



Insights | January 2019

The Size Paradox

William W. Priest, CFA
Chief Executive Officer, Co-Chief Investment
Officer & Portfolio Manager

Steven D. Bleiberg
Managing Director, Portfolio Manager

There has long been a pervasive belief in the investment world that smaller companies perform better than larger companies. There is a certain logic to the idea; it seems sensible to believe that once a company has become large, it must have more limited opportunities to grow. Think of it this way: if you count just 1% of the population as your customers, you still have the chance to grow your customer base 100-fold. Whereas if you have grown large enough that 50% of the population is already a customer, the most you can do is double your audience. And doesn't the market reward companies for growing?

The return to the size factor in Barra's U.S. risk model would seem to confirm this. Over the years, the size factor in the model has had a negative return on a cumulative basis, indicating that large size, as a factor in and of itself, has generated negative excess return.

Yet despite all this, there is one glaring piece of empirical evidence that requires an explanation. Namely, the fact that over the 40 years since the inception of the Russell Indices at the end of 1978, the Russell 1000, which represents the 1000 largest stocks in the US, has generated a better return than the Russell 2000, which represents the smaller companies on the capitalization spectrum. Not only that, but the Russell 1000 has been less volatile than the Russell 2000, which means that on a risk-adjusted basis the Russell 2000 looks even worse.

Figure 1 shows the cumulative relative performance of the small-cap Russell 2000 versus the large-cap Russell 1000. When the line is rising, it means small-cap stocks were outperforming; when the line is falling, it means small-cap stocks

FIGURE 1: Russell 2000 Relative to Russell 1000, 12/31/78 = 1.00



Source: Bloomberg

were underperforming. Small-cap stocks performed quite well on a relative basis in the early years of the indices. In the first five years after inception, the Russell 2000 gained 226%, compared to “only” 125% for the Russell 1000. But over the next five years, that relative performance completely reversed. The late 1990s saw small-cap stocks underperform large-caps dramatically, particularly during the bubble in tech and telecom stocks (which were already large before rising sharply during that period). This too reversed over the subsequent years. For the last decade or so, there has been little sustained difference in the performance of the two indices. And as of December 31, 2018, the annualized returns since inception for the two indices were not really that far off, with the Russell 1000, as mentioned, actually having the better result: 11.54%, versus 11.09% for the Russell 2000.

To understand what is going on here, we need to think more deeply about another question: how does a company grow large? In Epoch’s view, the answer has to do with proper capital allocation. As we always say, there are only five things that a company can do with its free cash flow: pay a cash dividend, buy back stock, pay down debt, invest in internal projects, or make an external acquisition. How management allocates a company’s free cash flow among these five uses should depend on the answer to one key question: if we reinvest the cash flow, either internally or through an acquisition, what will our return on that invested capital be, and how does that compare to our cost of capital? If the expected return is high enough above the cost of capital to allow for the uncertainty associated with that return, then the company should make the investment—taking capital that costs

X% and earning something greater than X% is how a company creates value. If the expected return on invested capital is not high enough, the company is better off returning the cash flow to the shareholders through one of the first three methods listed above. Why? Because reinvesting cash flow in a way that earns a return below the cost of capital destroys value; management should return the cash to shareholders, who always have other options for investing that cash.

In other words, companies grow large because they earn high returns on invested capital (ROIC)—in theory, anyway. Is this true in reality? Well, if it is, then larger companies, on average, should earn higher ROIC than smaller companies. Not because being large creates some advantage that enables them to earn higher ROIC; but rather, because the fact that they earn higher ROIC made them grow large. This is something we can test empirically.

We started by looking back to see which stocks were in the Russell 1000 and Russell 2000 indices at the end of 2014. We then looked at the ROIC that each company earned in the next three individual years (i.e., 2015, 2016, and 2017) and averaged those numbers. **Table 1** shows what the median result was for the stocks in the two indices, as well as the percentage of stocks which had a positive average ROIC.

	Median ROIC	Percentage of Companies with Positive ROIC
Russell 1000	7.2%	87.8%
Russell 2000	4.4%	70.0%

Source: FactSet

Stocks that were in the Russell 1000 at the end of 2014 had a higher median 3-year average ROIC over the ensuing

three years compared to companies in the Russell 2000 (7.2% versus 4.4%). And a higher percentage of Russell 1000 companies had a positive 3-year average as well: almost 88% of the Russell 1000 companies earned a positive average ROIC over the next three years, versus 70% of the companies in the Russell 2000. (Note that we are only focusing on ROIC here, not on the spread a company earns over its cost of capital; there is far more variability across firms in ROIC than there is in the cost of capital, so for our purposes we think it is sufficient to simply look at ROIC.)

This variation in ROIC between larger and smaller stocks is also evident within each of the two indices. **Table 2** shows how the median ROIC and the percentage of companies with positive ROIC fall consistently as we go from the top half of the Russell 1000 (sorted by market cap) through to the bottom half of the Russell 2000.

	Median ROIC	Percentage of Companies with Positive ROIC
Russell 1000 Larger Half	8.4%	89.9%
Russell 1000 Smaller Half	6.3%	85.7%
Russell 2000 Larger Half	4.9%	74.1%
Russell 2000 Smaller Half	3.7%	66.0%

Source: FactSet

So larger companies do indeed earn higher ROIC than smaller companies. But was it really the higher ROIC that made the larger companies grow large, as we argue, or was high ROIC a trait they acquired after they became large? To complete the picture, we need to dig a little deeper, mindful of the fact

that membership in the Russell 1000 and Russell 2000 is not static. Russell reconstitutes the indices once a year; some companies move from the Russell 2000 to the Russell 1000 (because their market capitalization has grown), while others move from the 1000 to the 2000 (because their market capitalization has shrunk.) What do we see when we compare those two groups of transitioning stocks?

Table 3 looks at the same statistics we examined in Tables 1 and 2, but focuses only on stocks that moved between the two indices during the three years from 2014 to 2017.

	Median ROIC	Percentage of Companies with Positive ROIC
Stocks that moved up	5.5%	78.8%
Stocks that moved down	0.0%	49.4%

Source: FactSet

What we find is that stocks that moved up from the Russell 2000 to the Russell 1000 had a median ROIC of 5.5% over this span, and almost 79% of the companies had a positive average ROIC. Compare those numbers to the figures in Table 2 and you will see that these stocks had better results than the larger half of the Russell 2000. Conversely, the stocks that moved down had a median ROIC of 0.0%, and only 49% had a positive average over the three years—not only worse than the smaller half of the Russell 1000, but worse than even the smaller half of the Russell 2000 as well.

This seems to confirm the hypothesis that it is not size itself which enables large companies to earn high ROIC. The companies that moved up into the Russell 1000 were initially small, yet they earned higher ROIC than their

small-cap peers, and their market capitalization increased. Conversely, the companies that moved down into the Russell 2000 were large in 2014, yet they earned poor ROIC over the next few years (lower even than the average small-cap stock) and their size shrank until they too were in the small-cap camp.

Now factor in an additional characteristic of ROIC: its persistence. As we documented in “The Capital Reinvestment Strategy” in 2016, companies with high ROIC in one year tend to continue to earn high ROIC the next year. At the other extreme, companies with low ROIC in a given year are very likely to continue to earn low ROIC in the subsequent year.

Putting these pieces together, we can understand how it is that the Russell 2000 has not outperformed the Russell 1000 over time, even as Barra tells us that there is a positive return associated with small size. The key point is that the term “small-cap stocks” does not refer to a fixed group of companies, in the way that, for example, the term “energy stocks” does. It is a group that is in constant flux. Small companies that are able to earn high ROIC tend to perform well, but simply by performing well they move up and out of the small-cap index and into the large-cap index, after which the persistence of ROIC means that a large proportion of them are likely to continue to earn high ROIC as large-cap companies. Eventually, though, large companies lose their competitive advantage; their ROIC declines, their size shrinks, and they fall into the small-cap index, where they are then likely to continue to earn poor ROIC for a while.

Think of the Russell 2000 as a collection of stocks at very different stages of their life cycle. Some are small because they are relatively young, and are just

starting to grow their business. Not all will succeed; the ones with poor ROIC will stay small, while the ones who have found a way to create a sustainable competitive advantage will earn high ROIC, and “graduate” up into the Russell 1000. Others are older companies, who were once large but have lost that competitive advantage. Their ROIC has fallen to very low levels, and as they have shrunk they were demoted to the Russell 2000.

In short, the Russell 2000 gives up its winners to the Russell 1000 (where the persistence of ROIC means they are likely to continue to perform well for a while), while at the same time absorbing the worst performers from the Russell 1000 (where, again, the persistence of ROIC means these companies are likely to continue to perform poorly for a while). Viewed in this light, it is not surprising that the Russell 2000 has not outperformed the Russell 1000. Stocks that stay in the Russell 2000 for a long time do so either because they don’t earn a high enough ROIC to grow larger, or they were once large and saw their ROIC wither. Meanwhile, the stocks that start in the Russell 2000 that do manage to earn high ROIC leave the index as they grow larger.

That is not incompatible with the existence of a “small cap premium.” It’s just that this “premium” is generated by a constantly changing group of stocks as they make the transition from small to large. Every large company started off small, and it is the very process of growing from small to large that the “small cap effect” is really capturing. But looking for that effect in a small-cap stock index is simply looking in the wrong place.

As an analogy, consider the plight of a photographer trying to capture a photo of extremely fast sprinters in a race.

She positions herself at the side of the track, points her camera across the lanes, and waits for a runner to appear in her viewfinder. As soon as she sees a runner appear, she presses the shutter. But even if her reflexes are very fast, the fact that the runners are in constant motion means that by the time the camera records the image, the fastest runner may already be moving out of the frame. A runner who is fully visible in the frame is likely to be one of the slower runners (at least on a relative basis). Similarly, the stocks that drive the “small-cap effect” are the ones that are busy “moving out of the frame”—i.e., moving up from the Russell 2000 to the Russell 1000. By definition, the Russell 2000 contains the stocks that have not yet moved up; it contains some that are in the process of getting

to that point, but it also contains stocks that have moved down from the Russell 1000, so it is not surprising that the index does not properly capture the small-cap effect.

What lessons can investors take from all this? We would emphasize two.

First, active management is key when you invest in small-cap stocks. As the relative performance of the Russell 2000 and the Russell 1000 indicates, you can not simply invest passively in a small-cap index and expect to benefit from the small-cap premium. You need to figure out which small-cap stocks are the ones that are going to be able to make the transition to the world of large companies, and steer clear of both the “fallen angels” (formerly large stocks that generated poor returns and shrank) and

the small stocks that are never going to grow large. And second, in doing that analysis, ROIC is the key metric to look at. Earnings growth in and of itself does not necessarily create value for shareholders and make a business grow in value. What matters is how much capital a company required to generate that growth, what the cost of that capital was, and how the return on invested capital that the profit growth represented compared to the cost of capital. Small companies that earn high levels of ROIC relative to their cost of capital are the ones that grow large enough to move from the small-cap index to the large-cap index, at which point the successful small-cap manager has to wave them a fond farewell and start the search all over again.

The information contained in this whitepaper is distributed for informational purposes only and should not be considered investment advice or a recommendation of any particular security, strategy or investment product. Information contained herein has been obtained from sources believed to be reliable, but not guaranteed. The information contained in this whitepaper is accurate as of the date submitted, but is subject to change. Any performance information referenced in this whitepaper represents past performance and is not indicative of future returns. Any projections, targets, or estimates in this whitepaper are forward looking statements and are based on Epoch's research, analysis, and assumptions made by Epoch. There can be no assurances that such projections, targets, or estimates will occur and the actual results may be materially different. Other events which were not taken into account in formulating such projections, targets, or estimates may occur and may significantly affect the returns or performance of any accounts and/or funds managed by Epoch. To the extent this whitepaper contains information about specific companies or securities including whether they are profitable or not, they are being provided as a means of illustrating our investment thesis. Past references to specific companies or securities are not a complete list of securities selected for clients and not all securities selected for clients in the past year were profitable.

For more insights visit

http://www.eipny.com/epoch_insights