

When Diversification “Fails,” and Why We Still Believe

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- Single asset classes will often outperform or underperform significantly over short time periods.
- With that noted, short-term underperformance of a diversified strategy does not mean diversification has failed.
- Diversification is a long-term investment strategy that should not be judged by short-term metrics.

Deviation and Breaking from the Norm

Since Harry Markowitz pioneered Modern Portfolio Theory over six decades ago, financial professionals have searched for innovative ways to construct portfolios that improve the investor experience. This search has centered largely on the concept of diversification – improving risk-adjusted returns by investing in a variety of assets. And although diversification is widely regarded as the only “free lunch” in finance, that meal may not be very filling on any particular day, week, month or even year. Concentrated portfolios can, and frequently do, outperform their diversified counterparts over specific time periods. Despite the occasional poor year, however, we believe diversified portfolios provide long-term investors the best opportunity to reach investment goals. Furthermore, short-term performance can be little more than noise, providing little to no indication of an investment’s long-term merit.

2013: The Year Diversification Failed?

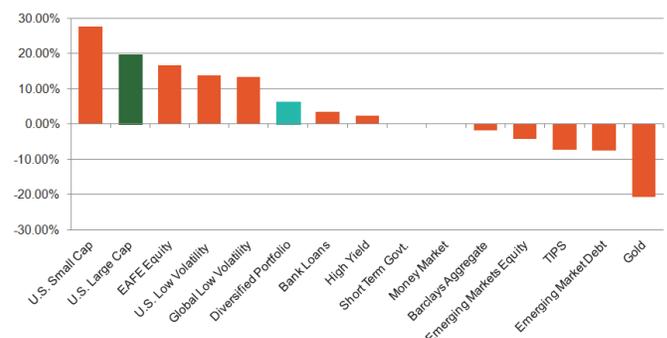
This has been a difficult year for diversified portfolios. U.S. large-cap equities, represented by the S&P 500 Index, have posted a total return of nearly 20% year to date through the end of September. Exhibit 1 shows that on top of a very strong absolute return, U.S. large-cap equities (green bar) have also outperformed nearly all other asset classes (orange bars) as well as a representative diversified portfolio (teal bar).¹

A unique aspect of the S&P 500 Index is that many investors consider it to be a barometer of financial market performance. This trend has emerged for two main reasons: (1) the ease of focusing on a single number, and (2) the media’s tendency to publicize the S&P 500 as a proxy for overall financial market

¹ The representative diversified portfolio consists of the following blend of investments: 29% S&P 500, 3% Russell 2000, 2% Emerging Market Equity, 9% MSCI EAFE, 7.5% Emerging Market Debt, 7.5% High Yield Bonds, 39.75% Barclays Aggregate, 2% TIPS, and 0.25% Money Market.

performance. While these forces make this trend understandable, they can also create confusion for investors when portfolio returns deviate from those of U.S. large-cap stocks. In environments like 2013, a natural question tends to arise—if investors understand the S&P 500 Index and often compare their portfolios to that proxy, why don’t investment professionals simply provide their clients with portfolios that contain large allocations to U.S. stocks and track very closely to the well-known index?

Exhibit 1: 2013 Asset Class Total Returns²



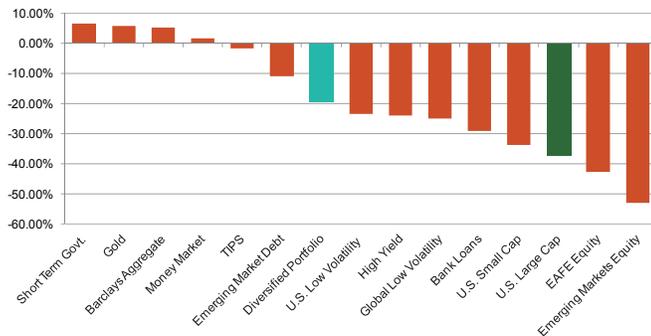
Source: Bloomberg, as of 9/30/2013.

^{2,3,4} Asset classes are represented by: S&P 500 (S&P 500 Index TR); Russell 2000 (Russell 2000 Index TR) Emerging Market Equity (MSCI Emerging Markets Index TR); MSCI EAFE (MSCI EAFE Index TR); US Low Volatility (S&P 500 Low Volatility Index TR); Global Low Volatility (MSCI ACWI Minimum Volatility Index Daily Gross TR); Gold (Gold Spot Price); Emerging Market Debt (JP Morgan EMBI Global TR Index); High Yield Bonds (iBoxx \$ Liquid High Yield Index); Barclays Aggregate (Barclays U.S. Aggregate TR Index); Bank Loans (S&P/LSTA Leveraged Loan TR Index); TIPS (Barclays US Inflation Linked Bonds TR); Short Duration (Barclays 1-3 Yr Government TR Index); and Money Market (Barclays U.S. Treasury Bills: 1-3 Months TR).

The Case for Staying Diversified

The simple answer is that, while U.S. large-cap stocks do act as an important allocation, they are also subject to fluctuations in performance just like other asset classes. For this reason, it is important that portfolios contain other exposures that can moderate the investment experience. Exhibit 2 shows returns for 2008, a difficult environment for the S&P 500 Index.

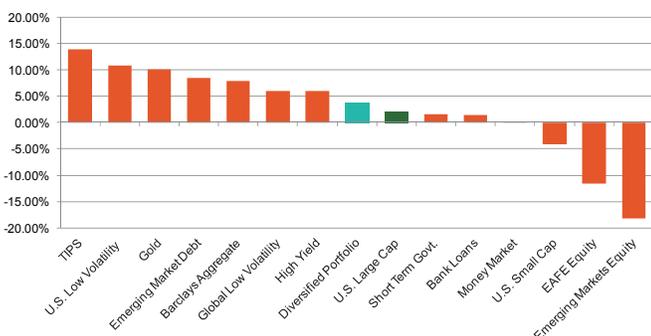
Exhibit 2: 2008 Asset Class Total Returns³



Source: Bloomberg

Admittedly, 2008 was an extremely negative environment for U.S. equities. Even in more “normal” years, however, U.S. stocks can fall anywhere in the spectrum of asset class returns based on current economic trends and investor preferences. Exhibit 3 plots the 2011 investment experience, a year in which the performance of U.S. large-cap stocks fell roughly in the middle of the distribution of asset class returns. These vastly different outcomes over a relatively short span—in 2008, 2011, and 2013—demonstrate the need for portfolio diversification.

Exhibit 3: 2011 Asset Class Total Returns⁴



Source: Bloomberg

With perfect foresight, investors could simply allocate all of their money to the best-performing asset class each year. Absent this divine ability, however, the next best option is to invest in a variety of assets that react differently to a variety of market forces. This serves to moderate the ups and downs of portfolio performance, giving investors a better chance to reach their long-term goals.

The Search for the Next Big Thing

When investors think about the value-add from asset allocation, they generally focus on the process of weighting various asset classes in a portfolio. SEI places a great deal of emphasis on this endeavor, rigorously analyzing historical data and combining those insights with forward-looking estimations to implement our best thinking on portfolio construction.

Another, less-considered aspect of the allocation process is the continuous search for new asset classes. If investment professionals are able to find sound strategies that provide different exposures than the assets already contained in a typical portfolio, they may be able to blend that strategy with those other well-known assets to create a more robust portfolio.

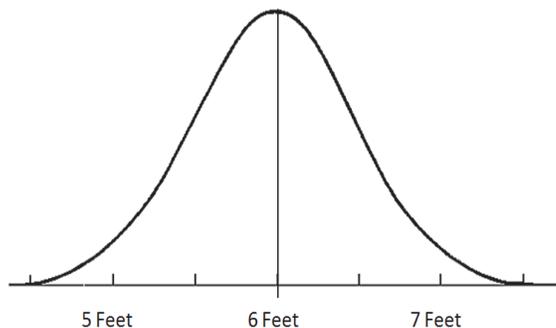
Two issues make it challenging to adopt these new strategies. First, they are difficult to find—identifying attractive exposures that diversify portfolios is the Holy Grail of investing, and thousands of analysts search for those strategies every day. The fact that firms allocate so many resources to this pursuit despite its difficulty should indicate the value of finding these new ideas.

Second, the exposure is inherently new to investors. The unfamiliarity with a new strategy may cause investors to view any deviations in performance as a sign that the strategy itself is flawed rather than recognizing that these deviations are a source of diversification. It is important to consider that even if a strategy is effective in the long run, it will undoubtedly underperform other assets over some shorter period.

How Diversification Works

The analysis that follows is a generalized example of why it is difficult, and even dangerous, to evaluate an asset class solely on a short-term basis. To start, take two imaginary assets—let’s call them Asset A and Asset B. Both assets have returns that are *normally distributed*, following a typical bell curve. This means that most of the results will fall close to the average, with fewer occurrences farther from that average. A good example of a normal distribution is human height in the fictional town of Mayberry. If the average male is 6’ tall, you are very likely to see many men who are between 5’11” and 6’1”, but much less likely to see one below 5’ or above 7’ as shown in Exhibit 4.

Exhibit 4: The Bell Curve and Male Height



Source: SEI

Next, we'll assume that both A and B have the same *volatility*, or risk, with 10% standard deviations. Think of volatility as the movement around an average. If an asset had zero volatility and an average of 6, that asset would always have a value of 6. If that asset had a very high volatility, however, it would show a wide range of returns on either side of the average. The most important point for this exercise is that both A and B are equally risky.

Now, imagine that A and B are *uncorrelated* assets, meaning the result of one has no relation to the result of the other. If results tend to move in the same direction, they are positively correlated (height vs. weight), while a tendency to move in opposite directions shows negative correlation (time spent working vs. leisure time in a given day). In our example, however, a movement in one implies nothing about what the other should do. If A is up, B could be up, down or flat, and vice-versa. Correlation is an important aspect of portfolio construction because blending uncorrelated assets can reduce risk without impacting return—providing a less volatile path to the same end point. It is for this reason that financial professionals search so diligently for new investments that are uncorrelated with the current investments in a portfolio.

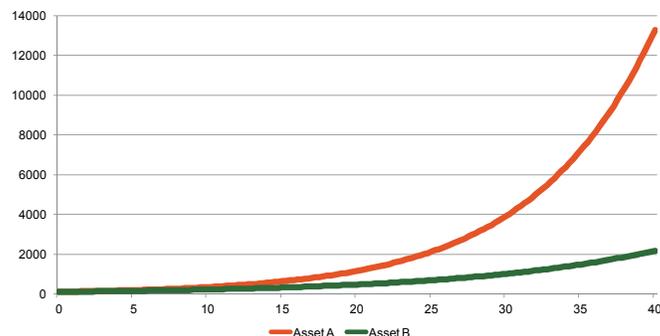
So far, assets A and B are similar. The distinguishing factor will be expected return – we'll assume that A is expected to return 13% each year, while B's expected return is 8%. This doesn't mean that these assets will always return 13% and 8%, respectively, per year, just that they will do so on average. If investors could choose only one asset to hold, which would be the better option?

Adding More Volatility

Clearly A is the better option, earning 5% more annual return on average for the same level of risk. How big of a difference can that 5% make? A \$100 initial investment in B would be expected to be worth more than \$2,172 after holding the asset for 40 years. An equivalent investment in A would, in contrast, be expected to be

worth more than \$13,278 after the same 40 years. The difference, as shown in Exhibit 5, is staggering.

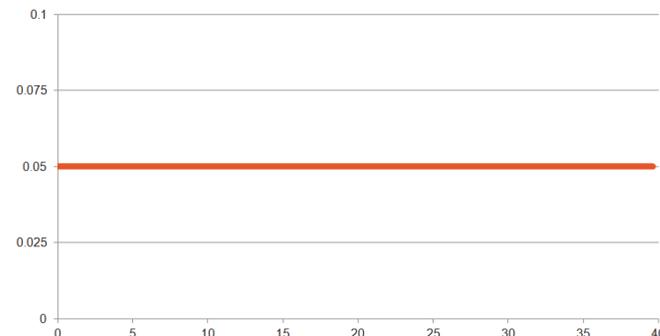
Exhibit 5: A vs. B, Growth of \$100



Source: SEI

Over the long run, an investment in A will clearly be much better than B. But will they necessarily be better off over every shorter-term period? Without any volatility (risk), the answer would be “yes.” Exhibit 6 shows the outperformance experience if A outperformed B by 5% every year, with no volatility (movement around the average). The chart shows that A will always outperform B by 5% per year.

Exhibit 6: Outperformance, No Volatility



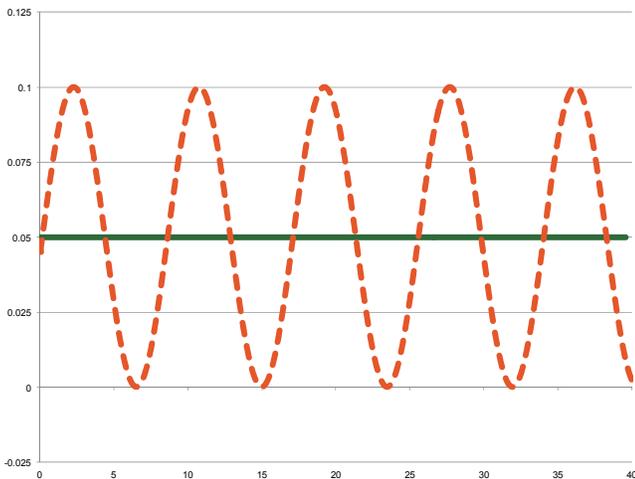
Source: SEI

Unfortunately, Exhibits 5 and 6 assume no volatility, and we have already noted that both A and B do have some movement around their averages. It is pretty clear, therefore, that investors holding A will not be able to receive that steady, constant 5% per year outperformance.

Instead we expect that there will be periods during which A outperforms by more or less than 5% but that over time, those outperformances and underperformances will average to a 5% outperformance over B. Think, for example, of a 6% outperformance in year 1, a 2% outperformance in year 2, and a 7% outperformance in year 3. This creates an average outperformance of 5% but with plenty of volatility along the way.

Given that the ride will have some volatility, the next logical question is “how much short-term variation around that 5% average outperformance should an investor in A expect?” Maybe one would think the outperformance would vary, but always remain positive—sometimes doing “well” by outperforming B by 10%, other times doing “poorly” by just matching B’s performance (0% outperformance). Exhibit 7 demonstrates this hypothetical relationship.

Exhibit 7: Between 0% and 10% Outperformance



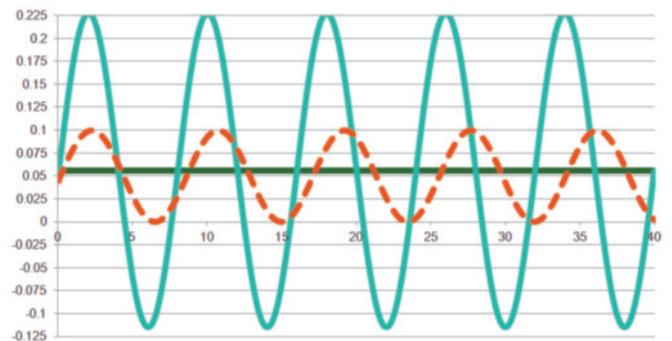
Source: SEI

If this were the expected experience, the relative performance would be quite strong on both a short and long-term basis. A’s investors would always outperform B’s, albeit by varying amounts. Given our specifications for A and B’s expected risks and returns that we outlined earlier, this is not the type of outperformance experience we would expect.

Outperforming is Hard Work

In fact, *A’s investors will significantly underperform B’s over certain time periods.* To test this, we simulated 40 years of monthly returns for both A and B and identified 12-month periods in which A *underperformed* B, repeating this process 100,000 times. In roughly 36% of the rolling 12-month periods, *B had a better return than A.* In fact, roughly 15% of the time, B outperformed A *by over 10%.* An outperformance chart consistent with these characteristics (5% average outperformance, underperformance roughly 36% of the time, and 10% or greater underperformance roughly 15% of the time) is better reflected by the teal line shown in Exhibit 8. The experience is quite volatile relative to the experience first proposed in Exhibit 7, still represented by the dotted line.

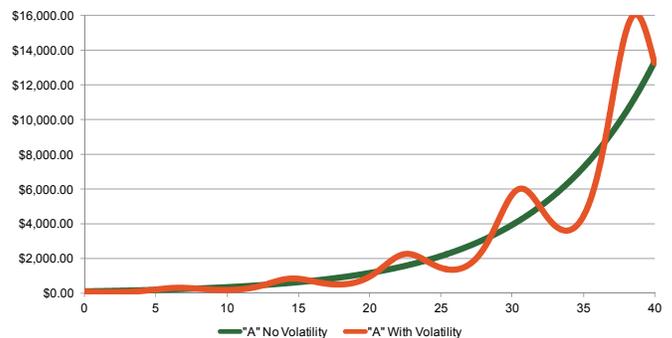
Exhibit 8: 5% Outperformance, Realistic Volatility



Source: SEI

What might that orange, more volatile experience look like in a growth of a dollar context? Exhibit 9 shows an example of an imaginary “smooth” ride in A (green line) vs. a more realistic “volatile” ride (orange line).

Exhibit 9: Smooth vs. Volatile Growth of \$100



Source: SEI

How is this possible in the face of A’s 5% expected advantage? The key is in the volatility—or unknown movements around the expected return. Imagine that in a given period B “surprises” by producing a return over the level predicted by long-term expectations while A “surprises” with a lower-than-expected return in that same period. At a standard deviation of 10% for each asset, these variations can cause “surprises” that overcome A’s expected 5% return advantage and lead to B outperforming in that period. Is there any way for thoughtful investors to reduce the impact of this short-term volatility on their investment performance?

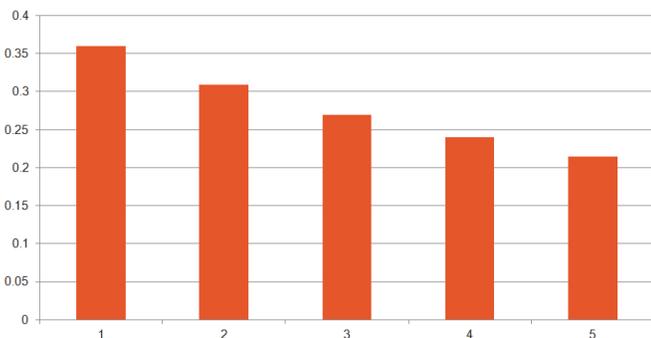
Time Wins

Unfortunately, if an investor chooses to focus only on short-term performance, volatility will continue to play a disproportionately large role in returns. Despite the obvious long-term benefit of owning A, it should now be evident that there will surely be short-term periods when B outperforms. Again, it will not necessarily be rare that this happens—despite A’s clear advantage remember that it failed to outperform B in over 36% of the 12-month periods in our simulations.

This amount of short-term underperformance, even for a better investment, is hardly what investors want. The key to improving this relationship, it turns out, has nothing to do with the investments themselves. Instead, the remedy lies in adjusting just one variable that determines the way that investors judge the success of those investments—adjust the time, or holding period, of the investment.

The longer an investor allocates to A, the more likely it becomes that its benefits over B overcome the short-term “surprises” from volatility. In short, the volatility plays less and less of a role in the relative performance. Exhibit 10 shows the same process of simulating 100,000 40-year series but adjusts the period over which performance is compared from 1 year to 5 years. The 5-year column, for example, shows that A underperforms B in just 21.5% of the 5-year holding periods in 100,000 trials—a meaningful improvement over the 36% rate of underperformance over 1-year periods.

Exhibit 10: Impact of Extending the Holding Period



Source: SEI

The longer an investor allocates to the better investment, the lower the impact of volatility on the returns and the more likely that investor is to outperform as expected. Although not shown in Exhibit 10, a 40-year investment in A outperformed an equivalent investment in B *in over 98%* of a set of 100,000 simulations. By adjusting the period over which success in an investment is measured, investors can avoid making investment decisions based on short-term noise and focus on the true characteristics of the assets that should help them reach their goals.

Better Together

What does this stylized ‘A and B’ example imply for the real world investor? The power of the thought experiment emerges when it is considered in a total portfolio context. Instead of thinking about them as imaginary assets, let B be a typical 60% stocks and 40% bonds blend that serves as an investor’s starting portfolio (the risk and expected return characteristics are, in fact, roughly in line with the levels historically exhibited by a typical 60/40 portfolio). If A were another asset class under consideration to be blended with the 60/40 portfolio represented by B, would the investor be well served by allocating to A to at least some degree?

A is clearly the better long-term investment on a stand-alone basis and certainly deserves a place in a diversified portfolio. How much better off would we expect the investor to be? According to our simulation, blending A with the 60/40 portfolio at a 20% weight would not only *increase* expected return from 8% to 9%, but also *reduce* the risk from 10% to 8.25%.³ Finding uncorrelated assets to blend with a portfolio is the Holy Grail of finance, and the reason is clear - *by diversifying, the investor has increased the expected return and reduced the expected risk.*

Despite the obvious long-term expected benefit there will surely be periods over the short-term in which B outperforms A. While the likelihood of underperformance declines as the investment period increases, over the short term these underperformances are not necessarily rare. This means that over some periods, a portfolio that does not contain A will outperform one that does.

During these times it may be tempting for investors to lose faith in a diversified approach and eliminate their holdings in A. However, without perfect foresight about when each will do better, making this move is likely to destroy value over the long term. Most importantly, the likelihood of a diversified portfolio underperforming its undiversified counterpart is reduced by extending the investment horizon. Investors are better served by paying less attention to short periods of ups and downs, focusing instead on the long term and the investment opportunities that may best help them reach their goals.

³ Expected return of a two asset portfolio is calculated as $w_a E(r_a) + w_b E(r_b)$. Variance of a portfolio with two uncorrelated assets is calculated as $w_a^2 \sigma_a^2 + w_b^2 \sigma_b^2$. W = percentage weight, $E(r)$ = expected return, σ = standard deviation.

Believe in Diversification and Stay the Course

Investment success is all about finding the best opportunities, blending them to create efficient portfolios and remaining invested long term. Holding an attractive long-term portfolio, however, is not always easy over shorter time frames. For investors enviously comparing their portfolios to the S&P 500 Index, 2013 is one of those short-term periods.

In addition to finding the most appropriate ways to blend known assets into attractive portfolios for clients, investment professionals should also search for new opportunities to further diversify and improve their

offerings. Remember that at one point well-known asset classes like high-yield debt and emerging-market equities were uncommon investments. Although holding new exposures can create deviations from traditional portfolios in the short term, diversifying investments can significantly improve an investor's long-term experience.

Over shorter periods, however, volatility can cloud perceptions. Furthermore, as we showed with A and B, even better long-term investments can underperform over the short run. SEI strives to ignore short-term market fluctuations, while seeking out the best opportunities with appropriate risks so that we are able to help investors achieve their long-term goals.

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