.70%	

Second-Stage Decomposition of Order Imbalance's Predictive Power

	Mroivol(w) Bid-Ask Return		Mroivol(w) CRSP Return		Mroitrd(w) Bid-Ask Return		Mroitrd(w) CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	0.0043	2.29	0.0046	2.45	0.0043	2.29	0.0046	2.45
PERS	0.0026	1.80	0.0024	1.58	0.0022	3.23	0.0022	3.19
CONT	−0.0885	−1.01	−0.1385	−0.69	−0.0074	−0.13	0.5561	1.46
OTHER	0.0006	7.68	0.0006	7.40	0.0006	4.89	0.0006	4.57
Ret$(w-1)$	−0.0128	−3.40	−0.0161	−4.32	−0.0128	−3.41	−0.0162	−4.33
Ret$(m-1)$	−0.0019	−1.01	−0.0020	−1.05	−0.0019	−0.98	−0.0019	−1.02
Ret$(m-7, m-2)$	−0.0002	−0.29	−0.0002	−0.33	−0.0002	−0.31	−0.0002	−0.35
Lmto	0.0000	−0.94	0.0000	−1.14	0.0000	−0.94	0.0000	−1.14
Lvol	0.0121	0.72	0.0170	1.02	0.0118	0.70	0.0167	1.00
Size	−0.0002	−1.25	−0.0003	−1.50	−0.0002	−1.29	−0.0003	−1.55
Lbm	0.0001	0.59	0.0001	0.63	0.0001	0.60	0.0001	0.63
Adj.R^2	4.70%		4.68%		4.74%		4.71%	
	IQR	R. Diff	IQR	R. Diff	IQR	R. Diff	IQR	R. Diff
PERS	0.0913	0.0241%	0.0913	0.0221%	0.1810	0.0402%	0.1810	0.0400%
CONT	0.0164	−0.1453%	0.0165	−0.2282%	0.0196	−0.0146%	0.0198	1.1010%
OTHER	0.9640	0.0580%	0.9640	0.0566%	0.7614	0.0480%	0.7613	0.0451%

Table A14: Predictability decomposition (continued)

(d) QMP 2016-2021

First Stage of Projecting Order Imbalance on Persistence and Past Returns

	Mroivol$(w-1)$ Bid-Ask Return		Mroivol$(w-1)$ CRSP Return		Mroitrd$(w-1)$ Bid-Ask Return		Mroitrd$(w-1)$ CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	−0.1436	−24.95	−0.1435	−24.94	−0.0268	−3.81	−0.0266	−3.79
Mroibvol$(w-2)$	0.1794	86.84	0.1794	86.84	0.3061	138.00	0.3062	137.97
Ret$(w-2)$	−0.5597	−31.36	−0.5601	−31.70	−0.5262	−32.16	−0.5270	−32.58
Ret$(m-1)$	−0.0888	−10.32	−0.0889	−10.31	−0.0404	−5.49	−0.0405	−5.48
Ret$(m-7,m-2)$	−0.0101	−2.43	−0.0102	−2.44	0.0184	5.68	0.0183	5.67
Adj.R^2	3.64%		3.64%		9.92%		9.92%	

Second-Stage Decomposition of Order Imbalance's Predictive Power

	Mroivol(w) Bid-Ask Return		Mroivol(w) CRSP Return		Mroitrd(w) Bid-Ask Return		Mroitrd(w) CRSP Return	
	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Intercept	0.0046	2.45	0.0049	2.61	0.0043	2.29	0.0046	2.44
PERS	0.0029	4.64	0.0029	4.56	0.0013	2.45	0.0012	2.38
CONT	0.0324	0.78	0.0234	0.56	−0.0271	−0.72	0.0438	0.95
OTHER	0.0009	9.94	0.0009	9.33	0.0007	5.08	0.0006	4.47
Ret$(w-1)$	−0.0130	−3.46	−0.0165	−4.40	−0.0130	−3.46	−0.0164	−4.40
Ret$(m-1)$	−0.0018	−0.94	−0.0019	−0.98	−0.0019	−0.99	−0.0020	−1.03
Ret$(m-7,m-2)$	−0.0002	−0.33	−0.0002	−0.37	−0.0002	−0.39	−0.0003	−0.42
Lmto	0.0000	−0.98	0.0000	−1.19	0.0000	−0.97	0.0000	−1.18
Lvol	0.0106	0.63	0.0156	0.93	0.0121	0.72	0.0171	1.03
Size	−0.0002	−1.33	−0.0003	−1.59	−0.0002	−1.25	−0.0003	−1.50
Lbm	0.0001	0.70	0.0001	0.73	0.0001	0.66	0.0001	0.69
Adj.R^2	4.73%		4.71%		4.76%		4.74%	
	IQR	R. Diff	IQR	R. Diff	IQR	R. Diff	IQR	R. Diff
PERS	0.1845	0.0534%	0.1845	0.0529%	0.2970	0.0371%	0.2971	0.0362%
CONT	0.0266	0.0862%	0.0271	0.0635%	0.0257	−0.0697%	0.0261	0.1144%
OTHER	1.0331	0.0941%	1.0332	0.0901%	0.8861	0.0579%	0.8861	0.0517%

Table A15: Marketable retail order imbalance and contemporaneous returns

(a) BJZZ 2010-2015

	Intense Selling		Selling		Buying		Intense Buying	
	Mean	t-Stat	Mean	t-Stat	Mean	t-Stat	Mean	t-Stat
Cumulative Market-Adjusted Return								
$k=-20$	0.0074**	7.33	0.0066**	8.18	−0.0127**	−15.39	−0.0166**	−19.30
$k=-15$	0.0071**	9.34	0.0064**	10.94	−0.0108**	−17.91	−0.0137**	−21.05
$k=-10$	0.0059**	10.89	0.0055**	13.04	−0.0083**	−19.19	−0.0103**	−20.67
$k=-5$	0.0039**	12.56	0.0035**	15.59	−0.0051**	−19.37	−0.0064**	−20.74
$k=0$	−0.0026**	−6.49	−0.0021**	−6.30	0.0016**	4.82	0.0021**	5.44
$k=5$	−0.0017**	−6.58	−0.0012**	−5.96	0.0018**	9.12	0.0026**	10.34
$k=10$	−0.0028**	−6.04	−0.0021**	−6.46	0.0027**	7.70	0.0039**	9.09
$k=15$	−0.0039**	−6.10	−0.0028**	−5.98	0.0032**	6.72	0.0049**	8.36
$k=20$	−0.0047**	−5.38	−0.0036**	−5.28	0.0034**	4.82	0.0052**	6.27
Weekly Market-Adjusted Return								
$k=-20$	0.0007*	2.48	0.0006*	2.44	−0.0018**	−8.18	−0.0028**	−10.48
$k=-15$	0.0014**	4.69	0.0012**	6.01	−0.0024**	−10.00	−0.0033**	−12.31
$k=-10$	0.0021**	6.47	0.0020**	7.83	−0.0031**	−13.25	−0.0039**	−13.42
$k=-5$	0.0039**	12.56	0.0035**	15.59	−0.0051**	−19.37	−0.0064**	−20.74
$k=0$	−0.0026**	−6.49	−0.0021**	−6.30	0.0016**	4.82	0.0021**	5.44
$k=5$	−0.0017**	−6.58	−0.0012**	−5.96	0.0018**	9.12	0.0026**	10.34
$k=10$	−0.0011**	−3.97	−0.0009**	−4.91	0.0009**	3.91	0.0013**	4.83
$k=15$	−0.0010**	−3.85	−0.0007**	−3.64	0.0007**	3.56	0.0012**	4.49
$k=20$	−0.0007*	−2.48	−0.0005**	−2.72	0.0004	1.84	0.0004	1.71

(b) QMP 2010-2015

	Intense Selling		Selling		Buying		Intense Buying	
	Mean	t-Stat	Mean	t-Stat	Mean	t-Stat	Mean	t-Stat
Cumulative Market-Adjusted Return								
$k=-20$	0.0075**	7.16	0.0067**	8.17	−0.0120**	−15.43	−0.0154**	−18.32
$k=-15$	0.0074**	9.49	0.0066**	11.03	−0.0103**	−17.73	−0.0130**	−20.85
$k=-10$	0.0061**	10.90	0.0056**	13.01	−0.0080**	−18.83	−0.0101**	−21.55
$k=-5$	0.0040**	11.46	0.0035**	13.44	−0.0049**	−18.81	−0.0061**	−21.04
$k=0$	−0.0040**	−8.84	−0.0037**	−10.94	0.0041**	11.72	0.0048**	10.84
$k=5$	−0.0019**	−7.31	−0.0015**	−7.15	0.0019**	9.87	0.0027**	10.43
$k=10$	−0.0033**	−7.12	−0.0023**	−6.54	0.0029**	8.35	0.0041**	9.12
$k=15$	−0.0047**	−7.45	−0.0031**	−6.17	0.0034**	7.11	0.0048**	8.13
$k=20$	−0.0052**	−6.00	−0.0037**	−5.20	0.0034**	5.03	0.0051**	6.36
Weekly Market−Adjusted Return								
$k=-20$	0.0004	1.40	0.0006*	2.48	−0.0016**	−7.54	−0.0023**	−8.99
$k=-15$	0.0014**	4.66	0.0012**	5.45	−0.0022**	−10.01	−0.0030**	−11.83
$k=-10$	0.0022**	7.56	0.0022**	9.43	−0.0032**	−13.18	−0.0040**	−14.96
$k=-5$	0.0040**	11.46	0.0035**	13.44	−0.0049**	−18.81	−0.0061**	−21.04
$k=0$	−0.0040**	−8.84	−0.0037**	−10.94	0.0041**	11.72	0.0048**	10.84
$k=5$	−0.0019**	−7.31	−0.0015**	−7.15	0.0019**	9.87	0.0027**	10.43
$k=10$	−0.0013**	−4.62	−0.0008**	−3.98	0.0010**	4.84	0.0014**	4.97
$k=15$	−0.0012**	−4.54	−0.0008**	−3.82	0.0006**	3.36	0.0008**	2.93
$k=20$	−0.0004	−1.30	−0.0003	−1.73	0.0002	1.25	0.0004	1.58

Table A15: Marketable retail order imbalance and contemporaneous returns (continued)

	(c) BJZZ 2016-2021							
	Intense Selling		Selling		Buying		Intense Buying	
	Mean	t-Stat	Mean	t-Stat	Mean	t-Stat	Mean	t-Stat
Cumulative Market-Adjusted Return								
$k = -20$	−0.0025*	−2.06	−0.0008	−1.04	−0.0142**	−14.76	−0.0179**	−12.93
$k = -15$	−0.0009	−0.90	0.0002	0.36	−0.0117**	−16.10	−0.0148**	−13.69
$k = -10$	0.0005	0.64	0.0008	1.60	−0.0091**	−17.21	−0.0114**	−14.88
$k = -5$	0.0009	1.80	0.0009**	2.89	−0.0059**	−17.72	−0.0071**	−16.25
$k = 0$	−0.0054**	−9.81	−0.0043**	−9.94	0.0004	1.16	−0.0003	−0.60
$k = 5$	−0.0013**	−3.16	−0.0009**	−3.88	0.0007*	2.46	0.0007	1.84
$k = 10$	−0.0021**	−2.85	−0.0013**	−3.40	0.0009	1.94	0.0014*	2.17
$k = 15$	−0.0032**	−3.34	−0.0021**	−3.61	0.0014*	2.28	0.0019*	2.06
$k = 20$	−0.0038**	−3.06	−0.0024**	−3.06	0.0018*	2.41	0.0020	1.90
Weekly Market−Adjusted Return								
$k = -20$	−0.0012**	−3.28	−0.0008**	−2.98	−0.0023**	−7.63	−0.0029**	−6.88
$k = -15$	−0.0013**	−3.34	−0.0005*	−2.05	−0.0027**	−9.11	−0.0033**	−8.09
$k = -10$	−0.0004	−1.04	−0.0001	−0.46	−0.0032**	−11.20	−0.0043**	−10.41
$k = -5$	0.0009	1.80	0.0009**	2.89	−0.0059**	−17.72	−0.0071**	−16.25
$k = 0$	−0.0054**	−9.81	−0.0043**	−9.94	0.0004	1.16	−0.0003	−0.60
$k = 5$	−0.0013**	−3.16	−0.0009**	−3.88	0.0007*	2.46	0.0007	1.84
$k = 10$	−0.0008	−1.83	−0.0004	−1.68	0.0002	0.74	0.0007	1.71
$k = 15$	−0.0011**	−2.97	−0.0008**	−2.88	0.0005	1.69	0.0005	1.35
$k = 20$	−0.0007	−1.56	−0.0004	−1.35	0.0003	0.91	0.0000	0.07

	(d) QMP 2016-2021							
	Intense Selling		Selling		Buying		Intense Buying	
	Mean	t-Stat	Mean	t-Stat	Mean	t-Stat	Mean	t-Stat
Cumulative Market-Adjusted Return								
$k = -20$	0.0012	0.84	0.0026*	2.53	−0.0161**	−15.42	−0.0219**	−14.46
$k = -15$	0.0020	1.65	0.0031**	3.70	−0.0137**	−15.90	−0.0185**	−15.33
$k = -10$	0.0025**	2.62	0.0031**	4.56	−0.0110**	−15.94	−0.0145**	−15.72
$k = -5$	0.0022**	4.07	0.0024**	5.92	−0.0069**	−15.31	−0.0087**	−15.37
$k = 0$	−0.0067**	−11.19	−0.0060**	−13.08	0.0032**	8.85	0.0028**	5.41
$k = 5$	−0.0020**	−4.46	−0.0013**	−4.69	0.0013**	4.47	0.0020**	4.82
$k = 10$	−0.0032**	−4.29	−0.0020**	−4.05	0.0016**	3.44	0.0023**	3.76
$k = 15$	−0.0046**	−4.51	−0.0030**	−4.09	0.0024**	3.89	0.0032**	4.03
$k = 20$	−0.0054**	−3.96	−0.0039**	−4.13	0.0027**	3.73	0.0033**	3.51
Weekly Market-Adjusted Return								
$k = -20$	−0.0006	−1.28	−0.0004	−1.16	−0.0024**	−8.43	−0.0034**	−7.93
$k = -15$	−0.0002	−0.56	0.0002	0.87	−0.0029**	−9.37	−0.0041**	−9.36
$k = -10$	0.0003	0.65	0.0007*	2.10	−0.0043**	−12.72	−0.0059**	−12.50
$k = -5$	0.0022**	4.07	0.0024**	5.92	−0.0069**	−15.31	−0.0087**	−15.37
$k = 0$	−0.0067**	−11.19	−0.0060**	−13.08	0.0032**	8.85	0.0028**	5.41
$k = 5$	−0.0020**	−4.46	−0.0013**	−4.69	0.0013**	4.47	0.0020**	4.82
$k = 10$	−0.0013**	−2.87	−0.0007*	−2.20	0.0003	1.11	0.0004	1.21
$k = 15$	−0.0015**	−3.21	−0.0009**	−3.02	0.0007**	2.65	0.0009*	2.26
$k = 20$	−0.0007	−1.47	−0.0009**	−2.65	0.0003	1.15	0.0001	0.20

References

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