



**DK Analytics, Post #15: Double whammy: pension underfunding juxtaposed against ZIRP, NIRP, and debt**  
**T.W. US\$ Index: 90.07; US 10-yr: 1.75%; S&P 500: 2067; Oil: \$38.18; Gold: \$1,231; Silver: \$15.13 4/6/16**



### Paying to Save

Investors in shorter-term Japanese and German government bonds receive a negative yield



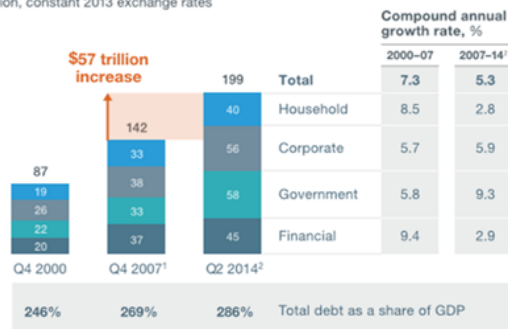
As of March 18, 2016

Source: Bloomberg

### Introduction:

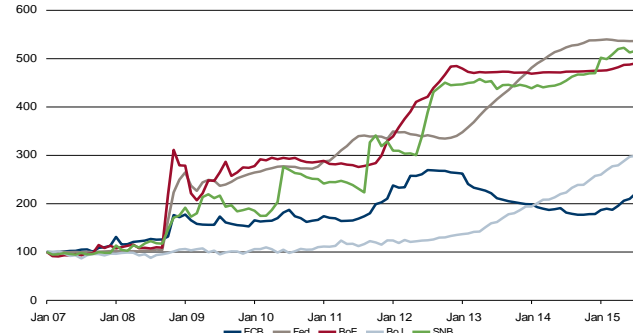
In addition to widening global pension underfunding due largely to sustained ZIRP (zero interest rate policies) as well as the advent of NIRP (negative interest rate policies), unparalleled global sovereign bond solvency issues -- thanks to "money printing/QE" created *government* debt mountains -- are conspiring to create double jeopardy for both pension plans ("plans") and pension plan beneficiaries ("beneficiaries"). Such are the "fruits" of financial repression (ZIRP, NIRP, and QE):

Global stock of debt outstanding,  
\$ trillion, constant 2013 exchange rates



Source: www.mckinsey.com/instights/economic\_studies/debt\_and\_not\_much\_leveraging

Central bank assets, indexed, 01.01.2007 = 100



Sources: Bloomberg, Datastream, Credit Suisse

If that wasn't enough of a challenge, a rapidly aging global society is adding insult to nearly unavoidable future pension income injury. How should employees/investors position themselves, i.e., to the extent that they have discretion over their pension fund assets (if employees have defined contribution plans such as IRAs, discretion is often considerable) or, in a mitigating sense, via their remaining discretionary investable assets? These are the concepts that this post shall examine.

### A closer look:

Defined benefit plan pension (shareholders/employers or governments contractually guarantee specific, formula-based retirement benefits) funding adequacy and accounting have consistently been a fudge wherein full-fledged actuarial and accrual integrity as well as real world return assumptions have been repeatedly and [materially compromised](#) for "C-Suite" and [political reasons](#). This has led, at least in the US, to an unrepresentative annual snapshot of defined benefit plan funding adequacy on the one hand and to understated periodic pension cost on the other hand.

More precisely, materially overstated private (example on page 4) and [public defined plan return assumptions of 7.5% - 8%](#), lax recognition of poor realized returns, and bloated discount rates of 4.0% to 4.5% (the implicit annual rates of interest "mated" to the present value of earned pension benefits to stay current with the annual increase in the projected benefit obligations) have resulted in understated defined benefit pension costs as well as understated plan obligations (and overstated corporate earnings!):

Actuaries spend a lot of time estimating what states will pay to retirees, who often collect them for their lifetimes. Making those estimates requires making a lot of assumptions about dozens of things, from how old workers might be when they retire and how long they'll live once

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they do, to what the investment returns on the assets in the pension plan might be. One of the most influential assumptions is the discount rate used to calculate the present value of future pension obligations. Assume a higher rate, and the present value of the pension obligations is suddenly much smaller; assume a lower rate, and the present value gets bigger.

That in turn affects two things: how much states need to put into the pot every year, and how big the pension plan assets are in relation to the plan's actual obligations – [that is, how “funded” their plans are](#).

In today's investment landscape, politically-based -- instead of economically-grounded -- pension funding adequacy (plan assets equal or exceed the net present value or NPV of plan obligations) determinations are even more misleading and pernicious than they would otherwise be. The reasons: a) the disconnect between 7.5% - 8% defined pension plan return assumptions and investment returns has continued to widen substantially, b) there are unparalleled, yet still largely latent global monetary inflation risks (thanks to bloated central bank balance sheets and the related productivity-robbing misallocations) which will eventually cause a dramatic bear market in “bubble valuation” bonds, and c) widening public and private sector creditworthiness concerns abound. The latter suggests insolvencies ahead, even potentially in so-called “investment grade” bonds and stocks, i.e., [if losses in municipal bonds](#), losses in AAA-rated mortgage backed securities in 2008/2009, and/or permanent bankruptcies or dissolutions of corporate titans such as GM, GE, AIG, and Goldman Sachs that would have occurred, had the government not massively intervened, are at all indicative.

With the above caveats in mind, take a look at the underfunded state of private and state pension plans in the US:

**Largest private defined pension plan underfunding in US in 2014**

Company	Ticker	Underfunded Status (\$billions)
AT&T	T	\$39.7
General Electric	GE	\$35.5
Exxon Mobil	XOM	\$26.5
Petroleo Brasileiro	PBR	\$17.3
Ford	F	\$15.4
Royal Dutch Shell	RDSA	\$15.0
Delta	DAL	\$15.0
Lockheed Martin	LMT	\$13.5
DuPont	DD	\$12.1
UPS	UPS	\$11.5

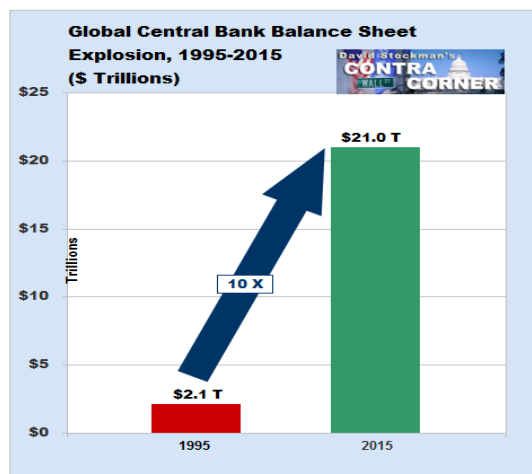
**Largest state per capita pension plan underfunding in 2014 (\$5.0trn in total)**

	Unfunded liability per capita	Total unfunded liability	Funding ratio (assets as a % of liabilities)
1. Alaska	\$40,639	\$29,870,006,000	25%
2. Illinois	\$25,740	\$331,579,500,000	22%
3. Ohio	\$25,028	\$289,603,831,000	34%
4. Connecticut	\$24,080	\$86,592,133,000	23%
5. New Jersey	\$22,491	\$200,150,052,000	30%
6. New Mexico	\$22,251	\$46,394,266,000	33%
7. Hawaii	\$21,852	\$30,679,916,000	29%
8. Nevada	\$21,472	\$59,907,102,000	33%
9. Wyoming	\$19,698	\$11,483,730,000	38%
10. California	\$19,671	\$754,049,342,000	39%

Sources: New Constructs, [www.globalupside.com/the-five-trillion-dollar-hole/](http://www.globalupside.com/the-five-trillion-dollar-hole/)

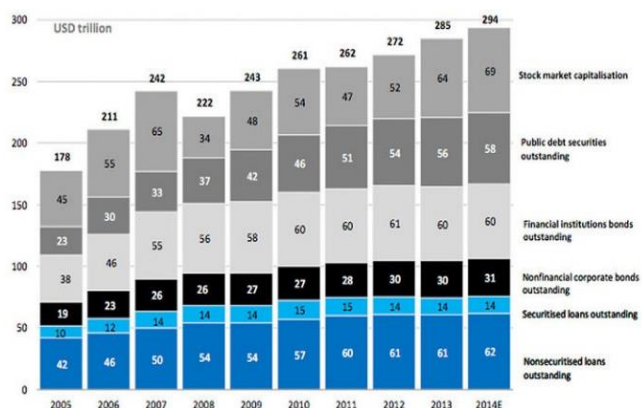
### There's more:

In addition to profound defined pension plan funding issues, both employees/future retirees and defined contribution plan investors remain captives in a global era of [financial repression-based](#) yield deprivation ([43% of plan assets are bonds](#)) and [in the ensuing asset bubbles](#). Specifically, the global central bank balance sheet over the past 20 years has compounded at a 12.2% rate, easily twice global nominal GDP growth over the same period. That same “explosion” has engendered, with a time lapse, a global financial asset bubble (which central bankers sought):



Sources: David Stockman's Contra Corner, McKinsey Global Institute, Haver, BIS, DB estimates, Author Wallace Witkowski

### Global financial assets

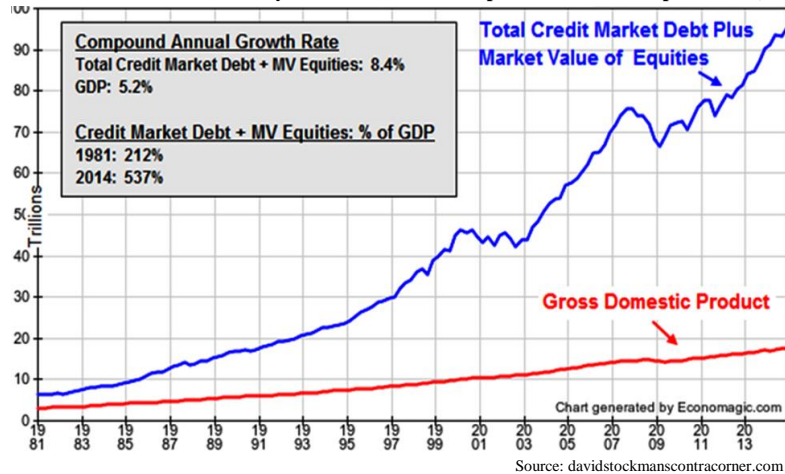


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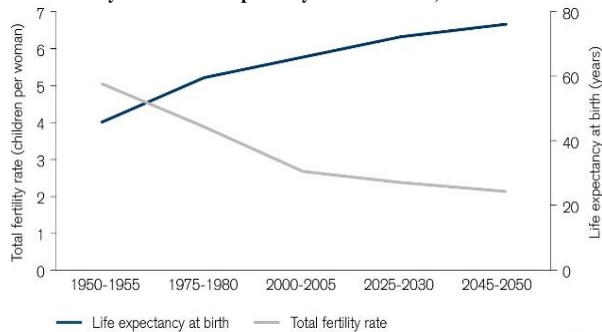
As a result, it comes as no surprise that so-called “traditional assets” (bonds and stocks) are encumbered by rising and increasingly tenuous claims on progressively more imperiled profits, economic output, and tax revenues. By definition, this “financialization” (please see chart below) continues to erode the soundness and fundamental value of an uncomfortably wide swath of bonds and equities alike. Upshot: investors in numerous bonds and stocks may suffer capital losses thanks to earnings power erosion, rising defaults, and/or bankruptcies. In addition, traditional asset valuations would be compressed substantially by rising interest rates that again “priced in” the achievement of a real rate of return and a risk premium for the rising default and inflation risks that central bank policies have fanned.

**Financialization of US Economy: total marketable debt plus stock market cap vs. GDP (nominal \$s)**

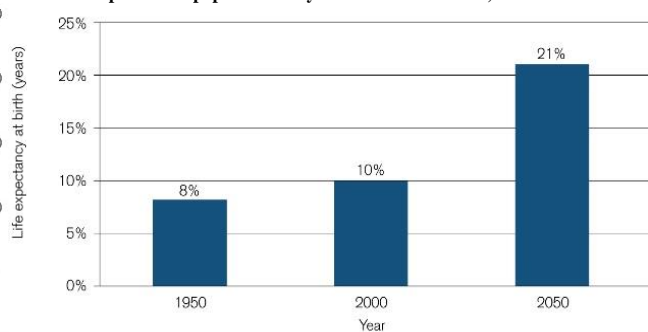


On top of protracted yield starvation, rapidly rising financialization risks, and the sobering underfunded states of defined benefit retirement plans in the US, [in Europe](#), and [in Japan](#), add defined pension plan funding challenges related to falling fertility rates, rising global life expectancies, and an aging population. Specifically, consider these challenges and the associated increase in old age dependency ratios:

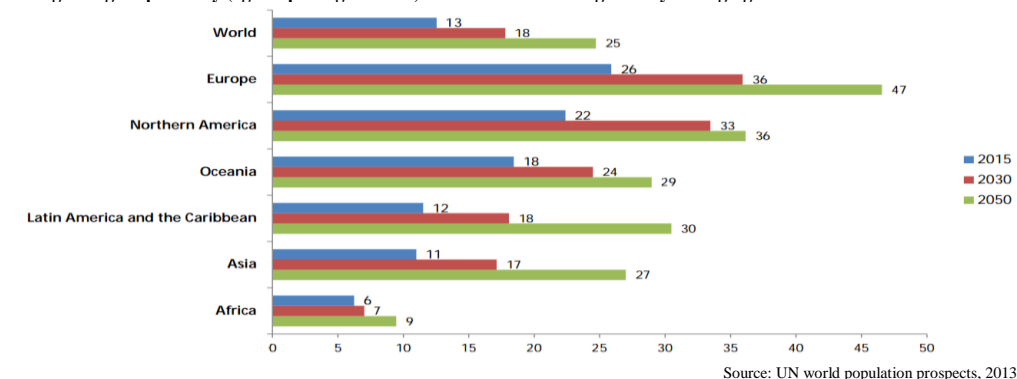
**Total fertility rate and life expectancy at birth: world, 1950 – 2050**



**Proportion of population 60 years and older: world, 1950 - 2050**



**Rising old age dependency (age 65 plus/age 14 – 64) ratios thanks to falling fertility and aging**



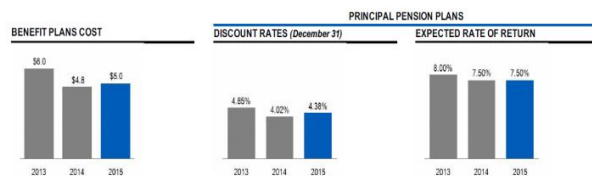
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Said differently, not only will actuarial life expectancy assumptions likely continue to be revised upward (barring major wars or a collapse in global productivity, which are huge but incalculable risks but would render the statistics academic), but a thinning of the employed-to-retired ranks suggests considerably larger pension costs/lower EPS for shareholders is in the offing. This will be all the truer if actual defined benefit plan investment returns continue to lag plan return assumptions by a wide margin over time. Decreased plan return assumptions require substantially more shareholder contributions/corporate expenses to fully meet the yearly increase in earned pension benefits. Meanwhile, rising life expectancy assumptions will lead to materially higher defined benefit plan obligations, which lowering plan discount rate assumptions would further exacerbate; quite the double, or should we say triple, whammy.

All in all, recognition of much lower financial repression-based returns coupled with aging will sharply increase defined benefit plan costs and obligations (the net present value or NPV of pension commitments). Higher obligations will need to be funded, at considerable corporate expense, via a substantial increase in pension assets to meet payout obligations to future retirees. Below an S&P 500 example (General Electric or GE) of how substantial annual plan costs are, specifically \$5bn in 2015 compared with writedown-impacted \$1.7bn in consolidated earnings in 2015 and \$9.5bn in consolidated earnings in 2014. Also note the impact to defined pension plan costs from lower discount rates and the material impact (\$4.6bn in 2014) on plan obligations from longer life expectancies:

#### POSTRETIREMENT BENEFIT PLANS (Dollars in billions)



#### 2015 – 2014 COMMENTARY

- Postretirement benefit plans cost increased in 2015, primarily because of the effects of lower discount rates and new mortality assumptions, which were partially offset by lower loss amortization related to our principal pension plans and by changes to principal retiree benefit plans.
- In 2015, we amended our principal retiree benefit plans affecting post-65 retiree health and retiree life insurance for certain production participants. These plan amendments reduced our principal postretirement benefit obligations by approximately \$3.3 billion.

#### 2014 – 2013 COMMENTARY

- Postretirement benefit plans cost decreased due to higher discount rates and lower loss amortization related to our principal pension plans, partially offset by a lower expected investment return on pension plan assets.
- We updated our mortality assumptions at December 31, 2014 based on tables issued by the Society of Actuaries to reflect longer life expectancies. The new mortality assumptions increased our principal postretirement benefit obligations by \$4.6 billion at year-end 2014.

Source: GE 2015 Form 10-K, pp. 70 & 71. Separately, please note discrepancy between GE's pension plan underfunding tally vs. New Construct's tally of same on second page

#### FUNDED STATUS OF PLANS

The table below presents the funded status of our benefit plans. The funded status represents the fair value of plan assets less benefit obligations.

#### FUNDED STATUS

(In billions)	2015	2014
GE Pension Plan	\$ (16.9)	\$ (16.8)
GE Supplementary Pension Plan	(6.1)	(6.6)
Other pension plans	(4.3)	(3.2)
Principal retiree benefit plans	(6.1)	(9.9)

#### 2015-2014 COMMENTARY

- The GE Pension Plan deficit increased in 2015 primarily due to the growth in pension liabilities and plan amendments, partially offset by higher discount rates.
- The increase in the underfunding of our other pension plans was primarily attributable to the acquisition of Alstom and liability growth, partially offset by higher discount rates, employer contributions and investment performance.
- The decrease in the principal retiree benefit plans deficit was primarily attributable to plan amendments.

Moreover, please note the 4.38% discount rate (the interest cost component of the periodic pension cost) heading into 2016 compared to sub-2% 10-year Treasury yields and sub-4% [AAA corporate bond yields](#)! Also note the elevated return assumptions, still largely unchanged from an assumed 8% level dating back to the late '80s, when [10-year Treasuries yielded between 8% - 9%](#) and the S&P 500's multiple, as measured by the long-term "Shiller P/E," [hovered between 12 and 18](#) (instead of the current 26 multiple), making for an "earnings yield" (an E/P) in the late '80s of roughly 7%. (Said made 8% plan returns pretty reasonable at the time.)

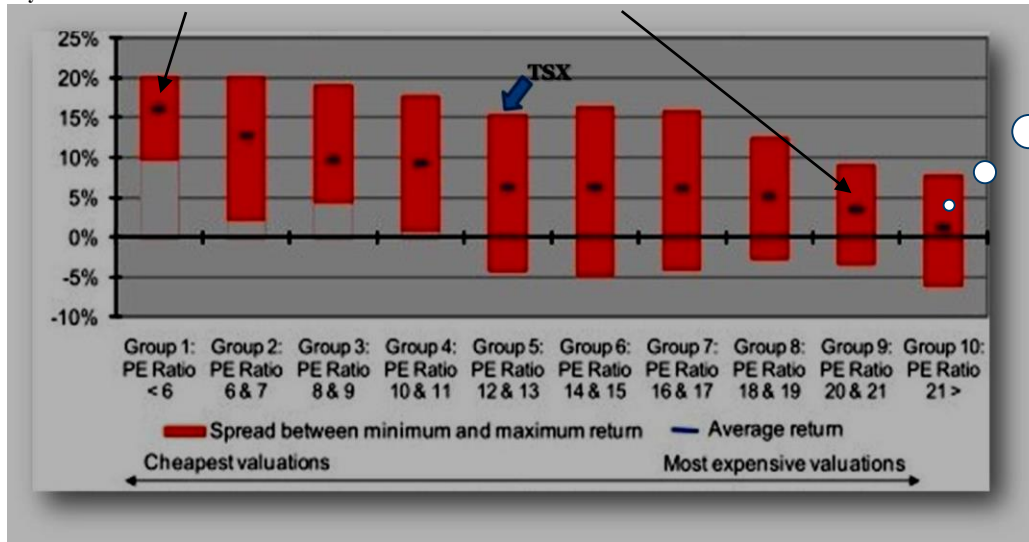
On top of already substantial and likely tapped out financial engineering-based, ["Potemkin village" \(versus organic\) EPS growth over the past 15 years](#), growing corporate pension expenses, even if partly offset with higher employee pension funding contribution agreements, threaten to exert additional pressure on corporate earnings. This is a trend which hugely underfunded public pension plans and [increasingly insolvent cities, municipalities, and states](#) could exacerbate via imposition of "politically expedient" higher corporate tax rates ([governmental authorities may also seek to fleece wealthy private university endowments](#)).

All these factors, especially against a backdrop of historically overvalued stocks thanks to ZIRP and NIRP (zero and negative interest rate policies), could substantially reduce equity market capitalizations, potentially adding additional pressure to pension plan returns from declining stock valuations, which in the Anglo-Saxon world easily comprise [over 50% of defined benefit plan assets](#). Given how a) overvalued stocks are by virtually any measure, b) the fact that new secular bull markets typically commence from P/Es of 10 or less, and c) the fact that lasting P/E expansion is facilitated by sustained reductions in benchmark interest rates (the 10-year Treasury currently yields 1.75%), pension plan managers may well have to come to terms with a decade of decidedly poor returns far removed from 7.5% to 8% annual plan return assumptions:

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**Strategic returns depend materially on acquisition P/E (valuation)**  
P/E of 6 or E/P of 16.7% (multiple expansion!); P/E of 20 or E/P of 5% (multiple compression)  
10-year forward real returns based on S&P 500 P/E ratios from 1871-2010



Source: Plexus Asset Management (based on data from Prof Robert Shiller and I-Net Bridge per 9/30/2011)

#### Long term nominal equity returns examined

- Long-term nominal equity returns p.a., whether in the US or other OECD nations, typically mirror nominal GDP growth p.a.
- As such, S&P 500 *bull market* decades were not GDP growth or earnings growth driven, rather they resulted principally from P/E (multiple) expansions in the '50s, '80s, and '90s -- the '80s and '90s valuation "bubble" was deflated in the '00 years:

Decade	Nominal Gross Domestic Product	S&P 500 EPS	Inflation (Deflation)	S&P 500 Total Return
1930-1940	-1.4%	-5.0%	-1.9%	0.0%
1940-1950	11.2%	7.7%	5.0%	8.9%
1950-1960	6.3%	5.4%	2.1%	19.3%
1960-1970	6.6%	5.6%	1.9%	7.8%
1970-1980	9.7%	7.9%	6.3%	5.8%
1980-1990	8.3%	5.5%	6.3%	17.3%
1990-2000	5.6%	7.1%	3.4%	18.0%
2000-2010	4.0%	4.5%	2.4%	1.4%

All table statistics are nominal p.a. growth rates

Sources: S&P, Bureau of Labor Statistics, Ibbotson, Crestmont Research

#### "What to do" conclusion:

In our current bond and stock bubble valuation landscape featuring yield deprivation, extended P/Es, and rising default and monetary inflation risks, defined benefit plan participants, defined contribution plan participants (such as in 401K and IRA plans), and retirees need to revisit conventional wisdom about being perennially invested "60/40" in stocks and bonds. While various parties will have varying access to pension fund assets and how such assets are invested, it will behoove all affected constituencies to revisit sound economic and investment return determination thinking. Sadly, as a rule of thumb, neither Wall Street nor the mainstream media will prove very helpful. Much of this is because these groups' monetary interests and rapidly rising wealth lie with perpetuating the very statist, central bank-engineered financial repression they are part and parcel of. RIP, widespread "clients first" Wall Street policies and mainstream media news (versus propaganda).

*As investors continue to see mounting evidence of troubled pension plans and zero interest on their savings and checking accounts, they will increasingly "step back" to reassess how to invest the investable assets they can control. This is where*

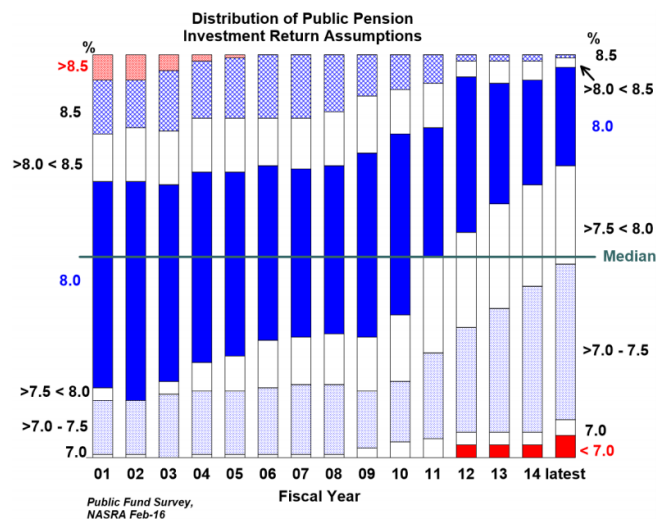
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we think we can provide worthy food for thought for Main Street depositors, defined benefit plan beneficiaries, and 401K/IRA plan participants on how to best protect their increasingly assailed savings while offering select “investment grade” yield ideas in an era of yield starvation -- consider the assailed oil majors for flavor. In this sense, we’d like to refer you back to our post #14, the [conclusion section, for details](#). Some key themes of that section include:

- Selling overvalued stocks and bonds and purchasing Treasury Bills (ignore gov’t shutdown/illiquidity demagoguery)
- Evading NIRP and bail-in risks with your cash balances (don’t be afraid to request bank notes)
- Protecting against monetary policy-engineered inflation (think liquid, scarce real asset investments)
- Having a satellite allocation in physical silver and gold, the “revisited backbone” of currency reforms throughout history

Defined benefit pension plan beneficiaries in the private and public sector alike will also need to increasingly question the politically-based actuarial assumptions which allow plan managements to continue to assume “Alice in Wonderland” return and discount rate assumptions amidst ZIRP, NIRP, and traditional asset bubbles that effectively “smother” growing systemic solvency risks. For public pension plan return assumption trends, the latest median assumption was still between 7.5% and 8.0%:



The same beneficiaries, in a satellite allocation sense and where they have discretion, should also carefully consider capitalizing on overvalued traditional asset opportunities via liquid, vertical market-based “short” opportunities. For additional input on [this](#) and related topics/themes on “bubbleland” or financial repression investing, please visit our site’s posts and reports sections.

Greetings,  
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