

# Investment Philosophy & Process

SEI Investment Management Unit

For use by advisers of regulated intermediaries in accordance with all applicable laws and regulations.

# SEI's Investment Philosophy: Active Management, Actively Managed

SEI believes that the best way to help clients meet their investment goals is through active management. We pursue this objective through a five-tiered investment process:

- 1 Active asset allocation
- 2 Active portfolio design
- **3** Active investment manager selection
- 4 Active portfolio construction and management
- 5 Active risk management

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# Introduction A Constant Search for "New Ways, New Answers"

For over 50 years, SEI has used the most up-to-date research to anticipate changing investor needs and create innovative business solutions designed to help clients meet the challenges of managing personal and institutional wealth. Our efforts began in 1968, when we recognised the need for faster and better training for bank loan clerks. The innovation continued in the 1970s, when bank trust departments were still largely functioning as a "paper and pencil" business. SEI transformed the industry by developing a completely automated trust and investment accounting system that became the industry standard in trust technology. Next, we turned our attention to investment management.

- In the 1980s, SEI helped change the way people look at investing by integrating modern portfolio theory with comprehensive asset allocation models. In 1986, the landmark study by Gary Brinson, L. Randolph Hood and SEI's Gil Beebower identified asset allocation as the primary determinant of variation in portfolio return and became a cornerstone of portfolio construction theory.
- In the 1990s, SEI was one of the first companies to offer managerof-managers investment programmes to both institutional and individual investors in the United States, Europe, Canada, South Africa and Asia. Under this structure, SEI hires professional investment managers to oversee portions of the assets invested in SEI Funds. Our clients' assets are not mixed with those of non-SEI clients who also invest with these managers. We believe this approach results in better risk control and a more costeffective implementation.
- In the 2000s, SEI further customised client asset allocations in order to help investors attain their end goals. SEI was an early developer of managed volatility equity and goalsbased investment strategies. Our 2004 paper "Goals-Based Investing: Integrating Traditional and Behavioural Finance" (Nevins, Journal of Wealth Management, Institutional Investors, 2004) was selected as a required reading for candidates in the Chartered Financial Analyst<sup>®</sup> (CFA<sup>®</sup>) programme. SEI also introduced valuesbased investing.
- In the 2010s, SEI has introduced dynamic asset allocation, flexible levels of discretion, open architecture and multi-asset and factor-based strategies.

SEI's focus on finding new ways and new answers that help our clients achieve their goals continues today through enhancements to our investment philosophy and process.

# A Focus on Active Asset Management

SEI's investment philosophy is based on active asset management. Our approach transcends the traditional focus on index funds versus active managers to encompass a more comprehensive view of active asset management across products, investment managers and asset classes. Based on this foundation, SEI offers a diverse range of global investment strategies that span across U.S. and international equity, fixed-income, high-yield, alternatives and emerging markets.

We implement custom solutions for institutional clients through collective investment schemes and separately managed accounts. We also maintain the flexibility to build around existing managers as needed for the achievement of client objectives.

Under our definition, active asset management consists of five key components:

- 1 Asset allocation
- 2 Portfolio design
- **3** Investment manager selection
- 4 Portfolio construction and management
- **5** Risk management

# **1** Active Asset Allocation

Asset allocation is a precise division of an investor's portfolio that sets up boundaries for the portfolio's risk exposure and return potential. At SEI, this occurs in two steps. Our Portfolio Strategies Group is responsible for the asset allocation decisions made within the strategies they construct.

We recognise that capital markets change over time, causing changes in the correlations between asset classes and in expectations for risk and return. As a result, an asset class that might have historically provided diversification may no longer offer the same benefits today. Accordingly, our assumptions about the behaviour of capital markets and our expectations for the performance of specific asset classes are adjusted to reflect these shifts. These types of active asset allocation decisions help SEI's investment offerings keep pace with an evolving market environment.

# 2 Active Portfolio Design

Portfolio design begins with an evaluation of factors that have the potential to generate returns in excess of the benchmark in a given asset class. Our Portfolio Management and Manager Research teams collaborate to conduct research into the drivers of risk and return as they relate to specific asset classes. Our disciplined approach to evaluating sources of returns provides a common research framework from which to evaluate investment managers across different disciplines. We conduct quantitative and qualitative research in an effort to identify sources of long-term excess return across multiple markets.

# 3 Active Investment Manager Selection

Our Manager Research team sources, analyses, selects and monitors a wide array of investment managers across multiple asset classes.

Studies have shown that past performance provides limited insight into an investment manager's future performance. Therefore, differentiating investment manager skill from market-generated returns is one of our primary objectives, as we seek to identify managers that can deliver attractive investment results. We believe that a full assessment of qualitative as well as quantitative factors is required to identify truly skilled managers.

In carrying out this function, we:

- > form forward-looking expectations regarding how a manager will execute a given investment mandate
- > define environments in which the strategy is likely to outperform or underperform
- > explain the relevant factors behind a manager's performance

In short, we seek to identify each manager's edge and the catalysts that would lead us to re-evaluate our view of that manager.



# 4 Active Portfolio Construction and Management

After sources of excess return have been selected and appropriate investment managers identified, Portfolio Management constructs a (typically) multi-manager portfolio. The portfolio construction process is designed to maximise the risk-adjusted rate of return by finding a proper level of diversification between the sources of excess return and the investment managers implementing them. It starts with the identification of the sources of return prevalent in each asset class. Based on our asset-class-specific analysis, as well as typical investor risk tolerances, we set strategic allocation targets for sources of excess return at the asset-class level. Each allocation represents a specific percentage of the portfolio.

Manager allocation is the second part of the process. The allocation to a given investment manager is based on the manager's particular array of sources of excess return, the current macroeconomic environment, expectations about the future macroeconomic environment, and the level of risk inherent in a particular manager's investment strategy.

Our manager allocation process uses our strategic view of return sources as a blueprint in an effort to control manager-specific risk. In other words, given differences in tracking error or relative return volatility, as well as correlations with other managers in the same portfolio, a manager's capital allocation is a reflection of the manager's risk allocation within the portfolio. SEI explicitly measures and allocates to our managers based on their risk allocations in an attempt to ensure that one manager does not dominate the risk of our multi-manager, multi-return-source portfolios. Allocations change in response to a variety of factors, including fluctuations in a portfolio's risk level, decisions investment managers make in underlying portfolios, macroeconomic developments, re-evaluation by our Manager Research team and other factors.

# **5** Active Risk Management

SEI's Risk Management Group focusses on common risks across asset classes (such as higher-than-expected correlations between portfolio components) and within asset classes (such as manager contribution to portfolio risk). The group is responsible for developing and monitoring risk guidelines for SEI's funds. Regular monitoring of assigned portfolio tolerances and deviations results in an active risk mitigation programme.

Following industry best practice, the Risk Management Group, which monitors various risk measures for specific SEI strategies, such as tracking error and beta, is separate from the Portfolio Management team. This separation of responsibilities allows the Risk Management Group to maintain objectivity and look at the entire spectrum of SEI's investment offerings to help ensure risk objectives are being met. The independence of SEI's Risk Management Group emphasises the importance we place on risk management.

A detailed review of the five key components of our active management philosophy and process on the following pages provides additional insight.

# Active Asset Allocation

# The First Level of Active Management

SEI's asset allocation approach originated with a series of research studies, including a landmark study conducted by Brinson, Hood and Beebower that identified asset allocation as the key component in portfolio construction.<sup>1</sup> The research demonstrates that, in the words of Roger G. Ibbotson and Paul D. Kaplan, "... market movement of the asset classes in which you are invested dictates 90% of the movement of your portfolio."<sup>2</sup>

Strategic asset allocation, which seeks to achieve long-term goals and objectives through diversified exposures across the global capital markets, is the variant of asset allocation most familiar to investors. Investment decisions are based on a full market cycle, which includes the period of time during which the market moves from a bull market to a bear market and then back to a bull market. The time horizon for the strategic asset allocation process is measured in years and sometimes in decades. Whilst many investment strategies are designed to be implemented over a full market cycle, investors' needs cannot always wait that long for an investment strategy to play out. Similarly, investors are not always willing to watch and wait as time passes and a long-term investment strategy appears to be out of sync with current market developments. For these reasons, SEI offers active asset allocation recommendations that are based on our shorter-term expectations for relationships among asset classes (a 6- to 18-month, forward-looking perspective) in addition to our longer-term, strategic capital market assumptions. Our strategic recommendations are based on much longer- term considerations that are structural as opposed to cyclical.

Simply stated, SEI's approach to active asset allocation is a way to manage risk and return in a more sensitive fashion than can be done via strategic asset allocation. This active approach is based upon identifying important market inflection points (points that mark the beginning of a significant move, whether positive or negative), and then tilting away from strategic asset allocation weights in order to be more responsive to market cycles.

<sup>1</sup>Brinson, Gary; Hood, Randolph; Beebower, Gil, Financial Analysts Journal, 1986, "Determinants of Portfolio Performance."

<sup>2</sup> Roger G. Ibbotson and Paul D. Kaplan, *Financial Analysts Journal*, January/February 2000, "Does Asset Allocation Policy Explain 40%, 90%, or 100% of Performance?"

# **Goal Setting**

All investors have goals. To help them achieve those goals, SEI uses a goals-based approach to investing that combines both traditional finance and behavioural theory, where different goals require different risk tolerances and investment strategies. Exhibit 1 highlights all of the inputs to this process—including investor goal-setting, the selection of asset-class components from which portfolios are built and proprietary asset-class research.

For investment pools assigned to a specific liability, goals are expressed using measures that consider the value of the liability and the cost of funding the liability. In these instances, the liability's sensitivity to economic variables (such as interest rates and inflation) is taken into consideration, since goal achievement will depend on the interrelationships between assets and liabilities. Other factors considered in the goal-setting process include local-market tilts and currency sensitivities.

#### Exhibit 1 Goals-Based Investing



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## **Investment Selection**

The inclusion of particular asset classes for a portfolio is guided by the investor's goals and other constraints or preferences. For example, the need for liquidity to manage shortterm operating requirements may impose liquidity constraints that limit the use of certain asset classes. Other potential portfolio components may not be suitable due to particular investor risk/return preferences and requirements.

Attitudes about benchmarking are also important. Investment managers operate in a relative-return environment and are concerned primarily with the gap between their performance results and a benchmark index. Active managers generally aim to outperform an index and risk is typically defined as a tracking error or shortfall against the index. Investors may or may not view benchmarks in the same light. A goal of funding specific liabilities (such as operating expenses for a hospital or the cost of a college education) may take precedence over outperforming an index. Thus, an absolute risk/return investment style may be necessary to control the risk of loss, which can be measured by drawdown risk, or the potential peak-to-trough decline of an investment over time.

For investors with conservative risk management goals (primarily concerned about the prospects of volatility and loss) and a more flexible approach to benchmarking, investment components managed on an absolute-risk basis may be appropriate. Whilst absolute-risk management is prevalent in the hedge fund space, SEI also offers more traditional, long-equity strategies managed on an absolute-risk basis. Investment managers for these strategies are assigned risk management objectives that are independent of market indices. Securities are held only if SEI believes that they may reduce the risk of loss, or increase the expected return without compromising objectives for downside risk. A security's weight in the index is largely immaterial to the investment process. The objective of using these strategies is to decrease the portfolio's overall volatility.

### **Asset-Class Research Process**

SEI's asset-class research begins with the development of capital market assumptions for each asset class that can then be used to estimate the asset class's contribution to a strategy's projected return and risk. They include baseline assumptions about expected returns, risks and correlations for defined segments of equity and fixed-income markets.

This data is intended to capture the average characteristics of asset classes observed over a series of market cycles. Stress assumptions (scenarios that differ from the baseline) are also examined, since the characteristics of asset classes are constantly changing. A model is employed to manage the numerous assumptions required to estimate portfolio characteristics in a variety of different base currencies for global investors. An asset class's risk profile is also evaluated based on different time horizons and inflation expectations. Either of these factors can have significant effects on the perceived risk of an asset class.

Estimating long-term risk can be challenging. Downside risk, or how much money could be lost in a poor market environment, is the main concern; however, it can be difficult to estimate this risk because market volatility is constantly changing, and volatility observed in the past is not a reliable predictor of future volatility. Furthermore, common risk measures (such as standard deviation) fail to adequately account for extreme market downturns (when asset prices may fall many standard deviations below the expected return and outside the range predicted by traditional assumptions).

SEI's Portfolio Strategies Group estimates downside risk by directly assessing potential extreme market scenarios, taking into account the worst two-year period observed historically, among other measures. This approach requires fewer statistical estimates than other methods and helps to reduce estimation error.

Asset-class correlations can be just as problematic as risk estimates. Correlations change as economic fundamentals change and they are highly sensitive to market sentiment. In a flight-to-quality environment, historical correlation patterns often break down. Correlations among risky assets tend to rise, whilst correlations between safe assets and risky assets fall.

The Portfolio Strategies Group looks at several different scenarios for correlations. Whilst a baseline scenario exists, other stress scenarios (in which most correlations are assumed to be higher than the baseline) are also examined. Our research suggests that stress scenarios are often characterised by correlations between assets rising midway between our baseline correlation assumptions and perfect correlations of 1.00.

Baseline and stress correlations are illustrated in Exhibit 2, which shows a hypothetical example of SEI's central assumption (or baseline) alongside the illustrative correlation between two asset classes in a specific portion of the global markets at a specific point in time. The combined 50% baseline, 50% perfect correlation line in Exhibit 2 indicates the higher correlation that we would expect to see during periods of market stress.

Currency translation effects are another component of asset-class research. Assumptions are maintained in a variety of base currencies, with one set of expectations for each asset class in local currency terms and another set of assumptions for the currency. The currency assumptions include expected returns, risks and correlations among currency pairs and between currencies and assets. To assess the effects of currency hedging, asset classes can be specified as either hedged or unhedged with regard to currency risk.



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## **Portfolio Analysis**

Asset allocation portfolio weights are determined through a mix of quantitative and qualitative analysis. Quantitatively, we assess the return and risk characteristics of a variety of portfolios using a combination of forward-looking scenarios, including baseline and stress scenarios, as well as historical (back-tested) results. Qualitatively, results are interpreted by experienced capital markets analysts to go beyond the limitations of quantitative methods. Qualitative factors include the estimation error about key assumptions, the relevance of each assumption set based on our outlook at a point in time and asset-class characteristics that are not captured by risk/return analysis such as liquidity.

This blend of analysis is designed to result in asset-allocation portfolios that are more diversified than those derived from a purely quantitative, portfolio-optimisation-based approach. Optimisers tend to magnify small differences in assumptions because they are based on a premise that asset-class characteristics are known with certainty. This often leads to allocations with large concentrations in a few asset classes. For example, investments with slightly lower expected returns than other similar investments are often excluded, even though the return difference may be insignificant when estimation error is considered.

# Asset Allocation Portfolios Designed to Support Investors' Goals

SEI offers a range of asset allocation portfolios that are categorised as either stability (wealth preservation) or growth (wealth accumulation) focussed, as shown in Exhibit 3. The portfolio type determines the risk management discipline, the asset classes considered for inclusion and the components that are chosen to represent each asset class.

For the stability-focussed portfolios, potential asset classes are screened according to risk metrics such as peak-to-trough declines. Losses are of secondary importance for the growth-focussed portfolios, since long-term returns take precedence. However, they are especially relevant for the stability-focussed portfolios, which generally are managed to a shorter time horizon. The opportunity set for the more conservative stability-focussed portfolios is usually limited by screening out the asset classes that have historically experienced more severe declines during particularly poor market environments.

Asset classes with a greater potential for large losses generally have very small allocations, or are not included in a stability-focussed portfolio. This is because they compromise the risk management framework. Not only can they take up too much of the portfolio's targeted risk allocation, but the outcomes are also less predictable according to our research, which suggests that estimation error tends to be higher for more volatile asset classes. The asset classes emphasised in the stability-focussed portfolios are those that our research suggests have attractive growth potential relative to their risk of loss. The portfolios remain diversified, with exposures to different styles of fixed-income and equity management, but allocations are tilted to conform to a more conservative risk management framework.



#### Exhibit 3 Asset Allocation Portfolio Types

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For the growth-focussed portfolios, we select from the full set of asset classes in an effort to help meet the goal of achieving the highest possible return for a given risk tolerance. Equity allocations are diversified globally, including developed and emerging markets and across large- and small-cap stocks. A portion of the portfolio may be allocated to growthorientated bonds such as high-yield and emerging-market debt. Research suggests that these additional asset classes can deliver long-term returns in line with the broad equity market whilst adding diversification benefits.

# **Defining the Portfolio Components for Each Asset Class**

The portfolio type also determines the components used for a particular asset class. For example, in our stability-focussed portfolios, we assign most of the equity allocation to equity components where risk is managed on an absolute basis. By managing the risk of losing money in absolute terms, rather than managing risk relative to a benchmark, the risk management discipline is aligned with the objectives of the stability-focussed portfolios.

The growth-focussed portfolios favour more traditional, benchmark-orientated equity components where risk is managed on a relative basis. The relative risk focus helps the goal of achieving growth by ensuring investor participation in broad market rallies.

Fixed-income components vary across portfolios according to the duration target. We favour short-duration bonds in stability-focussed portfolios and longer-duration bonds in growth-focussed portfolios. For institutional investors with interest-rate-sensitive liabilities, such as pension funds, duration targets are chosen to reduce the risk of a shortfall versus the liabilities.

By tailoring the components used within each asset class to the portfolio's objectives, our goal is to achieve consistency with the broad spectrum of investor's goals from the top-level asset allocation through to the management of each component.

# **Risk Budgeting**

SEI believes that many investing mistakes can be explained by improper risk management, which usually occurs as a result of managing the wrong kind of risk or taking the wrong amount of risk. To help avoid managing the wrong kind of risk, the risk-management discipline used throughout our portfolios is guided by the goals assigned to each portfolio. To help avoid the mistake of taking the wrong amount of risk, we use a technique called risk budgeting.

Risk budgeting involves a predetermined risk level, or budget, representing a targeted threshold for the amount of risk in a given portfolio. A mix of asset classes is chosen to allocate the overall risk budget among different investments. In particular, risk budgeting guides the portfolio allocation process in SEI's stability-focussed portfolios. Budgets are typically defined using a measure that considers the severity of potential losses. We then build in allowances for estimation error, as illustrated in Exhibit 4.

The pie charts represent the total risk budget. The blue portion represents the amount of risk built into the portfolio, according to a particular set of assumptions. The difference between the total risk budget and the blue portion is the cushion that we allow for estimation error.

Typically, a 15% cushion is set using the baseline risk and correlation assumptions. About half of the 15% cushion is intended to accommodate a high-correlation environment. In other words, when portfolio risk is recalculated using the higher correlation estimates, it increases to 92% of the total budget and the cushion for further estimation errors is reduced to 8%. These allowances are built in due to the fact that diversification among risky assets often fails when it is needed most.

## **An Evolving Process**

Asset allocation is not a static exercise. SEI conducts proprietary research on the alignment of asset allocation strategies with a range of investors' goals in an effort to help investors and their advisers make sound investment decisions.



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# Active Portfolio Design

# The Second Level of Active Management

The effort to launch a new strategy begins with an evaluation of factors that have the potential to generate alpha—returns in excess of the benchmark—in a given asset class. This effort begins with the identification of the desired alpha source(s) across our equity, fixed-income and alternative-investment portfolios.

We conduct research into the drivers of risk and return as they relate to a specific asset class. Taking a disciplined approach in evaluating the source of returns within an asset class provides a common research framework from which to evaluate investment managers across disciplines. Whilst asset allocation research focusses on how a particular asset class performs, alpha source analysis focusses on the sources of return within an asset class. We look for sources of excess return that have demonstrated staying power over the long term across multiple markets in a given geographic region.

We have found that active risk transcends asset class; for example, fixed-income managers, at times, can be correlated with equity managers in terms of the source of excess returns. By identifying and analysing the characteristics of sources of excess returns, our portfolio construction process aims to increase the likelihood of delivering a portfolio with diversified sources of return. We also categorise these return sources by the phase of the economic cycle (Recovery, Expansion, Stress and Distress) in which they are expected to outperform.

Keep in mind that this categorisation system is strictly what it purports to be: a categorisation system. It is not a quantifiable statistic like price-to-earnings or price-to-book ratios. It also represents only a single level of diversification, so its importance should not be overstated. Others, including manager selection and security selection, should not be overlooked.

We use our research to create a thesis that outlines the general strategy being proposed and provides a detailed, research-supported rationale. The thesis includes information about the strategy's structure (multi-manager, multi-fund, etc.), performance expectations and management structure. Projections regarding how the strategy may react to different phases of the economic cycle, along with an identification of the array of alpha sources, complete the thesis. Once alpha sources have been established and a solid thesis is developed, we can begin to evaluate potential investment managers.

## **Alpha Source Definitions**

Our research about sources of excess returns provides us with a framework from which to evaluate potential managers and the efficacy of their investment process. This research continues to evolve over time, reflecting the ever-changing nature of global markets. Accordingly, the terminology can be expected to change and the value of the effort is not in naming specific alpha sources but rather in recognising that sources of return can and will vary over time.

We have carefully categorised the specific alpha sources at work within financial markets, along with the behavioural biases that foster them and the opportunities they give rise to.

	Alpha Source	Description	Opportunity		
Generic	Macro	The investment manager seeks to benefit by capturing an asset-class premium resulting from investor aversion to volatility associated with changes in economic variables and trends.	Tendency for riskier asset classes to outperform less risky asset classes.		
	Momentum	The investment manager seeks to benefit from assets that trend in price as perception changes directionally and serially with incoming data as a result of investor underreaction and anchoring.	Tendency for an asset's recent relative performance to continue in the near future.		
	Risk Premium	The investment manager seeks to benefit from assets that mean revert as fears over the liquidity of the investment or perception of its general risk dissipate.	Tendency for relatively cheap assets to outperform relatively expensive assets.		
	Stability	The investment manager seeks to benefit from assets that enjoy long-term compounding as a result of investors' tendency to misprice lower-risk securities due to short time horizons and overconfidence in forecasts, which lead to a preference for securities offering lottery- like outcomes.	Tendency for lower-risk and higher-quality assets to generate higher risk- adjusted returns.		
Specific	Selection	The investment manager seeks to benefit from specific opportunities (exclusive of the generic sources above) through individual security selection.	Issuer-specific information is available or can be synthesised in an effort to identify mispriced assets.		

#### Exhibit 5 Alpha Sources\*

\*Within the alternatives space, we have identified an additional generic source of excess returns that we term "activism." Activism involves efforts to influence the financial or operational decision making of a security issuer's management (and, at times, directors).

Whilst some alpha sources may perform better than others at different points in the investment cycle, it would be an oversimplification to state that any one alpha source performs well during one and only one specific phase. As such, we seek to diversify amongst return source exposures within an asset class. When appropriate, we may tilt towards a preferred source(s) by taking tactical positions among asset classes or by actively managing our managers. It is also important to keep in mind that this alpha source framework is not an exact science but rather a general framework to help us outline our research discussions.



# Active Investment Manager Selection

# The Third Level of Active Management

As stated earlier, numerous studies have shown that past performance provides limited insight into an investment manager's future performance. Therefore, differentiating manager skill from market-generated returns is one of our primary objectives, as we seek to identify managers that can deliver consistent results.

Using our return-source research framework, we evaluate and recommend investment managers that we believe have an edge within a given asset class. Therefore, the investment manager evaluation and selection process focusses on the drivers of an investment manager's returns rather than the returns themselves. Our analysis is both qualitative and quantitative in nature. We seek to identify each manager's competitive advantage as well as the characteristics of that advantage — and, importantly, the risks or pitfalls associated with it — that can then be monitored on an ongoing basis.

By specifically identifying a manager's edge and potential pitfalls, we are able to establish specific re-evaluation triggers. We believe this gives us a more responsive monitoring framework as well as a more proactive sell discipline, as a manager can be removed when its perceived competitive advantage goes away (such as through staff departures) rather than waiting for poor performance to materialise prior to removal.

## **Research Philosophy**

We believe managers with skill can be identified, classified and validated through a proactive approach to due diligence that seeks out relevant and explanatory qualitative and quantitative insights that define a manager's competitive advantage.

#### Philosophical Foundation:

- > Markets are not perfectly efficient.
- > Active management can add value, but the average active manager will underperform.
- > Every active management philosophy has pitfalls, biases and risks.
- Differentiating between philosophy and edge is critical to identifying a manager's true source of excess returns.

In our view, market inefficiencies arise from human behavioural biases that transcend time, geography and asset class. We believe behavioural biases cause security prices to deviate from their intrinsic value; and this is why we are advocates of active investment management.

However, in order to deliver excess returns, we must source highly capable active investment managers. This requires us to identify those managers whose decision-making skills and processes allow them to overcome common pitfalls associated with their particular investment philosophy. To do so, our global team of experienced professionals employs a rigorous, disciplined and differentiated process.



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In addition to conventional resources, we are able to leverage the professional networks of our experienced investment team in order to source candidates from multiple channels. We evaluate the nature of a particular manager universe and assign coverage to analysts with the appropriate areas of expertise.

We identify market inefficiencies and analyse each manager's ability to exploit them. We also assess the quality and competitive advantage of each firm.

For each approved manager, we develop a thesis that (1) explains why we believe that manager is a superior implementer of its investment philosophy and (2) establishes specific re-evaluation triggers. Each thesis is subjected to peer review and Manager Research Committee approval.

We carry out ongoing reviews and due diligence of our managers using proprietary risk management tools and internal capabilities. In doing so, we look proactively for breaks in our thesis criteria. This allows us to respond to a manager's loss of competitiveness before it manifests itself in subpar performance.

Managers that SEI deems to be best in class are designated as recommended.

## **Investment Manager Thesis**

The primary aim of our investment manager research is to develop an investment manager thesis that includes forward-looking expectations regarding how a manager is expected to carry out a given investment mandate, environments in which the strategy should outperform, and environments in which the strategy might underperform. We believe a sound thesis must predict, explain and be relevant.

SEI's "thesis-based culture" provides the basis for our forward-looking, proactive due diligence process, and we believe it differentiates us from our competitors. A typical hiring rationale may be based on smart people, a disciplined process and good performance. We believe our approach provides a more robust framework; we also research the return sources used by a manager, identify a manager's competitive advantage, and assess whether performance in various environments is consistent with these characteristics. Our thesis-based approach also provides the foundation for our re-evaluation discipline. Where a typical approach may look out for staff turnover, inconsistent processes and poor performance, we also watch for performance that it is not characteristic to a manager's edge, breaks in our thesis criteria, and expectations of future headwinds. Exhibit 7 gives an overview of a traditional manager evaluation process and the enhancements provided by SEI's manager research approach.

#### Exhibit 7 Thesis-Based Culture\*

#### **Typical Industry Hiring Rationale**

- Smart People
- Disciplined Process
- > Good Performance

#### Traditional Re-evaluation Triggers

- > Staff Turnover
- Inconsistent Processes
- > Poor Performance

#### SEI Thesis Approach

- > Identify Alpha Sources Used
- > Discover Competitive Advantage
- > Assess Performance in Different Environments

#### SEI's Re-evaluation Triggers

- > Uncharacteristic Performance
- > Expectations of Future Headwinds
- > Break in Thesis Criteria

\* Comparison based on SEI's perspective and more than 20 years of experience with clients and prospects.

Importantly, our manager research process puts manager performance in proper perspective. Financial markets involve a significant degree of risk or chance. That means that even those managers with compelling investment philosophies, solid internal processes, and strong internal resources will not always outperform. In fact, a skilled manager's success rate is likely to be only slightly better than a coin flip; but that slight advantage should compound over time. Thus, it is critically important, in our view, to distinguish manager skill and luck. If a manager's investment process is well designed and rigorously adhered to, then quality decisions should follow, and return source-specific pitfalls should be avoided. Whilst good decision making won't always produce favourable results, it does tell us that good performance is deserved when it occurs and that an unfavourable outcome is the result of bad luck. This stands in sharp contrast to managers with unsound investment processes, for whom good performance is the result of luck and poor outcomes are deserved.

Our thesis-driven re-evaluation discipline also attempts to react to the loss of a manager's competitive edge before it is reflected in poor performance, rather than waiting for subpar performance to materialise.

## **Qualitative Analysis**

Qualitative analysis, which forms the foundation of our thesis development, is where the art of manager selection comes into play. Our initial efforts are focussed on assessing the depth and quality of the investment manager's personnel and other resources, the firm's stability, the efficacy of its investment process and the effectiveness of its trading processes. The goal of this effort is to make sure that an investment manager's investment philosophy and process are differentiated and internally coherent. Also, the goal is to ensure that the firm has the right people and resources in place for its particular strategy.

#### Our qualitative analysis efforts centre around two primary factors:

#### > Philosophy and Process

We want to understand the philosophical premise upon which an investment manager makes decisions and its proprietary process for implementing those decisions. Are the manager's philosophy and process consistent with one another? Are they focussed on overcoming common pitfalls? Are they robust, durable and embodied by the firm's culture and people? How strong is its risk management and oversight? > Organisation and Team

SEI hires teams — not firms. We look at the stability of ownership of the parent firm, the ability to attract and retain talent, dedicated resources, team structure, experience of key personnel and personnel depth or bench strength. We also take a close look at capacity constraints and client service and marketing demands.

## **Quantitative Analysis**

Once our qualitative assessment is complete, we use quantitative analysis to confirm, refine or refute our thesis for a particular manager. The statistical measures we employ include, but are not limited to:

#### > Risk

Factors such as overall absolute and relative volatility, upside/downside capture ratios, kurtosis and skewness help us to determine whether or not the risk an investment manager is taking is in proportion to the returns being generated. We are also careful to evaluate each manager's ability to manage the risks associated with their particular return source(s).

#### > Attribution Analysis

SEI applies various attribution tools to evaluate the characteristics of a manager's portfolio. Our goal is to determine what influences a manager's performance, risk and cyclicality. This analysis guides our on-site due diligence questions and ultimately will influence manager positioning over economic and market cycles. The identified characteristics also form a critical component of re-evaluation triggers within a manager thesis.



# Active Portfolio Construction and Management

# The Fourth Level of Active Management

In all of our offerings, the portfolio construction process is designed to maximise the risk-adjusted rate of return by finding a proper level of diversification between return sources and the investment managers implementing them. We also believe that alternative investments are an important asset class that offers significant diversification benefits.

Our portfolio-construction process starts with identification of the return sources prevalent in each asset class. Each of these alpha sources has a generic risk, return and correlation profile. Based on our asset-class-specific analysis, as well as typical investor risk tolerances, we set strategic alpha-source-specific allocation targets (for example, 60% from selection, 10% from macro, and so on).

Manager allocation is the second part of the process. Whilst investment manager selection is often highlighted as a key element of the process, properly sizing the allocation to each manager is equally important. The greater the number of managers in a portfolio, the more important this becomes, as the interactions between the combined investment managers in the portfolio may start to dominate decisions made by any one investment manager.

Allocation to a given investment manager is based on its particular array of return sources, the current macroeconomic environment, expectations about the future economic environment and the risk budget assigned to a particular manager's investment strategy.

Our manager allocation process uses our strategic view as a blueprint. The alpha sources used by a particular manager will therefore be used to populate our optimal alpha source allocation. In order to manage manager-specific risk, we allocate to our managers based on their contribution to risk as opposed to commitment of capital. In other words, given differences in tracking error or relative return volatility, as well as correlations with other managers in the same portfolio, managers' capital allocations will vary from equally weighted positions. SEI explicitly measures and allocates to investment managers based on their risk allocation in an attempt to ensure that one manager does not dominate the risk of our multi-manager, multi-return-source portfolios.

Because changing market conditions and active management decisions made by investment managers can result in changing correlations among investment managers in a portfolio—which can alter the portfolio's characteristics over time—allocations to investment managers are adjusted from time to time to account for this particular risk.

Whilst each strategy adheres to its own specific guidelines, determining the right combination of managers is a critical part of the portfolio construction process, allowing us to build a portfolio with a risk/reward profile that is appropriate for our investment objectives. The resulting portfolio is designed to offer access to the desired blend of return sources and deliver more consistent, less volatile relative returns. Whilst this process is fundamentally a qualitative judgment-based process, we also use sophisticated quantitative analysis.

# We believe there is no single optimal number of managers. However, the number of managers within a portfolio will primarily be a function of:

#### > Alpha Source Levers

The number of underlying investment managers should be sufficient to cover all desired alpha sources. SEI has the flexibility to manage the exposure to these return sources over time.

#### > Diversification

The number of investment managers should not exceed a level at which the value of incremental diversification benefits are marginal. Costs may increase and alpha may be diluted by holding lower-conviction investment managers.

#### > Risk Management

The number of investment managers should be sufficient to ensure that the portfolio return is not dominated by only a few managers. The tracking error of individual investment managers is typically higher than the portfolio's target tracking error, so lower correlation between managers lowers tracking error at the portfolio level.

# The number of managers will also incorporate practical and portfolio construction considerations:

#### > Investment Manager Capacity

In more illiquid asset classes, such as small-cap equity, we may find that some of our investment managers reach capacity and are then closed to further cash inflows. If our alpha expectations for such investment managers remain strong, there would be no reason to terminate the position and change managers, but it means that we would have to hold more managers than otherwise intended.

#### > Small Funds

If a strategy is small in terms of assets, the number of managers may be fewer than intended for the simple reason that we have insufficient assets to award a higher number of mandates. If so, we would need to consider holding lower-tracking-error managers or accept a higher level of volatility at the strategy level.

#### > Completion Managers

Even with a diversified array of managers, there are times when a strategy may not have exposure to certain sectors or industries based on the holdings of the existing managers. In this case, small holdings in additional managers may be made for portfolio completion purposes, rounding out exposure to a certain asset class and reducing unintended sources of risk.

The guiding principle underpinning the size of our allocation to any one investment manager is that, broadly speaking, managers will strategically contribute equally to the active risk of the strategy. Given that risk levels and correlations between managers will vary, this is unlikely to lead to equal asset weightings—all other things being equal, "riskier" managers will have a lower asset weighting and managers that are less correlated with other positions (and are good diversifiers) will have higher positions.

Notably, the equal contribution to risk is an initial starting point. Active managers make changes on a regular basis, and subsequently, correlations between managers change as the underlying holdings change. To account for these changes, the contribution to risk is managed within a tolerance band of one-and-half times assigned risk. It is also worth noting that an investment manager's contribution to risk can be less than equal. The equal weighting mandate is a guiding principal, not a hard-and-fast rule.

SEI portfolio managers initially use their judgment to scale up or scale down capital allocations to reflect their understanding of the risk profile and diversification benefits of individual investment managers. Investment managers are ranked by "riskiness" according to factors, such as active risk levels, portfolio concentration, liquidity, leverage and the investment manager's risk management process. This acts as a commonsense framework within which the more quantitative measurement of an investment manager's contribution to risk can be cross-referenced.

An investment manager's contribution to active risk is quantitatively measured, where possible, using holdings-based analysis tools. The standard measure used is Percent Contribution to Risk (PCTR). Where holdings-based analysis is not possible, returns-based analysis is undertaken. Whilst PCTR can be quantified and may lead SEI to reweight investment managers, it should be viewed as a tool to aid portfolio construction and not the sole means of determining manager sizing.

An overview of the portfolio construction process is provided in Exhibit 8.

The goal of this approach is to deliver more consistent, less volatile returns. SEI's Portfolio Management Group aims to achieve this goal by identifying alpha sources, selecting investment managers whose skill contributes to the return objective and constructing diversified portfolios that maximise risk-adjusted return. In each portfolio, differentiated investment managers are combined in an effort to minimise volatility specific to a particular investment manager or a specific investment environment.



**Portfolio Construction** 

Exhibit 8

- > SEI establishes relative return and risk expectations for the portfolio over the medium and long term.
- The Fund Investment Thesis outlines which return sources will be included in the portfolio and what the long-term strategic allocation should be.
- It provides a framework for manager selection and manager allocation or sizing.
- Through the allocation to differentiated managers, SEI seeks to construct a Fund with lower relative risk than the underlying managers individually.

Manager/Fund	Weight	Tracking Error	Alpha Source	Target-Risk Contribution
Manager 1	30%	5.0%	Risk Premium	25%
Manager 2	35%	4.0%	Selection	25%
Manager 3	15%	8.5%	Momentum	25%
Manager 4	20%	6.5%	Stability	25%
Fund	100%	3.0%	N/A	100%

For illustrative purposes only.

## **Portfolio Management and Evaluation**

Ongoing portfolio management includes analysis of the investment managers and their security-level holdings, as well as analysis of the macro-economic environment and its likely impact on alpha source performance. Not only do our views change over time, but our investment managers make changes regularly; and as the market rewards and punishes various decisions, portfolios become unbalanced. We monitor exposures at the fund or strategy level and adjust allocations as necessary to help keep the portfolio on track.

## **Macroeconomic Analysis**

Portfolio management also involves establishing a view of active risk and tilting the portfolio accordingly. Given our belief in and the analysis of the cyclicality of return sources, and our assessment of the managers and the alpha sources they use, we may tilt the portfolio towards the managers we expect to be in favour during a certain phase of the economic/market cycle.

To implement these tilts, the Portfolio Management Group studies the behaviour of each alpha source over various economic cycles to better understand its characteristics and the likely impact on an investment manager's forward-looking results. Our Portfolio Managers and analysts seek to identify the market conditions during which particular return sources are likely to generate superior returns across a broad range of asset classes, as well as the conditions under which the strategy is unlikely to deliver strong performance. For example, certain strategies may perform best during economic expansion; these return sources would be expected to drive the bulk of the portfolio's growth during a time of projected macroeconomic growth.

# **Investment Manager Monitoring**

A number of risk-management tools are used to measure and monitor the risks at the investment manager level and at the portfolio level. Investment manager portfolio holdings are available to us through our systems on a daily basis. This gives SEI's Portfolio Managers access to the same level of portfolio detail the investment managers use to make their decisions, and enables us to effectively challenge their positioning during periodic evaluations.

SEI's Portfolio Managers review each investment manager's underlying holdings on a regular basis to determine whether the outcomes are consistent with the expectations and guidelines that were established prior to selection. This security-level analysis is also important in understanding the forward-looking risk level of the investment manager. Our systems provide tracking-error expectations for each of our investment managers based on the current securities held in the portfolio. This enables us to closely monitor and manage the portfolio's overall risk budget.

Also, the attribution provided by these systems gives us a feedback loop for our manager thesis. This information enables us to monitor price trends, trading volume and fundamental characteristics of key holdings to evaluate consistency with objectives. It is used as the basis for monthly and quarterly due diligence conversations with the investment managers.

Conference calls and on-site due diligence visits are scheduled regularly so that Portfolio Managers and analysts can monitor and analyse changes in underlying portfolios and investment manager organisations. In situations where an investment manager is deviating from expectations, an SEI Portfolio Manager will initiate a call to discuss the reasons behind the change.

If an investment manager's return behaviour or risk contribution deviates from expectations, SEI Portfolio Managers have a number of options. Cash that becomes available in the portfolio may be channelled to other investment managers. Similarly, the investment manager's allocation within the portfolio could be reduced to limit its overall impact. The Portfolio Manager could also remove the investment manager and allocate the proceeds to other investment managers.

Exhibit 9 provides additional insight into our portfolio management and monitoring process.

**Investment Manager Monitoring and Reasons for Replacement** 

#### **Rigorous Implementation** Daily Quarterly Illustrative purposes only to generally reflect termination decisions > Access to underlying > Conference call portfolio holdings to assess manager Change in Process/Style and dedicated Weekly investment team > Performance and risk attribution analysis Annually > On-site visit to Monthly evaluate manager > Buys and sells review Investment and dedicated Change > Portfolio characteristics Team investment team and market trend overview Ongoing > In-depth performance > Peer analysis Process/Execution > Investment strategy and risk analysis > Evaluation of manager oversight and review decisions and outlook > Backup List

> Watch List

# Implementation

Exhibit 9

SEI employs regional specialists in offices around the world to provide local views on U.S., U.K., European, Canadian and Asian markets. Continually, asset-class teams within the Investment Management Unit evaluate the global economy in order to develop, on a regional basis, a viewpoint regarding the market, as well as anticipated changes to the market environment and which investment approaches best align with this view.

SEI Portfolio Managers are able to tilt their allocations to specific exposures using the levers previously approved. They may implement their views by changing investment manager allocations or by adding or removing investment managers.

For each portfolio, general expectations are established for the return, risk and correlation for each appropriate return source. These expectations are reviewed on an annual basis and serve as the basis for ongoing decision making.

Whilst each geographic region has its indicators and nuances, a representative look at how SEI Portfolio Managers evaluate market cycles and establish their views is provided in Exhibit 10 below. This is a representative example using the U.S. market. It is not used as a checklist, rather as a trend indicator to facilitate discussion among team members.

Environment	Market Indicators	Economic Indicators (often lag market indicators by two quarters)
Expansion	<ul> <li>Credit spreads low and likely slowly narrowing</li> <li>Default rates low and likely falling</li> <li>Valuation not "cheap" historically, cross-sectional dispersion is narrowing</li> <li>Chicago Board Options Exchange Volatility Index*</li> <li>(VIX) low, likely &lt;20</li> <li>Forex (FX)** volatilities low, carry trade operating well</li> <li>Asset prices generally rising at predictable pace</li> </ul>	<ul> <li>&gt; Asset bubbles slowly forming (likely unseen)</li> <li>&gt; Positive gross domestic product (GDP) outlook</li> <li>&gt; Consumer confidence is rising and high near the end of the cycle</li> <li>&gt; Unemployment is falling and generally low near the end of the cycle</li> <li>&gt; Emotional cycle of greed</li> </ul>
Stress	<ul> <li>Credit spreads rapidly blow out to high levels</li> <li>Defaults rising but generally late in cycle/ expectations of recovery highly uncertain</li> <li>VIX rapidly blows out to high levels (30+)</li> <li>Valuation spreads widen quickly, rapidly passing through "fair value" relative to historical levels</li> <li>Asset prices quickly falling</li> </ul>	<ul> <li>Asset bubble pops</li> <li>Most economic indicators very slow/late to adjust (consumer confidence/sentiment will be first)</li> <li>Emotional cycle of fear</li> </ul>
Distress	<ul> <li>Range-bound market trading, testing of relative highs and lows</li> <li>Cross-sectional dispersion among equities high, with many short-term reversals</li> <li>VIX likely off worst levels but high relative to expansion (say 25-35)</li> <li>Defaults increasing at a much slower rate, expectations for asset recoveries becoming less volatile but not yet increasing</li> </ul>	<ul> <li>Consumer confidence low but falling at a slower rate</li> <li>GDP slowing</li> <li>Unemployment rising</li> <li>General emotion is despair</li> </ul>
Recovery	<ul> <li>Credit spreads high and narrowing</li> <li>Valuation spreads high relative to history and narrowing, cross-sectional dispersion also narrowing</li> <li>Foreign exchange volatility high and narrowing</li> <li>Defaults have peaked, expectations of recoveries improving</li> </ul>	<ul> <li>Asset bubbles reflate towards fair value</li> <li>Most economic indicators slow/late to adjust (consumer confidence/sentiment will be the first)</li> <li>Emotional cycle of relief</li> </ul>

#### Exhibit 10 Market Cycle Evaluation

\*VIX is a measure of implied volatility in S&P 500 Index options that is also known as the "fear" index. \*\*Foreign exchange market where securities are bought and sold. Our aim is to have the outlook for the return sources influence, but not dominate our positioning. In this regard, changes to the portfolio are made at the margins and generally take place gradually over time. Wholesale changes over short periods are avoided. Transaction costs are taken into account when changes are made in an effort to avoid situations where the incremental return does not justify the cost.

#### SEI uses three basic levers for changing our positioning over time:

- Our asset-class rebalancing programme creates cash flow streams in our portfolios that allow us to raise cash from and contribute to return sources to effect changes in our portfolios.
- > Daily cash flows allow us to change at a slower rate.
- Outright trades of investment manager allocations are an option, but the frequency/ magnitude of this is done in light of the liquidity and costs of doing so.

Whilst we make changes based on our expectations for performance, we strive to maintain a proper level of diversification between the return sources and the underlying investment managers. We do not generally concentrate our portfolios on a single alpha source. Our objective is to ensure greater consistency of returns. The extent to which SEI Portfolio Managers shift assets will vary and depends on factors, such as the alpha sources in the portfolio's mandate, the liquidity of the asset class and the extent to which projected benefits outweigh trading costs. Generally speaking, this active management based on the macroeconomic environment aims to add incremental value to our strategic construction process rather than be the key driver of excess returns. It is not something that will be applied in wholesale fashion across our entire lineup.

Whilst portfolio design, manager selection, portfolio construction and portfolio management are all distinct processes, they are part of an integrated effort which also includes risk management. Exhibit 11 shows how these processes relate to and interact with one another.

#### Exhibit 11 Integration of Portfolio Process



# Active Risk Management

# The Fifth Level of Active Management

SEI's Risk Management Team is responsible for developing and monitoring risk guidelines for SEI's portfolios. Following industry best practice, the Risk Management Team is separate and independent from the investment strategy teams. The head of the Risk Management Team reports directly to the head of the Investment Management Unit and serves on the Investment Strategy Oversight (ISO) Committee. This independence and reporting structure facilitates a focus on common risks across and within asset classes. These aspects of risk are often overlooked when risk management is the responsibility of individual portfolio managers who monitor various risk measures such as tracking error and beta. The independence of SEI's Risk Management Team also emphasises the importance we place on risk management and, in particular, managing risk across asset classes in multi-asset portfolios.

This risk management process provides a system of checks and balances, ensuring that our Portfolio Managers have a clear view of the risks they are taking and that they maintain proper risk budgets. These controls help us maintain diversified portfolios designed to deliver more consistent returns over time whilst avoiding the risks associated with concentrating a majority of the portfolio's assets with a limited number of managers.

A situation in which risk management would be used would be if an investment manager's contribution to risk in a portfolio exceeds the allocation set by the Risk Management Team. In this case, the Risk Management Team would communicate the discrepancy to the relevant SEI Portfolio Manager and to the ISO Committee. The Portfolio Manager would then take action to bring the risk level back in line with acceptable parameters. One option may be to stop the flow of assets to the investment manager in question. Then, the Portfolio Manager would present a plan of action to the ISO Committee, such as reducing the percentage of the portfolio allocated to the investment manager. This plan would then be vetted by the ISO Committee and implemented if deemed appropriate. Other possible outcomes may include a portfolio rebalance, or a removal of the investment manager from the portfolio.

The Risk Management Team uses a variety of methods to monitor portfolio and managerspecific risk. These include statistical risk measures, such as value at risk (VaR), scenario analysis and stress testing, and process-control measures such as cumulative sum (CUSUM).

## Value at Risk (VaR)

At the multi-asset-class level, the emphasis of our risk management process is to monitor VaR. This measures the maximum loss that is not expected to be exceeded within a particular level of confidence over a certain period of time. At least monthly, the Risk Management Team calculates the VaR of selected multi-asset-class portfolios with a 95% level of confidence over a one-month time horizon. For example, if a multi-asset portfolio has a one-month VaR of 6%, this implies that over a one-month period, the probability of a loss of 6% or greater is 1 in 20. The PCTR deconstructs the VaR into its various sources.

The VaRs of the portfolios are computed by comparing the actual portfolio holdings under current market conditions with the expected VaRs. The expected VaRs are based on long-term capital market assumptions. Large deviations between the current VaRs and the expected VaRs are reported to the ISO. The Risk Management Team also performs stress tests on multi-asset portfolios to measure their sensitivity to major risk factors. Various shocks to the major risk factors are analysed at least monthly. Examples of these shock scenarios include shifts in the yield curve, shifts in credit spreads, major equity-market declines, increases in market volatility, an increase in inflation and a decline in the U.S. dollar.

Within individual asset classes, a primary emphasis of SEI's risk management process is to monitor risk relative to a benchmark (relative VaR) and the percentage contribution to tracking error risk by each investment manager in a portfolio. Relative VaR is defined as the VaR of the portfolio divided by the VaR of the portfolio's benchmark. A limit on relative VaR and a limit on the percentage contribution to tracking error risk from each investment manager are established and approved by the ISO. The risk contributions are computed at least monthly. If risk limits are exceeded, a remediation plan is developed by the Portfolio Manager and is submitted to the ISO for approval. The remediation plan generally results in a reduction in the capital allocated to the investment manager that exceeds its risk limit and may be achieved through cash flow management, liquidations or reallocation to other investment managers. The Risk Management Team monitors the progress of the remediation plan.

To calculate VaR and contributions to risk from investment manager and risk factors, the Risk Management Team uses a risk management system that uses the actual security holdings of each investment manager, portfolio and multi-asset portfolio, including derivatives, to calculate risk. The system employs a factor-model methodology that identifies the common sources of risk (factors) that systematically affect asset returns. It models each security using approximately 2,000 risk factors. Each day, the system uses the current holdings and applies the most recent risk-factor exposures, risk-factor returns and unsystematic returns to estimate the risk of each investment manager, portfolio and multi-asset portfolio over the risk-forecasting horizon. The system also models each investment manager's benchmark at the individual security level, which allows a detailed comparison of each investment manager and portfolio relative to its benchmark. The Risk Management Team also uses the system to monitor counterparty risk and leverage from derivative instruments, and to perform stress testing. The accuracy of the VaR model is monitored on a daily basis.

The risk management system provides a common platform for equity, fixed-income and alternative investment portfolios, including hedge funds, private equity and real estate. This consolidated view of risk facilitates the creation of multi-asset portfolios designed to help investors achieve their objectives.

For a fund of hedge funds, the returns of the underlying funds will typically be skewed and fat-tailed. In this case, SEI's risk management process monitors expected tail loss (ETL), also known as Conditional Value at Risk. ETL is the expected loss if the VaR is exceeded and provides a more comprehensive view of risk for portfolios with distributions that are not statistically normal. Limits on the percentage contribution to ETL are established for each underlying fund and approved by the ISO. The risk contributions are computed monthly and breaches are managed as described above.

Detecting changes in an individual investment manager's alpha generating process in the presence of market volatility is extremely difficult. One way to evaluate a manager's alpha generation is a measure of risk-adjusted return known as the information ratio (the ratio of alpha to tracking error). The annualised information ratio of a typical manager is in the range of 0 to 0.30. Because the signal level (alpha) is normally low relative to the noise level (tracking error), meaningful changes in the average level of excess return can be difficult to detect. SEI's Risk Management Team developed an internal system that seeks to avoid the limitations inherent in using information ratios as a risk management tool. Instead, it uses CUSUM, a statistical control measure that is commonly used to monitor industrial processes.

A CUSUM control chart provides a visual method for detecting when a manager's process has changed significantly over time. The time series of an investment manager's monthly excess returns is noisy, and changes in the mean level of excess returns are difficult to detect. However, the time series of cumulative excess returns is less noisy, making a change of process easier to detect. The slope of a CUSUM control chart of cumulative excess returns will be positive when a manager is exceeding its benchmark and negative when the manager is underperforming. These changes in slope, which indicate changes in a manager's relative performance, are more easily detected than a change in the mean level of a noisy time series of excess returns. Of course, like any statistical procedure, false alarms may occur when in fact there has been no change in a manager's investment process; however, when a change has occurred, CUSUM can detect the resulting performance variations in a timelier manner than most other techniques.

To illustrate the advantages of CUSUM, Exhibit 12 shows simulated 10-year monthly excess returns for an investment process. For the first 60 months, the manager has a positive alpha of 1% and a high information ratio of two. Beginning with month 61 and continuing for the remaining period, the manager's monthly excess return shifts to zero. This is a substantial change but is still difficult to detect when looking at the chart.

In contrast, Exhibit 13 uses the same information but sums the deviations of the sample values from a preset target value. The chart's obvious negative slope, initiated at or around month 61, makes it easy to determine that something has changed in the process that needs to be evaluated and corrected.



\*Simulated results are for illustrative purposes only and are not representative of the performance of any specific investment.



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The Risk Management Team updates the CUSUM of each investment manager on a monthly basis. There is a CUSUM control limit for each investment manager based on the alpha and tracking error assumptions provided by SEI's analysts. If the CUSUM control limits are exceeded, a report is provided to the responsible portfolio manager and to the ISO. A remediation plan is developed by the analysts and is submitted to the ISO for approval. The remediation plan generally results in a reduction in the alpha expectation, an increase in the tracking error expectation, or both. The remediation plan may also trigger a meeting with the investment manager or some other escalation. If an ISO review of a scenario confirms that it is a false alarm, the CUSUM is reset.

# Investment Management Unit Overview

SEI's Investment Management Unit is responsible for creating and maintaining proprietary mutual funds for a wide range of institutional and individual investors.

#### **Process and Structure**

Our investment process is based on research conducted by dedicated asset-class teams. The teams are overseen by an Investment Strategy Oversight Committee that reviews their assumptions and conclusions. Exhibit 14 provides an overview of structure.

The Investment Management Unit prides itself on conducting research in an open, academic environment that reflects SEI's entrepreneurial culture. Our global research and portfolio management efforts include teams based in Oaks in Pennsylvania, London, Toronto and Hong Kong. In a unit of over 115 professionals, with an average of 8 years of experience in the industry, more than 70% of the team members are CFA charter holders and/or hold an MBA or other advanced degree.

Exhibit 14 Investment Strategy Oversight Process

Investment Strategy Oversight Committee > Oversees manager selection process > Oversees risk management



that are linked to goals and attitudes

#### Portfolio Management team

- > Selects managers for equity, fixed-income and multi-asset funds
- > Constructs portfolios

#### Manager **Research team**

- > Sources and selects managers for equity, fixed-income and multi-asset mandates
- > Selects managers for separately managed account programs

#### Alternative **Investment Strategies**

> Conducts due diligence on a wide array of alternative investments and

#### **Management Team**

Risk

> Conducts analysis to constraints for funds

Investment Philosophy & Process 32 For use by advisers of regulated intermediaries in accordance with all applicable laws and regulations.

# **Glossary of Terms**

**Portfolio** is a generic term that refers to a single mutual fund, fund-of-funds, hedge fund, exchange-traded fund or other mixed investment vehicle sold via single net asset value (NAV) pricing.

Investment Manager refers to a third-party sub-adviser hired to manage assets in SEI's portfolios.

Portfolio Manager refers to an SEI employee responsible for managing SEI's portfolios.

**Portfolio Strategies Group** refers to the SEI team primarily responsible for asset-allocation decisions, construction and management of portfolios and research and development of capital market assumptions.

Style refers to investment styles such as large-cap growth, small-cap value, etc.

Strategy refers to a plan of action designed to accomplish a specific goal.



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