Multi-Asset Investing Methodology

This document outlines the framework used by Morningstar Investment Management (MIM) to empower investor success. The methodology leverages the extensive proprietary research conducted by Morningstar entities across four decades.

The objective is to clearly articulate our investment process by holistically reviewing each component in detail. It demonstrates how we find investment opportunities (in-depth valuation analysis); form views with risk at the front of mind (develop asset-class views); select the best exposures (investment selection); put portfolios together (portfolio construction); and adhere to a robust oversight framework to ensure the process remains effective (ongoing monitoring and oversight).

The Purpose of Our Investment Process
Our goal is to provide a comprehensive description of the process MIM uses to invest capital on behalf of end investors. Some elements of this document are necessarily technical in nature, so we have included a summary of the process to assist those readers less familiar with investment.

A Reminder of Why We Invest
Investing has a simple purpose: to enable investors to reach their financial goals and aspirations.

Goals are personal to everyone but share a common characteristic— their achievement requires the investor to access a higher return on their money than what is available from guaranteed bank deposits. This, in turn, necessitates that the investor accepts some degree of risk that their original capital may not retain its value.

Morningstar’s role as an investment manager is to create portfolios of investments that help provide an attractive return for the level of risk accepted and thereby maximise the probability that the investors will reach their goals. Accepting risk on behalf of others is a responsibility that we take extremely seriously. We have, therefore, constructed a process that reflects the seriousness of the undertaking.

This is a process that is comprehensive and consistently applied, but it is also constantly evolving, as we seek to improve all aspects of what we do with the aim of enabling the success of the investors who trust us with this responsibility.
Sources of Returns

To make sound investment decisions, it is essential to understand the source of the returns and how investors can access them. Investment returns are subject to four key drivers:

1. The level of inflation in the country where the investor is based or plans to live in the future. Inflation boosts the headline rate of return but also erodes the purchasing power of money and therefore acts as a drag on the effectiveness of a portfolio. The higher the level of inflation, the greater the drag. It is for this reason that investment returns should also be measured in real terms (i.e., after inflation).

2. The cash flows you receive from the asset in which you invest. These cash flows come in many forms, such as dividends, interest payments, rents, and the repurchase of shares by companies. The higher the cash flow you receive, the greater the return. This can be considered the "fundamental return" of the investment. Over the long-term (10-plus years), the fundamental real return of an asset will dominate the overall returns the investor receives. As the investment period shortens, the proportion of returns accounted for by inflation and the cash flows received by the investor decline relative to the lumpsum received from the sale or repayment of the asset.

3. The expected sale price of an asset, also known as its valuation, can be estimated by combining an assessment of the future cash flow from the asset with a discount rate that reflects the risk of those cash flows. The greater the risk to those cash flows, the higher the discount rate and the lower the current value. Using this approach, we can estimate a "fair value" for the asset, although, this estimate should be expressed as a range of values rather than a precise estimate, reflecting the uncertainty of the future. In practice, prices vary widely around this range and may depart far from this range entirely as the sentiment of investors is affected by economic, political, and market events. This continuous reassessment of the value of an asset can create considerable volatility in the price of the asset. Consequently, changes in the valuation of the asset are the third key driver of returns.

4. Prices that deviate far from fair value have usually been driven by strong investment trends and preferences, which eventually reverse, pushing prices back towards their fair value. Over the medium term (say, five to 10 years), asset prices tend to move towards their fair value. However, like a pendulum reaching the nadir of its swing, prices seldom remain at the middle of the fair value range for long and can move a long way past fair value. This reflects momentum due to the sentiment of investors and represents the fourth driver of returns. Momentum in the price of assets can dominate returns over short-term periods (zero to five years). Such sentiment is unpredictable and can lead to significant gains and losses. Consequently, most professional investors and regulators generally recommend as a rule of thumb that investors should have at least a five-year investment horizon before placing capital at risk.

When creating a portfolio to help an investor reach their goals, it is necessary to combine estimates of the above sources of return with the timescale of the investor to determine a realistic path towards financial goals. As each element is dynamic, the assumptions used to create this path should be updated on a regular basis.
Risk & the Role of Diversification

From the above, it is tempting to conclude that investors should only consider assets with the highest expected returns. The drawback of this approach is that asset prices are volatile and those with the highest expected returns tend to be the most volatile. Volatility tends to have a psychological impact on investors. As prices fall, investors can become pessimistic about the future. This can, in turn, encourage investors to sell their investments during periods of volatility. Investors who do this seldom reinvest their cash at the right time, leading to a permanent impairment in their ability to reach their goals.

For this reason, it is important to assess the risk required to meet those goals and ensure that risk is appropriate for you. Morningstar conducts an annual study “Mind the Gap,” which shows across eight asset classes that investor returns have fallen short of the category’s total returns, on average, over the past 10 years.

Exhibit 1

<table>
<thead>
<tr>
<th>U.S. Category Group</th>
<th>Investor Return %</th>
<th>Total Return %</th>
<th>Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allocation</td>
<td>7.11</td>
<td>6.44</td>
<td>0.67</td>
</tr>
<tr>
<td>Alternative</td>
<td>-0.92</td>
<td>0.96</td>
<td>-1.88</td>
</tr>
<tr>
<td>International Equity</td>
<td>3.30</td>
<td>4.89</td>
<td>-1.59</td>
</tr>
<tr>
<td>Municipal Bond</td>
<td>0.52</td>
<td>1.89</td>
<td>-1.37</td>
</tr>
<tr>
<td>Nontraditional Equity</td>
<td>2.10</td>
<td>4.16</td>
<td>-2.06</td>
</tr>
<tr>
<td>Sector Equity</td>
<td>6.42</td>
<td>10.80</td>
<td>-4.38</td>
</tr>
<tr>
<td>Taxable Bond</td>
<td>0.20</td>
<td>1.57</td>
<td>-1.36</td>
</tr>
<tr>
<td>U.S. Equity</td>
<td>10.00</td>
<td>11.77</td>
<td>-0.79</td>
</tr>
<tr>
<td>Overall</td>
<td>6.04</td>
<td>7.71</td>
<td>-1.68</td>
</tr>
</tbody>
</table>


To reduce the probability of this happening, investors typically undertake an assessment of their preference, tolerance of volatility, and their capacity to withstand the losses that may be caused by volatility. The result of this process is typically an estimate of the level of volatility that can be borne by the investor.

Increasingly, these outputs are standardised as a range of sample portfolios designed to be suitable for clients with different levels of risk tolerance. Such portfolios take advantage of the fact that asset prices seldom move in lockstep with one another. Many market scenarios are better for one asset and worse for another.

In short, there’s always “bull markets” and “bear markets” happening simultaneously in different asset classes. By combining different asset classes, it can help investors achieve a lower level of volatility than would be expected if one simply added the expected volatility of each asset together. This is commonly referred to as diversification and is the key benefit of creating a portfolio of investments rather than simply investing in a single company or asset class. It is important to note that the application of diversification naturally results in a lower return than that which could be achieved by investing in the
highest return asset. However, it is extremely unlikely that any investor would consistently select the highest returning asset—and so a diversified portfolio with an appropriate level of risk is a sensible way to help an investor reach their goals.

**Excess Returns**

Although the sources of return listed above are the primary determinant of whether an investor will meet their goals, many investors, including MIM, seek to improve client returns above that which can be achieved by simply investing in a portfolio that represents the correct level of volatility.

When considering the pursuit of “alpha” or excess returns beyond the representative benchmark, it is important to remember that there is typically a link between risk and return. It’s often quoted that “risk cannot be destroyed, only transformed.”

Taking more risk with your investment can lead to a higher return but may produce a more uncomfortable journey. It is, therefore, important to always consider return in the context of risk. When describing the sources of excess return, we are using the term to mean higher returns with an equal level of risk.

**Sources of Excess Return**

MIM believes there are a few sources of excess return, whether measured against the results from other investors (a peer group) or to beat a market benchmark.

- **The first—and easiest—source is cost.** The more one pays for an investment (in either management or transaction fees), the lower the probability of excess returns. It is for this reason that the cost of an investment must always be considered when creating a path towards your goals.

- **The second is informational.** If you know something that many other investors don’t about a particular investment, it is likely that you will be able to deliver superior returns. However, acting on insider knowledge is typically illegal and should not be a source of excess returns for any investor.

- **The third is analytical.** If you can better analyse the information that everyone has about an investment, then you are likely to be able to deliver excess return. While the pursuit of this advantage is the primary occupation of most investors, it is important to note that any single investor having a consistent analytical advantage in such a competitive market is unlikely.

- **The fourth is behavioural.** As many investors suffer from behavioural biases, such as loss aversion and a recency bias, they are prone to making investment errors. If we can create guardrails and make better behavioural decisions than the average investor, we can earn excess returns. This is increasingly regarded as the most impactful source.

The rest of this document will explain how we harness these drivers of returns to help investors reach their goals.
Investment Process Summary

Our investment process is governed by seven investment principles (exhibit 2) that enable our team to empower investor success. The methodology is designed to generate higher returns for a given level of risk.

► First, we must be crystal clear on establishing portfolio guidelines. Without laying this foundation, we risk being boundless and haphazard. Establishing portfolio guidelines provides a north star.

► Second, we assess risk comprehensively and make asset class selections. Our research process is built to identify assets that are attractively priced and are fundamentally sound. Assets that appear to meet these criteria are rigorously researched by members of Morningstar’s global Research & Investment team to ensure that we understand why the assets appear attractive and establish a thesis for investment. Having identified attractive assets, it is imperative that we combine them thoughtfully. Within the boundaries set, the overall level of risk in multi-asset portfolios will be decided in line with our view of the aggregate reward for risk that is available to investors.

► Third, we select the best exposures for portfolios. In most cases, the construction of portfolios is supported by a proprietary algorithm designed to support the portfolio managers’ decision-making process. It is a combination of quantitative and qualitative assessments, but the final decision is always made by the portfolio management team. These portfolios are then rigorously tested across a range of market and economic scenarios to identify potential weaknesses. This is an iterative exercise that is followed by a peer review process to help eliminate any remaining weaknesses before the portfolios are implemented.

► Fourth, we adapt to change and use a consistent framework. Changes are only made when we identify significantly more attractive assets than what is already held inside a portfolio. This is typically driven by significant moves in the price of the assets in which we can invest. We monitor any drift of the portfolio to ensure that our desired exposures are retained. We also monitor the underlying exposures and performance attribution of each portfolio. Strategies are subject to a periodic review by the chief investment officer who examines the behaviour of the portfolio and the decisions made by the portfolio manager.

Finally, the implementation of the process is governed by the relevant Regional Investment Policy Committee that reports to the Board or Executive Leadership of our regulated businesses. Each part of the process is subject to oversight by regional subcommittees and continuously improved through the work of our global best practice squads.
**About Morningstar Investment Management (MIM)**

We apply our experience in investor behaviour, asset allocation, investment selection, and portfolio construction to create investment strategies that are strengthened by access to the independent research, data, and analytics of Morningstar Inc. This research has earned 10 Graham and Dodd Awards from the Financial Analysts Journal (FAJ) for enduring contributions to the field of financial research.

**About Morningstar Inc.**

Our parent company was formed nearly 40 years ago and follows a simple mission: to empower investor success.

Today, Morningstar, Inc. is a leading provider of independent investment research in North America, Europe, Australia, and Asia. Morningstar offers an extensive line of products and services for individual investors, financial advisers, asset managers and owners, retirement plan providers and sponsors, and institutional investors in the debt and private capital markets. Morningstar provides data and research insights on a wide range of investment offerings, including managed investment products, publicly listed companies, private capital markets, debt securities, and real-time global market data.

Morningstar also offers investment management services through its investment advisory subsidiaries, with approximately $249 billion in assets under advisement and management as of March 31, 2023. The Company has operations in 28 countries. For more information, visit www.morningstar.com/company.

**Introducing the Team Behind the Process**

Our investment and operations teams span the globe, with offices in eight countries across five continents. This team works closely with Morningstar’s equity research, fund research, and sustainability analysts.

Each member of this team makes a unique contribution to the success of the investors whom we serve. This includes:

- Assessment of an asset's potential return profile and an assessment of fair value.
- Analysis of investment risks, in line with investor preferences, including sustainability risks, if applicable.
- Selection of specialist fund managers who can help aid in the performance of portfolios.

Each regional investment team is led by a chief investment officer, who has overall responsibility for ensuring our portfolios and funds meet their objectives and remain within their agreed risk parameters. Funds and portfolios are managed by experienced investors who work together in teams and are supported by a deep bench of investment analysts.

Additionally, investment decisions are grounded in research and enabled by our global Research, Behavioural Insights, and Risk & Analytics teams. These groups are focused on identifying investment opportunities, improving our decision-making processes, developing analytical tools, and ensuring that those who invest with us are aware of the risks within portfolios and the broader capital markets.
Meet the CIOs

The job of Morningstar’s Chief Investment Office is to identify the latest investment opportunities and market risks. While we are active locally, we are also globally connected. The global teams are led by exceptional leaders, who make sure that we support you in achieving your financial goals.

Let’s get to know Morningstar’s Chief Investment Officers (CIOs):

**Dan Kemp – Global Chief Research and Investment Officer**

What is your background in investing?
My investing career is anchored on the belief that our job is to help people reach their financial goals. Investing is therefore about people and not numbers. This view stems from the first seven years of my career that were spent primarily as a financial adviser. Gradually, I spent more time researching investments and managing portfolios and eventually moved away from giving advice in the early years of this century. Having managed many different portfolios and established a couple of research businesses, I joined Morningstar in 2014 as co-head of investment consulting and portfolio management for the EMEA region. I became the CIO of that region in the following year and the global CIO in 2021. I now lead the global research and investment teams.

What advice would you give new investors?
Remember that successful investing is a combination of humility (knowing what you do not know), patience (investments are like plants, they take time to grow), and discipline (the best investment decisions tend to make us uncomfortable).

What’s the best investing book you’ve read and why?
There is no single book that encompasses investing and, consequently, we encourage new members of our team to read through a set list of 20 books when they first join Morningstar. However, if I could only read one book on investment it would be “The Most Important Thing” by Howard Marks.

What is your biggest investment mistake and what did you learn from it?
I didn’t buy a property until 2018, as I placed too much emphasis on the risk of buying overpriced property and too little emphasis on the benefits of my family owning a home. It was a great reminder that the needs of the investor are often broader than a narrow analysis of the investment.
What hobbies do you have outside of work?
My key hobby is gardening. I have a very small garden in Southeast London but love to grow produce I can eat and make this patch of groundwork pretty hard! I find gardening to be very similar to investing. The whole enterprise requires considerable patience and resilience to uncertainty. Far more time is spent watching how the garden is working than making changes.

What makes Morningstar’s investment philosophy unique?
Our investment philosophy requires humility. All our research and investment decisions are subject to strong review from our teammates. This is naturally uncomfortable for accomplished investors who are accustomed to being correct. We endure this discomfort because we believe it is the best way to deliver returns for end investors.

Who and/or what was your biggest investment influence?
I have been fortunate to be influenced by many of the greatest investors over my career, but the individual who stands out is Michael Price, the renowned value investor. He was the first investor who helped me to understand the importance of valuation in investment decision-making.

Mike Coop – CIO, EMEA
What is your background in investing?
I majored in economics and started my career researching fund managers in Australia and the U.K., which was a great starting point for seeing how money was managed in different markets and asset classes. What became clear was the importance of asset allocation, which motivated me to switch to a strategist role in asset allocation and equity strategy, before moving onto strategic asset allocation, alternative investments, and, ultimately, multi-asset investing.

What advice would you give new investors?
Turn off the news and read up on the history of markets, as well as insights from great investors.

What’s the best investing book you’ve read and why?
One of the biggest challenges for investors is their limited personal experience of different environments. "Irrational Exuberance" by Robert Shiller provides a longer-term perspective that helps investors consider other possible scenarios.

What is your biggest investment mistake and what did you learn from it?
I failed to invest after a big market selloff (1998) and succumbed to recency bias—focusing only on the current environments and, in this case, thinking only of how a bad situation could get worse rather than other scenarios that markets were not discounting. That highlighted to me the need to think probabilistically about the future and to pay more attention to what markets were already pricing in.

What hobbies do you have outside of work?
Traveling to new places, cycling, and seeing live performing art.
What makes Morningstar’s investment philosophy unique?
The standouts for me are our focus on investor success, our independent, fundamental research, and thinking probabilistically.

Who and/or what was your biggest investment influence?
Ben Graham, Howard Marks, and Ray Dalio are among my favourites, demonstrating the value of enduring frameworks for understanding economies and investment markets.

Marta Norton – CIO, Americas
What advice would you give new investors?
First things first: Make a monthly contribution goal.

What’s the best investing book you’ve read and why?
"Fooled By Randomness." Narratives and easy explanations are dangerous!

What hobbies do you have outside of work?
Do kids count as work or a hobby? When I am not chasing after my trio, I’m reading or running.

Who and/or what was your biggest investing influence?
The Morningstar investment team. We’ve got so many thoughtful investors on our team who make me think, reconsider, and reevaluate.

Matt Wacher – CIO, Asia Pacific
What advice would you give new investors?
More than anything, learn to deal with uncertainty. Nothing in investing is black and white. Everything is grey, so you need to be humble when facing the markets.

What is your biggest investment mistake and what did you learn from it?
All investing mistakes I have made have really been from overconfidence. I’d believe in an investment thesis, do a lot of work to prove it, and disregard anyone talking against it. I learned that listening to others and disproving the thesis is essential for an idea to play out and sizing that idea in a portfolio.

What hobbies do you have outside of work?
I like to run and swim. Each are challenging and require a mindset of persistence. Putting yourself in uncomfortable positions like you feel in a difficult run or swim and pushing through really helps with your mindset as an investor — when things are going against you, you can react more calmly with more perspective.
Our Process in Detail

Our heritage, mission, and culture provide us with a unique behavioural advantage. We can behave differently when it matters and make rational long-term decisions in a less-than-rational world to the benefit of end investors.

We codified this thinking into investment principles and practice them every day: The Morningstar Investment Principles.

Exhibit 2

<table>
<thead>
<tr>
<th>Principle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>We put investors first.</strong></td>
<td>We believe the firms that put investors first win in the long term because their investors are more likely to win.</td>
</tr>
<tr>
<td><strong>We’re independent-minded.</strong></td>
<td>To deliver results, we think it’s necessary to invest with conviction, even when it means standing apart from the crowd.</td>
</tr>
<tr>
<td><strong>We invest for the long term.</strong></td>
<td>Taking a patient, long-term view helps people ride out the market’s ups and downs and take advantage of opportunities when they arise.</td>
</tr>
<tr>
<td><strong>We’re valuation-driven investors.</strong></td>
<td>Anchoring decisions to an investment’s fair value—or what it’s really worth—can lead to greater potential for returns.</td>
</tr>
<tr>
<td><strong>We take a fundamental approach.</strong></td>
<td>Powerful research is behind each decision we hold, and we understand what drives each investment we analyze.</td>
</tr>
<tr>
<td><strong>We strive to minimize costs.</strong></td>
<td>Controlling costs helps investors build wealth by keeping more of what they earn.</td>
</tr>
<tr>
<td><strong>We build portfolios holistically.</strong></td>
<td>To help manage risk and deliver better returns, truly diversified portfolios combine investments with different underlying drivers.</td>
</tr>
</tbody>
</table>

These principles are the backbone of the organisation and intended to guide our thinking, behaviour, and decision-making. The process has been inspired by several of the most experienced and successful investors of the last century and aligns with the history and founding purpose of Morningstar.
Portfolio Construction Framework

The principles are also embodied in our portfolio construction framework. This includes four stages with 17 underlying steps. Some elements are relevant for all portfolios, others are specific to certain strategies.

Exhibit 3

<table>
<thead>
<tr>
<th>Portfolio Guidelines</th>
<th>Asset Class Selection</th>
<th>Portfolio Development</th>
<th>Iterate and Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Outline investment objectives</td>
<td>• Determine asset class return and risk expectations</td>
<td>• Map reward for risk and conviction relative to position sizing</td>
<td>• Iterate portfolio exposures &amp; sizing to improve portfolio characteristics</td>
</tr>
<tr>
<td>• Identify portfolio constraints</td>
<td>• Assign conviction scores across asset classes</td>
<td>• Investments selected for portfolio implementation</td>
<td>• Calibrate portfolios to the aggregate reward for risk</td>
</tr>
<tr>
<td>• Determine portfolio construction sizing and exposure limits</td>
<td>• Determine the investible universe for the portfolio</td>
<td>• Produce a range of possible portfolios that meet constraints</td>
<td>• Identify most attractive portfolio</td>
</tr>
<tr>
<td></td>
<td>• Rank investible assets by attractiveness</td>
<td>• Consider portfolio quality &amp; robustness attributes</td>
<td>• Present proposed portfolio and research to Portfolio Committee for peer review</td>
</tr>
<tr>
<td></td>
<td>• Assess aggregate reward for risk to guide portfolio risk taking</td>
<td>• Test portfolio using historic scenarios and macroeconomic variables</td>
<td></td>
</tr>
</tbody>
</table>
Stage 1: Portfolio Guidelines

In starting, it’s paramount we emphasise the importance of the first step — establishing portfolio guidelines, which includes the following:

- **Outline Investment Objectives**
  This goals-based approach is essential to our success and a common feature across every portfolio MIM oversees. With a clearly defined objective in mind, we are then able to identify the appropriate parameters, constraints, and portfolio construction rules to achieve the given mandate.

MIM typically offers portfolios with five distinct multi-asset risk profiles designed to meet the needs of a wide range of investors with different risk profiles.

- **Identify Portfolio Constraints**
  This is our forward defense and a part of the process that deserves delicate care. When identifying the parameters, constraints, and rules, we consider a variety of factors, but the main considerations are:

  - Minimum holding period
  - Risk limits
  - Any limitations to the investment universe (for example, including or excluding the use of exchange-traded funds [ETF])
  - Maximum factor exposure
  - Concentration risk limits

- **Determine Portfolio Construction Sizing and Exposure Limits**
  This step guides the construction of portfolios that allocate the most capital to the most attractive opportunities and builds positions over time to intelligently align position sizing with investment conviction levels. To build out the rules of engagement, we might consider the following:

  - Position ranges — for example, if the smallest position should exceed a certain level.
  - Position size steps — for example, whether positions should increase or decrease by minimum increments.
  - Low-risk/defensive-position sizing — for example, whether cash and/or short-duration government bonds are considered default assets when the opportunity set is unattractive.
  - Turnover — a maximum turnover level should be set for the strategy.

Without laying this foundation, we risk being boundless and haphazard. Establishing portfolio guidelines provides a north star and leads us to stage two, **asset-class selection**.
Stage 2: Asset-Class Selection

The next layer of the foundation is determining the asset classes suitable for investment based on quantitative and qualitative characteristics, done in the following ways:

- **Determine Asset Class Return and Risk Expectations**

Finding investment opportunities isn’t just about great ideas; it’s also about selecting great investments that complement each other and play an active role in fulfilling the ultimate objective. From an asset-allocation perspective, this commences with a thorough understanding of the playing field we operate in and requires the continual testing of capital market assumptions, along with a deep understanding of what role each asset class has in a portfolio.

The list below provides a guide to the asset-allocation universe considered by MIM, although the list is not necessarily exhaustive.

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**Exhibit 4**

<table>
<thead>
<tr>
<th>Equities</th>
<th>Fixed Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 markets and sub-markets including:</td>
<td>150 markets and sub-markets including:</td>
</tr>
<tr>
<td>- US Equity by Style, Size and Sector</td>
<td>- Government Bonds</td>
</tr>
<tr>
<td>- UK Equity Style, Size and Sector</td>
<td>- Corporate Bonds</td>
</tr>
<tr>
<td>- European Equity (ex UK)</td>
<td>- Inflation Linked Bonds</td>
</tr>
<tr>
<td>- Asia Pacific (ex Japan)</td>
<td>- Global High Yield</td>
</tr>
<tr>
<td>- Emerging Markets</td>
<td>- Emerging Market Debt</td>
</tr>
<tr>
<td>- Japan</td>
<td>- Cash</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Currency</th>
<th>Alternative Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over 30 currencies including:</td>
<td>Various alternatives including:</td>
</tr>
<tr>
<td>- US dollar</td>
<td>- Infrastructure</td>
</tr>
<tr>
<td>- Pound sterling</td>
<td>- Real Estate (Global REITs)</td>
</tr>
<tr>
<td>- Euro</td>
<td>- Commodities</td>
</tr>
<tr>
<td>- Japanese yen</td>
<td>- Hedge funds</td>
</tr>
<tr>
<td>- Chinese yuan</td>
<td>- Commercial Property</td>
</tr>
</tbody>
</table>

The investment universe is vast and complex, with tens of thousands of open-ended funds in operation and many more direct equities and bonds.

On any given day, we could see a new entrant, a merger, or a wind down of a fund. We can also see changes within each fund, such as the departure of a regarded manager or new staff with conflicting styles.
This imposes a further risk to the portfolio management process and therefore requires careful attention to the investment selection process. The heart of our investment selection process is driven by the concept of the Morningstar Medalist Rating methodology.

Morningstar has one of the largest manager research staffs in the world, conducting qualitative due diligence. We believe these ratings combine the best thinking across Morningstar’s qualitative and quantitative research functions into one view.

This rating system is used by both the Morningstar Manager Research team and the MIM group, and it serves as the backbone of the investment selection appraisal approach.

The process by which we move from analytical research to making best-in-breed selection decisions involves the construction and ongoing maintenance of a “buy list.”

**Assign Conviction Scores Across Asset Classes**

Asset allocation using valuation-implied returns requires us to be independent and curious; continually evolving and researching for better ways to allocate money. Therefore, even with the benefit of a broad opportunity set, valuation-driven investing requires experience, dedication, and the application of a robust and repeatable asset-allocation process.

This judgment-driven approach allows us to maximise our exposure to our best investment ideas and accounts for the complexity and multifaceted nature of investment risk. We peel back these convictions and rank each asset in four ways:

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**Exhibit 5**
1) **Absolute valuation:** We want a clear understanding of what each asset can be expected to deliver over a 10-year time horizon. Is the asset cheap relative to history? Is the asset expected to generate a return above my required return for the given risk?

2) **Relative valuation:** We want to understand how well the asset ranks compared to other markets.

3) **Contrarian sentiment:** We want to identify whether current sentiment is supportive to our conviction in a long-term context. What are other market participants doing? Is there evidence of extreme pessimism? Morningstar has produced extensive research, backed by behavioural science, that details how investors can be their own worst enemies, buying and selling at precisely the wrong time. We often see opportunity in assets that are unloved and unpopular.

4) **Fundamental risk:** We want to clearly understand the range of possible scenarios, as well as any risk that would cause our base case to be inaccurate over the investment horizon. One example would be contingent risk associated with high exposure to material ESG issues. For example, British Petroleum had many red flags that were ignored prior to the oil spill in the Gulf of Mexico in 2010. We want to be as diligent as possible and consider potential negative events that could impact portfolios before they happen.

Before we invest, members of our team must fill out a "thesis template." The purpose of the thesis template is making sure all relevant information on the asset or asset class resides in one place and that significant thought and consideration has been put forth into understanding the investment.

Examples of what that template looks like can be seen below:

**Exhibit 6**

**[Asset Class Name]**

- Last Fundamental Check: [Date]
- Led by: [Name]
- Outcomes: [Choose an option]
- (Tap here to fill in a summary of observations and conclusions from fundamental check)

<table>
<thead>
<tr>
<th>Thesis: [Date]</th>
<th>Led by: [Name]</th>
<th>Peer Reviewed by: [Date]</th>
</tr>
</thead>
</table>

**Reason for Thesis Update and Summary of Research Conclusions**

[Tap here to fill in 1-3 sentences, please provide:

- The motivation for reviewing the asset class
- Any significant evolutions in our views and assumptions leading up to this review]

**Investment Case**

*Please add a headline that summarizes the key drivers of the investment thesis*

[Tap here to fill in max 200-300 words. This section should provide a clear fundamental thesis rather than describe the mechanics of our VFs. Please include:

- Specific fundamental drivers (industries, economies, etc.)
- Risk/reward profile
- Profitability and yield
- How do we expect fundamentals to play out in order to enhance our expected returns?

**Best Practices:** The thesis should be defensible. It will be possible in the future to assess what we got right and what we got wrong.

How do the key questions set out in the project scope impact the expected path for fundamentals?

**Best Practices:** When expressing assumptions of forecasts about the future, we don’t use simplistic words (opinions). Instead, we favor explicit probabilities.

- How might the capital cycle impact profitability as well as mean reversion, and therefore our expected returns?
- How do macro factors impact profitability as well as mean reversion, and therefore our expected returns?]

**Fundamental Risk**

[Tap here to fill in max 200-300 words. This section should follow our fundamental risk framework. Please include:

- Key market risks (e.g., interest rates, commodity prices, etc.)
- How do risks impact profitability as well as mean reversion, and therefore our expected returns?]
Exhibit 7

<table>
<thead>
<tr>
<th>Asset Class name</th>
<th>Current Conviction</th>
<th>Previous Conviction</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Conviction</td>
<td>Tap to enter a date.</td>
<td>Tap to enter a date.</td>
<td>This section should be no longer than a sentence, given comments below. This space can be used to explain why the overall conviction doesn’t align with the average of the underlying.</td>
</tr>
<tr>
<td>Absolute Valuation</td>
<td></td>
<td></td>
<td>This section should identify 1) whether the asset class in question is undervalued in its own right (vs. TAI or vs. History) and 2) the key drivers of expected returns. We should look to provide more context than “strong yield” or “positive valuation adjustment” and give a high-level description of what fundamentals are driving those. To simplify the update of these documents, we recommend keeping specific numbers (i.e., USD vs. TRY) out of this section and maintaining it within the FTR table below.</td>
</tr>
<tr>
<td>Relative Valuation</td>
<td></td>
<td></td>
<td>This section should indicate how attractive the asset class is relative to the investible universe. You can also include additional insights that would be useful in helping the team understand the relative trade-offs across similar asset classes.</td>
</tr>
<tr>
<td>Fundamental Risks</td>
<td></td>
<td></td>
<td>Following the fundamental risk framework, which looks at systematic risks and contingent events, this section should summarize whether there are notable trends in systematic risks (inverse cyclical, operating leverage, financial leverage) and whether there are material event risks that result in either high probability of fair value impairment or high fair value impairment (FVM2).</td>
</tr>
<tr>
<td>Contrarian</td>
<td></td>
<td></td>
<td>This section should summarize whether the asset class is under or overvalued by looking at extreme signals across flows, fund positioning, earnings expectations, and momentum.</td>
</tr>
</tbody>
</table>

And we keep a detailed log of how those theses change and evolve over time:

**Exhibit 8**

**Thesis Tracking**

<table>
<thead>
<tr>
<th>Date</th>
<th>Type</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>09-JUN-2022</td>
<td>Thesis Update</td>
<td>Fundamental Pillar: XXXXXX. The shifts in xxx were found to have driven/cont, and given their centrality, have negatively affected the fundamental risk pillar which shifted down to XXXXX. Taurus, Volaris, and the remaining elements remained stable and in this review was sufficient to reaffirm the new conviction.</td>
</tr>
<tr>
<td>01-JUL-2022</td>
<td>Under review</td>
<td>We place the fundamental risk pillar under review. The thesis was founded on xxx. While XXX remains strong, xxx has shifted significantly and we feel needs analysis in the squad. However, we feel that pending the review the risks to the conviction are only modestly to the downside.</td>
</tr>
<tr>
<td>01-JUL-2022</td>
<td>Reaffirmed</td>
<td>We reaffirm the fundamental risk pillar. The thesis was founded on xxx. While xxx has shifted, overall the fundamental risks have not shifted enough to change the conviction. See.</td>
</tr>
<tr>
<td>01-JUL-2022</td>
<td>Full Thesis</td>
<td>Fundamental Pillar: XXXXXX. The conviction update was driven by both the recent market weakness and the need to update the score given the last update was more than a year ago. The focus of the update is to evaluate both long-term and near-term factors that impact the asset class and form an overall evaluation of the attractiveness of the asset class.</td>
</tr>
</tbody>
</table>

► **Determine the Investible Universe for the Portfolio**

The goal is to populate portfolios with the best possible investments.

Underlying this, we know specific asset class exposures will be a key driver of outcomes, so we place a meaningful emphasis on the “valuation-implied returns” offered by various asset classes. We also couple this with a comprehensive investment selection framework, including the maintenance of “buy lists.”

Our approach combines both quantitative and qualitative considerations, while not being married to either. It’s not as simple as allocating money to asset classes with the highest conviction rating, because in certain instances, those assets could be highly correlated and portfolio robustness will suffer as a result. We must also consider our asset-allocation framework and the merits of diversification, which considers how attractive eligible investments are relative to the rest of the investment universe.
Rank Investible Assets by Attractiveness

Constructing a proper asset allocation is about the ranking of our convictions and risk management. Armed with our analysis—supported by reward-for-risk calibration and conviction levels—our global team works together to rank the available investment universe.

We seek to gain the largest exposure to our best ideas (investments with the largest difference between price and fair value), while building robust asset allocations designed to stand up to challenging investment environments. Further, we must appreciate that few investment firms are prepared to tolerate prolonged periods of underperformance and, hence, many fund managers have powerful incentives to follow the herd to deliver short-term returns that are similar to the rest of the pack.

John Maynard Keynes, the groundbreaking economist, described this best when he stated that it was seen as better to “fail conventionally than succeed unconventionally.”

This phenomenon was powerfully demonstrated during the dot-com boom, when investors abandoned their contrarian approach and, in some cases, lost their jobs, just before they were shown to be right. And we saw many parallels to the dot-com boom during the 2020-2021 timeframe that have since reversed.

Therefore, if valuation-driven investors are to succeed, they must do so unconventionally. They must overcome their biases and often go against the views of their peers. Many investors lack the mental toughness to do this, which is why few beat benchmarks over long time frames.

Using data from Morningstar, you can see the returns of active managers in aggregate. Only one asset class (U.S. real estate) has more than 50% of active managers outperforming their benchmark over the past 10 years.

Exhibit 9
In short, many active fund managers underperform for the reasons outlined above. For this reason, we utilise contrarian sentiment as part of our capital markets research. The general idea is to have greater exposure to assets that are underappreciated and vice versa. In practice, we compile a ranking of the investment universe to understand the landscape in a structured manner.

- **Assess Aggregate Reward for Risk to Guide Portfolio Risk-Taking**

Selecting investments that complement each other is an important part of the evaluation and due diligence process. This part of the process involves qualitative judgements supported by due diligence testing. This is built around a variety of factors, including any style and size biases with respect to subsectors as well as large- and small-cap equity indexes. For example, this could include a bias to investments further down the market capitalisation scale relative to broad market indexes, as over the long-term, investors may earn a risk premium from having this exposure.

Within fixed income, we drill down into each individual portfolio holding to further understand the exposure it contributes to the portfolio. We consider factors like duration, maturity, credit rating, and currency. This is an important part of the process as fixed-income indexes are constantly evolving as bonds are redeemed and new issuance is added.

In many cases, the challenge is not determining the fair value of an asset, rather what actions should be taken when the price is very different from fair value. We continue to believe a willingness to be different and acting on large differences between price and fair value is essential for long-term success. Often, when prices are very different to fair value, the consensus is positioned in a procyclical direction—hot on overpriced markets or shunning underpriced ones.

We utilise an array of tools, where appropriate, to allow for decisions to be made with the greatest sense of confidence. We perform due diligence on all portfolio iterations—using both proprietary measures and standard financial metrics—which includes the Aggregate Reward for Risk model.

- **Calibrate Portfolios to the Aggregate Reward for Risk**

The MIM Aggregate Reward for Risk model is used to signal the degree to which the investment environment is supportive of risk-taking. The goal is to create a thesis that is robust (i.e., evidence-based and supported by data) on the aggregate reward for risk in markets. Morningstar’s model is built on three pillars:

1) **Capital supply**: debt issuance, bank lending standards, state of the IPO market, etc.
2) **Investor risk aversion**: sentiment scores across regions, bull versus bear polls, fund manager surveys, market technicals, etc.
3) **Valuation**: absolute valuations, relative valuations, etc.

Each pillar is graded and scored monthly to inform our view on markets and the opportunities that may exist for investors. The picture below is a hypothetical example of what that scoring system looks like and how it may evolve over time.
Exhibit 10

<table>
<thead>
<tr>
<th>Aggregate</th>
<th>22-Jun</th>
<th>Mar-22</th>
<th>Feb-22</th>
<th>May-21</th>
<th>Jan-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Supply</td>
<td>Medium</td>
<td>Medium</td>
<td>Low to Medium</td>
<td>Low to Medium</td>
<td>Low to Medium</td>
</tr>
<tr>
<td>Investor Risk Aversion</td>
<td>Medium to High</td>
<td>Medium</td>
<td>Low to Medium</td>
<td>Low to Medium</td>
<td>Low to Medium</td>
</tr>
<tr>
<td>Valuation</td>
<td>Medium</td>
<td>Medium</td>
<td>Low to Medium</td>
<td>Low to Medium</td>
<td>Low to Medium</td>
</tr>
</tbody>
</table>

In turn, these rankings inform our equity positioning. You can see another hypothetical example for equity positioning below.

Exhibit 11

<table>
<thead>
<tr>
<th>Equity Positioning Target Risk Portfolios</th>
<th>Equity Positioning Real Return Portfolios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reward For Risk Conviction Score</td>
<td>General Rule</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>high</td>
<td>65%</td>
</tr>
<tr>
<td>medium-high</td>
<td>50%</td>
</tr>
<tr>
<td>medium</td>
<td>40%</td>
</tr>
<tr>
<td>medium-low</td>
<td>35%</td>
</tr>
<tr>
<td>low</td>
<td>5%</td>
</tr>
<tr>
<td>Reward For Risk Conviction Score</td>
<td>General Rule</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>high</td>
<td>65%</td>
</tr>
<tr>
<td>medium-high</td>
<td>50%</td>
</tr>
<tr>
<td>medium</td>
<td>40%</td>
</tr>
<tr>
<td>medium-low</td>
<td>35%</td>
</tr>
<tr>
<td>low</td>
<td>5%</td>
</tr>
</tbody>
</table>

Here are some simple observations that help outline what is shown in the example above:

- Equity positioning refers to effective equity exposure and considers exposure to higher risk bonds, currencies, duration, and the composition of the equity portfolio. Estimation should consider a variety of analysis including forecasts and historic equity betas of different assets.
- There are overlaps in exposures when moving from Medium to either Medium-Low or Medium-High and back again. These are designed to prevent excessive turnover.
- Ranges are widest when conditions become extreme (i.e., Low and High scores) and there is greater confidence in the signal and more discretion.
- The range of +/-2% for Medium is intended to accommodate some drift and one-off opportunities that may justify small shifts in risk-taking.

This process helps us arrive at our highest conviction ideas. With the above in mind, the investment team agrees on some predefined asset-allocation convictions for different risk budgets and naïve benchmarking. The central idea is to help portfolio managers better understand the ranking of our risk-adjusted convictions in the context of portfolio construction.

Once all these steps have been followed, we can move on to the next stage, portfolio development.
Stage 3: Portfolio Development

The next stage is to capture these elements together into a portfolio, seeking to maximise reward for risk given the objective and parameters. This is done in the following ways:

- **Map Reward for Risk and Conviction Levels to Position Sizing**
  An extremely important evaluation as we monitor portfolios is how selected investments complement each other. This part of the process involves qualitative and quantitative judgements supported by due diligence testing.

  For example, we use an algorithm to help inform asset-allocation decisions in our multi-asset portfolios. The algorithm is built as a competition for capital where each available asset class in the universe requests an amount of capital depending on its relative attractiveness based on our risk-and-return forecast. The algorithm provides different potential portfolios aligning both with the relative attractiveness and the portfolios constraints.

  We also use an optimiser that has a similar objective, which could be described as a providing an unfiltered view of what portfolios may look like based on our research and capital market assumptions. The key point to keep in mind: these are not meant to be final portfolios, but rather a starting point, or a way to challenge our portfolio managers. The mandate outlined above can be described simply as follows:

  - **Rules-based algorithm**: Generate a range of portfolios compliant with exposure limits and risk budgets, and consistent with the relative attractiveness of investible markets based on Morningstar’s capital markets research.
  - **Produces a limited number of portfolios**: Designed to be relevant for a variety of investment environments, such as when the aggregate reward for risk is very attractive or very unattractive and when investible markets “look the same” in terms of their attractiveness.
  - **The resulting portfolios are intended to be used as a starting point, not a final destination**: The main purpose is for qualitative judgmental assessment and refinement. Further testing is required for robustness and quality.

- **Investments Selected for Portfolio Implementation**
  With the inputs in hand, we seek to elevate the right investments for selection given the mandate. At all times, we abide by our investment principles and make choices that reflect our best thinking.

  Investment selection includes the following considerations:
  - Produce a range of possible portfolios that meet constraints,
  - Consider portfolio quality and robustness attributes,
  - Use of the scenario-testing tools,
  - Test portfolio using historic scenarios and macroeconomic variables.
Robustness Matters

Robustness is important at all stages of the process, but it is especially prevalent for investment selection. This applies both in isolation and when combined with other assets. For example, it is no good combining multiple assets that carry the same risk or return drivers. We therefore seek to identify and select investments that will result in a comprehensive portfolio that delivers positive outcomes for investors.

This means applying rigorous filters before an investment is selected in a portfolio. While every investment opportunity is unique, the investment selection will be biased to the most reliable sources of delivering positive outcomes.

External Risk Mitigation

Understanding risk comes in many forms and it is our job to fully appreciate the different types of risk that can affect investors. ESG risk mitigation is one area we consider, seeking to reduce the potential for losses to the future cash flows of an asset, and/or a permanent impairment of asset value, arising from exposure to such external risks, such as poor safety at work, high carbon emissions, or poor corporate governance.

These risks can be identified and managed, with the intention of estimating their impact on the future returns on an asset. The ESG risk approach is primarily focused on financial impact and consequently relevant to all investors and strategies and, therefore, can be incorporated by all investment managers.

Capital Markets Research Integration Practices

Because external risks can expose an asset class to additional tail risk or risk permanent loss of capital, this consideration is directly integrated into our Fundamental Risk conviction rating. The risk of a permanent loss of capital is calculated in the following four ways:

1) Identifying contingent events arising from high exposure to material external issues. Examples include carbon emissions or waste of the company’s own operations, while an event that could arise due to high exposure to this could be a catastrophic environmental event.
2) Assigning probabilities to those events.
3) Assessing the materiality—in other words, the impact on fair value assumptions, of those events.
4) Computing the overall expected impact on fair value, which is ultimately the expected permanent loss of capital.

<table>
<thead>
<tr>
<th>Contingent Events</th>
<th>1)</th>
<th>2)</th>
<th>3)</th>
<th>4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event arising from high exposure to material ESG Issue 1</td>
<td>Probability</td>
<td>20%</td>
<td>% Impact of Event on Fair Value</td>
<td>20%</td>
</tr>
<tr>
<td>Event arising from high exposure to material ESG Issue 2</td>
<td>10%</td>
<td>10%</td>
<td>1.00%</td>
<td></td>
</tr>
<tr>
<td>Event arising from high exposure to material ESG Issue (x)</td>
<td>10%</td>
<td>25%</td>
<td>2.50%</td>
<td></td>
</tr>
<tr>
<td>Other Event contingent on fundamental risk</td>
<td>50%</td>
<td>10%</td>
<td>5.00%</td>
<td></td>
</tr>
<tr>
<td>Total Probability * % Impact on Fair Value</td>
<td></td>
<td></td>
<td></td>
<td>12.50%</td>
</tr>
</tbody>
</table>
MIM assesses whether the equity model adequately incorporates the expected permanent loss of capital. As tail risks may result in material changes to expected returns, significant risks impact MIM’s equity assumptions. Consequently, these risks are considered in both the absolute valuation and relative valuation ratings and are ultimately reflected in the overall asset-class conviction scores.

**Equity Research and Security Selection:**
Investment opportunities tend to emerge from either countries and/or sectors/industries that show attractive reward for risk prospects based on forward looking valuation analysis (e.g., VIR or Price-to-Fair Value) on an absolute and relative basis.

- The valuation opportunity is broad-based, affecting several securities, as opposed to being specific to a single stock.
- The opportunity is generally associated with an ‘event-driven catalyst’ causing extreme market pessimism. From this these characteristics and in the spirit of deemphasising opportunities that are less robust sources of alpha, we are also calling out the characteristics of assets that are NOT considered to be part of our laybook:
  - Highly concentrated countries or industry/sectors that are driven by a single idiosyncratic factor.
  - Defensive equities sought for diversification purposes only, without exhibiting attractive valuation/contrarian characteristics.
  - Stand-alone stocks that are attractive based only on company specific factors.

**Fixed Income and Security Selection:**
- Spread Opportunities: spread fixed income markets show attractive valuation-implied returns and is usually associated with a catalyst (e.g., recession) that causes pessimism about the asset’s ability to generate future income. We differentiate between two types of spread opportunities:
  - Credit markets (e.g., high yield, loans, investment grade) screening attractive based on our valuation framework after adjusting for forward-looking default/recovery rates.
  - Inflation-linked bonds: break-even yields are attractive compared with our inflation forecasts. Inflation-linked bonds tend to be less liquid than their nominal bond counterparts, exacerbating the impact of a shift in impact from a change in market sentiment.
- Country Opportunities: developed and emerging country bonds screening at attractive levels after adjusting for inflation in local currency. The valuation opportunity is often associated with a country- or asset class specific (e.g., balance of payment crisis, recession) catalyst causing market pessimism. In emerging market debt, attractive real local bond returns are often associated with attractive currency rates.

It follows, that other potential fixed income opportunities are NOT considered to be part of our playbook. They include:

- Duration timing or shifting the duration profile of an individual interest rate curve in an attempt to generate outperformance by outguessing the market’s expectation of the future path of interest rates. The investment process review confirmed our prior view that duration timing is not a
repeatable source of alpha. Portfolio managers may still decide to vary the level of duration of their portfolio for portfolio construction reasons, however. A portfolio manager may for instance seek to improve portfolio robustness by increasing duration to hedge against cyclical risks elsewhere in the portfolio.

- Curve Positioning: an investment strategy may seek to add alpha by shifting the mix between longer and shorter duration bonds for a given level of portfolio duration. Our investment process review found some evidence of alpha by pursuing this strategy systematically. Yet, the alpha was too small to make a difference without taking on leverage. Furthermore, this type of trading strategy is likely most successfully implemented within the context of a systematic investment process, as opposed to a discretionary valuation-driven process. As with duration timing, a portfolio manager may seek to vary the curve positioning for a portfolio for portfolio construction reasons.

We will separately discuss our process for ESG investing later in this document.

**Manager Selection**

Morningstar has nearly four decades of manager selection experience, serving as a pioneer in creating the industry and evolving it over time.

Our manager selection process is comprehensive, where we closely scrutinise the Process, People, and Parent as primary considerations. By necessity, we consider further elements too, including the price, any tax implications, and longer-term performance — to name a few. A summary of how we assess the Process, People, and Parent pillars are below:

**Process:** There's an enormous variety of fund strategies even within a category. For example, if you are assessing a large-cap growth fund, you will need to find out whether the manager is taking a momentum-based approach or focusing more on growth-at-a-reasonable-price. At Morningstar, we drill down to really understand the differences. Competitive advantages are a key way to look at it. Is the manager doing something that anyone can do, or is he or she doing things that are hard to replicate? Is the strategy a proven one or a new, untested formula?

**People:** To understand a fund, investors must understand the people behind them. There is much more to a fund than its manager. There are the analysts, traders, and other managers who contribute to the process, and we consider all of them when assigning our ratings. We think about what advantages they have over their peers along the lines of expertise, experience, and demonstrated skill. A lot of work goes into assessing the people. We talk with managers on a regular basis, we visit fund companies to meet the people behind the scenes (such as analysts and chief investment officers), and of course we pore through piles of shareholder reports, press interviews with the manager, and SEC filings that show how much a manager has invested in the fund.

**Parent:** When you invest for the long haul, you realise just how important the company behind the fund is. In our analysis, we look at manager turnover at the firm, investment culture, quality of research, ethics, directors, SEC sanctions, and more. If you hold a fund for 15 years, you want stable management that will be there the whole way through. Failing that, you want a firm with a deep bench with people
who can step in and keep the fund going along the right path. What you really don’t want is frequent switches with not-very-talented investors.

You’ll also find that a fund company and the fund board make a number of decisions that have a big impact on the fund. Some clearly pit the company’s short-term profits versus fundholders’ long-term interests. For example, if they are maximising short-term profits at the firm, they won’t close a fund even if further assets could impair performance and they keep fees higher than necessary. Or they might, to the detriment of shareholders, merge two funds with distinctly different strategies. Firms seeking near-term gains sometimes launch funds that may be hot sellers but aren’t great investments and won’t lead to good investor outcomes. In short, you want a partner you can trust for many years to come.

From here, we move on to the next stage: iterate and review the portfolios.
Stage 4: Iterate and Review

- **Iterate Portfolio Exposures and Sizing to Improve Portfolio Characteristics**

  With a firm idea of how the portfolio will behave, we are able to populate our views with the right investment vehicles. This is a process in which we apply disciplined judgment to a multitude of dimensions to maximise reward for risk in asset allocation and investment selection across all investments.

  In this way, our choices come from people, not a machine.

  This means the team can focus the exposure of the portfolio on the best ideas (that is, selections we believe have the greatest likelihood of outperforming), while maintaining diversification in our selection process. This is designed in such a manner that it can stand up to challenging investment environments.

  As a part of this process, portfolio managers are required to consider the following investment considerations:

  - Why do we own it (or should we own it)?
  - What role does it play?
  - What are our expectations?
  - What are the issues/risks?
  - What would cause us to sell it?

- **Identify the Most Attractive Portfolio**

  The primary objective here is to ensure concentration risk is mitigated (i.e., prevent any single point of failure) and that any decision regarding a portfolio has a clear idea of what risks may be apparent and what mix of investment types may provide the greatest risk-adjusted returns.

  Inherently, all assets should not be expected to perform well simultaneously. This is a feature of diversification, not a defect.

  To accomplish this, we apply a robust risk methodology to evaluate asset class and sector exposure overlap. This involves fundamental analysis of risk, along with traditional correlation assessments to see how complementary they are within the overall framework. The goal is to establish a specific role for each asset to play in the overall investment mix. With access to this insight and conviction surrounding our investment process, we can then implement an effective total customer solution.

  Risk management is, therefore, at the heart of the process, which can be accommodated in conjunction with our investment selection framework.
The portfolio manager is responsible for the ultimate make-up of the portfolio, using the inputs from the research team’s output. All portfolio decisions are governed by structures and committees.

Committee Structures and Peer Review Process
MIM adopts a policy of oversight and utilises best practice working groups and subcommittees to ensure the investment process is being rigorously adhered to and continually advanced. The below list is not exhaustive, but should help illuminate the governance capabilities and oversight that relates specifically to our investment process:

► **Investment Policy Committee:** The Investment Policy Committee is the overarching governance committee that ensures the Morningstar Investment Management Group is producing outcomes aligned with the company’s principles and in line with regulatory standards. The intention is to ensure consistency with the investment principles framework, encourage research and development, and review investment merit across the group.

► **Asset Allocation Committee:** The Asset Allocation Committee is the primary governance committee for asset-allocation decisions. It utilises the information from the working groups and sector analysis research to ensure full alignment of the asset-allocation process.

► **Portfolio Construction Committee:** The Portfolio Committee utilises the information derived from asset allocation and investment selection efforts and remains an important committee considering the overall investment process. This provides a peer-review forum for proposed changes to portfolios, which is attended by all available portfolio managers and is chaired by the chief investment officer. Participants are encouraged to challenge the proposals made by the lead portfolio managers. This is designed to identify potential new opportunities, facilitate the flow of ideas from the primary analysts, and ensure that risks are effectively monitored.

► **Risk Committee:** On a regional basis, for example, the Europe, Middle East, and Africa (EMEA) region, there are risk committees that ensure governance and effective risk management procedures. The intention of risk committees is to ensure strict adherence to risk standards and the regulatory framework for that region.

Implementation
This part of the investment process seeks to put portfolios in line with optimal exposures. This is done in the following ways:

**Maintain target levels of exposure to asset classes, markets, and holdings:**
► We closely monitor rebalancing needs, aided by quantitative assessments of drift, using leading technology to ensure targets are maintained. On any given day, we can sell or purchase positions that have drifted outside of our comfort zone.
Comply with internal, product, client-specified, and regulatory limits:

- We monitor each strategy’s guidelines to make sure we are within position guidelines. We have set ranges around each position that must be adhered to by portfolio managers. Portfolio managers must seek approval to change targets or widen the ranges if they feel the need to.
- Fund compliance also checks to make sure we are not breaching limits in terms of the amount we own in any given asset.

Minimise trading costs and adverse tax consequences:

- We make sure we are only trading portfolios when the benefit of a trade outweighs the transaction costs and opportunity costs.
- For tax-sensitive portfolios we make sure we are not incurring undue realised gains that have tax consequences that outweigh the benefit of the trade.

Ensure sufficient liquidity to fund outflows and meet any liabilities such as fees and currency hedge losses:

- Broadly speaking, we maintain cash allocations that allow for most short-term liquidity needs of clients.
- Within the mutual funds, we also get daily reports that monitor the cash balances across sub-advisers and at the fund level to make sure we have ample liquidity to meet outflows.

The major elements of the implementation process are:

- Set drift deviation limits within which portfolios are rebalanced.
- Establish and apply rebalancing guidelines from full to partial rebalancing.
- Assessment of settlement differences between holdings and terms investors can invest/redeem.
- Daily process to track net cash flows, determine if trading is required, and instruct prior to instruction deadlines.
- Pre-trade compliance checks.

Portfolio Monitoring

Even if an investor has the perfect valuation-driven asset-allocation model and excels at investment selection, there is still scope for error when it comes to execution. One of the key elements that any investor must consider when managing a portfolio is when and how frequently to rebalance back to target weights. While this subject is both important and hotly debated, we have found no academic work to support the view that there is an optimum rebalancing period. Therefore, while we remain open to the discovery of a reliable systematic approach to rebalancing, we believe that rebalancing requires significant thought and should be done in a way that is consistent with our valuation-driven approach.

The key element of a diversified portfolio is the fact that asset prices move in different directions, especially when allocating between negatively correlated assets such as equities and bonds. This aspect of capital markets can help reduce the volatility of a portfolio that is broadly spread across asset classes, although, it does reduce our exposure to our best ideas.
By virtue, this can lead to a misalignment between the desired asset allocation and reality.

Rebalancing is, therefore, an essential part of a valuation-driven philosophy. Left unchecked, our exposures will not resemble our best ideas. Yet, executed too aggressively or regularly, we expose the portfolio to unnecessary turnover (taxes and fees) and the potential for a drag on performance.

The key challenge is that “early and wrong” are often indistinguishable in the initial stages of a valuation-driven investment. An investor who is “early” should consider increasing their capital commitment as the probability-adjusted gain increases (much like a poker player should). However, if that investment is “wrong,” they should consider accepting their losses and move on. This is what we tend to call value traps and are the nemesis of an auto-rebalancing policy.

Therefore, we do not adhere to a rebalancing schedule as such, but instead provide portfolio managers with the tools and accountability to monitor portfolios continuously. The final point we would make on rebalancing is in a managed portfolio context. As visibility of underlying clients’ actual portfolios can often be unknown, drift must be measured at the model portfolio level. Inherently, we want to avoid lazy portfolio management (via auto-rebalancing) as it leaves end investors open to significant transaction costs as well as value traps.

The challenge of measuring drift is that it is grounded on the assumption that all investors were invested at the last rebalancing point. New clients are regularly joining the portfolio management service and, consequently, the actual drift they experience may be different from the model. This is especially true when clients join the service during periods of high asset-price volatility.

To address this misalignment, we believe the entirety of a portfolio should undergo rebalancing when portfolio changes are made, while maintaining an ambition to keep costs as low as possible. We believe that this balances the interests of both new and existing investors with the underlying objective of the portfolio.

**Responsible Ownership and Local Application**

As previously mentioned, MIM is a global multi-asset business that takes a long-term approach to investment. As such, we consider the future from that perspective, including the issues that are playing an increasingly important role in the behavior of consumers, regulators, and investors. This, in turn, has an impact on asset prices, prospective returns, and risk.

While MIM is a global organisation, we operate within individual countries and markets that have varying opportunities, regulations, and preferences. We are unable to apply our policies and processes equally in all markets. As markets and regulations evolve across regions, we will continue to update this policy.

**Portfolio Choice at Morningstar, Including ESG Considerations**

Morningstar seeks to offer choice above all else. As a fiduciary, this comes in three forms:
1. We offer portfolio flexibility. People can decide their own path, depending on what matters to them. We do not impose Environmental, Social, and Governance (ESG) holdings on our clients — instead, we offer various strategies that can meet the needs of a diverse range of clients.

2. We consider all types of risks and have data to help us understand such risks. ESG issues can be a sub-component of external risks, as one of many risks to consider. This is a responsibility we take on as a fiduciary.

3. We seek to offer full transparency via data and analysis. ESG data can be a sub-component of this.

Morningstar is well positioned in this regard as one of the world’s largest financial data and research companies. On top of all the data and analytics you know Morningstar to have, Morningstar own one of the world’s largest ESG research and data businesses, Sustainalytics (first purchased an equity stake in 2017, followed by taking 100% ownership in 2020). By coming together, Morningstar and Sustainalytics intend to fast-track Morningstar’s ability to put independent analytics and portfolio choice at every level in the hands of investors.

**Governance of the Full Investment Process**

Once a portfolio is constructed, the job does not stop. We must constantly review the process, seeking to maximise reward for risk across the investor’s journey.

To do this, we have a formal structure to regularly reassess our asset-class convictions, our buy list, and the underlying portfolio mix given the changes in investment ideas, aggregate risks, and exposures. This iterative process reconsiders the opportunity set, with a constant eye on fundamental diversification while remaining biased toward inaction and long-term holdings. A key element is, therefore, keeping turnover and transaction costs as low as possible.

To ensure we hold ourselves to account, Morningstar Investment Management employs a formal review process to review asset allocation and investment selection.

This is conducted via the following categories:

**Global Asset-Class Calls:** To ensure the global alignment of our asset-class convictions, we have a structured agenda of global asset-class calls that are rotated by time zone. This ensures our global capabilities are effectively utilised and leverages our ability to provide broad coverage of the global investment universe. The calls are typically structured monthly and recurrently define the research agenda.

**Regional Intensives:** Every month, we dedicate at least one full day for intensive review of our investment process. This is attended by all members of the investment team, including the portfolio managers and analysts. The days are interactive, and the format is set to encourage debate, with clearly defined learning objectives and team cohesion of paramount importance. This is typically structured to discuss the implications of our global convictions and the impact this has on a regional basis. For example, if the global asset-allocation team increases our conviction in European financials, each region will meet to discuss the practical application of this conviction and any fundamental risks. We may also
discuss any other portfolio-related issues that affect the portfolio management function, including any investment selection issues that have surfaced.

**In-Depth Fundamental Reviews**

At a global level, we undertake a program of in-depth fundamental reviews. This involves a structured schedule to ensure our asset-class conviction levels are as accurate as practically possibly. Each review is extensive (often taking two to three months) and consists of a multidisciplinary project team.

The purpose is to obtain a thorough understanding of reward for risk by acknowledging the following points:

- The rationale for research
- The fundamental drivers
- Any fundamental risks
- Potential distribution of outcomes
- Sensitivity analysis
- Scenario analysis
- Contrarian indicators
- Total portfolio perspective
- The investment thesis
- Implication for implementation

**Monitoring Managers**

Morningstar's research and investment team meets with fund managers regularly and has an ongoing structured review program to ensure we remain informed and can challenge the managers where needed. Funds that appear to have strayed from their investment styles, experienced management and/or organisational changes, triggered concerns following quantitative analysis, or experience declines in their performance or risk rankings are subject to immediate qualitative review.

**Benchmarking and Performance Attribution**

Performance attribution is conducted, where we can determine the key factors that lead to the outcomes, including the amount attributable to our asset allocation and investment selection choices. Depending on the mandate, our investment outcomes may be measured against either an index and/or a relevant peer group, but we prefer to align to investor goals. To be clear, benchmarking is not designed to bias our decision-making process, but rather to ensure that the objective of delivering attractive total returns remains consistent with the given level of risk. Internally and as part of the broader investment process, the investment team also monitors each strategy’s risk numbers, which is important to ensure the portfolio remains appropriate given the mandate.

**Development**

In a highly competitive and dynamic environment, we are constantly seeking to develop our skills and insights to better serve investors and increase the probability of delivering excess returns.

This is accomplished in three key ways:
► Investor Development Program
The Investor Development Program is a comprehensive structured training program for our Research and Investment Management team designed to accelerate the learning and career development of our team. The program combines general investment education with Morningstar specific teaching (such as the construction of the aggregate reward for risk framework), skill development, external speaker sessions and book clubs. Each member of the team has a development plan that identifies particular skills that are required for that person to develop as an investor.

► Behavioural Insights
Our Behavioural Insights Team conducts research within and outside Morningstar with the aim of helping people make better investment decisions. The results of this research are transformed into educational materials, methodologies and software tool that support our investors and clients. The ongoing interaction with this team enables our investors to address and overcome our behavioural biases with the aim of providing a better outcome for investors.

► Methodology development
Methodology development is overseen by our global Investment Policy Committee that is chaired by the Global Chief Investment Officer. Members of this committee with particular interests and skills (such as the management of ESG portfolios) are tasked with leading global squads focused on incrementally improving all aspects of our investment process and methodology. Examples include the formation of expectations for the excess returns delivered by individual funds, the application of ESG to our fixed income research or developing new portfolio risk tools.
Appendix

Risk Calculation Input: Standard Deviation

MIM forecasts standard deviation as an estimated risk that represents the dispersion around an average return.

We employ a factor model approach to forecasting standard deviation. The idea behind this estimation approach is to model each benchmark as a combination of factors that explain the systematic variance in that benchmark’s returns. These factors are derived from macroeconomic data or tradable market assets. The set of factors chosen to represent each benchmark is based on well-established research and statistical verification.

Factor examples include:

- Macroeconomic factors: exchange rates and inflation rates
- Tradable market factors: global Fama-French factors, global excess-market sectors returns, global government bond returns, default premiums, etc.

Variance and covariances are typically estimated by using the shortest common subset of returns, thereby discarding some information contained in the longer series. As a result, both risk and diversification benefits can be underestimated or overestimated. To incorporate information in the long-history asset classes or indexes, we apply the Stambaugh (1997) adjustment to the total return of the short-history asset classes or indexes, so the total variance or risk is appropriately estimated. The Stambaugh (1997) model\(^1\) assumes that the beta between the short asset class and the long asset class does not change. The assumption is that perceived gains in efficiency depend on being able to extract stable and meaningful linear relationships between series.

In our practice, the Stambaugh (1997) adjustment is applied to both systematic variance and residual variance. By construction, variance for total returns is the sum of variance for systematic returns and variance for residual returns. On average, the Stambaugh (1997) adjustment on systematic variance is greater than the adjustment on residual variance.

Risk Calculation Input: Skewness and Kurtosis

To estimate an asset’s drawdown risk, we must provide estimates of skewness and kurtosis to more accurately represent the dispersion of expected monthly returns. Skewness measures the lack of symmetry in the distribution of returns. As an example, a positively skewed distribution would have frequent small losses and a few extreme gains.

Kurtosis measures the likelihood of extreme events.

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MIM employs the same factor model approach discussed above to forecast skewness and kurtosis.

**Risk Calculation Input: Correlation Coefficient**

The risk of a portfolio is based not only on the risk of each asset class, but on the relationship between the returns of asset classes as well. The relationship between the returns of asset classes is measured by the correlation coefficient.

The correlation coefficient measures the degree to which two asset classes’ returns change with respect to each other. The statistic can range between positive one (+1) and negative one (-1) and provides the following information about the relationship between asset classes:

- **Positive one (±1):** Perfect positive relationship — two asset classes move together in the same direction. No benefits arise from diversification.
- **Negative one (–1):** Perfect negative relationship — two asset classes move together in opposite directions, leading to maximum diversification benefits.
- **Zero (0):** No relationship — the movements of two asset classes are unrelated.

We estimate correlation coefficients using the same factor model approach used for standard deviation. The variance-covariance matrix is based on systematic returns, and residual returns are calculated first. Then the correlation coefficient is derived from it.

**Risk Model Example: Time Varying Model**

The most common model for generating simulated asset-class returns is the multivariate lognormal model. However, this model has several shortcomings, most notably failing to account for the non-normal aspects of returns, thus underestimating how often bad events occur, and it fails to account for the time varying nature of real-world returns. It also assumes that returns are independently and identically distributed, which is not the case.

The Time Varying Model (TVM) overcomes these shortcomings. It integrates valuation models, a discount rate mechanism, stylised asset returns characteristics, and it eventually generates stochastic returns for global asset classes that we believe more accurately reflect the range of potential outcomes and how those outcomes may be realised. Retirees have different horizons and goals, which require a time-varying return forecast. Since returns are mean-reverting and path-dependent, the sequence of returns risk has different impacts on accumulation and withdrawal phases. In addition, the TVM models’ interest rate and inflation allow one to accurately model a variety of investment products, especially annuity products that are sensitive to interest rate and inflation.

The TVM combines a sophisticated econometric term structure model with a truncated Lévy flight (TLF) return innovation. The econometric models work to preserve serial correlations and mean reversion characteristics of asset-class returns, while the TLF model helps preserve the non-normal characteristics of returns, namely skewness and kurtosis. The result is simulated asset-class returns based on forward-looking capital market assumptions, with appropriate serial correlation, mean-reversion, and cross-
correlation characteristics, coupled with fat tails that recognise that bad events happen far more often than the normal distribution would predict.

The TVM is different from many other, if not most, simulation models in that it is based on an explicit term structure model for both equity and fixed income. The term structure model provides the foundation on which discount rates for equities and yield curves for fixed income are built. The parameters for the term structure model are estimated from historical data with forward-looking adjustments.

The econometric portion of the TVM model's assets is in a three-tier structure.
- The first tier comprises the fundamental variables or factors that drive global asset returns, and each factor is driven by relevant time series models. Included in Tier 1 are global inflation rates, global interest rates, global credit spreads, and global discount rates for equities.
- Tier 2 comprises total returns for global fixed income and global equity asset classes.
- Tier 3 includes all local asset classes, such as U.S. and non-U.S. equity classes, as well as U.S. and non-U.S. fixed-income and alternative asset classes.

Discount rates in global equities are driven by global fundamental valuation estimates. Equity returns are driven by the discount rate dynamics. Global bond returns are driven by yield curve movements. The yield curves for global government and global corporates are forecast by time series movement of global interest rates, global term spreads, and global credit spreads.

The flow chart below is a summary of the TVM model.

The global equity market return innovations or shocks are modeled using a TLF simulation procedure to account for the fat tails. Empirically, it can be shown that the TLF distribution does an excellent job at modeling the non-normal characteristics of historical returns. Most notably, it has done an exceptional job at modeling downside risk, or how often bad events occur and the magnitude of those bad events.

We believe that the economic features incorporated in the TVM will provide superior forecasting performance, and it is vastly superior to a multivariate lognormal simulation. The term structure model enables an explicit incorporation of the expectations that drive asset returns. The yield curve is rebuilt.
every simulated year based on interest rates forecast at that time. The term structure approach also enables us to model documented aspects of inflation and interest rates such as serial correlation, heteroskedasticity, and mean reversion.

**Values-Driven Portfolios**
As noted in the body of the document, we seek to offer portfolio choice to meet the varying needs of clients. Values-driven investing seeks to align the investments of a portfolio with the values, preferences, and concerns of the investor. This approach may encompass both exclusions, such as avoiding tobacco manufacturers, and preferences, such as supporting alternative energy initiatives. For some clients with strong values-based preferences, a dedicated ESG portfolio is desirable, which requires additional fiduciary responsibilities.

Unlike external risk mitigation, this approach is not driven primarily by financial considerations and is highly personal to the investor. This approach is, therefore, a choice.

Importantly, we do not express values or preferences into our portfolios, except those products dedicated to it. For example, we do offer ESG products, but do not impose such holdings in our standard multi-asset offerings.

**ESG Manager Commitment Level**
For portfolios dedicated to those with strong ESG preferences, we maintain a Commitment Level rating on asset managers. We seek to answer whether certain managers could have flaws in their approach, which could impact our fiduciary responsibility.

The ESG Commitment Level for asset managers is expressed on a five-tier scale running from best to worst: Leader, Advanced, Basic Plus, Basic, and Low.

To arrive at the Commitment Level for a given investment strategy, we have a team that evaluates four key pillars: 1) Process, 2) People, 3) Data, 4) Parent. Each pillar is scored on a scale running from 0 to 4. For active strategies, these scores are combined into an overall Commitment Level according to this weighting scheme:

- **Active Strategies:** Process 50%, People 20%, Data 20%, Parent 10%.
- **Passive Strategies:** Process 80%, Parent 20%.

The “people” and “data” pillars are excluded for passive because their ESG characteristics will be determined largely by the properties of the indexes they track rather than by internal experts, data, and systems. The integration of ESG into the index’s construction is reflected in the process score, which is weighted at 80% for passive.

**Commitment Level Inputs - Process**
We seek to understand:

- The extent to which ESG factors are incorporated in each of the following elements of the investment process: screening, security analysis, portfolio construction, risk management, and asset allocation.
The extent to which the process is well reflected in the portfolio on a consistent basis.

The extent to which the strategy managers are involved with firm-level active ownership (proxy voting and engagement), and the clarity of publicly available reporting on active ownership at the strategy level.

**Resources – People**
The relevant team are judged along several axes, such as:

- Experience and ability relevant to the process used by the strategy
- Fit with the strategy and structure/integration with other teams
- Level of team turnover
- Communication and information flow

**Resources – Data**
Specific data characteristics considered include:

- Number of sources
- Integration of data into systems used for investment decision-making by the strategy’s managers
- Extrapolation of data into proprietary ESG ranks and ratings relevant to the strategy
- Whether or not the manager collects its own ESG data to supplement any external source

**Parent**
An asset manager’s philosophy and process are assessed along several dimensions:

- History
- Policies and company culture
- Sense of responsibility and societal purpose
- Firm’s own ESG credentials
- Alignment between investment philosophy and ESG principles
- Level and consistency of incorporation
- Transparent, public reporting on metrics for its funds

**Disclosures**
*Since its original publication, this piece may have been edited to reflect the regulatory requirements of regions outside of the country it was originally published in.*

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