

Return Generators & Risk Mitigators Portfolio Construction in a Post-Modern Portfolio Theory Environment

The Atlantic Group

Drew Karr, Neva Hagopian, Peter Clarke, Jack Traxler & Jack Mutchnik

Executive Summary

Modern Portfolio Theory (MPT) revolutionized the investment world by creating a framework that acknowledged the trade-offs between risk and return. In formulating the hypothesis in his paper, “Portfolio Selection” in 1952, Harry Markowitz introduced the world to the perceived benefits of asset class diversification, originating the investing adage: “Don’t put all of your eggs in one basket.”

Consider the three fundamental assumptions underlying Markowitz’s theory:

1. Markets are efficient – meaning all available information is accurately measured by the price of a security.
2. Investors have access to all information on which to base their decisions.
3. Investors behave RATIONALLY.

This framework for MPT became the basis for creating “optimal portfolios” with the appropriate level of risk – located somewhere on the “efficient frontier.” But clearly the foundation of MPT was conceived in a theoretical vacuum, and despite its elegance, it has repeatedly succumbed to the complexities of the real world. The assumptions that asset class returns are “normally distributed” and that expected returns, volatilities and correlations are both known to investors and static over time fail to stand-up to historical evidence.

Unfortunately, these assumptions are most vulnerable during market crises and are typically compounded by the effects of investor emotions triggering irrational decisions, which in turn impact portfolio outcomes.

In our opinion, asset class diversification, often called “the only free lunch on Wall Street,” is neither free nor particularly satisfying. Asset class diversification is similar to buying home insurance: a premium is paid – in terms of foregone equity market upside – in exchange for protection against losses. Viewed through the lens of this analogy, we see three main problems facing asset class diversification as a risk management tool going forward.

- The premium is getting more expensive
- Sizing the policy is difficult - A static split between asset classes will not deliver a consistent or desired risk profile
- The payoff is NOT guaranteed

Traditional portfolio optimization processes are highly sensitive to the assumptions made about risk and return forecasts. Even small changes to these assumptions can lead to dramatically different portfolios. This is very problematic because forecasting financial markets is notoriously difficult. *“The only function of economic forecasting is to make astrology look respectable.” – John Kenneth Galbraith*

While classical MPT is concerned with optimizing for the destination, the quality of the investing experience depends on the journey as well. Markowitz himself recognized these shortcomings by admitting he did not follow his own advice. He constructed his retirement portfolio to address his own personal behavioral biases rather than use his academic work. The importance of behavioral finance and the recognition of not just the occasional, but rather the persistent irrational behavior of investors, must be recognized now as a fundamental flaw in traditional portfolio construction.

The New Paradigm does not ignore the importance of asset allocation but is a step forward in accounting for an ever- evolving landscape that has become and continues to integrate with all aspects of the global economy. We address this by:

- Being strategic, not static
- Limiting risks to those for which we are adequately compensated by potential future returns
- Addressing the flawed assumptions of MPT
- Addressing the role that behavior plays in long-term investment results.

A core principle in The Atlantic Group's portfolio construction process is to **prioritize quality, strong cash flow, risk-adjusted returns and liquidity**. We will also constantly strive for balance, simplicity and transparency. All of which lead to the concept of Strategy Diversification vs Asset Class Diversification.

- **Strategic Beta** - offers low cost, tax efficient exposure to the global equity markets with a modest strategic overlay to account for valuation and growth trends across the world.
- **Alpha** - seeks to outperform passive, market-cap weighted equities over the long run by exploiting what are known as "factor" or "smart beta" strategies. While these buzz words may sound fancy, an equity "factor" is simply a characteristic of a stock or other security that helps explain that security's behavior. Factor investing seeks to tap into those characteristics that generate excess return over time.
- **Fixed Income** - we break down our "Fixed Income" bucket into two sub-buckets: "Core" and "Credit." This distinction reflects the fact that investors typically hold bonds for one (or both) of the following reasons: (1) volatility management / capital protection and (2) income.
- **Alternatives** - are what their name implies, an alternative, or diversifier to core asset classes. They include investments like private equity, private credit, real assets, and hedge funds. All of these represent a component of the portfolio that is non-traditional and, in certain market environments, can enhance the risk adjusted return of the portfolio.
- **Tactical** - consists of strategies that are flexible, meaning they have the ability to reposition their allocations across asset classes, sectors, geographies and strategies based on the prevailing market environment.

We have made an unwavering commitment to continue advancing the process of effective portfolio construction and risk management. Our efforts are not only to ensure our clients end up where they intended, but also that they arrive there after experiencing a smoother ride.

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INTRODUCTION

"It ain't what you don't know that gets you in trouble. It's what you know for sure that just ain't so." – Albert Einstein

Harry Markowitz revolutionized portfolio construction theory with his 12-page thesis published in 1952. In fact, invented is probably a more apt description as the topic of constructing investment portfolios was largely unexplored by academics at the time. The thesis titled "Portfolio Selection," would go on to form the foundation of what's known today as Modern Portfolio Theory (MPT).

Markowitz's work acknowledged there is a trade-off between risk and return. In doing so, he mathematically formalized one of the most popular investing adages: "don't put all your eggs in one basket." It was a huge thrust forward from the ad hoc risk management of prior generations.

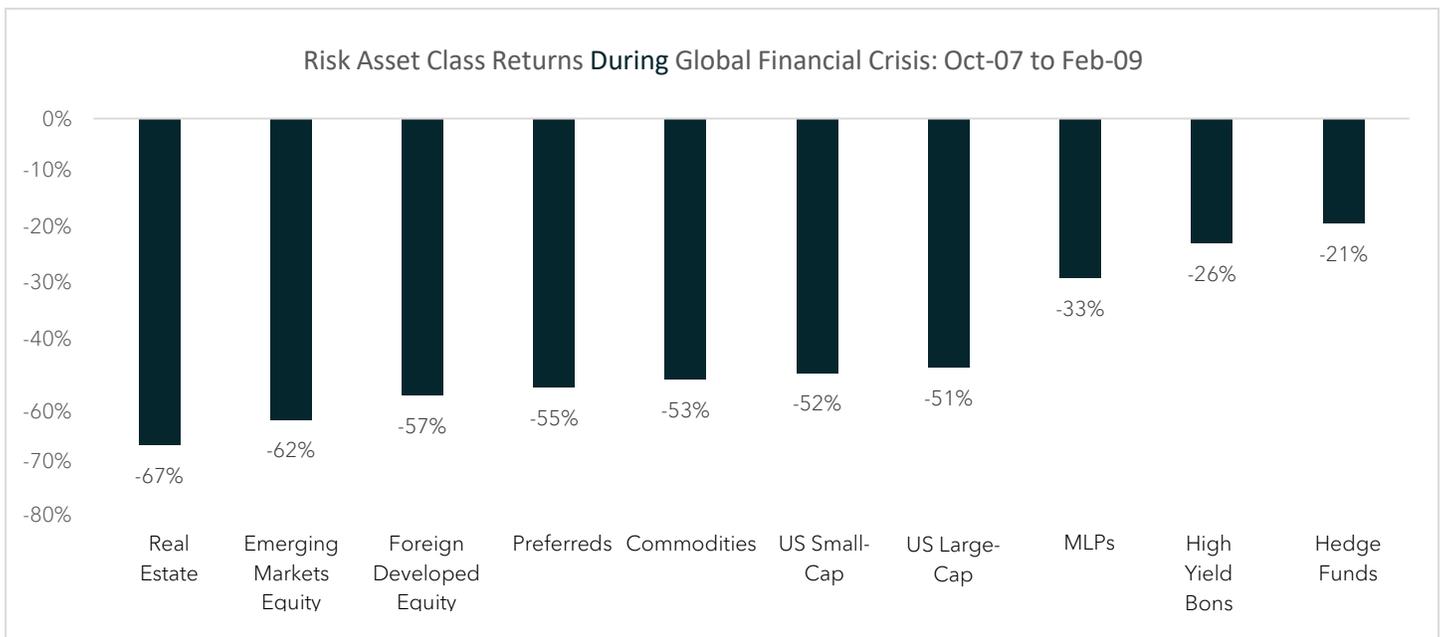
The influence of Markowitz's work was so pervasive and profound that he was awarded the Nobel Prize in Economics in 1991 – almost 40 years after his thesis was published. To this day, major investment firms and financial planning programs use the same techniques Markowitz created over a half century ago. Now, imagine driving a car that used the same engine and brake system developed in the 1950s. Sure, it still runs, but acceleration, cornering, breaking and efficiency are a far cry from today's advanced engineered vehicles. To take the argument a step further, the emergence of alternative technologies – such as electric vehicles like the Tesla have put even greater distance between the prevailing theories of the past and the realities of today. The fact MPT failed miserably during the global financial crisis has only led to a slight tinkering – call it the tail-fin known as Alternative Investments that has now been riveted to the 1950's chassis to make it more stable.

Innovation, like the creation of the Tesla, the advent of cloud computing or the emergence of artificial intelligence, requires thinking about the same challenge – getting from here to there – differently.

Before we go there, let's be clear about why we need to in the first place. Hasn't investment management become a commodity? Thanks to online platforms and fierce price competition, nearly everyone has access to the same stocks, bonds, mutual funds and ETFs. White-Shoe investment firms may tout their unique prowess or access to "deals," but more often than not, they fail to meet expectations or even to keep up with the most mundane of strategies. So why do they attempt to overcomplicate one of the most powerful tools in investing – just owning the market! By now, we know the question everyone is asking, "Why not just buy an S&P 500 index fund and call it a day?"

As it turns out, part of our answer to that question is "YES." In the evolution of modern portfolio theory, low-cost index strategies are a key part of a new type of vehicle: one built on a modern chassis that can accelerate, corner, stop and even protect you better in a crash.

While MPT may work well in a theoretical vacuum, its elegance fails to hold up to the complexity of the real world. The assumptions that asset class returns are normally distributed, and expected returns, volatilities and correlations are both known to investors and are static over time, fail to stand-up to historical evidence. Unfortunately, these assumptions fail spectacularly during market crises: the very times when investors rely on diversification the most.



Source: Bloomberg, Newfound Research. Returns are hypothetical index returns and do not include any fees or expenses. Indices assume the reinvestment of dividends. U.S. Real Estate is represented by the FTSE EPRA/NAREIT Index. Emerging Markets Equity is represented by the MSCI Emerging Markets Index. Foreign Developed Equity Index is represented by the MSCI EAFE Index. Preferred is represented by the S&P Preferred Stock Index. Commodities is represented by the S&P GSCI Index. U.S. Small-Cap is represented by the Russell 2000 Index. U.S. Large-Cap is represented by the S&P 500 Index. MLPs is represented by the Alerian MLP Index. High Yield Bonds is represented by the Barclays Bloomberg High Yield Corporate Bond Index. Hedge Funds is represented by the HFRI Fund-Weighted Composite Index. Past performance does not guarantee future results.

In fact, even Markowitz himself acknowledged the shortcomings of applying his theory in practice. While working at the RAND Corporation, Markowitz pondered how to invest his retirement account. He knew what he should have done: “I should have computed the historical covariances of the asset classes and drawn an efficient frontier.” His actual thought process was quite different. Markowitz explained, “I visualized my grief if the stock market went way up and I wasn’t in it – or if it went way down and I was completely in it. So, I split my contributions 50/50 between stocks and bonds.”

In light of these shortcomings, we felt it incumbent upon us as advisors to question the merits of asset class diversification and MPT. With the benefit of perfect hindsight, the diversified portfolio will never be return optimal. A well-diversified portfolio will always contain asset classes that disappoint after-the-fact. To judge the value of diversification after the fog of uncertainty has lifted, however, misses the point. Diversification and risk management is valuable precisely because investors don’t know what the future holds. We can focus on being vaguely right instead of risking being precisely wrong.

This is where we diverge from the common path. We believe there are pragmatic improvements that can be incorporated to address MPT’s most glaring flaws without abandoning its basic premise of diversification. Before we continue, however, it’s necessary to discuss what we perceive the flaws are.

THE FAILURE OF MPT

Incomplete Characterization of Risk

“Risk is like fire: If controlled it will help you; if uncontrolled it will rise up and destroy you.” – Theodore Roosevelt

MPT equates risk with the variability of returns. In many cases, it's a “good enough” approximation: higher volatility indicates a greater probability of larger realized losses. But it also indicates a greater probability of larger realized gains. Most investors, however, are risk averse, meaning they're willing to give up some of their potential return to protect against potential losses.

A simple weather analogy can clearly illustrate the limitations of volatility as the sole risk measure:

“Imagine that climatological scientists were to argue that weather risk could be defined by volatility – that is, the changeability – of weather. In some ways, that makes sense. Whether the weather is good or bad, if it is consistent enough that we can plan ahead for it, then we can deal with the risks. But if volatility is too high- if weather changes from good to bad to good too frequently and unpredictably – then we can't plan ahead. But that is almost a trivial consideration – what really matters is the risk of extremely damaging weather: hurricanes, tornadoes, lightning, powerful thunderstorms, hail, etc., and the same is true for the price volatility of investment assets: the natural, and even occasionally extreme oscillations in the price level of securities, should be a trivial consideration for most investors. We know from long experience that good markets follow bad and vice versa, just as good weather follows bad, and vice versa. What really matters is that we not employ strategies that destroy capital so permanently as to change fundamentally the investor's economic circumstances.”¹

Market hurricanes and tornados are the risks that really matter to investors. These are risks that are not explicitly considered by MPT.

On Oct. 19, 1987, commonly referred to as Black Monday, global stock markets crashed. The S&P 500 fell more than 20% in a single day.² To put this into perspective, the S&P 500's *annualized* volatility going back to 1950 is around 15%.³ In statistical terms, Black Monday was a 24 standard deviation event!⁴ If returns were normally distributed, as many modern practitioners assume, such an event would be less likely to happen than picking one particular atom in the entire observable universe.

Of course, the answer to all of this is not simply to reduce risk. Taking too little risk can be just as damaging as large losses are to achieving financials goals. However, we must acknowledge the risks of investing aren't easily summed up in a few statistics. They are complex and dynamic, requiring a robust game plan to navigate effectively.

Asset Class Diversification: Not Quite a Free Lunch

According to MPT, all investors should hold the market portfolio – a passive, market-cap weighted portfolio of all the financial assets in the world – levered up or down to their desired risk level. Such a world precludes the existence of active investment strategies. As a result, practitioners of MPT tend to focus solely on asset class and sub-asset class diversification (i.e., how much U.S. equities to hold vs. foreign equities vs. fixed income).

Asset class diversification has often been called “the only free lunch on Wall Street.” It is similar to buying home insurance: a premium is paid – in terms of foregone equity market upside – in exchange for protection against losses.

¹ Gregory Curtis, “Modern Portfolio Theory and Quantum Mechanics.” Journal of Wealth Management, 2002.

² Yahoo! Finance

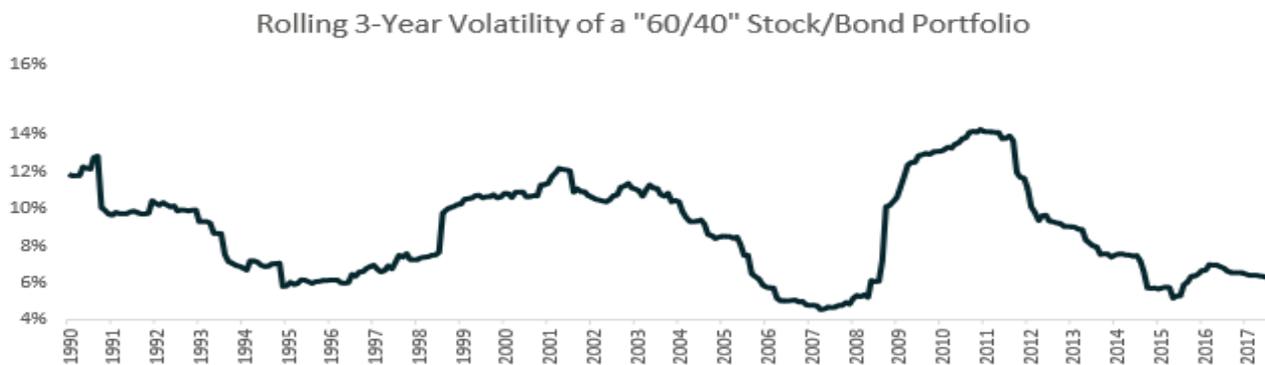
³ Yahoo! Finance (raw data), Newfound Research (calculations)

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Viewed through the lens of this analogy, we see three main problems facing asset class diversification as a risk management tool going forward.

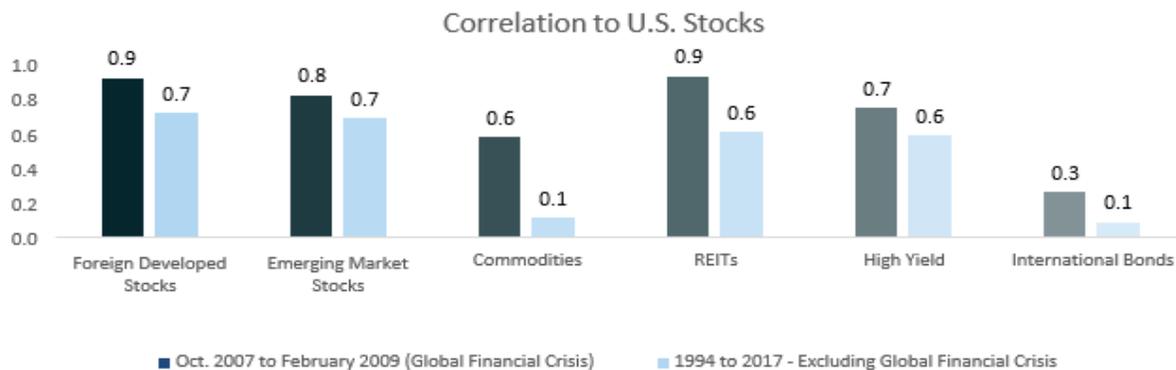
First, the premium is getting more expensive. The 30-year bull market in fixed income has created a unique environment whereby our primary *risk mitigator* was also a tremendous *return generator*. However, we find ourselves in a dramatically different situation today. With interest rates still well below long-term averages, it's likely that large, fixed income positions will be a significant drag on investor returns.

Second, sizing the policy is difficult. Static allocation mixes like the classic "balanced portfolio," a 60/40 split between stocks and bonds, do not deliver a consistent risk profile (see chart below). The same portfolio can simultaneously deliver too little risk exposure in one environment and too much in another.

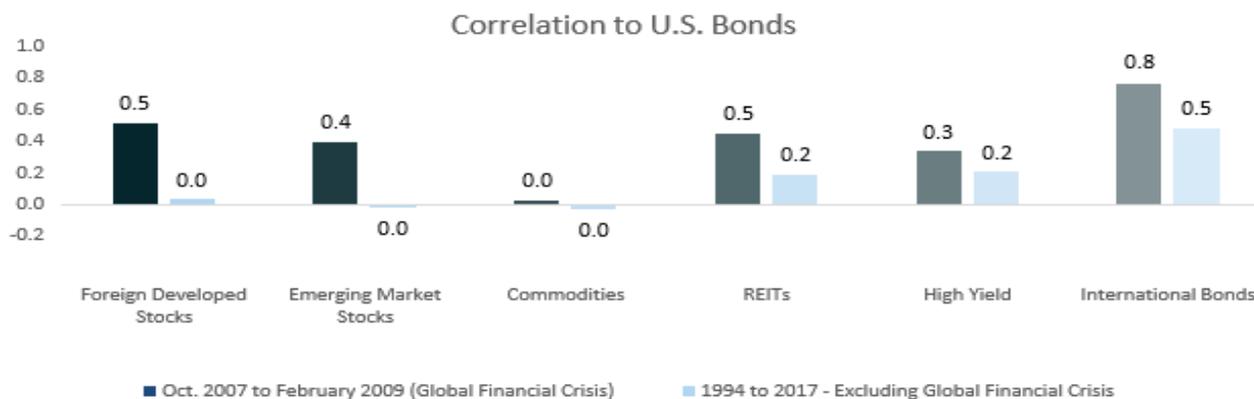


Source: Bloomberg, Newfound Research. Returns are hypothetical index returns and do not include any fees or expenses. Indices assume the reinvestment of dividends. The 60/40 portfolio is a hypothetical portfolio that is rebalanced monthly and consists of a 60% allocation to the Russell 3000 Index and a 40% allocation to the Bloomberg Barclays Aggregate Bond Index. Past performance does not guarantee future results.

Third, the payoff is uncertain. Unlike insurance, asset class diversification is non-guaranteed. It's entirely possible that we can enter a market environment where our risk mitigators become sensitive to the exact risks we're trying to protect against. For example, stocks and bonds may both be negatively affected by unexpected inflation shocks. From a mathematical perspective, diversification is measured through correlation, a statistical metric that measures whether one asset class zigs when the other zags or whether they tend to move in tandem. The global financial crisis was a clear example that correlations tend to spike upward during times of market crisis, robbing investors of protection just when they need it the most. In this sense, asset class diversification is like buying home insurance from a company that only insures homes on the Florida coast. The insurance may be totally adequate against one-off events unique to your house, but a hurricane could bankrupt the company just when you need a payout the most.



Source: Bloomberg, Newfound Research. Returns are hypothetical index returns and do not include any fees or expenses. Indices assume the reinvestment of dividends. Real Estate is represented by the FTSE EPRA/NAREIT Index. Emerging Markets Equity is represented by the MSCI Emerging Markets Index. Foreign Developed Equity Index is represented by the MSCI EAFE Index. Commodities is represented by the S&P GSCI Index. High Yield Bonds is represented by the Barclays Bloomberg High Yield Corporate Bond Index. International bonds is represented by the Bloomberg Barclays Global Ex-US Treasury Unhedged Index. U.S. stocks is represented by the Russell 3000 Index. Past performance does not guarantee future results.



Source: Bloomberg, Newfound Research. Returns are hypothetical index returns and do not include any fees or expenses. Indices assume the reinvestment of dividends. Real Estate is represented by the FTSE EPRA/NAREIT Index. Emerging Markets Equity is represented by the MSCI Emerging Markets Index. Foreign Developed Equity Index is represented by the MSCI EAFE Index. Commodities is represented by the S&P GSCI Index. High Yield Bonds is represented by the Barclays Bloomberg High Yield Corporate Bond Index. International bonds is represented by the Bloomberg Barclays Global Ex-US Treasury Unhedged Index. U.S. bonds is represented by the Bloomberg Barclays Aggregate Bond Index. Past performance does not guarantee future results.

Garbage In, Garbage Out

“On two occasions I have been asked, “Pray, Mr. Babbage, if you put into the machine the wrong figures, will the right answers come out?” ... I am not able rightly to apprehend the kind of confusion of ideas that could provoke such a question.” – Charles Babbage

Traditional portfolio optimization processes are extremely sensitive to the assumptions made about risk and return forecasts. Even small changes in these assumptions can lead to dramatically different portfolios.

This is very problematic because forecasting financial markets is notoriously difficult. For example, the American Association of Individual Investors (AAII) publishes an investor sentiment survey that asks participants whether they are bullish, neutral or bearish about the U.S. stock market over the next six months. On March 23, 2000, near the peak of the tech bubble, net investor sentiment was a staggering +46% (66%, 14%, and 20% of investors were bullish, neutral and bearish, respectively). On March 5, 2009, just days away from the bottom of the Global Financial Crisis, net investor

sentiment hit an all-time low of -51% (19% bullish, 11% neutral and 70% bearish).⁵ In aggregate, it appears that investors have a desire to buy high and sell low.

The impact of forecast error is so large that naïve, equally weighted portfolios regularly outperform traditional optimization-based approaches in out-of-sample tests.⁶

Behavioral Finance

“The optimal investment strategy is one that you can stick to.” – Charles Rotblut

When Markowitz discussed his 50/50 stock/bond split, there is a clear focus on emotion. He uses words like “grief” and “future regret.” This highlights what is perhaps the biggest failure of traditional portfolio construction: it does not consider investor behavior. A key assumption of MPT – at least in aggregate – is that investors are rationale. In reality, investors struggle mightily to block out emotions when making decisions.

In 1979, Amos Tversky and Daniel Kahneman published *Prospect Theory: An Analysis of Decision Under Risk*, helping to establish the field of behavioral finance by using cognitive psychology to explain inconsistencies between empirical economic decision-making and classical theory. In 2002, Kahneman became the first psychologist to win the Nobel Prize for Economics.

Since then, a score of cognitive biases have been identified and used to explain investor behavior including limited attention, overconfidence, over-optimism, anchoring, confirmation bias and herding. The importance of behavioral finance, the shortcomings of Modern Portfolio Theory and the consistent irrationality of investors has been the subject of pioneering work by University of Chicago Professor Richard Thaler whose research identified ways in which limited rationality, social preferences and even just a lack of self-control affect decisions that ultimately shape market outcomes. Thaler won the Nobel Prize in Economics in October 2017. We believe there are central tenets of investor behavior that should not be ignored in modern portfolio construction.

Investors are not risk averse, they are loss averse.

As discussed earlier, MPT uses volatility as the main metric of risk. Investors, however, are not necessarily risk averse. In fact, many investors actually have a preference for high risk, “lottery-style” investments.⁷ By using volatility as the primary measure, MPT punishes both bad, downside risk and preferable, upside risk.

In their 1979 paper, Kahneman and Tversky found losses are more than two times more painful than equivalent gains are pleasurable. In other words, investors are averse to losses, not risk.

Keeping up with the Joneses

Investors often evaluate their gains and losses relative to a reference point. Outcomes are classified as gains if they are above the reference point and losses if they are below it. In investing, reference points are often established public benchmarks (e.g., the S&P 500) as well as performance of peers, friends, and relatives.

⁵ Bloomberg/American Association of Individual Investors

⁶ Victor DeMiguel, Lorenzo Garlappi, Raman Uppal, “Optimal Versus Naïve Diversification: How Inefficient is the 1/N Portfolio Strategy?” *The Review of Financial Studies*, 2009.

⁷ Andrea Frazzini, Lasse Heje Pedersen. “Betting against beta.” *Journal of Financial Economics*, 2014.

A preference for a smooth ride

While classical MPT is concerned with optimizing for the destination, the quality of the investing experience depends on the journey as well. In fact, research has shown investors who monitor their portfolio more frequently will actually perceive their investments to be riskier: a phenomenon known as *myopic loss aversion*. Framing investment results over short investment horizons, combined with the asymmetric impact of gains and losses, creates a preference for a “smoother” ride over time.

THE NEW PARADIGM

We believe asset allocation is a foundational step for investors. A modern asset allocation approach should:

- *Be strategic, not static: the stock market is a powerful tool, but blind faith without regard for valuation or process can produce suboptimal results.*
- Limit risks to those for which we're adequately compensated by potential return: not all risk is created equal. We should identify risks worth taking by earning a premium above and beyond systematic or market risk for a given asset class.
- Acknowledge that a portfolio should be more than the sum of its parts: *as noted above, correlations are a moving target. When managing risk, we strive to identify strategies that pair well for the desired outcome; however, as standalone components may introduce certain unintended risks to the portfolio.*
- Address the flawed assumptions of MPT: *“Don't put all of your eggs in one basket.” There is no perfect solution to the portfolio construction process so we must exploit the positives and evolve, as new information is available.*
- Address the role behavior plays in long-term investment results: *we live in a world of 24/7 news and social media alerts transmitted in a matter of seconds. It's only fair to assume reactions to this information and human behavior play a major role in the valuation of asset classes and market movements.*

To achieve these goals, we embrace several philosophies:

- **A long-term focus** - Total Return portfolios are constructed for a 10+ year investment horizon. Time averages out short-term volatility and allows investors to harness the powerful benefits of compound growth.
 - *Income-oriented portfolios are what we consider “outcome driven,” so their time horizon can fluctuate based on both short- and long-term cash flow needs*
- **Benchmark-aware, not benchmark-centric** - Portfolios handcuffed to popular benchmarks don't have the flexibility to be dynamically positioned for the future. Yet, completely unconstrained portfolios can introduce painful short-term tracking errors that can exacerbate behavioral risks. We seek balance, remaining aware of, but not tied to, benchmarks.
- **Risk conscious** - The smoothness of the journey can be just as important as the ultimate destination.

Ultimately, this initial step will determine the portfolio split between *return generators* – asset classes and strategies responsible for long-term portfolio growth – and *risk mitigators* – asset classes and strategies designed to provide ballast to the portfolio during times of market turmoil.

It's important to note here that we mention asset classes *and* strategies. As we discussed earlier, asset class diversification is important, but the benefits can desert you just when you need them the most. When we run into a crisis of liquidity or panic, all “risky” asset classes – and even some asset classes that may normally be considered less risky, like corporate and municipal bonds – can lose money at the same time. Adding strategy diversification to the mix – holding investment managers with fundamentally different investment processes that will thrive in different market environments – can help to buttress our portfolio against painful shocks and deliver more consistent, long-term performance.

Before we dive in to how exactly we select investments within the Return Generating and Risk Mitigating buckets, it's important to note that no matter where an investment fits in the portfolio, The Atlantic Group will always prioritize **quality, strong cash flows, risk-adjusted returns and liquidity.**

We will also constantly strive for balance, simplicity and transparency. Just as Markowitz himself admitted, no one truly knows what the future holds. His response to this fact, in an effort to achieve his goals while also minimizing his feelings of grief and fear, was to simply balance his portfolio between stocks and bonds. We take this a step further, balancing not just between stocks and bonds, or return generators and risk mitigators, but also by strategy type (passive vs. systematic vs. active) and mandate (constrained vs. flexible).

Return Generators

We recognize the value in owning stocks for the long run. One would be foolish to ignore the history of the markets' ability to compound returns over a lifetime. We also recognize fees, expenses and taxes can eat into these gains.

Strategic Beta

The first category of return generators in our portfolio is the "Strategic Beta" bucket. Strategic Beta can be delivered through low-cost, tax efficient exposure to the global equity markets. It can be built with a modest strategic overlay to account for valuation and growth trends across the world and funded with passive investments like ETFs (Exchange Traded Funds) or, as a "Direct" Index.

Direct indexing provides the added benefit of "Tax Alpha".⁸ This strategy is built by unwrapping the benchmark and funding with the majority of the index constituents (directly) as opposed to ETF/index exposure. As a result, it utilizes the inherent ability to find substitutes within the vast array of holdings. Managers are then able to harvest tax losses efficiently and achieve the primary objective of maintaining minimal tracking error to the chosen benchmark or index. Investments in passive ETFs and direct indexing strategies help maximize the potential return of participating in long-term global economic growth, in a low-cost, tax efficient manner.

With over 300 factors now identified across the global equity markets, one may wonder how in the world one can have a view on which factors will actually work going forward. To dig into this a bit deeper, let's look at one of our favorite examples of a factor-based portfolio.

Vanguard S.M.A.R.T. Beta Portfolio

Multi-Factor portfolio investing in stocks with the following characteristics:

- Ticker starts with S
- Ticker starts with M
- Ticker starts with A
- Ticker starts with R
- Ticker starts with T

Average Annualized Total Returns (Dec-94 to Oct-13)



Source: Vanguard (<http://vanguardadvisorsblog.com/2013/12/04/introducing-vanguards-new-alphabet-etfs/>). Data from December 1994 to October 2013. Returns are index returns and do not reflect fees or expenses. S.M.A.R.T. Beta strategy is backtested and was calculated by Vanguard. Data does not reflect any Newfound index or strategy. **Past performance does not guarantee future results.**

⁸ [Using Tax Alpha to Measure Tax Efficiency \(parametricportfolio.com\)](http://parametricportfolio.com)

The portfolio, suggested by Vanguard, buys companies whose tickers start with the letters S, M, A, R or T. This is not a real portfolio anyone should invest in, yet it has identified an anomalous return pattern. On a backward-looking basis, the S.M.A.R.T. Beta portfolio nearly doubled the annualized return of the S&P 500.

To determine the validity of this so-called factor, we need to understand:

1. What is the theory that explains why the factor works (provides excess return)? Without a theory for why something works, we cannot possibly form an intelligent view as to whether or not it will work in the future.
2. How has the factor performed on an out-of-sample basis? This is math speak for the following types of questions: How has the factor performed after its discovery? How does the factor work with slightly alternative implementations? Does the factor perform well in other assets classes and geographies?

In the case of the S.M.A.R.T. Beta factor, these questions allow us to quickly dismiss it. There is obviously no good reason for why the first letter in a stock's ticker should drive returns. While we have not stress tested S.M.A.R.T. Beta across asset classes and geographies, we know this was simply a tongue-in-cheek example presented by Vanguard trying to get the point across that it's easy to find something that works in the past, but much harder to find something that will work in the future. We suspect if we did test the strategy in other countries, as an example, it would probably outperform in some cases and underperform in others. This lack of "robustness" would be a clear sign our level of confidence in this factor going forward should be very low.

So, what factors do meet these criteria? Only four that are applicable to stocks:

- **Value** - Buy cheap stocks and sell expensive ones (i.e., *find bargains*).
- **Momentum** - Buy outperforming securities and sell underperforming ones (i.e., *follow the trend*).
- **Quality** - Buy lower risk/higher quality securities and sell higher risk/lower quality ones (i.e., *favor stability*).
- **Size** - Buy smaller companies and sell larger ones⁹ (i.e., *be nimble*).

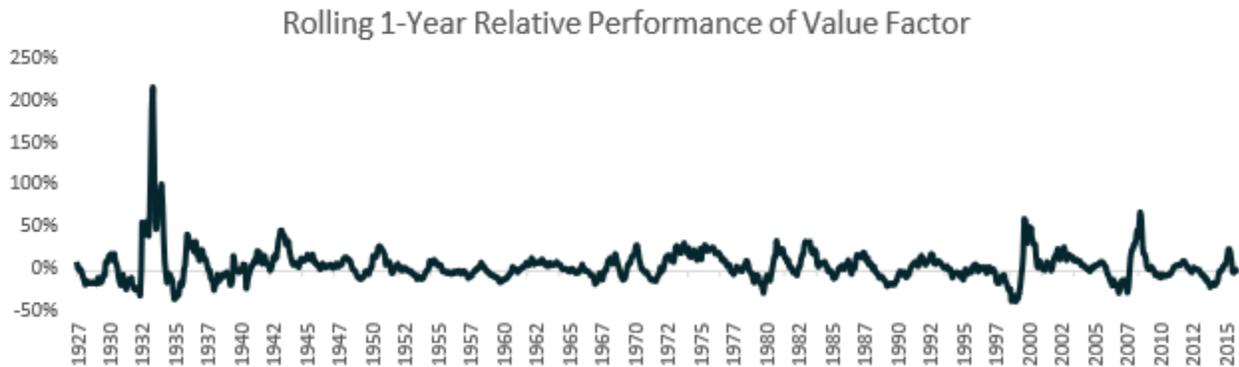
Now we know what everyone is thinking – if these four factors provide generally higher risk-adjusted returns to passive, market-cap weighted indices – then why not use factor-based investing exclusively and in place of our Strategic Beta sleeve. The answer lies in the table below:

	Excess Return	Volatility	Sharpe Ratio	Maximum Drawdown	Longest Drawdown
Market	6.4%	18.6%	0.34	70.6%	12 Years
Size	2.7%	10.3%	0.26	54.5%	34 Years
Value	3.8%	14.3%	0.26	50.6%	16 Years
Momentum	6.5%	17.9%	0.36	74.2%	21 Years
Quality	7.7%	11.2%	0.69	52.8%	7 Years
EW	6.3%	5.6%	1.12	22.0%	6 Years

Source: AQR. Calculations by Newfound Research. Data from December 1930 to August 2017. Factor returns reflect self-financing long/short indices. Returns are excess returns (net of the risk-free rate) and include the reinvestment of dividends. Hypothetical returns do not reflect fees or expenses. Data does not reflect any live index or strategy. Past performance does not guarantee future results.

⁹ The size premium is really the only factor of the four that today faces any meaningful resistance. Recent research suggests size prospers once we control for quality (i.e., we want to buy small, high-quality companies not just small companies).

While the performance of each of the individual factors has been impressive, the outperformance is far from risk-free. All the factors come with their own volatility and significant periods of underperformance to a passive index. To be clear, this is not just slight underperformance. In some cases, the underperformance was in excess of 50% and lasted over 20 years before climbing back to breakeven on a relative performance basis.



Source: AQR. Calculations by Newfound Research. Data from July 1926 to August 2017. Factor returns reflect self-financing long/short indices. Returns are excess returns (net of the risk-free rate) and include the reinvestment of dividends. Hypothetical returns do not reflect fees or expenses. Data does not reflect any live index or strategy. Past performance does not guarantee future results.

Recognizing that factor premiums vary over time should not be too surprising. Imagine a scenario where outperformance was riskless. In this case, factor strategies would be viewed as free money. Capital would flood into the strategies, driving prices up and causing the strategy to stop working. Risk is precisely what allows the factors to exist in the first place. Weak hands that “fold” pass the outperformance on to strong hands that “hold.”

While short-term underperformance may be necessary for long-term outperformance, we recognize nobody enjoys underperforming. So how do we combat the inevitability of temporary underperformance? – **Diversification**. Specifically, we diversify by attempting to equal weight exposure to the four factor strategies. Going back to the table above, you may notice by equal weighting (**EW**) these four factors, we preserve the outperformance potential while dramatically lowering both the magnitude and duration of underperformance. At the same time, we diversify our factor exposure by implementing both skill-based, active strategies with rules-based, quantitative selection. By implementing active management within the factor-based framework, we create high conviction exposure while staying true to the same principles of owning assets, or, in this case, asset managers who have provided outperformance (*alpha*) over extended time periods by exposing one or more of the four factors identified above – size, value, momentum and quality.

By seeking to balance exposure to the Strategic Beta and Alpha sleeves, we introduce an additional layer of strategy diversification. Just as Markowitz minimized the potential for future regret by mixing stocks and bonds, we acknowledge no one knows over any given period of time whether passive or active, factor-based strategies will outperform. By blending the two together, we feel the return-generating sleeve is best positioned for whatever the future holds.

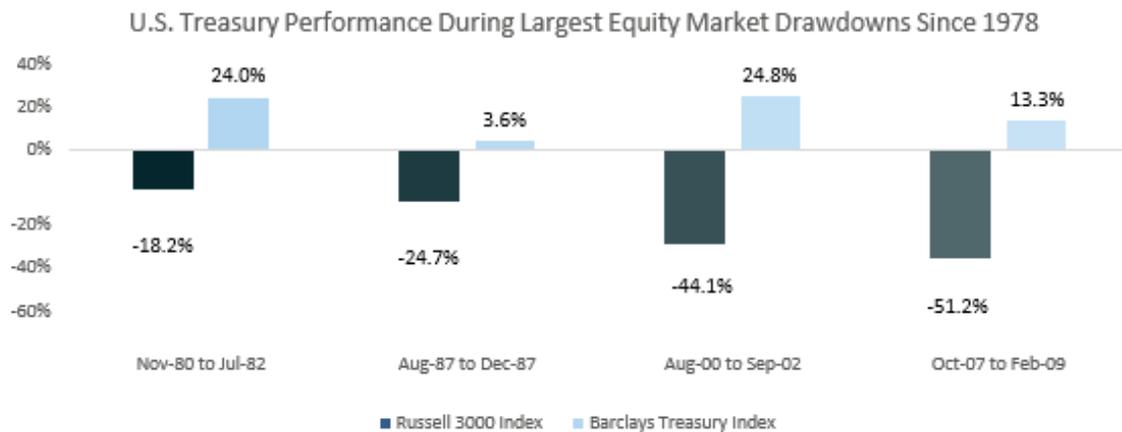
Risk Mitigators

On Sept. 30, 1981, the 10-year U.S. Treasury rate peaked at an all-time high of 15.8%. Over the next 30 years, it fell to an all-time low of 1.4% on July 5, 2016. During this period, the Barclays Aggregate Bond Index returned a phenomenal 8.5% per year.¹⁰ This bond bull market was driven by both high starting yields and the secular decline in interest rates.

¹⁰ Board of Governors of the Federal Reserve System (US), 10-Year Treasury Constant Maturity Rate [DGS10], retrieved from FRED, Federal Reserve Bank of St. Louis

Unfortunately, our situation today is much different from the early 1980s. Current yields are very low by historical standards, implying, for the foreseeable future, fixed income is likely to be a drag on portfolio performance especially after accounting for inflation. However, that doesn't mean bonds shouldn't still play a key role in all but the most aggressive portfolios.

We break down our “Fixed Income” bucket into two sub-buckets: “core” and “credit.” This distinction reflects the fact that investors typically hold bonds for one (or both) of the following reasons: (1) volatility management / capital protection and (2) income. The “core” portion of this bucket is plain vanilla, high-quality debt. These types of bonds provide piece of mind as they involve loans to either the United States Government (an entity that most are 100% certain they can count on for repayment), government-related entities or corporations/municipalities with strong credit profiles.



Source: Bloomberg, Newfound Research. Returns are hypothetical index returns and do not include any fees or expenses. Indices assume the reinvestment of dividends. Past performance does not guarantee future results.

The purpose of the “credit” sleeve is to increase the overall income profile of the “Fixed Income” bucket. Of course, higher income and return comes with higher risk as these bonds typically involve lending to companies or other entities with higher risk of default than the loans contained in the “core” sleeve. By employing both of these sleeves in various proportions depending on risk profile and client objective, we can balance the need for bonds to fulfill their risk mitigation and income mandate in a low interest rate environment.

While fixed income will always remain a key part of our risk management plan, it's not an end-all, be all, especially with rates where they are now and the uncertainty around their future trajectory. To reduce volatility from traditional risk assets while also managing our interest rate exposure, we turn to “**Alternatives.**”

Alternative Investments

Over the years, the broader investment community has cycled between love and hate for the use of ‘alternatives’ as a method of diversifying a traditional portfolio. Yet, these strategies are considered a core holding for many of the world’s most sophisticated investors. A survey of more than 800 college and university endowments found the average allocation to alternative investments was north of 50%.¹¹ In fact, a robust alternatives portfolio is now considered a must for most institutions and family offices.

¹¹ <https://www.commonfund.org/wp-content/uploads/2017/01/2016-NCSE-Press-Release-FINAL.pdf>

Historically, there has been a major disparity between institutions and individual investor allocations to alternative investments, with institutional portfolios dwarfing the allocations of individuals. Two of the primary barriers to entry for individual investors have been high investment minimums and the lack of liquidity for many of these investments. Pair these factors with little easily accessible research, loose requirements for public reporting, and complex return data and it is no wonder why individuals have felt apprehension contributing a higher percentage of their portfolio to these assets. In recent years however, recognizing the value alternatives have added to institutional portfolios, the financial industry has made efforts to make alternatives more accessible while still attempting to deliver the benefits that each asset class has historically delivered.

“Alternative” is an amorphous term used to describe investments that fall outside the asset classes listed in the traditional ‘style box’ portfolio management schema. What the term really refers to is a diverse mix of assets which often have nothing to do with one another – and so should not be lumped into one asset class. There are four main categories of alternatives: private equity, private credit, real assets, and hedge funds. Each of these has uniquely diversifying, risk managing or alpha driving elements. When paired together, alternatives can significantly enhance the risk adjusted performance of a balanced portfolio and complete our structural framework of strategy diversification.

Private Equity

Private Equity strategies invest in companies that have not yet gone public and investors are seeking a unique return profile for contributing capital to these companies earlier in their life cycle. Due to this characteristic these investments are less liquid and more opaque, leading to a different risk profile. In fact, the average lifespan of a private equity fund is seven years from first call to last distribution. However, the return potential for these investments is also enhanced and uncorrelated to public markets. This is largely attributable to information inefficiency, illiquidity premiums, and superior potential for explosive innovation – which leaves room for managers to outperform their peer group if they have a competitive advantage.

Private Debt

It has become increasingly apparent in recent years that the traditional wisdom of allocating to fixed income has not kept up with the changing interest rate environment. As noted in earlier comments, it is our belief that the traditional 60/40 portfolio will not provide risk adjusted returns to which investors in previous cycles have grown accustomed.

Challenged with this math problem, investors can either increase exposure to riskier, higher yielding (junk) bonds or to equities. The other “alternative” is to explore private markets which can offer attractive yields and are uncorrelated to government or corporate debt. Private debt in the form of direct loans, distressed and special situations, mezzanine, and real estate mortgages have the potential to offer substantially higher yields with better Sharpe ratios than is currently found in public markets.

Real Assets

Real assets encompass investments in non-financial instruments such as real estate, commodities (and derivatives of those commodities), land, and other forms of property (wine, art, antiques etc.). The most common and accessible form of the real asset sub-category is real estate – both in the form of equity and debt.

When it comes to finding uncorrelated returns there are few more proven asset classes than real estate. Many individual investors who lack the capital, liquidity, or time to research their own personal real estate investments have sought exposure in publicly traded REITs to varying degrees of success. The issue with these vehicles is that they have attracted mass amounts of capital and by virtue of their own success have been forced to buy less-desirable assets to simply deploy capital.

Private real estate sponsors on the other hand maintain the ability to be selective in the investment process due to a multitude of factors. Size, agility, and the ability to invest earlier in a project's timeline, give an investor the opportunity to harvest enhanced yield or capital appreciation when managed well.

Hedge Funds

Hedge funds are likely the most notorious of the assets listed in the alternatives bucket. In fact, novels could and have been written about the various successes or failures of hedge funds and their managers in the past (e.g. Bernie Madoff) However, this distracts from the true value that hedge funds can create in portfolio construction. More than any other investment, hedge fund returns have the highest dispersion of manager results, magnifying the delta between top performing managers and bottom performers. The term "hedge" can be defined as protecting oneself against loss on an investment by making balancing or compensating transactions. This is not always the case when reviewing the holdings of hedge fund managers and makes due diligence, understanding of a strategy and positioning within the overall portfolio, very important in manager selection.

When combined thoughtfully, we find "alternatives" have the ability to complement both our "Alpha" and "Fixed Income" allocations by mitigating risk without doubling down on exposure to equities or interest rates.

Tactical

In the introduction to our approach, we spoke about building *strategic*, not *static* portfolios. It's unrealistic to think a set-it and forget-it asset allocation policy can succeed in an increasingly interconnected financial world where information rapidly diffuses through the markets and conditions can change on a dime.

As we saw, a static 60/40, balanced portfolio has exhibited a very different risk profile across different market environments. The volatility of this portfolio has ranged from a bond-like 5% to a stock-like 16% over the last three decades.¹²

The four buckets we have discussed up to this point – "Strategic Beta," "Alpha," "Fixed Income" and "Alternatives" – are largely constrained. These are the buckets meant to harvest the long-term benefits of the asset classes and strategies we've selected.

We complete the portfolio with an allocation to strategies unconstrained in their mandate. This "**Tactical**" bucket consists of strategies that are flexible, meaning they have the ability to reposition allocations across asset classes, sectors, geographies and strategies based on the prevailing market environment. We look to these strategies to act as smoothness optimizers, increasing return consistency especially during market dislocations. By breaking down the walls of a traditional style box allocation, these managers can opportunistically or "tactically" dial risk up or down.

These strategies typically employ either a trend following and/or contrarian approach. Trend-followers implement a strategy very similar to the old investment adage "sell your losers short and let your winners run." They seek to buy securities trending upward and sell or avoid securities trending downward. Contrarian investors, on the other hand, look to identify asset classes or securities either extremely over or undervalued. They sell or avoid overvalued securities and buy undervalued ones.

With the "Unconstrained" bucket, we take the handcuffs off to allow for moderate over/underweights to keep the risk of each portfolio in line with our target even as equity volatility ebbs and flows. The Unconstrained Allocation takes a top- down approach in rounding out what becomes our new paradigm of STRATEGY DIVERSIFICATION.

¹² Bloomberg (data), Newfound Research (calculations). The 60/40 is a portfolio that is 60% MSCI ACWI Gross Return Index and 40% Bloomberg Barclays Aggregate Bond Total Return Index

CONCLUSION

The Efficient Frontier and resulting pie chart of Modern Portfolio Theory continues to serve the broad universe of financial advisors, wealth managers and financial planners – despite its obvious flaws in both assumptions and results. Over the past half century, the passage of time, the rapid evolution of investment products, innovations in portfolio research capabilities and the inevitability of periodic crises have exposed its rusted chassis, worn brakes, inefficient use of fuel and, perhaps most importantly, its lack of airbags.

We at The Atlantic Group have included the following tag line on every correspondence with our clients. It says simply, PLAN – EXECUTE – ADAPT – ACHIEVE. This paper has addressed our EXECUTION process of strategy diversification and its inherent ability to ADAPT to changing economic conditions and stressed financial markets. Ultimately, to reach a goal, our belief is every investor – individual or institution must have a PLAN. Yogi Berra famously said, “If you don’t know where you’re going, you’ll probably end up somewhere else.” For us, ACHIEVEMENT means our clients will end up where they intended. We’ve made an unwavering commitment to continue advancing the process of effective portfolio construction and risk management. Our efforts aren’t only to ensure our clients end up where they intended, but also that they arrive there after experiencing a smoother ride.

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