

This paper is meant to serve as an overview of asset allocation, both for non-investment professionals and for those practitioners who may be interested in re-evaluating their notions on the topic.¹ It addresses the concept, its importance, and how investors have approached it in recent decades. The paper also discusses at length one of the key tenants of asset allocation – diversification – as well as shares best practices.

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¹ Note that this paper focuses on asset allocation in an asset-only framework (i.e., it does not explicitly discuss asset-liability management).

Key takeaways

- Asset allocation is generally expected to have a greater impact on long-term performance than any other decision you make. Therefore, it is worth spending considerable time on the topic.
- An investment should not be considered based solely on its individual risk-return profile, but rather how it fits within a portfolio. It is the mix of assets that determines the overall success of the portfolio.
- Asset allocation and risk allocation are one in the same. Don't just look at risk from a single, statistical viewpoint. Rather, take a "mosaic" approach to understanding the risks in a portfolio.
- Don't put all your eggs in one basket. Diversify your portfolio such that it is designed to weather as many market environments as possible.
- Take a long-term view to strategic asset allocation. Make the asset allocation decision with a focus on meeting your goals and operating within your constraints.

What is asset allocation?

Asset allocation is the decision of how much of your portfolio to invest in different categories of assets (i.e., asset classes), such as stocks, bonds, and real estate. However, asset allocation is more than simply deciding where to allocate your capital. Because investing requires risk taking, asset allocation is also the process of determining what risks you are willing to accept, and then managing those risks.

How does asset allocation affect performance?

Asset allocation is the paramount factor that influences the performance of your portfolio.² The asset allocation decision has a much greater impact on overall performance than does market timing, manager selection, or individual security selection. There are several reasons for this.

² A number of academic studies have been conducted on this topic, and they all come to the same conclusion. See "Determinants of Portfolio Performance," Brinson, Hood, and Beebower, 1986 - "investment policy dominates investment strategy (market timing and security selection), explaining on average 93.6 percent of the variation in total plan returns." Also see "Does Asset Allocation Policy Explain 40, 90, or 100 Percent of Performance?," Ibbotson and Kaplan, 2000 - "We found that about 90 percent of the variability in returns of a typical fund across time is explained by policy...and on average about 100 percent of the return level is explained by the policy return level."

First, each asset class exhibits unique risk and return behavior. For example, some asset classes, like equities, are considered risky, but they offer higher potential returns. Other asset classes, like cash, may pose minimal risk, but they typically offer limited return potential.

Second, there are common economic and market factors, such as growth, inflation, and interest rates, that drive the returns of asset classes. Some asset classes react similarly to these factors, while others behave quite differently from each other. For example, stocks and high yield bonds are likely to move in the same direction during periods of crisis; in contrast, stocks and US Treasury bonds often move in opposite directions during crisis periods.

Third, which asset classes you choose to include in your portfolio - and how you combine them - will be the primary factor *that you can control* that will determine the overall level of risk and return in your portfolio.

Understanding asset allocation

Asset allocation has many similarities to cooking. For example, for a skilled chef to put together a great dish, they must first select the proper ingredients. To do this, the chef needs to understand the characteristics of each individual ingredient. Is it sweet, salty, bitter... what is its texture... how does it change when you cook it, etc. But, it is equally important for the chef to understand how those ingredients interact with each other.

To illustrate this point, consider the following three ingredients: chocolate, peanut butter, and jelly. On their own, each is enjoyable. Now, if you combine peanut butter and jelly, you get a lunch-time favorite. If you combine peanut butter and chocolate, you get perhaps the best food combination ever discovered. But if you try to combine chocolate and jelly, you'll likely find that's not as popular.

A similar example from an asset allocation standpoint would be a portfolio consisting only of risky assets, such as stocks, private equity, and high yield bonds. All three assets are likely to produce solid returns over the long run, but they are all also likely to move in the same direction most of the time, and especially during periods of market stress. A more sensible dish - or asset allocation - would include an ingredient that balances out the characteristics of these assets.

Returning to the cooking metaphor, once you have determined the proper ingredients, the next step is to figure out the right amount of each ingredient to include. That is, you need to determine the appropriate combination. For example, if you want to make cookies, you are going to need flour, butter, sugar, eggs, and vanilla. If you combine these ingredients in equal proportions to each other, you will ruin the dessert. However, if you combine them according to the allocations set forth in the recipe, you will likely be very happy with the outcome. Asset allocation is similar, in that it is the proper combination of the ingredients that will often yield the best result.

This begs the question, “how do I figure out what the right combination of assets is?” In cooking, as with investing, you learn from history and from trial and error. In cooking, the knowledge gained is generally passed down in the form of recipes. However, learning from history is less straight forward for investors. This is not least because markets, unlike most food ingredients, are constantly and rapidly evolving.

For example, one lesson investors have learned is that there is a positive relationship between long-term return expectations and the level of risk they are willing to accept. Or, to put it more simply, higher returning assets tend to possess greater risk.

Sometimes, the lessons are not immediately obvious, nor intuitive. Investors may, unfortunately, extrapolate the wrong lesson. For example, an investor looking at the returns for bonds over the last five years might conclude that they should expect a similar return from bonds over the next five years. Yet, if the yields available on bonds today are substantially different than they were five years ago, their future returns will likely be considerably different.

Returning to the food analogy one last time, many chefs enjoy experimenting. And this is encouraged by the limited downside risk (e.g., if you burn your dinner, you can order take-out). In investing, the downside risk can be much greater, especially when talking about millions or billions of dollars. Hence the degree of experimentation is usually limited. Instead, many investors look to their peers – to see both what they got right, and wrong – to inform their own investment decisions. This is probably why the asset allocation for investors of a similar type, and with similar goals, tend to resemble each other.

Modeling: modern portfolio theory and mean variance optimization

There is a long history of data for major financial markets. This makes many aspects of the industry (such as performance and volatility) easy to measure, and what can be measured can be modeled, for better or worse.

Unsurprisingly, the investment industry has been building mathematical models since before there were electronic calculators, let alone computers. As more data and computing power has become available, models have grown more sophisticated and robust... but, not always more accurate. Moreover, it can be difficult to tell what information is relevant and important, and what is not.

The mathematical model that underpins the way much of the investment world has thought about diversification and asset allocation has been around since the 1950s. Known as Modern Portfolio Theory, or MPT, it has the twin benefits of being straight forward to understand and easy to use.

Importantly, MPT shows that the risk of a diversified portfolio may be less than the risk of any single investment in that portfolio. Just as important, it shows that an investment should not be considered based solely on its individual risk-return profile, but rather how it fits within a portfolio.

Modern Portfolio Theory serves as the basis for a quantitative tool called mean variance optimization, or MVO. For decades, MVO has been the traditional starting point for determining asset allocation for many investors. MVO can be used to mathematically determine a set of “optimal” portfolios, as defined by those portfolios with the highest risk-adjusted expected returns. In theory, all an investor needs to do is determine the risk or return target they want, and then choose the corresponding point along this line of optimal portfolios.

One of the traits that makes MVO easy to use is that it requires just three sets of inputs for each asset class that is included in the model:

- Expected return, which is your projection for the future performance of the asset,
- Expected volatility, which is a measure of how much you expect the value of the asset to fluctuate over time,
- And correlation, which is a measure of how much an asset class’s movements are driven by, or related to, those of another asset class.³

³ For MVO purposes, the correlations are expressed as a covariance matrix.

Investment advisors develop these inputs for use in their models. Such capital markets expectations are often updated annually.⁴ Given the uncertainty surrounding financial and economic forecasts, expectations development is challenging. In fact, it is quite unlikely that we (or anyone else) can predict with precision the level of returns for the universe of asset classes over the next ten or twenty years. Hence, capital markets expectations should be treated as educated guesses, not guarantees.

⁴ Meketa produces assumptions for more than 100 different asset classes & strategies. Meketa’s most recent capital markets expectations can be found on our website.

The efficient frontier

Digging in a bit more on the concept of MVO and the “optimal portfolios” it produces, what MVO shows is that by combining assets that are not highly correlated with each other, an investor can:

- 1) create a portfolio that provides a higher expected return for a given level of risk, or
- 2) create a portfolio that experiences less risk for a given level of expected return.

In other words, it allows you to achieve a better expected risk-return trade-off. The optimal portfolios produced as part of MVO can be expressed graphically along what is known as an “efficient frontier.” The efficient frontier represents a series of portfolios with the highest expected return for a given level of risk (see Figure 1). In other words, the portfolios that lie along the efficient frontier offer the mathematically optimal trade-off between return and risk.

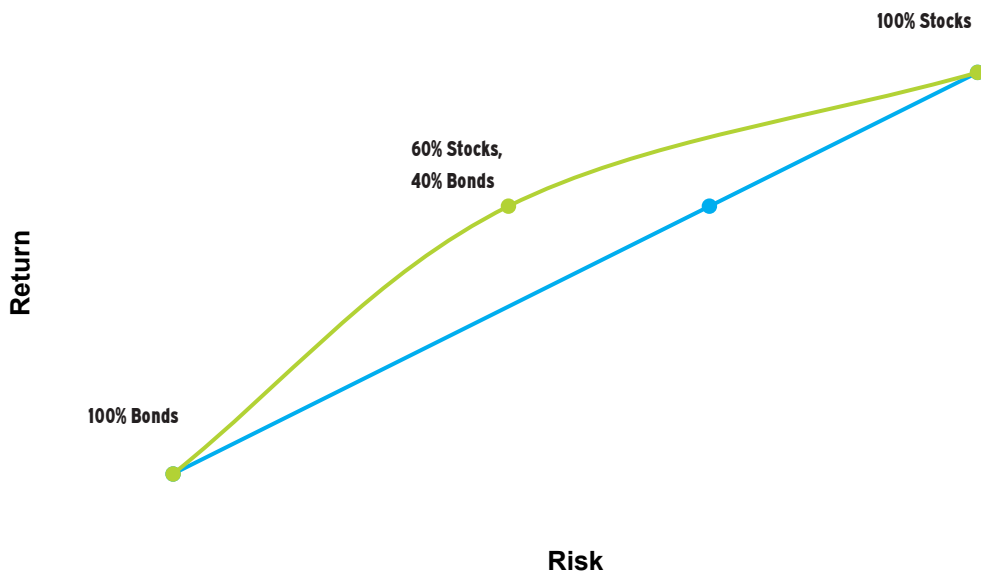


FIGURE 1
Typical Efficient Frontier

Source: Meketa Investment Group, 2024.

The measures of “return” and “risk” can be reframed to be a variety of metrics. For example, pension fund investors might consider an efficient frontier that compares expected return relative to funded status or required contributions, rather than volatility.

Critiques of MVO

There are shortcomings in MVO (as with any model), and not recognizing this fact by choosing a portfolio strictly from the efficient frontier would likely result in a sub-par decision. This is because MVO makes a few assumptions that may not hold true in the real world in order to keep the model simple. It also may fail to account for all of the factors that an investor considers as part of their decision. These critiques are worth noting not just to understand MVO, but to better understand financial markets.

First, MVO assumes that investment returns are random and normally distributed; that is, they resemble a bell curve. In reality, markets are prone to fat tail events that occur with far greater frequency and magnitude than the model projects. MVO also assumes that asset class risks and correlations are stable over time, which is likewise not the case in financial markets.

Another shortcoming relates to the primary problem with all modeling. That is the fact that the output of the model is only as good as the inputs.⁵ If the assumptions are inaccurate, even by the smallest of margins, the output will likewise be sub-optimal. Further, MVO tends to pick one asset class at the exclusion of another even when the difference in expectations are so small that a practitioner would likely consider the differences to be insignificant. The resulting portfolios tend to be highly concentrated. See Figure 2 for examples of the types of portfolios MVO may produce if followed too dogmatically.

⁵ In common parlance, this is known as GIGO, or garbage in, garbage out.

- Venture Capital
- Asset-Based Lending
- Special Situations
- Short-term Investment Grade Bonds
- Portable Alpha
- Value-Added Real Estate
- Opportunistic Real Estate
- Commodities
- RMS Aggregate
- Alternative Risk Premia
- Cryptocurrencies
- Insurance-Linked Strategies

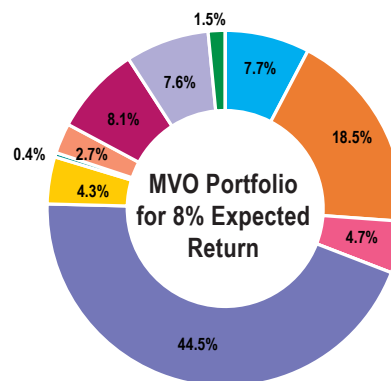
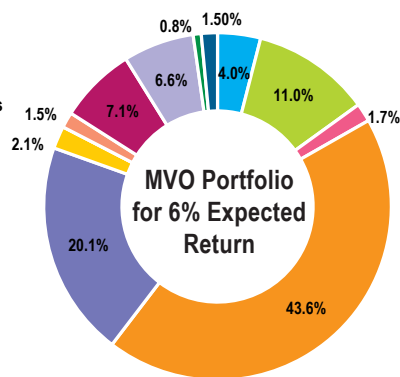


FIGURE 2
Sample Unconstrained Efficient Portfolios

Source: These portfolios were produced using an unconstrained set of Meketa's capital markets expectations.

A further issue is that the MVO framework does not sufficiently account for the complexity of investors' objectives and constraints. MVO uses a single statistical measure, volatility, as a proxy for risk.⁶ It does not recognize the potential for aversion to illiquidity, leverage, short-term drawdowns, poor performance relative to peers, etc. Nor does it account for the feasibility or cost of implementation, fees, or the potential for adding value through manager and fund selection.

⁶ Our experience has been that if you ask a group of people charged with governing a large pool of assets how they consider risk, those who define it solely as "the standard deviation of returns" will be few in number.

Finally, the output of MVO implies a false level of precision. It may suggest that one portfolio is superior to another (often only by a basis point or two), even when a practiced observer would look at the two portfolios and (rightly) attribute the difference to noise or a very reasonable margin of error.

We believe it is important to be aware of these shortfalls so that we can be sure to account for them when doing an asset allocation study. Adopting a less rigid approach to portfolio selection shows a little humility, as it allows for the possibility of errors in the inputs or assumptions. We do not think it means you should give up on all models. Quite the contrary. We suggest using many different models that, when taken together, can provide a greater understanding of your portfolio.

Diversification

You may have heard the phrase that diversification is the sole "free lunch" available to investors. This is because diversification allows you to reduce the risk of your portfolio without reducing the overall expected return. By diversifying, investors can create more "efficient" portfolios.

We illustrate the potential benefits of diversification in the charts in Figure 3. The first chart on the left represents a portfolio composed of a single asset class - bonds. The chart in the middle then adds two new asset classes - stocks and cash - in a manner such that the combined portfolio has the same risk as the 100% bond portfolio, but it has a higher expected return. The chart on the right likewise adds stocks and cash, but in different weights, such that the combined portfolio has the same expected return as the 100% bond portfolio, but it exhibits lower risk.

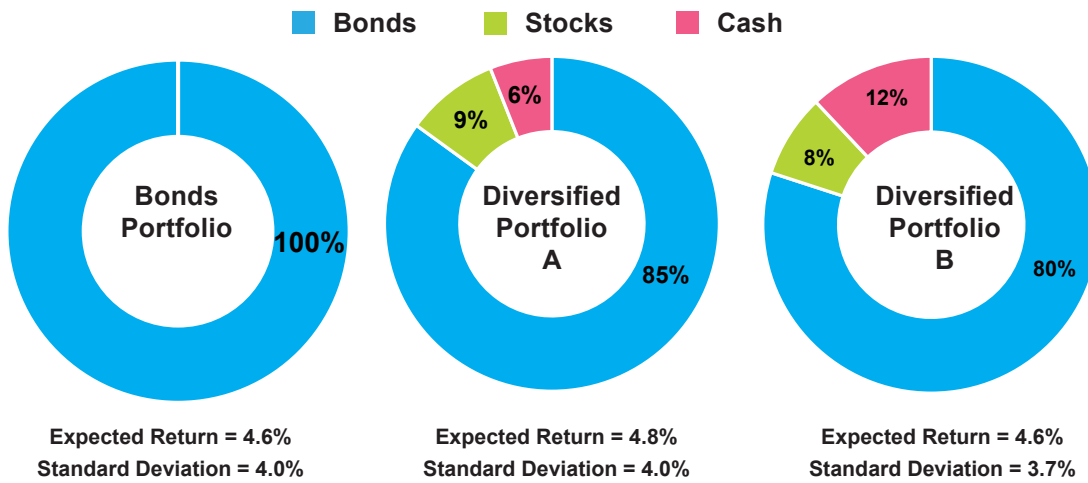


FIGURE 3
Portfolio Diversification Examples

Source: Based on Meketa's 2024 10-year capital markets assumptions for core bonds, US equities, and cash.

This next example of the benefits of diversification illustrates a point that was made earlier when discussing MPT. Specifically, an investment should not be considered based solely on its individual risk-return profile, but rather, how it fits within a portfolio.

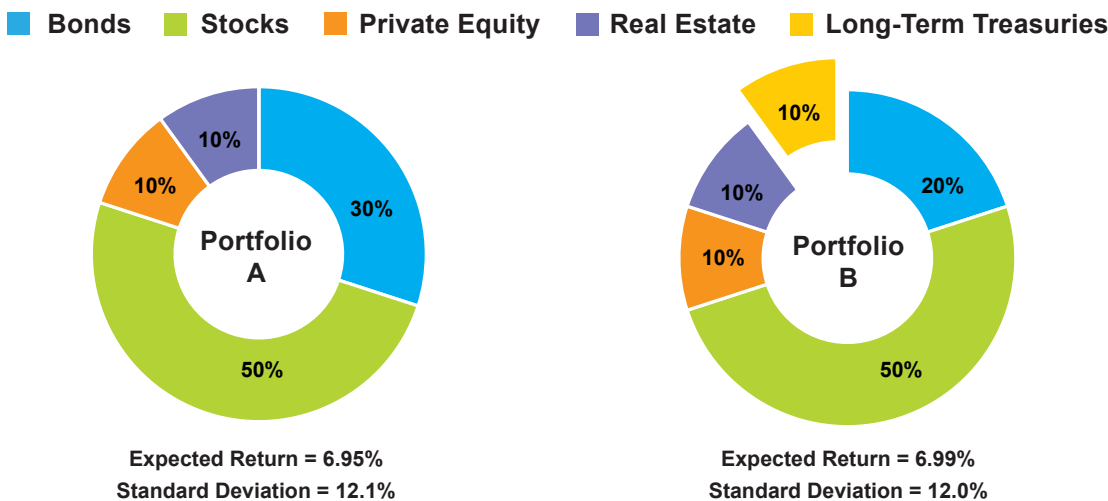


FIGURE 4
Example of the Counter-Intuitive Benefits of Adding a "Riskier" Asset

Source: Based on Meketa's 2024 10-year capital markets assumptions for core bonds, global equities, private equity, real estate, and long-term government bonds.

The portfolio on the left above (see Figure 4) is diversified across four major asset classes: stocks, bonds, real estate, and private equity. Now consider the addition of a fifth asset class: long-term Treasuries. When compared to "core" bonds, long-term Treasuries might have a similar expected return, but they have much more interest rate risk and exhibit substantially greater volatility. Thus, on a stand-alone risk-return basis, long-term Treasuries appear to be inferior to core bonds, and replacing some of the core bonds with long-term Treasuries would seemingly increase risk.

Yet when we add long-term Treasuries to the portfolio, overall volatility declines, as illustrated in the portfolio on the right. This is because long-term Treasuries are generally negatively correlated with stocks, as well as the other risky assets which dominate this portfolio. Thus, it is the way long-term Treasuries interact with the other assets in the portfolio that allows for the construction of a more efficient portfolio.

Each asset class should play a specific role

In thinking about the benefits of diversification, it may help to consider a portfolio in a similar way to how you might look at your favorite sports team. For example, a successful baseball team cannot just have nine players in the shortstop position on the field. Rather, they need a team where each position plays a different and important role.

The same concept applies to portfolios – different asset classes should work together like a well-rounded team. And like players on a basketball team, some assets may have periods of “slumps” or “hot streaks.” Having a diverse team of different asset classes makes it possible for other assets to “pick up the slack” during slumps, so that the overall portfolio is more protected from the volatile swings of slumps and hot streaks. To help clarify and define the roles of various asset classes, some investors adopt a functional allocation framework. A functional framework can provide governing bodies with quick and intuitive transparency into the major risks and roles among portfolio components.

Designing a portfolio

As noted earlier, asset allocation is more than simply deciding where to allocate your capital. Because investing requires risk taking, asset allocation is also the process of determining what risks you are willing to accept, and then managing those risks. Therefore, we believe that the asset allocation and risk management process should be intricately linked with each other.

The mosaic approach

The real-world risks and objectives faced by investors are complex and often conflicting. These cannot be summarized in a single statistic.

Many practitioners in the industry are familiar with the concept of the mosaic approach to portfolio management.⁷ This is the concept of developing an understanding of an investment opportunity by putting together an image, piece by piece, until you see the whole picture. We believe in applying that concept more broadly, especially when it comes to understanding the many risks inherent in a complex, multi-asset class portfolio. We look at risk from many different viewpoints so as to help us better understand the risks in a portfolio.

⁷ The mosaic approach was (and at the time of this writing still is) part of the CFA curriculum.

Important among these different perspectives is stress testing and scenario analysis. As noted earlier, traditional MPT-based metrics use assumptions that may not be realistic, particularly when it comes to “tail risk” events. Evaluating possible portfolio options under periods of historical stress can provide a real-world evaluation of potential portfolio outcomes in extreme environments.

Stress testing on specific factors - such as interest rates, credit spreads, currency movements, inflation, and bear markets - can paint a more comprehensive picture of the sensitivities in a portfolio. They can reveal what factors will have the most significant impact on an investor's performance and allow them to determine if they feel they are positioned appropriately. Stress tests can also be used to evaluate a portfolio's liquidity needs and the impact of cash flows.

We believe it is important to be humble, but rigorous, about the modeling used for this analysis. Taken together, their output can be used to create a holistic view of the potentials risks and opportunities an investor is facing.

An all-weather approach

When building a portfolio, some investors are inclined to focus on the event or scenario they believe is most likely to occur. But doing so might open them up to more risk, particularly if the outcome is different than their prediction (which it almost assuredly will be). An undiversified portfolio often represents a bet, intentional or not, on very specific market conditions. Predicting the direction of the markets with any consistency is particularly challenging. Even though investors may feel confident that they know the direction the markets will take in the near term, unexpected events often occur.

It is not uncommon for the investment industry to use a weather analogy to illustrate this point. If you dress for the weather that is typically expected for your climate zone at a given time of year, you should be okay more than 99% of the time. If the weather turns out to be as you expected, or even better than expected, you will probably be quite content. But if a blizzard or hurricane occurs, it could have disastrous consequences if you are unprepared for it.

Investing is much the same. Being unprepared for the unexpected can be devastating. For example, major events such as wars, pandemics, and financial crises have a history of quickly changing the prevailing economic environment. This argues for designing a portfolio to weather all possible scenarios instead of betting on a portfolio designed to benefit solely from the environment that is considered most likely to occur.

The asset allocation process

When designing a portfolio, the first thing an investor should do is decide what their objectives are, as well as determine what constraints they face.⁸ Many institutional investors have already expressed their objectives, at least in part, in their investment policy statements. However, these objectives should be reviewed periodically, including during each asset allocation study, to determine if they are still appropriate. These include both return and risk objectives. Due to shifting circumstances, or turnover in the bodies overseeing these institutions, it is not unusual to see modest changes in these objectives over time.

⁸ This lesson is also courtesy of the CFA curriculum.

The constraints that investors face likely change less often than their objectives. These include the time horizon (i.e., is the institution a “going concern,” to use an accounting term), liquidity needs (i.e., the ability to meet short-term cash flow obligations), any legal and regulatory constraints (e.g., ERISA law for retirement plans), the tax status of the investor (i.e., are they tax exempt), and anything else that may influence the decision, such as plan mergers.

The next step is to evaluate different options that meet these objectives and constraints. It is quite likely there will be many different asset allocation mixes that could accomplish this. We prefer to engage in an iterative process whereby we have an ongoing dialogue with the investor that allows us to provide options, consider their feedback, and make changes accordingly.

Making choices and considering trade-offs

Unfortunately, making the asset allocation decision is not as simple as most of us would probably like it to be. There is no single portfolio that will clearly distinguish itself from every other possible portfolio as being the “right” one. Hence, investors often use a pragmatic approach to help simplify their decision. For example, investors may choose to only consider portfolios with an expected return at or above their target return. Alternatively, they might choose a risk target, particularly one related to liabilities, such as a minimum funded ratio.

However, even simplified guidelines like these raise questions about how much “margin for error” they should leave themselves. For example, should they choose a portfolio that might give them a “close enough” chance of hitting their target return? Or should they choose to take on more risk in the hope of improving their odds of achieving their target (see Figure 5)? These are questions to which there is not a single “right” answer.

	Portfolio A (%)	Portfolio B (%)	Portfolio C (%)
Expected Return	6.5	7.0	7.5
Standard Deviation	13	14	15
Probability of Hitting Target	50	60	70

FIGURE 5
Illustrative Portfolio
Returns and Target
Probabilities

Source: Meketa Investment Group, 2024.

The reality is that the portfolios under consideration likely represent reasonable trade-offs relative to each other. Consider the example that follows in Figure 6. It shows four possible asset allocation options, some basic risk and return characteristics for each, as well as a few other pertinent risk measures.

Asset Group	Current Portfolio (%)	Portfolio X (%)	Portfolio Y (%)	Portfolio Z (%)
Rate Sensitive	16	25	16	17
Credit	11	4	10	3
Growth/Equity	53	51	51	53
Real Assets	13	13	13	27
Hedge Funds	7	7	10	0
Expected Return (20 Year)	6.56	6.56	6.85	6.94
Standard Deviation Volatility	12.66	11.64	12.99	13.41
% Illiquid	28	28	40	28
20-year probability of achieving 6.5%	50.4	50.5	54.3	55.3
Tracking Error vs Peer Group	0.31	1.89	1.04	1.51
Global Financial Crisis (Oct 2007 - Mar 2009)	-28.2	-23.7	-26.6	-30.2
Stagflation (Jan 1973 - Sep 1974)	-23.3	-22.2	-21.2	-13.0
10-year Treasury Bond rates rise 300 bps	-2.5	-4.6	-3.1	-2.2

FIGURE 6
Illustrative Portfolios
Along with Risk and
Return Metrics

Source: Meketa Investment Group, 2024.

If we compare the current portfolio to portfolio X, on the surface, X appears to be superior. Portfolio X offers the same expected return, but a much lower level of volatility. Hence it is more mathematically efficient. However, it achieves this primarily by shifting a significant amount of assets into long-term bonds. This increases the interest rate risk of the portfolio. It also has a substantial impact on the tracking error vs. peers; that is, it meaningfully increases the amount by which the investor's performance is likely to be different than its peer group.

Next, consider portfolio Y, which offers an improvement in expected return with only a modest increase in volatility. This is achieved mostly by shifting a significant portion of the portfolio into illiquid assets. This obviously increases the liquidity risk of the portfolio, which may or may not be tolerable for this investor.

Finally, consider portfolio Z. It has the highest expected return, but also the highest level of volatility. Yet a unique and potentially attractive aspect of portfolio Z is that it has by far the best expected outcome in a stagflationary environment. It accomplishes this by shifting a significant amount of the portfolio into inflation-sensitive assets. Such a portfolio might be very appealing, and worth the trade-off of higher volatility, to an investor who is concerned about stagflation risk.

The bottom line is that there is not a single right way to choose for everyone. Investors have to make the asset allocation decision based on what they believe is in the best interest of their portfolio, given their unique goals and constraints.

Best practices

When undergoing the asset allocation process, there are a variety of “best practices” that investors may wish to consider. While these practices are no guarantee of success, we believe that they are more likely to result in better outcomes and greater confidence in the decisions that are made.

Since many institutions are governed by a group of people, such as a board of trustees, they may find it challenging to clearly define their objectives, given that there may be different opinions among the board members. When possible, it is helpful to conduct a risk survey to determine where there is consensus and examine the areas where it is absent. Setting explicit – and preferably quantifiable – objectives, can help provide more clear direction to staff and consultants, as well as uniformity of purpose.

Another best practice gets to the frequency with which the asset allocation policy is reviewed. Most investors set their asset allocation strategically, with a long-term time horizon in mind. Making changes to the asset allocation every year may run contrary to this philosophy and can be detrimental. Conducting an annual review of the asset allocation using updated capital markets assumptions to make sure that the policy is still in line with objectives is prudent. However, reviewing a policy and making changes to it are two different things. For many investors, we recommend they set a schedule of conducting an in-depth review of the strategic asset allocation policy every three to five years. This can help avert the tendency whereby humans feel compelled to make a change whenever they review something. A disciplined approach also reduces the impulse to “time the markets” or adopt investment fads.

While we recommend changing asset allocation infrequently, we have observed that many institutions should probably be spending more time on the topic, given its importance. Hence, we suggest planning for multiple meetings to discuss asset allocation. This will allow for an iterative process, for education on new topics, and for the stakeholders to have greater conviction in the eventual decision.

Once an investor decides on an asset allocation policy, they should set a target allocation to each asset class. In addition, an investor should also determine an allowable range for each asset class around its respective target. This permits deviations from the targets due to market movements while providing appropriate guidance on rebalancing. Likewise, if the investor is making changes that will take time to implement, they might want to consider setting interim targets. This allows for a fair comparison to benchmarks and thoughtful implementation.

Finally, we recommend that investors document the reasons they choose a policy, and that they share this information with new members when they join the governing body of the entity. Understanding the reasoning behind prior decisions and the current allocation should help inform future decisions.

Conclusion

Asset allocation plays a crucial role in long-term investment performance. It will likely have a greater impact on investments than any other decision you make. Therefore, dedicating considerable time to understanding this topic is worthwhile.

When evaluating an investment, do not focus solely on its individual risk-return profile. Instead, consider how it fits within the overall portfolio. Think of assets as ingredients in a recipe – their mix determines the recipe's success.

Asset allocation and risk allocation are closely linked. Rather than viewing risk from a single statistical perspective, adopt a holistic approach. Imagine it as a mosaic, where each piece contributes to the overall picture of risk in your portfolio.

Avoid putting all your eggs in one basket. Diversify your portfolio to withstand various market conditions.

Lastly, when making asset allocation decisions, prioritize what aligns with your portfolio's best interests. Focus on meeting your goals while operating within your constraints.

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