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# Expert Analysis: Using Simulation to Assist Courts in Assessing the Prudence of Retirement Plan Investment Decisions

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After a retirement plan investment incurs substantial losses, a lawsuit may be filed alleging that the selection and/or retention of the investment was imprudent. When these cases arise, both sides frequently rely on experts to assist the court in assessing the prudence of investment decisions.

Under the Employee Retirement Income Security Act, fiduciaries have a responsibility to act ''with the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent [person] acting in a like capacity and familiar with such matters would use in the conduct of an enterprise of a like character and with like aims.''[1] Courts and experts generally look at both procedural prudence and substantive prudence when assessing whether a fiduciary's decision was consistent with this prudent person standard.

[1] ERISA Section 404(a)(1)(B), 29 U.S.C. § 1104(a)(1)(B).

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This article provides an overview of some of the approaches that experts use to evaluate issues related to procedural and substantive prudence. Some of these approaches are familiar to ERISA litigators; however, one of these approaches—simulation—is less well known. Because simulation can be an apt tool for evaluating issues related to substantive prudence, this article provides a case study that demonstrates how an expert can use simulation to assist a court in assessing the substantive prudence of the selection, retention or termination of a retirement plan investment.

## Expert Analysis of Procedural Prudence

*Procedural prudence* refers to whether the fiduciaries followed an appropriate process to reach a decision. Experts generally rely on documents and depositions produced in the litigation as a primary basis for their understanding of the process that was followed. The experts then use their knowledge and research to assess whether this process was consistent with the processes that other professionals use to select investments for similar retirement plans and/or other institutional investments.

The details of experts' evaluations of the plan fiduciaries' process vary according to the specifics of the allegations and decisions at issue. Rather than attempt to consider all, or even most, areas of focus, this article discusses a few selected cases to illustrate some of the approaches that experts may use to evaluate whether plan fiduciaries used an appropriate process in deciding whether to select, retain or terminate a plan investment.

In one case, plaintiffs alleged that a plan's investment committee's process for monitoring investments failed to place appropriate weight on recent performance. Plaintiffs argued that a prudent process would have reacted more quickly to the deterioration in the fund's performance and removed the poorly performing investment in time to avoid most of the losses incurred by the plan. The defendants' expert submitted a report and provided deposition testimony about the use of short-term and long-term performance to evaluate portfolio managers. The expert explained that because a portfolio manager's performance is influenced by both skill

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and luck, even the most highly skilled portfolio managers may underperform unskilled managers (and conversely, unskilled managers may outperform skilled managers). However, over longer periods of time, the effects of good and bad luck on a portfolio manager's returns are more likely to balance out. Consequently, over longer evaluation periods, the influence of luck on portfolio performance diminishes, and—all else being constant—performance is a better indicator of portfolio manager skill. The expert further explained that placing too much emphasis on short-term performance can harm plans by causing fiduciaries to replace investments that are overseen by skilled portfolio managers with investments that are overseen by less-skilled portfolio managers who have benefited from blind luck.

In another case, plaintiffs challenged the decision to retain a plan investment, despite the fact that the investment was on watch list status for an extended period of time.[2] The defendants' expert reviewed documents and depositions that showed that the plan's investment committee had regularly evaluated the investment and had decided to retain the investment based on their belief that the investment's recent poor performance was explained by the portfolio manager adhering to a sound investment strategy—a strategy, which historically caused the fund both to outperform its peers over complete market cycles and also to underperform its peers during periods of rapid, widespread appreciation in stock prices. The defendants' expert opined that the committee had performed an appropriate analysis of the consistency of the portfolio manager's strategy and that the committee's focus on performance over the entire market cycle was appropriate for the plan.[3]

In many cases, plaintiffs allege that plan fiduciaries failed to properly account for ''red flag'' warnings that an investment would perform poorly. In these cases, experts may evaluate and opine on whether the consideration given to these warnings by plan fiduciaries was consistent with the processes that sophisticated investors and/or academics used to assess these same ''red flags.'' Among other things, the experts' opinions may address whether sophisticated investors or researchers view the purported red flags as indicative of poor performance and whether other available information contradicted the predictive power of the ''red flags'' for the challenged investment.

[2] Many plan investment committees use a watch list as part of the evaluation process. Typically, investments that do not meet specified criteria are designated as on watch list status, which may subject the investment to additional review. In many plans, investments remain on the watch list until the conditions that led to the watch list status change or the investment is removed from the plan.

[3] The expert also performed an independent analysis which showed that the portfolio manager had indeed remained consistent with his historical strategy. The expert opined, based on her experience as an investment professional, that this strategy was a credible strategy for achieving the investment's stated long-term objectives, which were appropriate for the plan.

## Expert Analysis of Substantive Prudence

*Substantive prudence* refers to the appropriateness of the decision itself. That is, substantive prudence focuses on the outcome of the decision making process, as opposed to the process to reach the decision.[4]

To evaluate whether the decision was appropriate, experts may look at the decisions made by other investors that the expert views as ''acting in a like capacity and familiar with such matters would use in the conduct of an enterprise of a like character and with like aims.''[5] For example, the expert may research whether similar retirement plans and/or sophisticated investors held the challenged investment. Experts may also consider analyst ratings of the challenged investment. While this approach is intuitive and can be compelling, in many situations, the necessary data are not available to implement this approach.

An expert may also apply what he or she believes to be an appropriate process for the plan at issue to the information that was available when the challenged decision was made.[6] This approach allows the expert to assess whether the challenged decision could have resulted from this process. For example, if plaintiffs challenged the selection of an investment for a retirement plan, an expert could apply what he or she believes to be appropriate screens for selecting investments in order to determine whether the application of these screens could have led to the selection of the challenged investment.[7]

Experts may also evaluate whether the challenged decision constituted an appropriate tradeoff between expected return and risk.[8] To compare how alternative decisions would have affected expected return and risk, experts often refer to summary statistics, such as aver-

[4] The analysis of substantive prudence can be divorced from the assessment of procedural prudence. That is, a fiduciary's decision is considered substantively prudent if the outcome of the process is objectively prudent regardless of the decision making process followed. As then Judge Scalia explained in *Fink v. National Savings and Trust Company*, ''I know of no case in which a trustee who has happened—through prayer, astrology or just blind luck—to make (or hold) objectively prudent investments (e.g., an investment in a highly regarded 'blue chip' stock) has been held liable for losses from those investments because of his failure to investigate and evaluate beforehand.'' (772 F.2d 951, 962, 6 EBC 2269 (D.C. Cir. 1985)).

[5] ERISA Section 404(a)(1)(B), 29 U.S.C. § 1104(a)(1)(B).

[6] To avoid hindsight bias, experts generally should consider only information that was available when the challenged decision was made.

[7] Examples of potential screens include minimum portfolio manager tenure with the fund, minimum performance relative to peer funds over various time periods, minimum returns relative to a benchmark over various time periods and a minimum measure of risk-adjusted return.

[8] These summary statistics can be measured in absolute terms or relative to a benchmark.



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ages and standard deviations.[9] While these explanations are informative, discussions of summary statistics may fail to offer an intuitive and accessible metric for evaluating whether the challenged decision constituted a reasonable risk-reward tradeoff. As discussed below, in many such cases, simulation analysis provides a more intuitive framework for evaluating and explaining this tradeoff.

## Simulation Approach

Although academics and investment professionals frequently use simulation, some attorneys are unfamiliar with this analytical tool, which can be useful in an evaluation of whether the outcome of a challenged decision was appropriate. In the current context, simulation can be thought of as randomly sampling from relevant data to create a distribution of thousands of possible returns series. These distributions provide a basis for evaluating the tradeoff between expected return and risk. The following example provides a more detailed description of simulation by explaining how one expert used simulation to assist a court with its evaluation of substantive prudence.

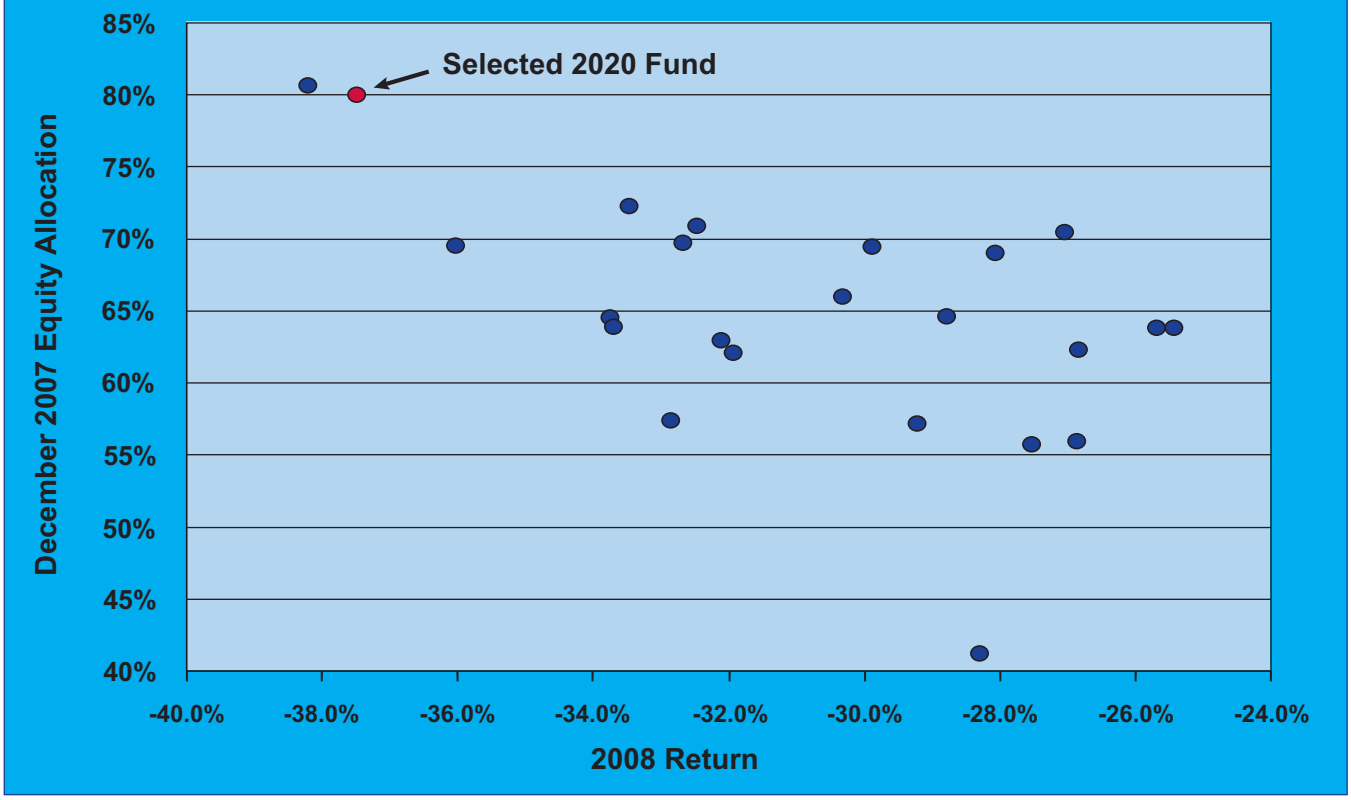
[9] The standard deviation measures the dispersion of a series of numbers, such as returns, around the average (mean). Series with more dispersion have larger standard deviations.

The litigation arose from a 401(k) plan's investment committee's selection of a series of target date mutual funds in December 2007. The investment committee selected a 2020 target date mutual fund (''Selected 2020 Fund'') with an asset allocation of 80 percent Equity and 20 percent Fixed Income (''80/20'').[10] At the time of the selection, the median Equity allocation of 2020 Funds was approximately 64 percent, and the Selected 2020 Fund's Equity allocation exceeded the Equity allocation of 21 of the 22 other 2020 Funds. In 2008, Equity substantially under-performed Fixed Income, and the Selected 2020 Fund's return was -37.5 percent. As **Figure 1** shows, in 2008, the returns to 2020 Funds were negatively related to the funds' Equity allocations, and the Selected 2020 Fund under-performed most of the other 2020 Funds.[11]

[10] To simplify the discussion, I focus on the selection of a 2020 target date mutual fund (''2020 Fund''), and I assume that there are only two asset classes: Equity and Fixed Income.

[11] For simplicity, the example ignores variation in the meaning of the target date. In reality, the meaning of the target date varies somewhat across target date fund series. For some target date funds, the asset allocation gradually changes until the target date after which the asset allocation remains constant. These funds are said to be ''managed to the target date.'' For other target date funds, the asset allocation continues to change after the target date. These funds are said to be ''managed through the target date.''

**Figure 1. 2020 Funds: 2008 Returns and December 2007 Equity Allocation**




Sources: D. Lee Heavner, Morningstar Direct

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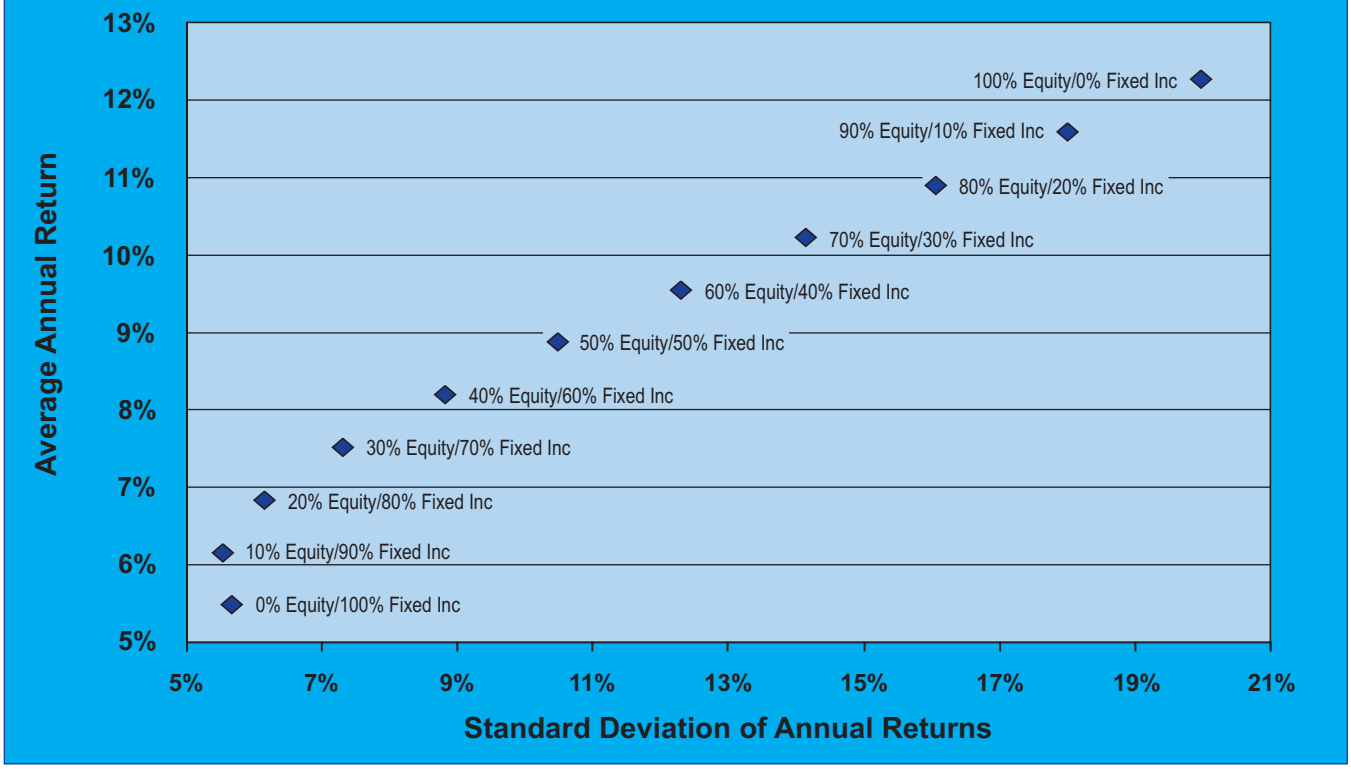
The complaint alleged, among other things, that the choice of the Selected 2020 Fund was imprudent because the fund's excessive Equity allocation made the fund too risky to be a prudent investment. Both sides submitted expert reports on issues related to procedural and substantive prudence. The experts agreed that Modern Portfolio Theory and empirical research have shown that among the ''efficient'' portfolios, asset allocations with greater expected returns are also associated with greater variability of returns.[12] The experts also agreed that the selection of an Equity allocation involves a tradeoff between the desire for greater expected returns and the desire for less risk.

To this point, from 1926 through 2007, Equity exhibited higher average returns and more variability in returns than Fixed Income.[13] As **Figure 2** shows, these facts mean that for a wide range of asset allocations, higher Equity allocations were associated with higher average returns as well as with more variability in returns.

The plaintiffs' expert opined that the Selected 2020 Fund's equity allocation made the fund too risky to be included in the plan. The expert concluded that 65 percent was the maximum appropriate Equity allocation for a 2020 Fund. The expert cited articles on optimal asset allocation for retirement savings as one basis for this opinion. The expert also explained that over the period from 1926 through 2007, the annual returns for the 80/20 and 65/35 allocations averaged approximately 10.9 percent and 9.9 percent with standard deviations of approximately 16.1 percent and 13.2 percent respectively.[14] The expert opined that the one percentage point increase in average returns associated with the 80/20 allocation was insufficient compensation for the 2.9 percentage point increase in the standard deviation. Expressed as a ratio, the percentage point increase in standard deviation was 2.9 times greater than the percentage point increase in average returns.

The defendants' expert responded by pointing out what he believed to be flaws in the plaintiffs' expert's understanding of the asset allocation literature. The defendant's expert also opined that the use of one-year returns to evaluate expected return and risk was inappropriate and that the risk-reward tradeoff should be evaluated over a time frame that was consistent with

**Figure 2. Average and Standard Deviation of Annual Returns by Asset Allocation: 1926–2007**




Sources: D. Lee Heavner, 2010 Ibbotson SBBI Classic Yearbook, pp. 29-30

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[12] An efficient portfolio is one that provides the maximum expected return for a given level of risk (variability of returns).

[13] See, for example, 2010 *Ibbotson SBBI Classic Yearbook*, p. 29-30.

[14] The returns data in this article are based on the returns to Large Capitalization Domestic Equities (''Equity'') and Intermediate-Term Government Bonds (''Fixed Income'') as reported in the 2010 *Ibbotson SBBI Classic Yearbook* (pp. 29-30).



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**Table 1. Simulation Results: Distribution of 12-Year Annualized Returns**

| | Allocation to Equity/Fixed Income | |
|---|---|---|
| | 80/20 | 65/35 |
| Average annualized return | 9.8% | 9.1% |
| Standard deviation of annualized returns | 4.8% | 3.9% |
| Probability that the portfolio outperforms | 75.4% | 24.6% |
| Probability that the annualized return is at least 0% | 97.8% | 98.8% |
| Probability that the annualized return is at least 5% | 84.0% | 85.5% |
| Probability that the annualized return is at least 6% | 78.2% | 78.6% |
| Probability that the annualized return is at least 6.25% | 76.8% | 76.8% |
| Probability that the annualized return is at least 7% | 72.3% | 71.1% |
| Probability that the annualized return is at least 8% | 64.9% | 61.8% |
| Probability that the annualized return is at least 9% | 57.3% | 52.2% |
| Probability that the annualized return is at least 10% | 48.6% | 41.7% |

Source: D. Lee Heavner

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the investment horizon of participants who would invest in a 2020 Fund. Because in December 2007—the date on which the Selected 2020 Fund was chosen—January 2020 was 12 years away, the expert focused on 12-year returns.

The expert performed multiple simulation analyses to evaluate the merit of the plaintiffs' expert's assertion that the historical data demonstrated that an 80/20 allocation was excessively risky relative to the 65/35 allocation. The rest of this example describes the steps in one of these simulations.

The simulation used random samples of data on annual returns to create thousands of possible returns series. To create a 12-year return series, the expert's simulation program first selected a year randomly from the period for which data were available (1926—2007).[15] The Equity and Fixed Income returns observed in the year were combined to calculate the returns to various asset allocations, including the 65/35 and 80/20 allocations,[16] and these returns were assigned to the initial year of the 12-year series.[17] The process was repeated to generate the portfolio returns for the remaining 11 years in the 12-year series, and returns were compounded to arrive at the 12-year return for the potential return series.[18] This process was then repeated thousands of times to approximate the distribution of potential returns.

**Table 1** provides some results from this simulation.

The Table shows that the average annualized 12-year returns were approximately 9.8 percent and 9.1 percent for the 80/20 and 65/35 allocations respectively. These higher average returns were also associated with greater variability; the standard deviation of the 80/20 allocation exceeded that of the 65/35 allocation by approximately 0.9 percentage points (4.8 percent versus 3.9 percent). Thus, the analysis implies that over 12-year holding periods the selection of the 80/20 allocation rather than the 65/35 allocation resulted in an additional 0.7 percentage points of expected annualized returns, along with a 0.9 percentage point increase in the standard deviation of returns. Expressed as a ratio, the percentage point increase in standard deviation was approximately 1.3 times the percentage point increase in average returns.

The defendants' expert used these results to explain that the plaintiffs' expert's inappropriate focus on annual returns resulted in a misleading representation of the risk-reward tradeoff and biased the plaintiffs' expert's analysis toward finding that the 80/20 allocation was excessively risky.

Table 1 also shows that when the Plan's Investment Committee selected target date funds, there was a three-fourths probability that participants' current in-

[15] This article uses the 1926-2007 period because 1926 is the first year of the Ibbotson data, and 2007 was the last year for which data were available when the challenged decision was made.

[16] The asset allocations of target date funds generally follow a ''glide path'' in which the asset allocation changes over time until it reaches its final allocation (at or after the target date). To simplify the discussion, the example ignores asset allocation changes associated with these glide paths.

[17] For example, suppose that 1993 was the randomly selected year. In 1993, Equity returns were approximately 10.08 percent and Fixed Income returns were approximately 11.24 percent. These numbers imply that the returns to 65/35 and 80/20 portfolios were approximately 10.49 percent and 10.31 percent, respectively.

[18] These selections are made with replacement. That is, the year is always made from the entire period. Consequently, the same year can be selected more than once in a 12-year series.

vestments would be worth more by the target date with the 80/20 allocation than with 65/35 allocation. However, this increased likelihood of greater wealth was accompanied by an increase in the probability of negative returns from 12 out of 1,000 to 22 out of 1,000.[19] Given this tradeoff and the characteristics of the plan and its participants, the defendants' expert argued that it was reasonable for the Investment Committee to select a 2020 Fund with an 80/20 allocation rather than the 65/35 allocation proposed by the plaintiffs' expert. As such, this framework allowed the expert to explain the tradeoff between the greater probability of higher wealth and increased risk without requiring the court to understand the implications of differences in standard deviation of returns and other summary statistics.

[19] The tradeoff associated with the choice of asset allocation also affects the likelihood of achieving a target return level. For example, this simulation indicates that for target returns of greater than 6.25 percent, the 80/20 allocation was more likely to achieve the target return; however, for target returns of less than 6.25 percent, the 65/35 allocation was more likely to achieve the target return.

## Conclusion

Experts often play an important role in litigation about whether the selection, retention or termination of a retirement plan investment was prudent. In these cases, experts use a variety of approaches to assist a court with the evaluation of procedural and substantive prudence.

Expert analysis related to substantive prudence frequently involves assessing whether the challenged decision resulted in an appropriate combination of expected return and risk. In many such situations, simulation is a useful tool for evaluating the tradeoff between expected return and risk. Simulation not only offers a way to evaluate the statistical properties of longer-period returns, but it also provides experts with a more ready format to communicate these complex findings in a way that is more intuitive and accessible to the court.

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