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What is Sharpe Ratio?

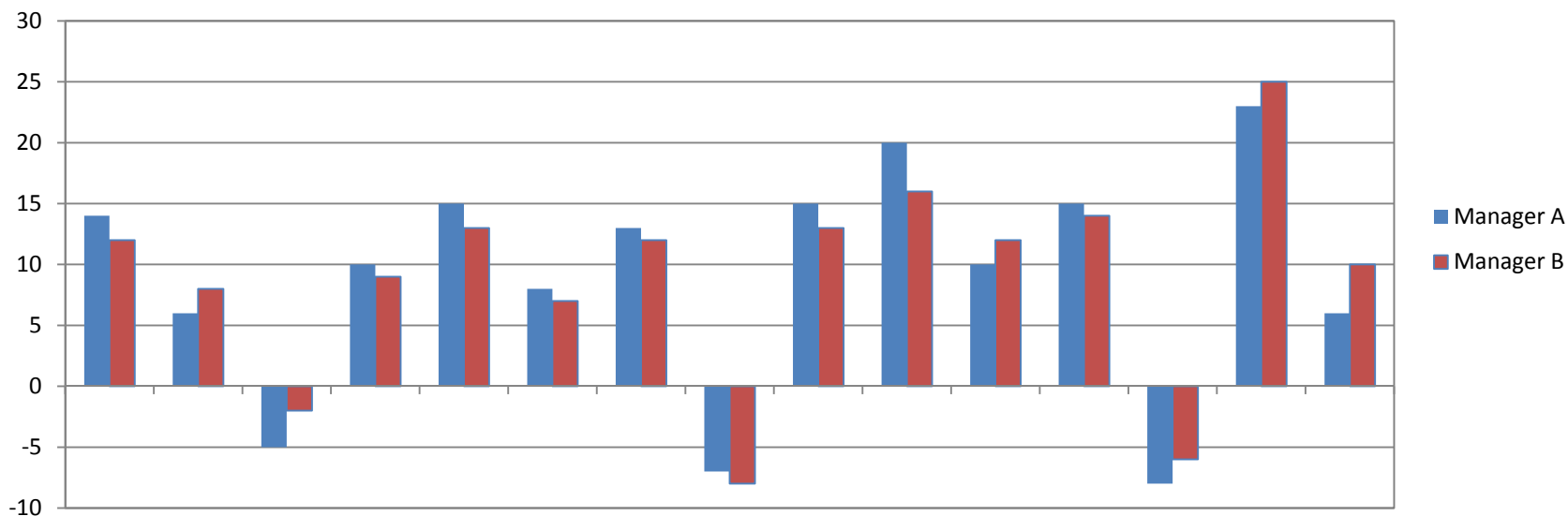
Sharpe Ratio is a common metric used in the investment industry to help measure an investment manager's performance. The purpose of this piece is to help the reader understand the Sharpe Ratio calculation and how a plan sponsor can use it to evaluate managers as part of its fiduciary responsibility of ongoing investment monitoring.

Sharpe Ratio is a risk-adjusted measure of performance. It combines the return performance and volatility of the manager under evaluation in order to answer the question: *How much return did I receive for the risk that I have taken?*

Let us consider Manager A and Manager B who both manage assets in the same asset class. Over the last five years, both managers have had an average return of 9%. How would you decide which is better? Or consider a second scenario where Manager B has a higher return but appears to have larger ups and downs. How do you put them on a level playing field?

A basic principle of portfolio theory, as most famously developed by Harry Markowitz in the 1950s, is that investors are risk averse. This implies that if a person were given a choice between two investments which have equal rates of return, an investor would prefer the one with lower risk associated with it. Alternatively, for two investments carrying the same risk level, investors would prefer the one with a higher return.

Consider the following chart which shows 15 period returns for two managers. Which should an investor prefer?



In this case, both managers had an average return of 9%, so now let us consider the variability of those returns. We can measure variability by looking at the standard deviation of the returns. Standard deviation captures how much the values in a return series differ from its average or mean. The larger the standard deviation, the higher the variability was around the average.

The standard deviations for the two series above are:

Manager A: 9.4

Manager B: 8.6

So which manager would you choose? A rational investor would choose Manager B since it had the same return result as Manager A, but experienced less variability.

Now we get to the Sharpe Ratio, developed by William F. Sharpe, which quantifies Markowitz's investors' risk-averse assumptions. It is defined as the amount of return above the risk-free rate, divided by standard deviation. The risk-free rate is subtracted out of the manager's return since it is in a sense "a gimme": a return for no risk. Subtracting out the risk-free rate allows you to analyze the portion of the return that had risk associated with it.

$$\text{Sharpe Ratio} = \frac{\text{rate of return} - \text{risk free rate}}{\text{standard deviation}}$$

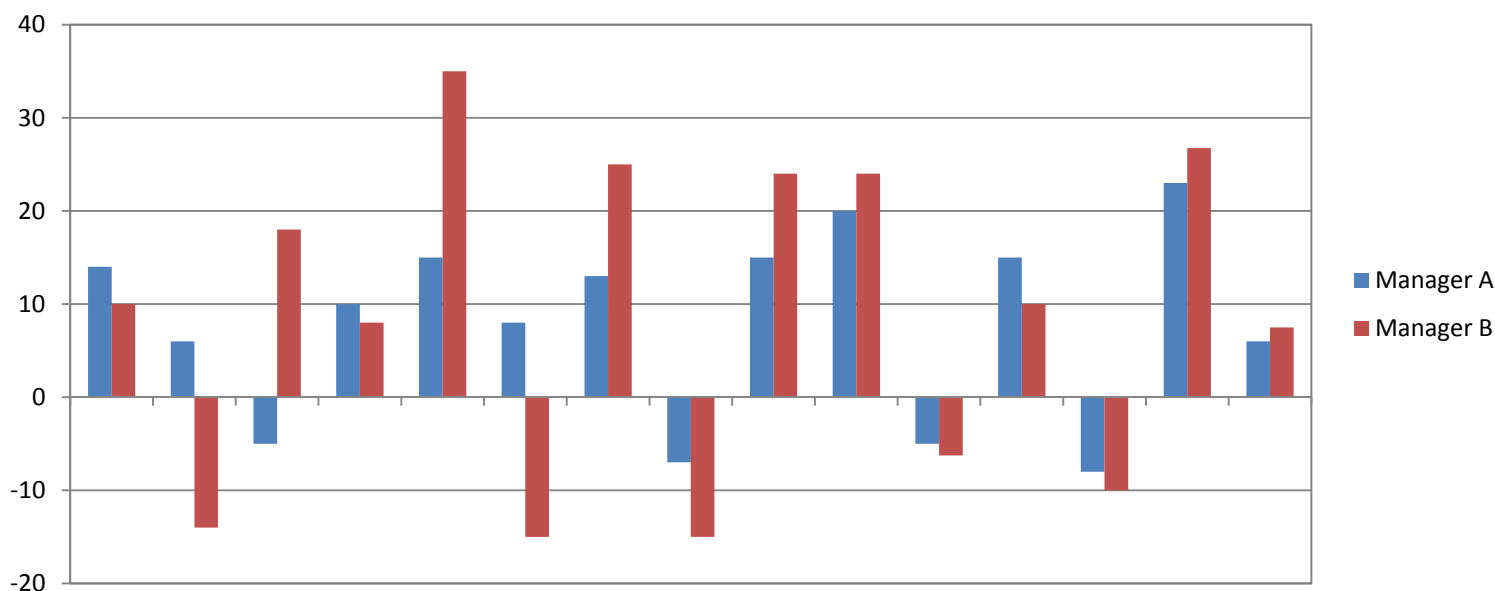
So, if we assume that the risk-free rate during this example was 3%, we would calculate the Sharpe Ratios as follows:

$$\text{Sharpe Ratio for Manager A: } 0.64 = \frac{9.0 - 3.0}{9.4}$$

$$\text{Sharpe Ratio for Manager B: } 0.70 = \frac{9.0 - 3.0}{8.6}$$

Manager B's Sharpe Ratio is higher than that of Manager A's; hence the Sharpe Ratio would indicate that Manager B is preferable.

Now consider the following example:



Manager A had an average return of 8.0% and Manager B had an average return of 8.4%. However, Manager A had significantly less variability or volatility (in other words, manager B had a lot more volatility). To help in the evaluation process, we go to the Sharpe Ratio calculations:

$$\text{Sharpe Ratio for Manager A: } 0.50 = \frac{8.0 - 3.0}{10.0}$$

$$\text{Sharpe Ratio for Manager B: } 0.32 = \frac{8.4 - 3.0}{17.0}$$

Since Manager A has the higher Sharpe Ratio, the investor would prefer A. Thus, even though Manager A had lower return, it earned a bigger bang for the risk buck it spent: it got an excess of 0.5% per unit of risk assumed compared to only 0.32% for Manager B.

Risk is what you have to endure to achieve returns above the risk-free rate, which is usually thought of as securities such as U.S. Treasury Bills. However, an investor should be properly compensated for taking risk. Sharpe Ratio tells you whether or not that tradeoff has been worthwhile.

DC Plan Participants Respond to Market Volatility

In the current market environment, we are frequently reminded of the effect of stock market declines on the value of 401(k) plan assets. With volatility not seen since the Great Depression, many participants are becoming more concerned about their defined contribution accounts. Industry trends show a significant response by plan participants in reaction to the market volatility.

Along with large overall mutual fund outflows experienced by fund companies such as Fidelity and Vanguard, many DC plan providers have experienced significant increases in call center and web volume, allocation changes, and hardship withdrawal requests. When comparing September 2007 to September 2008, New York Life Investment Management and ING each reported that call and website volume increased roughly 70% and 50%, respectively. These same plan providers have also experienced increased volume for both withdrawals and transfers. New York Life reported investment allocation changes nearly tripled versus the same time last year, while Vanguard noted that on one day, participants executed nearly \$1 billion in exchanges (7 times the normal average), with over \$400 million moving into fixed income products (22 times the normal average). A recent month-end survey of 401(k) plan activity also indicated significant cash flows from equities into fixed income during the volatile month of September 2008.

Speakers at a recent Industry conference have noted common themes for plan sponsors include taking more of a paternalistic role with plan participants as well as the need for more participant education. Speakers and attendees noted that many participants are trying to time the market, as seen by the recent shift out of equities, indicating a lack of proper investment education as well as improper positioning of their portfolios.

In addition to these trends, recent testimony before the House Education and Labor Committee by Jack Vanderhei of the Employee Benefits Research Institute (EBRI) on the "Impact of the Financial Crisis on Workers' Retirement Security" noted equity allocation trends among those close to retirement. EBRI's research found that many of the oldest 401(k) participants (ages 56-65 in 2006) may not be adequately aware or educated on the proper amount of equity exposure and risk within their retirement accounts. For example, it was noted that among participants in this age group, more than 48% had 70% or more in equities, which included 27% having 90% or more. In contrast, the average target date fund for participants in this age group had 51.2% in equities (per year end 2006 allocations).

Against the backdrop of the current market environment, these trends may indicate a renewed need to emphasize investment education for many defined contribution plan participants.

Business Groups Seek Legislative Relief for Pension Plans

As a result of the ongoing financial crisis and recent sharp market declines, many employers have seen the value of their plan assets fall precipitously, creating enormous funding obligations for 2009. These events make the timing of the new funding provisions of the Pension Protection Act of 2006 (PPA) most unfortunate, as they will force many companies to commit large cash contributions to their pension plans at a time when it is least feasible to do so and when lenders are even less willing to extend credit to cash-strapped companies. These challenges may also be further complicated by accounting considerations for plans subject to disclosures under FASB.

Recently, several business groups spent time on Capitol Hill urging legislators to provide some relief to corporations on several provisions in the PPA that will likely force increased contribution requirements during 2009 as well as create greater potential for funding-based restrictions. Legislative relief efforts largely focused on a few key issues. Specifically, these groups would like legislators to lower the levels at which pension plans must be funded and to clarify whether they may "smooth" the market values of pension plan assets over several years in financial reports.

The major issue surrounding asset valuation for funding requirements involves the change in the method companies must use to fund their pensions, which is generally based on the value of plan assets relative to liabilities (the present value of projected retirement payouts based on accrued benefits). Under the pre-PPA funding rules, plan sponsors could smooth their asset values based on market returns over 48 months. Under new rules, companies may only average returns over a two-year period, and the averaged assets cannot exceed current market value by more than 10%. However, the interpretation of the law by the IRS has proposed a narrow and generally unattractive interpretation of asset "averaging" which will compel plan sponsors to either "average" assets over two years in a way that routinely understates asset value or carry asset values at fair market value (more volatile and less predictable). In general, any smoothing or averaging approach will produce lower asset values when asset values are rising, and higher asset values when asset values are decreasing, as is the case recently. Yet the longer the period from the valuation date, the more biased the method becomes toward a lower average value, since prior values are adjusted for contributions and distributions, but not expected investment return. On this topic, concerned business leaders would urge legislators to clearly permit two year asset smoothing and to increase the asset valuation corridor from 10% to a pre-PPA 20% level, or a higher or even no limit, to reflect the unexpected drop in plan asset values experienced by many corporate plans over the year-to-date period.

Regarding funding requirements, the business group representatives asked to delay the provisions in the PPA requiring companies to fully fund pension plans at certain levels. Under the new law, plan sponsors must meet the funding level of the current transition year. The funding level for 2008 is 92% and for 2009 is 94%. Here, they asked legislators to maintain the level at 92% for 2009, and to allow companies to fund plans to that level instead of requiring them to fund 100% of the plan for both plans below or at the phase-in transition level.

Another plan-related matter includes creating more flexibility with respect to the choice of new funding elections (such as yield curve election) for 2009 or 2010 without IRS approval. Increased flexibility in this area may allow plan sponsors to take advantage of the near-term increase in interest rates that may offset, to some degree, the recent loss in pension market values. Essentially, as high-quality corporate bond rates rise, the present value of future retirement payouts (or plan liabilities) declines. The choice of the yield curve to measure liabilities could make a notable difference. There are two general alternatives: 1) a full (one-month average) yield curve, which will produce a market-value-type liability (lower); or 2) one of 10 similar 24-month average curves. The 24-month average curves will likely produce a higher funding target for 2008, but will generate less volatile, more predictable liabilities in future years. Flexibility in this aspect may be able to lessen the cash flow pressure that many plan sponsors will be encountering in the near-term.

Whether these recent relief efforts by numerous interested parties will be successful is uncertain, but legislators are listening and realize these issues are time-sensitive. These are also measures that would not cost the Treasury in lost revenue, which is a benefit to taxpayers, jobholders and does not hamper future economic stability and growth. We will continue to monitor all pertinent legislative actions and keep you abreast of any changes.

The Use of Liability Driven Investing in Pension Plans

Historically, pension assets have been managed using an asset-only based strategy which focused on a “semi-standardized” asset allocation mix of equities and bonds. Under this approach, performance of a portfolio was typically measured against a return expectation set forth by the plan sponsor or versus a benchmark. The strategy has worked fairly well in the past. However, pension portfolios have been under increased pressure in recent years, primarily due to the combination of low interest rates along with negative equity returns. This has caused pension liabilities to increase, while also causing pension assets to decrease, leaving pensions less able to meet their liability obligations. Additionally, stricter regulations set forth by the Pension Protection Act and new FASB regulations that require employers to recognize the overfunded or underfunded status of their plan in their balance sheets have further pressured pension plan sponsors. In light of these issues, many pension sponsors have been considering new strategies to help ensure that they can meet their pension liabilities in the future. One of these strategies is called Liability Driven Investing (“LDI”).

Instead of using a traditional asset allocation model, the LDI strategy focuses the investment allocation on meeting the plan’s liability obligations and establishing a link between the plan’s liabilities and the investment management of the plan’s assets.

Although liabilities among pensions have different characteristics, a common characteristic of all pension plans is that their liabilities fluctuate inversely with interest rates. Consequently, in a declining rate environment, plan liabilities generally increase (all other factors held equal). This effect is further compounded with longer duration liabilities. However, bonds can be used as a hedge against fluctuations in a plan’s liabilities as

bond values also react inversely to interest rates. To effectively reduce this volatility, the portfolio's bond duration should be matched closely to that of the pension's liabilities. Depending on the plan's specific needs, other investments can be employed under LDI, including the use of inflation linked bonds, alternative asset classes and derivatives.

This is not to say that LDI strategies revolve around only holding bonds in the portfolio, as equities are likely to earn a return premium that is greater than that of bonds over the long-term. It is merely a strategy that can be used to minimize interest rate and inflation risks to help ensure that the portfolio's investments are in line with the liability obligations of the plan.

A recent study done by the Pension Research Management Panel has shown that less than 20% of U.S. pension plans have actually implemented LDI strategies. However, the study also showed that approximately 45% of plan sponsors are considering adopting an LDI strategy in the near future. Due to recent market conditions as well as the new funding requirements, this trend is expected to continue.

IRS Announces Key Benefit Limits for 2009

The Internal Revenue Service announced new limits on contributions and benefits for the 2009 tax year. For 401(k) plans, the contribution limit, catch-up limit and total contribution limits have been raised. For 2009, the contribution limit increased from \$15,500 to \$16,500. The catch-up limit increased from \$5,000 to \$5,500. The total that can be contributed to a 401(k) plan will increase to the lesser of 100% of compensation or \$49,000, up from \$46,000. In addition, the salary breakpoint for the highly compensated worker category has increased from \$105,000 to \$110,000 in 2009. For defined benefit plans, the maximum annual benefit a participant may accrue increased from \$185,000 to \$195,000.

What's New at PEI

Over the summer months, PEI hired four new investment analysts and a new investment consultant to meet the needs of an expanding client base. PEI was excited to add these talented individuals, who will help provide additional research and client service support.

As always, we are excited to continue to develop our client relationships and look forward to providing services that will help you meet your fiduciary responsibilities.