Think Small
Small Cap, That Is

The other day, a friend of mine was saying how a discussion had come up recently at his place of work regarding Small Cap Stocks versus Large Cap Stocks. Someone cited a study that said that, if you omitted the years 1975 through 1983 from the analysis, Large Cap Stocks had performed better than Small Cap Stocks in the recent past.

Mark Twain has a famous quote about statistics: *"There are three kinds of lies: lies, damn lies and statistics."*

This seems to apply here. How can you claim something to be factual if you selectively choose the data? The study in question used only 50 to 70 years of historical data to reach its conclusions. Leaving out the nine years from 1975 to 1983 represents about 15% of the data. Couldn't you just as well say that if Michael Jordan had not played for the Chicago Bulls during the 90's, the Bulls would not have been the best team in the league?

I decided to take a look at how Small Cap Stocks compare to Large Cap Stocks. My metric of choice is a fairly simple measurement known as return premium.

Return premium measures the degree by which one investment outperforms (or under performs) another asset. The equation is like this:

$$RP = \frac{1 + \text{Return of asset A}}{1 + \text{Return of asset B}} - 1$$

So, for example, if asset A returns 20%, and asset B returns 10%, the premium of A over B is 9.1% (1.2 / 1.1, minus 1). Return premiums above zero indicate A has better performance than B, those below zero indicate A has worse performance than B.

Return premium is an easy way to count how often the performance of one asset beats another, and to what degree it beats it.

I looked at the premium of Small Cap Stocks over Large Cap Stocks for the following investment horizons: 1, 3, 5, 10, 15, 20, 25 and 30 years. My data source was the 2001 SBBI Yearbook from Ibbotson Associates.

The Ibbotson data goes back to 1926. This gave the results some statistical validity in that there were enough observations to be meaningful. For example, in the 30-year tests, we have 46 observations (1926-55, 1927-56, …, 1971-2000). For each of these observations we compute a return premium which is either a positive number (indicating Small Cap Stocks outperformed Large Cap Stocks) or a negative number (indicating the reverse). The percentage of time Small Caps beat Large Caps we call the Small Cap Winning Percentage, or *Small Win %* for short.

Also listed in the results are the worst-case and best-case outcomes for Small Caps (relative to Large Caps) and the average premium of Small Caps to Large Caps. The results of the study are in Table 1.

Table 1 – Small Cap Premiums over Large Caps, 1926-2000

Horizon in Years	# Obs	Small Win %	Worst-case	Average Premium	Best-case
1	75	56%	-46.89%	2.79%	57.72%
3	73	49%	-27.07%	2.18%	34.70%
5	71	55%	-19.64%	2.33%	24.75%
10	66	64%	-5.24%	2.73%	16.08%
15	61	74%	-5.84%	2.95%	11.05%
20	56	89%	-2.05%	3.24%	8.64%
25	51	98%	-0.24%	3.12%	6.94%
30	46	93%	-0.55%	2.97%	5.85%

As horizons get longer, the chance that Small Cap Stocks outperform Large Cap Stocks increases. In fact, in horizons of 20 years and longer, you have better than a 9-in-10 chance that you will do better with Small Cap Stocks. Also, the degree of benefit in the best-case is much higher than the degree of hindrance in the worst-case, particularly in the longer horizons.

So, using all the data that is available from 1926 to 2000, it is fairly evident that Small Caps at least need to be considered as part of any long-term strategy. Why, then, does the study cited earlier get so much attention? I decided to run three other studies, each designed to leave out the period 1975 through 1983, the years in which Small Caps totally dominate.

I first ran the period 1926 through 1974. Of the three additional studies this one covers the largest span of time. The number of observations for each horizon, while not as high in the full study above, is still enough to make the statistics valid. The results of the test were as follows:

Table 2 – Small Cap Premiums over Large Caps, 1926-1974

Horizon in Years	# Obs	Small Win %	Worst-case	Average Premium	Best-case
1	49	53%	-46.89%	2.40%	57.72%
3	47	49%	-27.07%	1.82%	34.70%
5	45	58%	-19.64%	2.09%	24.75%
10	40	67%	-5.24%	2.95%	11.52%
15	35	74%	-4.52%	2.86%	11.05%
20	30	90%	-0.49%	2.72%	7.20%
25	25	96%	-0.24%	2.42%	5.01%
30	20	95%	-0.21%	2.71%	5.81%

The data from 1926-1974 is remarkably similar to 1926-2000. In the shorter horizons Small Caps and Large Caps are fairly evenly matched. Once you get out to the 20-year and longer horizons,

however, Small Caps win in 9 out of 10 observations. Again, this is strong evidence that Small Caps should deserve at least as much consideration as Large Caps in any long-term strategy.

Many people say that capital market data before the end of World War II should not be used when considering present-day investment decisions. To satisfy that argument I ran the study a third time, this time using data from 1946 to 1974. Now, with this reduced data set, number of observations becomes a problem in that we only have 29 total years of data.

Table 3 – Small Cap Premiums over Large Caps, 1946-1974

Horizon in Years	# Obs	Small Win %	Worst-case	Average Premium	Best-case
1	29	48%	-20.61%	0.44%	48.07%
3	27	41%	-12.81%	0.12%	24.50%
5	25	56%	-13.98%	0.52%	20.17%
10	20	60%	-4.63%	1.53%	9.75%
15	15	67%	-2.62%	1.50%	6.66%
20	10	80%	-0.49%	1.45%	3.52%
25	5	80%	-0.24%	0.23%	0.64%

In running the test, I was more concerned with how the statistics compare to the longer time frame studies shown above than I was with the statistics themselves. Although not as pronounced as the longer time frames, it is clear again that Small Caps outperform Large Caps in the longer time frames. While the margin of victory is slimmer, there is still a premium for Small Caps from 1946 to 1974.

As a final test, I wanted to see what's been happening since 1983. I ran the short cycle of data from 1984 to 2000, a total of only 17 years. The results from this most recent data are as follows:

Table 4 – Small Cap Premiums over Large Caps, 1984-2000

Horizon in Years	# Obs	Small Win %	Worst-case	Average Premium	Best-case
1	17	41%	-27.91%	-3.74%	14.56%
3	15	27%	-14.08%	-4.49%	11.76%
5	13	23%	-11.11%	-3.67%	6.81%
10	8	13%	-5.00%	-2.59%	0.03%
15	3	0%	-5.84%	-4.75%	-3.83%

These results tell a very different story from the three prior tables. No longer are Small Caps dominating Large Caps. It's as if Michael Jordan changed teams in 1984 and is now a star for Large Caps rather than Small Caps.

What are we to make of these results?

Prior to 1984 Small Caps were consistently beating Large Caps, particularly in horizons of 20 years or longer. Since 1984, however, Large Caps have had the upper hand, by a large margin.

Has something fundamental changed that now allows Large Caps to dominate Small Caps? Is this a long-term trend, in which Large Caps will continue to trounce Small Caps for years to come? Or is it more a short-term correction to the overly profitable years from 1975 to 1983 for Small Caps, and the recent dominance of Large Caps will be short-lived?

I can't answer those questions. I wish I could. The point I would make is that Small Caps definitely need to be considered for investment horizons of 20-years or longer. All of the historical data we have shows that, while Small Caps may be more volatile than Large Caps, they are also better performing for the long haul. Here's what I think:

- If you're not already, you should consider investing some portion of your equity holdings in Small Cap Funds, even if your horizon is relatively short (less than 10 years). The benefits are diversification and a reasonably good chance of boosting your rate of return.
- If your horizon is 20 years or longer, you should seriously consider putting a good portion of your stock portfolio into Small Caps. Historically, the downside in a worst-case scenario is that you might under perform Large Caps by about 1.5%. On average, though, you can expect to earn a premium of about 2%, and possibly as much as 7 to 8% in the best of times.
- Be wary of studies that cite statistics that rely on hand-selected data. Mark Twain knew what he was talking about.

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