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Investment Panel:
Can We Invest Our Way Out?
A 10-Year Outlook on the Investment Environment

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June 6, 2019

Key Task Force Investment Questions & Requests

Investment Panel:

- "Can we Invest Our Way Out"

- "What if we Employed the Nevada or Passive Investment Strategy?"

Presentation:

- "What is our Investment Strategy and Performance?" Provide an Overview.

- "Do You Have Recommendations on How We Can Do Better?" How Can the Task Force Help?"

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PERA SOLVENCY TASK FORCE

STATE OF NEW MEXICO

June 6, 2019

Allan Martin, Partner

FACING THE CHALLENGE OF SUBDUED CAPITAL MARKET FORECASTS

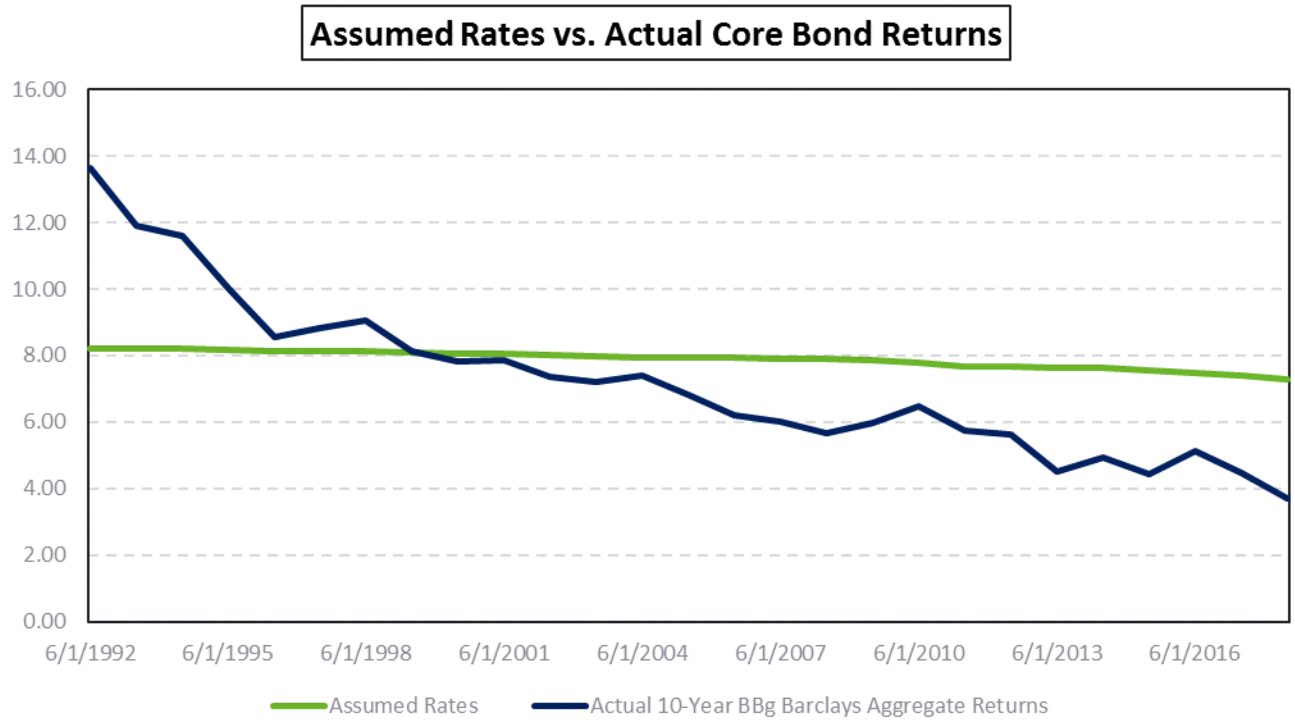
- **All investors face the same fundamental challenge**
  - Contributions + Investment Earnings must equal or exceed total Obligations (Benefits and Expenses)
  - For pension plans, this is the classic equation:

$$C + I = B + E$$

- **If investment return is lower than expected, adjustments are required to balance the equation**
  - Contributions must be higher (which challenges sponsor budgets), or
  - Benefits must be lower (politically difficult), or
  - More risk must be taken to earn a similar return, or risk must be taken more efficiently

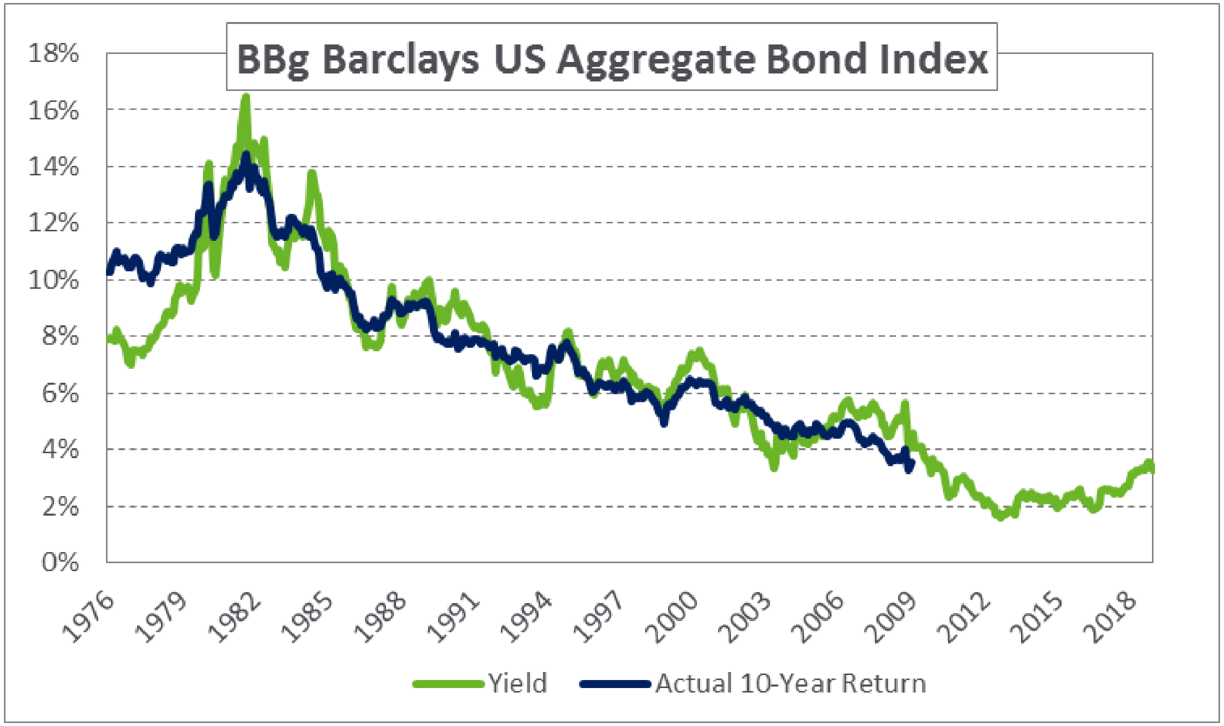
- **Adjusting investment return and risk is the most fluid of these factors**
  - Requires an understanding of both assets and liabilities to determine the "right" amount of risk in a portfolio
  - Requires any potential structural challenges from future cash flow dynamics be addressed and understood
  - Even optimal portfolio returns may be insufficient in near term

PF MEDIAN ASSUMED RATES VS. CORE BOND

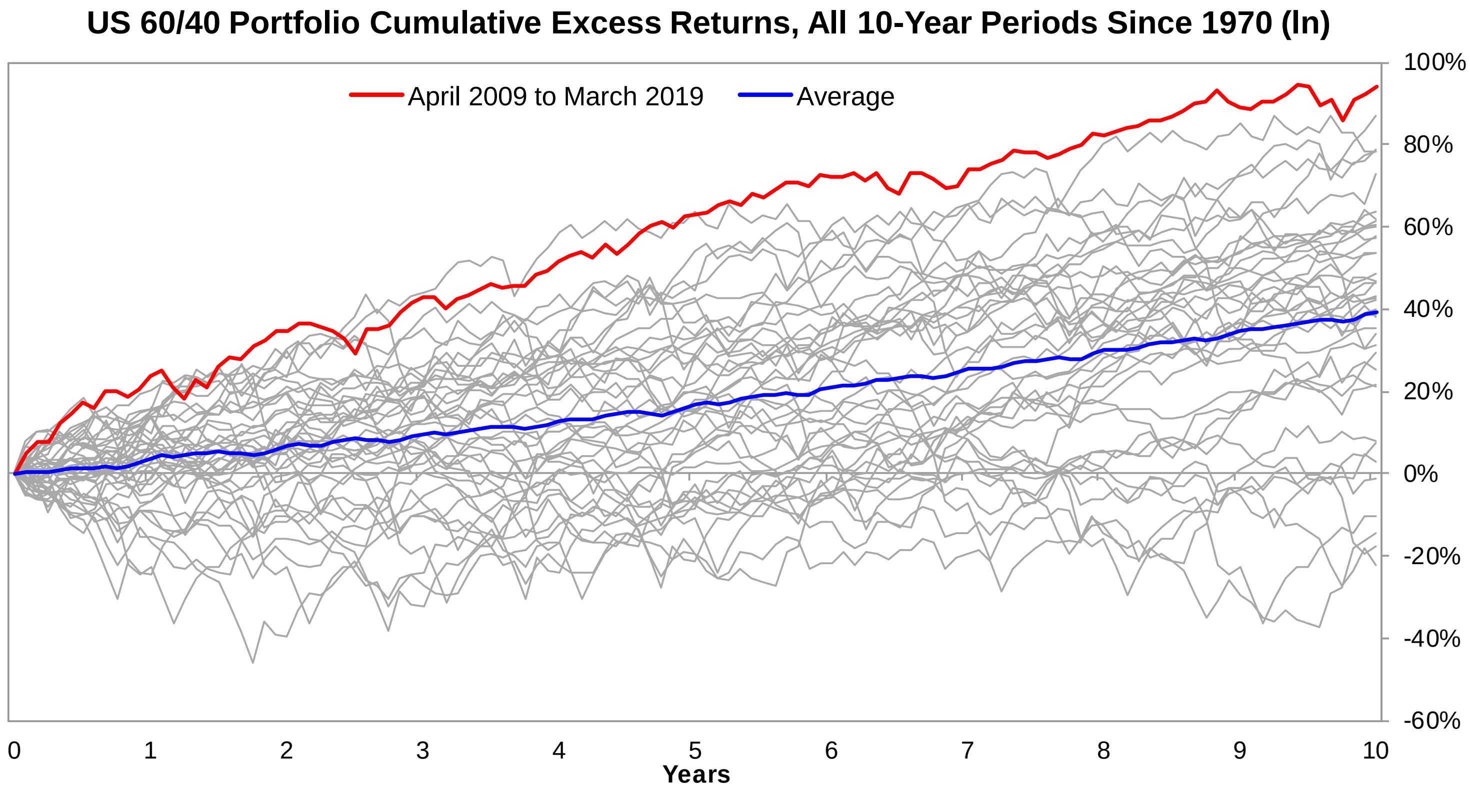


OUTLOOK FOR CORE BOND RETURNS IS MUTED

- **For fixed incomed, current yield serves as excellent predictor of 10 year holding period returns.**



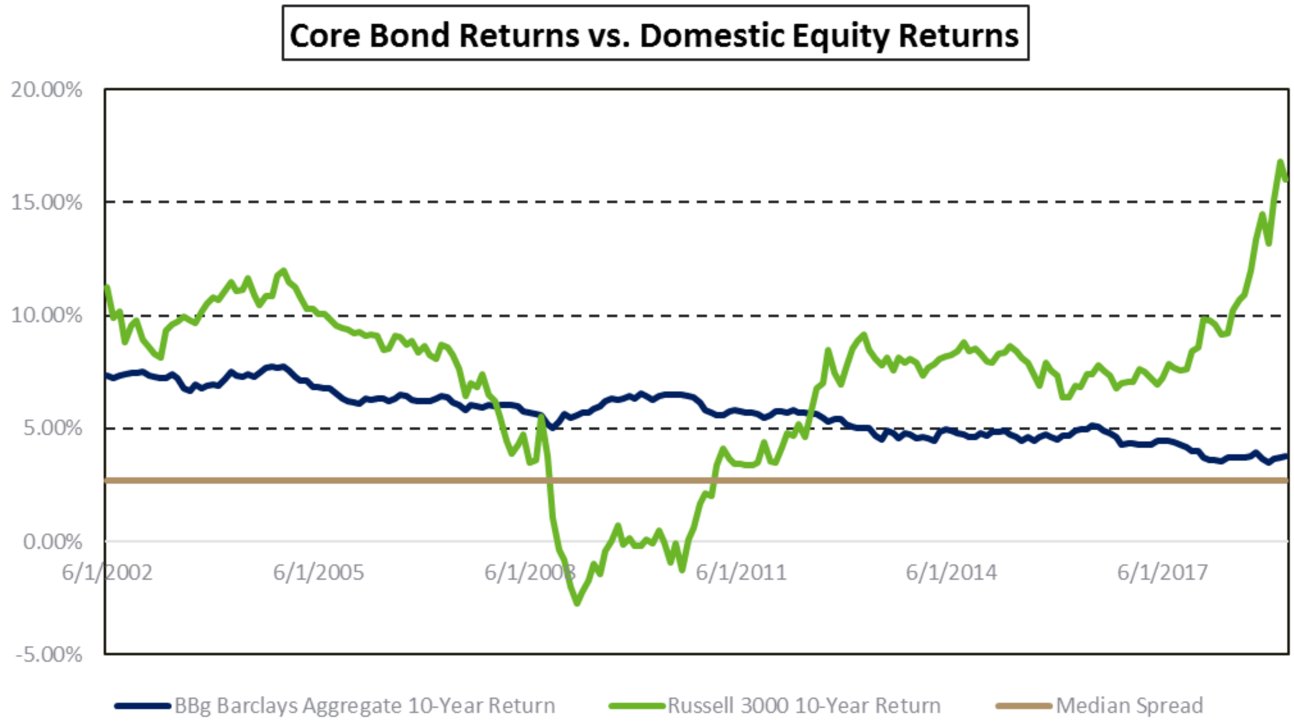
- **Current NEPC 5-7 year forecasted return for core bonds is 3%**



US 60/ 40 Portfolio Excess Return (Ann.)	
Since 1970	4.2%
April 2009 to March 2019	9.9%
Forward-Looking	~2%

Analysis through March 2019. The 60/40 represents 60% capital weight in equities and 40% capital weight in nominal bonds. Forward-looking total return estimate based on Bridgewater's 10-year value estimates. There is no guarantee that these results will be achieved. Past performance is not indicative of future results. Please review the "Important Disclosures and Other Information" located at the end of this document.

US EQUITY RETURNS VS CORE BONDS



- Adjusted Long-term spread of Equity/ Core Bond is ~3%
- Current Forecasted 5-7 Year LC US Equity Return is 6.0%

CORE RETURN 5-7 YEAR ASSUMPTIONS

	Asset Class	5-7 Year Return	Change 2019-2018	Volatility
	Cash	2.50%	**+.50%**	1.00%
	US Inflation	2.25%	**-0.25%**	-
Equity	Large Cap Equities	6.00%	**+0.75%**	16.50%
	International Equities (Unhedged)	6.75%	**-0.75%**	20.50%
	Emerging International Equities	9.25%	**+0.25%**	28.00%
	*Private Equity**	*10.01%*	***+2.01%***	*24.16%*
Rates/Credit	Treasuries	2.50%	**+0.25%**	5.50%
	*Core Bonds**	*3.04%*	***+0.29%***	*6.10%*
	High Yield Bonds	5.25%	**+1.50%**	12.50%
	*Private Debt**	*7.60%*	***+1.10%***	*11.97%*
Real Assets	Commodities	4.25%	**-0.50%**	19.00%
	Midstream Energy	8.25%	**+1.00%**	18.50%
	Non-Core Real Estate	7.00%	**-**	17.00%
	Core Real Estate	6.00%	**+0.25%**	13.00%
Multi-Asset	*US 60/40**	*5.07%*	***+0.53%***	*10.45%*
	*Global 60/40**	*5.08%*	***+0.17%***	*10.95%*
	*Absolute Return**	*5.74%*	***-0.09%***	*8.15%*

**Calculated as a blend of other asset classes – see page 39 for additional details*

SUMMARY

- **One of the most dangerous things an investor can do is to extrapolate into the future trends that shouldn't be extrapolated.**
- **We are likely at or near the end of several major secular trends that supported economies and assets over the past few decades.**
  - Falling interest rates supported markets
  - Globalization enhanced productivity and lowered inflation
  - Global adoption of free-market economic model led to prolonged shifts to pro-business environment, which supported corporate margins, while less of the benefits went to labor.
- **Central banks are shifting toward easing but will likely struggle. Together with rising populism and still high levels of debt, this creates unique risks.**

CONCLUSION

- **Highly unlikely that a 60/40 balanced portfolio will exceed 6% over next 10 years**
- **Diversification will help, but will still fall short of 7 1/2%**

Tom Toth, Investment Consultant
Wilshire Associates

Investment Returns: Can we "Catch-Up"?

71% Funded Ratio	10 Years
Approximate Required Return to "Catch Up" to 100% Funding	10.9% annualized return

Probability of Achieving "Catch Up" Return	
Current Portfolio	11.2% probability

Source: Wilshire Associates

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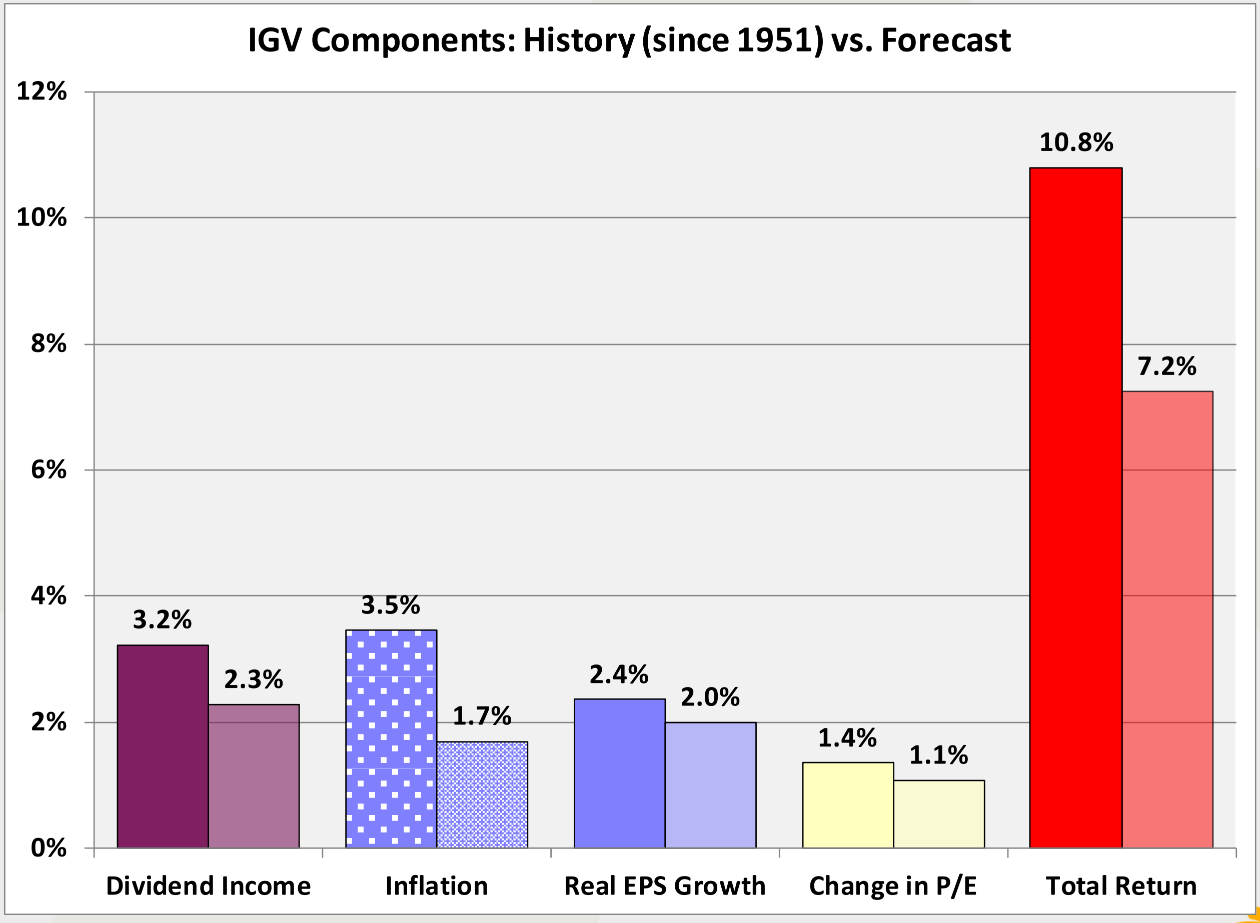
Wilshire US Stocks Forecast Model



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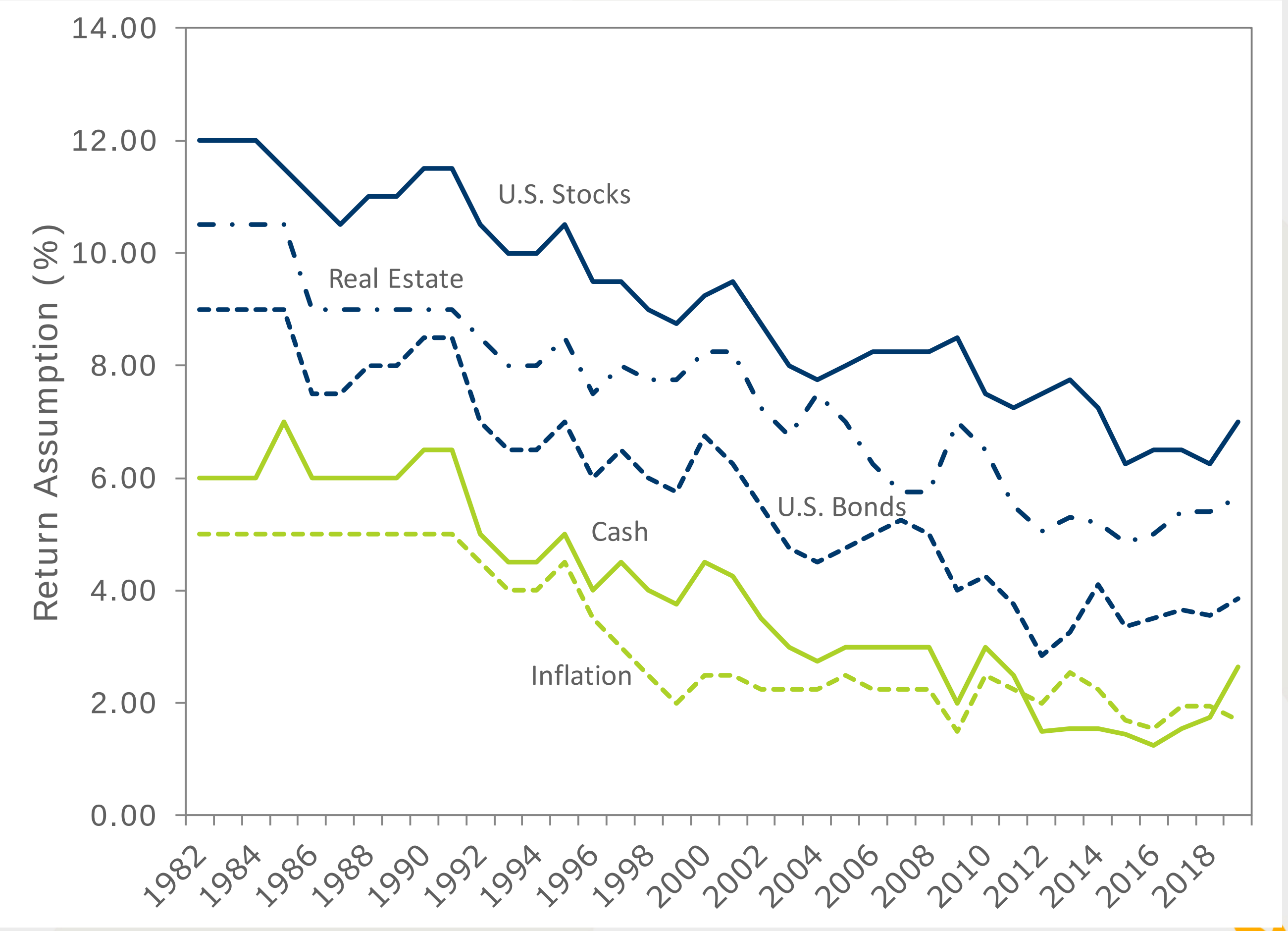
Wilshire Investment Return Forecasts Over Time



Bridging the Return Gap- PERA Strategy

Note: 10-year forecast.; projected and subject to change based on market volatility

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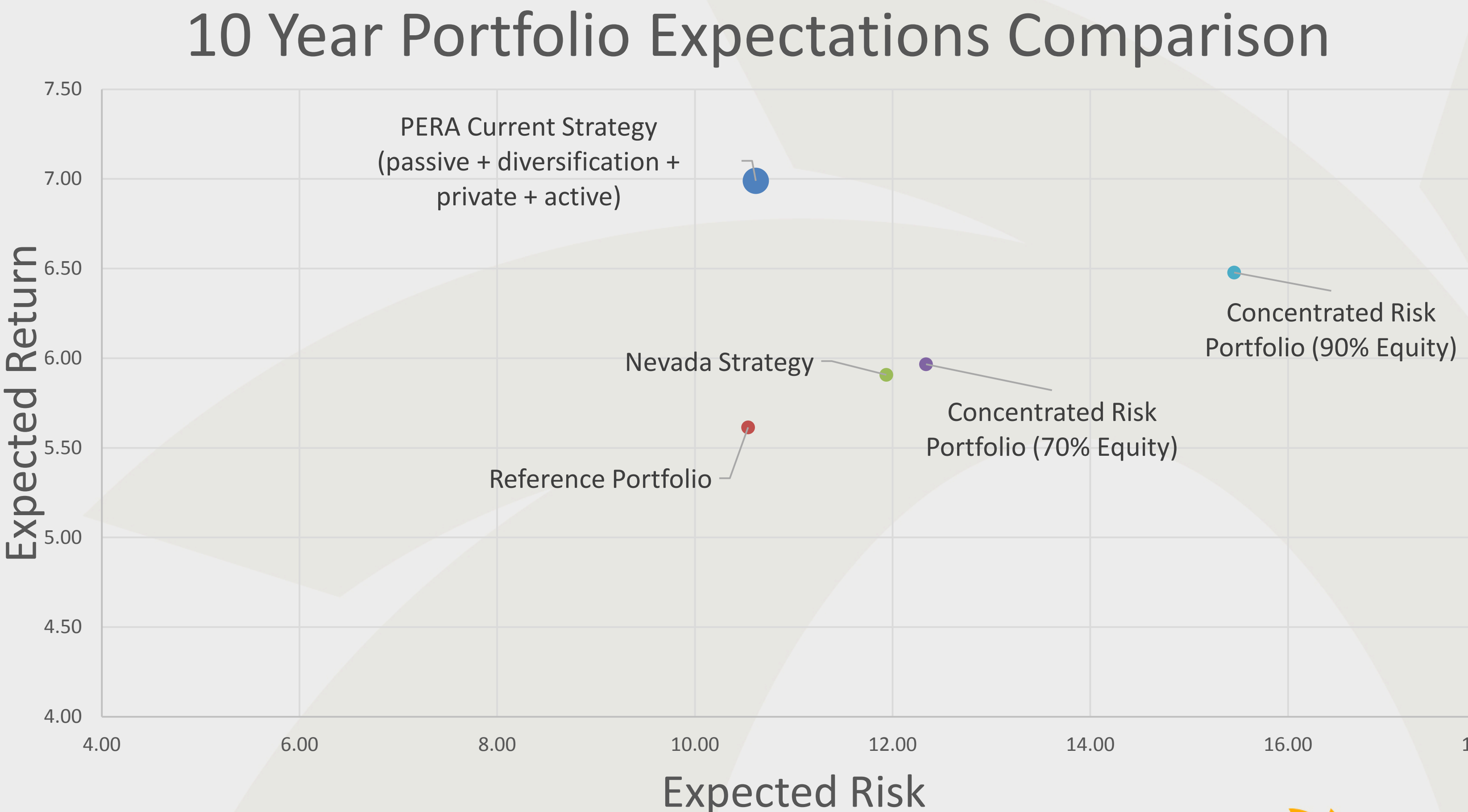
What If We Moved to All Passive?



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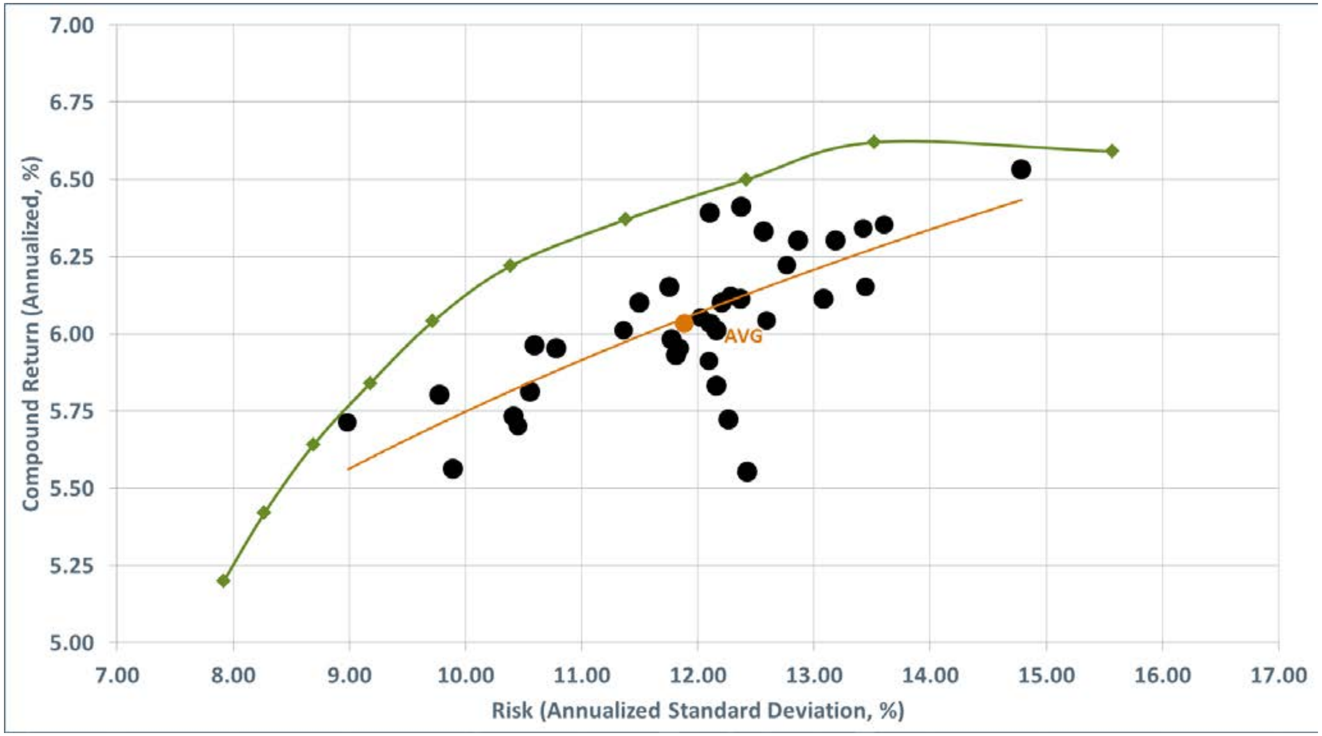
New Mexico State Investment Council

Governor's Task Force PERA

Robert "Vince" Smith, CFA, Deputy SIO and Chief Investment Officer
June 6, 2019

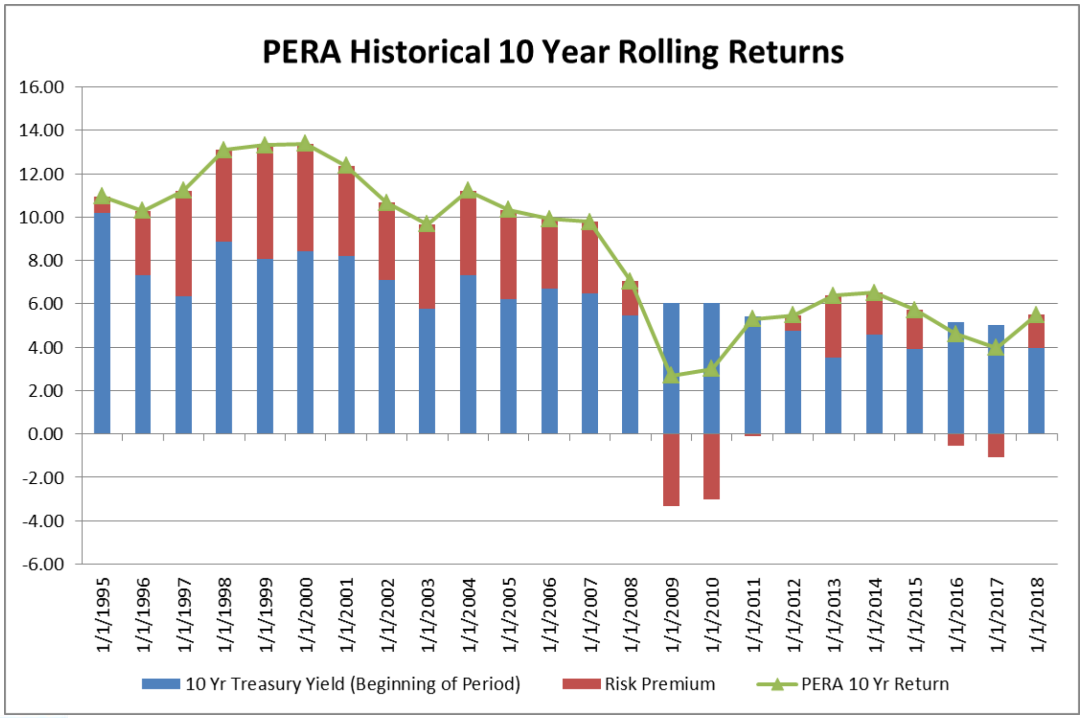
Public Fund Long Term Future Return Expectations – "Black Dot Chart"

- The graph below identifies the long-term future return expectations of 37 large (greater than $5 billion in assets) public funds, as derived from the asset allocations of their investment portfolios. Each "black dot" represents a distinct fund/asset allocation. This group of funds is constructed to be representative of the large public fund universe.
- Each fund's asset allocation in modeled through consultant RVK, Inc's long term forward-looking risk, return and correlation assumptions to derive an expected return and expected volatility.
- On average, funds are expecting a compound, annualized return of roughly 6.00% with a range of about 5.50% to 6.50%. This is a long term assumption. If one shortens the time horizon to the next ten years, return expectations are roughly 25 to 50 basis points (0.25% to 0.50%) lower.
- We estimate there are 1,200 "primary fiduciaries" at large public funds in the U.S.—Trustees, Executive Directors, Chief Investment Officers and General Investment Consultants–who make the asset allocation decisions at their funds and who collectively "paint the picture" regarding future expected rates of return for public funds, as captured below..



PERA Historical Risk Premia Earned

- The graph below indicates PERA's 10 year rolling investment returns (green line). The table to the right contains the underlying data.
- The returns are broken down further into the yield on the 10-year Treasury bond at the beginning of each 10 year period (representing the "sure thing" portion of the return—blue bars) and a "risk premium" earned by holding a portfolio of riskier investment assets rather than just the 10-year Treasury bond (red bars).
- The average of the risk premiums over these periods is 2.15%; the median is 2.93%; the highest observation is 5.25% and the lowest observation is -3.33%.
- Recently, the 10 year Treasury bond has been trading at about a 2.20% yield.



Return End Date	PERA 10y	10Y Treas Yield	Treasury Yield Date	Risk Premium
6/30/1995	10.95	10.18	6/30/1985	0.77
6/30/1996	10.30	7.32	6/30/1986	2.98
6/30/1997	11.22	6.37	6/30/1987	4.85
6/30/1998	13.11	8.87	6/30/1988	4.24
6/30/1999	13.32	8.08	6/30/1989	5.24
6/30/2000	13.39	8.41	6/30/1990	4.98
6/30/2001	12.37	8.23	6/30/1991	4.14
6/30/2002	10.66	7.12	6/30/1992	3.54
6/30/2003	9.68	5.78	6/30/1993	3.90
6/30/2004	11.23	7.32	6/30/1994	3.91
6/30/2005	10.33	6.20	6/30/1995	4.13
6/30/2006	9.91	6.71	6/30/1996	3.20
6/30/2007	9.79	6.50	6/30/1997	3.29
6/30/2008	7.05	5.45	6/30/1998	1.60
6/30/2009	2.70	6.03	6/30/1999	-3.33
6/30/2010	3.01	6.03	6/30/2000	-3.02
6/30/2011	5.31	5.41	6/30/2001	-0.10
6/30/2012	5.47	4.78	6/30/2002	0.69
6/30/2013	6.39	3.52	6/30/2003	2.88
6/30/2014	6.52	4.58	6/30/2004	1.94
6/30/2015	5.72	3.92	6/30/2005	1.81
6/30/2016	4.61	5.14	6/30/2006	-0.53
6/30/2017	3.97	5.03	6/30/2007	-1.06
6/30/2018	5.49	3.97	6/30/2008	1.52

Comparison of the "Forward-Looking" & "Historical" View

- The tables below summarize the two views.
- On the forward-looking view, public funds who build the highest risk portfolios appear to be expecting compound returns of about 6.50% annually. The funds which take the lowest amount of investment risk appear to be expecting compound returns in the 5.50% annually area. These are "long term" estimates; over the shorter "next ten years" period, we expect returns to be lower than these by roughly 0.25% to 0.50%.
- Taking a historical view using PERA's actual historical returns one might (roughly) expect a range of 3.70% to 6.70% compounded annually, given the current starting point of 2.20% 10-year Treasury yields.

Fwd-Looking (Public Fund Universe) View

Category	Expected Return
Highest Risk Funds	6.50%
Higher Risk Funds	6.25%
Average Risk Funds	6.00%
Lower Risk Funds	5.75%
Lowest Risk Funds	5.00%

Historical View

Category	Risk Premium Multiplier	Risk Premium	Curr 10 Yr Tsy Yield	Expected Return
Very Lucky	150%	4.50%	2.20%	6.70%
Lucky	125%	3.75%	2.20%	5.95%
Expected	100%	3.00%	2.20%	5.20%
Unlucky	75%	2.25%	2.20%	4.45%
Very Unlucky	50%	1.50%	2.20%	3.70%

Note: Historical Risk Premium is about 3.00% at median