Liquid Alternative Mutual Funds: An Asset Class that Expands Opportunities for Diversification

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Liquid Alternative Mutual Funds:

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Alternative mutual funds (AMFs) provide access to asset classes and investment strategies that are generally unavailable to retail investors. These funds offer many important benefits that are not offered through traditional stock and bond funds. The most important is enhanced portfolio diversification. The diversification benefits associated with AMFs enable retail investors to significantly reduce risk for a given level of expected returns, or equivalently, increase expected returns for a given risk level.

AMFs provide diversification benefits because fund returns are designed to be relatively uncorrelated with traditional assets, such as stocks and bonds. When imperfectly correlated assets are added to the investment opportunity set, investors are able to incorporate them into asset allocation strategies that can result in an increase in expected returns for given risk levels or decrease the level of risk for a given return level, or both.

Some AMFs use derivative contracts and may use them for a variety of purposes, including gaining exposures difficult to achieve in cash securities or to increase notional exposures, mostly due to low volatility underlying assets like fixed income or currency. A key question is whether larger notional exposures are being used in an aggressive manner that is designed to amplify risk to generate out-sized expected returns. The empirical evidence provided herein suggests that AMFs do not use derivatives to amplify risk in ways that are potentially dangerous to retail investors. In fact, all of the alternative fund asset classes we examine have risk levels that are significantly less than standard equity benchmarks like the S&P 500. The relatively low volatility levels suggest instead that derivatives are being used to expand the investment opportunity set in a conservative manner that has been unproblematic.

The purpose of this paper is to address the question of whether leverage is being used by AMFs to amplify risk, particularly with respect to the use of leverage and the use of derivatives. We will make the general case that AMFs expand the investment opportunity set by broadening investor choice. In addition to allowing retail investors to more fully diversify and minimize downside risk, we also discuss additional risk mitigating benefits associated with organizing as a fund under the Investment Company Act of 1940. Since our focus is on derivatives, we only consider the class of alternative funds that use derivatives as an integral part of their investment strategy – the so-called *liquid* AMFs (LAMFs). This excludes funds that primarily hold illiquid assets, such as funds that hold portfolios of individual loans.

EXECUTIVE SUMMARY

The SEC has recently proposed a rule that would regulate the use of derivatives by AMFs. AMFs make extensive use of derivative instruments to enable better diversification opportunities. The proposed rule would significantly impact the operation and viability of these funds.

There is a widely held misconception that AMFs use derivatives to take on significant risk in the search for outsized returns. This paper provides empirical data on key characteristics of AMFs that may be helpful to policymakers.

The main empirical findings of the paper are:

- AMFs provide diversification to investor portfolios.
- The diversifying nature of AMFs expands the "efficient frontier" available to investors. This enables investors to construct portfolios that either reduce the level of risk for a given level of return, or increase returns at the same level of risk, or both. That is, investors could possibly add 1-2% per year in expected return without taking more risk, or allowing them to meaningfully reduce risk without reducing expected return.
- AMFs provide modest returns commensurate with their moderate levels of risk.
- AMFs generally provide returns that lie somewhere between the returns of fixed income funds and the returns of equity funds.
- In contrast to private funds, AMFs are precluded from investing primarily in illiquid securities, and have to abide by rules critical for investor protection, such as daily liquidity, transparency, rules governing conflicts of interest, and supervision by an independent board of directors.
- AMFs have enabled ordinary investors to access an asset class that had previously been available only to high net worth individuals and institutional investors.

The empirical evidence suggests that AMFs do not subject investors to undue risk, and have important diversification benefits that can make them a highly beneficial tool for the retirement security of the average investor. Policymakers engaged in rulemaking concerning the use of derivatives may want to use this study as input for their considerations.

1. What Are Alternative Mutual Funds?

Investors in AMFs find them attractive because they utilize investment strategies and invest in asset classes that provide expanded risk and reward opportunities. The most important investor benefit associated with AMFs is the ability to expand investment opportunities through enhanced portfolio diversification.

Other important benefits are derived by packaging alternative strategies within a "fund wrapper." By subjecting AMFs to the requirements of the SEC's Investment Company Act of 1940 (the '40 Act), it compels them to provide enhanced investor protections and enables them to provide access to their products to retail investors.

The '40 Act requires funds to meet minimum liquidity standards (no more than 15% illiquid assets), satisfy mandatory transparency requirements (with proposed enhanced disclosures around detail and frequency), and comply with formal governance requirements. Aside from these legal protections, AMFs also charge fees that are fixed and lower than the typical management plus incentive fees charged by private funds. Under the incentive fee arrangement, private fund managers are paid 1% to 2% of the assets under management plus an incentive fee of as much as 20% of the funds profits above a predetermined benchmark.

1.1. Alternative Fund Categories

Although there is no simple way to characterize AMFs, we follow the SEC study [2015] and separate them into two broad categories: non-traditional investment strategies and non-traditional asset classes. It should be noted that this categorization is not mutually exclusive as many alternative funds combine different attributes such as a non-traditional investment strategy that employs non-traditional asset classes.

AMFs often employ strategies that are designed to mimic those employed by private funds. Examples include long/short portfolios and managed futures. A common element of these funds is that they frequently use financial derivatives. The SEC study [2015] reports that 91% of alternative funds are authorized to use derivatives compared to 73% for traditional mutual funds. In practice, only 14% of alternative funds and 5% of traditional funds actually use them.¹

Alternative funds in the second category invest in non-traditional asset classes such as commodities and currencies. In Section 5, we show that these funds provide direct exposure to asset classes that significantly expand investor diversification opportunities. They are an efficient way to diversify because these alternative funds are calibrated to be relatively uncorrelated with stock and bonds.

We restrict our attention to the class of funds commonly referred to as *liquid* alternative mutual funds. As such, we consider funds that hold illiquid assets and levered exchange traded funds (ETFs) to be outside of the scope of our analysis.

1.2. Description of Alternative Mutual Fund Types

This subsection reproduces the Morningstar descriptions of selected major alternative fund category types that can employ leverage and derivative securities as part of their investment strategies.²

Market Neutral

These funds attempt to reduce the investor's exposure to systematic risk factors such as exposures to broad directional stock market risk, market sector exposures, capitalization exposures, currencies, and/or countries. They try to achieve this by matching short positions within each market sector against long positions in the same. These strategies are often managed as beta-neutral, dollar-neutral, or sector-neutral or all three. A distinguishing feature of funds in

¹ The SEC study [2015] bases these estimates on data collected from Form N-SAR.

² Category descriptions are from *The Morningstar Category Classifications*, Morningstar Methodology Paper Effective April 30, 2014, available at <u>http://corporate.morningstar.com/us/documents/MethodologyDocuments/MethodologyPapers/MorningstarCategory Classifications.pdf</u>. In addition, portions of this paper rely on data obtained from Morningstar. The following protections and prohibitions apply with respect to such data: "© 2016 Morningstar. All Rights Reserved. The information contained herein: (1) is proprietary to Morningstar and/or its content providers; (2) may not be copied or distributed; and (3) is not warranted to be accurate, complete or timely. Neither Morningstar nor its content providers are responsible for any damages or losses arising from any use of this information. Past performance is no guarantee of future results."

this category is that they typically have low beta exposures (< 0.3 in absolute value) to indexes such as MSCI World. In attempting to reduce systematic risk, these funds put the emphasis on issue selection, with profits dependent on their ability buy long portfolios that outperform the portfolios that they sell short.

Long/Short Equity

Long-short portfolios hold stakes in both long and short positions in equities and related derivatives. Some funds that fall into this category will shift their exposure to long and short positions depending on their macro outlook (though they tend to have a bias toward being net long) or the opportunities they uncover through bottom- up research. Some funds may simply hedge long stock positions through exchange-traded funds or derivatives. At least 75% of the assets are in equity securities or derivatives.

Managed Futures

These funds primarily trade liquid global futures, options, swaps, and foreign exchange contracts, both listed and over-the-counter, though mostly futures. A majority of these funds follow trend-following, price-momentum strategies. Other strategies included in this category are systematic mean- reversion, discretionary global macro strategies, commodity index tracking, and other futures strategies. More than 60% of the fund's exposure is invested through derivatives, which is how they achieve their primary risk exposure. Fund holdings are largely cash instruments.

Multi-Alternative

These funds offer investors exposure to several different alternative investment strategies. Through these funds, an investor's exposure to different strategies may change slightly over time in response to market movements or the manager's discretion. Funds in this category include both funds with static allocations to alternative strategies and funds tactically allocating among alternative strategies and asset classes.

Non-traditional Bond

The nontraditional bond category contains funds that pursue strategies that diverge in one or more ways from conventional practice in the broader bond-fund universe. Many funds in this group describe themselves as "absolute return" portfolios, which seek to avoid losses and produce returns uncorrelated with the overall bond market. Another large subset are selfdescribed "unconstrained" portfolios that have more flexibility to invest tactically across a wide swath of individual sectors of the bond market, including high-yield and foreign debt, and typically with very large allocations. Funds in the latter group tend to have broad freedom to manage interest-rate sensitivity, but attempt to tactically manage those exposures in order to minimize volatility. The category is also home to a subset of portfolios that attempt to minimize volatility by maintaining short or ultra-short duration portfolios, but explicitly court significant credit and foreign bond market risk in order to generate high returns. Funds within this category often will use credit default swaps and other fixed income derivatives to a significant level within their portfolios.

Currency

Currency portfolios invest in single or multiple currencies through the use of short-term money market instruments; derivative instruments including but not limited to forward currency contracts, index swaps, options, and cash deposits.

2. The Growth in Alternative Mutual Funds

The benefits associated with AMFs described in Section 1 are important determinants of their rapid growth. There are, however, other factors that also have contributed to this growth. It has been argued that current market conditions have created a window of opportunity that made these funds relatively attractive. For example, the current, low interest rate environment may have incentivized investors to seek new investment strategies that are expected to generate higher yields, even if this required them to hold more risk. Others have argued that recent, past volatility in the financial markets has motivated investors to seek returns elsewhere (See Champ [2014]). For example, large declines in equities during the Financial Crisis of 2008 likely motivated investors to seek investment opportunities that hedge some of the downside risk because investment opportunities that provide greater portfolio diversification allow investors to better calibrate their risk exposure.³

A recent analysis by the U.S. Securities and Exchange Commission ("SEC study") reports that assets under management in AMFs grew from \$320.4 billion in 2010 to \$469.3 billion in 2014.⁴ Over this period, the compounded annualized growth rate of 10.01% is roughly comparable to the 12.29% rate across all funds. This is inconsistent with the popular view that alterative funds have grown at exponential rates since their inception.

Based on the finding in the SEC study [2015] that AMFs experienced a 0.23% *reduction* in aggregate market share between 2010 and 2014, the SEC economists argue that growth comparisons are potentially misleading because much of the growth in traditional funds reflects capital gains appreciation, which may be at least partially attributable to riskier investment strategies and the very strong equity market in that period. The study then shows that if one focuses on net flows, a different picture emerges. For example, annual net flows into AMFs as a percentage of total net flows across all funds were 9.94% over the 2010 to 2014 period. This relatively high market share of new flows is disproportionately higher than the corresponding market share of assets under management, which was only 2.64% at the end of 2014.

The SEC study [2015] also reports that total assets under management increased from \$320.4 billion in 2010 (2.94% of all registered funds) to \$469.3 billion in 2014 (2.71% of all registered funds). The slight decrease of 0.23% (2.94% in 2010 to 2.71% in 2014) in the total market share

³ Geczy [2015] shows that "many so-called alternative investments generally lost less on the downside during the credit crisis and hence had an easier road to recovery."

⁴ See SEC Division of Economic and Risk Analysis 2015 White Paper, "Use of Derivatives by Registered Investment Companies."

of all registered funds is attributable to commodity funds, which experienced aggregate net outflows over 2010 to 2014 of \$58.2 billion (\$148.4 billion - \$90.2 billion). If one excludes commodity funds, the market share of LAMFs actually increased by 0.61% (1.58% in 2010 to 2.19% in 2014).

This characterization of the empirical evidence has caused some at the SEC to strike a cautionary tone in some of their public statements. For example, Commissioner Stein [2015] has argued that the SEC's investor protection mandate requires it to evaluate potential concerns about suitability and its impact on the broader market:

"Alternative mutual funds promising the upside of hedge fund investments with the liquidity of traditional mutual funds are all the rage. I think that this trend should give everyone pause, and regulators and the public need to be asking questions about this development. Many of these funds may indeed be innovative. But are they consistent with the Investment Company Act and its protection of the retail investor, <u>particularly leverage restrictions</u>? What should the regulatory reaction be? Should we consider regulating these funds differently than plain vanilla, traditional mutual funds?

As I have laid out, the retail investor has certain expectations of mutual funds, grounded in longstanding rules under the Investment Company Act. Alternative mutual funds seem to operate on the margins of several of these rules. <u>They may be less liquid, employ more leverage, and invest in exotic and complex instruments</u>. At a minimum, this raises the question of retail investor confusion. Do retail investors understand that the unconstrained alternative bond fund that they are being sold may not actually perform like a traditional bond fund at all? What happens during the next crisis, when markets are stressed and alternative mutual funds are tested for the first time? All of these questions should be asked and debated now, and not during a time of financial market distress."⁵

This paper will make the point that LAMFs do not "operate on the margins." Rather they are designed to enhance diversification opportunities by providing liquid portfolios that offer moderate returns at moderate risks. To illustrate this point, Appendix A provides product descriptions from the prospectuses of the three largest funds by AUM for each of the five categories described in Section 2.

3. Alternative Mutual Funds Growth and Financial Innovation

Financial innovation designed to provide retail investors with access to alternative investment strategies and asset classes is one of the factors that has spurred the development of AMFs.⁶ From an economic standpoint, innovative financial markets enhance investors' abilities to move funds into alternative asset classes and manage risk. Duffie and Rahi [1995] argue that financial innovators respond to incentives to bring new offerings to market for which there are no close substitutes, and which may be used to hedge risks.

⁵ See U.S. Securities and Exchange Commissioner Kara Stein remarks at Brookings Institution (June 15, 2015) (emphasis added).

⁶ See Tufano [2003] and Merton [1992].

Financial innovations designed for retail investors tend to have a distinct life cycle. As a group, retail investors tend to be slow to react to new investment products, possibly due to uncertainty about suitability.⁷ Over time, as investment advisors and brokers gain experience and begin to recommend these products to clients, their growth trajectory accelerates much like the pattern that has been documented for AMFs. Rapid initial growth is largely attributable to their ability to satisfy untapped investor demand for greater diversification. As investor interest in these products to grow, there is a natural migration away from traditional funds. Once investor demand is satiated and the market shares of assets under management approach a steady state, LAMFs should be expected to continue to grow at rates that are in line with traditional funds.

4. Regulatory Initiatives and Alternative Mutual Funds

Recently, the SEC has proposed new rules designed to enhance portfolio transparency, place limits on derivative use, and establish minimum liquidity requirements. While portfolio transparency requirements apply to all AMFs, derivative limits primarily apply to funds that differentiate themselves by investment strategies and asset class. By contrast, the liquidity constraints are primarily applicable to funds that specialize in illiquid investments. Since we focus on LAMFs, we consider the liquidity rule to be less relevant for our analysis than the rule that limits derivative usage. This follows because strategies that employ derivative securities, especially the simple derivatives favored by these funds, tend to be highly liquid. The purpose of this section is to describe the current rules and those that have been proposed by the SEC and have yet to be finalized.

AMFs are directly impacted by proposed SEC regulation in three different ways: 1) placing limits on leverage by constraining a fund's use of derivative instruments; 2) providing enhanced portfolio transparency so that investors (and regulators) can better understand how risks and return evolve over time; and 3) requiring funds to hold minimum liquidity balances to better meet investor redemption demands during periods of financial stress.

4.1. Limits on derivatives and leverage

On December 11, 2015, the SEC proposed new rule 18f-4, titled, "Use of Derivatives by Registered Investment Companies and Business Development Companies". The proposed rule would limit the use of derivatives by registered investment companies (*e.g.*, mutual funds, ETFs, and closed-end funds) and business development companies, and require them to put in place risk management measures focused on investor protection.

Under the proposed rule, a fund would be required to comply with one of two alternative portfolio limitations designed to limit the amount of leverage the fund may obtain through derivatives and certain other transactions: 1) under the exposure-based limit, a fund would be required to limit its aggregate notional exposure to 150% of the fund's net assets; 2) under the

⁷ An example of a transformative financial innovation is the introduction of exchange traded funds (ETFs). Growth in the popularity of ETFs tracks the growth in alternative mutual funds. The life cycle of financial innovations has been extensively examined in financial economics. See papers by Finnerty [1998], Merton [1992], Tufano [2003], and Seward and Rogalski [1991].

risk-based portfolio limit, a fund would be allowed to have notional exposure up to 300% of a fund's net assets subject to satisfying a "value-at-risk" based test.

Funds also would be required to manage the risks associated with derivatives by segregating certain assets to enable the fund to meet its obligations, including under stressed conditions. Certain funds also would be required to establish a formalized derivatives risk management program. Finally, the proposed rule also places new restrictions on funds' use of certain financial commitment transactions.

The Derivatives release proposes to limit leverage by placing constraints on *notional* levels of derivatives exposure. While this is attractive because it provides an easily verifiable "bright line," it has the unintended consequence of failing to accurately measure fund risk. Using notional exposure to measure leverage is problematic because it fails to risk-adjust. This leads to an "apples-to-oranges" comparison where over- and under-statement are distinct possibilities. The SEC study [2015] explicitly recognizes this limitation:

"There are drawbacks to using notional amounts. First, because of differences in expected volatilities of the underlying assets, notional amounts of derivatives across different underlying asset generally do not represent the same unit of risk. For example, the level of risk associated with a \$100 million notional of a S&P500 index futures is not equivalent to the level of risk of a \$100 million notional of interest rate swaps, currency forwards or commodity futures."

The Office of Financial Research at the U.S. Treasury Department makes a related point in its 2015 study, where it states:

"One shortcoming of both [gross notional exposure] and aggregate derivative metrics is that they do not differentiate between different types of derivatives, making it difficult to identify a hedge fund's portfolio risks by position type or notional size. For example, the notional values of a CDS and an interest rate swap do not pose equivalent risk. [Gross notional exposure] also does not account for netted positions, because it is based on summed absolute long and short values."⁸

4.2. Enhanced transparency and disclosure

On May 20, 2015, the SEC proposed a set of new rules and rule amendments titled "Investment Company Reporting Modernization". Under the proposal, registered investment companies would be subject to a number of new requirements to report information to the SEC and to disclose information to investors: 1) new Form N-PORT would require firms to report a host of new information about their monthly portfolio holdings in a structured data format; 2) changes to Regulation S-X would require a firm to include in its financial statement new and detailed disclosures about investments in derivatives; 3) a new rule, Rule 30e-3, would allow firms to send periodic reports to shareholders on a website (although investors would have the ability to

⁸ See Office of Financial Research, 2015 Financial Stability Report (December 15, 2015), at p. 38, available at https://financialresearch.gov/financial-stability-reports/files/OFR_2015-Financial-Stability-Report_12-15-2015.pdf.

opt out and continue to receive such reports by regular mail); and 4) new Form N-CEN, which would require firms to report certain census-type information on an annual basis.

4.3. Liquidity runs and minimum liquidity requirements

On September 22, 2015, the SEC proposed a rule targeting liquidity management for mutual funds and ETFs, titled, "Open-End Fund Liquidity Risk Management Programs; Swing Pricing." Under the proposal, covered funds would be required to classify each of the fund's holding into one of six "liquidity buckets" based on the number of days it would take to liquidate each asset. The proposal sets forth nine specific factors that a fund must consider in determining the liquidity of a particular holding. Under the proposals, funds would be required to document their consideration of each of the nine factors, and would also be required to continuously monitor the liquidity of covered holdings. Funds also would be required to develop liquidity factors set forth in the rule. Finally, funds would be required to consider maintaining a minimum percentage of assets that can be liquidated within three days. The proposal also would permit open-end funds to engage in swing pricing, subject to board approval and oversight. Swing pricing would allow funds to adjust their daily NAV to reflect costs associated with shareholders' trading activity in order to protect existing shareholders from dilution associated with shareholder purchases and redemptions.

5. Liquid Alternative Mutual Funds and the Benefits of Diversification

The basic economic rationale for LAMFs is simple. Since their returns are designed to be relatively uncorrelated with traditional assets, such as stocks and bonds, they provide enhanced opportunities to diversify the risk of traditional asset allocation strategies that only consider stocks and bonds.

If we begin with the premise that investors desire high absolute returns, it is tempting for investors to seek out asset managers that consistently provide superior performance relative to their peers. Academic studies have shown that asset flows do in fact follow performance and that this performance is, at least in part, related to managerial skill.⁹

One of the conceptually challenging aspects of performance measurement is the role that diversification plays in evaluating the trade-off between risk and return. For example, over time, the S&P 500 has outperformed most alternative strategies, such as a long-short equity fund, on the basis of absolute returns. In response, a naïve investor may prefer to only hold the S&P 500. The problem with this argument is that it ignores risk. Since riskier assets are expected to earn higher returns, it should not be surprising to find periods when these securities actually earn higher returns. The concept of diversification is based on the idea that investors can improve

⁹ See Chevalier and Ellison [1997], Fulkerson, Jordan, and Riley [2013], Chevalier and Ellison [1997], Ivković and Weisbenner [2009], and Sirri and Tufano [1998]. These studies document that good performance leads to high flows of new money while bad performance produces only low outflows. This behavior is often attributed to the presence of uninformed (unsophisticated) investors (Gruber [1996]), or to the expectation that fund firms will replace poorly performing fund managers or alter its investment strategy (Lynch and Musto [2003]). More recently, Golstein, Jiang, and Ng [2015] show that poor performance in corporate bond markets results in heighted flows.

their risk-return profile by investing in different investments rather than concentrating their exposure to a single asset class, such as equities. This should allow a diversified portfolio to outperform an undiversified portfolio over the long term.

Standard asset pricing models argue that investors only receive compensation for bearing exposure to systematic or market risk factors. Diversification plays a central role because when assets are imperfectly correlated, idiosyncratic negative shocks to some securities may be offset by idiosyncratic positive shocks to others. To the extent that these shocks are offsetting, investors should not be able to demand compensation for bearing risk that can be diversified away. In this sense, diversification forces an investor to focus on risks that following simple to implement investment strategies cannot eliminate.

5.1 Historical Risk-Return Tradeoffs Among Asset Classes

An effective way to evaluate the inherent riskiness of LAMFs is to compare their historical performance to more traditional assets classes such as equities and fixed income. To do this, we present summary statistics that demonstrate risk-return performance across different asset classes over the time period beginning December 1993 and ending December 2015.

Since we do not have a sufficiently long time series of LAMF returns, we perform two separate analyses. The first uses returns to alternative private fund strategies as a proxy because many of the investment strategies used by LAMFs are similar to those employed by private funds. Using private fund returns is not without limitations. There is no assurance that they are comparable due to differences in fee structure, manager skill, and size of assets under management. Despite these possible limitations, we believe that the overarching risk-return properties and associated correlations are likely to be representative. The second uses LAMF return. The tradeoff is that while these returns directly measure fund performance, the time period used for estimation is shorter.

5.1.1. Performance of Traditional Well-Diversified Equity Portfolios

Table 1 reports monthly returns over the period December 1993 through December 2015 for a number of equity portfolios. The selected portfolios include the CRSP value- and equal-weighted indices, the S&P 500, and the ten CRSP size-decile portfolios. The average of the annualized mean monthly returns across all portfolios is 10.90% with an average annualized standard deviation of 15.87%. Given the high degree of overlap in the underlying assets, all of the portfolios are highly correlated with each other. Rather than report the full correlation matrix, Table 1 reports the correlation coefficient for each portfolio and the S&P 500. The average correlation coefficient across all portfolios is 0.843. Although most of the correlation coefficients are quite high, the levels range from 0.634 to 0.983. Not surprisingly, the correlation coefficients between size portfolios and the S&P 500 increase monotonically with size.

The relatively high correlation levels result in annualized mean returns that are similar across different equity portfolios. The largest difference in mean returns is between the extreme CRSP size-decile portfolios (CRSP Size Decile 1 and 10), which respectively have annualized mean returns of 14.43% and 9.08%.

By contrast, the correlation between equity portfolios and fixed income is significantly lower. Table 1 reports the correlation coefficients between the equity portfolios and a broad investment grade corporate bond index and finds that the average correlation across all equity portfolios is only 0.287. Note also that the direction of the correlation is reversed. That is, the smallest size-decile equity portfolios are more highly correlated with corporate bonds than are the larger portfolios. For example, the correlation coefficients for size-deciles 1 and 10 with investment grade corporate bonds are 0.355 and 0.250, respectively.

5.1.2. Performance of Traditional Well-Diversified Fixed Income Portfolios

We report analogous results in Table 2 for U.S. Treasuries with an average life of seven years and a number of broad investment grade bond indices. The main takeaway is that realized returns and standard deviations are lower. The average of the annualized mean monthly returns is 5.62% compared to 10.90% for equities, and the average annualized standard deviation is 4.35%, which is less than one-third of the comparable volatility for equity (*i.e.*, 4.35%/15.87% = 0.274 < 0.333).

The variation in correlation also is much wider. For example, the correlation coefficients for the fixed income portfolios with the S&P 500 range from -0.1881 for Treasuries to 0.2370 for investment grade corporates. As credit risk increases, fixed income portfolios become more highly correlated with each other. Table 2 reports that the average correlation coefficient between the various fixed income portfolios and a broad investment grade corporate bond index is 0.813.

5.1.3. Performance of Well-Diversified Alternative Portfolios

We now consider the historical performance of LAMFs. One of the caveats of this analysis and our discussion of alternative funds as an asset class is that part of our empirical results are based on returns to fund indices. Since index returns are based on diversified portfolios of different funds, the analysis measures aggregate performance for the entire asset class.

Table 3 separately reports results for private funds (Panel A) and LAMFs (Panel B). We present summary data for both asset classes because, even though they may not be as directly applicable, the times series for private funds is significantly longer. For example, the private fund data covers the twenty-two year period from December 1993 to December 2015, while the alternative fund data only covers the fifteen year period from January 2001 to December 2015.¹⁰

Panel A of Table 3 shows that the realized returns to private fund portfolios are lower and less risky than traditional equities and higher and riskier than bonds. The average of the annualized mean monthly returns cross all strategies is 7.63% with an average annualized standard deviation of 8.65%. The data demonstrates that the volatility of each of these alternative strategies is lower than the volatility for the S&P 500. Alternative investments display considerable cross-sectional variation in how strongly they correlate with equities but on average their correlation with the S&P 500 is 0.362 and their correlation with the BIG Corporate Index is 0.222. By contrast,

¹⁰ Data for Managed Futures is available only for 2006-2015.

equity and fixed income portfolios tend to be highly correlated within their respective asset classes.

The ability of private funds to expand the investment opportunity set is exhibited in the annualized mean monthly returns across the nine investment strategies reported in Panel A. Note that mean annualized returns range from 3.08% for currency funds to 10.32% for global macro funds. Their correlation with the S&P 500 index ranges from -0.072 for managed futures to 0.669 for long/short equity. Similarly, alternative investment strategies have correlation coefficients with fixed income that range from -0.066 for equity market neutral to 0.415 for convertible arbitrage. Convertible arbitrage funds have high a high degree of correlation with fixed income because many firms hedge the equity risk in these securities that combine equity and bond risk by taking short positions in the underlying stock.¹¹

Panel B of Table 3 presents direct evidence of ability of LAMFs to broaden diversification opportunities. For the most part, the evidence is broadly consistent with Panel A. The main difference is that LAMFs are slightly more "equity-like" than private funds because they are more positively correlated with the S&P 500 (0.580 vs. 0.392) and are less correlated with investment grade corporates (0.027 vs. 0.222).

The empirical evidence for both private funds (a proxy for LAMFs) and LAMFs presents a qualitatively similar picture. Our overall findings indicate that LAMFs expand diversification opportunities. As a group, they are less correlated with the S&P 500 than well-diversified equity portfolios but are more correlated with investment grade than other fixed income indices. More importantly, rather than amplifying risk to generate out-sized returns, LAMFs offer moderate returns with commensurately moderate risk levels.

5.2 Modern Portfolio Theory and Diversification

The benefits associated with portfolio diversification are rooted in the normative implications derived from modern portfolio theory (MPT), which was developed by Markowitz [1952]. MPT posits that investors make portfolio allocations by considering the expected return and volatilities of all possible combinations of risky assets. Investors then identify the set of optimal portfolios that maximize expected return for a given level of risk – a so-called efficient portfolio. The collection of all efficient portfolios is then defined as the "efficient set," or the "efficient frontier." An investor then selects an optimal portfolio from the efficient set based on his/her tolerance for risk. That is, the optimal investment choice is to select the efficient portfolio for an investor's preferred level of risk.

5.2.1 The efficient frontier with traditional equity and fixed investments

Figure 1 displays the set of efficient portfolios (the blue line) that can be achieved by investors that take long-only positions in equity portfolios and fixed income portfolios (the green dots)

¹¹ Brown, Grundy, Lewis, and Verwijmeren [2011] describe how convertible bond arbitrage funds use short sales to hedge the equity risk embedded in convertible debt.

reported in Tables 1 and 2. We assume that investors hold long-only positions to characterize the investment opportunity set available to the typical retail investor.¹²

The efficient frontier illustrates how equities tend to display higher returns and higher volatility, while fixed income investments tend to have lower returns and be less volatile.¹³ One can see that value weighted portfolios, such as the CRSP value-weighted portfolio and S&P 500, cluster around the largest CRSP size decile portfolio (Size Decile 10). By contrast the CRSP equal-weighted portfolio lies in the same area in Figure 1 as the smaller CRSP size decile portfolios.



Figure 1. Efficient set based on long equity and fixed income portfolios.

 $^{^{12}}$ Another reason to only consider long positions is that securities are held in positive net supply in the aggregate.

¹³ We exclude CRSP Size Decile 1 from the figure because it tends to distort the actual investment opportunities available to investors due to their small market capitalizations. Nonetheless, if we include Size Decile 1, the results are qualitatively similar.

5.2.2 The efficient frontier with equity, fixed income, and private fund alternative investments

We now consider how the introduction of alternative investments affects the efficient set. Figure 2 shows that even when investors have access to well-diversified portfolios of stocks and bonds, the addition of liquid alternative funds to the investment opportunity set reflects an economically significant expansion of the efficient frontier (the green line).¹⁴ The degree to which diversification enhances the investment opportunity set can be assessed by how far the efficient frontier moves in the direction of higher returns and lower risk – the northwest corner. For example, investors could possibly add 1-2% per year in expected return without taking more risk. Alternatively, Figure 12 shows that investors could meaningfully reduce risk without reducing expected return. The key takeaway is that additional assets provide expanded investment opportunities relative to traditional stocks and bonds.

Consistent with the idea that alternative strategies have moderate risk, all of the funds depicted in Figure 2 offer lower returns and have less risk than standard equity portfolios. We include the CRSP value weighted portfolio as a referent. Comparing alternative investment returns in Table 3 to fixed income returns in Table 2, one can see that alternative investments have risk and return characteristics that more closely track fixed income.



Figure 2. Efficient set based on long equity, fixed income, and private fund portfolios.

¹⁴ The indices included in this analysis include funds based on convertible arbitrage, emerging market, equity market neutral, event driven, and global macro strategies.

5.2.3 The efficient frontier with equity, fixed income, and liquid alternative investments

Figure 3 constructs an analogous version of the efficient frontier depicted in Figure 2 but replaces private funds with the LAMFs in Panel B of Table 3. The main takeaway is that, despite covering a shorter time period, the efficient frontier that includes LAMFs looks very similar to the one that includes private funds. This indicates that our main findings are robust to different proxies for alternative funds and different (but overlapping) time periods.



Figure 3. Efficient set based on long equity, fixed income, and liquid alternative mutual fund portfolios.

As can be seen in Table 3 and Figures 2 and 3, alternative funds are not using derivative securities to take excessive risks. Consistent with this observation is the fact that that all of the alternative asset classes depicted in Figures 2 and 3 are much closer to the low-risk edge of the efficient frontier. These findings suggest that, to the extent derivatives are being used, they are primarily designed to rescale expected returns so that alternative strategies are attractive to investors, but in such a way as to keep risk exposures at modest levels.

6. Additional Benefits of Liquid Alternative Mutual Funds

The decision to organize a pooled investment vehicle as a `40 Act fund offers a number of additional benefits. Some of the key attributes of mutual fund regulation that are important to investors include: 1) portfolio transparency requirements, including daily pricing at the fund's current net asset value; 2) the provision of daily liquidity and minimum liquidity requirements; 3) limitations on financial leverage; 4) a general prohibition against charging performance fees; and 5) fund governance requirements. It is the imposition of these constraints that makes LAMFs suitable for retail investors. Without these protections, they would represent an asset class that is more suited for sophisticated investors that have access to private funds.

6.1 Transparency

Consistent with the SEC's investor protection mandate, funds must comply with a number of transparency requirements. The first is daily pricing of the funds assets. Daily prices not only facilitate the efficient processing of redemptions and new subscriptions at market determined prices, but also allow investors to assess the risk return characteristics of the fund. This has the benefit of allowing investors to infer whether a fund is performing in line with expectations, whether performance has experienced unexpected changes in volatility, and how well realized performance tracks its stated performance benchmarks.

The decision to organize as a `40 Act fund also subjects the fund to certain ongoing disclosure requirements. For example, financial statements of a fund are filed on Form N-CSR, which shows all of a fund's investment positions, including short sales. Additional public filings include Form N-Q and Form N-SAR. These forms require funds to disclose their portfolio holdings plus additional operational information such as sales of shares, portfolio turnover rates, income and expenses, and total assets.

As noted in Section 3, proposed modifications to the disclosure regime (Form N-PORT) require more frequent disclosures. This not only would provide investors with better information about the nature of how the fund operates and the riskiness of the underlying investment strategy, it also provides financial service firms with information they require to make investment recommendations.

6.2 Liquidity

The SEC has expressed broad concerns about liquidity in the mutual fund industry and has proposed new regulations designed to ensure that funds have adequate liquidity to satisfy daily redemptions as well as the possibility of heightened redemption demands during periods of market stress. Since this paper focuses on *liquid* alternative funds, these concerns are ameliorated because investment strategies and the assets that are a part of their investment universe produce portfolios of relatively liquid securities.

One consideration is whether the types of derivative instruments used by LAMFs are sufficiently liquid. The SEC study [2015] characterizes derivative use across AMFs. It reports that the most commonly used derivatives are standard contracts that trade in highly liquid markets. These

include stock index futures, government bond futures, currency forwards, and interest rate futures.

Given the types of derivative securities actually being used by LAMFs, there are two related aspects of a fund's use of derivatives that enhance liquidity. First, the derivatives used by `40 Act funds tend to be more liquid than equivalent underlying cash positions. This not only makes it less costly to build initial positions but makes them easier to unwind, particularly during periods of market stress.

The second point also is specific to funds that use derivatives to create "synthetic" positions. A synthetic position is one that combines a derivative instrument, like futures on an equity index, with a corresponding money market position to achieve the same economic exposure as the actual security position. For example, a firm that wants to hold \$100 million of the S&P 500 index can purchase S&P 500 index futures with \$100 million of notional exposure and hold \$100 million in money market securities. Since the futures contract moves (approximately) one-for-one with the S&P 500 index, it replicates that payoffs of the index. The benefit of the synthetic position is that it improves overall fund liquidity because the large cash position can be used to meet redemption requests. This implies that derivative use by funds can mitigate concerns about urgent sales during period of market stress.

6.3 Leverage

Despite the investor protections already contained in the `40 Act, the SEC also has expressed concerns that the existing leverage restrictions based on asset segregation do not impose explicit leverage limits and could allow funds to use leverage to amplify risk to levels that are inappropriate for retail investors. Derivatives are an important consideration because many alternative investments use derivatives (or permit short selling), thereby providing investors with access to strategies that use leverage and could have large risks if used inappropriately (though we have found empirically that they tend only to have moderate risk.¹⁵

By requiring well-defined (but not necessarily well-specified) limits on derivatives, the recently proposed Derivatives rule addresses this *potential* issue. We consider derivatives usage to be a *potential* issue because the empirical evidence presented in Section 5 indicates that LAMFs tend to be less risky than diversified equity portfolios. The relative low volatility levels suggest that derivatives are primarily being used to expand the investment opportunity set as opposed to amplify risk.

It should be noted that these findings contrast with leveraged exchange traded funds (ETFs), which are not considered liquid alternative funds. Unlike LAMFs, which offer moderate returns with moderate risk, leveraged ETFs are specifically designed to amplify risk to levels that can substantially exceed the risk of well-diversified equity portfolios. This follows because a leveraged ETF specifies its end of day value as multiple of a well-diversified equity portfolio.

¹⁵ Derivative securities effectively provide investors with access to leverage because they are economically equivalent to levered positions in the underlying security. For example, a call option can be viewed as a portfolio of stock and riskless borrowing. Black and Scholes [1973] demonstrate how a riskless dynamic trading strategy that combines the underlying stock and riskless borrowing can be designed to replicate the payoff on a call option.

For example, a 2X leveraged ETF on the S&P 500 provides 200% exposure to the S&P 500 over a single trading day.

6.4 Fund Governance

A key investor protection of the `40 Act is mandatory fund governance. Since most fund operations are not administered by a fund employee, the board of directors must negotiate contracts with its respective service providers. This includes approving the selection of an investment advisor to manage the fund's portfolio, a distributor or underwriter to sell fund shares, and a transfer agent to process asset purchases and sales. To enhance the independence of the fund's board, a majority of its board must be independent directors. The board must also have an audit committee, which has the primary responsibility to annually approve the retention of the fund's independent auditors, which must then be approved by the full board.

Fund boards have the standard duties of loyalty and care that apply to other public boards. This creates a fiduciary obligation to obtain sufficient information so that a director can exercise his or her business judgment. SEC staff has discussed this specific obligation in public remarks (Roye [2000]).¹⁶

In addition to these board responsibilities, a director of a `40 Act fund has other responsibilities that are unique to mutual funds. They include the approval of policies and procedures regarding asset valuation, approval of investment policies, such as constraints on derivative use, determining policies for the voting of proxies in connection with portfolio securities, and approval of a 12b-1 plan, among others. It is apparent from this list that fund governance involves specific expertise to address a number of complex issues that are unique to the asset management industry.

CONCLUSION

Contrary to the widely held misconception that AMFs use derivatives to take on significant risk in the search for outsized returns, the empirical evidence suggests that these funds do not subject investors to undue risk, and have important diversification benefits that can make them a highly beneficial tool for the average investor. As described above, these funds enable investors to construct diversified portfolios that either reduce the level of risk for a given level of return, or increase returns at the same level of risk, or both, and they have enabled ordinary investors to access an important, diversified asset class that had previously available only to high net worth

¹⁶ See U.S. Securities Exchange Director if Investment Management, Paul Roye, Remarks at ICI Workshop for New Fund Directors (April 14, 2000) ("The quality of information provided to you by fund management significantly impacts your ability to perform your role effectively. Information submitted to you should be concise, well-organized and designed to inform. The information should be sufficiently complete to form a basis and complete record, for your decision-making. Memoranda, reports and other information should be provided sufficiently in advance of the meeting to provide time for thoughtful reflection and meaningful consideration by the directors. This is important, since if your decisions are attacked in litigation you will want the benefit of the business judgment rule. In reviewing an independent director's conduct, a court will not substitute its judgment for that of the director, provided that the director acted in good faith, rationally believed the action was in the best interest of the fund, and the director was reasonably informed. Thus, quality of information provided you is important, if you want the benefit of the business judgment rule. ")

individuals and institutional investors. To the extent that investors are heavily concentrated in equities, LAMFs can preserve expected returns at meaningfully lower risk levels.

Policymakers engaged in rulemaking concerning the use of derivatives may want to use this study as input for their considerations.

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Table 1. Summary statistics for monthly returns over the period December 1993 to December 2015 for the CRSP equal- and value-weighted indices, the S&P 500 index, and CSRP size decile portfolios. Deciles 1 and 10 respectively contain the smallest and largest firms in the CRSP universe. The reported statistics are the mean monthly return (Mean) and its associated standard deviation (Std. Dev.). The next two columns are annualized mean and standard deviations. The final two column report the correlation coefficient between the indicated portfolio and the S&P 500 and the Broad investment grade corporate bond indices.

					Correlation	Correlation
			Annualized	Annualized	with S&P	with BIG
Description	Mean	Std. Dev.	Mean Ret.	Std. Dev.	500	Corporate
Value-Weighted CRSP	0.80%	4.14%	9.57%	14.35%	0.977	0.269
Equal-Weighted CRSP	0.92%	4.68%	11.07%	16.21%	0.855	0.311
S&P 500	0.82%	4.29%	9.83%	14.85%	1.000	1.000
CRSP Size Decile 1 (Smallest)	1.20%	4.80%	14.43%	16.64%	0.634	0.357
CRSP Size Decile 2	0.86%	4.25%	10.26%	14.72%	0.728	0.354
CRSP Size Decile 3	0.93%	4.35%	11.16%	15.08%	0.757	0.315
CRSP Size Decile 4	0.92%	4.79%	11.04%	16.61%	0.777	0.306
CRSP Size Decile 5	0.98%	5.01%	11.74%	17.35%	0.801	0.268
CRSP Size Decile 6	0.99%	5.06%	11.90%	17.54%	0.818	0.261
CRSP Size Decile 7	0.89%	4.75%	10.65%	16.47%	0.843	0.271
CRSP Size Decile 8	0.96%	4.73%	11.54%	16.40%	0.872	0.277
CRSP Size Decile 9	0.95%	4.59%	11.43%	15.90%	0.906	0.281
CRSP Size Decile 10 (Largest)	0.76%	4.09%	9.08%	14.17%	0.983	0.256
Average	0.92%	4.58%	11.05%	15.87%	0.842	0.348
Median	0.92%	4.68%	11.07%	16.21%	0.843	0.281

Table 2. Summary statistics for monthly returns over the period December 1993 to December 2015 for the S&P 500 index and a number of broad investment grade bond indices: Treasuries, Corporates, and Asset-Backed Securities. The reported statistics are the mean monthly return and its associated standard deviation. The next two columns are annualized mean and standard deviations. The final two column report the correlation coefficient between the indicated portfolio and the S&P 500 and the Broad investment grade corporate bond indices. The average and median estimates exclude the Value-Weighted CRSP index.

					Correlation	Correlation
			Annualized	Annualized	with S&P	with BIG
Description	Mean	Std. Dev.	Mean Ret.	Std. Dev.	500	Corporate
Treasuries	0.44%	1.28%	5.26%	4.43%	-0.177	0.673
Broad Investment Grade (BIG)	0.46%	1.06%	5.54%	3.66%	0.011	0.864
BIG Corporate	0.52%	1.54%	6.18%	5.33%	0.243	1.000
BIG Asset Backed Securities	0.46%	1.15%	5.49%	3.98%	0.107	0.720
Average	0.47%	1.26%	5.62%	4.35%	0.046	0.814
Median	0.46%	1.21%	5.51%	4.20%	0.059	0.792
Median	0.47%	1.26%	5.62% 5.51%	4.35% 4.20%	0.046	0.814

Table 3. Summary statistics for monthly returns over the period December 1993 to December 2015 for the S&P 500 index and a number of returns to alternative fund indices based on different strategies. Panel A reports summary statistics for private fund strategies obtained from HFRI Hedge Fund indices¹⁷ for the period December 1993 to December 2015. Panel B reports summary statistics for liquid alternative mutual funds for the period January 2001 to December 2015.¹⁸ The reported statistics are the mean monthly return and its associated standard deviation. The next two columns are annualized mean and standard deviations. The final two column report the correlation coefficient between the indicated portfolio and the S&P 500 and the Broad investment grade corporate bond indices. The average and median estimates in Panel B exclude the S&P 500 index and the broad investment corporate grade index. The Managed Futures in Panel B only cover the period January 2006 to December 2015.

					Correlation	Correlation		
			Annualized	Annualized	with S&P	with BIG		
Description	Mean	Std. Dev.	Mean Ret.	Std. Dev.	500	Corporate		
Panel A: Private Fund Strategies, December 1993 to December 2015								
Consolidated Hedge Fund	0.67%	2.04%	7.99%	7.05%	0.570	0.315		
Convertible Arbitrage	0.56%	1.87%	6.68%	6.47%	0.365	0.415		
Currency	0.05%	0.89%	0.62%	3.08%	0.004	0.105		
Emerging Markets	0.64%	3.97%	7.63%	13.76%	0.538	0.197		
Equity Market Neutral	0.42%	2.75%	5.09%	9.54%	0.288	-0.066		
Event Driven	0.69%	1.77%	8.28%	6.13%	0.631	0.221		
Global Macro	0.86%	2.62%	10.32%	9.07%	0.240	0.325		
Long/Short Equity	0.76%	2.68%	9.12%	9.28%	0.669	0.255		
Managed Futures	0.49%	3.33%	5.89%	11.55%	-0.071	0.172		
Multi-Strategy	0.64%	1.45%	7.71%	5.02%	0.389	0.280		
Average	0.58%	2.34%	6.93%	8.10%	0.362	0.222		
Median	0.64%	2.33%	7.67%	8.06%	0.377	0.238		

Panel B: Liquid Alternative Mutual Funds, January 2001 - December 2015

S&P 500 Index BIG Corporate	0.50% 0.42%	4.33% 1.03%	6.03% 4.99%	15.01% 3.59%	1.000 -0.142	-0.142 1.000
Equity Market Neutral	0.33%	0.78%	3.99%	2.69%	0.548	0.149
Long/Short Equity	0.47%	2.06%	5.61%	7.15%	0.919	-0.118
Managed Futures	0.73%	3.55%	8.79%	12.29%	-0.057	-0.014
Multi-Strategy	0.20%	2.32%	2.36%	8.02%	0.908	-0.093
Nontraditional Bond	0.43%	1.38%	5.12%	4.80%	0.580	0.211
Average (Alternative funds only)	0.43%	2.02%	5.17%	6.99%	0.580	0.027
Median (Alternative funds only)	0.43%	2.06%	5.12%	7.15%	0.580	-0.014

¹⁷ HFRI data provided by a member of the Coalition for Responsible Portfolio Management.

¹⁸ Liquid alternative mutual funds that follow a Managed Futures strategy only cover the period from January 2001 to December 2015.

Appendix A

Investment Objective Language for Largest Alternative Mutual Funds: AUM Data as of 12/31/2015

SAMPLE METHODOLOGY: Includes the three largest funds by AUM in each category. Categories are the four main alternative categories defined by Morningstar, plus the Nontraditional Bond category (which is included under "alternatives" by the DERA study) and Currency category.

Morningstar Category: US Long/Short Equity

1. Gateway (AUM: \$8.3B)

"Seeks to capture the majority of returns associated with equity market investments, while exposing investors to **less risk than other equity investments**." Source: Fund Website.

2. Boston Partners Long/Short Research (AUM: \$7.2B)

"Diversified fund that seeks long-term capital appreciation while minimizing exposure to general equity market risk." Source: Fact Sheet.

3. Diamond Hill Long-Short (AUM: \$4.4B)

"The strategy maintains a long-bias; however the short positions reduce net exposure and therefore tend to **reduce volatility compared to long-only funds**." Source: Fact Sheet.

Morningstar Category: US Managed Futures

1. AQR Managed Futures Strategy (AUM: \$9.6B)

"Managed Futures strategies seek to generate returns that are uncorrelated to traditional asset classes, and can increase a portfolio's diversification."

"Target an **annualized volatility level for the Fund of 10%** ... volatility will typically range between 5% and 13%." Source: Fact Sheet, Prospectus.

2. Natixis ASG Managed Futures Strategy (AUM: \$2.7B)

"Seeks to maintain volatility at or below a targeted level to limit the magnitude of potential loss." Source: Fact Sheet, Fund Website Page.

3. Catalyst Hedged Futures Strategy (AUM: \$2.2B)

"The Fund seeks to provide positive returns in all market conditions with **low volatility and low correlation to the equity markets**." Source: Fact Sheet

Morningstar Category: US Managed Futures

1. AQR Managed Futures Strategy (AUM: \$9.6B)

"Managed Futures strategies seek to generate returns that are uncorrelated to traditional asset classes, and can increase a portfolio's diversification."

"Target an **annualized volatility level for the Fund of 10%** ... volatility will typically range between 5% and 13%." Source: Fact Sheet, Prospectus.

2. Natixis ASG Managed Futures Strategy (AUM: \$2.7B)

"Seeks to maintain volatility at or below a targeted level to limit the magnitude of potential loss." Source: Fact Sheet, Fund Website Page.

3. Catalyst Hedged Futures Strategy (AUM: \$2.2B)

"The Fund seeks to provide positive returns in all market conditions with **low volatility and low correlation to the equity markets**." Source: Fact Sheet

Morningstar Category: US Market Neutral

1. Merger Investor (AUM: \$4.8B)

"The Fund seeks to provide **attractive risk-adjusted returns** in virtually all market environments while **preserving investor capital** and **minimizing volatility based risk**."

"For more than 20 years, the Fund has strived to help investors **reduce total portfolio risk** while providing absolute, **non-correlated returns** regardless of market movements." Source: Fact Sheet.

2. Calamos Market Neutral Income (AUM: \$3.8B)

"Low correlation with most fixed income benchmarks: provides a means to **dampen volatility**."

"Historically, the fund has shown the ability to **manage risk** over full market cycles with **limited correlation** to fixed income markets." Source: Fact Sheet, Fund Website Page.

3. The Arbitrage Fund (AUM: \$2.0B)

"The fund seeks to provide capital growth and absolute returns by investing in equity securities involved in mergers and acquisitions transactions, targeting a return profile with **low volatility and low correlation to the capital markets**." Source: Fact Sheet.

Morningstar Category: US Multi-Alternative

1. John Hancock Global Absolute Return Strategies (AUM: \$9.1B)

"Targeting positive returns over all market cycles with **significantly less volatility than traditional equities**."

"Diversified, risk-managed portfolio of uncorrelated investments, including directional and relative value strategies." Source: Fact Sheet.

2. Blackstone Alternative Multi-Strategy (AUM: \$3.9B)

"Enhanced Diversification: Seeks to be **uncorrelated with traditional investments.** Seeks to provide a **lower volatility profile than a traditional 60/40 portfolio."** Source: Fund Brochure.

3. Natixis ASG Global Alternatives (AUM: \$3.7B)

"Pursues an absolute return strategy that seeks to provide capital appreciation consistent with the risk-return characteristics of a diversified portfolio of hedge funds with **less volatility than major equity indexes**."

"As market risk levels change, position sizes are adjusted as often as daily, with the goal of **maintaining a stable risk profile**." Source: Investor Guide, Fund Website Page.

Morningstar Category: US Nontraditional Bond

1. BlackRock Strategic Income Opportunities (AUM: \$30.9B)

"The BlackRock Strategic Income Opportunities Fund, a flexible, core bond alternative, seeks to offer investors attractive income, returns and **meaningful portfolio diversification**."

"Employs a flexible investment approach across fixed income sectors without constraints on maturity, sector, quality or geography. The team actively manages the two main risks in fixed income, interest rate and credit risk, to provide a **compelling combination of income, low volatility and attractive returns.**" Source: Investor Guide. 2. Goldman Sachs Strategic Income (AUM: \$16.3B)

"Investing across the global bond spectrum may potentially **provide multiple**, diverse income sources, not typically found in a portfolio, and the potential for higher returns."

"Low sensitivity to rate movements may potentially bring positive returns in any rate environment."

"A dynamic and flexible approach may potentially **dampen the swings in portfolio** value - because even with bonds, a loss of capital can occur." Source: Fund Website Page.

3. JPMorgan Strategic Income Opportunities (AUM: \$15.8B)

"Designed to deliver high total returns by investing in a broad range of fixed income securities."

"The Fund focuses on absolute return, meaning it is benchmark agnostic and **seeks to produce uncorrelated, low volatility returns across all market environments**." Source: Investor Guide, Fund Website Page.

Morningstar Category: MultiCurrency

1. PIMCO Emerging Markets Currency (AUM \$3.9B)

"EM local currency instruments have had low historical correlations with other fixed income assets, such as U.S. Treasuries, and may help enhance overall portfolio diversification." Source: Fact Sheet.

2. John Hancock Absolute Return Currency (AUM \$1.06B)

"Seeks: Long-term total return. Use for: Portfolio diversification." Source: Fact Sheet.

3. Lord Abbett Emerging Markets Currency Fund (AUM \$477M)

"The Fund seeks to produce a **high total return** primarily through exposure to currencies of emerging market countries." Source: Fact Sheet.