Slow Growth Is Bad News for U.S. Pension Investors

October 2017 | Kurt Winkelmann, Raghu Suryanarayanan, Attila Agod, Ferenc Szalai

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Why This Matters?

This paper builds on our earlier work linking macro-economic conditions to asset returns. In this paper we show that a prolonged period of below-trend real economic growth can lead to deterioration in pension funding ratios.

Who Should Read This Paper?

Investment strategists and asset allocators should find this paper to be of interest.

01. Introduction

Despite the prolonged equity market rally, recent headlines[1] suggest that pension funding continues to be a challenge for U.S. public funds.

According to our macro-based long-term return and risk models, the single largest risk to U.S. public funds is the continuation of below-trend real growth. Our earlier notes have pointed out that slow restoration of real growth is important because it implies prolonged periods of low real returns. Thus, our baseline view of prolonged below-trend real growth suggests that it is likely that funding will continue to be a challenge for U.S. public funds.

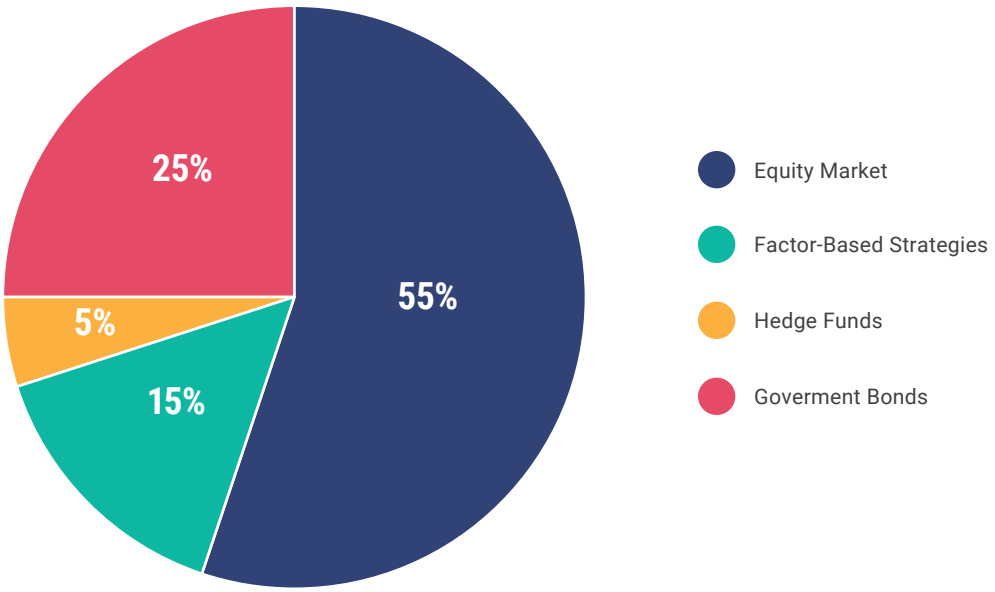
[1] See, for instance, the Economist, October 7, 2017.

02. Portfolio Composition

To illustrate the impact of continued low real growth on pension funding, we used the portfolio shown in Exhibit 1. The exhibit shows the median asset allocation for the 112 funds surveyed by the National Association of State Retirement Administrators (NASRA).[2] It is evident from the exhibit that the median fund allocation in the NASRA data has over 50% of the portfolio allocated to equities or equity-like investments.

[2] The NASRA asset allocations are specified in terms of equities, real estate, bonds, cash and alternative (private equity and hedge funds). We modeled alternatives as factor-based strategies tilted towards small cap and value (i.e. growth-sensitive strategies). See www.nasra.org

Exhibit 1 - The Representative Pension Fund Has Significant Equity Exposure



SOURCE: NASRA DATA, NAVEGA STRATEGIES LLC CALCULATIONS

In addition to asset allocation information, NASRA provides data on funding ratios and target rates of return for each of the funds in their survey. Accordingly, the median funding ratio for the fund in the NASRA survey was 75%, and the median target rate of return was 7.5%.[3]

Target rates of return are set by each fund, using asset class expected return assumptions. In 2001, the median target rate of return was 8.0%, implying that the median target rate of return has dropped 50 basis points over the past 17 years. By comparison, over the same time period the yield on U.S. Treasury 10-year notes has declined from 4.5% (as of year end 2000) to 2.3% (as of end of Q3, 2017), or 220 basis points. Thus, the implied risk premium for the U.S. public funds in the NASRA data has increased by around 180 basis points over the past 17 years.

Exhibit 1 and the pension funding data prompts two questions. First, how much of the asset risk in the prototypical pension fund can be attributed to real growth risk. Second, how sensitive is the funding ratio to an extended period of low real growth.

[3] The funding ratios reported by NASRA were taken from fund reports and calculated using the target rate of return. It is worth noting that according to the NASRA data, public fund funding ratios were 100% in 2000. See www.nasra.org

03. Portfolio Risk

Pension fund risk analysis usually focuses on the levels of, and interactions between, asset class and strategy risk. These analyses use time series of asset class returns to determine overall portfolio risk and the channels of portfolio risk (the so-called "risk budget"). However, this framework cannot systematically address the effects of prolonged periods of below-trend real growth, or the impact of persistent shocks to inflation.

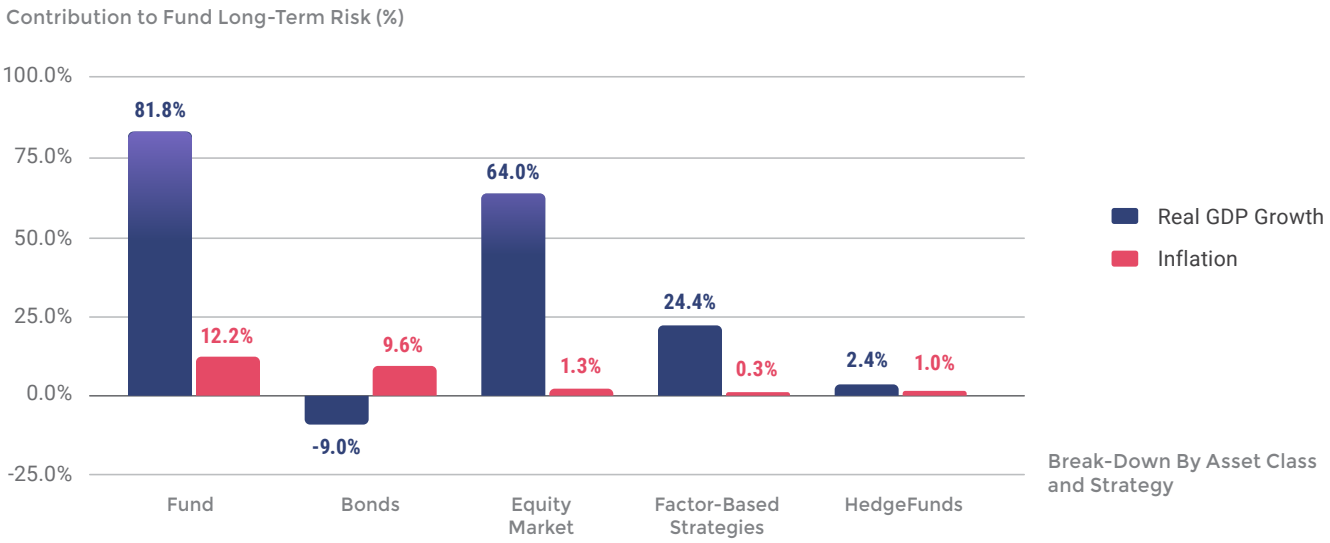
An alternative approach is to rely on the long-run risk (LRR) modeling agenda. The premise behind LRR models is that asset values depend on cash flow growth rates and discount rates. Each of these can, in turn, be linked to macroeconomic factors such as real GDP growth and inflation. By aggregating across all investments in a portfolio, analysts can determine the exposure of any portfolio to persistent shocks to real GDP growth and inflation. This approach has two benefits for institutional investors: first, it is consistent with the long-term objectives behind most institutional portfolios. Second, it offers a framework for systematically analyzing the impact of sustained periods of below-trend real growth.

Exhibit 2 applies the LRR framework to the asset allocation of Exhibit 1. The exhibit shows the macro-risk decomposition for the fund and its break-down by each principal investment in the fund. Based on our models, the long-term risk of the prototypical pension portfolio is about 8%. The following points emerge from Exhibit 2:

- Over 80% of the LRR of the portfolio is attributable to real GDP growth shocks
- The high real GDP growth risk exposure is due to the portfolio's enhanced allocations to growth-sensitive equity market and factor-based strategies
- The portfolio's exposure to inflation risk mostly comes from allocations to nominal bonds

Having analyzed exposures of typical U.S. pension funds to trend growth and inflation shocks through the lens of our models, we now explore the implications for funding ratios of different scenarios for future growth and inflation.

Exhibit 2 - Real GDP Shocks Are The Largest Source of Fund Long-Term Risk



The Exhibit shows, for a typical U.S. pension fund portfolio, the real GDP growth and inflation contributions to long-term risk implied by our models, and the break-down of these contributions by the main asset classes and strategies the portfolio is allocated to.

SOURCE: NAVEGA STRATEGIES LLC RESEARCH

04. Scenarios and Funding Impact

Let's apply the LRR framework and consider the impact on pension funding of four specific scenarios for macroeconomic conditions over the next 5 years. These scenarios (summarized in Exhibit 3) are:

- A baseline scenario of low inflation and low long-term trend real growth
- Return to pre-2000 long-term trend growth and low inflation, 5 years from now
- Stagflation, with declining real growth (20bp/year) and increased inflation (60bp/year)
- Continued secular decline in real growth by 20bp per year over five years

The impact on pension funding of each of these scenarios is shown in Exhibit 4. The exhibit shows the projected funding ratio in five years time under each of the four scenarios.[4]

[4] The impact of each scenario on asset and strategy returns is detailed in our companion piece, "The End of Asset Price Reflation?".

Exhibit 3 - Alternative Macroeconomic Scenarios

Scenario	Real Growth (%)	Inflation (%)
Baseline	2.0	2.0
Restored Growth	2.5	2.0
Secular Decline	1.4	2.0
Stagflation	1.4	3.8

The Exhibit shows average U.S. growth and inflation rates over the next 5 years under 4 alternative scenarios. All growth and inflation rates are annualized percentage rates.

SOURCE: NAVEGA STRATEGIES LLC RESEARCH

It is evident from the exhibit that unless real growth reverts to its pre-2000 trend, funding ratios will erode further (all else equal). In the baseline scenario, with low real growth and benign inflation, the representative funding ratio is projected to decline from 75% to 72.5%. Further erosion of growth, or an acceleration of inflation (the secular decline and stagflation scenarios) lead to further projected declines in funding ratios. In each of these scenarios, low real growth is consistent with low equity and factor returns. Portfolios with high equity allocations or investments whose returns are highly exposed to real GDP growth pick up the low returns.

By contrast, in the scenario where long-term trend real growth returns to its pre-2000 level, long run equity returns increase and funding ratios do not deteriorate. It can be concluded that the high target returns and high equity allocations shown in the NASRA data have implicitly embedded in them a view that long-term growth will revert to its pre-2000 level. Thus, the biggest single risk to pension funding is that long-term trend growth does NOT revert to its pre-2000 level.[5]

[5] A knock-on effect of low real growth is the impact on contribution rates. Contributions depend on a combination of wages and taxes, both of which depend upon real growth. A full accounting of the macro risk associated with pension funding would combine the effects of low growth on asset returns with the effects on contributions.

Exhibit 4 - Restored Growth Is Needed to Maintain Funding Levels

Scenario	Projected Funding Ratio (%)
Baseline	72.5%
Restored Growth	78.1%
Secular Decline	67.3%
Stagflation	67.7%

The Exhibit shows the projected funding ratio after 5 years implied by our models under each growth and inflation scenario.

SOURCE: NAVEGA STRATEGIES LLC RESEARCH

05. Conclusions

Equity holdings represent a significant exposure for many U.S. pension investors. These holdings reflect a view on real economic growth. We show that the high equity allocations for a representative U.S. public pension fund are consistent with over 80% of long-term risk attributable to real economic growth. A consequence of these allocations is that prolonged periods of low real growth (i.e. growth rates that are consistent with a lower long-term mean) are also consistent with further deterioration in pension funding ratios. Our analysis suggests that pension investors who agree with our baseline view on long-term trend growth will find it difficult to make up funding deficits through investment returns alone.

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