



A New Paradigm for Today's Challenges (first in a three-part series)

In today's financial markets, there are certain realities institutional investors must confront. The equity markets have disappointed over the past three years and interest rates have reached nearly 50-year lows.

The implications of this dilemma on plan sponsors are two-fold: forward-looking return assumptions are too high and most plans are underfunded – some seriously. In the past three years, S&P 500 plans went from 30% overfunded to 20% underfunded. Given current interest rate levels and average S&P plan return assumptions (8.8% return annually), the average pension plan with approximately 65% equities will need its equity allocation to outperform bonds by roughly 8.0% on an annual basis.* Even before the equity bubble burst, these returns would have been considered unrealistic. Today, most investors have lowered their long-term expectations of equity outperformance over bonds to roughly half this level.

Given this environment, many investors are seeking new solutions. We believe our *Active Alpha Investing* approach may provide some answers. Simply stated, it is an enhancement of traditional portfolio theory. The core concept is to attempt to disaggregate sources of portfolio risk to identify additional return opportunities. It is a process that seeks to identify how to optimally deploy risk – to either improve returns at a stated level of risk, or reduce risk at a target level of returns. In a series of three articles, we'll illuminate *Active Alpha Investing* by highlighting the value of separating sources of risk, helping you identify uncorrelated sources of return, and providing a framework for putting an improved long-term investment plan into action.

The Foundation: Equilibrium

Let's start with one of the most basic principles of economics: equilibrium – a state of the world where supply equals demand. Of course, this idealistic state never really exists in the actual financial markets. Investors, speculators, and traders are constantly buying and selling. Prices are constantly adjusting. Although steady-state equilibrium is not possible, the concept of equilibrium underlies *Active Alpha Investing*. It provides a center of gravity – a stable, consistent vantage point for seeking to identify opportunities that may allow investors to outperform the market.

Optimizing Risk Leads to Higher Returns

The core of our approach is to quantify three types of risk: *Interest Rate Risk*, *Market Risk* and *Active Risk*. Each of these has different characteristics. We believe this warrants a new approach to allocating risk.

1. Interest Rate Risk

Exposure to interest rate movements

A typical US Pension plan is exposed to significant interest rate risk, as shown in the following example. A reduction in interest rates causes the value of the bond portfolio to increase by \$152 million against a liability increase of \$1.5 billion. This bond portfolio only hedged about 10% of the interest rate exposure. In a typical plan, this exposure is permanent and represents a large, unacknowledged, strategic bet on increasing interest rates. The mismatch in duration exposes the plan to uncompensated risk. Is this wise? We think not.

Typical US Pension Plan Exposure to Interest Rate Risk

Assets	\$10 billion
Liabilities	\$10 billion
Allocation	\$6 billion in equities (60%) \$4 billion in bonds (40%)
Duration of bond portfolio	3.8 years
Duration of liabilities	15 years

Effects of a 1% Interest Rate Decline

	Before	After
Value of Liabilities	\$10 billion	Up \$1.5 billion
Value of Bond Portfolio	\$4 billion	Up \$152 million (.4*\$380)
Funded Status	100%	88%

Plan sponsors should think about risks and returns on assets relative to liabilities, rather than using the traditional assets-only approach. Since improved funding status is essential, why be limited to only the asset side? For example, if liabilities were known with certainty, a simple risk-minimizing policy would be to purchase a 100% fixed income portfolio with cash flows similar to the liability stream. In this case, liability and asset values would change by approximately the same amount for a given change in interest rates. However, this approach has one big disadvantage: it permanently uses valuable capital to lock-in lower fixed income expected returns relative to other investments and will require higher future contributions.

*Sources: Goldman Sachs Asset Management, Pensions & Investments, Credit Suisse First Boston Research

In the past, a plan balanced the trade-off between using its capital to hedge the duration risk versus funding other return-producing investments to cover uncertain future liabilities. Generally, plans have tended to invest primarily in higher returning assets, resulting in large interest rate exposures. This implicit bet on rising interest rates has not been marked to market and, unfortunately, its risk is often not even recognized. This bet worked well in the 1970s, but not so well over the past 20 years.

The good news is that plans no longer have to balance this trade-off. We believe that the typical plan can, and should be, positioned strategically neutral to interest rate movements. Any deviation from this neutral position is equivalent to taking a bet on interest rate movements. In the current environment of historically low rates, if a plan expresses a view, its exposure needs to be sized and managed appropriately.

2. Market Risk

Exposure to overall equity market returns

In the past, sizing market risk has been a main focus of investment policies. Strategic asset allocation decisions depended on the equity markets as the principal source of returns. Investment professionals constructed portfolios that sought to maximize return for a given level of risk. These portfolios tended to be equity-oriented, due to the expectation of long-term rewards. In fact, many experts estimated that 95% of return volatility could be attributed to the equity allocation decision. In this light, let's review the historical performance of equities relative to bonds (as reported by Ibbotson).

Returns of US Large Cap Stocks vs. US Bonds

	Equity		
	Excess Return	Volatility	Sharpe Ratio
1926-2002	4.8%	20.8%	0.23
1946-2002	5.3	17.8	0.30
1993-2002	2.4	20.1	0.12
1998-2002	-8.0	22.3	-0.36

Source: Ibbotson

Despite a history of equities outperforming bonds, the magnitude of the excess return relative to its volatility (the Sharpe ratio) has not been very large. In fact, the last 5 years have been among the worst since the Depression, renewing a focus on the equity risk premium and forcing investors to revisit their market risk allocations. So, what should investors expect going forward? We think it is reasonable to expect 3 – 4% excess returns relative to bonds, 15 – 20% volatility and a Sharpe ratio of around 0.20. Interestingly, most plans agree with these expectations. However, with the current level of interest rates, these return expectations would lead to expected portfolio returns of about 5.5% (7% from equities, 3.5% from bonds) with a 60% equity allocation. This is about 3% short of median plan sponsor returns, as noted earlier.

We believe investors should have an allocation to equity at all times because equilibrium suggests that the return expectation for equities should be positive over time. Equity values reflect the largest aggregate risk – one that must ultimately be held by investors. Thus, in equilibrium, investors expect to be compensated for this market risk. In terms of management fees,

this market risk component should be nearly cost-free to the investor. Many passive investments, including index funds or highly liquid derivatives, require little capital and deliver passive market exposure essentially for free.

Given the importance of an equity allocation, what percentage of plan assets should be held in equities? While there is no one correct answer for all plans, the answer lies in your plan's overall appetite for risk. The best way to make this decision is to create scenarios for future equity market valuations and work with an actuary to map out the impact of equity allocations on required contributions and the plan's funded status. In this context, stakeholders can make informed decisions about the trade-off between the benefit of higher equity holdings in benign markets and the cost of such holdings in bear markets.

Strategic adjustments to equity allocations over time may be necessary to reflect changes in funded status, or simply to express tactical views about future prospects for the equity market. However, such tactical changes should be sized and managed appropriately. In other words, risks should be taken according to your ability to correctly forecast future returns. In our opinion, since equity markets are among the most efficient markets in the world, large tactical bets on their direction do not make a lot of sense.

3. Active Risk

All other sources of risk in the portfolio

Every investment's return can be decomposed into market and residual components. The market component, measured as beta, represents the investment's expected return when the market goes up or down. Multiplying the market return by beta gives us an unbiased estimate of its return. For example, suppose a portfolio has a beta of 1.2. If the market returns 2% on a particular day, the portfolio will be expected to return 2.4%. However, if the actual portfolio return is 3.5%, the market component is 2.4%, and the residual return component is 1.1%. This residual return is uncorrelated with the market. We use the term "active risk" to refer to this residual component.

The expected return of the active risk is called alpha, and is a critical component of investment strategy. Since all investments can be decomposed this way, market risk and active risk are really the only two possible sources of excess return over the risk free rate of interest. There are two kinds of active risk: (1) active risk consciously added to a portfolio in order to generate alpha and (2) unintentional active risk, which presumably has an expected alpha of zero or less. *Active Alpha Investing* focuses on attempting to increase only the alpha-generating type of active risk. And, because active risk is uncorrelated with market risk, it can be added to any portfolio without greatly impacting the portfolio's overall risk.

Many investors are skeptical about the ability of active managers to add alpha above market returns. Active management should be a zero sum game. The market is the aggregate holdings of all investors. If one group of investors is outperforming, another group must be underperforming. No one can reasonably suggest that all investors can beat the market.

In equilibrium, all managers have the same information and there is no way to systematically outperform the market. But, in our view, equilibrium does not exist in the real world. We

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believe that differences in information and management skill do exist. Markets are not all perfectly efficient. Some classes of investors are not optimizing returns. And, although they are not easy to find, some managers have consistent, above-average track records, suggesting they may have an edge in the market.

We are not trying to convince you that there is a simple formula for finding skilled managers. It is difficult. Rather, we wish to focus on the value of finding alpha – if you can.

Why Separate These Three Risks?

Hedging your interest rate exposure, and focusing on separating your portfolio’s return-generating risks offers several benefits:

- Separately allocating risk helps you take the risks you want to take, offering more optimal risk-adjusted returns. For example, given a limited overall risk budget, by taking a strategic neutral position on interest rates, plans have more opportunity to invest in the return-generating sources of market and active risk.
- Separating return-generating risk into market and active components allows you to pay for value. For example, market risk should be virtually free. Active risk is what you should pay for through active management fees.
- Finally, we believe that separating beta from active risk enables plans to pursue sources of active risk that generate higher alphas. Historically, plans have hunted for alpha where they have taken their beta risk. Within their strategic asset allocations, plans selected managers who could add alpha. But once a plan had “filled up” its asset allocation, it couldn’t add any more alpha from that asset class. Eliminating this unnecessary

constraint – and looking for the best alpha generators wherever they exist – is key to generating higher returns.

Take More Active Risk

In our opinion, risk is a scarce resource that should be efficiently deployed to generate the highest possible returns. Rather than optimally allocate risk, institutional investors have followed a conventional approach that allocates more than 95% of their risk budget to market risk (and thus 5% or less to active risk). If you focused on independently maximizing returns from both market and active risk and made reasonable assumptions about expected returns and volatilities, your optimal allocation to active risk would be much higher than 5%.

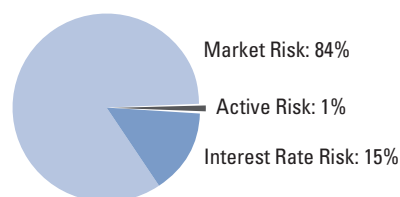
We recognize that, after fees, not all plans can find managers who will create positive alpha, unless some investors are systematically underperforming (e.g., retail investors, central banks). A passive portfolio is a defensible position, but if you believe there are opportunities to create alpha, you should determine the optimal level of active risk. The small amounts of active risk taken by most plans today implies an unrealistic consensus that active risk is available, but that the alpha potential is tiny.

While increasing active risk is critical in generating alpha, it is important to realize that you don’t have to get to the optimal level of active risk in order to gain the benefits. Since most plans take so little active risk, simply increasing the amount of active risk at the margin can have a huge positive impact.

Our prescription for facing today’s challenges and developing a durable long-term investment strategy is clear: Hedge your interest rate exposure and increase your exposure to active risk.

Taking More Active Risk Can Generate Returns and Improve Your Plan’s Risk Profile

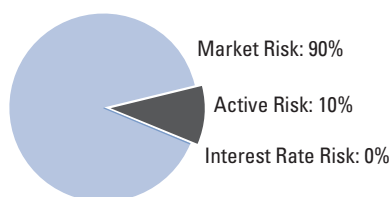
Typical Risk Allocation Today



Estimated Excess Return:	279 bps
Estimated Volatility:	11.8%
Estimated Sharpe Ratio:	0.26

This typical portfolio is assumed to have 40% bonds, 60% equities, with active managers providing 125 bps of active risk with an information ratio of 0.5. The fixed income portfolio is assumed to have a duration of 3.8 and the plan has a liability structure with a duration of 15 years.

Suggested Risk Allocation



Estimated Excess Return:	392 bps
Estimated Volatility:	11.4%
Estimated Sharpe Ratio:	0.4

This suggested portfolio is assumed to have hedged its liability interest rate exposure using derivatives. The market risk comes from a 60% allocation to equities. The active risk is assumed to have 350 bps of volatility and an information ratio of 0.5.

The entire Active Alpha Investing series is available at activealpha.gs.com.

Article 1: **A New Paradigm for Today’s Challenges** – Learn the value of taking more active risk

Article 2: **All Alphas are Not Created Equal** – Understand how to find and evaluate alpha sources

Article 3: **Putting it All Together** – Learn how to implement solutions in your organization

