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Global Pension Funds: The Coming Storm

By Nicolas Rabener (https://blogs.cfainstitute.org/investor/author/nicolasrabener/)

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The Global Pension Funds Crisis

Tens of thousands of Dutch workers took to the streets in the spring of 2019 to protest a proposal to raise the retirement age. (https://www.ft.com/content/83442daf-0399-3021-81fd-1f479ebfd27c)

Then, in October, the two largest Dutch pensions funds, ABP and PFZW, warned that their funding ratios were too low and that they would have to cut pension benefits for millions of retirees (https://www.reuters.com/article/us-netherlands-pensions/top-two-dutch-pension-funds-abp-pfzw-warn-of-impending-payout-cuts-idUSKBN1WW0JK). This triggered tense discussions between the pension funds, an alarmed government, and enraged trade unions.

Yet the Dutch pension system is among the best-managed in the world, and both ABP and PFZW are in enviable positions with funding ratios of approximately 90%. Other countries have it much worse. The situation in some US states is particularly grim: The public pensions of Kentucky, New Jersey, and Illinois, for example, all have funding ratios below 40% (https://taxfoundation.org/state-pension-plan-funding-2019/) and are effectively irreparable.

To make matters worse, the current return assumption for the average US public pension fund is 7.25%, according to the National Association of State Retirement Administrators (NASRA) (https://www.nasra.org/latestreturnassumptions). Such a figure is overly optimistic in a low interest rate environment. And if the return expectations are unrealistic, that means the liabilities and funding deficits are even larger.

So what is the true outlook for returns from US equities and bonds based on historical data? And what needs to happen to achieve the 7.25% return assumption?

The Life and Death of the 60/40 Portfolio

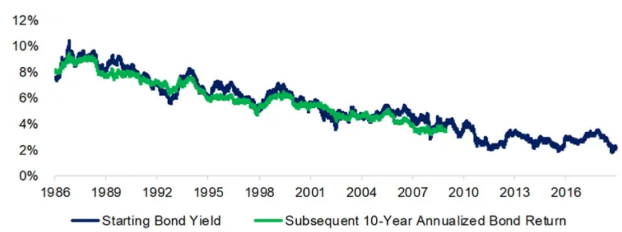
A traditional equity/bond portfolio, commonly called the 60/40 portfolio based on its allocations, has served US investors well over the last few decades. But those salad days, with their secular bull markets in both stocks and bonds, are likely coming to an end.

It's not hard to see why.

Bonds have declined consistently since the 1980s and generated attractive returns for investors. But the bond yield at the time of purchase — the starting bond yield — largely determines the nominal total return over the next decade. So what you see is what you get.

With current bond yields at approximately 2%, the fixed-income portion of the portfolio is unlikely to generate the type of returns that it has in the past.

US Bond Returns vs. US Starting Bond Yields



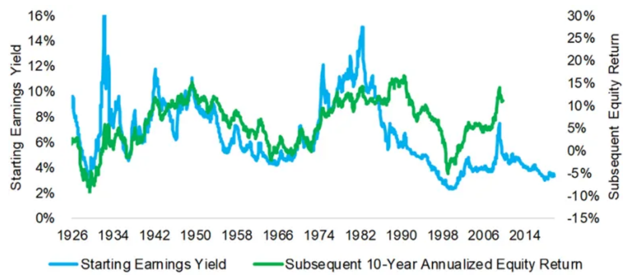
Source: FactorResearch. Bonds returns are represented by the Vanguard Total Bond Market Index Fund (VBMFX) and bond yields by a combination of US 10-year Treasury notes (70%) and US corporate investment-grade bonds (30%).

The relationship between valuation and subsequent returns is not as statistically meaningful for equities as it is for fixed income. Stocks only have a 0.55 correlation compared with 0.97 for bonds. Nevertheless, historically the lower the earnings yield — calculated as the inverse of the cyclically adjusted price-to-earnings ratio (CAPE) — at the time of the investment, the lower* the subsequent returns.

But as emerging economies become more technologically driven and different accounting standards are adopted, older valuation data may lose some of its relevance. While slightly higher valuations may be justified, these still mean-revert over time.

The current earnings yield of 3.3% equates to a CAPE ratio of 30, which is expensive even in light of recent history, and suggests low returns for US equities over the next 10 years.

US Equity Returns vs. US Starting Earning Yields



Sources: Robert Shiller, FactorResearch. Earning yield is log scale.

By combining the expected returns from equities and bonds based on historical data, we can create a return matrix for a traditional 60/40 portfolio. Our model anticipates an annualized return of 3.1% for the next 10 years. That is well below the 7.25% assumed rate of return and is awful news for US public pension funds.

Subsequent 10-Year Annualized Return for Traditional 60/40 Equity/Bond Portfolio

Today

Starting Bond Yield						
> 8%	1.5%	5.0%	7.2%	8.5%	9.5%	9.8%
7% - 8%	1.1%	4.5%	6.7%	8.1%	9.0%	9.3%
6% - 7%	0.7%	4.1%	6.4%	7.7%	8.7%	9.0%
5% - 6%	0.3%	3.8%	6.0%	7.3%	8.3%	8.6%
4% - 5%	(0.1%)	3.4%	5.6%	6.9%	7.9%	8.2%
< 4%	(0.4%)	3.1%	5.3%	6.7%	7.6%	7.9%
Starting CAPE Ratio	> 40	20-40	13-20	10-13	8-10	< 8

Source: FactorResearch.

Alternatives to the Rescue?

If US equities can't deliver the required returns, where can pension funds go? With low or negative interest rate environments in much of the developed world, international bonds aren't especially appealing. So what about international and emerging market equities, real estate, hedge funds, and private equity?

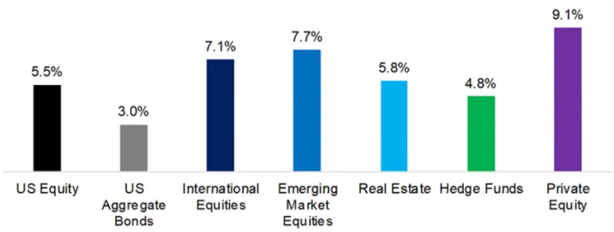
Large asset managers provide 10-year return assumptions for various asset classes. We aggregated this data from a number of firms and found that almost every asset class is expected to outperform US equities and bonds.

Of course, these expected returns should be treated with severe caution for several reasons:

- Forecasted asset prices are highly unreliable.
- Asset managers often have conflicts when creating forecasts since they market products for the various asset classes. That's why it is so rare to see negative return forecasts.

- Forecasts for alternatives are derived from data-bias-prone indices that tend to overstate returns.

Asset Manager Capital Market Assumptions: Expected Annualized Returns, 2019



Sources: Various asset managers, FactorResearch.

Though unreliable, capital market assumptions are one of the only games in town. There are few alternative methodologies for portfolio construction. In addition to return estimates, some asset managers also forecast volatility and correlations. These tend to demonstrate that given their low correlations with equities, such alternatives as real estate, hedge funds, and private equity offer diversification benefits. But that conclusion is a bit misleading: The low correlations can also be attributed to smoothed valuations and a lack of daily mark-to-market accounting.

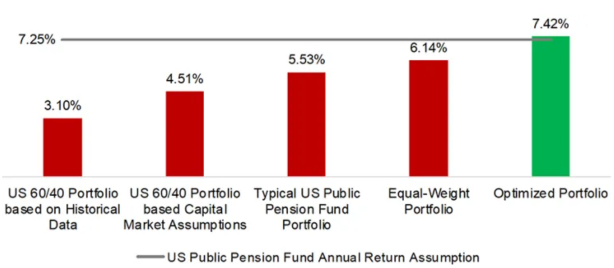
Because of this, we ignored the interaction among asset classes and created four simple portfolios composed of seven major asset classes: US equities, US bonds, international stocks, emerging market stocks, real estate, hedge funds, and private equity.

- **US 60/40 Portfolio**: A traditional equity/bond portfolio, one based on historical data and another on capital market assumptions.
- **Typical US Public Pension Fund Portfolio:** 50% equities, 22% fixed income, 7% real estate, and 19% alternatives, according to NASRA.
- **Equal-Weight Portfolio:** Allocates equally among the seven asset classes.
- **Optimized Portfolio:** Allocates to meet or exceed the 7.25% return assumption of US public pension funds with a 25% maximum allocation per asset class.

Our results are bad news for public pension funds: Except for the Optimized Portfolio, all our models failed to hit the 7.25% mark.

The Optimized Portfolio exclusively allocates to international and emerging stocks, real estate, and private equity. It has zero exposure to US equities or bonds. Most investors would consider this extreme and risky, although it is slightly reminiscent of the current allocation of Yale University's endowment fund.

Asset Allocation Models and Expected Annualized Returns, 2019



Source: FactorResearch.

Further Thoughts

Pension funds need to reduce costs. They can accomplish this, in part, by fully embracing passive management and low-cost alternatives. But that won't be enough to meet their goals.

Governments will have to increase the retirement age, and by a significant margin, to reduce liabilities. But given the poor return outlook, that likely won't be sufficient either.

And that means pension benefits have to be cut. And that will likely spur more protests.

With inequality already tearing at the fabric of society, reducing benefits to the elderly has the potential to rip it apart.

So demonstrations like those in the Netherlands earlier this year may turn out to be the initial raindrops of a much larger storm.

** The text initially read "the higher the subsequent returns." That was an error and has been corrected.*

For more insights from Nicolas Rabener and the FactorResearch (https://www.factorresearch.com/) team, sign up for their email newsletter (https://www.factorresearch.com/research-subscription).

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Nicolas Rabener is the managing director of FactorResearch, which provides quantitative solutions for factor investing. Previously he founded Jackdaw Capital, a quantitative investment manager focused on equity market neutral strategies. Previously, Rabener worked at GIC (Government of Singapore Investment Corporation) focused on real estate across asset classes. He started his career working for Citigroup in investment banking in London and New York. Rabener holds an MS in management from HHL Leipzig Graduate School of Management, is a CAIA charter holder, and enjoys endurance sports (100km Ultramarathon, Mont Blanc, Mount Kilimanjaro).

10 thoughts on "Global Pension Funds: The Coming Storm"

1. **— Tom Gale says:**

   17 December 2019 at 09:44 (https://blogs.cfainstitute.org/investor/2019/12/16/global-pension-funds-the-coming-storm/#comment-663787)

   The situation is much worse than explained. The liability calculation for pensions assumes pensions are fully funded and uses the same return assumption in discounting future cash flows to pension recipients. If a pension is 50% funded then the return on assets needs to double, which in this case would be 14.5%, not 7.25%. For pension funds that are not fully funded, there is no asset allocation using the above return expectations that will remain viable long term.

   Reply (/investor/2019/12/16/global-pension-funds-the-coming-storm/?replytocom=663787#respond)

   1.  **— Nicolas Rabener (http://www.factorresearch.com) says:**

      18 December 2019 at 15:10 (https://blogs.cfainstitute.org/investor/2019/12/16/global-pension-funds-the-coming-storm/#comment-663939)

      Hi Tom, thanks for the excellent point regarding return assumptions and funding levels, which paints an even more depressing picture! Best regards, Nicolas

      Reply (/investor/2019/12/16/global-pension-funds-the-coming-storm/?replytocom=663939#respond)

2. **— Terry Fisher, CFA (https://woodgundyadvisors.cibc.com/web/terry-fisher/home) says:**

   17 December 2019 at 14:42 (https://blogs.cfainstitute.org/investor/2019/12/16/global-pension-funds-the-coming-storm/#comment-663807)

   See the error on page 2: lower earnings yield means lower (not higher) subsequent returns.

   Reply (/investor/2019/12/16/global-pension-funds-the-coming-storm/?replytocom=663807#respond)

1.  — **Nicolas Rabener (http://www.factorresearch.com) says:**

   18 December 2019 at 15:08 (https://blogs.cfainstitute.org/investor/2019/12/16/global-pension-funds-the-coming-storm/#comment-663938)

   Hi Terry, thanks for catching the error, we corrected that. Best regards, Nicolas

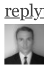
   Reply (/investor/2019/12/16/global-pension-funds-the-coming-storm/?replytocom=663938#respond)

3. — **Colleen Robertson CFA says:**

   18 December 2019 at 20:31 (https://blogs.cfainstitute.org/investor/2019/12/16/global-pension-funds-the-coming-storm/#comment-663962)

   Do you have any data on the current condition of US private pensions? Is there any good news there?

   Reply (/investor/2019/12/16/global-pension-funds-the-coming-storm/?replytocom=663962#respond)

4.  — **Nicolas Rabener (http://www.factorresearch.com) says:**

   19 December 2019 at 04:26 (https://blogs.cfainstitute.org/investor/2019/12/16/global-pension-funds-the-coming-storm/#comment-664007)

   Hi Colleen, if you're referring to corporate pension funds in the US, then these are in slightly better shape than public pension funds with 86% funding. Here is a recent article:
   https://www.ai-cio.com/news/investment-gains-lift-us-corporate-pension-funding-november/ (https://www.ai-cio.com/news/investment-gains-lift-us-corporate-pension-funding-november/)

   In case you meant how well private US citizens are prepared for retirement, then this is a more much complex topic. For example, the median savings seem to be low (median $17,000 for 56-61 years old), but there is also home ownership and pension income. Overall, US citizens don't seem well prepared. Here are some statistics.
   https://www.american-equity.com/resources/blog/a-closer-look-at-the-average-retirement-savings-by-age (https://www.american-equity.com/resources/blog/a-closer-look-at-the-average-retirement-savings-by-age)
   Best regards, Nicolas

   Reply (/investor/2019/12/16/global-pension-funds-the-coming-storm/?replytocom=664007#respond)

5. — **Tobias says:**

   20 December 2019 at 09:16 (https://blogs.cfainstitute.org/investor/2019/12/16/global-pension-funds-the-coming-storm/#comment-664243)

   My reading of the results is that your optimized portfolio is not very informative. It shows a corner solution. Imagine US equity return assumption to be 0.2% higher and real estate return assumption to be 0.2% lower, then the portfolio would most likely invest 25% in US equities and nothing in real estate. Bottom line: be careful to draw any conclusions from poorly designed optimizations that are highly sensitive to input facors.

   Reply (/investor/2019/12/16/global-pension-funds-the-coming-storm/?replytocom=664243#respond)

6. — **james rich says:**

21 December 2019 at 13:07 (https://blogs.cfainstitute.org/investor/2019/12/16/global-pension-funds-the-coming-storm/#comment-664368)

Excellent discussion. Thanks.

I think the situation with state pension funds is even worse than indicated, though. Corporations use interest rates based on long term high-quality bonds to discount back their liabilities. Reasonable. State governments use expected portfolio returns. One could never settle those liabilities, of course, with an insurance company based upon expected portfolio returns. And, as you indicate, their expected returns are backward-looking rather than forward-looking.

I'm not at all convinced that cutting benefits would be politically acceptable. The more likely outcome, IMHO, higher tax rates. And US tax rates are well below those of other OECD countries so there is probably room for such increases.

Bottom line for investors – consider Roth accounts rather than traditional tax-deferred accounts.

Reply (/investor/2019/12/16/global-pension-funds-the-coming-storm/?replytocom=664368#respond)

7. — **Mario DellOro says:**

21 December 2019 at 14:30 (https://blogs.cfainstitute.org/investor/2019/12/16/global-pension-funds-the-coming-storm/#comment-664379)

Demographics is very hard to change… The continued aging of population and the growing life expectancy makes defined distribution system totally unviable in the current conditions unless you expect ridiculous high return on investments. Therefore, there is only one solution… "Increase retiring age and decrease defined benefits" Most analysts will be inclined to say doing so is not possible and will lead to a social crisis. This crisis will only be resolved once the millennials realize that the Baby Boomers are taking them for a ride. Therefore, at the end it will lead to a huge conflict between generations. Only other alternative is a huge transfer from Government (State or Federal).
The only realistic recommendation is to stop the current Ponzi Scheme and introduce big incentives for Defined Contribution Schemes.

Reply (/investor/2019/12/16/global-pension-funds-the-coming-storm/?replytocom=664379#respond)

8. — **Paul OBrien says:**

21 December 2019 at 18:10 (https://blogs.cfainstitute.org/investor/2019/12/16/global-pension-funds-the-coming-storm/#comment-664398)

Nicolas, can we bury the 60/40 as a reference point for institutional asset allocation? Not only won't it work, no one is there any more. Your numbers showing higher expected returns for the typical public pension portfolio than for a 60/40 means they are running more risk. Looks like 70/30 or 75/25 to me. Big endowments are often running even more risk.

Also, while pension systems are unsustainable, their failure mode, and the right defensive asset allocation, is very much in question. Cutting benefits and raising retirement ages are deflationary steps. They will drive rates down even more, further depressing expected returns. Bonds win. A vicious cycle. But the other policy path is just printing the money to pay benefits. (The Feds will have to bail

THIS IS A SNACKBAR ACTION

out the states at some point). This will lead to inflation, higher nominal returns but losses in real terms. Bonds lose, perhaps big. TIPS are the only asset to do well in both regimes.

Reply (/investor/2019/12/16/global-pension-funds-the-coming-storm/?replytocom=664398#respond)

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