



## **Benchmarking Your Retirement Portfolio With a Risk-Free Strategy**

By Laurence B. Siegel  
July 10, 2012

Making the savings from 35 or 40 years of work pay for a retirement of the same length is a real challenge – something that our forebears didn't have to worry about, because they rarely lived past 80, much less to 100 or 105. At a zero real rate of return, you would have to save *half of your income* to enjoy a retirement that long without taking a cut in your living standard.

There is, of course, a better way – judicious use of TIPS and annuities. A riskless strategy using those asset classes can safeguard one's retirement assets and can serve as a benchmark against which riskier portfolios can be measured.

Few live to 105, but some do, and they will probably run out of money using conventional investment strategies. Annuities enable those who die younger to help pay benefits to those who survive – but most investors are loath to transfer control of their portfolio to an annuity provider in exchange for a lifetime stream of income.

The better strategy takes advantage of the longevity-risk-pooling features of annuities without relying on them exclusively. A number of advisors, academics, and investment managers have been pursuing parallel paths toward such a solution.

Joe Tomlinson described one such effort in a March 6 *Advisor Perspectives* [article](#). Tomlinson suggested holding a conventional investment portfolio (either riskless or risky) to fund the first part of one's retirement, and a deferred income annuity (DIA) to fund the latter part.<sup>1</sup>

Let's look at a recent research paper that supports Tomlinson's position, and then show how those findings can be used to compare an equity-oriented retirement portfolio to a passive and riskless retirement benchmark.

### **Using TIPS and DIAs to define a decumulation benchmark**

A recent *Financial Analysts Journal* [article](#) by Stephen Sexauer, Michael Peskin and Daniel Cassidy extends Tomlinson's logic to arrive at a slightly different goal – an investable benchmark for asset decumulation in retirement. The benchmark portfolio consists of about 88% in a laddered TIPS portfolio, providing income to the investor for the

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<sup>1</sup> For an academic's take on this question, see Shankar, S. Gowri, "A new strategy to guarantee retirement income using TIPS and longevity insurance," *Financial Services Review*, vol. 18 (2009), pp. 53–68.



first 20 years – that is, from age 65 to 85 – and 12% in a DIA, providing income for the rest of the investor’s life. The 88-12 portfolio is a benchmark, in that investors can either hold it directly (akin to indexing) to avoid market risk entirely, or try to beat it by blending risky assets into the mix. In the latter case, the benchmark serves as a measuring stick for the success of the investor’s risk-taking.

Because, in this strategy, annuity payments start at age 85, the likelihood is high that the investor will live to collect only a few of them. Thus the deferred annuity is priced cheaply. It is so cheap that a mere 12% allocation to this asset class produces an income in year 21 (the first year of payout) that is equal in real terms to the annual income produced by the TIPS ladder; hence the 88/12 split. In other words, the investor does not take a pay cut, even when the last TIPS bond is redeemed. Unfortunately, there are no real (inflation-adjusted) DIAs available currently, so the income remains level in nominal terms after that time – but most investors won’t care, since expenses (other than those related to health care) tend to tail off after age 85. (When using this strategy, it’s prudent to maintain a separate reserve or insurance policy for nursing care and/or in-home health care; unlike ordinary living expenses and travel-and-leisure expenses, these tend to shoot upward near the end of life.)

### **The defined contribution decumulation benchmark (DCDB) of Sexauer, Peskin and Cassidy**

Sexauer, Peskin and Cassidy refer to their benchmark as the DCDB, or defined contribution decumulation benchmark, and it essentially a strategy for spending. The acronym DCDB also evokes the phrase “DC to DB,” defined-contribution to defined-benefit, which refers to the fact that, if a DCDB strategy is used to manage post-retirement spending, a DC plan can offer all the benefits of a typical DB plan, offering a fixed income throughout retirement.

The 88/12 split is just an example, and it reflects deferred-annuity pricing for a 65-year-old man in the United States and interest rates that prevailed at the time the article was written (September 2010). Updates, available [here](#), show that, while the split is still 88/12, the first year’s income per \$100,000 invested has slipped from \$5,017 to \$4,684, thanks to declining interest rates.

The percentage allocation to the DIA is higher for those initiating the program later than age 65, and lower for those initiating the program earlier. The initial split is also affected by interest rates. After the program has been put in place, the allocation to TIPS (or other conventional investment assets) declines over time as that asset is spent down, and at age 85 the allocation is 100% in the DIA. Of course, investors may choose to put only part of their assets in a DCDB strategy, in which case the allocation within the strategy does not tell the whole story.



## Behavioral considerations

The psychological benefit of the DCDB strategy is considerable. Most people can't plan the rest of their lives, from a financial standpoint or any other. Executing a 20-year plan is daunting enough, but it still feels much more manageable. You save enough money to last for the first 20 years of retirement, plus the amount you need to buy the deferred annuity, and generating income beyond age 85 becomes someone else's problem. (That said, it becomes your problem again in case of hyperinflation, or if the annuity issuer defaults and the annuity payment you had coming was greater than the amount that your state's annuity guarantee pool provides.)

## Benchmarking a conventional portfolio with the DCDB

Most investors will not be happy with the rock-bottom rates-of-return on riskless TIPS. The real yield on a 10-year TIPS is -0.54%; on a 20-year issue, it's 0.09%. The nominal yield – what is actually paid to investors – equals the real yield plus the change in the CPI over the relevant time horizon, so assuming 2% inflation, expected nominal TIPS yields vary between about 1.5% and 2.0%.

As a result, investors will seek out investments with higher expected returns, such as equities, corporate bonds, commodities, hedge funds, and real estate. Of these, equities are by far the most popular. Let's build an example using a 40/60 equity/TIPS portfolio and compare the results to that of the DCDB benchmark under three investment scenarios: expected, bullish, and bearish. To keep things simple, we'll assume U.S.-only investments, although investors shouldn't restrict their equity investments to one country; they should hold global portfolios.

Investment returns are modeled as follows:

- *Expected, or most likely, scenario.* In the expected case, the equity total return is 5.6%, equal to the current nominal 10-year Treasury bond yield of 1.6% plus a 4% equity risk premium (the average risk premium from the Hammond, Leibowitz, and Siegel study recently reviewed [in these pages](#)).
- *Bullish scenario.* In the bullish case, the equity total return is equal to the earnings yield on the S&P 500 (6.9%) plus a high inflation forecast of 3%, for a total of 9.9%.
- *Bearish scenario.* In the bearish case, the equity total return is equal to the dividend yield on the S&P 500, currently 2.0%, with zero capital appreciation; in this scenario, inflation is assumed to be 1%.

In all scenarios, TIPS are assumed to provide a return equal to their current real yield plus the inflation assumption (1%, 2%, or 3%).



My simulation covers a period of 20 years. Rebalancing is annual. In both the conventional portfolio and the DCDB benchmark, I reserved 12% of the initial investment for purchase of the deferred annuity; it would be more interesting to see how large of a single-premium immediate annuity (SPIA) the investor could afford at age 85, given the investment results of the conventional portfolio, but I have no way to price an SPIA issued to an 85-year-old 20 years from now, when longevity assumptions and interest rates will have changed.

Because the DCDB is a benchmark of cash flows (income to the participant) from a self-liquidating TIPS portfolio (that is, one that has no value after 20 years), I need to keep track of cash flows in the conventional portfolio too. I used a 5% spending rule. The cash flow from the conventional portfolio is set at 5% of initial capital, inflating with the CPI, where that amount consists of the dividend yield on the stocks and nominal yield on the TIPS, plus (if the funds are available) the proceeds from liquidating enough of the portfolio to satisfy the 5% spending rule. Any remaining assets in the conventional portfolio at the end of year 20 are treated as a lump-sum cash flow to the investor in that year (labeled as “terminal value of conventional portfolio” in Figure 1 below).<sup>2</sup>

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<sup>2</sup> Note that my simulations assume a linear growth path, rather than the fluctuating asset values that come from investing partly in stocks. I did this partly for computational ease, but also because any particular draw from a stock-return distribution with volatility could be criticized as unrepresentative, due to “sequencing risk.” If, for example, the expected-return scenario with an equity return of 5.6% was constructed using low returns at the beginning and high returns at the end, this is much more favorable to investors (who typically have more money later in their lives) than the opposite scenario, even though the two have the same compound return.

Figure 1

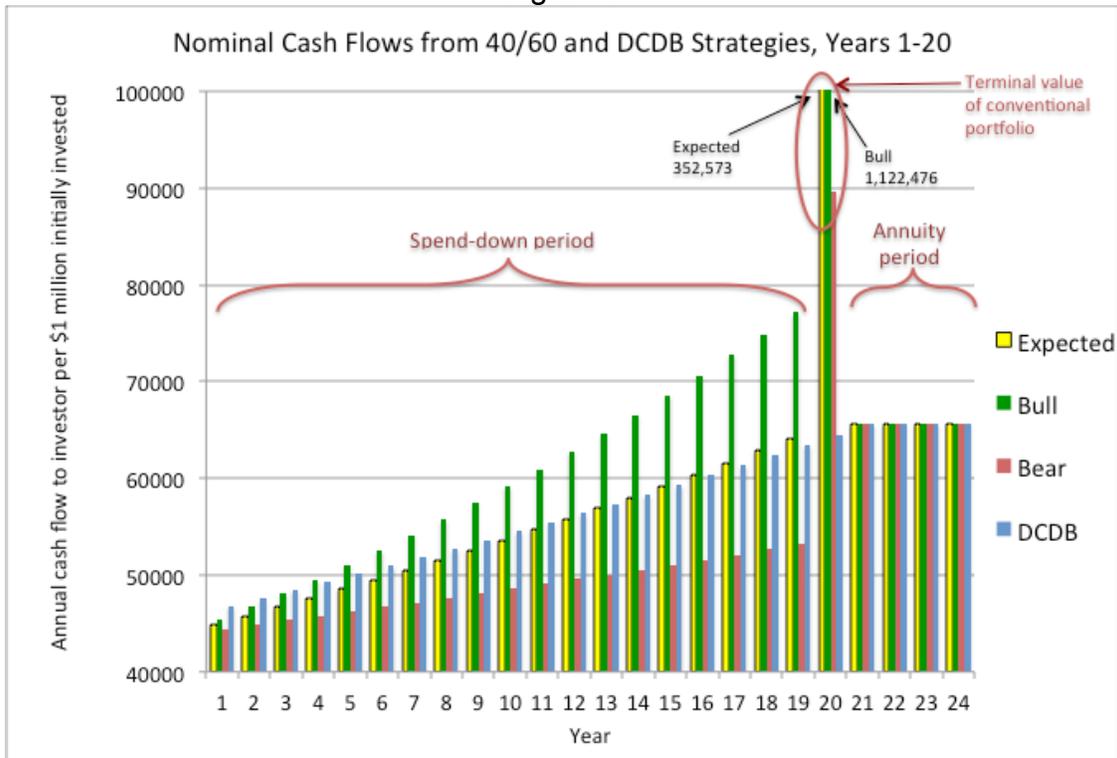


Figure 1 shows the cash flows to the investor. The DCDB strategy provides cash flows of \$46,840 each year, inflating at the CPI rate until year 21, when the cash flows level off at \$65,620 (in what will then be "current" dollars) because the investment portfolio has been spent down to zero and the DIA has kicked in.

The expected-return scenario provides year-by-year cash flows that are very similar to that of the DCDB, except in the 20<sup>th</sup> year, when the 40/60 investment portfolio gets liquidated at a large profit. (The total cash flow in that year, including dividends, interest, and the scheduled return of capital, is \$352,573.)

The bullish scenario produces both larger yearly cash flows and a much larger profit upon liquidation than the DCDB scenario; the year 20 total cash flow exceeds \$1 million. The bearish scenario generates lower yearly cash flows than the DCDB strategy but a modest profit in the 20<sup>th</sup> year. Thus, the DCDB serves as a baseline for comparing other strategies, as well as providing the asset weights and withdrawal rates for a minimum-risk strategy suitable to very conservative investors.

The cash flows after year 20 are the same for all strategies, because we have assumed that 12% of the initial investment is used to buy a DIA. The payments do not stop at year 24 (the last year in the chart) but continue until the annuitant's death. The excess funds



provided by the risky strategies in year 20 can be spent, saved, or used to buy additional annuity units, thereby increasing the retiree's income after age 85.

Note that the bearish scenario is not in any sense a worst-case scenario. The bearish scenario assumes another 20 years of unchanged stock prices; in the worst case, stocks decline. Thinking about the worst-case scenario also leads one to consider the possibility of default or compromised payment on TIPS, a very unlikely outcome that would only occur if there is hyperinflation. Such a scenario would adversely affect both the conventional strategy and the DCDB strategy, however, and it is hard to say which would suffer more, because, in such a case, investments other than TIPS would almost certainly default or greatly decline.

## Summary

The work of Tomlinson and others makes it clear that a strategy combining a conventional portfolio with DIAs reduces the burden on investors of planning for a lifetime and makes the retirement income generation problem manageable. Sexauer, Peskin and Cassidy take the concept a step farther by noting that the TIPS-plus-deferred annuities strategy is the lowest-risk position available to investors who are averse to annuitizing their whole portfolio, and they calculate the cash flows from it. They then use these cash flows as a benchmark for riskier strategies that are undertaken in an effort to earn higher returns.

I don't know what asset mix I'll hold in the part of my retirement fund that's earmarked for the first 20 years, but the deferred annuity is such an appealing idea, I'm certain I'll use it. I just hope that diversifying among two or three annuity issuers is enough protection.

I'd hate to have to go back to work at 85.

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