

## Risky Business

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- Interest rates are historically low in the U.S. and abroad. Couple this with modest growth, and fund sponsors reluctant to lower return expectations face one of the most difficult investing environments in history.
- To find out how difficult, Callan experts wondered, “What would an investor need to do to achieve a 7.5% return with the least amount of risk possible?” Using Callan’s proprietary forward-looking capital market projections, we found that investors in 2015 needed to take on *three times as much risk* as they did only 20 years ago.
- Return-seeking portfolios are now more complex and expensive than ever. Whereas in 1995 a portfolio made up entirely of fixed income was projected to return 7.5%, by 2015 to achieve comparable returns that fixed income portion was down to just 12%, with private equity and stocks making up around three-quarters of the portfolio.
- The results of our research sent a current through the institutional investing community when they were first released in *The Wall Street Journal*. To get the story behind the story, Callan’s Published Research Group spoke to Jay Kloepfer, head of Capital Market and Alternatives Research at Callan, and Julia Moriarty, a consultant in our Capital Markets Research group who conducted the analysis, about the implications of these findings.

### Jay Kloepfer

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Capital Market and Alternatives Research

### Julia Moriarty, CFA

Senior Vice President  
Capital Markets Research



### How did this start?

**Julia** Jim Callahan, Callan’s Head of Fund Sponsor Consulting, was presenting to a group of public funds. His purpose was simple: he wanted to show what investors had to do to get a 7.5% return 20 years ago, with the least amount of risk, versus what they have to do to achieve that same return today. Our hypothesis was that achieving 7.5% now would require greater risk, complexity, and expense. That turned out to very much be the case.

### How did you prepare the analysis?

**Julia** We conduct asset allocation studies for clients in order to determine the risk associated with portfolios that are designed to generate an expected return. Callan has an optimizing tool that helps us find the “efficient frontier,” meaning the right combination of assets that provides the highest return for the lowest risk.

In 1995, our expectation for broad U.S. fixed income was exactly 7.5%. We found a 100% fixed income portfolio was an efficient way to achieve that return, with a standard deviation of just 6% (**Exhibit 1**).

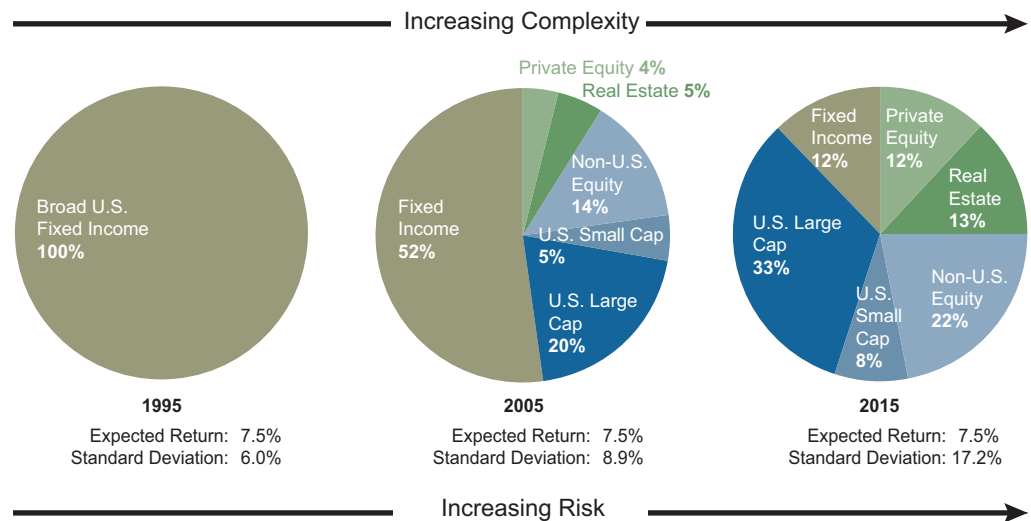
Ten years later, an investor seeking a 7.5% return would have needed a portfolio containing 48% relatively risky, return-seeking assets, with just 52% in fixed income. And between 2005 and 2015, an investor had to risk up the portfolio even more and include 88% in return-seeking assets, with just 12% in fixed income. Meanwhile, the standard deviation almost doubled from “only” 8.9% in 2005 to 17.2% in 2015.

Standard deviation is a broad measure of risk, so the headline is that in just two decades, the risk required to achieve a 7.5% return nearly tripled from 6% to 17.2%.

### Exhibit 1

#### Same Return, Increasing Risk

*Projected portfolio  
returns over past  
20 years*



Source: Callan Capital Market Projections

### Do these pie charts represent how our clients were actually invested?

**Jay** No, they do not. These asset mixes for 1995, 2005, and 2015 are based on the forward-looking capital market projections that we created in each of those years. Those projections are our expectations for risk and return in each asset class, as well as their correlation to one another.

Our projections for virtually all asset classes have come down gradually over the years. The unnerving consequence of lowering capital market projections is that if an institutional investor does not lower its total fund return requirement, that investor will have to keep taking on more and more risk. Driving fixed income allocations down to 12% means investors do not have a lot of protection in a deflationary environment. The “safe asset” or bedrock against which they take risk gets smaller.

It also means they face a great deal of volatility, as a 17.2% standard deviation represents equity-like volatility for the total portfolio.

### Would you say that investors are taking on more risk, complexity, and expense for lower returns?

**Jay** A better way of saying it is that many investors are reaching for risk in order to achieve return expectations that they are unwilling to lower.

### Were you surprised at what you found?

**Julia** Yes and no. We were fairly certain that plans had to increase risk when they were reluctant to lower their expected return. With the decline in interest rates, and bond yields correspondingly falling, plans have to take on more risk in the form of equities and illiquid investments to achieve the same expected return.

I think we were surprised at the size of the shift in the model portfolio’s assets. To see the decline from 100% fixed income to 52% to 12%—the magnitude was surprising. The fact that an investor had to take on three times the risk to achieve the same return was surprising as well.

**Jay** In 2015 fund sponsors would have loved to hold nothing but bonds—if only they returned something. Now sponsors have to invest in more asset classes, and these asset classes are more complicated and time-consuming, which results in greater expense.

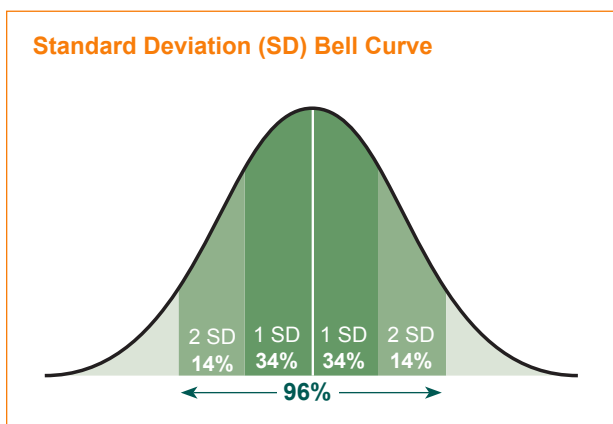
### Are standard deviation and risk synonymous?

**Jay** Standard deviation represents a variability of results, which is more or less the broadest definition of investment risk. It is a measure of how far returns can range. A bigger standard deviation means a greater range of potential outcomes. It represents how much returns could be over or under expected

results. The typical statistical reading is that one standard deviation around the expected case captures about 68% of potential results, and two standard deviations about 96%.

To illustrate this point, assume that in 1995 an investor had a 7.5% return expectation with a standard deviation of 6.0%. One standard deviation down would be a +1.5% return and one up would be +13.5%. Two standard deviations would be -4.5% to as high as +19.5%. That is a fairly narrow range.

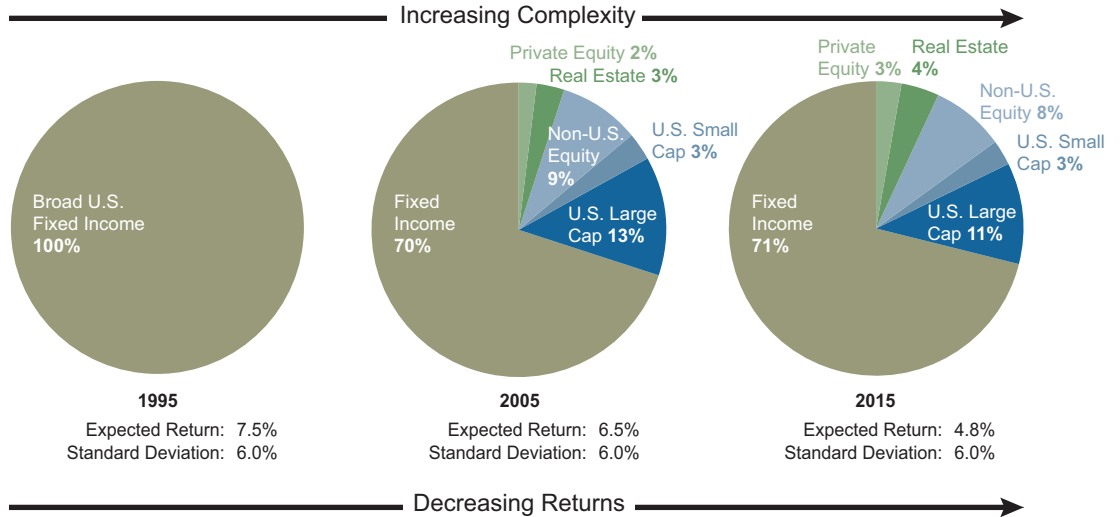
For a standard deviation of 17.2%, which is what we projected for the 2015 portfolio, the risk is much, much higher: Two standard deviations would yield a range of -26.9% to +41.9%.



### What would happen to expected returns if standard deviation was held constant?

**Julia** We conducted that analysis, holding standard deviation at 6.0%. Based on our capital market projections in each of those years, expected returns fell from 7.5% in 1995 to 4.8% in 2015 (**Exhibit 2**).

**Exhibit 2**  
**Same Risk, Decreasing Returns**  
 When target risk is held at 6.0% expected returns fall from 7.5% in 1995 to 4.8% in 2015



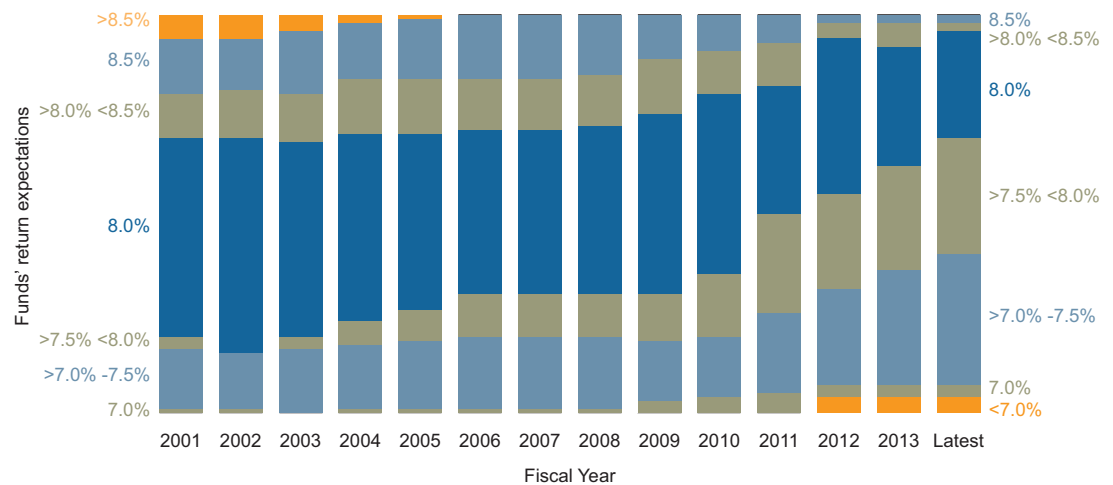
Source: Callan Capital Market Projections

### When did 7.5% become the “Holy Grail” for institutional investors?

**Julia** It has evolved. It begins with expected return, which is also known as the “discount rate.” A discount rate of “X” means the money in the corpus of a pension fund is expected to grow by that amount. Given that expectation, a fund sponsor needs to figure out how the money should be invested in order to achieve that rate of return.

The discount rate used to be almost 9% when capital market projections were much higher in the late 1980s and early 1990s. Then the typical rate went down to 8.5%, then 8%, and now 7.5% (**Exhibit 3**), which is still a bit optimistic given current expectations.

**Exhibit 3**  
**Public Funds**  
 Historical changes to long-term return assumptions



Source: Compiled by NASRA based on Public Fund Survey

### Were you having similar conversations about risk in 2005?

**Jay** Yes, although the return bogey was not 7.5%. It was closer to 8.5%.

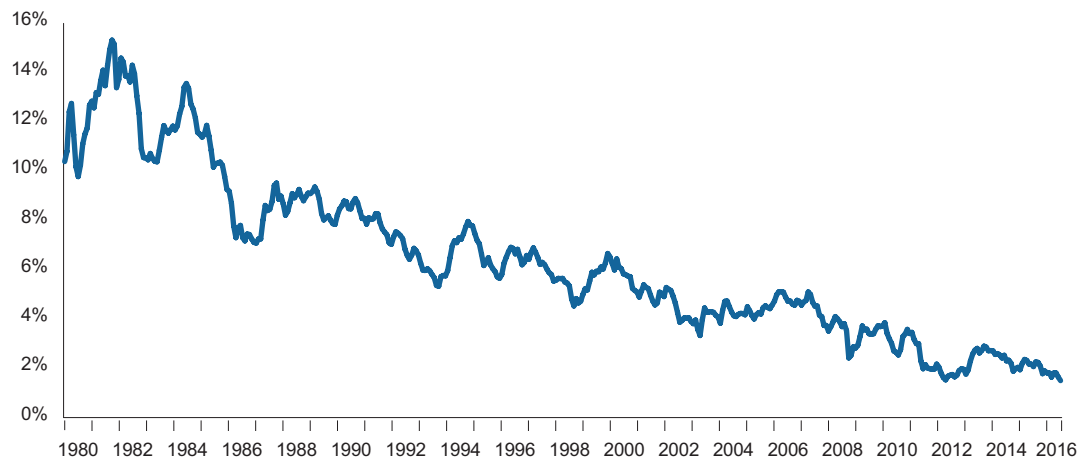
In the late 1990s there was a lot of pressure from plan sponsors on actuaries and advisors to raise discount rates because there had been a period of such incredible capital market performance. They would say, “Why would you put the discount rate at 8%? It will force us to put too much money in the plan. We should put the discount rate at 10%.”

Then we suffered through the almost three-year-long bear market from spring 2000 to well into 2002. The S&P lost half its value, and fund sponsors had to reassess because they were no longer at a 120% funding level. They had to gradually start bringing down assumptions.

#### Exhibit 4

##### A Decades-Long Slide

*10-year Treasury yields  
(December 1979 to  
July 2016)*



Source: Federal Reserve System

### What is the culprit in all of this?

**Julia** There has been a secular decline in interest rates and bond yields (**Exhibit 4**). Callan has been doing capital markets projections since the early 1980s and in 1989 our forward-looking projection for fixed income was 9.4%. Post-financial crisis, the world financial system entered an era of unprecedented monetary easing.

**Jay** Between 2005 and 2015, we saw the tail end of the real estate boom and a bubble in mortgage-backed securities. That bubble burst, which launched the global financial crisis.

Governments and central banks around the world embarked on a unified, worldwide fiscal and monetary response. This response drove interest rates to zero as a way to keep liquidity going, to keep the economy moving, and to push investors into risk assets, because risk assets were expected to create economic growth. The thinking was: Don't let people sit on piles of money; instead, make it so painful that they have to go invest.

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Only in hindsight will it be clear if this policy has been successful. One can argue that this zero-interest rate policy kept the world financial system from going into a deep, dark tailspin from which it may have not yet emerged. However, investors have to live with this overhang of historically low interest rates.

Low interest rates are great for borrowers, but they are not so good for savers or investors. In 1995, a saver could get 7.5% on an account attached to bonds. An investor could live off that yield. Now to get to 7.5%, an investor must have a portfolio that is much riskier and much more complex. An all-bond portfolio today would produce a 2.0% return, which is far too low. The investor would have to eat into the corpus or take a lot more risk.

**If you look at this information from the standpoint of a public fund, it appears there are three potential paths. Path One is to lower return assumptions, leading to increased contributions. Path Two is to lower benefits. Path Three is to maintain return assumptions and load up on risk. None of these are particularly appealing. Is there a fourth path anywhere?**

**Julia** A fourth path is a variation of Path Three, where instead of increasing risk in the form of beta exposure, plans are attempting to restructure their portfolios to increase alpha. This is a path that many fund sponsors are taking.

Finally, funds can also do a little bit of each: lower return assumptions (leading to increased contributions) and reduce benefits while increasing risk. It is not all-or-nothing.

**Why would an investor maintain a 7.5% expectation at this point?**

**Jay** There are significant real-life implications to lowering that expectation. Take a public pension plan with a 7.5% return target that decides to move its discount rate to 6.5% to lower its risk. When the calculation is done to see how well-funded the plan is and how much money needs to be put in, the funded status will go down and the amount of money that must be contributed goes up for a given level of benefits. A higher required contribution means less spending elsewhere in the sponsor's budget, or perhaps it means a tax increase. Alternatively, lower funded status could force a reduction in benefits. Changing the return target has impacts measured in real dollars, and this is a dilemma that a lot of our clients face.

The other challenge is that the typical public pension is well below 100% funded. They are not really earning 7.5% relative to their liabilities. They may only be getting 65-75 cents on the dollar, so now that fund is compelled to have to reach even further and take on more risk, not less.

**Julia** There is also a political aspect to pension funding and the setting of the investment return target, which is why some may be reticent to address it. Some of this is definitely hard news.

**What about taking the long view? If an investor averages a return of 7.5% over the long term, do these lean years matter all that much?**

**Jay** The path to getting to 7.5% can matter a lot, especially when you attach dollars to it. This phenomenon is called "return sequencing." Let's say there are two public funds with two large pools of money that average a 7.5% return over 10 years, both of which are distributing cash over that period of time. Pool A has a couple of bad years up front, whereas Pool B has its bad years interspersed. Pool A may very well come away with less money.

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There are time-horizon issues too. What have pensions done over the past 30 to 40 years? Have they generated 7.5%? Yes, they have. But what were the circumstances under which they achieved this return? Interest rates were higher. Stock market returns were higher than current forward-looking projections. What is a reasonable set of expectations going forward? The path forward is not clear because of the current zero-interest-rate policy. We will enter uncharted territory once interest rates start to go back up.

If an investor has a horizon of 30 or 40 years, it is not unreasonable to expect that returns will revert to their long-term mean, which is higher than our current projections. These long-term investors think, "I probably shouldn't make too big a strategic move with my plan based on the last five years." That may work out, but if there are a couple of missteps in the capital markets that are concentrated, and those missteps drive the funded status into a place where the financial condition of the fund is now in peril, the fund sponsor may never get to enjoy the benefits of that 7.5%.

### **We conducted this analysis pre-Brexit. How does the Brexit affect this environment?**

**Jay** The Brexit just exacerbates the problem. We did this analysis at a point when everyone expected interest rates to rise toward 3% or higher over the next couple of years, and even that did not allow for a lot of fixed income in a portfolio if the investor had a 7.5% return requirement.

Now interest rates have plummeted even more. It was tough getting to 7.5% before; it is even harder post-Brexit.

#### **Key questions for investors to consider**

*Given the nearly three-fold increase in risk required to produce a 7.5% return in 2015 compared to 1995, investors should consider these critical questions in evaluating their portfolios:*

1. What is the purpose of each asset class in the portfolio?
2. Is the fund's fixed income exposure a sufficient enough anchor against risk?
3. Is the fund's fixed income exposure really "fixed income," or is it filled with investments that have a lot of equity-like risks, such as credit?
4. How far can the fund go in terms of exposure to fixed income?
5. Is there something else the investor can do to lower risk?
6. Is the fund still comfortable with its return target, and the resulting risk in the portfolio?
7. Is the portfolio truly a reflection of its tolerance for risk?
8. Can the fund handle lowering return expectations?
9. If not, then what changes can it make?

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## Biographies



**Jay V. Kloepper** is an Executive Vice President and the Director of Capital Market and Alternatives Research. Jay oversees Callan's Capital Markets, Hedge Fund and Private Markets research groups. The Capital Markets group helps Callan's fund sponsor clients with their strategic planning, conducting asset allocation and asset/liability studies, developing optimal investment manager structures, evaluating defined contribution plan investment lineups and providing custom research on a variety of investment topics. The Hedge Fund and Private Markets groups are responsible for specialized consulting including asset class and strategy research, manager searches, portfolio reviews, and performance evaluation.

Jay is the author of the "Callan Periodic Table of Investment Returns," which he created in 1999. He is a member of Callan's Management Committee and is a shareholder of the firm. Jay earned an MA in Economics from Stanford and a BS with honors in Economics from the University of Oregon.



**Julia A. Moriarty, CFA**, is a Senior Vice President and a consultant in the Capital Markets Research group. She is responsible for assisting plan sponsor clients with their strategic planning, conducting asset allocation studies, developing optimal investment manager structures, and providing custom research on a variety of investment topics. Julia joined Callan in 1990 as an analyst in the Client Report Services group, working on the production of comprehensive performance measurement reports and the implementation and testing of new products. Prior to joining the Capital Markets Research group, she was a Software Solutions Consultant in the Client Software Department. Julia is a shareholder of the firm.

Julia earned an MBA from the University of California at Berkeley's Haas School of Business and a BS in Finance from California Polytechnic State University at San Luis Obispo. She earned the right to use the Chartered Financial Analyst designation and is a member of the CFA Society of San Francisco and CFA Institute.



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*If you have any questions or comments, please email [institute@callan.com](mailto:institute@callan.com).*

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