BRIDGEWATER

Presented to:

SOUTH CAROLINA RETIREMENT SYSTEM
INVESTMENT COMMISSION

Commission Meeting

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BRIDGEWATER OVERVIEW

- Institutional investment manager.
- Founded in 1975.
- Deep fundamental understanding of markets.
- Built around the principle of separating alpha and beta.
- Manage approximately $150 billion in assets.
- Employee controlled.

Figures estimated as of May 2016.
Please review the “Important Disclosures and Other Information” located at the end of this presentation.

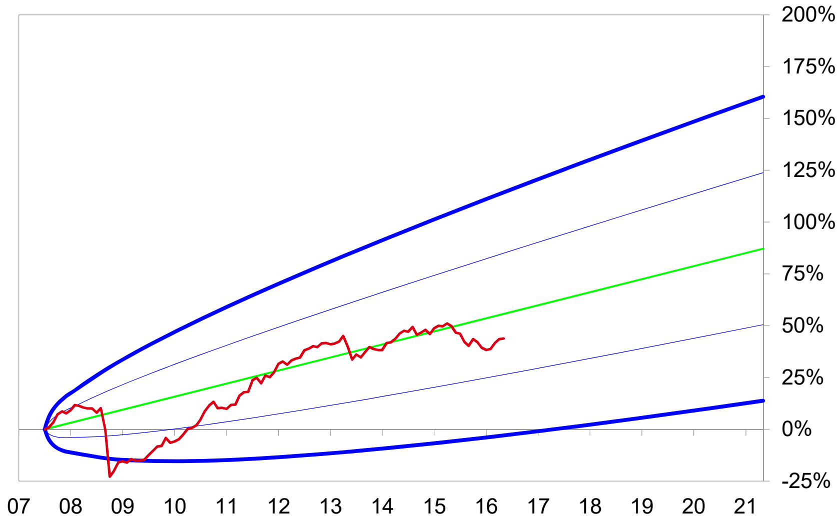
PERFORMANCE SUMMARY

- When SCRS hired us in 2007, our goal was to deliver high and consistent returns from strategic asset allocation (All Weather) and from tactically trading markets (alpha).

- Since that time we have met those expectations. SCRS has earned $585 million, net of fees.

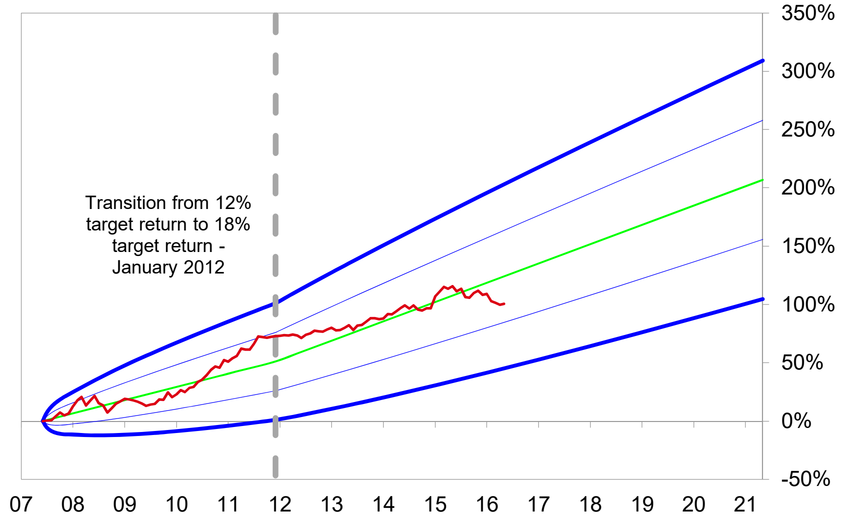
All Weather Fund LLC

Gross Cumulative Excess Return vs. Expectations (ln)



Alpha Relationship (PA and PAMM)

Gross Cumulative Excess Return vs. Expectations (ln)



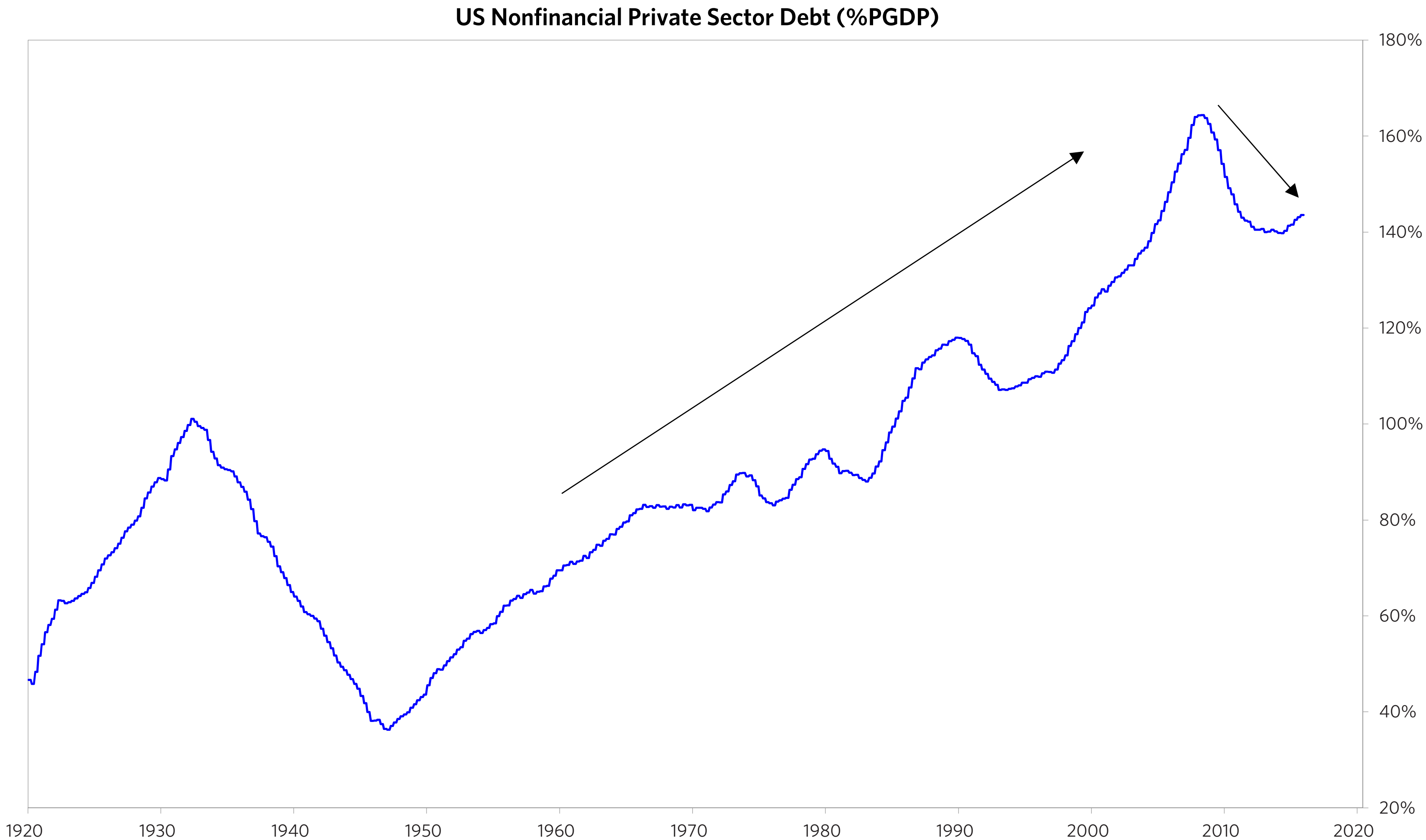
Expected Return — 2 Standard Deviation — 1 Standard Deviation — Cumulative Alpha

Effective February 2011, the mandate began obtaining a portion of its alpha through an investment in Pure Alpha Major Markets. Effective January 2012 the mandate target return was adjusted from 12% to 18%. Past performance is not indicative of future results. Please review the "Important Disclosures and Other Information" located at the end of this presentation.

OBSERVATIONS

- Investors face the most challenging investment environment since perhaps the 1930s.
- Largely driven by the low return of cash, expected returns are low, creating a savings challenge for all investors and constraining central banks.
- To survive this environment investors need to maximize their return given the risk they are taking.
- SCRS should seek to further diversify it’s asset allocation and add tactical tilts from trusted managers.

SPENDING = INCOME + BORROWING; AFTER 60 YEAR BOOM, YEARS OF DELEVERAGING



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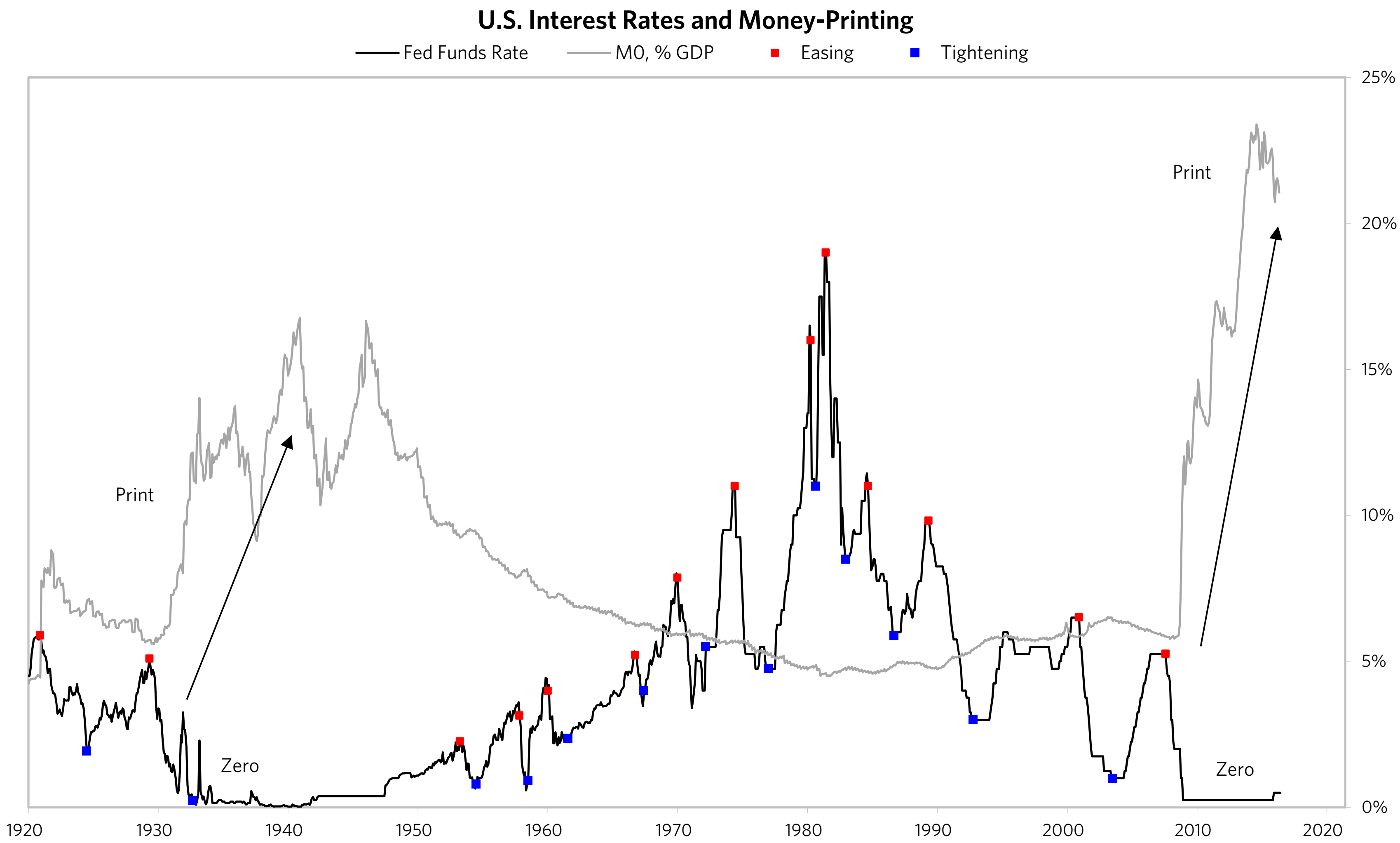
INTEREST RATES FELL TO ZERO AND MONEY REPLACED CREDIT



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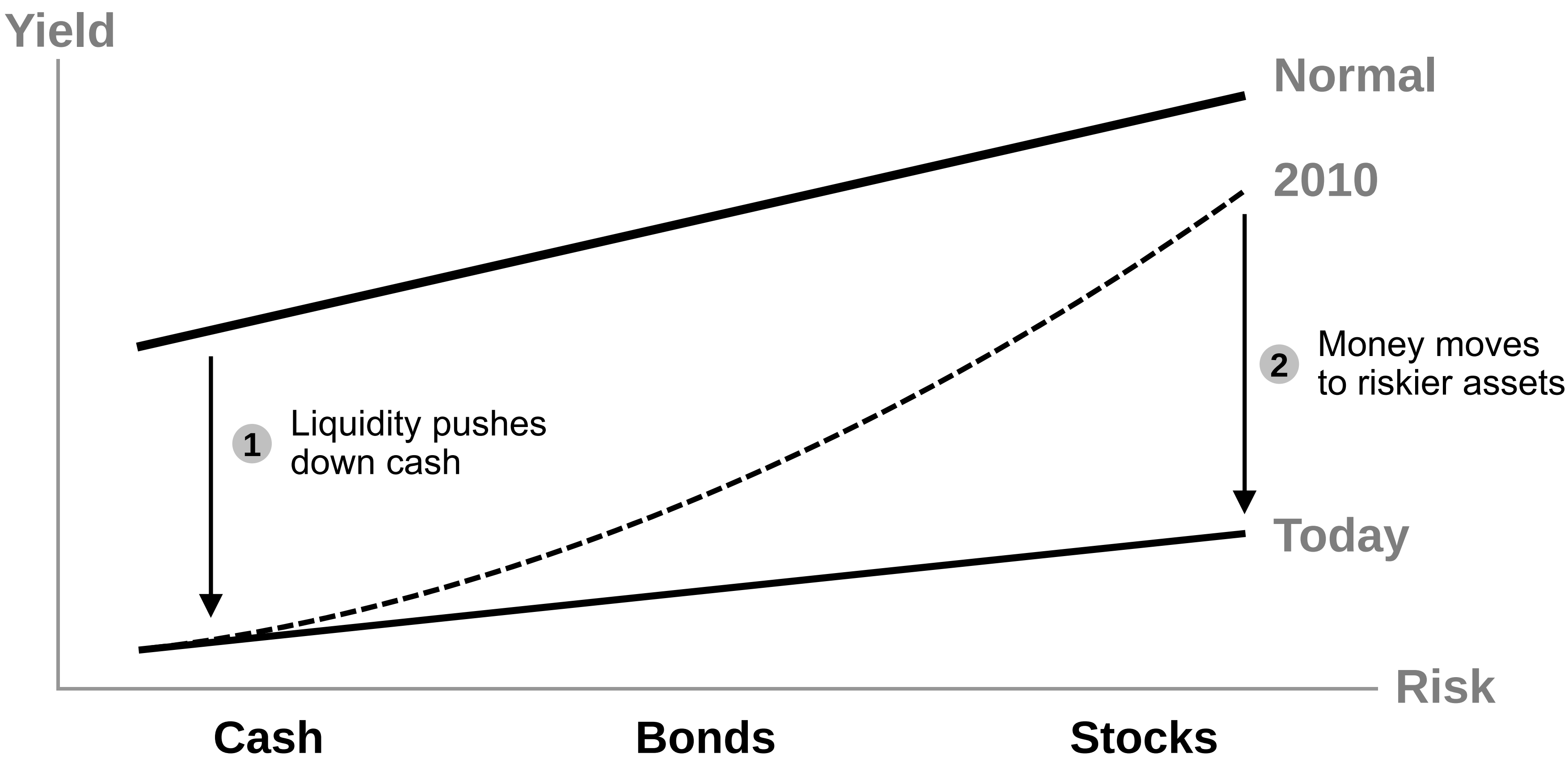
LIQUIDITY PUSHED MONEY OUT THE RISK CURVE



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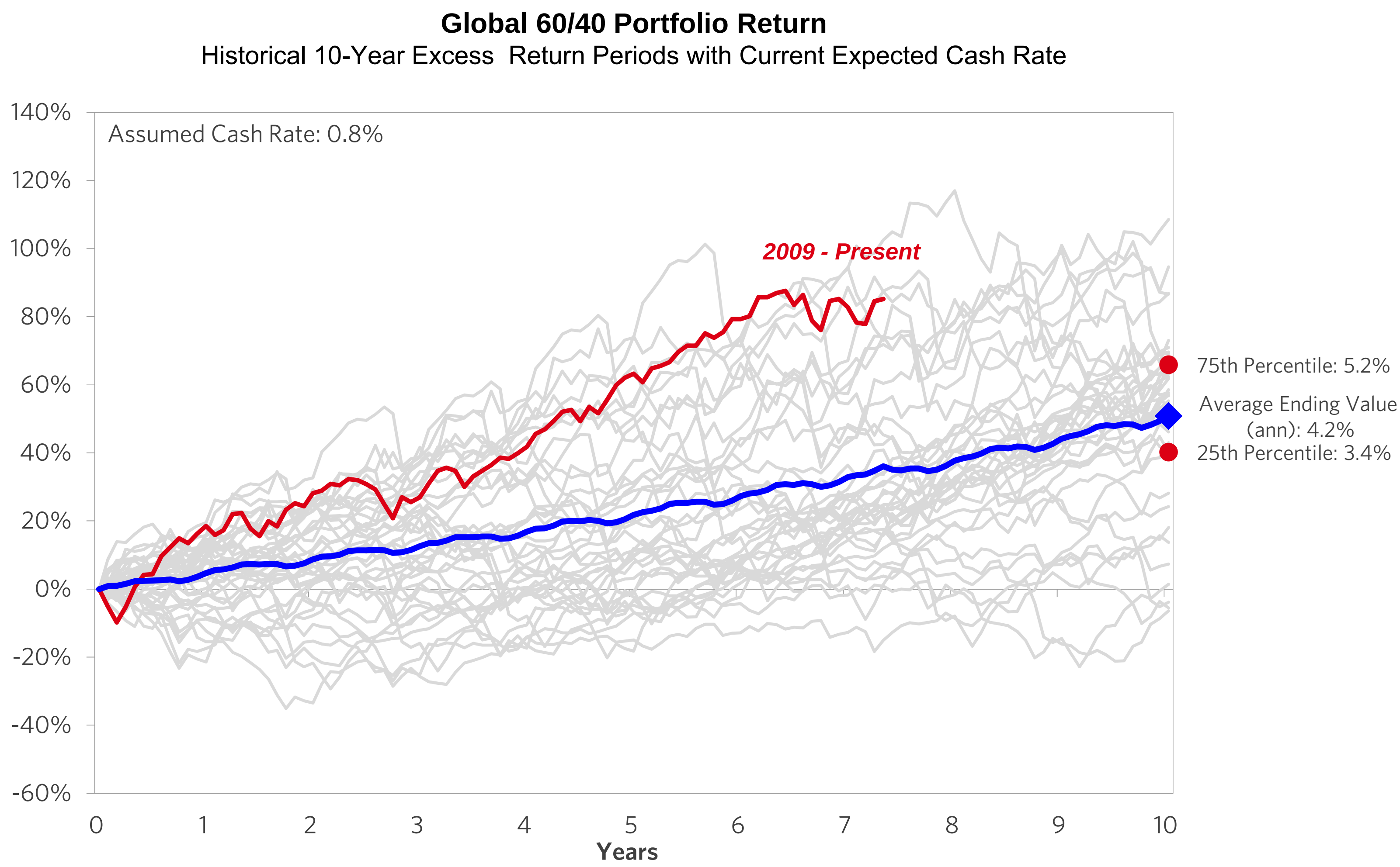
FAVORING THE 60/40

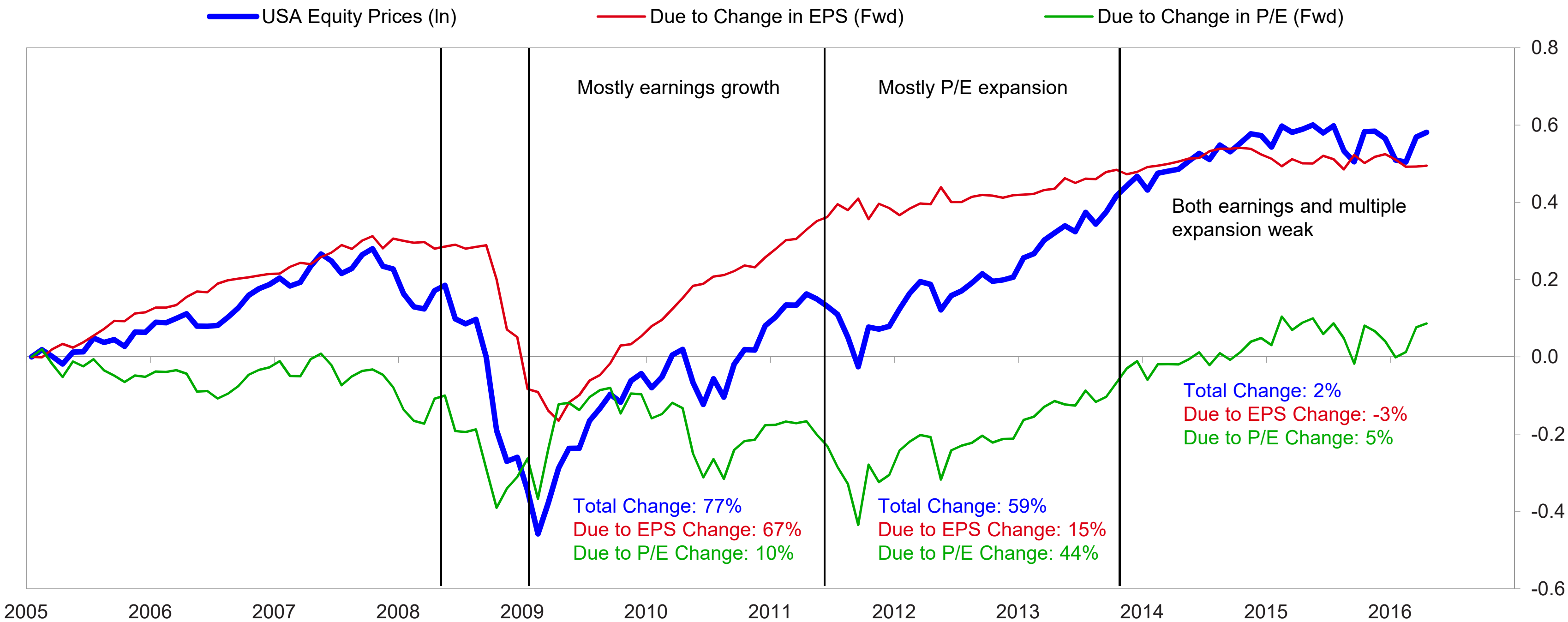


Historical 10-year periods from 1970 through April 2016. Global 60/40 consists of 60% capital weight world equities and 40% capital weight world nominal bonds hedged to USD. Total returns assume historical excess returns overlaid on a forward-looking 0.8% expected cash return. Please review the "Important Disclosures and Other Information" located at the end of this presentation.

US EQUITIES IN PARTICULAR HAVE OUTPERFORMED

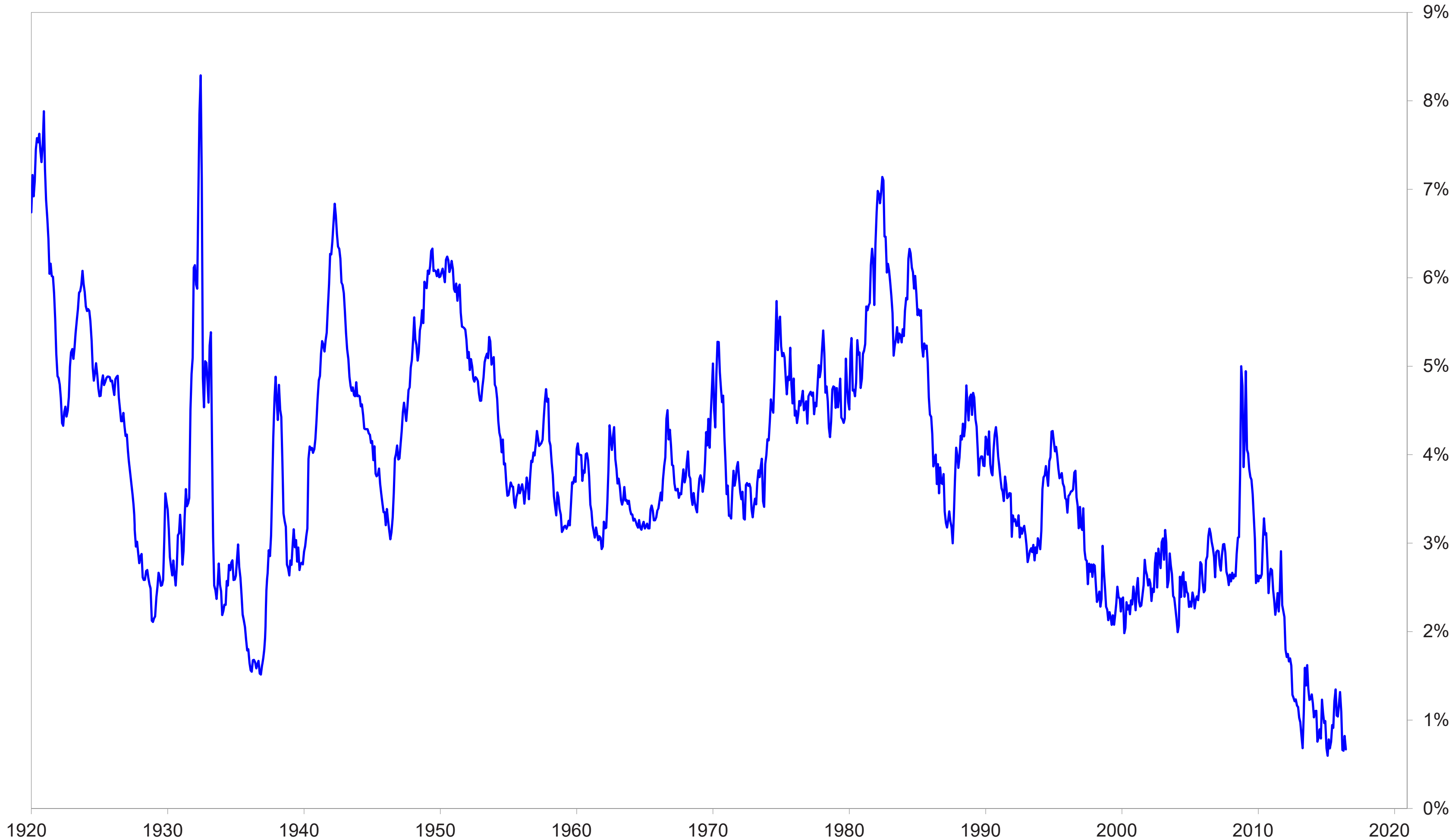
US Equity Price Changes (Annualized)

	Leveraging Period ('80-'08)	Financial Crisis	2009-2011	2012-2013	2014-Today
Price Change	8.7%	-47.1%	26.5%	15.9%	1.3%
Due to Change in EPS (Fwd)	5.9%	-34.6%	22.3%	3.5%	-2.2%
Due to Change in P/E (Fwd)	2.7%	-19.1%	3.5%	12.0%	3.6%
	Supported both by earnings and P/E expansions	Collapsing earnings and rising risk premiums	Strong earnings growth coming out of the crisis	Slower earnings growth but continued P/E expansion	Both weaker



LOW EXPECTED RETURNS

USA Risk-Weighted Average Expected Real Return of Stocks and Bonds



CENTRAL BANKS ARE CONSTRAINED IN THEIR ABILITY TO EASE

Developed World Monetary "Fuel in the Tank"

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THE SAVINGS CHALLENGE

Global 60/40 Portfolio Total Return		Cash		Strategic Asset Allocation		Tactical Views
8.9%	=	5.3%	+	3.6%	+	?
Current ?	=	0.8%	+	?	+	?

Data shown through April 2016. The global 60/40 is 60% unhedged world equities and 40% hedged world bonds. The strategic asset allocation return since 1970 is calculated by subtracting the return of the risk free rate since 1970 from the global 60/40 portfolio total return since 1970. Please review the "Important Disclosures and Other Information" located at the end of this presentation.

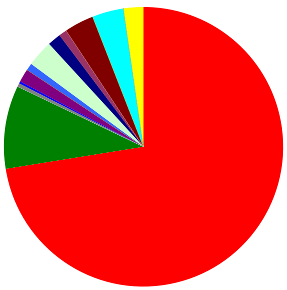
SCRS PORTFOLIO ANALYSIS

SCRS PORTFOLIO ANALYSIS

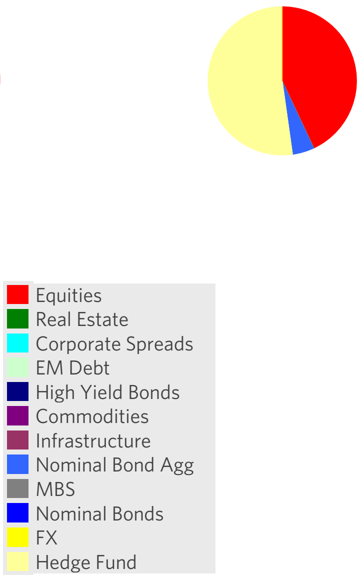
SCRS Expected Total Return		Cash		Strategic Asset Allocation		Tactical Views
~5.0%	=	0.8%	+	~4.0%	+	0.3%

Equity	**45%**
Global Equity (Hedged and Unhedged)	26%
Global Equity (Portable Alpha)	5%
Equity Options Strategy	5%
Private Equity	9%
Conservative Fixed Income	**12%**
Short Duration	2%
US Agg	7%
US Agg (Portable Alpha)	3%
Diversified Credit	**18%**
Mixed Credit	6%
Private Debt	7%
EMD	5%
Opportunistic	**17%**
GAA (50 MSCI World/50 WGBI)	10%
Hedge Funds (non-PA)	4%
Other Opportunistic	3%
Real Assets	**8%**
Real Estate (private)	5%
Real Estate (public REITS)	2%
World Infrastructure	1%
Total	**100%**

Risk from Strategic Asset Allocation : 97%



Risk from Tactical Views: 3%



SCRS Portfolio was modeled using the information provided by SCRS. Data through April 2016. SCRS Total Return based on Bridgewater's Long-Term Assumptions. Uses equilibrium assumptions of .2-.3 Sharpe ratios across assets.
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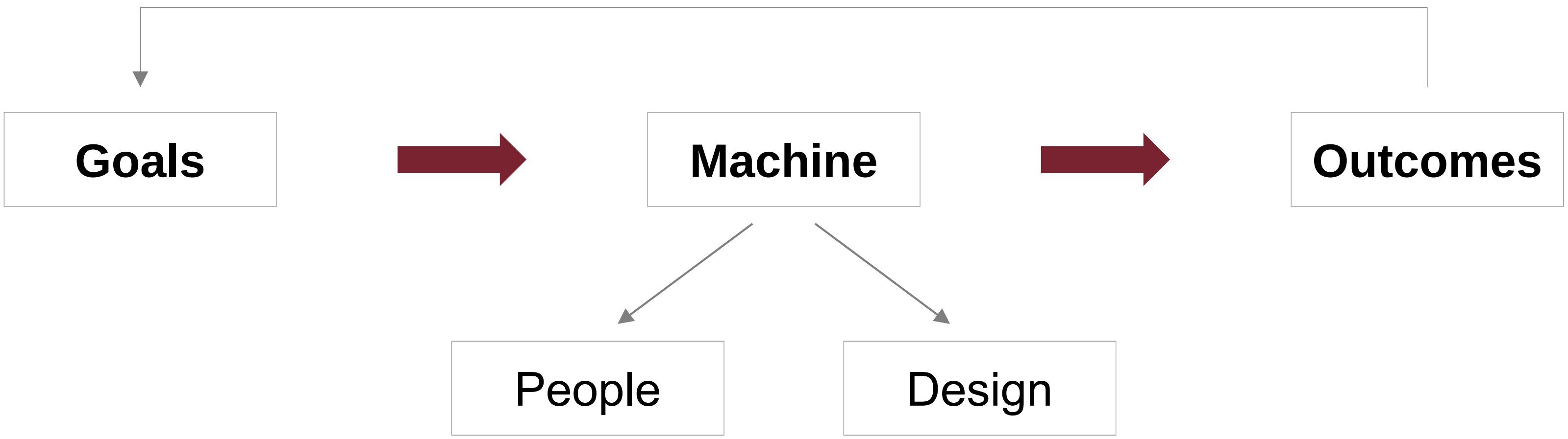
DEFINE GOALS AND COMPARE OUTCOMES RELATIVE TO THOSE GOALS



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PORTFOLIO CONSTRUCTION FRAMEWORK

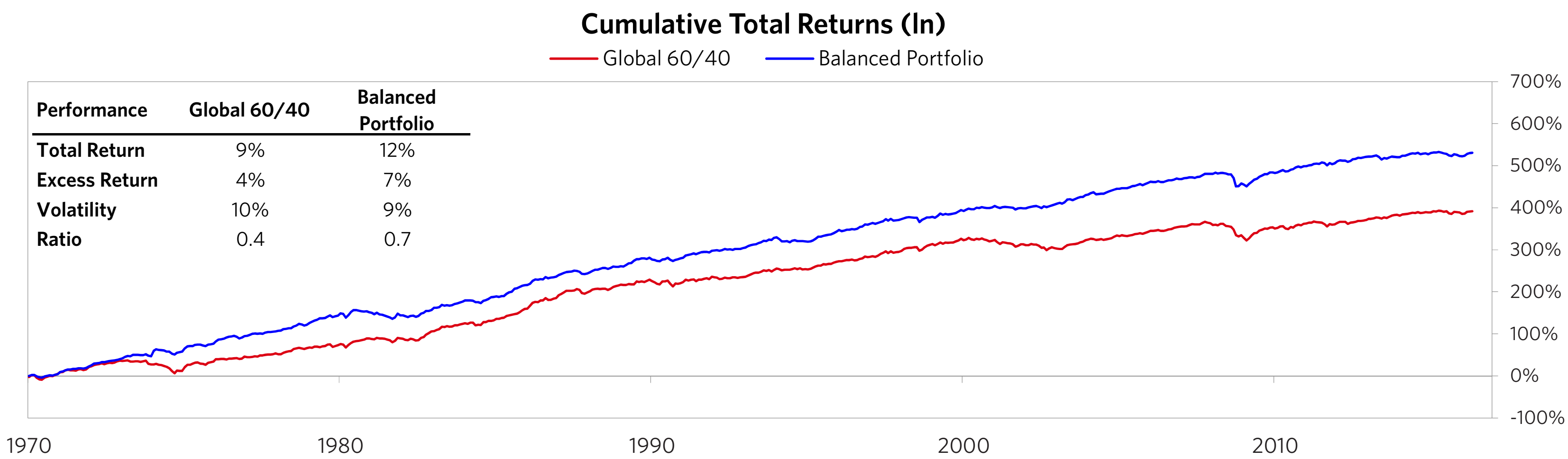
Total Return =	Risk-Free Position +	Beta +	Alpha
Definition	The position that best neutralizes liabilities	Passively held market exposures to achieve incremental return	Deviations from the strategic asset allocation
Potential Return-to-Risk	–	Low to Medium	High (but Zero-Sum)
Potential Diversification	–	Low to Medium	High
Difficulty	–	Easy	Very Hard

PICK YOUR RISK

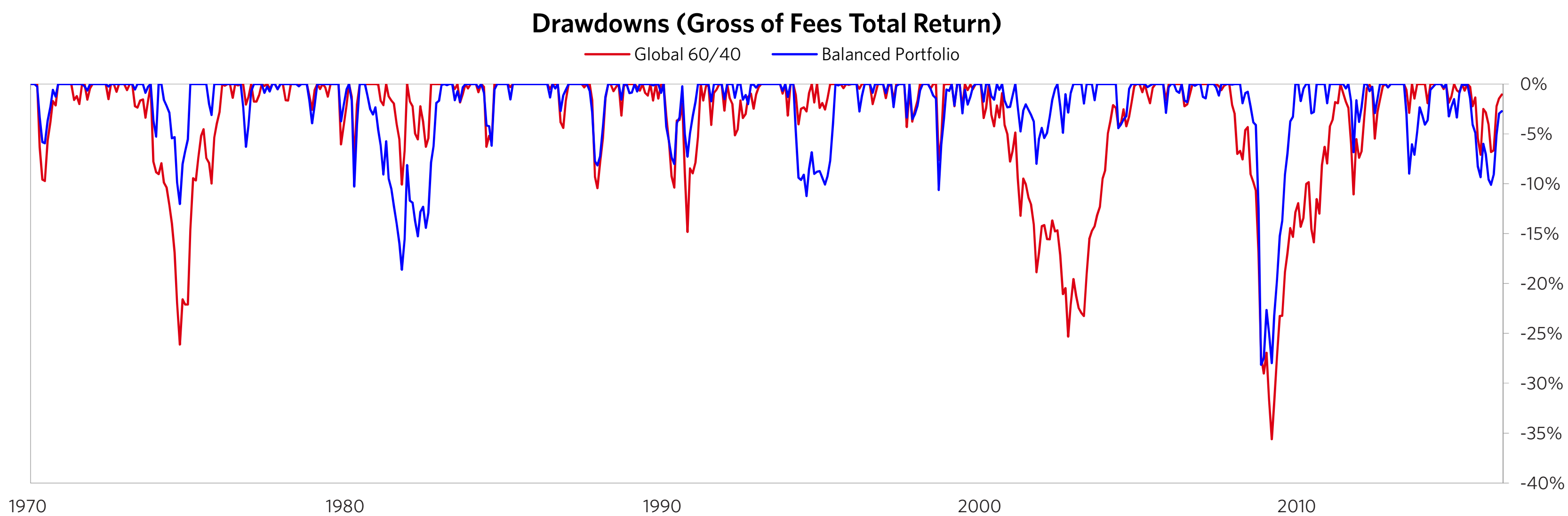
- Accept lower returns.
- Accept bigger drawdowns.
- Bet on stocks.
- Bet on diversification.
- Add illiquid investments and hope liquidity conditions don't change.
- Deviate from peers.
- Make bets.
- Rely on others to make bets.

Beta

BALANCE OUTPERFORMS CONCENTRATION OVER TIME



Performance	Global 60/40	Balanced Portfolio
Total Return	9%	12%
Excess Return	4%	7%
Volatility	10%	9%
Ratio	0.4	0.7



Data through April 2016. The global 60/40 is 60% unhedged world equities and 40% hedged world bonds. All Weather returns are based on All Weather Asset Mix (see All Weather Asset Mix Disclosure). All return series are hedged to USD. It is expected that the simulated performance will periodically change as a function of both refinements to our simulation methodology and the underlying market data. Comparing All Weather to other portfolios may produce different results. WHERE SHOWN, HYPOTHETICAL OR SIMULATED PERFORMANCE RESULTS HAVE CERTAIN INHERENT LIMITATIONS. UNLIKE AN ACTUAL PERFORMANCE RECORD, SIMULATED RESULTS DO NOT REPRESENT ACTUAL TRADING OR THE COSTS OF MANAGING THE PORTFOLIO. ALSO, SINCE THE TRADES HAVE NOT ACTUALLY BEEN EXECUTED, THE RESULTS MAY HAVE UNDER OR OVER COMPENSATED FOR THE IMPACT, IF ANY, OF CERTAIN MARKET FACTORS, SUCH AS LACK OF LIQUIDITY OR MAY OTHERWISE BE IMPRECISE. SIMULATED TRADING PROGRAMS IN GENERAL ARE ALSO SUBJECT TO THE FACT THAT THEY ARE DESIGNED WITH THE BENEFIT OF HINDSIGHT. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN. Past performance is not indicative of future results. Please review the “Important Disclosures and Other Information” located at the end of this presentation

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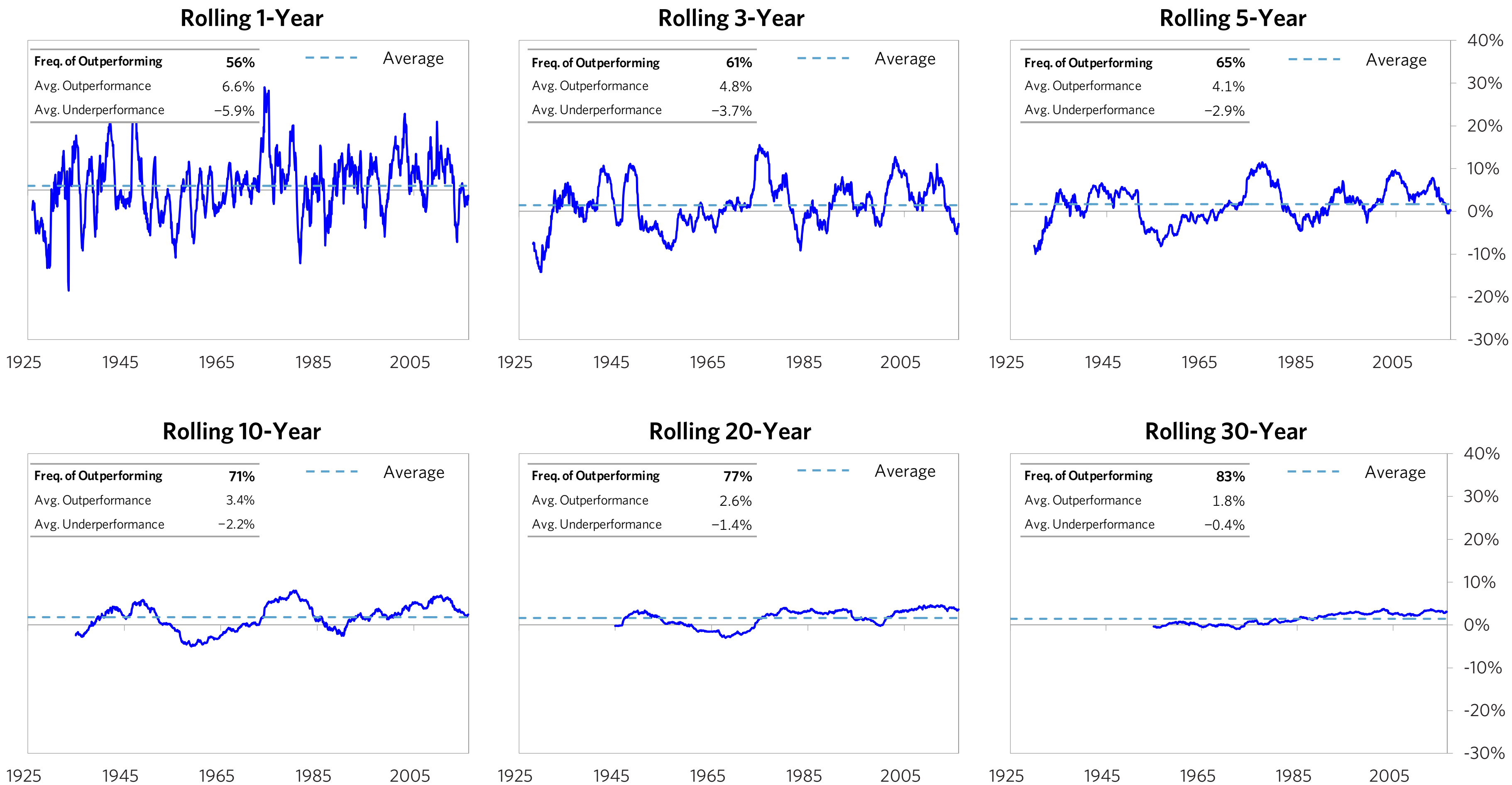
BALANCE OUTPERFORMS MORE CONSISTENTLY OVER LONGER PERIODS

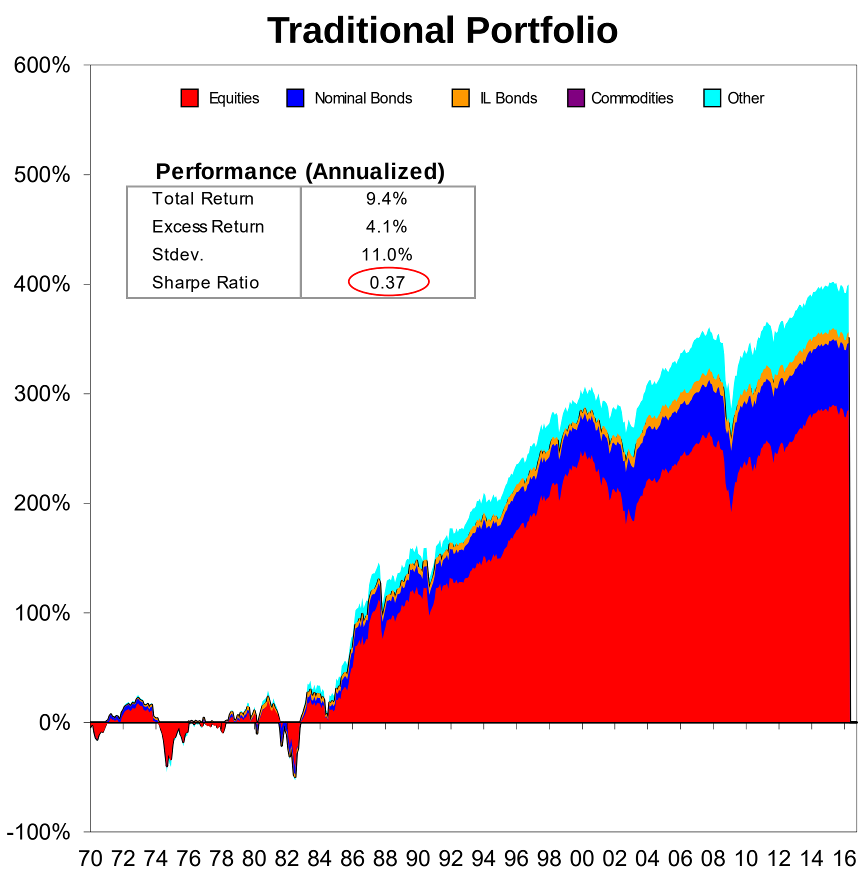
All Weather Asset Mix minus Global 60/40 Return Differences

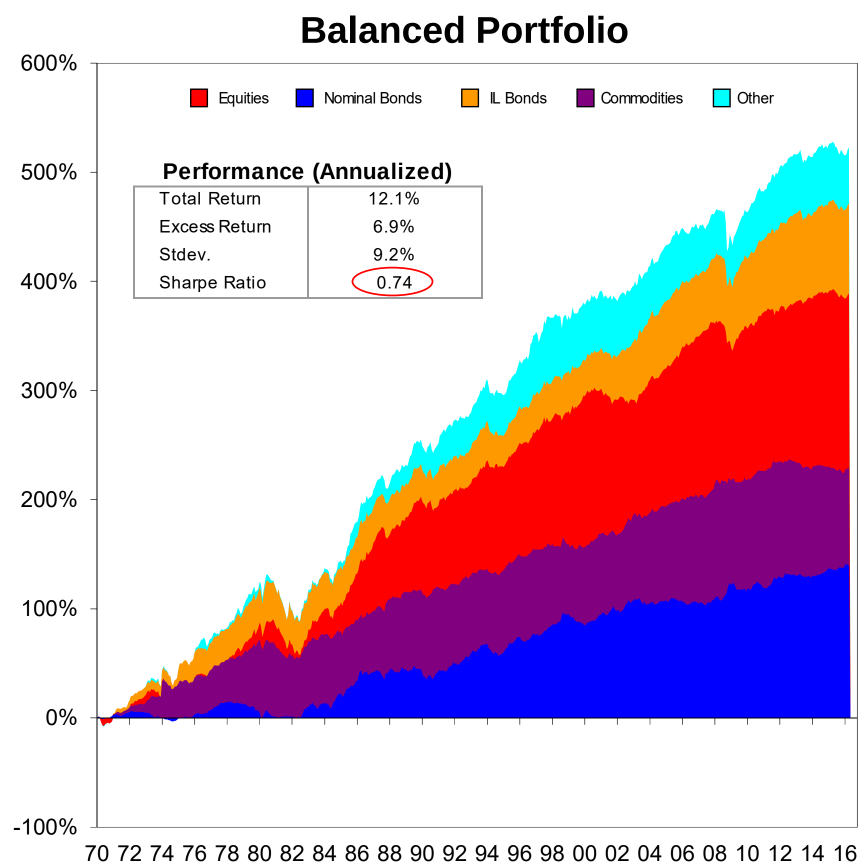


Data through April 2016. From January 1970 the global 60/40 is 60% unhedged world equities and 40% hedged world bonds, prior to January 1970 a mix of U.S. Equities and U.S. bonds is used. Please note the All Weather Asset Mix is used in this analysis (see All Weather Asset Mix Disclosure). It is expected that the simulated performance will periodically change as a function of both refinements to our simulation methodology and the underlying market data. HYPOTHETICAL OR SIMULATED PERFORMANCE RESULTS HAVE CERTAIN INHERENT LIMITATIONS. UNLIKE AN ACTUAL PERFORMANCE RECORD, SIMULATED RESULTS DO NOT REPRESENT ACTUAL TRADING OR THE COSTS OF MANAGING THE PORTFOLIO. ALSO, SINCE THE TRADES HAVE NOT ACTUALLY BEEN EXECUTED, THE RESULTS MAY HAVE UNDER OR OVER COMPENSATED FOR THE IMPACT, IF ANY, OF CERTAIN MARKET FACTORS, SUCH AS LACK OF LIQUIDITY. SIMULATED TRADING PROGRAMS IN GENERAL ARE ALSO SUBJECT TO THE FACT THAT THEY ARE DESIGNED WITH THE BENEFIT OF HINDSIGHT. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN. Past performance is not indicative of future results. Please review the “Important Disclosures and Other Information” located at the end of this presentation.

CONCENTRATED VS. BALANCED PORTFOLIO RETURN CONTRIBUTION

Cumulative Performance Attribution (ln)





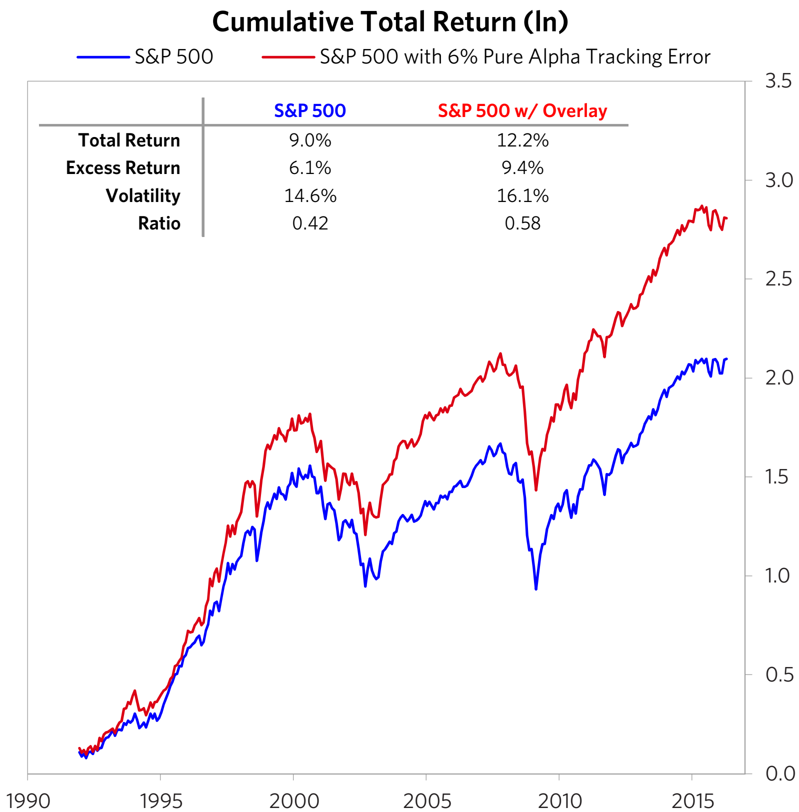
Data through April 2016. "Traditional Portfolio" refers to the U.S. Traditional Portfolio. Returns are cumulative excess returns above cash, shown gross of fees. All Weather returns are based on All Weather Asset Mix (see All Weather Asset Mix Disclosure). It is expected that the simulated performance will periodically change as a function of both refinements to our simulation methodology and the underlying market data. HYPOTHETICAL OR SIMULATED PERFORMANCE RESULTS HAVE CERTAIN INHERENT LIMITATIONS. UNLIKE AN ACTUAL PERFORMANCE RECORD, SIMULATED RESULTS DO NOT REPRESENT ACTUAL TRADING OR THE COSTS OF MANAGING THE PORTFOLIO. ALSO, SINCE THE TRADES HAVE NOT ACTUALLY BEEN EXECUTED, THE RESULTS MAY HAVE UNDER OR OVER COMPENSATED FOR THE IMPACT, IF ANY, OF CERTAIN MARKET FACTORS, SUCH AS LACK OF LIQUIDITY. SIMULATED TRADING PROGRAMS IN GENERAL ARE ALSO SUBJECT TO THE FACT THAT THEY ARE DESIGNED WITH THE BENEFIT OF HINDSIGHT. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN. Past performance is not indicative of future results. Please review the "Important Disclosures and Other Information" located at the end of this presentation.

Alpha

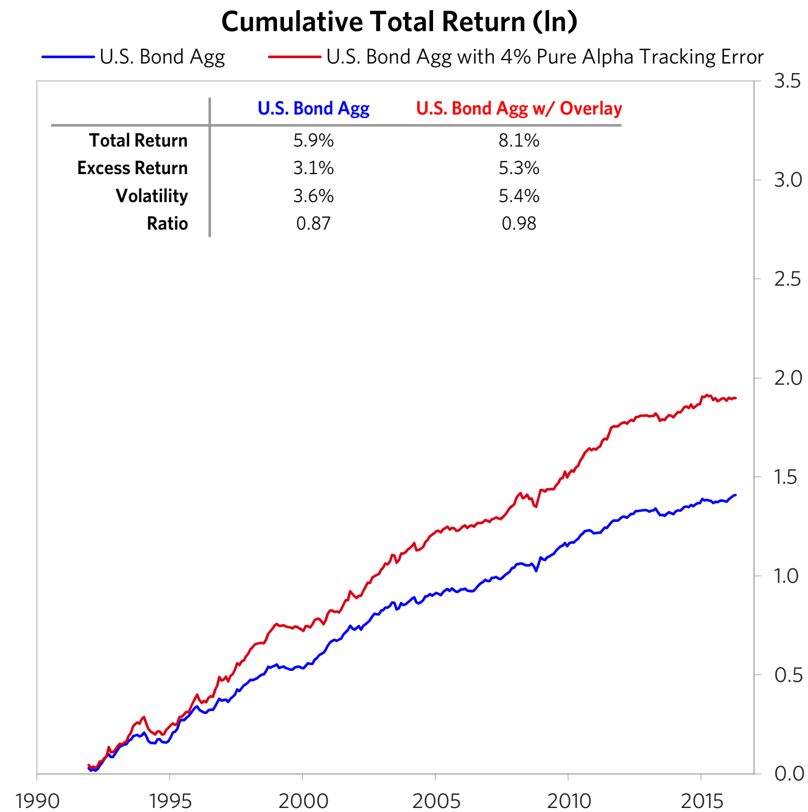
OBSERVATIONS ON ALPHA

- There are only two ways to make money: holding assets (beta) and making bets (alpha)—they are fundamentally different.
- Good alpha can improve portfolios by offering high and consistent returns that are diversifying.
- However, generating and identifying good alpha is hard: it's a zero-sum game and it is hard to know exactly what to expect from a manager.
- Diversification matters as much as goodness, and represents an untapped opportunity for investors.

ALPHA OVERLAY CAN HELP YOU MEET YOUR GOALS



	S&P 500	S&P 500 w/ Overlay
Total Return	9.0%	12.2%
Excess Return	6.1%	9.4%
Volatility	14.6%	16.1%
Ratio	0.42	0.58

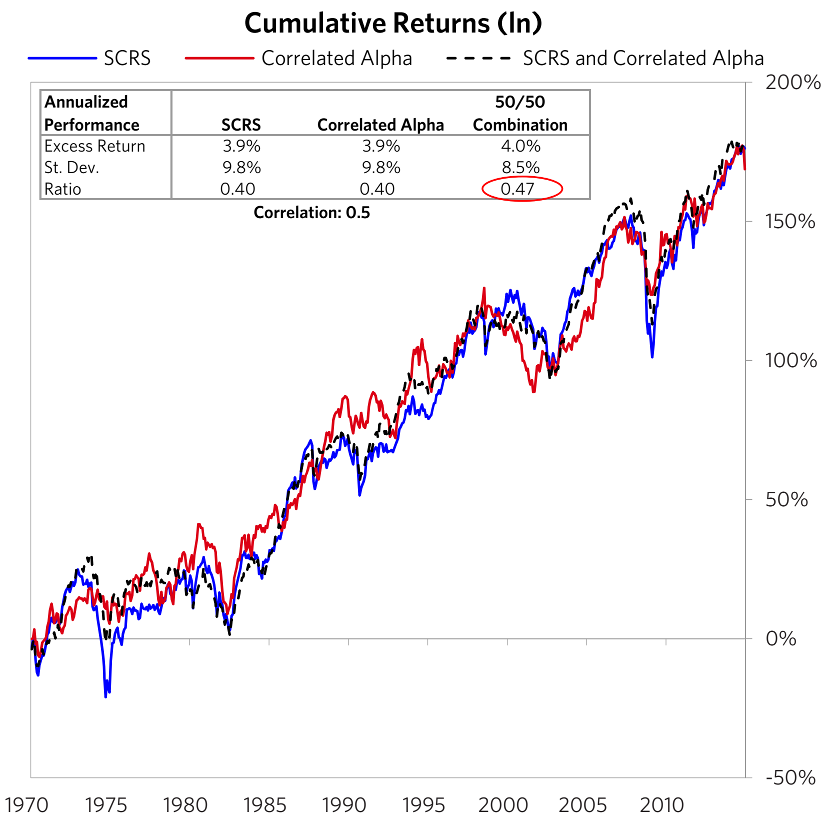


	U.S. Bond Agg	U.S. Bond Agg w/ Overlay
Total Return	5.9%	8.1%
Excess Return	3.1%	5.3%
Volatility	3.6%	5.4%
Ratio	0.87	0.98

Data from December 1991 through April 2016. Volatility calculated gross of fees. The U.S. 60/40 is constructed using the S&P 500 and U.S. Bond Agg return streams shown above. Tracking error performance is based on the net-of-fees performance of the Pure Alpha 12% strategy. Before April 1999, Pure Alpha returns are based on the actual performance of a partially funded account (where interest income has been removed to arrive at the excess returns), and are simulated to include the imputed interest return on the full notional value using the US repo rate. HYPOTHETICAL OR SIMULATED PERFORMANCE RESULTS HAVE CERTAIN INHERENT LIMITATIONS. UNLIKE AN ACTUAL PERFORMANCE RECORD, SIMULATED RESULTS DO NOT REPRESENT ACTUAL TRADING OR THE COSTS OF MANAGING THE PORTFOLIO. ALSO, SINCE THE TRADES HAVE NOT ACTUALLY BEEN EXECUTED, THE RESULTS MAY HAVE UNDER OR OVER COMPENSATED FOR THE IMPACT, IF ANY, OF CERTAIN MARKET FACTORS, SUCH AS LACK OF LIQUIDITY. SIMULATED TRADING PROGRAMS IN GENERAL ARE ALSO SUBJECT TO THE FACT THAT THEY ARE DESIGNED WITH THE BENEFIT OF HINDSIGHT. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN. Past performance is not indicative of future results. Please review the “Important Disclosures and Other Information” located at the end of this presentation.

IMPACT OF ALPHA ON SCRS PORTFOLIO

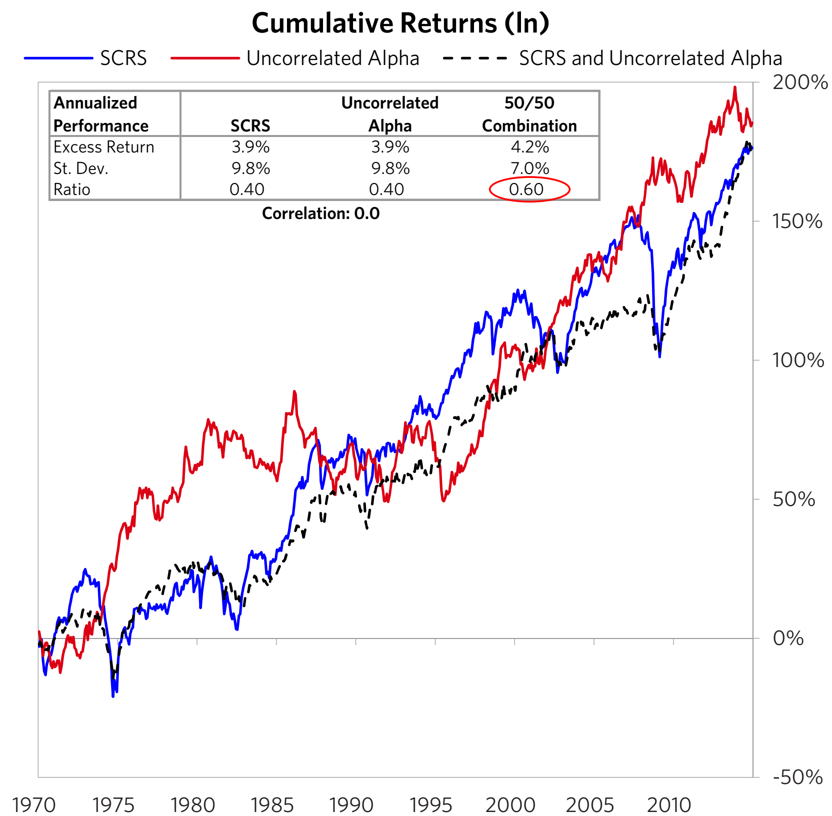
Positively Correlated Alpha



Annualized Performance	SCRS	Correlated Alpha	50/50 Combination
Excess Return	3.9%	3.9%	4.0%
St. Dev.	9.8%	9.8%	8.5%
Ratio	0.40	0.40	0.47

Correlation: 0.5

Uncorrelated Alpha

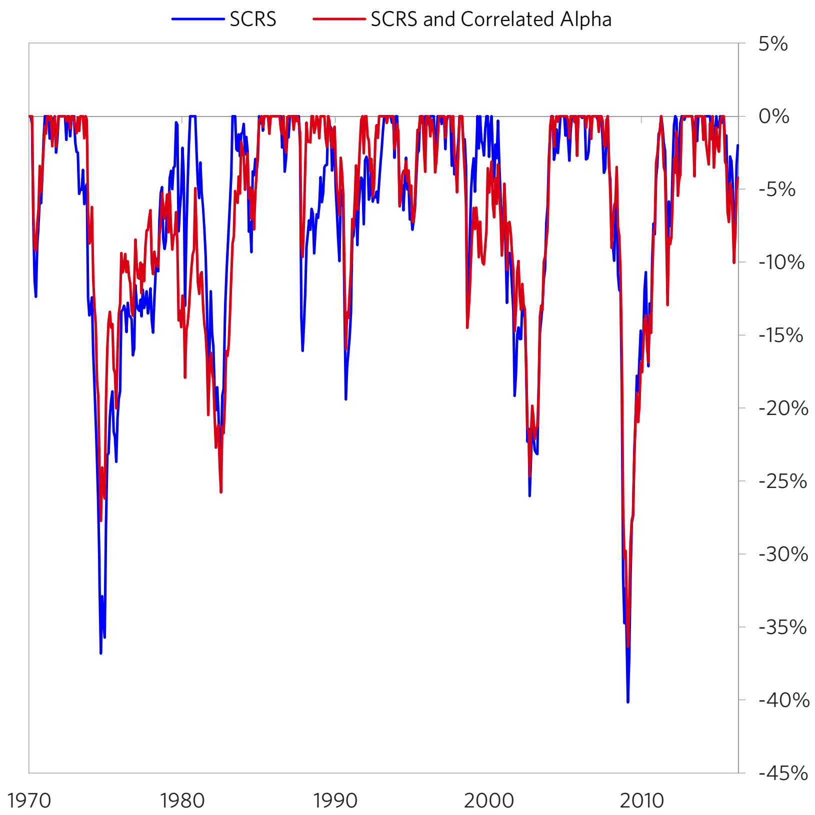


Annualized Performance	SCRS	Uncorrelated Alpha	50/50 Combination
Excess Return	3.9%	3.9%	4.2%
St. Dev.	9.8%	9.8%	7.0%
Ratio	0.40	0.40	0.60

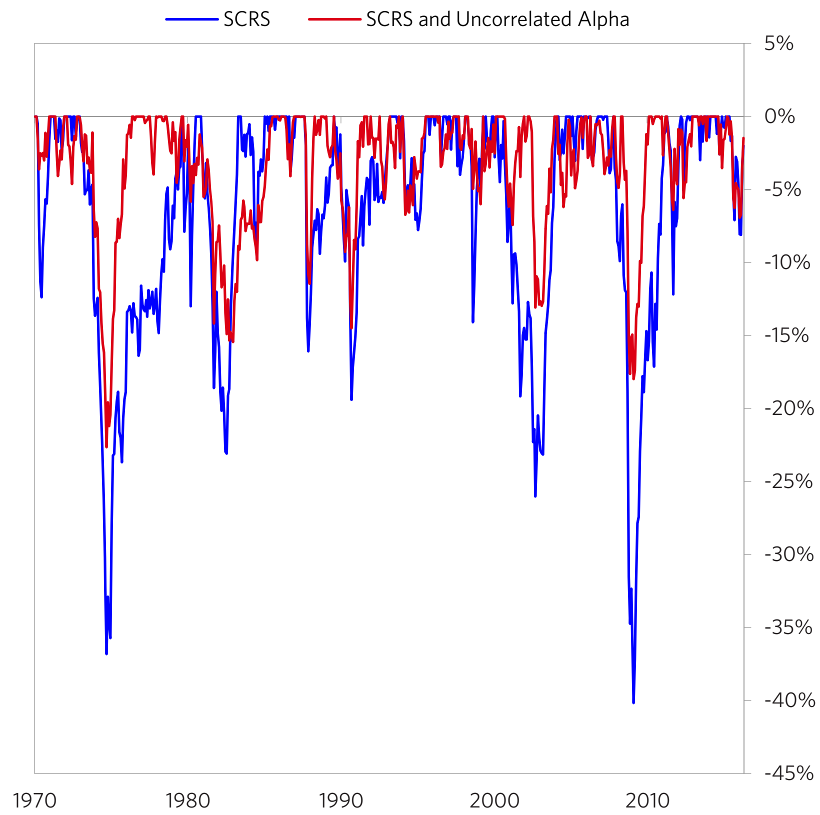
Correlation: 0.0

UNCORRELATED ALPHA LIMITS DRAWDOWNS

Positively Correlated Alpha



Uncorrelated Alpha



Current Market Pricing

WHAT MARKETS ARE DISCOUNTING

Growth

Implied Real Earnings Growth	
Developed World:	0.8%
United States:	1.4%
Eurozone:	−0.6%
Emerging Markets:	3.7%

Inflation

Long-Term Breakeven Inflation	
United States:	1.6%
Eurozone:	1.0%
Japan:	0.4%

Rates

Forward Nominal Short Rate in 3 Years	
United States:	1.4%
Eurozone:	−0.4%
Japan:	−0.3%
United Kingdom:	0.9%
Canada:	0.8%
Switzerland:	−0.8%
Sweden:	−0.4%

Currencies

Priced-in 1-Year Change vs. USD	
Japanese yen (JPY):	1.5%
Euro (EUR):	1.4%
UK pound sterling (GBP):	0.4%
Brazilian real (BRL):	−8.9%
Indian rupee (INR):	−5.2%
Mexican peso (MXN):	−3.5%
South African rand (ZAR):	−7.0%

Data is shown as of June 7, 2016.

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ALL WEATHER ASSET MIX DISCLOSURE

All Weather Asset Mix Performance (Net of Fees)

	All Weather Total Return in USD
Last 1 Year	-2.5%
Last 3 Years	2.5%
Last 5 Years	4.7%
Last 10 Years	6.6%

Annualized Returns (Jun-96 through May-16)

Net Since Inception Jun-96 through May-16

Annualized Return	9.0%
Standard Deviation	9.5%
Sharpe Ratio	0.69

Past results are not necessarily indicative of future results. It is expected that the simulated performance will periodically change as a function of both refinements to our simulation methodology and the underlying market data. WHERE SHOWN, HYPOTHETICAL OR SIMULATED PERFORMANCE RESULTS HAVE CERTAIN INHERENT LIMITATIONS. UNLIKE AN ACTUAL PERFORMANCE RECORD, SIMULATED RESULTS DO NOT REPRESENT ACTUAL TRADING OR THE COSTS OF MANAGING THE PORTFOLIO. ALSO, SINCE THE TRADES HAVE NOT ACTUALLY BEEN EXECUTED, THE RESULTS MAY HAVE UNDER OR OVER COMPENSATED FOR THE IMPACT, IF ANY, OF CERTAIN MARKET FACTORS, SUCH AS LACK OF LIQUIDITY. SIMULATED TRADING PROGRAMS IN GENERAL ARE ALSO SUBJECT TO THE FACT THAT THEY ARE DESIGNED WITH THE BENEFIT OF HINDSIGHT. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN.

All Weather Asset Mix Disclosure:

Where shown, simulated returns for All Weather are created using the All Weather asset mix. The All Weather asset mix performance is simulated by applying All Weather asset mix weights, which are determined by Bridgewater's proprietary process for building an environmentally balanced portfolio, to historical market returns. We use actual market returns when available and otherwise use Bridgewater Associates' proprietary estimates, based on other available data and our fundamental understanding of asset classes. In certain cases, market data for an exposure which otherwise would exist in the simulation may be omitted if the relevant data is unavailable, deemed unreliable, immaterial or accounted for using proxies. In the case of omitted markets, other markets in the same asset class, which represent the vast majority of our positions in each asset class, are scaled to represent the full asset class position. Examples of omitted markets include, but are not limited to, non-U.S. markets prior to 1970, emerging market equities, some inflation-linked bond markets and certain commodities.

Simulated asset returns are subject to considerable uncertainty and potential error, as there is a great deal that cannot be known about how assets would have performed in the absence of actual market returns. The All Weather asset mix simulation is an approximation of our actual process but not an exact replication, and may have differences including but not limited to the precise mix of markets used and the weights applied to those markets. It is expected that the simulated performance will periodically change as a function of both refinements to our simulation methodology (including the addition/removal of asset classes) and the underlying market data. There is no guarantee that previous results would not be materially different. Future strategy changes could materially change previous simulated return in order to reflect the changes accurately across time.

Transaction costs are accounted for and are estimates themselves based on historical measured costs and/or modeled costs. Actual transaction costs experienced could have been higher or lower than those reflected in the simulation. Where noted, the All Weather Asset Mix Net of Fees returns have been calculated using our standard fee schedule for a minimum size account, which are the highest fees we have or would currently charge an account. Investment advisory fees are described in Bridgewater's ADV Part 2A. No claim is being made of the All Weather Asset Mix's ability to perform in absolute terms or relative to any market return in the future, during market events not represented or during market events occurring in the future. Market conditions and events vary considerably, are unpredictable and can have unforeseen impacts resulting in materially adverse performance results.

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PURE ALPHA STRATEGY PERFORMANCE DISCLOSURES

Pure Alpha Strategy Performance (Net of Fees)

	Pure Alpha Total Return in USD
Last 1 Year	-11.6%
Last 3 Years	0.5%
Last 5 Years	2.4%
Last 10 Years	5.8%

Annualized Returns (Dec-91 through May-16)

Net Since Inception Dec-91 through May-16

Annualized Total Return	9.0%
Standard Deviation	10.1%
Information Ratio	0.61

Past results are not necessarily indicative of future results. Standard deviation is calculated using gross of fees performance. Information ratio is calculated using the annualized standard deviation of gross of fees performance. HYPOTHETICAL OR SIMULATED PERFORMANCE RESULTS HAVE CERTAIN INHERENT LIMITATIONS. UNLIKE AN ACTUAL PERFORMANCE RECORD, SIMULATED RESULTS DO NOT REPRESENT ACTUAL TRADING OR THE COSTS OF MANAGING THE PORTFOLIO. ALSO, SINCE THE TRADES HAVE NOT ACTUALLY BEEN EXECUTED, THE RESULTS MAY HAVE UNDER OR OVER COMPENSATED FOR THE IMPACT, IF ANY, OF CERTAIN MARKET FACTORS, SUCH AS LACK OF LIQUIDITY. SIMULATED TRADING PROGRAMS IN GENERAL ARE ALSO SUBJECT TO THE FACT THAT THEY ARE DESIGNED WITH THE BENEFIT OF HINDSIGHT. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN.

Bridgewater Pure Alpha Strategy 12% Volatility Performance Disclosure:

The performance history provided is based on actual Bridgewater Pure Alpha accounts. Returns since the strategy's inception in December 1991 through April 1999 are based on the actual performance of a partially funded account (where interest income has been removed to arrive at the excess returns), and are adjusted to include the imputed interest return on the full notional value using the US repo rate. Returns from May 1999 through present are the actual returns of the longest running fully funded Pure Alpha account with a target tracking error of 12%, an approximation of an United States cash benchmark, and fully unconstrained active management guidelines. Bridgewater manages additional Pure Alpha portfolios not included in this performance history.

Gross of fees performance is gross of management and performance fees only and includes the reinvestment of interest, gains, and losses.

Where shown, from December 1991 through April 1999, net of fees returns have been calculated using the cumulative gross return of the Strategy starting in December 1991 and applying our standard Pure Alpha fee schedule, which are the highest fees charged. From December 1991 through April 1999, using a monthly high water concept (and after April 1999 a quarterly high water concept) deduction of incentive fees may vary and may be higher or lower than the fees actually charged to the account for the same time period. These returns reflect all fees (which are at our Pure Alpha standard rates), expenses and interest actually charged or credited to the account. Investment advisory fees are described in Bridgewater's ADV Part 2A.

No representation is being made that any account will or is likely to achieve returns similar to those shown. Trading in futures is risky and can result in losses as well as profits. PAST RESULTS ARE NOT NECESSARILY INDICATIVE OF FUTURE RESULTS. Performance as of the current month is estimated and subject to change.

SCRS PORTFOLIO

This page contains the allocation information for the historical simulation of the SCRS Portfolio, from 1970 onwards, as well as forward looking assumptions for expected ratio, volatility, and tracking error, used in this analysis. Correlations are based on either historical market returns when available or Bridgewater Associates' estimates, based on other available data and our fundamental understanding of asset classes. The portfolio capital allocation weights (illustrated below) are estimates based either upon Bridgewater Associates' understanding of standard asset allocation (which may change without notice) or information provided by or publicly available from the recipient of this presentation. Asset class returns are actual market returns where available and otherwise a proxy index constructed based on Bridgewater Associates understanding of global financial markets. Information regarding specific indices and simulation methods used for proxies is available upon request (except where the proprietary nature of information precludes its dissemination). Results are hypothetical or simulated and gross of fees unless otherwise indicated. HYPOTHETICAL OR SIMULATED PERFORMANCE RESULTS HAVE CERTAIN INHERENT LIMITATIONS. UNLIKE AN ACTUAL PERFORMANCE RECORD, SIMULATED RESULTS DO NOT REPRESENT ACTUAL TRADING OR THE COSTS OF MANAGING THE PORTFOLIO. ALSO, SINCE THE TRADES HAVE NOT ACTUALLY BEEN EXECUTED, THE RESULTS MAY HAVE UNDER OR OVER COMPENSATED FOR THE IMPACT, IF ANY, OF CERTAIN MARKET FACTORS, SUCH AS LACK OF LIQUIDITY. SIMULATED TRADING PROGRAMS IN GENERAL ARE ALSO SUBJECT TO THE FACT THAT THEY ARE DESIGNED WITH THE BENEFIT OF HINDSIGHT. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN.

	Asset Type	Benchmark	Nominal Exposure	Fx Exposure	Beta Volatility	Beta Ratio	Alpha Volatility	Alpha Ratio
1	Equities	World Equities	13.0%	Hedged	14.7%	0.30	---	---
2	Equities	World Equities	13.0%	Unhedged	14.7%	0.30	---	---
3	Equities	World Equities	5.0%	Hedged	14.7%	0.30	5.0%	0.30
4	Equities	U.S. PE / VC	7.2%	---	24.5%	0.25	---	---
5	Equities	U.K. PE / VC	0.6%	Unhedged	25.9%	0.20	---	---
6	Equities	German PE / VC	0.6%	Unhedged	29.5%	0.20	---	---
7	Equities	Japan PE / VC	0.6%	Unhedged	26.6%	0.20	---	---
8	Nominal Bonds	U.S. Gov't Bonds - 2 yr duratic	2.0%	---	1.9%	0.25	---	---
9	Nominal Bond Agg	U.S. Bond Aggregate	7.0%	---	4.3%	0.25	---	---
10	Nominal Bond Agg	U.S. Bond Aggregate	3.0%	---	4.3%	0.25	2.0%	0.25
11	High Yield Bonds	U.S. High Yield	2.0%	---	11.4%	0.30	---	---
12	MBS	U.S. MBS	2.0%	---	4.1%	0.25	---	---
13	Corporate Spreads	U.S. Corporate Bond Spreads	2.0%	---	6.6%	0.25	---	---
14	Corporate Spreads	U.S. Corporate Bond Spreads	7.0%	---	6.6%	0.25	---	---
15	EM Debt	Emerging Market Debt	5.0%	---	13.1%	0.35	---	---
16	Equities	World Equities	2.5%	Unhedged	14.7%	0.30	---	---
17	Nominal Bonds	World Gov't Bonds	2.5%	Unhedged	3.7%	0.30	---	---
18	Hedge Fund	Cash	4.0%	---	---	---	7.0%	0.70
19	Commodities	Bloomberg Commodity Index	3.0%	---	16.9%	0.20	---	---
20	Real Estate	World Real Estate	7.0%	Unhedged	19.2%	0.30	---	---
21	Infrastructure	World Infrastructure	1.0%	Unhedged	14.1%	0.30	---	---
22	Equities	U.S. Equities	5.0%	---	15.3%	0.25	---	---
23	Balanced Portfolio	All Weather 10% USD	5.0%	---	10.0%	0.65	---	---

1. Global Equity (Hedged and Unhedged)
2. Global Equity (Hedged and Unhedged)
3. Global Equity (Portable Alpha)
4.-7. Private Equity

8. Short Duration
9. US Agg
10. US Agg (Portable Alpha)
11-13. Mixed Credit

14. Private Debt
15. EM Debt
16-17. GAA (50 MSCI World/50 WGBI)

18.Hedge Funds (non-PA)
19. Other Opportunistic
20. Real Estate
21. World Infrastructure

22. Equity Options Strategy
23. GAA (50 MSCI World/50 WGBI)

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USD TRADITIONAL PORTFOLIO

This page contains the allocation information for the historical simulation of the Traditional portfolio, from 1970 onwards, as well as forward looking assumptions for expected returns, volatility, tracking error, and correlations used in this analysis.

The portfolio capital allocation weights (illustrated below) are estimates based either upon Bridgewater Associates' understanding of standard asset allocation (which may change without notice) or information provided by or publicly available from the recipient of this presentation. Asset class returns are actual market returns where available and otherwise a proxy index constructed based on Bridgewater Associates understanding of global financial markets. Information regarding specific indices and simulation methods used for proxies is available upon request (except where the proprietary nature of information precludes its dissemination). Results are hypothetical or simulated and gross of fees unless otherwise indicated. HYPOTHETICAL OR SIMULATED PERFORMANCE RESULTS HAVE CERTAIN INHERENT LIMITATIONS. UNLIKE AN ACTUAL PERFORMANCE RECORD, SIMULATED RESULTS DO NOT REPRESENT ACTUAL TRADING OR THE COSTS OF MANAGING THE PORTFOLIO. ALSO, SINCE THE TRADES HAVE NOT ACTUALLY BEEN EXECUTED, THE RESULTS MAY HAVE UNDER OR OVER COMPENSATED FOR THE IMPACT, IF ANY, OF CERTAIN MARKET FACTORS, SUCH AS LACK OF LIQUIDITY. SIMULATED TRADING PROGRAMS IN GENERAL ARE ALSO SUBJECT TO THE FACT THAT THEY ARE DESIGNED WITH THE BENEFIT OF HINDSIGHT. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN.

Asset Type	Benchmark	Nominal Exposure	Fx Exposure	Beta Volatility	Beta Ratio	Alpha Volatility	Alpha Ratio
Equities	U.S. Equities	15.0%	---	15.3%	0.25	---	---
Equities	U.S. Equities	15.0%	---	15.3%	0.25	5.0%	0.25
Equities	Dev. World Equities Ex-US	18.0%	Unhedged	15.4%	0.30	5.0%	0.30
Equities	Emerging Market Equities	3.0%	Unhedged	19.1%	0.25	5.0%	0.30
Nominal Bonds	U.S. Gov't Bonds	4.5%	---	3.8%	0.25	---	---
Nominal Bonds	U.S. Gov't Bonds	4.5%	---	3.8%	0.25	2.0%	0.25
Corporate Bonds	U.S. Corporate Bonds	5.0%	---	6.9%	0.30	3.0%	0.25
MBS	U.S. MBS	6.0%	---	4.1%	0.25	2.0%	0.25
IL Bonds	U.S. IL Bonds	1.0%	---	7.3%	0.25	---	---
IL Bonds	U.S. IL Bonds	1.0%	---	7.3%	0.25	1.0%	0.25
High Yield Bonds	U.S. High Yield	2.0%	---	11.4%	0.30	4.0%	0.25
Nominal Bonds	World Gov't Bonds Ex-US	2.0%	Hedged	3.8%	0.30	2.0%	0.30
Equities	U.S. PE / VC	9.0%	---	24.5%	0.25	10.0%	0.25
Real Estate	U.S. Real Estate	5.0%	---	20.0%	0.25	6.0%	0.25
Real Estate	World Real Estate	2.0%	Unhedged	19.2%	0.30	---	---
Commodities	Bloomberg Commodity Index	2.0%	---	16.9%	0.20	10.0%	0.30
Hedge Fund	Cash	5.0%	---	---	---	7.0%	0.70

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Daily Observations

June 3, 2016

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The Pervasive Drag from Low Returns to Savers

The current low interest rate, low return investment environment presents a long-term challenge for a wide range of savers and holders of financial assets throughout the developed world. Whether held directly by households or in joint saving vehicles, like retirement plans or insurance programs, over coming decades the return on savings will in many cases fall substantially short of what is expected and needed. The challenge is most obvious where asset holders face pre-defined liabilities, such as contractual insurance or retirement payments, but exists equally though with less awareness where needs and obligations are not so specifically defined. The impact will play out in a wide variety of ways. Some entities that have asset-liability mismatches will face potential insolvency. Others, like banks, are likely to generate lower earnings (see our May 31, 2016 *Observations*). Nearly all independent savers will end up living on less retirement income, unless governments cover the difference through wealth transfers. The outcomes are a natural consequence of the excessive indebtedness that has been managed down by negative real interest rates, and the impact of low yields on cash spreading to the pricing and yields of all assets. This process has effectively spread out the deleveragings, but has also shifted the debt problem to a savings challenge for savers who save their money after prices have risen and yields have fallen, and for asset holders who had mismatches going into the transition.

Japanese savers have faced this squeeze for more than two decades, providing a window into the potential effects. Unable to raise returns because they could only get what the market offered, they both saved more and retired on less than they had previously expected, with both avenues creating a long-term drag on spending. Other savers in the developed world now face the same choices, with the consequences playing out gradually over decades. The outcomes will have macro effects, though perhaps so slowly developing and indirect that the cause-effect linkages are not recognized. Actions and policy shifts made gradually and well in advance can be effective. Waiting until the effects have occurred will be too late.

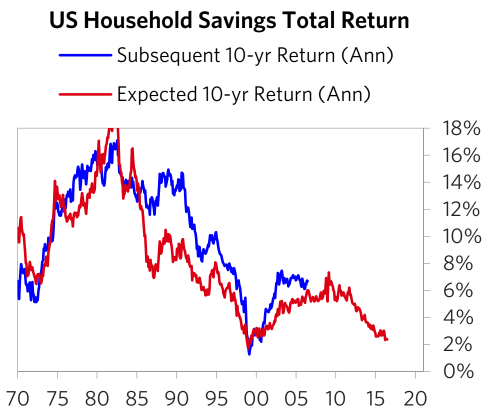
Future Manifestations of the Savings Challenge

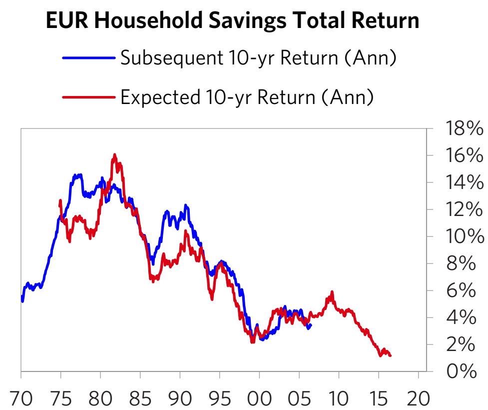
Household savings, whether held directly or managed through retirement plans or insurance, make up the bulk of savings in the developed world. Future returns on these savings will be very low, ranging from less than 1% in Japan to a bit over 2% in the US. Even with low inflation rates like 1-2%, households will barely be able to maintain the real spending power of their money, let alone grow their real spending power over time. The following table summarizes the composition of savings as well as past and projected returns of these asset mixes.

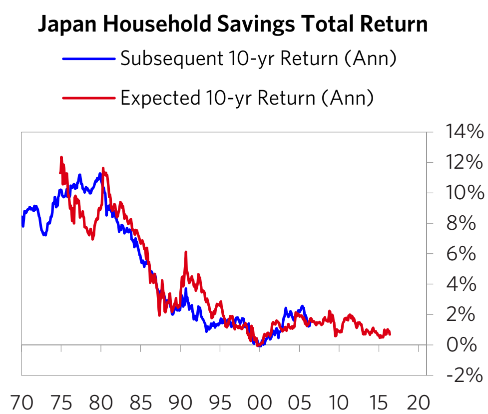
The Savings Challenge Is Becoming More Pervasive

	Household Savings		Nominal Returns		
	%GDP	%Assets	1970-2007	Since 2008	Next 10 Years
US	236%	100%	9.9%	5.3%	2.4%
Bonds	40%	17%	9.8%	6.3%	1.8%
Stocks	142%	60%	11.2%	7.0%	3.2%
Cash	54%	23%	6.4%	0.4%	0.8%
Europe	135%	100%	9.2%	1.6%	1.4%
Bonds	19%	14%	9.7%	7.3%	0.2%
Stocks	42%	31%	11.4%	0.5%	4.5%
Cash	74%	55%	7.9%	0.8%	0.0%
Japan	229%	100%	4.9%	0.8%	0.9%
Bonds	5%	2%	7.3%	2.4%	-0.1%
Stocks	50%	22%	6.6%	3.1%	4.1%
Cash	174%	76%	4.3%	0.1%	0.0%

While predicting short-term returns is challenging, longer-term returns can be estimated with more confidence. For example, the expected total return of holding US bonds to maturity is known and will be 1.8% over the next 10 years. And because this pricing impacts the discount rate on other assets, and because risk premiums have fallen substantially in recent years, the expected returns of all assets are now low. Using a relatively simple calculation that accounts for the current bond yield and the likely future cash flows of equities, we estimate the long-term expected return of US equities is about 3.2%. The following charts show the past accuracy of such estimates. It shows past estimates of the expected 10-year returns versus actual subsequent 10-year returns of equities and bonds since 1970. As these charts show, the expected returns of the above mixes of assets are likely to be in the low single digits across the developed world.





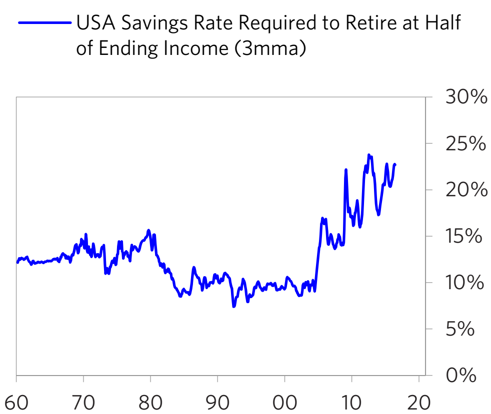


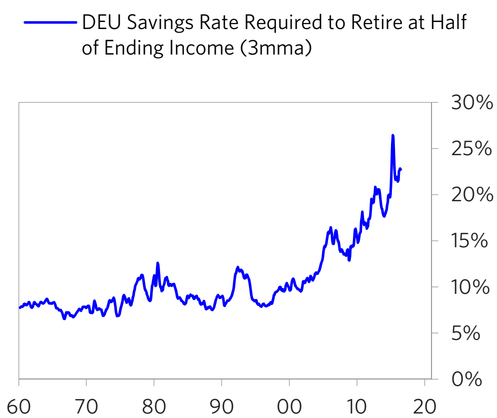
Low Returns Require Either More Saving or Less Retirement Income

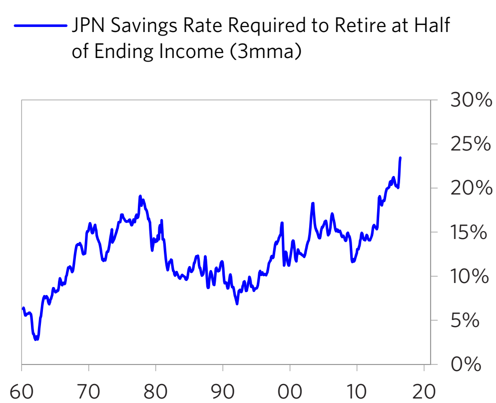
To illustrate the effects of this low return environments on household savings, consider the simple example of a person who starts saving at age 30, plans to retire at age 65, will live to age 80, wants to retire on half of their final working income, and saves in bonds. As shown in the table below, at the yields that existed from the 1970s through most of the 2000s, this saver, living in the US, Germany, or Japan, would have needed to save about 10% of their annual income to achieve their retirement goal. At today's forward yields they would need to save more than double that amount. If all workers raised their savings rates by these amounts, GDP would fall by an amount that would easily match the last recession. Alternatively, and more likely, if the person continues to spend and save as they have, their retirement income would be a fraction of the goal, reducing future income. Either way, spendable income falls. And, of course, as people live longer, more savings are needed.

Savings Rate Required to Retire at Half of Ending Income

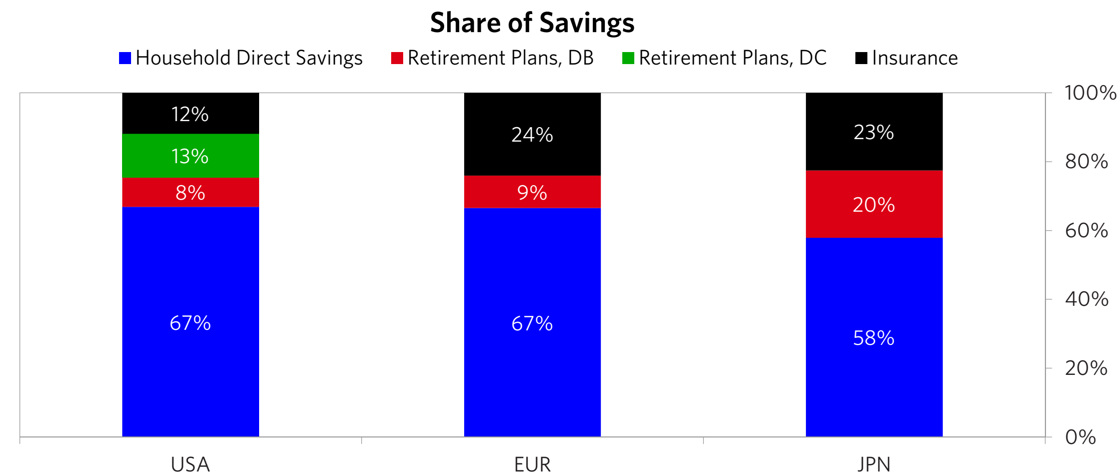
	Today	2000	1990	1980	1970
United States	23%	10%	10%	14%	14%
Germany	23%	9%	9%	11%	8%
Japan	24%	12%	10%	14%	16%



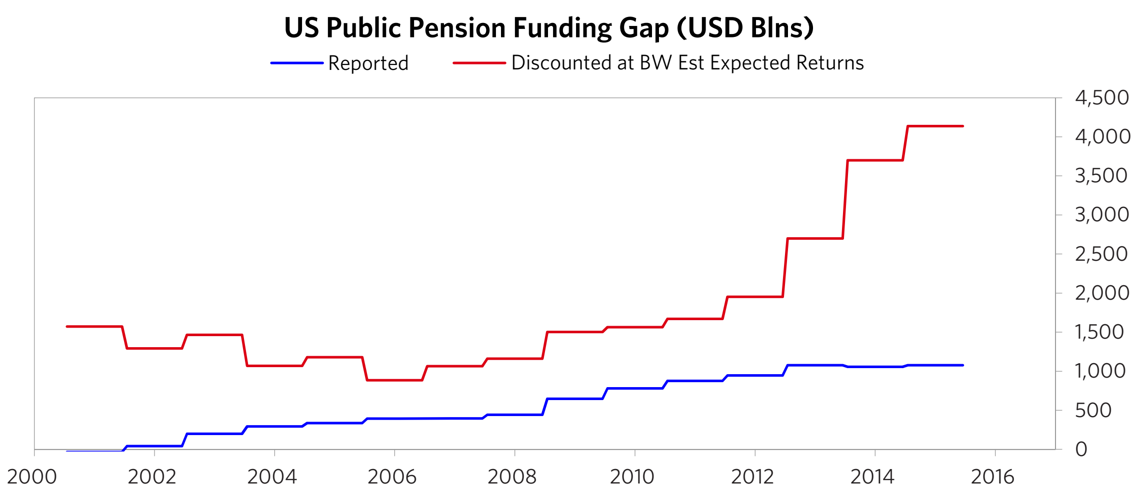




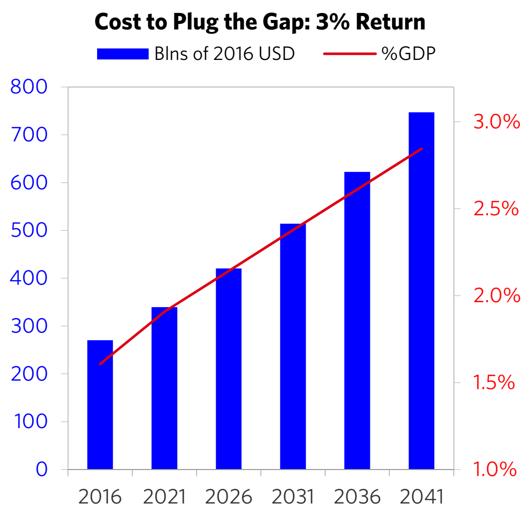
All savers face these challenges. The charts below show the breakdown of the major savings vehicles in the US, Europe, and Japan.

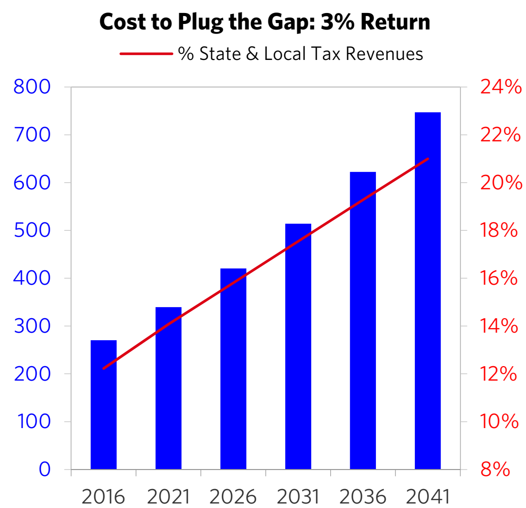


In the US, the entities with the most clearly recognized gaps in their savings in this environment are defined benefit pension funds. The gaps are recognized because governance structures require it. Comparable gaps exist in the defined contribution world, but are less recognized and therefore less likely to be addressed. It is well recognized that defined benefit pensions have substantial funding gaps assuming 7% to 8% returns. At the low single digit returns that we expect, the funding gap would be on the order of $4 trillion versus the reported $1 trillion. While the retirement liabilities associated with defined contribution plans are, by definition, not defined, at the same level of retirement benefits their underfunded status would be roughly comparable.

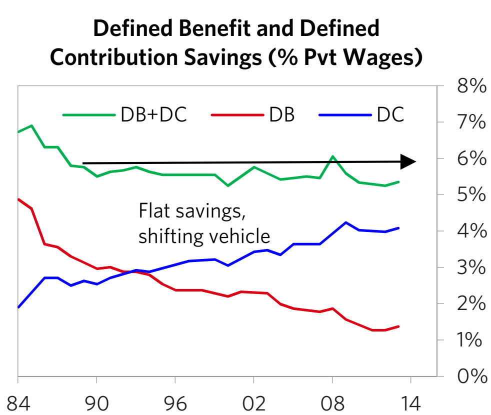


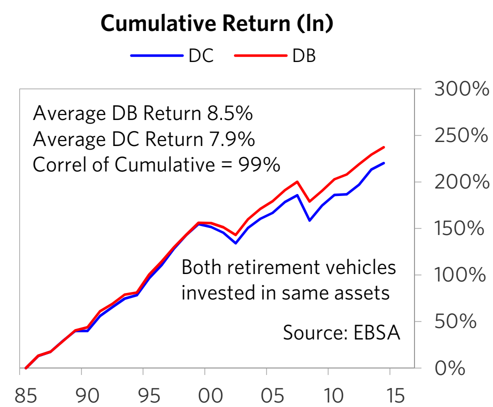
If future asset returns are in the ballpark of what we expect, the path to retirement plan sustainability will require, like Japan, some combination of lower retirement income and increased savings. The cost to fill the gap will be much less if it is addressed sooner, and much bigger if action is delayed. Taking public pensions as an example because the liability is defined, we estimate that if public pensions start plugging the hole now and assume a 3% return going forward, they'll need to save/contribute an extra $270 billion per year over the next 30 years, which amounts to about 1.6% of US GDP and 12% of state and local tax revenues. But if they wait 10 years, we estimate the impact per year will balloon to about $420 billion per year over 30 years. And if they don't plug the gap, and let the machine run its course, low asset returns will inevitably cause lower income for savers through lower retirement income as the assets are depleted. As mentioned, DC savers face similar outcomes and would have to make comparable shifts in order to close their retirement gaps, roughly doubling the size of the national savings adjustments relative to what is shown below to cover the full retirement gap.





Over time, US retirement savings have shifted further into defined contribution rather than defined benefit plans. But households' contribution into retirement plans overall has been roughly flat, so an inadequate amount of money is still being saved, just in a different vehicle. Since defined contribution plans invest their money in roughly the same assets, defined contribution plans face the same set of challenges. As shown in the chart below on the right, the returns of DC and DB have been similar, with DC slightly lower. For defined contribution plans, the challenge doesn't get officially reported because their liabilities are not pre-defined, but the gap in households' retirement income is similar.





In Europe, the largest gaps for savers with defined liabilities are in the life insurance sector. Life insurance companies' existing guaranteed rate is between 3% and 4%, compared to the expected returns on their assets which is somewhere between 0.5% to 0.7%. EIOPA, an insurance sector regulator, stress-tested individual firms in Euroland and found that if yields remained this low for an extended period of time, 24% of insurance companies would not meet capital requirements, and in 8-11 years insurers would start having problems meeting promises to policy holders.

European Insurance Companies* (Eur, bln)

		Guaranteed Return	
		New Business	**Existing Bus.**
Premiums	3663		
o/w Traditional	2485	0.8%	2.8%
o/w Non-Life	1178	No guarantee	
		Expected Return	
Assets	4764	0.5% - 0.7%	

*Excluding Unit Linked Accounts

This gap resulted from a duration mismatch when yields fell. In particular, many European insurers make fixed-return commitments on insurance contracts, which tend to be longer-term than available investments, leaving a natural asset-liability mismatch. Commitments on their books were of course made with higher yields than exist today, so as existing assets mature before the liability, funds are reinvested at yields that are lower than the yield on the commitment made. On average, the asset-liability mismatch in Euroland is about six years, and it is largest in core countries like Germany where most of the assets are concentrated and where interest rates are also lowest. Over time, this will imply either inadequate capital reserves or a failure to meet the liability commitments.

European Insurance Companies

Country	Duration Mismatch	%Total Assets (2013)
Euroland	5.9	
France	4.8	35%
Germany	10.7	28%
Italy	0.8	10%
Netherlands	5.4	7%
Spain	0.8	5%
Belgium	1.4	5%
Luxembourg	5.5	2%
Austria	10.1	2%
Finland	5.4	1%

Source: EIOPA Stress Test 2014

While these challenges are relatively new in the US and Euroland, Japanese savers have faced this squeeze for two decades. Their defined benefit pension funds—the biggest of which is GPIF—coped with the situation both by forcing households to save more, increasing contributions by about 20%, and by defaulting, cutting benefits by about 20%. The combination was and continues to be a material drag on spending in Japan. On the margin, they also shifted their asset allocation. In particular, they:

A) Raised contributions by about 20%, through:

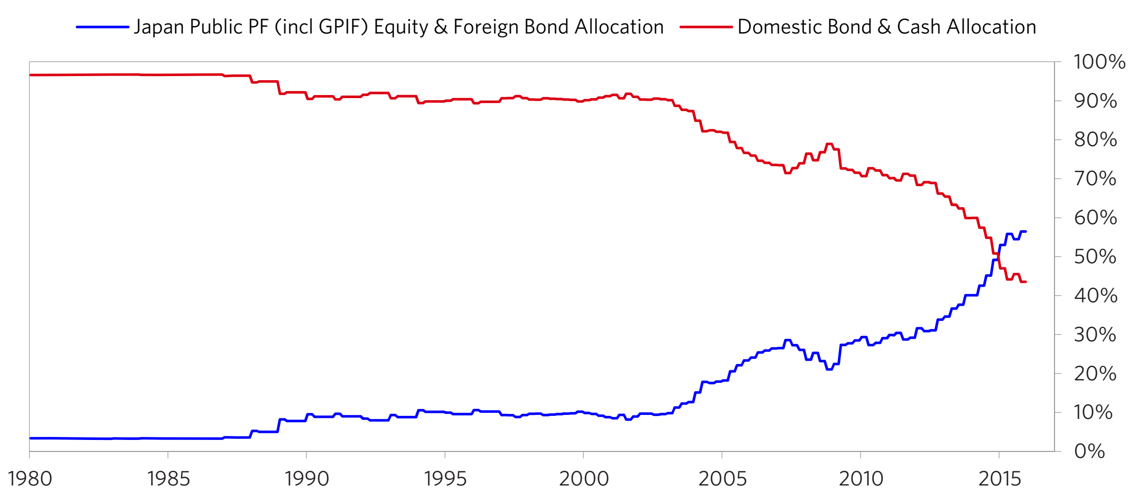
1) *Raising contributions from workers*. In 2004, reforms raised the contributions from workers by about 25% over 10-15 years, from 13,500 yen a month in 2004 (about $125) to 16,900 yen by 2017 (about $160).
2) *Raising contributions from the government*. The government contribution was raised for the base-line National Pension, financed by the national tax system.
3) *Spending out of the principal of the fund*. In addition to raising inbound contributions, the public fund is drawing down the actual principal of the fund, transferring the burden elsewhere.

B) Cut Benefits by about 20%, through:

1) *Outright reduction of benefits.* In the 2000 reforms, benefits were cut 5% for new beneficiaries.
2) *Over-time reductions.* In the 2004 reforms, the calculation for pension benefits was changed, which gradually cut the ratio of the pension benefit to the average worker's income from 62% to 50% by 2038.
3) *Switching indexation.* Benefits were originally indexed to wages. In 2000, the indexation was changed from wages to CPI. In 2004, the indexation was switched to "macro-economic," which adjusts benefits based on national population and life expectancy.
4) *Raising the retirement age.* In the 2000 reforms, the retirement age was raised from 60 to 65 and early benefits were eliminated.

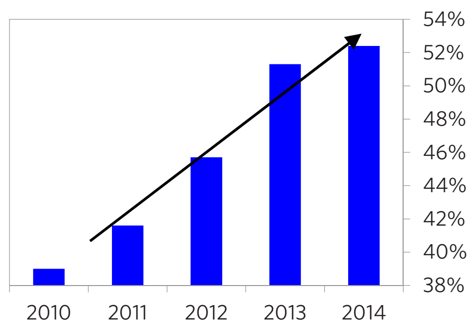
C) Bought assets with higher returns and higher risk:

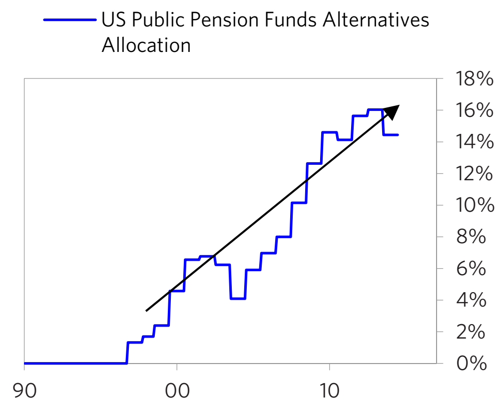
Historically, pensions' investment strategy was a "5:3:3:2" strategy, which stipulated that at least 50% of funds invested had to be placed in low-risk assets like Japanese government bonds; assets invested in the domestic stock market had to be 30% or less; foreign currency-based assets had to be 30% or less; and real estate 20% or less. Over time, though, the funds have taken more risk in order to earn a higher return.



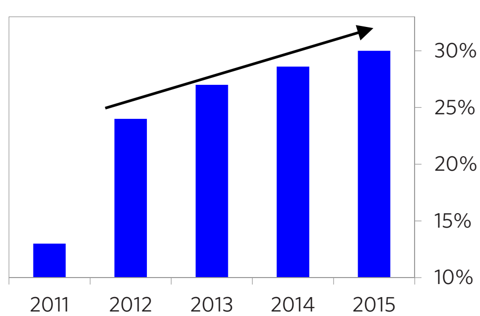
The rest of the world now faces circumstances analogous to Japan. The move to take more risk is pervasive as shifting to riskier assets avoids the politically and economically painful actions of cutting benefits or raising contributions. But the impact is often limited depending on the nature of the saver's liability and the path of investment returns. For example, if losses or underperformance comes early, the compounding effects mean that raising returns by taking more risk is unlikely to significantly reduce the long-term probability of default, and may raise it. This is because even though the expected return of the fund is higher, on an expected value basis the probability of meeting the liability may not improve, because the compounding drag from losses can be fully offsetting. Below are just a few examples of many where institutional investors are moving to riskier assets. Large US pension funds are shifting their bond portfolio from government bonds to higher risk and higher yielding corporates, as well as moving more aggressively into illiquid assets. European insurers have also been moving into lower rated riskier bonds in search of higher yields, and Japanese insurers are moving into higher yielding foreign assets, primarily foreign bonds (partly unhedged).

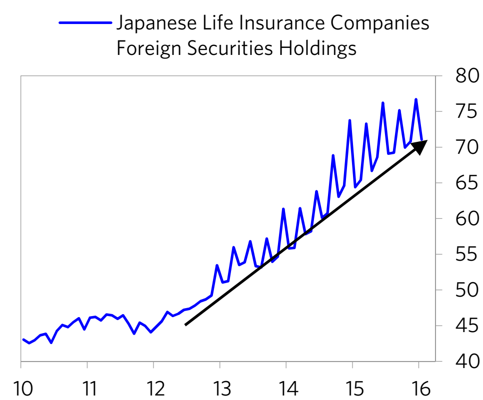
US Large Pension Funds Corporate Bond Allocation (%Fixed Income)





EUR Insurers Exposure to BBB and Lower Grade Bonds (%Fixed Income)





The savings challenge presented by future low returns will play out over many years. The slow pace at which the squeeze unfolds will make the effects and their causes almost indiscernible, but over time it will produce a notable drag on income and spending in the developed economies, with related social and political impacts.