

Rank Effect and Individual Investors' Buying Decisions

March 29, 2020

1 Introduction

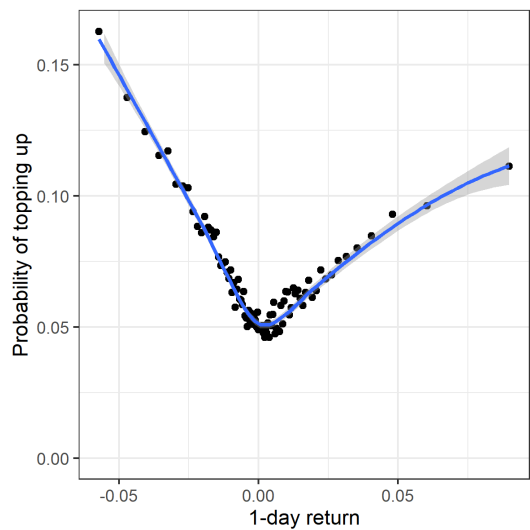


Figure 1. Probability of topping up on each percentile of 1-day return
Long Description

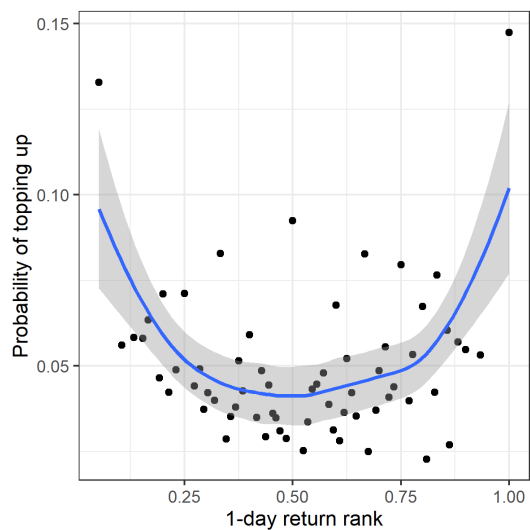


Figure 2. Probability of topping up on rank 1-day return

2 Summary statistics

2.1 Account level information

Table 1. Summary statistics at the account level: mean/median and (standard deviation)

Variable	N	Statistic
Age	6,647	48.227/52.000 (14.947)
Top up rate	6,654	0.122/0.096 (0.100)
% Female		17.9

2.2 Holding level information

Table 2. Summary statistics at the holding level

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
1-day return	1,111,928	0.0004	0.039	−0.882	−0.009	0.000	0.009	7.500
rank 1-day return	1,111,928	0.5333	0.255	0.000	0.346	0.500	0.714	1.000
3-day return	1,111,928	0.001	0.069	−0.882	−0.018	0.000	0.016	7.000
rank 3-day return	1,111,928	0.531	0.266	0.000	0.333	0.500	0.724	1.000
1-week return	1,111,928	0.002	0.090	−0.999	−0.024	0.000	0.022	8.062
rank 1-week return	1,111,928	0.529	0.275	0.000	0.300	0.500	0.700	1.000
number of holdings	1,111,928	16.021	15.644	3	7	11	20	128
portfolio return	1,111,928	0.012	0.146	−0.988	−0.053	−0.00001	0.060	6.066

Daniel Stewart Securities increased from £0.00200 to £0.01700 (increased by 750%) from 30/March/2015 to 31/March/2015.

3 Top up decisions

Table 3

	<i>Dependent variable:</i>			
	Top Up			
	(1)	(2)	(3)	(4)
1-day rank	−0.274*** (0.011)	−0.071*** (0.010)	−0.079*** (0.010)	
1-day rank ²	0.286*** (0.010)	0.091*** (0.009)	0.085*** (0.009)	
1-day top rank				0.029*** (0.003)
1-day bottom rank				0.022*** (0.003)
Portfolio return			0.031*** (0.008)	0.029*** (0.007)
Return since purchase			−0.059*** (0.013)	−0.059*** (0.013)
Return since purchase rank			0.038*** (0.005)	0.039*** (0.004)
$\sqrt{Holding\ days}$			−0.007*** (0.0002)	−0.007*** (0.0002)
Return since purchase × $\sqrt{Holding\ days}$			0.002*** (0.001)	0.002*** (0.001)
Constant	0.116*** (0.003)			
Account FE	No	Yes	Yes	Yes
Stock×Date FE	No	Yes	Yes	Yes
Return decile FE	No	Yes	Yes	Yes
Observations	1,111,928	1,111,928	1,111,928	1,111,928
R ²	0.009	0.406	0.419	0.420

Note:

*p<0.05; **p<0.01; ***p<0.005

Table 4

	<i>Dependent variable:</i>			
	Top Up			
	N=3		N=5	
	(1)	(2)	(1)	(2)
N-day rank	-0.059*** (0.010)		-0.059*** (0.010)	
N-day rank ²	0.068*** (0.009)		0.067*** (0.008)	
N-day top rank		0.026*** (0.003)		0.025*** (0.003)
N-day bottom rank		0.019*** (0.003)		0.021*** (0.003)
Controls	Yes	Yes	Yes	Yes
Account FE	Yes	Yes	Yes	Yes
Stock×Date FE	Yes	Yes	Yes	Yes
Return decile FE	Yes	Yes	Yes	Yes
Observations	1,111,928	1,111,928	1,111,928	1,111,928
R ²	0.419	0.419	0.419	0.419
<i>Note:</i>		*p<0.05; **p<0.01; ***p<0.005		

Table 5. Subsample analysis: break by median house price

	<i>Dependent variable:</i>											
	Top Up											
	house price	weekly income	starting value	median income	trading frequency	login frequency						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1-day rank	-0.087*** (0.014)	-0.087*** (0.014)	-0.075*** (0.014)	-0.087*** (0.014)	-0.087*** (0.014)	-0.090*** (0.016)	-0.090*** (0.016)	-0.072*** (0.018)	-0.072*** (0.018)	-0.073*** (0.015)	-0.073*** (0.015)	-0.073*** (0.015)
1-day rank ²	0.096*** (0.013)	0.096*** (0.013)	0.083*** (0.012)	0.083*** (0.012)	0.088*** (0.012)	0.102*** (0.013)	0.102*** (0.013)	0.078*** (0.017)	0.078*** (0.017)	0.083*** (0.014)	0.083*** (0.014)	0.083*** (0.014)
1-day top rank		0.032*** (0.004)		0.029*** (0.004)		0.026*** (0.004)	0.032*** (0.004)	0.022*** (0.005)	0.022*** (0.005)	0.022*** (0.005)	0.028*** (0.005)	0.028*** (0.005)
1-day bottom rank		0.021*** (0.005)		0.021*** (0.005)		0.026*** (0.005)	0.022*** (0.005)	0.021*** (0.006)	0.021*** (0.006)	0.017*** (0.005)	0.017*** (0.005)	0.017*** (0.005)
Higher group dummy × 1-day rank	0.001 (0.019)		-0.012 (0.019)		0.014 (0.018)		0.018 (0.019)		-0.009 (0.020)		-0.008 (0.018)	
Higher group dummy × 1-day rank ²	-0.010 (0.018)		0.005 (0.017)		-0.006 (0.017)		-0.027 (0.017)		0.009 (0.019)		0.004 (0.017)	
Higher group dummy × 1-day top rank		-0.005 (0.004)		0.0002 (0.005)		0.006 (0.005)		-0.006 (0.005)		0.009 (0.006)		0.002 (0.005)
Higher group dummy × 1-day bottom rank		0.005 (0.007)		0.003 (0.007)		-0.007 (0.006)		0.001 (0.006)		0.002 (0.007)		0.008 (0.007)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Account FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stock*Date FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Return decile FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,021,879	1,021,879	1,079,745	1,079,745	1,111,928	1,111,928	1,111,928	1,111,928	1,111,928	1,111,928	1,111,928	1,111,928
R ²	0.433	0.433	0.423	0.423	0.419	0.419	0.419	0.419	0.419	0.419	0.419	0.419

Note:

*p<0.05; **p<0.01; ***p<0.005

Table 6. Subsample analysis: break by median house price

	<i>Dependent variable:</i>											
	Top Up											
	house price	weekly income	starting value	median income	trading frequency	login frequency						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
3-day rank	-0.066*** (0.013)		-0.056*** (0.014)		-0.067*** (0.014)		-0.075*** (0.015)		-0.048*** (0.018)		-0.044*** (0.015)	
3-day rank ²	0.079*** (0.012)		0.066*** (0.012)		0.070*** (0.012)		0.089*** (0.013)		0.07849*** (0.017)		0.054*** (0.014)	
3-day top rank		0.030*** (0.004)		0.026*** (0.004)		0.021*** (0.004)		0.028*** (0.004)		0.011* (0.005)		0.023*** (0.004)
3-day bottom rank		0.017*** (0.005)		0.018*** (0.005)		0.022*** (0.005)		0.019*** (0.005)		0.019*** (0.006)		0.014*** (0.005)
Higher group dummy × 3-day rank	-0.001 (0.019)		-0.009 (0.018)		0.015 (0.018)		0.025 (0.018)		-0.012 (0.021)		-0.021 (0.019)	
Higher group dummy × 3-day rank ²	-0.008 (0.018)		0.006 (0.017)		-0.004 (0.017)		-0.033* (0.016)		0.023 (0.019)		0.020 (0.017)	
Higher group dummy × 3-day top rank		-0.006 (0.005)		-0.001 (0.005)		0.009 (0.005)		-0.003 (0.005)		0.019*** (0.006)		0.004 (0.005)
Higher group dummy × 3-day bottom rank		0.005 (0.006)		0.003 (0.006)		-0.007 (0.006)		0.0000 (0.006)		-0.001 (0.007)		0.008 (0.006)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Account FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stock*Date FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Return decile FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,021,879	1,021,879	1,079,745	1,079,745	1,111,928	1,111,928	1,111,928	1,111,928	1,111,928	1,111,928	1,111,928	1,111,928
R ²	0.433	0.433	0.423	0.423	0.419	0.419	0.419	0.419	0.419	0.419	0.419	0.419

Note:

* p<0.05; ** p<0.01; *** p<0.005

Table 7. Subsample analysis: break by median house price

	<i>Dependent variable:</i>											
	Top Up											
	house price	weekly income	starting value	median income	trading frequency	login frequency	house price	weekly income	starting value	median income	trading frequency	login frequency
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
5-day rank	-0.069*** (0.013)		-0.060*** (0.013)		-0.064*** (0.013)		-0.074*** (0.014)		-0.058*** (0.018)		-0.054*** (0.015)	
5-day rank ²	0.080*** (0.012)		0.068*** (0.012)		0.066*** (0.011)		0.085*** (0.012)		0.053*** (0.016)		0.060*** (0.013)	
5-day top rank		0.031*** (0.003)		0.027*** (0.003)		0.020*** (0.003)		0.027*** (0.004)		0.009*** (0.005)		0.022*** (0.004)
5-day bottom rank		0.019*** (0.005)		0.020*** (0.005)		0.022*** (0.005)		0.020*** (0.005)		0.023*** (0.006)		0.020*** (0.005)
Higher group dummy × 1-day rank	0.005 (0.018)		0.0003 (0.018)		0.008 (0.018)		0.023 (0.018)		0.0003 (0.020)		-0.007 (0.017)	
Higher group dummy × 5-day rank ²	-0.015 (0.017)		-0.003 (0.017)		0.001 (0.017)		-0.027 (0.016)		0.015 (0.019)		0.009 (0.016)	
Higher group dummy × 5-day top rank		-0.009 (0.005)		-0.004 (0.005)		0.009 (0.005)		-0.002 (0.005)		0.019*** (0.006)		0.004 (0.005)
Higher group dummy × 5-day bottom rank		0.006 (0.006)		0.002 (0.006)		-0.002 (0.006)		0.001 (0.006)		-0.004 (0.007)		0.001 (0.006)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Account FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stock*Date FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Return decile FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,021,879	1,021,879	1,079,745	1,079,745	1,111,928	1,111,928	1,111,928	1,111,928	1,111,928	1,111,928	1,111,928	1,111,928
R ²	0.433	0.433	0.423	0.423	0.419	0.419	0.419	0.419	0.419	0.419	0.419	0.419

Note:

*p<0.05; **p<0.01; ***p<0.005

4 Extention: first buy

Table 8. Result with 30-day assumption

	<i>Dependent variable:</i>					
	First Buy					
	N=1		N=3		N=5	
	(1)	(2)	(1)	(2)	(1)	(2)
N-day rank	−0.190*** (0.036)		−0.154*** (0.034)		−0.114*** (0.034)	
N-day rank ²	0.218*** (0.032)		0.190*** (0.031)		0.159*** (0.031)	
N-day top rank		0.066*** (0.010)		0.060*** (0.009)		0.054*** (0.034)
N-day bottom rank		0.055*** (0.010)		0.037*** (0.010)		0.026** (0.010)
portfolio_return	0.049 (0.039)	0.030 (0.037)	0.053 (0.039)	0.031 (0.037)	0.056 (0.039)	0.032 (0.038)
Account FE	Yes	Yes	Yes	Yes	Yes	Yes
Stock*Date FE	Yes	Yes	Yes	Yes	Yes	Yes
Return decile FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	261,708	261,708	261,708	261,708	261,708	261,708
Adjusted R ²	0.320	0.320	0.320	0.320	0.320	0.320

Note:

*p<0.05; **p<0.01; ***p<0.005

Table 9. Result with 60-day assumption

	<i>Dependent variable:</i>					
	First Buy					
	N=1		N=3		N=5	
	(1)	(2)	(1)	(2)	(1)	(2)
N-day rank	−0.188*** (0.026)		−0.142*** (0.025)		−0.111*** (0.023)	
N-day rank ²	0.203*** (0.024)		0.171*** (0.022)		0.143*** (0.021)	
N-day top rank		0.058*** (0.007)		0.055*** (0.006)		0.048*** (0.006)
N-day bottom rank		0.058*** (0.008)		0.037*** (0.007)		0.028*** (0.007)
portfolio_return	0.024 (0.025)	0.011 (0.024)	0.033 (0.025)	0.016 (0.024)	0.033 (0.025)	0.015 (0.024)
Account FE	Yes	Yes	Yes	Yes	Yes	Yes
Stock*Date FE	Yes	Yes	Yes	Yes	Yes	Yes
Return decile FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	373,594	373,594	373,594	373,594	373,594	373,594
Adjusted R ²	0.299	0.300	0.299	0.299	0.299	0.299

Note:

*p<0.05; **p<0.01; ***p<0.005

Table 10. Result with 90-day assumption

	<i>Dependent variable:</i>					
	First Buy					
	N=1		N=3		N=5	
	(1)	(2)	(1)	(2)	(1)	(2)
N-day rank	−0.178*** (0.021)		−0.141*** (0.020)		−0.107*** (0.019)	
N-day rank ²	0.189*** (0.019)		0.165*** (0.018)		0.135*** (0.017)	
N-day top rank		0.052*** (0.006)		0.053*** (0.005)		0.045*** (0.005)
N-day bottom rank		0.057*** (0.006)		0.037*** (0.006)		0.028*** (0.006)
portfolio_return	0.019 (0.019)	0.007 (0.018)	0.027 (0.019)	0.013 (0.018)	0.027 (0.019)	0.011 (0.018)
Account FE	Yes	Yes	Yes	Yes	Yes	Yes
Stock*Date FE	Yes	Yes	Yes	Yes	Yes	Yes
Return decile FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	467,781	467,781	467,781	467,781	467,781	467,781
Adjusted R ²	0.280	0.280	0.280	0.280	0.279	0.280

Note:

*p<0.05; **p<0.01; ***p<0.005

5 Conclusion

Here is a conclusion (Hartzmark, 2015).

References

Hartzmark, S. M. (2015). “The worst, the best, ignoring all the rest: The rank effect and trading behavior”.
In: *The Review of Financial Studies* 28.4, pp. 1024–1059.