

Is High Short Interest a Signal to Buy or to Sell?

Issue

Short interest for a stock is the total number of shares that have been sold short but not yet been covered or closed out. Investors typically pay little attention to short interest, but recent extreme volatility in stocks like GameStop has raised awareness of the investment opportunities and risks of heavily shorted stocks.

Since shorting by market making and index tracking strategies reflects a non-directional viewpoint on any given stock's prospects, varying short interest levels arguably reflect the opinions of informed investors (e.g. hedge funds) actively hedging risk exposures or betting on outright price declines. Therefore, one might assume that a high short interest levels or large increases indicate a bearish outlook for a stock's prospects. On the other hand, even a glimmer of positive news about heavily-shortened companies could have disproportional price impact from long-only investors buying the stock and short sellers covering their short bets.

How are short interest levels or changes correlated with future relative stocks returns and risk? Does predictive effectiveness depend on how short interest factors are formulated, on company size, or by holding period. Has short interest factor effectiveness evolved over time?

Research Approach

To aid comparability across different size firms, we divided short interest by Shares Outstanding and 3M Avg Trading Volume to create two short interest magnitude factors. We created two short interest change factors by computing shares sold short differences over 1, 3, and 6 month lookback periods and dividing those differences by either the starting value (i.e., percentage change) or by the current shares outstanding.

Starting with the MSCI U.S. Investable Market Index members (approximately the largest 2300 market caps stocks; REITs excluded), we created a large cap test universe of the top 1000 stocks at each point in time and placed the remaining stocks into a small cap universe. Each month from November 2001 – February 2021, we ranked stocks by each short interest metric into quintile portfolios within each market cap universe and averaged subsequent 1, 3, and 12-month returns relative to each cap universe. Rank order was dictated by the hypothesis

that high or rising short interest would negatively impact subsequent returns and risk. We measured each factor's predictive strength using Information Coefficients ("IC" is the correlation between ranks and subsequent returns), quintile excess returns, and quintile return standard deviations. Finally, we ran rank correlations of our short interest metrics and a variety of commonly used screening factors for insight into the investment characteristics of lightly and heavily shorted stocks.

Results

We started our research by focusing on how short interest *magnitude* has been related to subsequent returns and volatility. The results in Table 1 show:

- Stocks with higher short interest (quintile 5) have tended to have lower returns and higher price volatility
- Short interest level has been more predictive on small cap stocks and over longer holding periods
- Factor performance has been stronger if short interest is scaled by shares outstanding rather than trading volume, particularly in terms of subsequent price volatility

Factor	Univ	Avg IC	Stdv IC	Avg 12M Excess Return%					Avg 12M Stdev Return%				
				Qn1	Qn2	Qn3	Qn4	Qn5	Qn1	Qn2	Qn3	Qn4	Qn5
SI/ShrOut	Lcap	0.051	0.099	0.24	0.26	-0.51	0.12	-0.26	22.4	24.4	27.7	32.3	41.0
SI/AvgVol	Lcap	0.021	0.070	0.65	0.17	0.04	-0.28	-0.48	28.5	28.9	30.7	31.9	32.0
SI/ShrOut	Scap	0.088	0.090	1.52	1.28	1.03	-0.12	-3.70	41.2	44.3	48.5	54.9	65.3
SI/AvgVol	Scap	0.028	0.070	2.06	1.15	0.56	-1.17	-2.73	53.3	50.0	53.7	49.3	52.3
Factor	Univ	Avg IC	Stdv IC	Avg 3M Excess Return%					Avg 3M Stdev Return%				
				Qn1	Qn2	Qn3	Qn4	Qn5	Qn1	Qn2	Qn3	Qn4	Qn5
SI/ShrOut	Lcap	0.019	0.104	0.04	0.07	0.05	-0.08	-0.13	10.9	11.8	13.3	15.0	19.0
SI/AvgVol	Lcap	0.013	0.063	0.07	0.14	0.01	-0.07	-0.13	13.8	13.6	14.2	14.8	15.2
SI/ShrOut	Scap	0.046	0.097	0.59	0.48	0.06	-0.04	-1.05	18.4	19.4	21.3	24.3	29.4
SI/AvgVol	Scap	0.026	0.077	0.82	0.34	0.13	-0.37	-0.97	23.3	22.2	22.4	22.8	24.0

Switching our attention to short interest *changes*, we found it didn't matter how changes were scaled. Therefore, since Table 1 showed that scaling by shares outstanding was most effective, for consistency we show short interest change scaled by shares out in Table 2 and note that:

- Stocks with rising short interest tend to have lower returns, but the highest price volatility is found among stocks with the largest short interest increases or decreases
- Short interest change has been somewhat more predictive on small cap stocks and over longer holding periods

- Factor performance has been stronger when change is measured over longer time intervals

Factor	Univ	Avg IC	Stdv IC	Avg 12M Excess Return%					Avg 12M Stdev Return%				
				Qn1	Qn2	Qn3	Qn4	Qn5	Qn1	Qn2	Qn3	Qn4	Qn5
3MSI Chg	Lcap	0.012	0.050	0.33	-0.12	0.13	-0.04	-0.48	33.9	27.1	25.7	28.1	35.9
6MSI Chg	Lcap	0.017	0.049	0.62	0.17	-0.20	-0.45	-0.27	33.5	27.1	25.5	27.6	36.7
3MSI Chg	Scap	0.029	0.048	0.65	1.90	0.82	-0.34	-3.11	58.1	49.8	43.5	48.5	56.5
6MSI Chg	Scap	0.037	0.049	1.35	1.38	0.36	-0.21	-2.93	58.8	46.4	41.7	47.6	60.5
Factor	Univ	Avg IC	Stdv IC	Avg 3M Excess Return%					Avg 3M Stdev Return%				
				Qn1	Qn2	Qn3	Qn4	Qn5	Qn1	Qn2	Qn3	Qn4	Qn5
3MSI Chg	Lcap	0.004	0.049	0.13	-0.06	0.08	0.07	-0.29	15.6	13.1	12.5	13.3	16.7
6MSI Chg	Lcap	0.009	0.056	0.17	0.11	-0.08	-0.04	-0.24	15.5	12.9	12.2	13.3	17.1
3MSI Chg	Scap	0.018	0.040	0.19	0.61	0.42	-0.28	-0.92	25.4	21.3	19.5	20.9	26.8
6MSI Chg	Scap	0.023	0.043	0.41	0.57	0.25	-0.29	-0.92	25.1	20.7	19.2	21.2	27.4

We next computed average correlations over time between short interest level and short interest changes (both ranked in descending order) and several commonly used screening factors. The results in Table 3 show:

- Short interest levels have been positively correlated with beta, price volatility, and recent price changes, but negatively correlated with market cap, profitability, and value factors
- Short interest changes have had low correlation with short interest level and most other factors

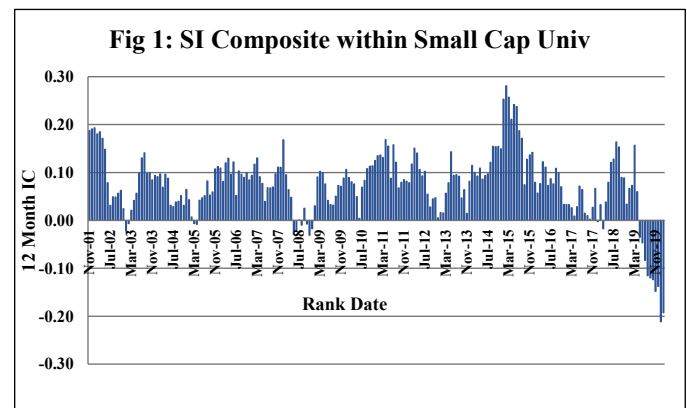
It appears that short sellers are risk averse, contrarian investors who act independently, and therefore, whose actions (especially short interest changes) may convey unique information about stocks' future prospects.

Factor	SI Level	6MSI Chg
SI / ShrsOut	1.00	0.03
6MSI Chg / ShrsOut	-0.03	1.00
Market Cap	-0.42	-0.12
Beta	0.30	0.16
12M Price Volatility	0.50	-0.09
Book / Price	-0.14	-0.06
FY1 EPS / Price	-0.27	-0.07
FCF / Price	-0.19	-0.05
LTD / Assets	-0.07	0.00
ROE	-0.33	0.03
5Y EPS Gth Forecast	0.07	0.05
3Y Sales Gth	0.13	0.05
12M Price Chg	0.20	0.13
3M Price Chg	0.27	0.10
3MFY1 EPS Revisions	-0.13	0.16
Avg Broker Rating	-0.06	-0.12

The low correlation between short interest level and changes suggests they could be combined to create a more useful stock selection indicator. Indeed, Table 4 shows that an equally weighted short interest composite matched the predictive power and was more consistent (i.e. lower IC standard deviation) than its two inputs.

Holding Period	Univ	Avg IC	Stdv IC	Avg 12M Excess Return%					Avg 12M Stdev Return%				
				Qn1	Qn2	Qn3	Qn4	Qn5	Qn1	Qn2	Qn3	Qn4	Qn5
12 Month	Lcap	0.041	0.078	0.69	-0.21	0.02	-0.41	-0.23	24.2	26.5	31.2	30.2	38.1
12 Month	Scap	0.075	0.070	2.81	0.76	0.11	-0.28	-3.37	45.7	44.8	53.2	49.3	61.7
3 Month	Lcap	0.016	0.083	0.13	0.03	-0.01	0.06	-0.25	11.5	12.7	14.6	14.4	17.8
3 Month	Scap	0.042	0.072	0.95	0.37	0.02	-0.33	-1.00	19.9	20.1	23.2	22.2	28.0

Tables 1-4 show average statistics since 2001. Analyzing short interest factor performance through time we find that recent performance has been poor among large caps stocks but similar to other historical drawdowns. Among small caps, however, a more disturbing pattern has emerged. Figure 1 plots monthly snapshots of our short interest composite's 12-month ICs within small caps since 2001. Here we see unprecedentedly poor performance that began far before and has been much more widespread than the recent GameStop event. RIR suspects this plunge is a side effect of growth stocks trouncing value stocks since 2018, but time will tell. While changing market behavior has ruined some formerly useful factors (e.g., EPS surprise), we have never seen a factor evolve into something that's consistently useful with the opposite sign of the original effect.



Conclusions

This study has shown that short interest captures sentiment from an informed set of investors – short sellers. Furthermore, short interest factors have little correlation with other sentiment factors such as analyst forecast revisions and stock price momentum.

Historically, stocks with high or rising short interest have significantly *underperformed* the average stock coupled with far higher price volatility. RIR believes investors are far better served looking for buy ideas among stocks with low short interest and leave identifying potential short-squeeze candidates to short-term speculators.

That said, we believe the GameStop event has already impacted short-seller behavior and may trigger a change in how buyers and sellers should best use short interest to make decisions. That's why RIR keeps monitoring factor performance, testing alternative factor formulations, and searching for new market inefficiencies to exploit.