

THERE'S SAFETY IN NUMBERS

Another birthday. Time to think about death. At my age, there is less than one chance in 500 that I will die in the next year. Not enough for even me to worry about. It's just a good time to focus on death in general. I just love to grab the latest mortality tables and compare trends. That's what I do. I am an actuary.

I was lost in my work when the door opened. I recognized the silhouette immediately. Five feet, three inches. Brown hair that curls whenever it rains. A smile that would light up the display on a calculator. But that wasn't what got me. It was the way she talked about retirement programs. A woman of actuarial fantasy.

We had once been an item, but she left me for one of those pretty-boy actuarial firms. I hadn't heard from her since she asked for her data back. I motioned to the nearest chair; the one not covered with investment magazines. "How have you been?" I asked, hoping she had just stopped by to ask about the new IRS limitations.

"I guess I owe you an explanation," she said. "It started off with just a newsletter."

It sounded innocent enough. I wasn't sure if I really wanted to know why she left me, but she went on. "They seduced us with gifts and talk of offices in exotic locations. At first, they were there for us. I thought we could build a lasting relationship. They talked about their big powerful, valuation system."

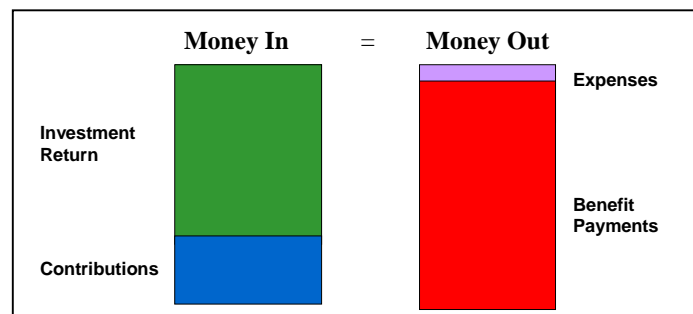
I could tell what was coming next. She had a thing for number crunching. I switched the subject. "You didn't just stop by to discuss old times."

She got to the point. "The Retirement Board is worried that our assumptions may be too aggressive in the current environment. I don't know who else I can turn to. The new actuary has given us their set of assumptions. They don't want to talk about them or help us work through the impact."

Long-term funding perspective

A damsel in funding distress. I did what any red-blooded actuary would do in this situation. I started talking about the long-term funding perspective.

"Over the long term, the money that goes out from the plan can't be any more than the money that comes into the plan." I went to the blackboard and drew some boxes.



She'd seen my sketchings before, smiling to let me know she remembered. She said, "if we don't make contributions now, we'll just have to put more money in later."

Just like old times, I thought. "The assumptions you select determine when you ask for a contribution and how well funded the plan is." I waited for her to nod before going on. "Ideally, you adopt a set of assumptions that will match the future as closely as possible. That gives the best estimate of your real costs and the best picture of where you stand at any point in time."

"But even you can't guarantee the future," she said as she rubbed her hands slowly around the Magic 8-Ball sitting on my desk. "And if we are going to be wrong, my board members want to be safe, not sorry." It was good to know that she wanted to practice safe funding. I just hoped that it wasn't too late.

There are dozens of assumptions in an actuarial valuation. Some big, and some small. Every one of these assumptions impacts on the plan's contribution rate and funded position. In the old days, we might have gone through them all. Given the board meeting scheduled for later that day, I suggested that we focus on the three assumptions that would impact their results the most:

- Investment return.
- Salary increases.
- Inflation.

I could see the tension release at the mention of these assumptions. They were old friends. We would start with the assumption that had the biggest impact and work our way down.

Investment Return

That meant starting with the assumed rate of investment return, and how we set the rate. "Investment return tends to have two components: inflation and the real rate of investment return," I reminded her.

"Our investment consultant has told us that over 90% of our real investment return is based on our asset allocation." I had seen the statistics. Their allocation had been 60% in stocks, 40% in bonds. Pretty standard stuff, so I let her continue. "What if we don't think our asset allocation is good enough to reach the assumed rate? What happens if we move our assumed rate down?"

I pointed back at the picture on the board. Money in equals money out. I motioned to boxes on the left side of the board. "The less money that you get from investment return, the more money you will need from contributions. A lower investment return assumption means higher contributions." Higher contributions. That sounded safer than Tiger Woods with a five-stroke lead.

I didn't stop there. "It also impacts your liabilities and funded position. If you drop your investment return assumption and keep everything else the same, your liabilities will increase."

The liabilities are the portion of the present value of benefits attributed to the past. The funded percentage is the portion of the liabilities covered by assets already in the plan. We used to spend hours discussing liabilities and funded percentage. I wondered if I would have to remind her. Her reply told me not to worry.

“If our money earns less of a return,” she said, “we would need more in the fund today to cover the same future payments.”

“That’s right,” I continued, “and with a higher liability, your funded percentage drops.”

She thought aloud. “If we show a lower funded percentage, that is also a safer result.” Everything seemed to point in the same direction.

“Is there any reason why we shouldn’t drop the rate?” She was smart enough to check for the down side. She knew how to get an actuary excited.

“Many plans have benefit provisions based on the fund’s assumed rate of return.” I took a breath. “A few funds calculate the contributions made by employees using the assumed interest rate. Employee contributions in those plans rise when the investment return is dropped, just like the employer rates. More funds credit interest to employee contributions equal to the plan’s assumed rate of investment return.”

“We do that,” she said. “We also use that rate for crediting DROP account balances. Our DROP participants pay close attention to those balances. I am not sure the board members want to lower the rate they credit for DROP.”

The happy months we had spent designing their DROP provisions. Debating objectives. Researching regulations. The look on her face said she remembered these times fondly as well.

I got back to the discussion at hand. “Investment return sometimes affects other parts of plan operation, like actuarial equivalence factors for optional benefit forms.”

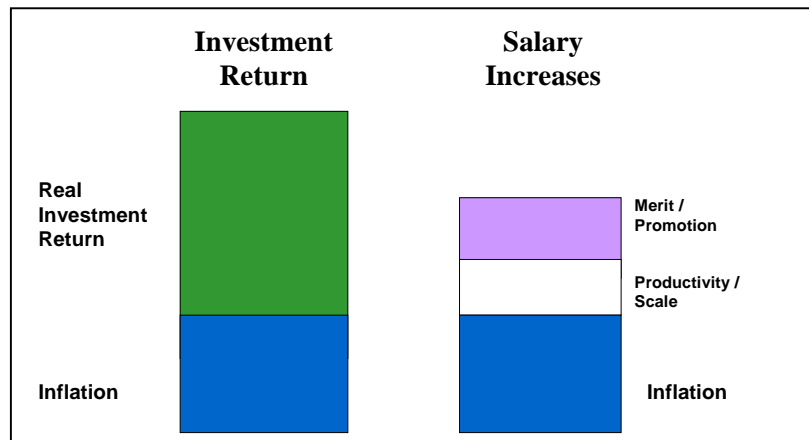
I may have been getting too technical for some, but not for her. “Aren’t those the reduction factors we use when someone wants a 50% or 100% joint and survivor benefits?” she asked.

I let her know the truth. “When the investment return assumption drops, you need a bigger benefit reduction to maintain actuarial equivalence.”

“So, if we reduce the investment return assumption, we pay people smaller benefits, credit less to DROP and employee accounts, ask for larger contributions and show ourselves as being less well funded. That sounds safer, I am just not sure if it sounds like something we want to do.” She understood the issues. It was time to move on.

Salary Increase

The next step down the impact scale brought us to the salary increase assumption. Traditionally, this assumption has three components: inflation, productivity / scale increases, and merit and promotion. Showing off, I drew more boxes.



I could see she was impressed. She seemed to understand the impact. “Our benefits are based on pay. If we assume the salaries will be bigger, we expect to pay bigger benefits. It would feel safer if we assumed we will pay bigger benefits, rather than smaller benefits.”

She was close to the mark, and I let her know it. “If you increase the assumed rate of salary increase, and keep everything else the same, you expect to pay higher benefits. This means that you will need more money to pay for those benefits. This should increase contributions and plan liabilities.”

That was the easy part. Next came the tricky part. With actuarial science, there is usually a twist of some kind.

“The picture gets complicated when the funding method comes into play.” I held back a smile as I continued. “Some plans try to fund as a level percentage of pay. For those plans, an increase in the assumed salary increase rate moves a larger portion of their contributions into future years. This means a smaller portion of the value of benefits gets allocated to past years. This offsets the impact of the benefit increase to some extent.”

“Overall, though,” she wanted to get this straight before moving on, “higher salary increase assumptions are more conservative than lower assumptions. They cause higher contribution rates and lower funded percentages.”

I was impressed. I nodded in agreement.

Inflation

Like a fine cuckoo clock, I could see the gears turning in her head, ready to strike the hour before shooting out the question. “So what happens if you move them both?”

“Good question,” I said as I pointed to the picture of the assumption building blocks. “Inflation is a component of both investment return and salary increase. That is why inflation has the third biggest impact on valuation results.”

She repeated what I had told her before. “If we drop the inflation assumption, we drop the investment return, causing the contributions to go up, while the funded percentage goes down. At the same time, the salary increase rate drops. This causes the contribution rate to go down and the funded percentage to go up.”

She looked confused, and started to spit out questions like watermelon seeds at a picnic. “So it goes up and down. How do we know what the impact will be? Should we raise the inflation assumption or lower it if we want to be safe?”

We didn't have time to let her figure it out on her own. I cut off the questions and filled in the missing piece. “For an average plan, investment return tends to have double the impact of salary increase. That means that if I drop the investment return and salary increase rate by the same amount...”

She finished the sentence. “...Contributions will increase more than they will decrease, and the funded status will go down more than it will go up.”

I wrapped it all together. “That means that a lower inflation assumption is actually more conservative than assuming higher inflation.”

She was stunned into silence, like a keynote presenter at a mime conference. She let the gravity of the statement sink in, repeating what she heard. “A lower inflation assumption is safer. Who would have thought it?”

Other considerations

The clock chimed twelve. It was 11:45. I made a note to fix the clock soon. Her meeting was little more than an hour away. This time, though, I was not going to let her walk out of my life without discussing policy setting.

“Don't just make changes at random. Have a policy in place that states when you should review assumptions and what you are trying to do. It should be part of a series of related policies: funding policy, investment policy. They all come from your funding objectives.”

She sensed my passion. “What should our funding objectives be?”

I knew she had to leave, so I was quick. “They vary by fund. Some funds want to keep contributions as low as possible. Some funds want to keep contributions steady from year to year. Other funds focus on paying benefits without worrying so much about contribution rates. Different plans have different priorities.”

We made a date to discuss funding policy and she headed to the door. Just before she shut it, she said that she understood. “It's not the size of the valuation system, it's how you use it.” Too bad she had to learn it the hard way.

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