

THE SHIFTING SMALL CAP PREMIUM: SMALLEST OF THE SMALL OR SMALLEST OF THE BIG?

Christopher Meeske, CIMA® & Ashvin Viswanathan, CFA

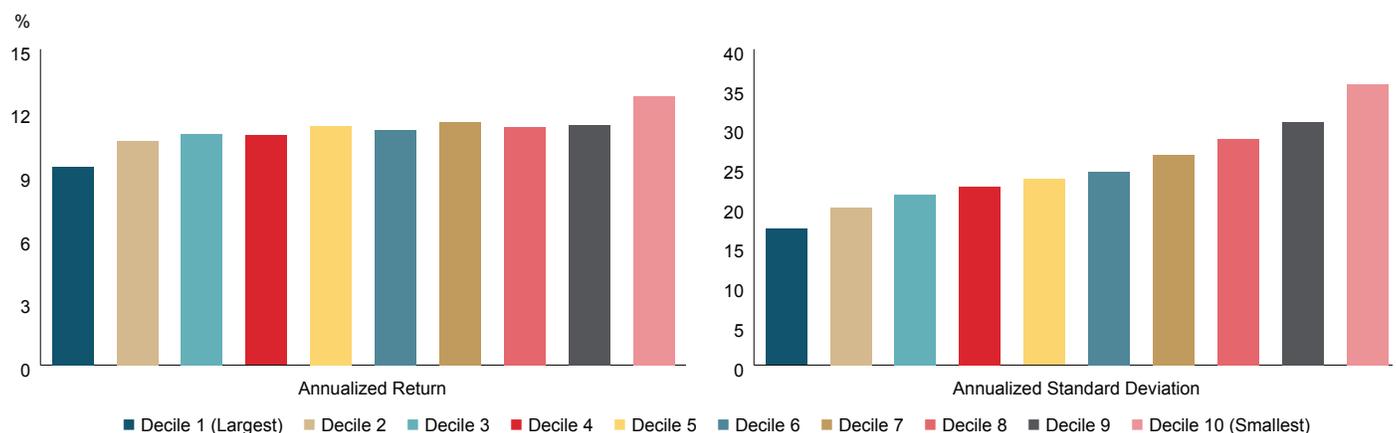
- The higher returns earned by smaller securities—the “small-cap premium” or “Size factor”—have been documented and studied for decades, with data stretching back almost a century showing that stocks with higher market capitalizations underperform smaller stocks.
- However, in recent decades the size premium has become less significant as classically measured, and there have been a number of periods of time where the Size factor was negative.
- In this paper, we look at the changes to the small-cap premium, the relative reliability of the higher returns of the smallest-capitalization stocks relative to other market segments, and the nature of small-cap investing across many periods.
- Additionally, we look at the sensitivity of smaller-capitalization securities to profitability—another quantitative factor which has a disproportionate impact on small-cap stock returns.

The Size factor—the premium in returns earned by smaller-capitalization stocks over the long term when compared to larger companies—is a well-studied and long-standing phenomenon. Described at least as early as 1981 by Rolf Banz in “The Relationship Between Return and Market Value of Common Stocks,” the higher returns earned by small-cap stocks are traditionally explained in terms of risk, with larger companies representing safer investments which cannot command as high an expected return.

This risk-based explanation has both an underlying logic and compelling long-term data to support it. When sorting the US stock market from the biggest to smallest companies in 10% increments (deciles) and looking at each segment’s risk and return characteristics over more than 90 years of market data, we do indeed observe an essentially linear relationship between size, risk, and return (see Exhibit 1).

Exhibit 1: Long-Term Return and Risk—US Stock Market by Size Decile

Jan. 1, 1926–July 31, 2019



Gerstein Fisher Research and http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

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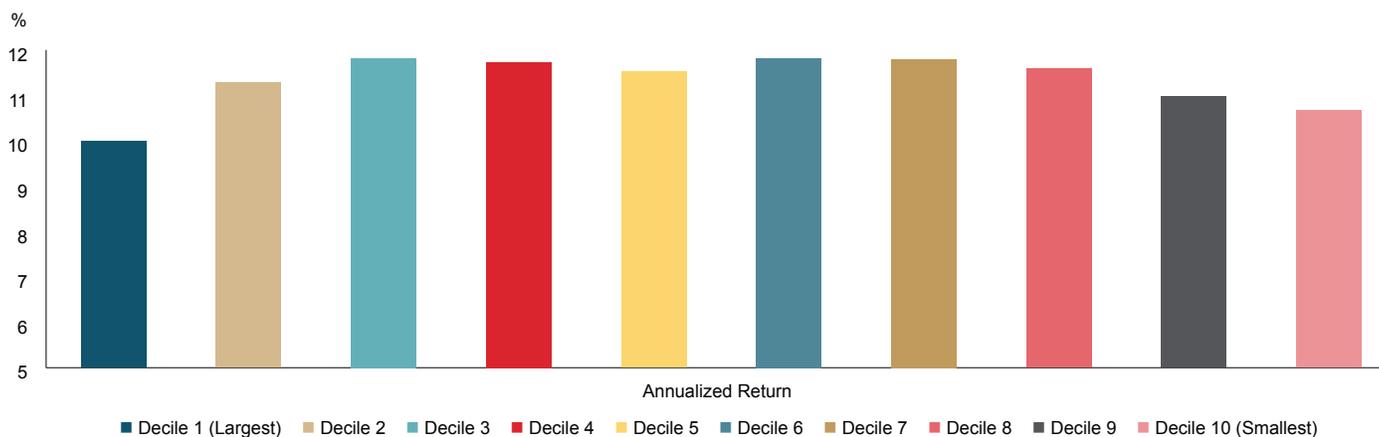
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However, while this is not an inaccurate observation over the longest-term data available, it does not tell the complete story of the interaction between size and returns over all historical time periods. In fact, there have been a number of shorter periods, even multi-decade periods, where there is a far less linear relationship between market cap and returns for US stocks. If we look at the last five decades, for example,

the very largest stocks do indeed underperform the rest of the stock market, but very small-cap stocks are not the highest performing market segment (see Exhibit 2). In short, while there remains a relationship between size and returns in this time frame – smaller stocks did broadly outperform – simply weighting a portfolio to maximize exposure to the smallest companies was not an optimal approach to managing a portfolio.

Exhibit 2: Return and Risk—US Stock Market by Size Decile from 1970
Jan. 1, 1970–July 31, 2019



Gerstein Fisher Research and http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

Looking Past the Long-Term: Multi-Period Analysis

Breaking down the long-term data into shorter, 5-year periods, we can look at the returns achieved by each of these market segments across more than 1,000 distinct time frames. When viewed this way, we can analyze not only the “point to point” returns over a single start and

end date, but also the frequency with which each market segment outperformed the overall market, and by how much it out- or under-performed. In Exhibit 3, we see several trends not immediately apparent when looking at the long-term returns alone.

Exhibit 3: 5-Year Rolling Period Analysis—By Market-Cap Decile

Jan. 1, 1926–July 31, 2019

	% of Periods— Outperforming Total Market	% of Periods— Underperforming Total Market	Median 5-Year Return	Median Outperformance vs. Total Market	Median Underperformance vs. Total Market
Decile 1 (Largest)	38.8%	61.2%	10.3%	0.6%	-1.3%
Decile 2	70.7%	29.3%	12.2%	1.1%	-0.8%
Decile 3	72.6%	27.4%	12.8%	1.9%	-1.0%
Decile 4	62.2%	37.8%	12.8%	2.8%	-1.5%
Decile 5	61.6%	38.4%	12.6%	4.1%	-1.9%
Decile 6	58.6%	41.4%	12.5%	4.4%	-2.1%
Decile 7	61.5%	38.5%	13.2%	3.4%	-2.3%
Decile 8	56.0%	44.0%	12.6%	5.3%	-3.4%
Decile 9	54.7%	45.3%	12.8%	5.6%	-3.7%
Decile 10 (Smallest)	54.3%	45.7%	13.2%	9.4%	-4.5%

Sources: Gerstein Fisher Research and http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

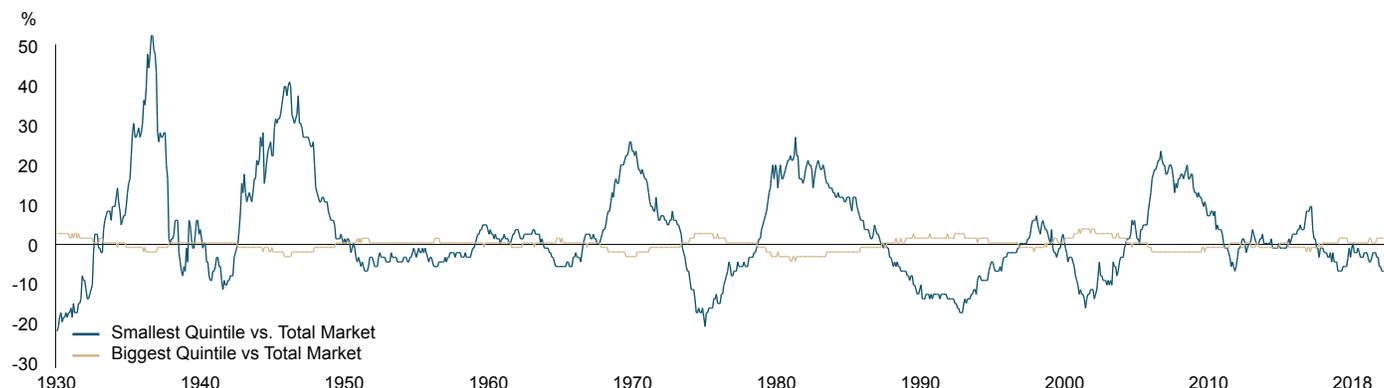
Note: Rolling periods are based on 1-month increments, with 1,064 total periods represented.

While the median returns for all 5-year periods followed a broadly similar pattern to the long-term data (with the smallest decile of securities generally outperforming the rest of the market), we observe that the outperformance of the most small-cap oriented deciles was highly irregular. While the median outperformance (that is, the average amount by which that decile beat the overall market in all periods when it outperformed) is significantly higher for smaller deciles, they have significantly fewer periods in which they outperform. In fact, the best “batting average” for market outperformance comes from the “smallest of the biggest” deciles – the 2nd and 3rd segments, which beat the overall market in over 70% of all 5-year periods, compared to the just over 50% for the smallest two deciles.

In short, smaller-cap securities are (at least in large part) deriving their long-term outperformance from periods of significant dispersion from the overall market and not from any consistent or stable premium. In Exhibit 4, below, we can see the rolling 5-year returns of the largest 20% and smallest 20% of the US market against the returns of the overall market. There is a markedly higher dispersion between the returns of the smaller stocks when compared to the overall market (out- or underperforming by 20% or more in certain 5-year periods). While more-recent years have been more modest in terms of how far small-cap returns have differed from the overall market, investors in these very small names should certainly be prepared for significantly higher volatility relative to larger stocks.

Exhibit 4: 5-Year Rolling Period Returns vs. Total Market—Largest vs. Smallest Quintile

Jan. 1, 1926—July 31, 2019



Sources: Gerstein Fisher Research and http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html
 Note: Rolling periods are based on 1-month increments, with 1,064 total periods represented.

Breaking Down the Size Premium Within Large-Cap and Small-Cap Stocks

Beyond the single axis of the entire universe of US stocks sorted by size, examined above, we can also look at the impact of market capitalization within the context of larger-cap stocks and smaller-cap stocks as distinct groups. To do this, we define large-cap stocks as the largest 20% of names (as the largest companies tend to be many times bigger than the average small-

cap security, they represent the majority of invested capital) and small cap stocks as the smaller 80% of securities. When examined this way, there is a fairly distinct “smaller”-cap premium within the large-cap universe and a somewhat weaker relationship between size and higher returns for smaller stocks (see Exhibits 5 and 6).

Exhibit 5: Large-Cap US Stocks—Return Analysis by Size Quintile

Jan. 1, 1970–June 30, 2019

	% of Rolling Periods Outperforming Universe				
	Annualized Return	1 Year	3 Year	5 Year	10 Year
Quintile 1 (Largest)	10.2%	47.2%	45.6%	38.6%	34.2%
Quintile 2	10.1%	45.3%	39.9%	35.1%	12.5%
Quintile 3	11.0%	55.9%	54.0%	60.2%	72.5%
Quintile 4	11.2%	60.1%	64.5%	76.0%	83.7%
Quintile 5 (Smallest)	11.1%	55.4%	58.2%	65.7%	75.7%

Sources: Gerstein Fisher Research and MSCI
 Note: Rolling periods are based on 1-month increments.

Exhibit 6: Small-Cap US Stocks—Return Analysis by Size Quintile

Jan. 1, 1970–June 30, 2019

	% of Rolling Periods Outperforming Universe				
	Annualized Return	1 Year	3 Year	5 Year	10 Year
Quintile 1 (Largest)	11.2%	55.4%	58.2%	62.7%	65.5%
Quintile 2	11.1%	63.0%	68.9%	64.9%	70.2%
Quintile 3	11.2%	62.5%	70.0%	73.5%	68.7%
Quintile 4	10.7%	45.6%	45.8%	47.5%	52.0%
Quintile 5 (Smallest)	9.2%	34.4%	30.3%	30.6%	31.5%

Sources: Gerstein Fisher Research and MSCI
 Note: Rolling periods are based on 1-month increments.

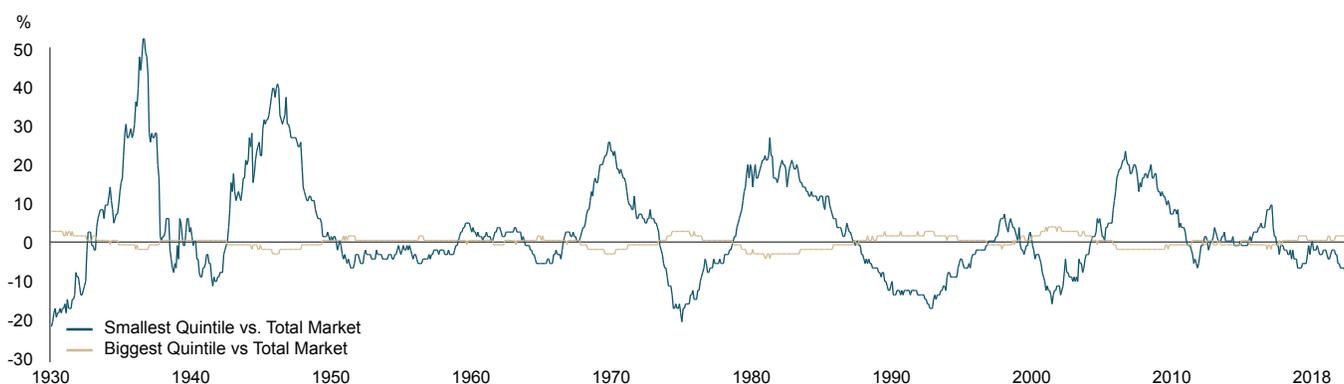
While the smaller-cap quintiles broadly outperformed the larger-cap quintiles for the full period, the most consistent outperformance actually came from the smaller large-cap stocks, while the smallest small-cap stocks had the lowest returns and the least frequent periods of outperformance relative to their universe.

We also want to account for any timing-related sensitivity of the small-cap premium, in both the larger-cap and smaller-cap universes. To achieve this, we can perform a “bootstrap” analysis which randomizes the order in which historical returns occurred—while the

overall results may be largely similar to the historical rolling periods, the impact of any period-specific idiosyncrasies should be mitigated.

In Exhibit 7, below, we can see a summary of 1,000 randomized 5-year periods for the largest 20% of securities in the US market, broken down into quintiles by size. The sorting of the market by size is similar to the historical rolling-period analysis in Exhibit 5, above, and the results we see with the “bootstrap” analysis are only slightly different, suggesting that timing is a relatively unimportant factor in the results.

Exhibit 7: Large-Cap US Stocks—Randomized “Bootstrap” Return Analysis by Size Quintile

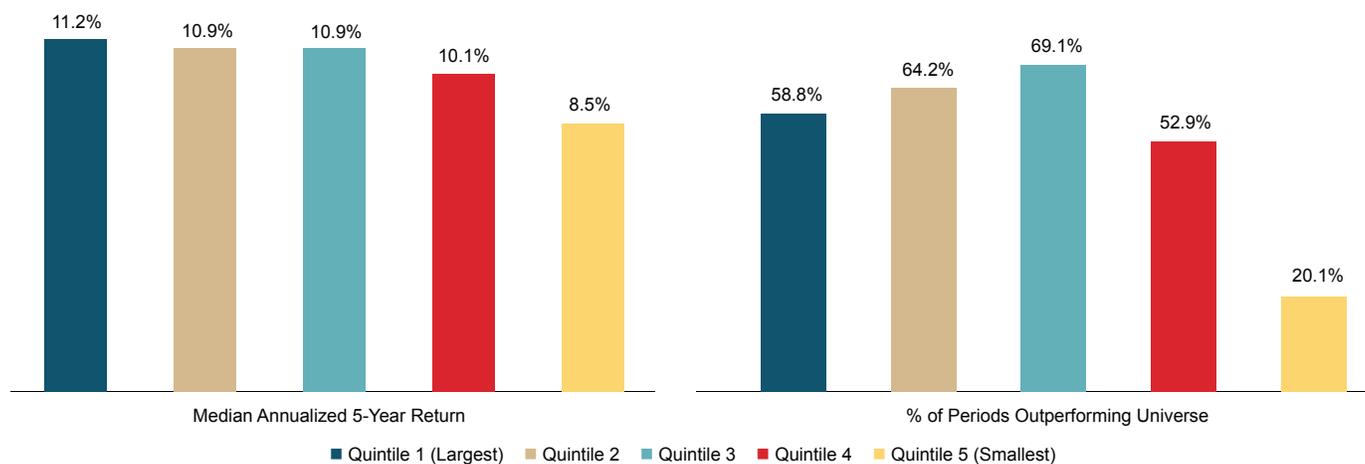


Sources: Gerstein Fisher Research and MSCI
 Note: Data represents analysis of 1,000 randomized 5-year periods.

Similarly, in Exhibit 8, the results of the randomized 5-year periods for the smallest 80% of the US market are broadly similar to those of all rolling historical 5-year periods. The smallest quintile of the small-cap securities has somewhat lower performance in the randomized

sample when compared to the historical data, but the other four quintiles are more comparable. From both “bootstrap” and historical data, there does not seem to be a linear relationship between smaller-market capitalization and higher returns.

Exhibit 8: Small-Cap US Stocks—Randomized “Bootstrap” Return Analysis by Size Quintile



Sources: Gerstein Fisher Research and MSCI
 Note: Data represents analysis of 1,000 randomized 5-year periods.

The Sensitivity of Small-Cap Stocks to Profitability

Some research also indicates that a significant portion of the small-cap premium (or lack thereof) in recent periods is driven by “profitability shocks”—sharp changes to cash flow which have impacted returns disproportionately across smaller and larger firms¹. While these “shocks” are by definition short- or medium-term events, even over much longer periods we do see a significant impact to the returns of small-cap securities when examined in terms of profitability.

In Exhibit 9, the US market is divided into quintiles across two variables in a bi-variate analysis, in terms of size and in profitability. The total return impact of holding the most-profitable companies relative to the least-profitable is significant across all size quintiles, but is vastly greater for the smallest stocks—a 2.4% annualized premium for the biggest quintile vs. a 6.8% annualized premium for the smallest quintile.

¹ *Resurrecting the size effect: Firm size, profitability shocks, and expected stock returns*, Kewei Hou and Mathijs A. van Dijk. Review of Financial Studies. August 2018.

Exhibit 9: Bi-Variate Return Analysis—Size and Profitability

Jan. 1, 1970–June 30, 2019

	Profitability Quintile 1 (Most Profitable)	Profitability Quintile 2	Profitability Quintile 3	Profitability Quintile 4	Profitability Quintile 5 (Least Profitable)	Quintile 1–5 Profitability “Premium”
Quintile 1 (Largest)	12.2%	11.6%	10.0%	9.7%	9.8%	2.4%
Quintile 2	12.1%	11.7%	11.8%	10.5%	9.0%	3.1%
Quintile 3	11.9%	12.6%	11.1%	10.6%	9.6%	2.3%
Quintile 4	12.8%	12.2%	11.0%	10.9%	8.2%	4.6%
Quintile 5 (Smallest)	12.3%	12.0%	10.3%	9.6%	5.5%	6.8%

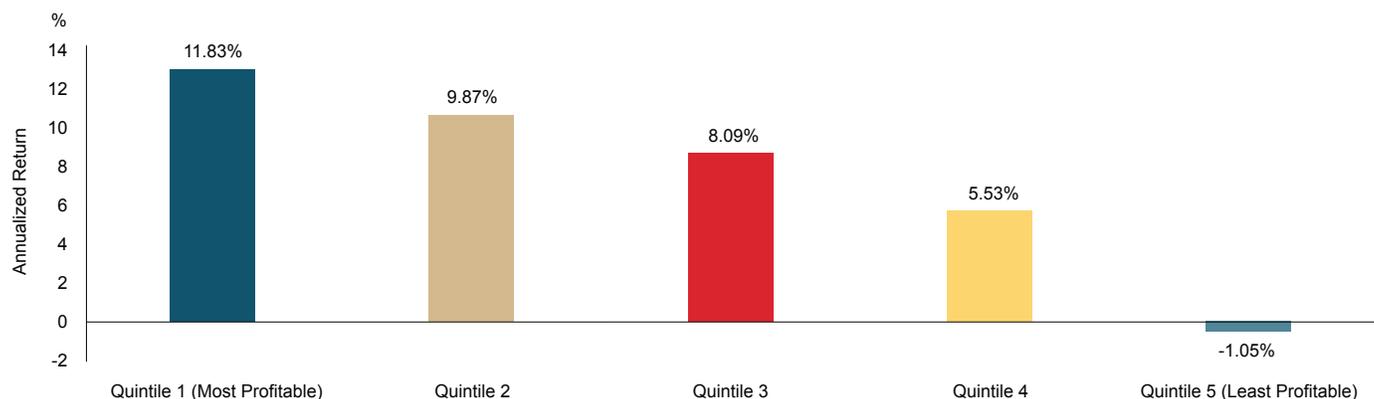
Sources: Gerstein Fisher Research and MSCI

Data from a more recent period—a 20-year trailing lookback – shows an even starker disparity between the returns of highly profitable small-cap stocks and those which are not profitable. In fact, even across a broadly positive US stock market from 1999 to 2019 for both

large- and small-cap securities, the smallest quintile of stocks in the US market with the lowest profitability actually experienced a negative annualized return over that 20-year period (see Exhibit 10).

Exhibit 10: 20-year Trailing Returns—Smallest Market-Cap Quintile By Profitability

June 1, 1999–June 30, 2019



Source: Gerstein Fisher Research and MSCI

This finding is also in line with other Gerstein Fisher research, in particular our paper describing the disproportionately large impact the highest-valuation (highest “growth”) securities have on small-cap returns.

Please see “Returns On Small Cap Growth Stocks, Or The Lack Thereof: What Risk Factor Exposures Can Tell Us”² for more.

² https://gersteinfisher.com/wp-content/uploads/2018/07/Gerstein-Fisher_Research>Returns-Small-Cap-Growth.pdf

Conclusion

There seems to be an argument for two somewhat distinct small-cap return premiums historically – a moderate but consistent premium earned by weighting a portfolio away from the very largest securities in the large-cap space, and a larger but much more volatile premium earned by small-cap stocks over larger securities. Investors should consider a broad approach to incorporating the Size factor into their portfolios – not

only adding an allocation to targeted small-cap stocks, but also ensuring some “tilt” within the large-cap space away from the largest securities. Additionally, other factors such as profitability seem to have a significant impact on the returns of small-cap stocks relative to larger securities, which seems to account for at least part of the overall weakening of the small-cap premium for the smallest securities in more recent periods.

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