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# Enhancing the Equity Momentum Premium by Incorporating Fundamental Characteristics

The momentum premium has been well documented since 1993, when Jegadeesh and Titman<sup>1</sup> showed that an equity strategy of simultaneously buying past winners and selling past losers can generate abnormal returns over holding periods from three to 12 months. At Breton Hill, we implement a more concentrated version of the widely followed technical definition, which primarily involves selecting top-tier securities and shorting the bottom tier, after adjusting for last 12-month price return (minus the last month). In the following article, we will attempt to show that selecting securities with strong (weak) technical momentum scores combined with strong (weak) underlying fundamental characteristics can produce better risk-adjusted returns than technical momentum signals alone. To demonstrate, we will compare our results of an enhanced momentum portfolio to that of a traditionally constructed long/short cross-sectional momentum portfolio, as defined by Jegadeesh and Titman. Our analysis suggests that there can be an overall improvement in returns, with less risk, while still meeting the basics characteristics of a traditional momentum signal.

<sup>1</sup> "Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency," Narasimhan Jegadeesh and Sheridan Titman, Journal of Finance, March 1993. Several key risks are associated with pure play momentum investing. As most market participants have observed, there have been several instances during a normal business cycle in which the momentum premium has experienced sharp drawdowns (e.g. dot-com bubble, global financial crisis, Fed tapering, etc.) due a rapid change in the direction of price movement. One of the tools quantitative investors, or "quants", often use to help manage those sharp reversals is to diversify the basket of stocks (i.e. increase breadth) so that a small number of names experiencing such reversals do not drag down the performance of the entire portfolio. Another method that is often used is the implementation of risk reversal signals as a separate indicator; however, this strategy can be prohibitively expensive. Similar to paying for insurance, standalone risk reversal signals create a net pay-off structure that is negatively skewed, gradually eroding an investor's returns. To find a better solution, we need to break down the components of an equity risk premium. Equity premiums are a function of several factors that can be grouped according to the below categories:

Equity Risk Premia = Fundamentally Driven Risk Premia + Technical Risk Premia + Idiosyncratic Risk

Most quants tend to use the diversification principle in order to mitigate idiosyncratic risk. This can be very effective, but often comes at the expense of forfeiting the possibility of generating excess returns through security selection. Alternatively, one may be able to sharpen an existing signal by defining it more accurately and incorporating enhanced information, without sacrificing idiosyncratic alpha potential. At Breton Hill, we focus on sharpening the traditionally defined premia in an effort to further extract excess returns and better manage risk. In the methodology below, we take a commonly used equity risk premium, momentum, and explore an opportunity to enhance the commonplace definition through thoughtful security selection, without giving up the core momentum characteristics.

# Methodology

Figure 1 below highlights the methodology we utilized to create the two model portfolios. The first utilizes the traditional momentum methodology and the second uses the enhanced definition of momentum, utilizing a secondary screen to sharpen the momentum signal. Implementation of these signals is accomplished by trading both long and short.

Criteria	Traditional Momentum Definition	Enhanced Momentum Definition				
Universe	Top 1500 Market Cap U.S. Stocks	Top 1500 Market Cap U.S. Stocks				
Time Period	December 2009 to July 2018	December 2009 to July 2018				
Momentum Time Measure	Previous 365 days minus most recent 30 days	Previous 365 days minus most recent 30 days				
Volatility Neutralization (last 12 months)	Yes	Yes				
Sector Neutralization	Yes	Yes				
Ranking Securities (Monthly)	Divide universe into tertiles (500 high momentum, 500 medium momentum and 500 low momentum)	Divide universe into tertiles (500 high momentum, 500 medium momentum and 500 low momentum)				
Fundamental Screens	No	Within the high (low) overall momentum tertile, a set of fundamental momentum screens are employed to further shrink the selected stocks to 250 names				
Weighting	Equally weighting stocks on each side; fully invested on the long side; beta-adjusted on the short side	Equally weighting stocks on each side; fully invested on the long side; beta-adjusted on the short side				

### FIGURE 1. TRADITIONAL MOMENTUM VS. ENHANCED MOMENTUM METHODOLOGIES

#### FIGURE 2. ENHANCED METHODOLOGY ILLUSTRATION

FIGURE 3 SECONDARY CHARACTERISTICS



#### Step 1: Price Momentum

- Divide the universe based on volatility scaled price momentum
- Highest momentum securities create the new investable universe

#### Step 2: Security Selection

- Secondary screens to select high conviction momentum securities
- Within the high momentum universe, consider the following on the long side, for example:
- Avoid overly expensive securities
- Avoid poor-quality securities
- Avoid high-risk securities
- Seek higher income earners

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Desirable Characteristics	Traditional Momentum Definition	Enhanced Momentum Definition Backward-/forward- looking diversified metrics (P/E, P/CF, EV/EBITDA, etc.) help avoid value traps					
Value	Cheap assets tend to outperform expensive assets						
		Specialized ratios (ex. Banks, Consumer Discretionary, etc.)					
Quality	Assets with strong fundamentals tend to be resilient in volatile markets	Improving fundamentals from all three financial statements (Current Ratio, ROA, Leverage, etc.)					
Income	High yielding assets tend to outperform	Consider dividends, buybacks and growth in return of capital to shareholders					
Low-Risk	Low risk assets often outperform	Combination of volatility and beta across multiple tenors					

For the purpose of this analysis, the following secondary characteristics illustrated in Figure 3 are utilized to select the best (worst) 250 names from the 500 names in the high (low) momentum universe.

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For each one of the characteristic listed above, Breton Hill uses a proprietary definition that applies some combination of the following sources: balance sheet data, income statements, cash flow statements, price action, alternative data sets (credit card, transcript analysis, etc.) and views from Neuberger Berman's 40-person equity research team, along with sophisticated Artificial Intelligence "AI" and quantitative risk management techniques.

# Results

Figure 4 below shows the performance and risk metrics of the two momentum premia methodologies: the traditional definition and the enhanced definition.

#### FIGURE 4. TRADITIONAL VS. ENHANCED METHODOLOGY RETURN PROFILE

December 31, 2009 – July 31, 2018

	Traditional Momentum Model Portfolio <sup>1</sup>	Enhanced Momentum Model Portfolio <sup>1</sup>
Annualized Return	3.84%	6.57%
Annualized Volatility	5.91%	6.78%
Risk-Adjusted Return	0.65	0.97

Source: Bloomberg, Neuberger Berman.

<sup>1</sup>Model portfolio returns are shown gross of all fees and transaction costs.

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Additionally, Figure 5 is a year-by-year comparison between the two portfolios:

# FIGURE 5. TRADITIONAL VS. ENHANCED METHODOLOGY ANNUAL RETURNS

As of July 31, 2018

	2010	2011	2012	2013	2014	2015	2016	2017	1 Year	3 Year	5 Year
Enhanced Definition Model	2.3%	18.8%	7.3%	7.0%	5.7%	18.2%	-8.8%	6.2%	5.2%	2.0%	4.9%
Traditional Definition Model	1.2%	12.2%	1.5%	4.3%	0.0%	15.9%	-6.8%	4.0%	4.0%	1.7%	3.4%
Enhanced Model Excess Return	1.1%	6.7%	5.8%	2.7%	5.7%	2.3%	-2.0%	2.2%	1.2%	0.3%	1.6%

Source: Bloomberg, Neuberger Berman.

<sup>1</sup>Model portfolio returns are shown gross of all fees and transaction costs.

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While the above metrics help demonstrate that performance can be enhanced beyond the traditional momentum definition, Figure 6 illustrates that this can be accomplished without compromising exposure to the momentum premium itself. In the chart on the next page, the light blue line illustrates the monthly difference in the momentum characteristics of the two methodologies. As seen in the chart, the average difference in momentum characteristics (dark gray dashed line) is an immaterial amount of 0.01. In other words, using the definitions defined above, both methodologies have approximately the same set of momentum characteristics.



## FIGURE 6. COMPARISON OF MOMENTUM CHARACTERISTICS

Source: Bloomberg, Neuberger Berman.

# **Summary**

The illustration below in Figure 7 summarizes the methodology to enhance the traditional momentum score, as originally defined in by Jagadesh and Titman, while maintaining core momentum exposure.



#### FIGURE 7: SELECTING SECURITIES USING "RANK OF RANKS" APPROACH

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Securities with strong (weak) price momentum that are corroborated by other indicators from the firm's core balance sheet, income statement metrics, etc. tend to exhibit a more favorable risk/return profile when compared to traditional momentum portfolios that rely too heavily on diversification as a main risk management tool.

In summary, at Breton Hill, we believe that traditional risk premia can be augmented by a secondary screening process that reduces breadth and increases conviction without compromising the core characteristics of the desired premium. As new sets of information become available, we believe we can continue to sharpen existing signals and deliver higher conviction portfolios beyond what has been traditionally offered in the risk premia space.

#### Hypothetical Backtested Performance Disclosures

The hypothetical performance results included in this material are of a backtested model portfolio that is shown for illustrative purposes only. The hypothetical results were calculated by running the model portfolio on a backtested basis using the stated methodologies and assumptions below. The results are shown on a supplemental basis and do not represent the performance of any Neuberger Berman managed account or product and do not reflect the fees and expenses associated with managing a portfolio. The results assume no withdrawals and reinvestment of any dividends and distributions.

This following is a summary of the backtested methodology and assumptions for the Traditional Momentum Model Portfolio:

Stock Selection: At the end of each business day month-end, the momentum measure divides the underlying universe into tertiles. Stocks are picked on a sector-neutralized basis where best (worst) tertile of each sector is included in the best (worst) overall tertile; this step results in the formation of the long (short) side of the portfolio.

Weighting: The model portfolio equally weights stocks within each side. The model portfolio is fully invested on the long side and weighted on a beta-adjusted basis on the short side. The portfolio is rebalanced monthly.

This following is a summary of the backtested methodology and assumptions for the Enhanced Momentum Model Portfolio:

**Stock Selection:** At the end of each business day month-end, the momentum measure divides the underlying universe into tertiles. Stocks are picked on a sectorneutralized basis where best (worst) tertile of each sector is included in the best (worst) overall tertile. In the best (worst) overall momentum tertile, a set of momentumfundamental screens are employed to further shrink the selected stocks to 250 names; this step results in the formation of the long (short) side of the portfolio.

Weighting: The model portfolio equally weights stocks within each side. The model portfolio is fully invested on the long side and weighted on a beta-adjusted basis on the short side. The portfolio is rebalanced monthly.

Hypothetical backtested returns have many inherent limitations. Unlike actual performance, they do not represent actual trading. Since trades have not been actually been executed, results may have under- or over-compensated for the impact, if any, of certain market factors, such as lack of liquidity, and may not reflect the impact that certain economic or market factors may have had on the decision-making process. Hypothetical backtested performance also is developed with the benefit of hindsight. Other periods selected may have different results, including losses. There can be no assurance that Neuberger Berman will achieve profits or avoid incurring substantial losses. Neuberger Berman managed accounts in the manner reflected in the models during a portion of the backtested time periods shown.

Unless otherwise indicated, results shown reflect reinvestment of any dividends and distributions. The hypothetical performance figures are shown gross of fees, which do not reflect the deduction of investment advisory fees and other expense. If such fees and expense were reflected, returns referenced would be lower. Advisory fees are described in Part 2 of NB BH's Form ADV. A client's return will be reduced by the advisory fees and any other expenses it may incur in the management of its account. The deduction of fees has a compounding effect on performance results. For example, assume Neuberger Berman achieves a 10% annual return prior to the deduction of fees each year for a period of 10 years. If a fee of 1% of assets under management were charged and deducted from the returns, the resulting compounded annual return would be reduced to 8.91%. Please note that there is no comparable reduction from the indices for the fees.

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