STATE OF WISCONSIN
Department of Employee Trust Funds
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SECRETARY

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CORRESPONDENCE MEMORANDUM

DATE: November 10, 2010

TO: Employee Trust Funds Board

FROM: Bob Conlin, Deputy Secretary

SUBJECT: Examination of Economic Assumptions

This memo is for the Board's consideration.

Attached to this memorandum is a letter dated October 19, 2010, from Keith Bozarth, executive director of the State of Wisconsin Investment Board (SWIB). In his letter, Director Bozarth asks the Board to review certain economic assumptions (investment returns and wage assumptions) used by the Wisconsin Retirement System (WRS) that are based, primarily, on current and future WRS asset allocations and long-term investment prospects. Department staff believes that reviewing the assumptions at this time is a prudent approach.

Actuarial valuations of the WRS are conducted annually by the Board's consulting actuary, Gabriel, Roeder, Smith & Company (GRS) and are based on several different economic and non-economic assumptions. State law requires the actuary to review the assumptions used in these valuations at least every three years. The most recent three-year review of these assumptions was conducted in 2009; it was based on WRS experience obtained in 2006, 2007 and 2008. Based on that review, the Board adopted new assumptions for use beginning with the December 31, 2009, valuation of the WRS.

Two economic assumptions used by the actuary that have a significant impact on the valuations are the **investment return assumption** and the **wage inflation assumption**. The investment return assumption is used to determine how much a pension plan's assets will grow to meet its pension liabilities. Generally, if the assumption is too optimistic, contributions to the fund will not meet pension obligations. If the assumption is too pessimistic, the contributions will be higher than they need to be, potentially causing undue economic hardship for participating employers and employees.

Board	Mtg Date	Item #
ETF	12.2.10	4B

As part of its three-year review, GRS noted in its November 19, 2009, report to the Board that SWIB had advised that the current investment assumption of 7.8% was still a reasonable expected return rate for the WRS portfolio. However, Director Bozarth notes in his October 19 letter that the long-term return expectations developed by SWIB's consultants have been declining over the past year. He notes that SWIB believes it is undesirable to take on more risk and volatility in its portfolio in order to meet the current assumption. He believes it is time to revisit the assumption.

The wage inflation assumption (currently 4%) is used to help determine the rate of growth of future benefit liabilities in the WRS. As with the investment return assumption, significantly over- or underestimating this assumption can disproportionally affect contribution levels. In general, reductions in the assumed investment return are often accompanied by reductions in the wage inflation assumption. This is because an economy that struggles to generate investment returns (e.g., corporate profits) is also likely to be one in which sustained wage growth is difficult. Wisconsin law recognizes this relationship and requires the actuary to examine the assumption for future wage growth if the investment return assumption is changed.

In light of the concerns raised by Executive Director Bozarth, the Department has begun working with SWIB and GRS to study the continued appropriateness of these two key assumptions, with the goal of having the actuary submit recommendations to the Board at the March meeting.

Both SWIB and GRS will provide a general overview of this issue at the December meeting.

Attachment

SWIB State of Wisconsin Investment Board

October 19, 2010

Employee Trust Funds Board
Department of Employee Trust Funds
801 W. Badger Rd., P.O. Box 7931
Madison, WI 53707-7931

Dear Employee Trust Funds Board:

The State of Wisconsin Investment Board (SWIB) recently completed its annual educational workshop and the first phase of our annual asset allocation review. For the reasons detailed below, I am writing to encourage the Employee Trust Funds Board (ETF) to review the economic assumptions (specifically the investment return and wage assumptions) used for the Wisconsin Retirement System (WRS). The goals of achieving lower return volatility and matching changed economic prospects indicate a review of both assumptions is in order.

I propose that SWIB staff and advisors work with ETF staff and its actuary to develop revised assumptions for certification to the ETF Board. Based on the anticipated WRS asset allocation and long-term investment prospects, I believe it is appropriate to consider such changes for implementation in the near term, rather than in conjunction with the customary three-year review process.

As you know, SWIB continues to explore strategies to reduce volatility of returns in light of the impact that variation can have on existing retiree pensions. Using the projected investment outcomes, retirees' pensions could be expected to grow over longer periods. Nonetheless, even with the potential changes to dampen volatility, we could expect negative pension adjustments as often as once out of three years. That projection includes the application of the current five-year smoothing of results. Volatility of returns also affects contribution rates, but the smoothing cycle is effectively longer for that calculation.

SWIB has been considering and implementing strategies to reduce volatility while still maintaining a 7.8% return expectation. However, the surest and most direct way to achieve a significant reduction in the statistical probability of frequent negative pension adjustments is to target a lower return in structuring the investment portfolio. For that reason, I believe the review of assumptions is appropriate.

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In addition, long term return expectations used in our asset allocation process have been declining over the past year. Based on advice from SWIB's asset allocation consultant, it appears likely SWIB would need to increase current risk significantly in order to have a reasonable expectation of returning 7.8% over a long period. In our view, that course is not desirable, and provides an additional reason to review assumptions.

I should emphasize that the return expectations used in our modeling process are longer term in nature (12-18 years), and are not based solely on concerns about the significant economic difficulties facing the global economy in the next few years.

The same economic factors that are affecting long and short term return prospects also will influence wage prospects, and, thus, justify a review of the wage assumption. My understanding is that Wisconsin law recognizes this connection by actually requiring that any amendment of return assumption be accompanied by an adjustment of the wage assumption.

The logical conclusion is that economic assumptions should be adjusted downward. That change would be consistent with the goal of decreasing the variability of pensions and consistent with keeping the overall portfolio risk at a reasonable level. It likewise reflects changing market expectations. I anticipate addressing the ETF Board in December, and will welcome working with your staff and actuary on a review.

Sincerely,

Keith Bozarth
Executive Director

cc: Dave Stella, Department of Employee Trust Funds
Norm Jones, Gabriel, Roeder, Smith & Co.

Economic Assumptions

ETF Board

December 2, 2010

Portfolio Return Construction

Portfolio Total Return = Cash Rate + Beta + Alpha

Achieving The Target Return

SWIB Portfolio Total Return		Cash Rate		Beta		Alpha
Since 1982						
10.5%	=	**4.8%**	+	**5.3%**	+	**0.4%**
Current						
?	=	**0.1%**	+	**?**	+	**?**
Prospective						
?	=	**2.0%**	+	**?**	+	**?**

Capital Market Expectations

- Developed by Asset Allocation Consultant
- Considers:
  - Historical Results
  - Risk Premiums
  - Comparison with Other Investors' Projections
  - Currency Projections
  - Inflation Forecasts
  - Capital Asset Pricing Model
  - GDP Growth Rates
  - Etc.
- Revised twice per year
- Tend to change incrementally

Declining Return Expectations
December 2001

	Allocation
Public Equity	57.0%
Fixed Income	34.0%
Real Estate	4.0%
Alternatives	5.0%
Cash	0.0%
Expected Return	8.46%
Expected Risk	11.54%

Declining Return Expectations
October 2010

	Current Allocation
Public Equity	55%
Fixed Income	26%
TIPS	3%
Real Estate	6%
Alternatives	6%
Active Risk	1%
Multi-Asset Strategies	3%
Cash	0%
Expected Return	7.91%
Expected Risk	12.60%

Declining Return Expectations
Current

	Expected Return	Expected Risk	Current Allocation
Public Equity	8.5%	17.4%	55%
Fixed Income	3.5%	4.8%	26%
TIPS	3.2%	4.5%	3%
Real Estate	7.3%	18.0%	6%
Private Equity	10.5%	34.5%	6%
Active Risk	5.5%	7.5%	1%
Multi-Asset Strategies	7.6%	12.6%	3%
Cash	2.0%	0.9%	0%
Inflation	2.2%		
Expected Return			7.56%
Expected Risk			12.64%

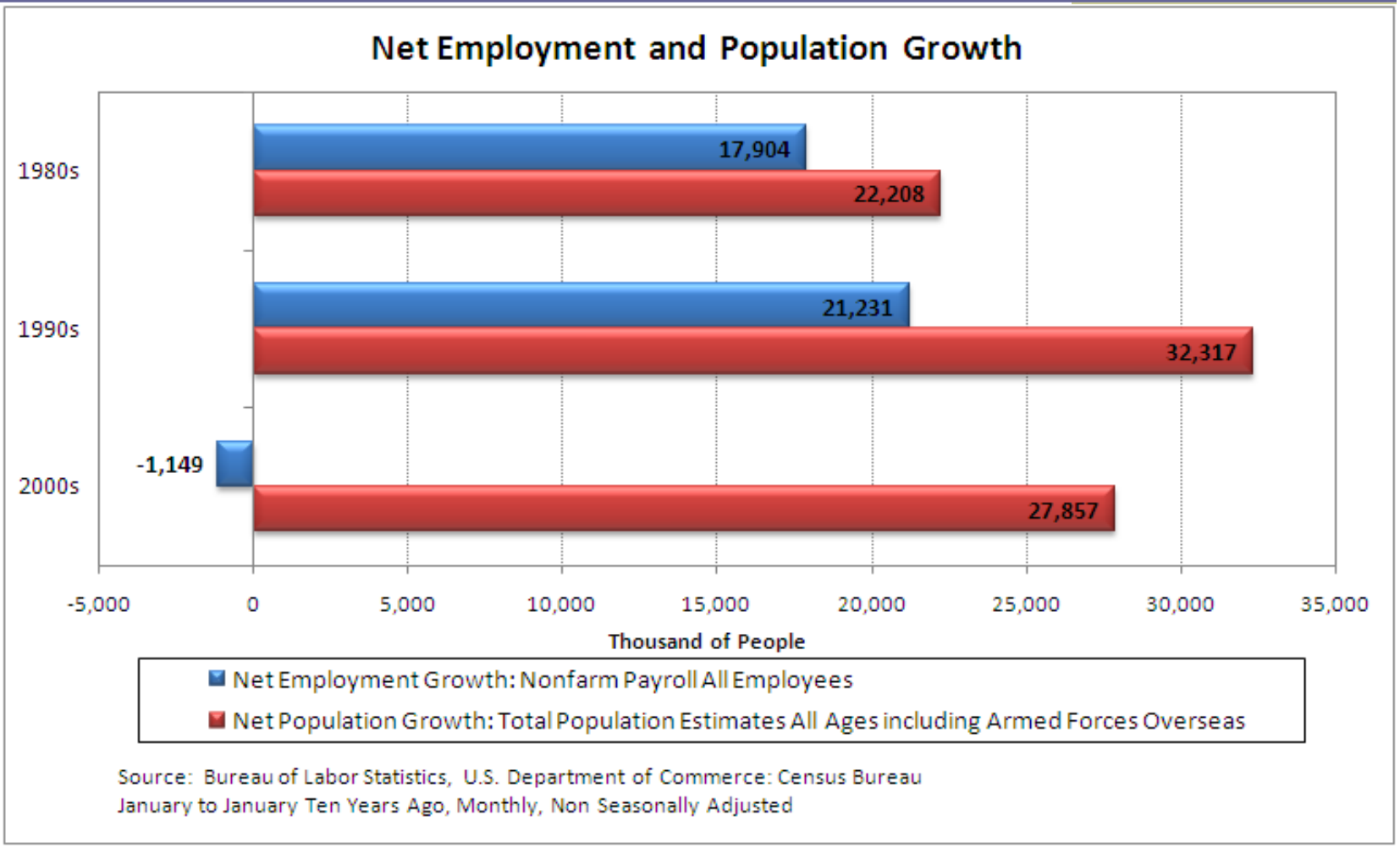
Increasing Risk Expectations
December 2005 – Risk Example

	Sample Mix
Public Equity	46.8%
Fixed Income	41.2%
Real Estate	5.0%
Alternatives	5.0%
Multi-Asset Strategies	2.0%
Cash	0.0%
Expected Return	7.90%
Expected Risk	10.59%

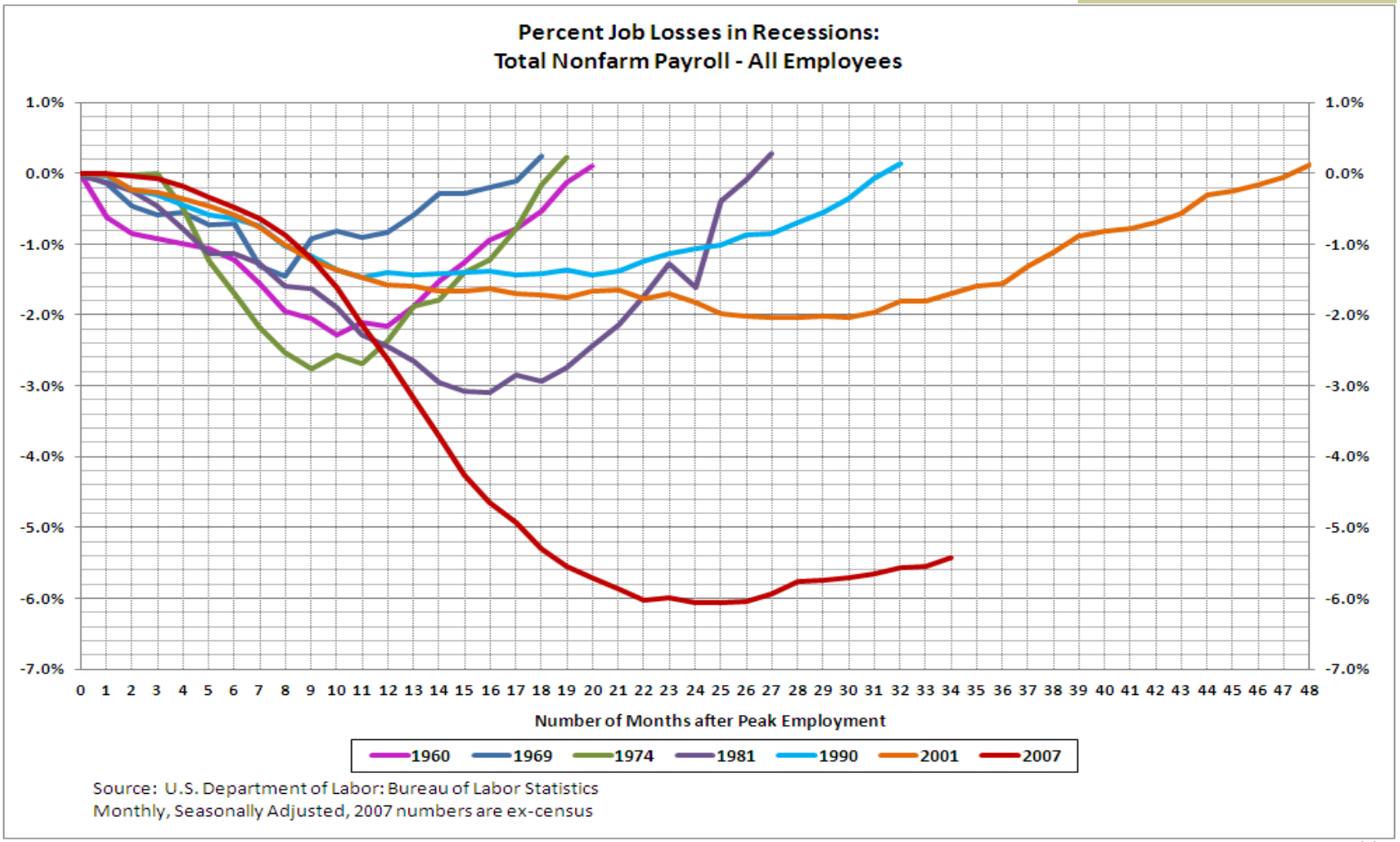
Wage Expectations - Factors

- Inflation Expectation
  - Imbedded in ETF assumption - 3.0%-3.5%
  - SWIB expectation - 2.2%
- Unemployment Level
- Persistent global competition
- Fiscal Issues for State and Local Government
- *State law recognizes connection between returns and wage growth*

Fewer Jobs, More People

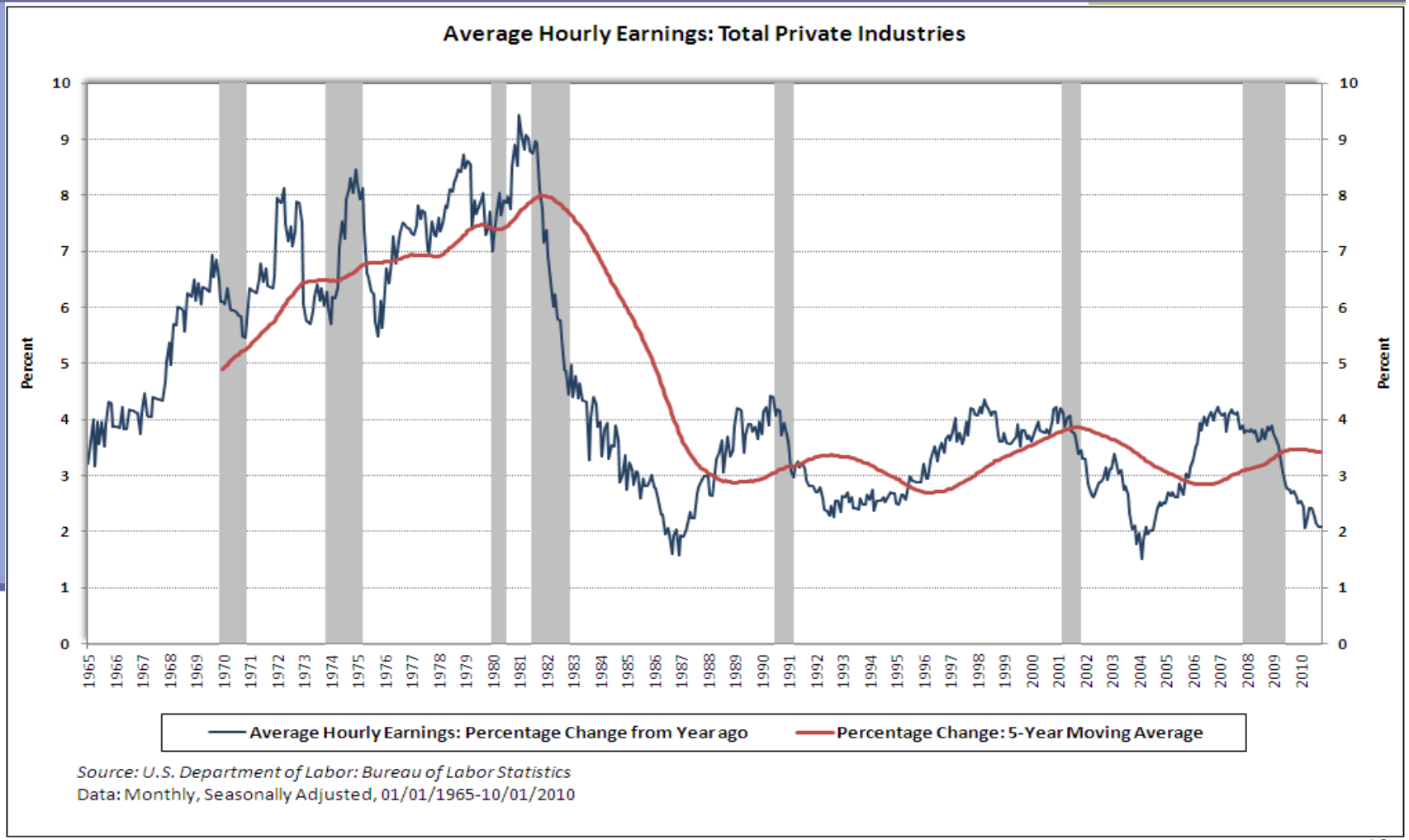


Very Slow Job Recovery



SWIB State of Wisconsin Investment Board

Recent History – Wage Growth



Source: U.S. Department of Labor: Bureau of Labor Statistics
Data: Monthly, Seasonally Adjusted, 01/01/1965-10/01/2010

SWIB State of Wisconsin Investment Board

Wisconsin Retirement System

Alternative Economic Scenarios and Their Effect on the Retirement System

December 2010

GRS
Gabriel Roeder Smith & Company
Consultants & Actuaries
www.gabrielroeder.com

Historical Patterns of Investment Return, Pay Increases and Inflation

Calendar Year Period	Gross Market Returns			
	Bonds (Long)		Cash Equiv. (T Bills)	Stocks (S&P 500)
	U.S. Treasury	Corp. (S&P AA)		
1950-59	(0.1)%	1.0 %	1.9 %	19.4 %
1960-69	1.4 %	1.7 %	3.9 %	7.8 %
1970-79	5.5 %	6.2 %	6.3 %	5.9 %
1980-89	12.6 %	13.0 %	8.9 %	17.5 %
1990-99	8.8 %	8.4 %	4.9 %	18.2 %
2000-09	7.7 %	7.6 %	2.8 %	(0.9)%
Last 60 Years	**5.9 %**	**6.2 %**	**4.7 %**	**11.0 %**
Last 27 Years	**9.5 %**	**9.4 %**	**4.8 %**	**10.8 %**
Last 10 Years	**7.7 %**	**7.6 %**	**2.8 %**	**(0.9)%**

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Historical Patterns of Investment Return, Pay Increases and Inflation

Calendar Year Period	Price Inflation (CPI)	National Average Earnings	Sample Balanced Fund*	
			Total Return (I)	Spread: I - NAE - e
1950-59	2.2 %	4.5 %	14.0 %	9.0 %
1960-69	2.5 %	4.3 %	6.2 %	1.4 %
1970-79	7.4 %	6.9 %	6.1 %	(1.3)%
1980-89	5.1 %	5.8 %	16.3 %	10.0 %
1990-99	2.9 %	4.2 %	15.4 %	10.7 %
2000-09	2.5 %	3.3 %	2.4 %	(1.4)%
Last 60 Years	**3.8 %**	**4.8 %**	**10.0 %**	**4.7%**
Last 27 Years	**3.0 %**	**4.0 %**	**10.8 %**	**6.3%**
Last 10 Years	**2.5 %**	**3.3 %**	**2.4 %**	**(1.4)%**

* *Based on 70% Equities/30% Fixed Income.*

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Comparative Statement - Core

Valuation Date	Number	$ Millions Annual Annuities	Fund Balance	Actuarial Reserve	Ratio	Change in Annuities	Change in CPI
1999	102,817	$1,513.8	$ 16,857.8	$ 15,687.2	1.075	17.1 %	2.7 %
2000	107,425	1,867.0	20,517.8	19,405.3	1.057	5.7 %	3.4 %
2001	112,142	2,048.6	21,979.7	21,283.6	1.033	3.3 %	1.6 %
2002	116,289	2,226.6	23,142.4	23,202.9	0.997	0.0 %	2.4 %
2003	121,582	2,364.7	25,071.9	24,724.0	1.014	1.4 %	1.9 %
2004	126,211	2,500.3	26,920.0	26,232.2	1.026	2.6 %	3.3 %
2005	131,674	2,691.4	28,575.3	28,359.7	1.008	0.8 %	3.4 %
2006	137,117	2,843.6	31,180.5	30,273.9	1.030	3.0 %	2.6 %
2007	142,906	3,075.3	35,050.1	32,877.5	1.066	6.6 %	4.1 %
2008	144,033	3,399.3	35,798.1	36,551.5	0.979	(2.1)%	0.1 %
2009	150,671	3,449.3	36,655.8	37,072.7	0.989	(1.3)%	2.7 %
27-Year Average						**4.9 %**	**3.0 %**
10-Year Average						**2.0 %**	**2.5 %**

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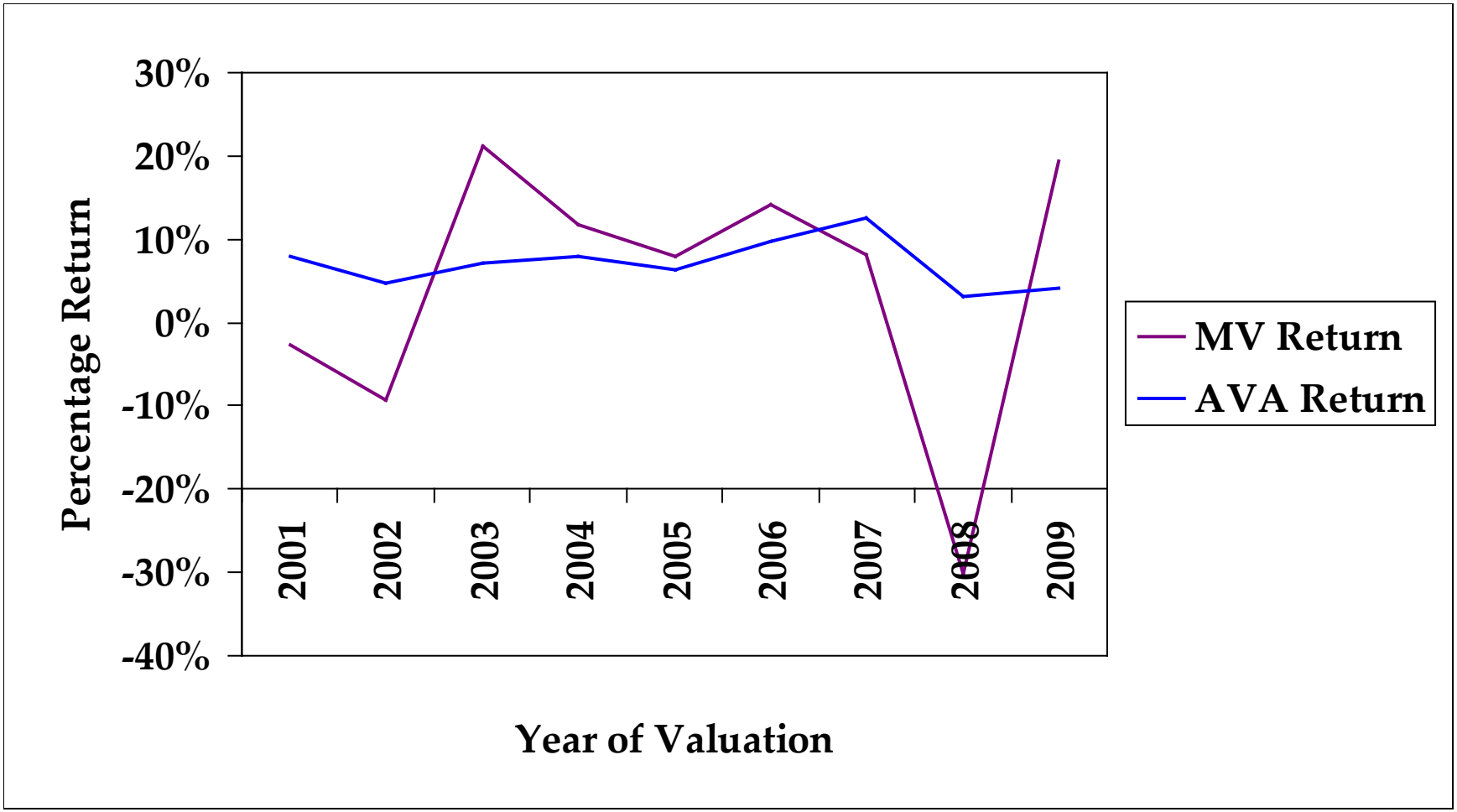
Market Value Return vs. Actuarial Value Return



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Recent Changes by Other Systems

- Colorado PERA, 8.5 to 8.0
- Pennsylvania PSRS, 8.5 to 8.25 effective 6/30/08, then to 8.0 effective 6/30/09
- Pennsylvania SERS, 8.5 to 8.0
- San Francisco City & County, 8.0 to 7.75
- Virginia RS, 7.5 to 7.0
- NY Common, 8.0 to 7.5
- Indiana TRF, 7.5 to 7.0
- Indiana PERF, 7.25 to 7.0
- District of Columbia Retirement Board, 7.5 to 7.0
- Illinois SERS and SURS, 8.5 to 7.75
- Arizona Public Safety, 8.5 to 8.0 over 2 years

Historical Wage Inflation

Average Salary Increase
(General Employees)

Year	Avg Pay Increase	Salary Gain (M)
2000	3.4%	-190
2001	2.8%	303
2002	2.1%	161
2003	3.5%	81
2004	2.8%	117
2005	2.3%	232
2006	3.1%	125
2007	3.4%	79
2008	4.3%	66
2009	2.1%	361
5 Yr Avg	3.0%	
10 Yr Avg	3.0%	

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Observations

- Evidence from SWIB seems to support a lower investment assumption and a lower inflation assumption
- The next few slides will demonstrate the economic impact of lower inflation and investment returns on the various stakeholders (active members, retirees, and employers)

Alternative Economic Assumptions

	Interest Rate	Wage Inflation	Expected Dividend*	Spread
Current	7.80%	4.00%	2.17%	3.80%
Alternative 1	7.50%	3.70%	1.88%	3.80%
Alternative 2	7.50%	3.50%	1.88%	4.00%
Alternative 3	7.30%	3.70%	1.69%	3.60%

* *Reduced by .5% for mortality improvements and technical adjustments.*

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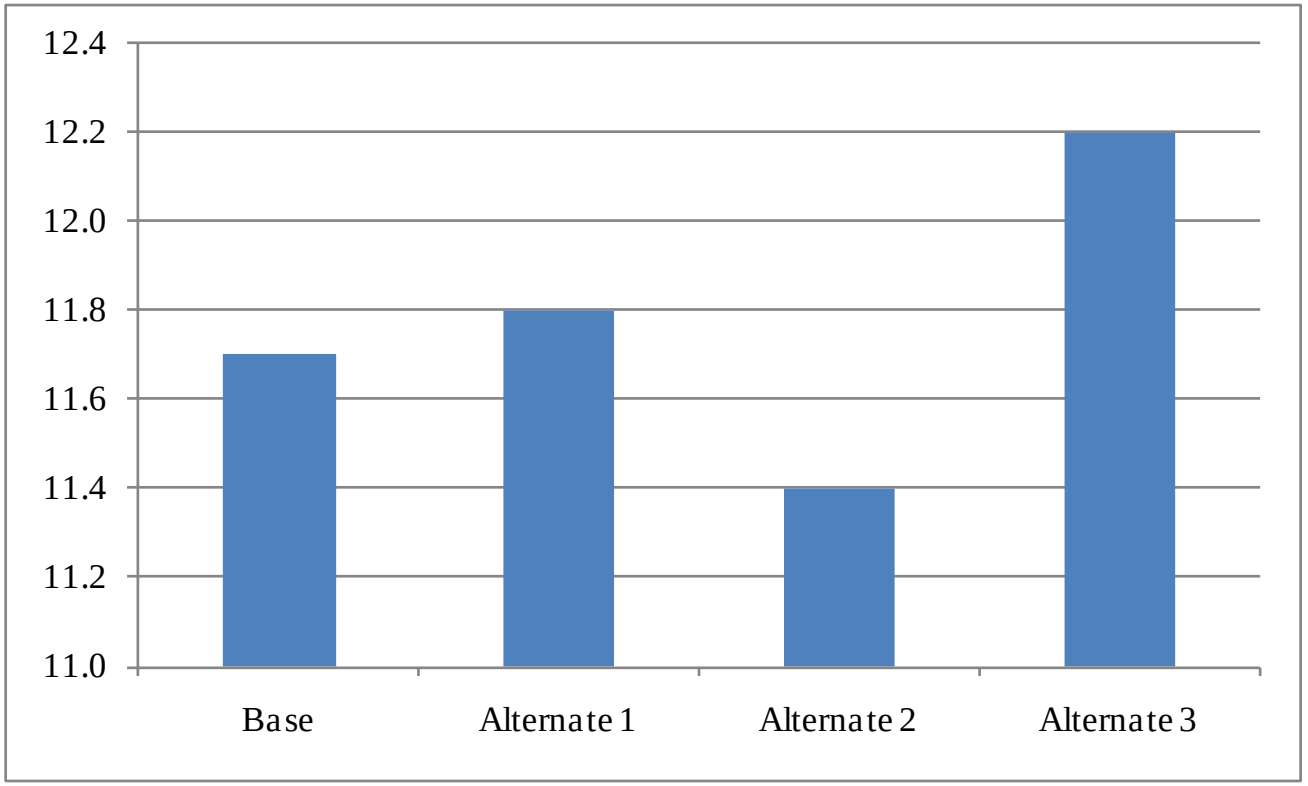
Contribution Rate Implications

Normal Cost Rate – General Employees



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Retirement Benefit Implications

	Monthly Benefits at Retirement					
	Age 60 Retirement		Age 65 Retirement		Age 70 Retirement	
	Formula	Money Purchase	Formula	Money Purchase	Formula	Money Purchase
Current	$5,189	$ 4,591	$ 7,366	$ 8,064	$10,242	$ 14,390
Alternative 1	4,759	4,211	6,658	7,293	9,124	12,833
Alternative 2	4,491	4,114	6,223	7,104	8,446	12,467
Alternative 3	4,759	4,070	6,658	7,005	9,124	12,244

Example based on General member hired at age 30 with $40,000 starting salary

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Retirement Benefit Implications

Example based on General member hired at age 30 with $40,000 starting salary. Benefit equal to greater of formula and money purchase minimum.

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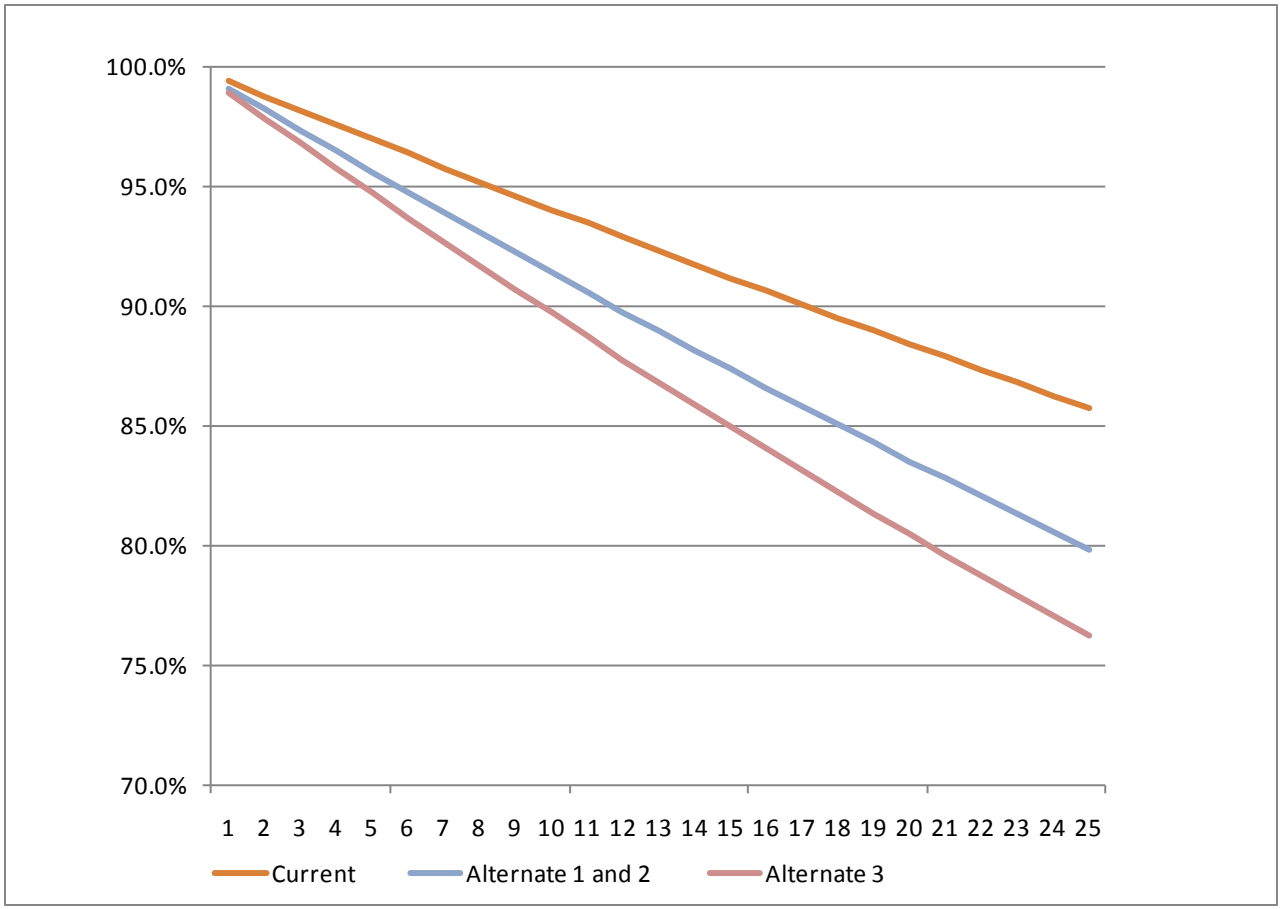
Dividend Implications

Loss of Purchasing Power Based on Assumed CPI of 2.8%



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Observations

- Lower investment returns coupled with lower wage increases may not significantly affect contribution rates
- Lower investment returns coupled with lower wage increases will reduce base retirement benefits paid to members
- Lower investment returns will reduce expected dividends

Questions

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