Playing Defense

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Since a story is always more interesting than a formal research report, I will use that format to tell a story as the background is also relevant.

Charles Rotblut, editor of the *AAII Journal*, published online in October a reprint of an interview with Roger Ibbotson originally published in the *AAII Journal* in April 2013. Roger Ibbotson is a well-known and very solid researcher, currently at Yale. The interview and data reported excess returns available to investors by buying low liquidity stocks. For example, returns from the lowest liquidity quartile for the quartile of smallest cap stocks was 16.17% compared to 2.56% for the highest liquidity small cap stocks. That is significant.

Based on that I obtained the reference article "Liquidity as an Investment Style" by Roger G. Ibbotson, Zhiwu Chen, Daniel Y.-J. Kim, and Wendy Y. Hu published in *Financial Analysts Journal* (Vol 69, n3). There they make a very strong case for including liquidity as an investment style or factor for excess returns along with size, value and momentum. By liquidity they are referring not so much to whether there is a market enabling one to quickly buy or sell stocks as the rate of turnover in a company's stocks. The data and the way they are presented is very convincing. Before buying a portfolio of stocks, I needed to get to a smaller number of stocks than 232. It occurred to me that I could test their findings myself, since I have read reports about how few academic research reports are actually confirmed with independent testing.

Using AAII Stock Investor Pro data, I pulled together data on about 3,400 stocks each month going back to January of 2003. I used forward returns for four weeks, thirteen weeks, twenty-six weeks and fifty-two weeks. I found that the shorter-term returns have a lot of noise, and the one-year returns are more useful. I made some calculations to create variables that resembled Ibbotson's *et. al*. way of defining turnover. I tried to replicate their findings, but did not find anything productive or practical related to turnover. My current thought is that maybe if I pulled market cap stocks smaller than the largest 3,400, I could find something of value.

However I was into the scavenger hunt, which can be rather addictive, and began finding combinations of variables and various value ranges on those variables that had produced returns up to 100% per year. As is typically the case, the problem was that the returns were sporadic and often skewed by a few stocks with very high returns. This is especially true for growth stocks and for small-cap stocks. I found significant periods of negative returns amidst the high return profiles.

I'm dumbfounded that this did not occur to me years earlier, but I decided to search for winning stocks only in the months that had generated overall negative returns a year later. If I could find screens that would work in those periods, given the general high correlations with markets, I might reduce the downside volatility for all months.

I found four variables that in combination produced annual returns of 25% in the market's down years. When I applied the same variables to the entire database, I get 25% returns but with much less volatility than my other screens. If you are interested, the variables are sales growth (or lack thereof) of the company's industry over the last twelve months, the f-score on the Piotroski scale of strong company financials, a select group of industries, which as I look at them generally conform to what is considered defensive investing, and finally the percent rank of the relative strength weight over the last four quarters.

Lee Wenzel
(952) 944-2699
Lee@WenzelAnalytics.com
www.WenzelAnalytics.com

Wenzel Analytics, Inc.
Registered Investment Advisor
8666 Westwind Circle
Eden Prairie, MN 55344

I then began reviewing the number of stocks selected by the chosen screen each month and the respective returns in comparison to market returns. I noticed that when the count was low, the consequent returns were low. I have observed this before, but always saw uneven count as a problem. Suddenly it occurred to me that if indeed there was a correlation, using low count to avoid consequent sour markets could indeed be very valuable. The correlation between count and returns was .37, which gives a *t* value of 4.78 and *p* or probability of happening by chance .00000435 of the time.

The table below gives a more concrete picture of these numbers, which I will explain.

Screen Count	Months Count	% Time	Avg (%)	StDev	SD/Avg COV	1yr Neg As % of count	< -7%	
0	12	8%	*0.6*	*10.6*	*17.7*	*42%*	*33%*	*Returns of market*
1-3	21	15%	-2.3	18.0	-7.9	57%	52%	Out
4-7	19	13%	11.3	12.7	1.1	21%	5%	Cautious
8-14	28	20%	18.9	19.1	1.0	21%	0%	In
15-29	27	19%	24.7	11.7	0.5	0%	0%	Allocate more
30-92	36	25%	27.0	10.6	0.4	0%	0%	Allocate more

The screen count is the number of stocks selected each month when running the screen against the database of 3,040 stocks. There were twelve months when no stocks were selected and one month when 92 stocks were selected. The % Time gives the percentage of months for counts within the given screen count range. The Avg(%) return is the percent change in the stock's price one year later. Obviously, there is a dramatic correlation between how many stocks were selected each month and what happened in the next year. The Standard Deviation column measures the variation between stocks within monthly returns for that count range. Since standard deviations vary according to the average, we get a more meaningful number if we divide the standard deviation by the average to get a coefficient of variation (COV). Lower is better. The next column gives the percentage of negative return months within that count range. If the count was 15 stocks or more, there were no months with negative returns a year later when taking the average of all stocks selected for that month. Of course one will get fewer erratic results from 50 stocks than from 5. The next column evaluates the number of months which had returns less than negative -7%. If one could tolerate a 5% chance of losses below -7%, one would buy every time there were between four and seven stocks meeting the screen criteria and have a 11.3% average return. If one did not buy anything the months with a count selection of three or less and left the money with no return but otherwise invested an equal amount each month, multiplying the %Time column times the Avg% column gives an annual return of 16.7% with very limited drawdown. Ten thousand dollars at the 16.7% annual return becomes $100,000 in fifteen years. The 25% return on the previous page was for time invested and ignored the months the screen selected no stocks.

On the first line of the table, if no stocks meet the criteria, obviously there will be no returns to evaluate. Therefore, in italics I have given market returns for those months. Average returns were almost flat with a high risk of negative returns.

To replicate how these data were derived, one would buy all or a proportionate number of stocks meeting the screen each month in a laddered approach and then hold them for one year. For example, for the first month the screen selected 30 stocks. If I can buy ten stocks, unless something is obvious about a particular stock I might sort them by sector and take every third one, giving representation from each sector. The research results would not prescribe a methodology of jumping in and out each month depending upon the screen count.

The naysayers would say it is all curve-fitting. Results going forward will vary significantly from what we found in the past as reported here. These results reflect the market since the beginning of 2003, which is no doubt unique. However, I believe that the findings are strong enough and consistent enough with what seems logical to me based on other observations that the general advantages will persist. I have never found data on timing which is as compelling.