BUILDING A BETTER VALUE PORTFOLIO

Gerstein Fisher's Multi-Factor® Value Strategy Overview

"In the short run, the market is a voting machine; but in the long run, it is a weighing machine."

– Benjamin Graham

The core principle of value investing – targeting securities with a low market price relative to their underlying characteristics (whether measured by earnings, sales, or book value) has been around for decades. At Gerstein Fisher, our research into quantitative investment strategies and building portfolios using quantitative risk factors has been applied across multiple asset classes, including growth equities and global real estate. However, even in market segments such as value equities (value itself being a risk factor), we can take advantage of far more than a single security characteristic and build a value-oriented equity portfolio with additional targeted exposures to momentum, size, profitability, quality, and other factors to improve expected risk-adjusted return.

The Logic of Value Investing

Value investing is based on the core principle of investing in stocks whose prices are low relative to their fundamentals when compared to peers or to the overall market. Benjamin Graham, one of the fathers of value investing, compared the discount of the market price to the intrinsic value as a 'margin of safety' when he developed this concept with David Dodd in the 1920s. Professional investors who are proponents of value-oriented strategies, such as Warren Buffett, have made their careers on implementing a wide range of value-oriented strategies, and many benefited from taking advantage of the idea that a portfolio of relatively "cheaper" (but potentially riskier) securities relative to the overall market should outperform the market over a long time frame.

A Long-term Approach to Investing

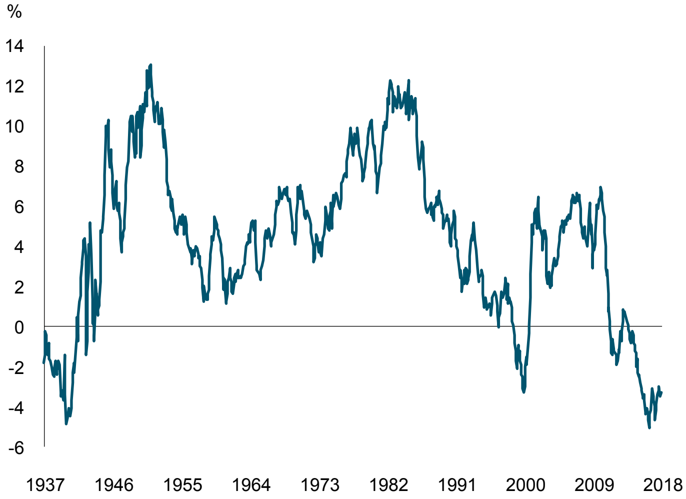
From a practitioner point of view, value investing is usually a relatively slow and deliberate strategy for equity management that does not require frequent trading to manage. Traditionally, the information upon which a value portfolio is built is relatively stable – while the price (and therefore market value) fluctuates on a minute-to-minute basis, the book value and most other forms of valuation are usually adjusted quarterly, and often do not change much over any given three months. More recently, research has shown that certain methods of measuring value can be adjusted more frequently than a company's quarterly balance sheets[1], and as practitioners, Gerstein Fisher has tended to avoid any single measure of "value" as being correct – more data is better, in our view.

All else being equal, if all investors had a high degree of both patience and risk tolerance and "stuck" with value investing in the long term, lower-priced securities would be bought and held until their price reflected a more "average" value. Theoretically, were this to happen the risk premium historically enjoyed by value-based investing would eventually disappear and the market would be highly efficient in pricing the risk inherent in value stocks. However, in reality we have decades of data that demonstrate that the average investor, or at least the average market environment, does not reflect this

[1] Asness and Frazzini. *The Devil in HML's Details,* Journal of Portfolio Management, 2013.

theory, and value stocks have outperformed their more "expensive" peers over most periods (see Exhibit 1 below). During the 975 10-year rolling periods encapsulated in Exhibit 1, value outperformed growth 84% of the time and by three percentage points or more in 65% of periods.

Exhibit 1: US Value Premium over Growth Stocks – 10-Year Rolling Periods
Jan. 1, 1927–Mar. 31, 2018



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

An Index vs. Multi-Factor Approach

When identifying how an investor should access a given asset class (US value equities, in this case), it is helpful to simplify the wide range of options into three very broad categories. First, an investor could attempt some form of active management and seek a strategy which attempts to outperform a benchmark by (for example) superior security selection, or market timing. This approach has the potential to outperform benchmarks, but tends to have higher costs and historically, most value managers actually lag in terms of risk-adjusted performance. Passive management (also known as indexing), offers a more structured and lower-cost option to providing diversified exposure to the value equity space as a whole, but ties an investor's returns to the performance of a given index.

In our research and experience, we favor a third methodology for gaining exposure to the value segment of the equity market, which seeks to take the best elements of passive management – a disciplined and quantitatively focused strategy with low turnover and low cost – and complement it with a quantitative Multi-Factor® approach. As our processes and technology have grown and developed over more than a decade of direct equity management, Gerstein Fisher has been able to apply our Multi-Factor® approach to different asset classes (for more on our Multi-Factor research, please see **Beyond Smart Beta: What is Global Multi-Factor Investing and How Does it Work?**). Our goal is to identify where we can cost-effectively apply our best thinking and add value for our investors over an alternative such as an index.

Measuring the Value Factor

In quantitatively managing a value strategy, we begin by exploring the optimal measure or measures that investors should use to capture exposure to stocks that are highly exposed to value as a risk factor. The Price-to-Book ratio (commonly shortened to P/B ratio), which is the market value of the company divided by the book value of a company, is one option, and there are similar measurements, such as the Price-to-Earnings, or P/E ratio. Generally, the lower these ratios (and therefore the lower the price relative to the earnings or book assets of the company), the deeper is the securities' exposure to value, relative to the market. It is important to note that the market's collective "opinion" of the company in question – the price – is always in the numerator of these ratios, making these ratios a blend of both fundamental data and investor sentiment. No matter how one defines or adjusts the measure of valuation, be it book value or otherwise, the market price of a stock is fast-moving information influenced by the trading activity of many independent actors.

No single ratio, however, can be a perfect measurement of a security's valuation, and there can be limited or missing data in some cases. Newly-listed companies, for example, may have little or no earnings data released. Additionally, no matter how long a company has existed, there is almost always a lag between the dates when earnings are measured and when they are reported – a 2nd quarter earnings call in July for a company will include information from at least as far back as early April. Estimation of future earnings based on trailing data is also subjective and can lead to different judgments among analysts. Between reported data points, the market will do its collective best to determine the "correct" price of the security (the numerator of a P/E or P/B ratio), but the cumulative activity of traders buying and selling a given stock cannot be assumed to be a prediction of the future.

Exhibit 2: Value Portfolio Returns with Additional Factor Exposures
Jan. 1, 1996–Mar. 31, 2018

	Momentum	Profit	Quality	Value	Size	Russell 1000 Value
Annualized Return	9.57%	9.37%	9.12%	8.90%	9.48%	8.73%
Volatility	14.17%	14.66%	14.79%	14.94%	14.68%	14.60%
Sharpe Ratio	0.32	0.30	0.28	0.26	0.31	0.26
Growth of $1	7.63	7.34	6.97	6.66	7.51	6.40

Sources: MSCI, Russell, Gerstein Fisher Research

For all of these reasons, we measure value utilizing multiple components of the financial statement – for instance, price-to-sales since revenues are top line and more difficult to manipulate; price-to-cash flow adjusts for non-cash charges; and price-to-earnings, which is a focus of investors. This helps to limit the idiosyncrasies of any single data source or measurement of value, and Gerstein Fisher blends the Book-to-Price ratio, Sales-to-Price ratio, Cash Flow-to-Price ratio, a Structural Valuation Factor, and Earnings Yield. We then standardize the combined scores[2] across the equity universe to compare all current and potential holdings in our strategy.

Adding Additional Factors to Value

While value by itself can be a powerful tool for understanding risk and potentially increasing a portfolio's expected return, as discussed above, Gerstein Fisher's focus on a Multi-Factor approach to investing has led us to explore how other sources of risk and return might be combined to further strengthen a Value equity strategy. In Exhibit 2, we can see how single-factor portfolios built using our quantitative approach compare to the Russell 1000 Value Index (which serves as a benchmark). As we can see, tilts towards momentum, profit, quality (which incorporates capital spending, asset and issuance growth), value or size (all risk factors that Gerstein Fisher has incorporated into our Multi-Factor® strategies) improves upon the benchmark's return. Momentum provides the highest return, outpacing the Russell 1000 Value benchmark by almost a full percent from January 1996 to March 2018. (For more on factor-based investing, see **"What is a Multi-Factor Investment Approach?"**).

As seen above, a value portfolio "tilted" towards each factor demonstrated better risk, return, or both, but we also test our confidence in this result by finding a consistent relationship between combined factor exposures and investment results. Exhibit 3 presents bivariate analysis applied on value, momentum, and quality characteristics, divided into 25 sub-portfolios based on quintiles (quintile 1 represents the highest factor score and 5 the lowest) of each factor. These segments are then regularly rebalanced and analyzed for their risk and return for the 22 years between 1996 and 2017. In Table A, for example, the securities with the highest value exposure and highest momentum (upper left corner – the 1st quintiles for each factor) outperformed growthier stocks with lower momentum (bottom right corner – the 5th quintiles), with a spread of 16%. In terms of risk, the top quintile by Value and Momentum exhibited 16% volatility versus 30% for the lowest ranking by Value and Momentum.

The data analysis for how each factor interacts with every other potential variable of a portfolio, and how multiple factors interact in combinations with other groupings of multiple factors, represents an ongoing process integral to our portfolio management and oversight. We do not believe that there is a "perfect" mix of factors, or that historical data will be precisely predictive of the future, and instead embrace the idea that a diversified mix of quantitative risk exposures, guided by the broadest and deepest data available, should be the foundation of our Multi-Factor® Value Strategy.

[2] This includes calculating a z-score, which is the number of standard deviations a data point is from the mean. It is calculated by subtracting the mean from the observation, and dividing by the standard deviation of the sample.

Exhibit 3: Bivariate Factor Performance Analysis – Momentum, Value, Size, Quality, and Growth in Value
Jan. 1996–Dec. 2017

A) Value & Momentum

Return

	Momentum				
Value	**1**	**2**	**3**	**4**	**5**
1	13%	15%	14%	11%	3%
2	10%	10%	8%	6%	0%
3	6%	8%	4%	1%	-7%
4	6%	9%	6%	1%	-8%
5	-6%	-1%	-2%	-2%	-3%

Risk

	Momentum				
Value	**1**	**2**	**3**	**4**	**5**
1	16%	12%	14%	20%	26%
2	15%	11%	12%	18%	23%
3	16%	12%	13%	18%	23%
4	20%	15%	17%	24%	30%
5	24%	20%	20%	24%	30%

B) Value & Quality

Return

	Quality				
Value	**1**	**2**	**3**	**4**	**5**
1	17%	15%	8%	8%	2%
2	13%	10%	7%	6%	4%
3	11%	7%	-1%	-1%	4%
4	7%	8%	5%	2%	0%
5	0%	2%	-3%	-3%	-8%

Risk

	Quality				
Value	**1**	**2**	**3**	**4**	**5**
1	19%	18%	18%	18%	23%
2	16%	15%	15%	13%	17%
3	16%	14%	14%	15%	19%
4	18%	17%	18%	18%	23%
5	25%	24%	23%	24%	26%

Sources: MSCI, Gerstein Fisher Research

The Gerstein Fisher Multi-Factor® Value Strategy

Gerstein Fisher's Multi-Factor® Value Strategy seeks to invest in large-cap US value securities, defined in part by the Russell 1000 Value Index. The strategy does not seek to own every constituent stock inside its investable universe, as doing so would entail significant trading and turnover costs without equivalent diversification benefit. Therefore, we screen the entire investable universe and identify a substantial basket of securities which represent a broad portfolio of the large-cap value market segment, and we incorporate tilts to the additional risk factors described above.

By not limiting ourselves to a single security characteristic – such as value itself – the Gerstein Fisher Multi-Factor® Value Strategy can offer broader and more diversified risk-factor exposures than a traditional value fund. Additional characteristics such as size, profitability, and quality can be targeted, and the overall mix of security-level characteristics within the portfolio can be carefully managed and monitored. The addition of momentum, for example, steers the portfolio away from companies for which prices are falling more rapidly than earnings, helping to avoid value traps (where an investor may continue to buy a rapidly declining company as it becomes "cheaper"). All of these exposures are implemented with tightly controlled turnover and transaction costs, with the objective of offering a cost structure which is comparable to that of a low-fee, index-like approach.

Over the long term, the strategy seeks to achieve a higher risk-adjusted return than the domestic large-cap value equity benchmark through higher – but carefully managed – exposures to factors, relative to the market. To maintain additional exposures to strategic risk factors, based on decades of research we believe that investors should be compensated, over the long term, in the form of higher expected returns. Additionally, by ensuring that the targeted exposures are across numerous risk factors that are not perfectly correlated to each other, a Multi-Factor Value strategy can maintain a long-term expected volatility similar to that of the benchmark index.

Exhibit 4: Return and Risk Comparison – Multi-Factor® Value Strategy Test vs. Russell 1000 Value Index
Jan. 1, 1996–Mar. 31, 2018

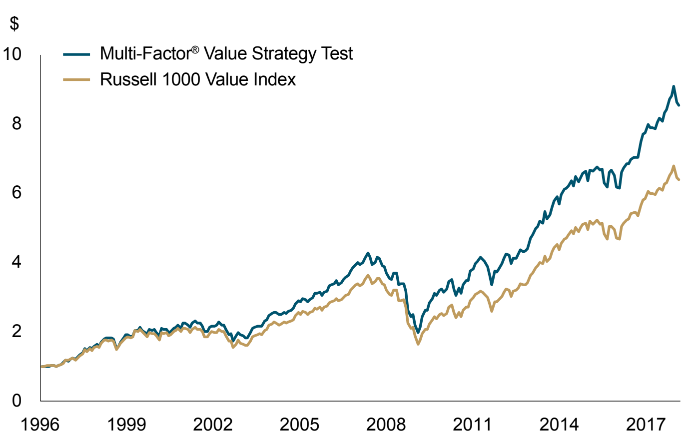
	Annualized Return (%)	Standard Deviation (%)
Russell 1000 Value Index	8.73	14.60
Multi-Factor® Value Strategy Test	10.16	14.65

Note: Test strategy performance above represents a hypothetical, back-tested portfolio and is presented for illustrative purposes only. It is not meant to illustrate the performance of any actual Gerstein Fisher model or strategy. Please see the related important disclosure on the final page of this presentation for further details.
Sources: MSCI, Russell, Gerstein Fisher Research

Our research has shown that by layering these additional factors onto a value-oriented portfolio, we can construct a strategy which, based on our data, would have significantly outperformed historical benchmarks. While in Exhibit 2 we saw the impact of pairing additional factors to a Value portfolio, in Exhibit 4 we see a simulated Multi-Factor® portfolio incorporating tilts to each core factor outlined above, and compare its risk and return to that of the Russell 1000 Value Index.

When multiple factors are combined, we are left with a portfolio which has historically not only performed better than a value benchmark, but has done so by combining multiple sources of risk in a diversifed, quantitative approach. This strategy is designed to manage risk as well as return, achieving higher expected returns over the benchmark value index incrementally over a long investment horizon without taking outsized or unmanaged risks (volatility is, in fact, slightly lower), and is designed to provide investors with an overall better investment experience (See Exhibit 5).

Exhibit 5: Growth of $1 – Multi-Factor® Value Strategy Test vs. Russell 1000 Value Index
Jan. 1, 1996–Mar. 31, 2018



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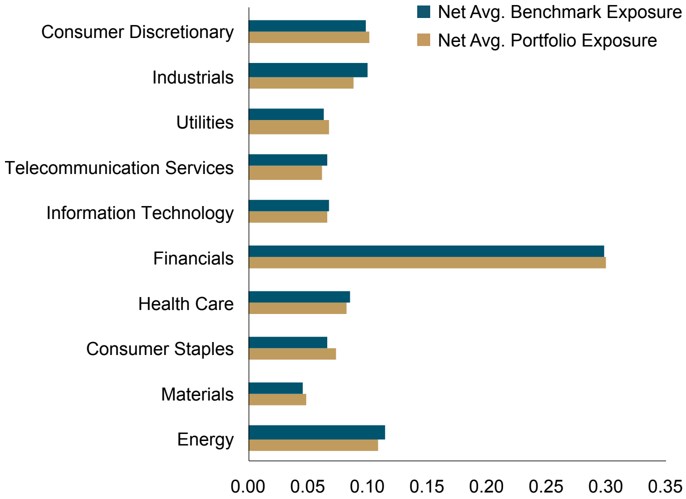
Sources: MSCI, Russell, Gerstein Fisher Research

In additional to managing risk through our quantitative investment process and by balancing multiple diversified factor characteristics across the portfolio, this simulated portfolio is also carefully managed to reduce the risk of unintended over- or under-exposure to sectors (see Exhibit 6).

Value and Growth are Not Opposing Ideas

Growth investing, whose philosophy is based on selecting companies with strong earnings growth and future prospects, is often viewed as contradictory (but which we see as complementary) to value investing. With expectations for the company's future success elevated, growth stocks often incorporate this positive outlook by investors into the stock price and thus generate higher valuations (relatively), which may indicate that they are 'overvalued' from a value-oriented perspective.

Exhibit 6: Sector Exposure – Multi-Factor® Value Strategy Test vs. Russell 1000 Value Index
Jan. 1, 1996–Mar. 31, 2018



Sources: MSCI, Russell, Gerstein Fisher Research

Over a 90-year period (from January 1928 to December 2017), a 100% value portfolio earned an approximately 1% higher annual return than a 100% growth portfolio[3]. However, looking at the Russell 1000 Growth and Russell 1000 Value Indexes, over the last 10 years to March 2018 growth stocks outperformed value stocks by over 3% annualized. While periods of value underperformance are rare historically (refer to Exhibit 1 above), they are not unprecedented, even over relatively long, 10-year periods. The risk of value investing is periodically realized in underperformance when compared to growth stocks, which may lead investors to question the relative merits of value- or growth-oriented investing in their equity portfolios. For a more detailed discussion of this issue, please see our papers, **"After a Decade of Strong Large Cap Growth, Is There a Place for Small Value?"** and **"The Trouble with 100% Value: Why What Looks Good on Paper May Not Be Great for Real Life"**.

However, value and growth are not opposing ideas that cannot be reconciled in an investor's portfolio. In fact, growth is one variable to consider when estimating the value of a company. Our general recommendation for investors is to consider a portfolio which incorporates both value *and* growth components and takes a factor-based approach to invest in a diversified basket of global equities, within which Gerstein Fisher's Multi-Factor® Value Strategy would be one component.

Conclusion

Gerstein Fisher research and theoretical models are designed to be put into practice for our clients and investors in the form of a rational, investable strategy. We manage our Multi-Factor® Value Strategy as an approach which can take the best elements of indexing (primarily the avoidance of excessive security-level risk and an emphasis on controlling costs and turnover) while targeting specific risks in a rigorous, quantitative manner which should result in higher expected returns. This strategy is implemented with a careful focus on cost management, and uses individual equities to avoid the administrative costs inherent in a mutual fund structure, along with a trading strategy designed to minimize transactional friction costs and other expenses.

In managing our family of Multi-Factor® strategies for over two decades, across asset classes and vehicles, Gerstein Fisher has always sought to be cutting edge in terms of research, thought leadership, and the ability to implement these ideas in an intelligent manner. When compared with the Russell 1000 Value, the Gerstein Fisher Multi-Factor® Value Strategy is a thoughtful and strategic investing method with a broad range of research-based factor exposures incorporated into a disciplined investment process. Within the US large-cap value universe, it applies tilts to risk factors including value, size, profitability, momentum, and earnings yield. For more details and performance, please refer to our Multi-Factor® Large-Cap Value fact sheet.

[3] 100% value portfolio was represented by Fama/French US Large Value Index (exl. utilities); 100% growth portfolio was represented by Fama/French Large Growth Index (excl. utilities).

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Performance contained within this presentation reflects results for hypothetical, back-tested portfolios. These portfolios are provided exclusively for informational purposes only.

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