Building a Better Equity Market Neutral Strategy

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Equity Market Neutral (EMN) is a well-established strategy designed to deliver positive performance without exposing investors to the risk of the overall equity market. We believe this strategy, with its long-term institutional track record, can be efficiently managed not only as a limited partnership but also as a registered investment product.

This paper describes our approach in building an EMN strategy that seeks to systematically capture positive returns from global stocks, regardless of market direction.

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Introduction

Most investors' portfolios are less diversified than they appear. Although investors allocate almost half of their capital to asset classes other than equities, those asset classes tend to be relatively less volatile. Consequently, overall portfolio risk is predominantly driven by just one source: equity markets. The result is that good and bad equity market performance overwhelmingly determines good and bad portfolio performance. Equity market neutral ("EMN") may be a solution for investors looking to add a new source of returns.

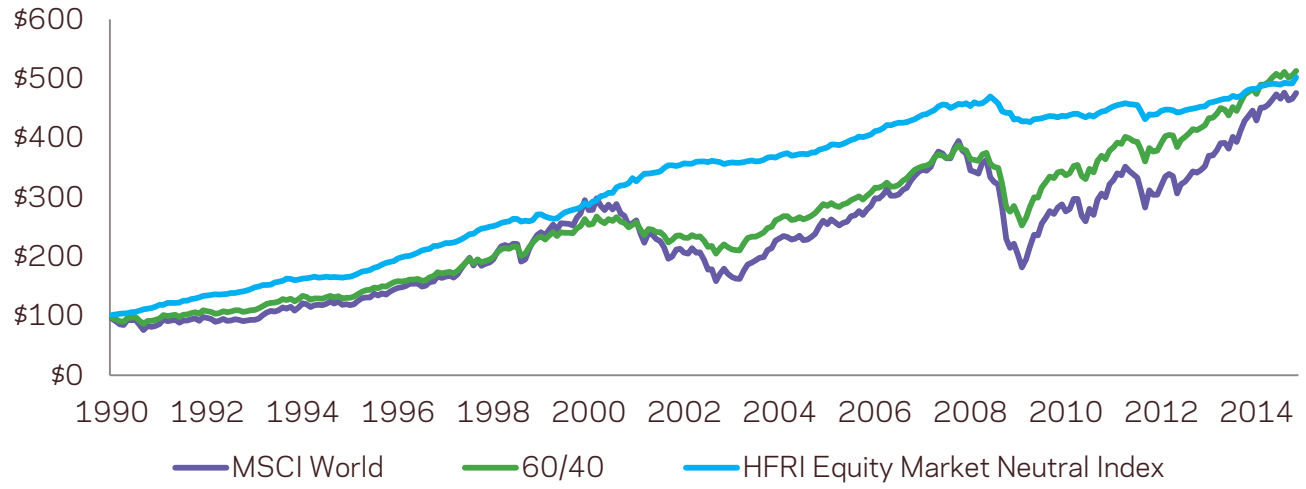
By definition, returns of EMN funds should be uncorrelated to traditional equity returns. EMN strategies are designed to make money when long positions outperform short positions, regardless of overall market direction. Thus, their returns are often considered pure alpha, and may be expected to improve a portfolio's expected returns, reduce its volatility, or both.[1]

The Equity Market Neutral Landscape

Hedge funds have managed EMN strategies for decades, and the category has posted strong long-term risk-adjusted and total returns (see Exhibit 1). EMN strategies have also shown less-severe drawdowns than equities and the traditional 60/40 portfolio (Exhibit 2), while maintaining attractive diversification characteristics — from 1990 to November 2014, the correlation between the HFR Equity Market Neutral Index and a global 60/40 portfolio was less than 0.3.

EMN works by taking long positions in stocks that are expected to outperform their peers and short positions in stocks expected to underperform. The positions are chosen so that the equity market exposure of the long side of the portfolio is offset by the exposure of the short side. This results in a strategy that is hedged to the aggregate stock market, thereby insulating investors from the major ups and downs in equities.

Exhibit 1 — Hypothetical Growth of $100, January 1990 - November 2014



Source: HFR, AQR. 60/40 is a portfolio of 60% MSCI World and 40% Barclays Aggregate. Broad-based securities indices are unmanaged and are not subject to fees and expenses typically associated with managed accounts or investment funds. Investments cannot be made directly in an index. Past performance is not a guarantee of future performance. For illustrative purposes only and not based on an actual portfolio that AQR manages.

[1] For more on hedge funds returns, including a discussion of alpha, please see AQR whitepaper "Is Alpha Just Beta Waiting To Be Discovered".

EMN strategies typically also employ leverage, which gives the portfolio manager the ability to manage the level of risk of the strategy. This way, a strategy that otherwise might deliver too little risk and return to matter to an investor's overall portfolio may instead make more of a contribution (of course, a good manager must still carefully monitor the strategy's risk). In the case of the aggregate HFRI Equity Market Neutral Index, this results in volatility comparable to that of bonds (3.2% annual volatility for the EMN Index compared to 3.7% for the Barclays Aggregate).

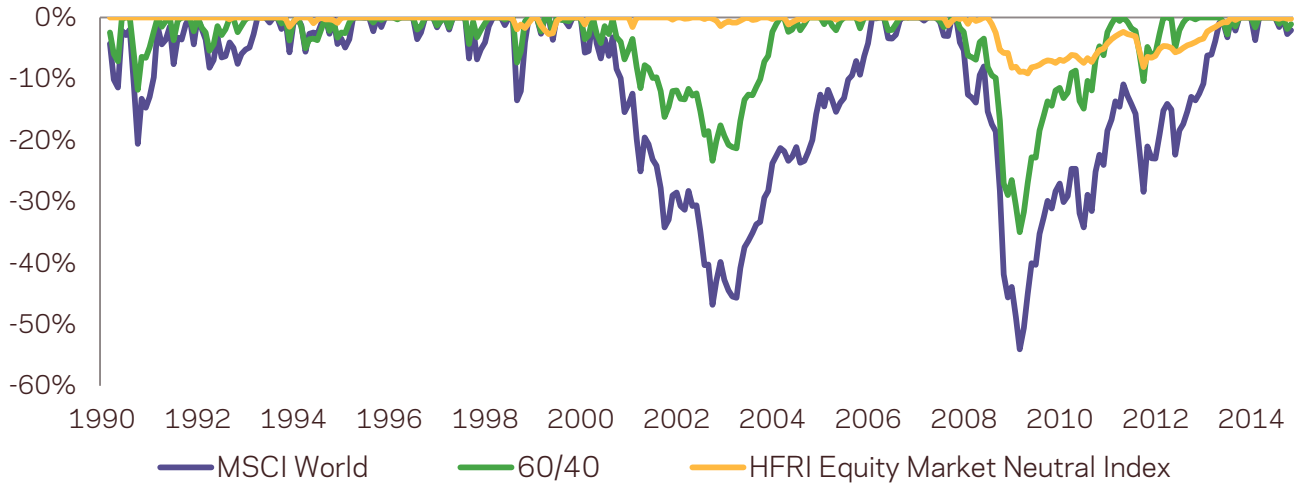
Though familiar to many institutional investors, EMN strategies have only recently been implemented in vehicles for retail investors. However, as with many liquid alternatives with long institutional track records, the category is growing, especially as investment advisors have sought to add independent sources of returns to client portfolios.[2]

Building a Better Equity Market Neutral Strategy

AQR has managed EMN strategies since inception in 1998. Our approach is to build long and short positions based on economic fundamentals (we like cheap, high quality stocks that have improving fundamentals and price) and measure them consistently and objectively for every company we look at. The relationship between these fundamentals and subsequent returns is thoroughly tested, and we require it to be supported both by economic theory and empirical evidence.

Our approach is differentiated in various ways, chief among them by our focus on diversification. We strive for diversification not only in the number of securities and industries in the EMN portfolio, but also in the breadth of investment themes used and in the span of geographies included.

Exhibit 2 — Hypothetical Peak-to-Trough Losses, January 1990 — November 2014



Source: HFR, AQR. 60/40 is a portfolio of 60% MSCI World and 40% Barclays Aggregate. Broad-based securities indices are unmanaged and are not subject to fees and expenses typically associated with managed accounts or investment funds. Investments cannot be made directly in an index. Past performance is not a guarantee of future performance. For illustrative purposes only and not based on an actual portfolio that AQR manages.

[2] See for example, "The Trillion-Dollar Convergence", McKinsey & Company, August 2014.

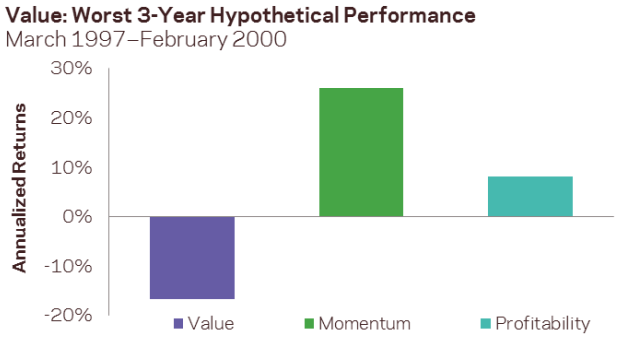
Diversification: Number of Securities

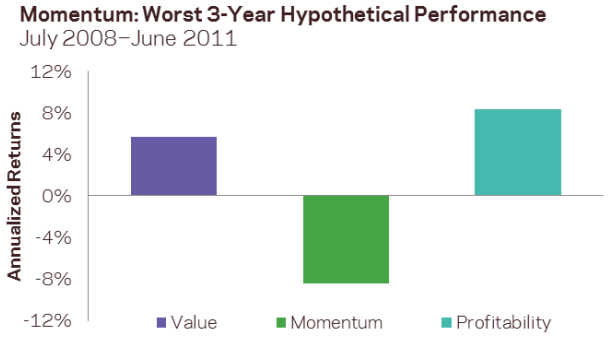
Our strategy can be expected to include several hundred stocks on both the long and short sides. Each of these will have a fairly low individual weight, with the maximum allocation to any one company being generally less than 2.5% of the portfolio's overall exposure. This means that news about a single company is unlikely to have much impact on the overall portfolio. At the overall strategy level, total exposures will typically be around $2 long and $2 short for every dollar invested.

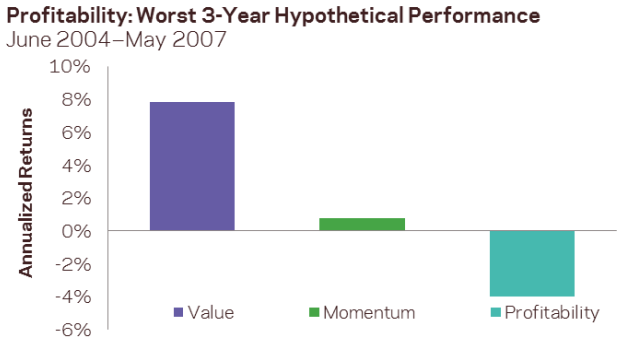
Diversification: Investment Themes

A second source of diversification comes from the breadth of investment themes we use to evaluate companies. Many of these themes are uncorrelated to each other, which means there may be meaningful benefits to using them together. Exhibit 3 illustrates this for just three simplified versions of the themes we pursue: value, momentum, and profitability.[3] Historically, when one theme sustained its worst 3-year performance, the other two themes performed positively. While our themes are built to generate alpha on a standalone basis, they also complement each other to achieve more consistent alpha through time, which can help mitigate periods of underperformance.

Exhibit 3 — Potential Benefits of Multiple Themes







Average Correlation of Hypothetical Excess Returns

	Momentum	Profitability
Value	-0.48	-0.39
Momentum		0.38

Source: AQR. Based on long-only hypothetical returns for the U.S. Large Cap universe from "A New Core Equity Paradigm." Frazzini, Israel, Moskowitz, Novy-Marx (2013). The U.S. Large Cap universe approximately corresponds to the largest 1000 U.S. stocks by market capitalization. Returns are gross of fees and net of estimated transaction costs. Returns shown are excess returns over the Russell 1000 Index Total Return benchmark. The returns of the underlying style components are based on AQR backtests, gross of fees and transaction costs. This analysis is for illustrative purposes only and is not based on an actual portfolio AQR manages. Please read disclosures at the end for a description of the investment universe and the allocation methodology used to construct the backtests. Hypothetical performance results have inherent limitations, some of which are disclosed at the end.

[3] Profitability is a component of "Stability" in Exhibit 4.

Even within a single theme we seek to take advantage of diversification through the use of multiple measures. For example, to evaluate "value" we include (among other metrics) measures of book-to-price, dividend yield, and earnings-to-price. Similarly with momentum, we include both direct, price-based measures, which evaluate a company's performance compared to its peers; and indirect measures, which can account for a company's economic links to other companies. This notion of benefiting from "intra-theme diversification" extends to the entire suite of investment themes used to select stocks for the EMN strategy.

Value, momentum, and profitability are only a few of the broad investment themes we use to select stocks. Our EMN strategy utilizes many others, some of which are shown in Exhibit 4. Each is systematically incorporated within our process to determine which stocks are attractive (and how attractive they are) versus ones that are unattractive.

Diversification: Industries and Geographies

Third, our process incorporates differences across geographies and industries (for our EMN strategy this includes nearly 60 industries). In this way, we are able to independently account for investment themes across stocks within an industry, at the industry-level, and for industries across different geographies (country-industry pairs). While we expect the majority of our alpha to be derived from within-industry stock selection, we expect industry and country-industry pair selection to offer additional diversifying sources of alpha.[4]

Implementation Matters

For many managers, stock selection is an overwhelming focus, but in reality it represents only a part of what's required for success — identifying the right stocks is merely necessary, it isn't sufficient. Success in EMN strategies relies in large part on implementation. AQR's experience since 1998 encompasses a wide range of market environments and has honed our

Exhibit 4 — Investment Themes We Pursue in Equity Market Neutral

Value	Identify companies that are "cheap" versus peers
Momentum	Determine recent relative outperformance
Earnings Quality	Differentiate companies with higher earnings quality
Stability	Evaluate financial health, company risk and quality
Investor Sentiment	Include actions from multiple investor groups as signals of market opinion
Management Signaling	Incorporate management signaling to evaluate financial health of company operations

Source: AQR.

[4] Country-industry pairs are evaluated using the same themes as our within-industry stock selection strategy; industry selection uses only a subset of these, namely, valuation and momentum.

ability to translate a portfolio that looks good in theory to one that can be managed in the real world.

For example, a stock's potential attractiveness can be quickly eroded by frictions such as transactions costs and shorting fees. For over a decade, AQR has been developing and enhancing proprietary algorithms to implement our views efficiently in competitive markets. These algorithms are designed to trade passively when possible and more quickly when prudent.

A Focus on Risk Management

The construction of a sound EMN portfolio may inherently reduce risk. By hedging away overall stock market exposure, EMN strategies seek to eliminate a major source of risk. Since 1970, the volatility of the MSCI World has been 15% — this can lead to potentially large market swings: for example, in three distinct years since 1990, the MSCI has been down over 20% (twice in the 2000s).

As already noted, diversification in and of itself can reduce volatility. Diversified portfolios are less susceptible to large swings from individual positions and their volatilities tend to be more predictable than those of concentrated funds. We can also diversify the economic drivers of returns: even if one particular investment theme does poorly, the impact on our portfolio may be offset by the performance of other themes we invest in.

We seek to achieve a steady 6% volatility in our EMN strategy. On one hand, this is meaningfully less than the average volatility of stock markets; on the other hand, it's still enough to lead to returns that make a useful contribution to many investors' portfolios. Importantly, we seek to achieve this volatility from month to month and year to year — that is, the portfolio is designed to provide fairly consistent volatility through time. This in turn may provide investors more consistent exposure to these sources of returns, regardless of market volatility.

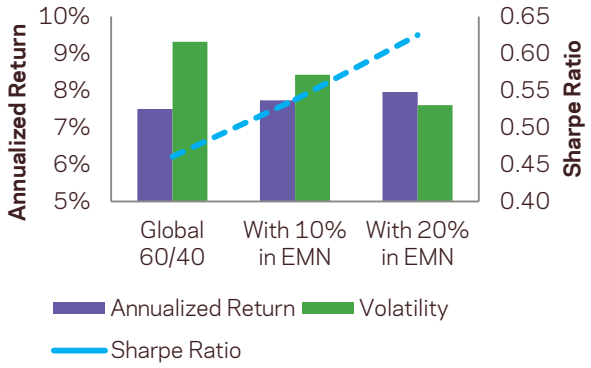
Equity Market Neutral in a Portfolio

Where it fits: In general, EMN strategies are used to reduce a traditional portfolio's overall risk while improving its risk-adjusted returns. For investors who already have an allocation to liquid alternatives, equity market neutral is often a strategic holding within their alternatives portfolio.

Deciding how to fund an EMN strategy requires careful consideration. Investors who are relatively comfortable with their existing portfolio risk but who seek higher expected returns might consider funding an EMN investment from an existing alternatives allocation. Investors primarily focused on reducing portfolio risk and mitigating drawdowns will likely want to fund an EMN allocation from a volatile asset class such as equities. A hypothetical example of such a shift is shown in Exhibit 5, based on the backtest of AQR's EMN strategy. The exhibit compares a globally diversified 60%/40% stock/bond allocation to ones that incorporate EMN. Even a modest allocation to EMN leads to a meaningful reduction in volatility. Importantly, this reduction is not commensurate with a reduction in returns, which change far less (in fact, returns improve slightly in this hypothetical backtest). Lower risk and a similar return lead to a meaningful improvement in the risk-return tradeoff. The portfolio's risk-adjusted return, or Sharpe ratio, increases from 0.54 to 0.62.

Exhibit 5 — Allocating from Equities to EMN

Hypothetical Backtest, Jan 1995—Aug 2014



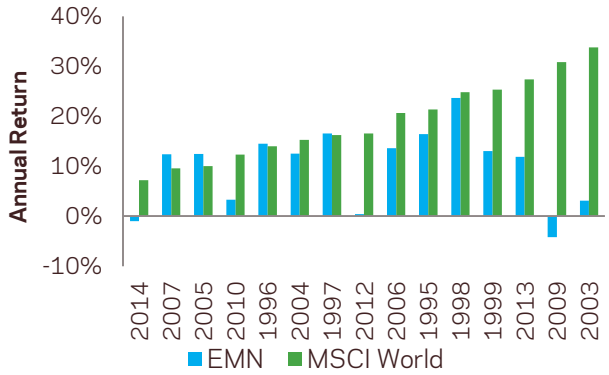
	Global 60/40	With 10% in EMN	With 20% in EMN
Annualized Return	7.5%	7.7%	8.0%
Volatility	9.3%	8.4%	7.6%
Sharpe Ratio	0.46	0.54	0.62

Source: AQR. For illustrative purposes only. The global 60/40 portfolio is 60% the MSCI World Index and 40% the Barclays Capital Aggregate Bond Index. Portfolios with EMN allocate pro-rata from 60/40. The EMN returns are gross of fees and net of simplified transaction costs. Performance is hypothetical, and is not based on an actual portfolio or account. See important disclosures relating to hypothetical results at the end of this paper. Indices are unmanaged and are not subject to fees and expenses.

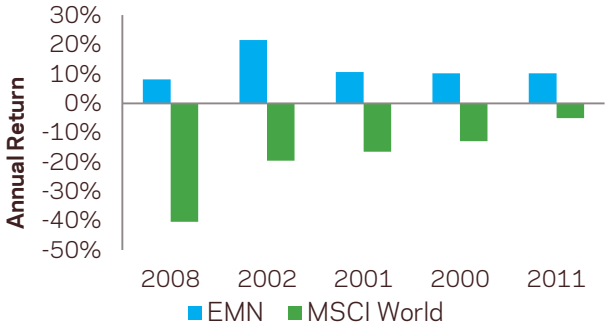
Setting expectations: Investors should realize that "market neutral" does not necessarily mean "strong returns when markets are down" (neither does it mean "weak returns when markets are up"!). The goal is for returns to be independent of equity markets over time. Consistent with this objective, the EMN strategy described in this paper produced a 0.0 correlation to equity markets over the full period shown in Exhibit 5. As shown in Exhibit 6, over any short-term period, returns may move in the same or in the opposite direction as the overall market, but over time should deliver an uncorrelated stream of returns.

Exhibit 6 — Hypothetical Performance

Years Equities Make Money, Jan 1995—Aug 2014



Years Equities Lose Money, Jan 1995—Aug 2014



Source: AQR. For illustrative purposes only. The EMN returns are gross of fees and net of simplified transaction costs. Performance is hypothetical, and is not based on an actual portfolio or account. See important disclosures relating to hypothetical results at the end of this paper. Indices are unmanaged and are not subject to fees and expenses

Investors should also consider what the likely magnitude of returns will be. Though we believe the EMN strategy we describe here can achieve higher risk-adjusted returns than stocks and bonds over the long term, the swings in performance may lead to large differences in any given year between equity markets and the EMN strategy. Equity markets are volatile and the difference between a good year and a bad year can easily be (and historically has been) positive or negative 20%. We expect the EMN strategy described in this paper to provide more consistent, less volatile returns, with about a third of the long-term volatility of equities.

Conclusion

Institutional investors have long embraced alternative strategies, whose long-term efficacy and diversification benefits have added significant value. With the emergence of liquid alternatives, a wider range of investors will be able to access these valuable tools so as to improve the diversification and enhance returns of their portfolios.

AQR seeks to improve the EMN landscape by providing an option for investors that is more transparent and risk-conscious, and that takes advantage of more than a decade of experience in managing liquid hedge fund strategies. We believe a diversified and disciplined approach that seeks to systematically harvest opportunities globally may help investors capture a truly alternative source of returns.

Biographies

Gabriel Feghali, CFA, Vice President

Gabe is a member of the portfolio management team in AQR's Global Stock Selection group. In this role, he monitors portfolio performance, reviews accounts with clients and presents stock selection strategies to investors. Prior to AQR, Gabe was a senior investment analyst with Planet Investment Services in Paris and also worked in the investment banking units of both UBS and Credit Suisse. Gabe earned a B.S. in operations research and industrial engineering from Cornell University, graduating *cum laude*, and an M.B.A. from Harvard Business School. He is a CFA charterholder.

Dan Villalon, CFA, Vice President

Dan is U.S. head of AQR's Portfolio Solutions Group, where he writes white papers and other research, is involved in the design of multi-asset portfolios, and engages clients on portfolio construction, risk allocation and capturing alternative sources of returns. Prior to AQR, he was a senior business analyst at Mitchell Madison Group and an investment analyst in the private bank at JPMorgan Chase & Co. Dan earned a B.A. in physics from Pomona College and an M.B.A. with a concentration in analytical finance from the University of Chicago Booth's School of Business. A paper co-authored by Dan, "Chasing Your Own Tail (Risk)," is part of the curriculum for people seeking to become Chartered Alternative Investment Analysts. He is a CFA charterholder.

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Realized volatility may come in higher or lower than expected***. Past performance is not an indication of future performance.***

Gross performance results do not reflect the deduction of investment advisory fees, which would reduce an investor's actual return. For example, assume that $1 million is invested in an account with the Firm, and this account achieves a 10% compounded annualized return, gross of fees, for five years. At the end of five years that account would grow to $1,610,510 before the deduction of management fees. Assuming management fees of 1.00% per year are deducted monthly from the account, the value of the account at the end of five years would be $1,532,886 and the annualized rate of return would be 8.92%. For a ten-year period, the ending dollar values before and after fees would be $2,593,742 and $2,349,739, respectively. AQR's asset based fees may range up to 2.85% of assets under management, and are generally billed monthly or quarterly at the commencement of the calendar month or quarter during which AQR will perform the services to which the fees relate. Where applicable, performance fees are generally equal to 20% of net realized and unrealized profits each year, after restoration of any losses carried forward from prior years. In addition, AQR funds incur expenses (including start-up, legal, accounting, audit, administrative and regulatory expenses) and may have redemption or withdrawal charges up to 2% based on gross redemption or withdrawal proceeds. Please refer to AQR's ADV Part 2A for more information on fees. Consultants supplied with gross results are to use this data in accordance with SEC, CFTC, NFA or the applicable jurisdiction's guidelines.

Hypothetical performance results (e.g., quantitative backtests) have many inherent limitations, some of which, but not all, are described herein. No representation is being made that any fund or account will or is likely to achieve profits or losses similar to those shown herein. In fact, there are frequently sharp differences between hypothetical performance results and the actual results subsequently realized by any particular trading program. One of the limitations of hypothetical performance results is that they are generally prepared with the benefit of hindsight. In addition, hypothetical trading does not involve financial risk, and no hypothetical trading record can completely account for the impact of financial risk in actual trading. For example, the ability to withstand losses or adhere to a particular trading program in spite of trading losses are material points which can adversely affect actual trading results. The hypothetical performance results contained herein represent the application of the quantitative models as currently in effect on the date first written above and there can be no assurance that the models will remain the same in the future or that an application of the current models in the future will produce similar results because the relevant market and economic conditions that prevailed during the hypothetical performance period will not necessarily recur. There are numerous other factors related to the markets in general or to the implementation of any specific trading program which cannot be fully accounted for in the preparation of hypothetical performance results, all of which can adversely affect actual trading results. Discounting factors may be applied to reduce suspected anomalies. This backtest's return, for this period, may vary depending on the date it is run. Hypothetical performance results are presented for illustrative purposes only.

The returns of the EMN backest represent results of a hypothetical equity market neutral portfolio, gross of fees and net of simplified transaction costs, and without any drawdown control system (which is designed to mitigate significant portfolio losses). The strategy aims to take long positions in stocks that scored well in our model and short positions in stocks that scored poorly, while maintaining beta-neutrality relative to the MSCI World Index. The investment universe makes up approximately 1,800 stocks across the majority of countries in the MSCI World Index. The hypothetical portfolio targets a 6% volatility and is run from January 1995 through August 2014.

There is a risk of substantial loss associated with trading commodities, futures, options, derivatives and other financial instruments. Before trading, investors should carefully consider their financial position and risk tolerance to determine if the proposed trading style is appropriate. Investors should realize that when trading futures, commodities, options, derivatives and other financial instruments one could lose the full balance of their account. It is also possible to lose more than the initial deposit when trading derivatives or using leverage. All funds committed to such a trading strategy should be purely risk capital.

Hypothetical returns shown in Exhibit 3 use approximately the largest 1000 U.S. stocks by market cap (roughly the Russell 1000 Index), and apply the following filters: Exclude LPs, MLPs, mortgage REITs, Royal Trusts, ETFs/ETNs, closed-end funds, ADRs/ADSs, SPACs; Exclude IPOs: Minimum seasoning of 12 months; Exclude acquisition or merger targets; Minimum Liquidity: 3 month median daily trading volume of at least $0.5M; Multiple classes of stock: choose the most liquid class based on trading volume.

The white papers discussed herein can be provided upon request.

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