Arkansas Teacher Retirement System

Valuation Results as of June 30, 2014

Presented by
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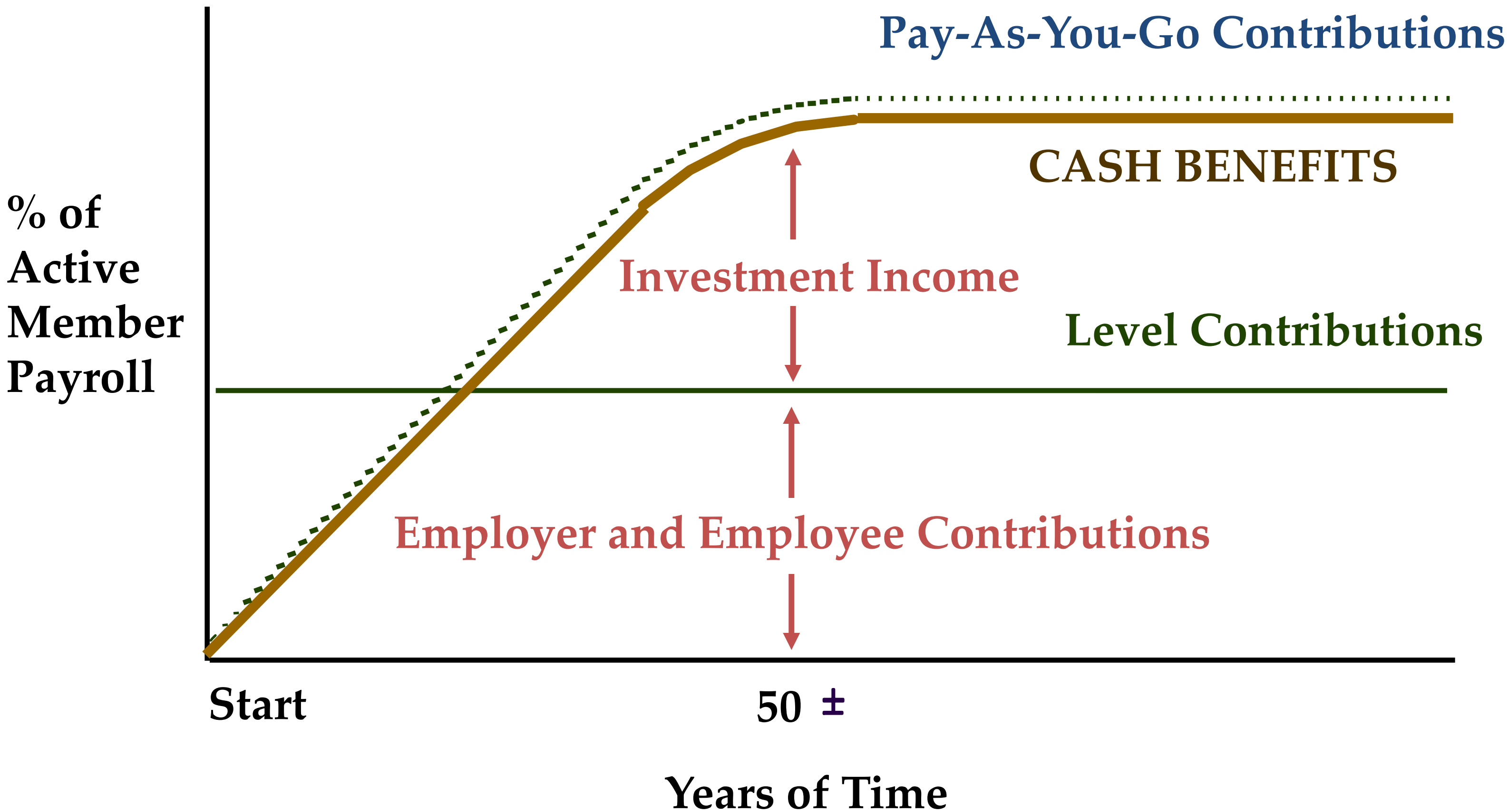
Agenda

- June 30, 2014 Valuation Results
- Projections of June 30, 2015 Valuation
- Going Forward

Funding Objectives

- Intergenerational equity with respect to plan costs
- Stable pattern of contribution rates
- Ratio of Assets to Liabilities targeted at 100%

Financing Increasing Benefit Obligations



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What Is Needed To Meet Objectives?

- Reasonable forecasts of resources and obligations (i.e., good assumptions)
- Smoothing devices
  - Level % of payroll funding method (EANC)
  - Market-related asset valuation method
- Funding discipline
- A sound investment program

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Covered Population Overview

	Number at June 30		
	2014	2013	% Change
Active	70,225	70,660	-0.6%
TDROP	4,127	4,265	-3.2%
Inactive	11,763	13,099	-10.2%
Retired	38,478	36,254	6.1%
Total	124,593	124,278	0.3%

ATRS receives 14% of pay contributions for 3,845 retirees who have returned to work.

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Non-TDROP Active Members

June 30	Number	Group Averages			% Increase
		Age	Service	Annual Earnings	
2007	69,226	44.4	9.3	31,645	3.03%
2008	70,172	44.5	9.4	32,319	2.13%
2009	70,655	44.7	9.5	32,804	1.50%
2010	72,208	44.7	9.7	32,980	0.54%
2011	72,293	44.8	9.9	33,995	3.08%
2012	71,195	45.0	10.1	34,362	1.08%
2013	70,660	45.0	10.2	34,920	1.62%
2014	70,225	44.7	10.2	35,673	2.16%

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T-DROP Actives, Inactive and Retired Members

June 30	T-DROP Active Members		Deferred Members		Retired Members	
	Number	Payroll ($Mil)	Number	Vested Benefit ($Mil)	Number	Benefit ($Mil)
2007	4,709	$270	10,689	$45	25,611	$485
2008	4,630	267	11,688	56	26,801	516
2009	4,631	274	11,766	53	28,818	565
2010	4,608	275	11,924	54	30,587	613
2011	4,487	271	12,404	57	32,099	657
2012	4,432	268	12,654	59	34,160	709
2013	4,265	260	13,099	63	36,254	764
2014	4,127	253	11,763	61	38,478	822

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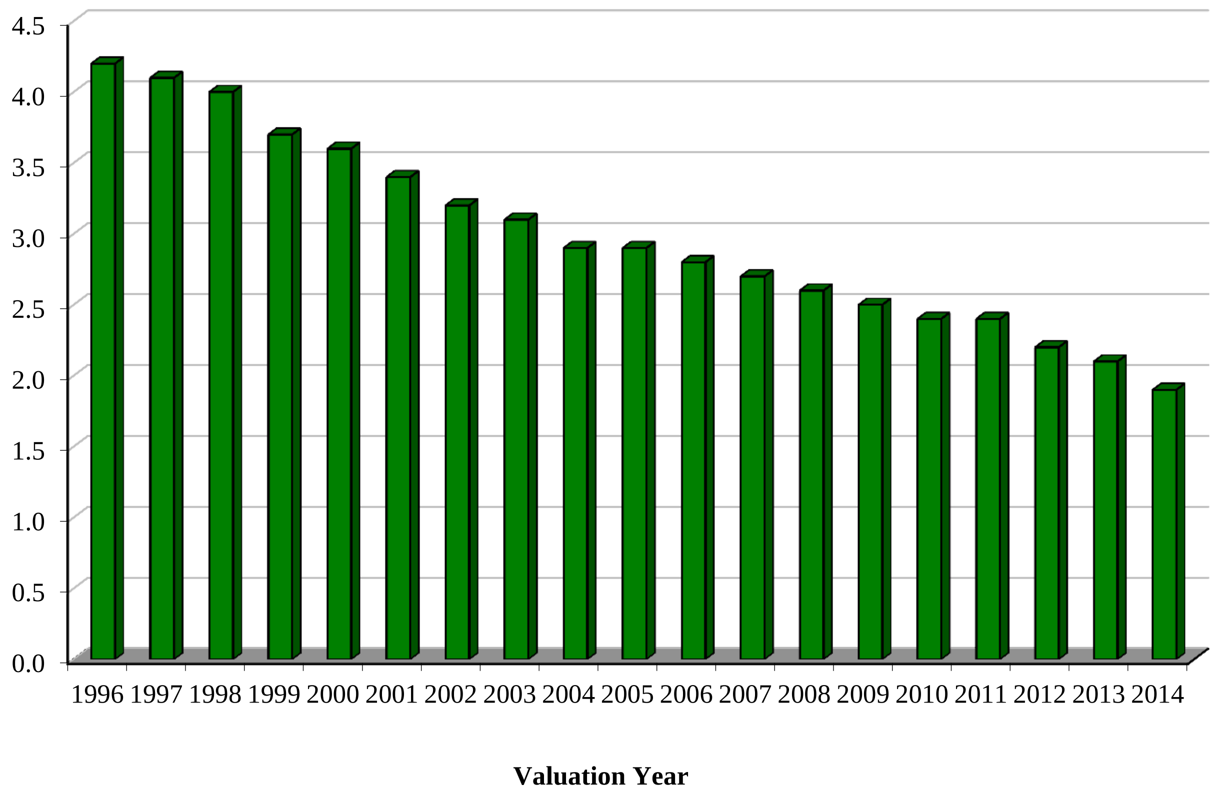
Ratio of Actives to Retirees



Members in T-DROP are included with Active members

Retirement Benefits as a Percent of Member Payroll

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Computed Actuarial Liabilities

Actuarial Accrued Liabilities for:	$Millions 2014	$Millions 2013
Age and service retirement allowances based on total service likely to be rendered by *present active members*	$ 5,423	$ 5,322
Age and service retirement allowances based on total service likely to be rendered by present *T-DROP members*	2,319	2,389
Benefits payable to present retirees and beneficiaries	8,652	8,093
Benefits payable for all other reasons	916	914
Total	$17,310	$16,718
Applicable Assets	13,375	12,247
Unfunded Actuarial Accrued Liabilities (UAAL)	$ 3,935	$ 4,471

If the market value of assets were used, the UAAL would be $2,454 Million

Assets and Volatility

- Under the asset valuation method, investment gains and losses are spread over a 4-year period
- To reduce the impact of past volatility in the investment market, the Funding Value of assets was set equal to the Market Value as of June 30, 2012
- This means that there are no phase-ins of prior gains and losses from the 2011 or 2012 valuation
- This year there was a $1.5 billion investment gain which will be recognized over 4 years

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Development of Funding Value of Assets

Year Ended June 30:	2012	2013	2014	2015	2016	2017
A. Funding Value Beginning of Year	$ 11,146,221,518	$ 11,483,885,509	$ 12,246,805,197			
B. Market Value End of Year	11,483,885,509	12,829,565,578	14,856,276,668			
C. Market Value Beginning of Year	11,894,877,338	11,483,885,509	12,829,565,578			
D. Non-Investment Net Cash Flow	(284,584,663)	(336,581,359)	(394,588,772)			
E. Investment Return						
E1. Market Total: B - C - D	(126,407,166)	1,682,261,428	2,421,299,862			
E2. Amount for Immediate Recognition (8%)	880,314,335	905,247,586	963,960,865			
E3. Amount for Phased-In Recognition: E1-E2	(1,006,721,501)	777,013,842	1,457,338,997			
F. Phased-In Recognition of Investment Return						
F1. Current Year: 0.25 x E3	(251,680,375)	194,253,461	364,334,749	Unknown	Unknown	Unknown
F2. First Prior Year	338,179,073	-	$ 194,253,461	$ 364,334,749	Unknown	Unknown
F3. Second Prior Year	99,652,124	-	-	$ 194,253,461	$ 364,334,749	Unknown
F4. Third Prior Year	(465,185,645)	-	-	-	$ 194,253,459	$ 364,334,750
F5. Accelerated Market Value Recognition	20,969,142					
F6. Total Recognized Investment Gain	**(258,065,681)**	**194,253,461**	**558,588,210**	558,588,210	558,588,208	364,334,750
G. Funding Value End of Year:						
G1. Preliminary Funding Value End of Year: A+D+E2+F6	**11,483,885,509**	**12,246,805,197**	**13,374,765,500**			
G2. Upper Corridor Limit: 120% x B	**13,780,662,611**	**15,395,478,694**	**17,827,532,002**			
G3. Lower Corridor Limit: 80% x B	**9,187,108,407**	**10,263,652,462**	**11,885,021,335**			
G4. Funding Value End of Year	**11,483,885,509**	**12,246,805,197**	**13,374,765,500**			
H. Actual/Projected Difference between Market and Funding Value	-	582,760,381	1,481,511,168 *	922,922,958	364,334,750	-
I. Market Rate of Return	(1.08)%	14.87 %	19.17 %			
J. Funding Rate of Return	5.65 %	9.72 %	12.64 %			
K. Ratio of Funding Value to Market Value	100.00 %	95.46 %	90.03 %			

The Funding Value of Assets recognizes assumed investment Return (line E2) fully each year. Differences between actual and assumed investment return (line E3) are phased-in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than market value. *The Funding Value of Assets is unbiased with respect to Market Value* . At any time it may be either greater or less than Market Value. If assumed rates are exactly realized for 3 consecutive years, it will become equal to Market Value.

*The $1.481 billion difference will be recognized over 3 future years

Results of 6/30/2014 Valuation

	$Millions	
	2014	2013
Accrued Liabilities	$17,310	$16,718
Assets at Funding Value	13,375	12,247
UAAL	3,935	4,471
- % Funded (2)/(1):	77%	73%
-% Funded based on MVA	86%	74%

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Results of 6/30/2014 Valuation

	% Payroll	
	2014	2013
1) ER Normal Cost	6.84%	6.89%
2) UAAL	7.16%	7.11%
3) Employer Contribution Rate	14.00%	14.00%
Amortization Years	39	70

If the Market Value of Assets were used in the calculations, the amortization period would be 16 years instead of 39 years.

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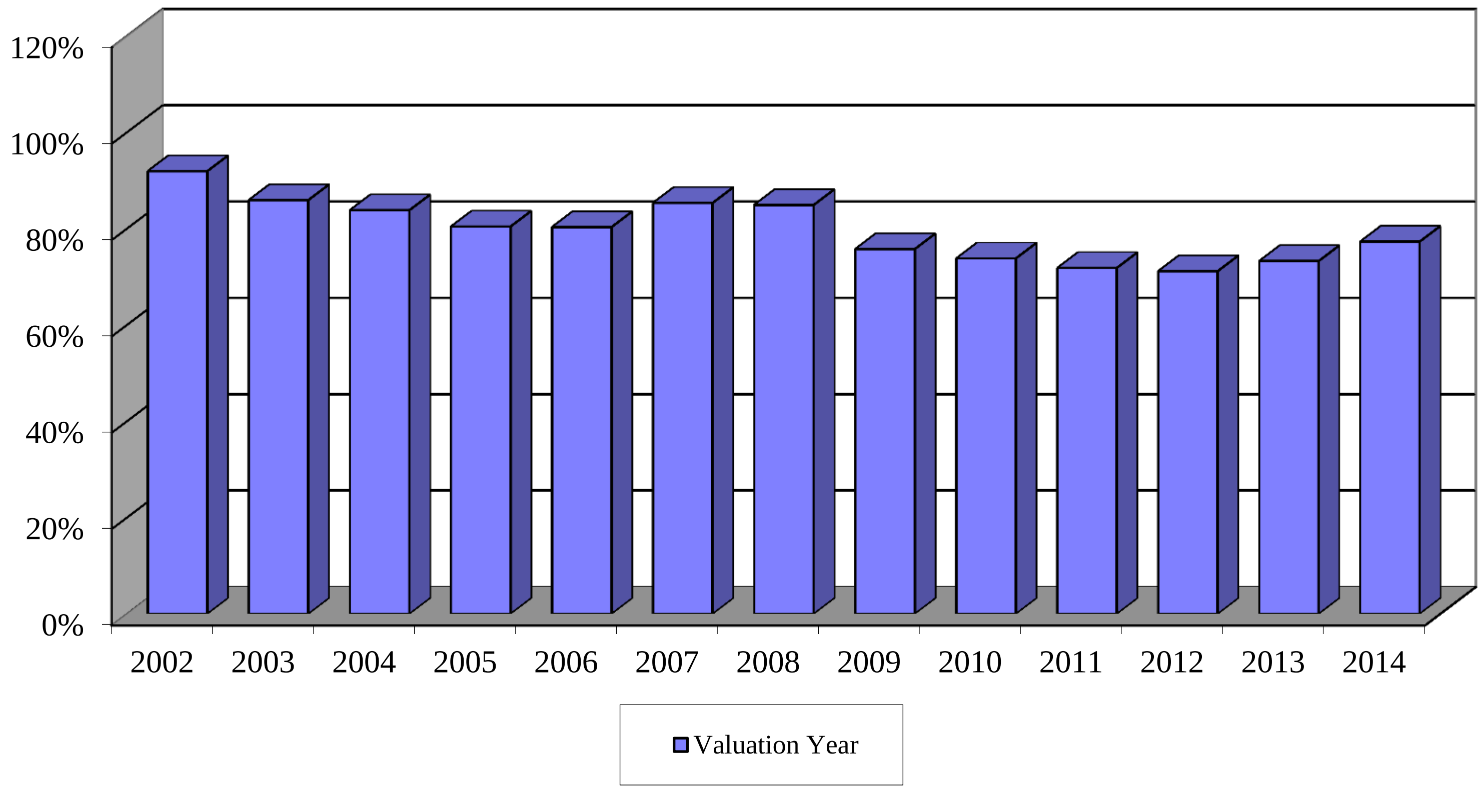
Funded Ratio: Actuarial Value of Assets as Percents of Accrued Liabilities



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Experience in FY 2014

- The amortization period this year is 39 years, a decrease from last year's period of 70 years
- Sources of Decrease:
  - Market Value of Assets rate of return of 19.17%, compared to an assumed 8.0% return
  - Other areas of experience will be detailed in the Gain/Loss analysis but they will likely be less impactful than the 19.17% ROR

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The Rest of the Story

- Unless there is an investment loss in FY 2015, the amortization period is likely to fall below 30 years in the next valuation.
- Based on the June 30, 2014 valuation, an employer contribution rate of 14.9% of payroll would be needed to return the amortization period to 30 years now.
- An even higher contribution rate (over 17% of pay) would be needed to avoid “negative amortization”. More on this later.

The Future

- Let's have a look at projected valuation results and the amortization period for the next five years based on alternate future rates of investment return for 2015
- All scenarios assume an 8% return for years after 2015
- All scenarios assume a 14% of pay contribution rate
- Of course, actual experience will determine what actually happens

About Projections

- The projections that follow are based upon many assumptions about the future.
- Actual future valuation results will take all known future information into account and will differ from the projections -- perhaps materially.
- Projected results are very sensitive to the rates of payroll growth and liability growth that are assumed. In the long run, according to theory, both of those figures should approach 3.25%.

Projected Amortization Years

Valuation Year	2015	2016	2017
Projection A			
Investment Return	8%	8%	8%
Amortization Years	27	20	16
Projection B			
Investment Return	2%	8%	8%
Amortization Years	31	25	23
Projection C			
Investment Return	19%	8%	8%
Amortization Years	21	12	6

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Going Forward

- Projections indicate that if future experience is reasonably in line with assumptions, the amortization period should fall below 30 years in the next valuation
- That is, of course, good news
- However, with a 30 year period, the UAAL grows in $ amount each year, although it declines as a % of payroll. This situation is referred to as "negative amortization" and is falling out of favor
- "Negative Amortization" in the context of a mortgage is said to occur during any period during which the loan payment is less than the interest due so that the outstanding balance of the loan actually increases, rather than decreases, as one would normally expect

Going Forward

- Based upon ATRS' assumptions, it takes about an 18 year period to avoid the "negative amortization"
- Therefore, it would really be desirable to have a lower amortization period than 30 years
- With reasonably good experience, projections show that we may be at there (at 18 years) in a few years, even without a contribution rate increase. A contribution increase to the 17% of pay area would get us there now
- If the Market Value of Assets were used, we would already be at 16 years

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Going Forward

- After the June 30, 2015 valuation, the ATRS will be due for the next Experience Study
- The Actuary recommends that such studies be done at least every 5 years
- The study will focus on experience during the last 5 years related to:
  - Investments
  - Retirements
  - Deaths/Mortality (actives, vested and retired people)
  - Quits/other activity (option factors, service purchases)
- As part of the study, we would also provide some risk metrics for ATRS
- Depending on the risk metrics, we may make a recommendation to lower the assumed rate of return

Going Forward

- As part of the Experience Study, ATRS may, as it has done in the past, want to:
  - Engage the Investment Consultant to review earnings expectation, risk and volatility of current asset allocation
  - Make adjustments to investments and funding policy as needed to foster long term stability and security for ATRS

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