State Pension Funds Fall Off a Cliff

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{ Executive Summary }

This study examines different measures of historical and current funding shortfalls in state pension plans. Two case studies are examined in greater depth to explore some fatal flaws that have caused funding crises in these plans: Public Employee Retirement Association of Colorado (PERA) and the Kansas Public Employee Retirement System (KPERS).

SOME OF THE KEY FACTS AND ISSUES INCLUDE:

- A sharp decrease in the value of assets during the recent economic downturn caused the funding ratio in many state pension plans to fall significantly. In some of these plans, such as PERA and KPERS, unfunded liabilities have nearly doubled over the past year.

- Many of these state pension plans assume a rate of return on assets of eight percent or more. Because they assume a high rate of return on assets, state pension plans often invest in a portfolio heavily weighted towards equities, which can result in greater volatility in the value of assets, funding ratios, and unfunded liabilities.

- Even with a questionably high eight percent assumed rate of return on assets, government employers would have to significantly increase contribution rates to bring the plans into actuarial balance. This would be difficult given the current recession and associated revenue shortfall.

- The financial crisis encountered over the past decade reveals that many state pension plans are fundamentally flawed. Using more realistic assumptions regarding the rate of return on assets, as well as assumptions regarding the actuarial value of liabilities, it is highly unlikely that these plans will achieve actuarial balance over the amortization period.

- The solution to the funding crises in state pension plans will require fun damental reform. Everything should be on the table, including changes in benefits and increased employee contribution rates, as well as employer contribution rates. These plans should consider replacing their defined-benefit plans with defined-contribution plans for new employees.

{ Introduction }

In recent years, many state and local governments have encountered a funding crisis in their pension and other post-employment benefit (OPEB) plans for public employees. This crisis in the states has resulted from many factors, including: the escalation in health care costs; very large losses in the stock market; generous pension and health benefits provided in defined-benefit plans; public employees retiring earlier and living longer; and, reduction and postponement of employer contributions to the pension plans. In this study we explore the magnitude of the funding crisis.

State and local governments have made significant progress recently in providing citizens greater transparency and accountability with regard to government expenditures. Many state and local jurisdictions have created user-friendly Web sites for this purpose. However, little progress has been made in providing current financial information for state and local pension plans, despite new Governmental Accounting Standards Board (GASB) protocols that require state and local jurisdictions to provide this information in their financial statements. Many state and local jurisdictions have yet to meet the GASB reporting standards, and for those that do, they often provide data that is so out of date, it is of little use. It is difficult to see how elected officials and citizens can monitor these pension plans and hold them accountable without current information on their financial status.

The lack of current financial information is especially critical as a result of the recent financial crisis and recession. Many state pension plans have indeed fallen off a cliff, but it is difficult to assess the magnitude of the crisis. This study provides comprehensive financial data for state pension plans in 2006, the most recent year of data available. The study also provides information for some state pension plans in 2008 for which financial data is available to provide a preliminary assessment of the impact of the financial crisis and recession on this sample of plans. Additionally, the study

provides more detailed data for state pension plans in two states where the plans are facing a serious financial crisis: Colorado and Kansas.

Unfunded Liabilities in State Pension Plans: *Historical Data*

State and local governments have a long history of providing pension and other post-employment benefits to their employees. Defined-benefit pension plans were established to set aside funds to pay retirement benefits to employees. These benefits are financed from contributions of employers and employees and the investment income derived from such contributions. Some states have a single retirement system for public employees, while others have multiple systems for different groups of employees.

Some of these state pension plans date back to the early 20th century. Many of them operated initially on a pay-as-you-go basis. However, over time, most states attempted to prepay the cost of pension benefits for employees. All states now report on their pension plans in financial statements following guidelines established by the GASB. The funding ratio offers the best measure of the success of states in pre-funding their pension obligations. The funding ratio equals the actuarial value of assets divided by actuarial accrued liabilities. Unfunded liabilities are that portion of accrued liabilities not offset by assets in the plan.

In the course of the 20th century, states made significant progress in pre-funding their pension obligations. By the 1970s, the funding ratio reached 50 percent; in the 1990s, the ratio reached 80 percent; and in 2000, the ratio exceeded 100 percent. With a booming economy and the run up in the stock market in the 1990s, most states eliminated unfunded liabilities in their pension plans.

This success in eliminating unfunded liabilities in state pension plans was short lived. When recession hit in 2001, the fall in the stock market brought significant losses in assets held by state and local government pension funds. During the boom years of the 1990s, many states made grievous errors in managing their pension funds. They increased the share of assets in stocks versus fixed income assets, exacerbating the losses when the stock market collapsed. Many states extended very generous benefits to public employees, the costs of which would be borne over many years. Some states reduced and suspended employer contributions to their pension funds.

Demographic and lifestyle changes also increased liabilities in state pension funds. More public employees chose early retirement, often in response to inducements offered by states to retire early. Employees have also lived longer in retirement.

By 2006, the funding ratio of state pension plans had fallen to 81 percent; and unfunded liabilities in these plans accumulated to almost $360 billion. At that time, Standard and Poor's projected the funding ratio would remain roughly constant—an outlook that proved to be optimistic. Since then, the stock market has fallen sharply and the economy has entered a recession. Demographic changes continue to increase liabilities in these plans as employees continue to retire earlier and live longer in retirement.

Table 1 summarizes state funding ratios and unfunded liabilities in 2006, the most recent year in which comprehensive data for these plans is available. Total debt for each state is also included for comparison purposes.

TABLE 1.
State Pension Plans 2006:
Funded Ratios And Unfunded Liabilities

State	Funded Ratio (Percent)	Unfunded Liabilities ($ Billions)	State Debt ($ Billions)
Alabama	88.1	3.4	2.2
Alaska	61.0	8.4	1.3
Arizona	83.5	5.0	3.4
Arkansas	81.3	3.3	1.1
California	87.4	48.1	54.6
Colorado	74.1	12.8	0.5
Connecticut	56.4	14.8	13.3
Delaware	101.7	-0.1	2.0
Florida	105.6	-6.2	17.9
Georgia	96.1	2.6	7.5
Hawaii	65.0	5.1	4.6
Idaho	95.2	0.5	0.2
Illinois	59.5	32.4	25.8
Indiana	64.3	10.1	1.3
Iowa	88.4	2.5	0.3
Kansas	69.4	5.4	3.2
Kentucky	71.9	10.7	4.1
Louisiana	66.3	10.4	3.6
Maine	71.3	3.0	0.7
Maryland	83.3	7.1	6.3
Massachusetts	72.1	14.1	26.1
Michigan	80.7	11.9	5.2

Minnesota	84.3	5.9	3.5
Mississippi	73.5	6.6	3.4
Missouri	83.0	7.0	2.6
Montana	81.1	1.4	0.2
Nebraska	88.7	0.8	0
Nevada	74.8	6.6	2.1
New Hampshire	61.4	2.5	0.6
New Jersey	77.4	24.3	28.5
New Mexico	80.4	4.6	2.2
New York	100.9	-2.0	40.6
North Carolina	106.1	-3.0	6.5
North Dakota	81.0	0.7	0.1
Ohio	82.5	27.3	9.7
Oklahoma	59.5	9.9	1.5
Oregon	110.5	-5.4	5.7
Pennsylvania	84.9	14.4	8.8
Rhode Island	53.4	4.9	1.5
South Carolina	71.6	8.6	2.9
South Dakota	96.7	0.2	0.2
Tennessee	95.3	1.5	1.2
Texas	88.7	14.8	7.2
Utah	96.4	0.5	1.7
Vermont	90.8	0.3	0.5
Virginia	80.8	10.2	6.4
Washington	76.6	5.4	11.2
West Virginia	52.7	5.3	1.5

Wisconsin	99.5	0.4	8.7
Wyoming	94.4	0.3	0
Total		359.1	214.4
Average	81.0	7.2	6.9

Source: Standard and Poor's, 'Market Volatility Could Shake Up State Pension Funding Stability,' Ratings Direct, February 20, 2008

Unfunded liabilities in state pension plans increased by roughly $30 billion between 2005 and 2006 alone. Only a handful of states had eliminated unfunded liabilities in their pension plans. These included: Delaware, Florida, New York, North Carolina and Oregon. At the other extreme were states where the funding ratio fell below the average of 81 percent for all states. These underperformers included: Alaska, Colorado, Connecticut, Hawaii, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maine, Massachusetts, Michigan, New Mexico, Oklahoma, Rhode Island, South Carolina, Virginia, Washington and West Virginia.

Unfunded Liabilities in State Pension Plans: *Current Data*

The most recent Comprehensive Annual Financial Reports (CAFRS) data used to meet GASB standards is only available for 2008. In fact, most states have yet to report the 2008 financial data for their pension plans. The states that have reported their pension fund data for 2008 use different reporting periods. Some states report at the end of the fiscal year, while others report at the end of the calendar year.

TABLE 2.
Funded Ratios and Unfunded Liabilities for Comprehensive State Pension Plans, 2008

State	Funded Ratio (Percent)	Unfunded Liabilities ($ Billions)
Alaska	78.8	1.9
Colorado	68.5	17.9
Florida	107	0
Idaho	93.3	0.7
Iowa	89.1	2.7
Kansas	58.7	8.3
Maine	79.7	2.8
Nevada	76.2	7.3
New Hampshire	67.8	2.5
South Dakota	97.2	0.2
Utah	64.8	2.3

Source: Comprehensive Annual Financial Report data for 2008

Further complicating comparisons of these state pension plans are differences in the coverage of these plans. Some states report financial data for comprehensive pension plans, covering different classifications of employees. Other states with comprehensive pension plans report financial data separately for different classifications of employees. Table 2 reports data for comprehensive pension plans. Table 3 reports data for pension plans covering only state employees. The latter data provides for comparison of pension plans for state employees in this group of states.

TABLE 3.
Funded Ratios and Unfunded Liabilities for Pension Plan Employees

State	Funded Ratio (Percent)	Unfunded Liabilities ($ Billions)
Delaware	103.1	0.0
Illinois	46.1	12.8
Kentucky	52.5	4.8
Louisiana	67.6	4.4
Maryland	78.6	10.7
Minnesota	73.6	4.7
Mississippi	72.9	7.7
Missouri	85.9	1.3
Montana	90.3	0.4
New Mexico	93.3	0.9
North Dakota	92.6	0.1
Oklahoma	73.0	2.4

Source: Comprehensive Annual Financial Report data for 2008

A final caveat is required in comparing this data. GASB standards require some uniformity in calculating pension fund financial data. Despite these GASB standards, there are significant differences in the actuarial assumptions used in the different pension plans. Despite these data limitations and caveats, the data provides at least a preliminary assessment of the magnitude of the financial crises encountered in these state pension plans.

One way to assess the magnitude of the funding crises in state pension plans is to use the same government standards applied to private pension plans. In the private sector, defined-benefit pension plans are considered 'safe' by government standards if they have enough assets to support at least 80 percent of pension benefit obligations *(Life and Health Insurance News.*

TABLE 4.
Per Capita Unfunded Liabilities for Comprehensive State Pension Plans, 2008

State	Unfunded Liabilities Per Capita	Unfunded Liabilities Per Capita // Personal Income Per Capita
Colorado	$3,624	8.60%
Kansas	2,962	7.8
Nevada	2,808	7.0
Alaska	2,769	6.4
Maine	2,128	6.0
New Hampshire	1,900	4.4
Iowa	899	2.5
Utah	841	2.8
Idaho	459	1.4
South Dakota	249	0.7
Florida	0	0.0

Source: Comprehensive Annual Financial Report data for 2008

com, 2009). As reported in Table 2, eight of the 11 states reporting comprehensive state pension plans for 2008 have funding ratios below this safe level. As reported in Table 3, eight of the 15 states reporting pension plans for state employees have funding ratios below this safe level. It is possible that in this latter group of states, the funding ratio in pension plans for other classifications of public employees would be below the safe level. Indeed, in some of these states, including Illinois, preliminary unaudited data for public employee pension plans reveal funding ratios falling well below safe levels.

A better measure of the burden of unfunded liabilities in state pension systems, from a taxpayer's perspective, is to compare unfunded liabilities per capita and as a share of per capita income. The following table makes these comparisons for the states reporting financial data for comprehensive pension plans in 2008.

Table 4 ranks the states from the highest burden to the lowest burden. The data reveal a heavy burden of unfunded liabilities per capita in six of these states, from $1,900 in New Hampshire to $3,624 in Colorado. In all of these six states (except New Hampshire), unfunded liabilities per capita exceed five percent of income per capita.

The data in Table 4 does not fully capture the impact of the financial crisis on state pension funds because the data are based on the actuarial value of assets rather than the market value. Most of these states use a smoothing technique to determine the actuarial value of assets that spreads losses in assets over a period of years. The effect of this smoothing technique defers some of the losses in asset values to future years.

Two Case Studies:
Why Do Pension Funds Fall Off a Cliff?

Colorado and Kansas provide two cases to explore the impact of the financial crisis on state pension funds. For these two states, data is available for the market value of assets, as well as the actuarial value of assets. Unfunded liabilities calculated for this market value of assets reveal a much greater financial crisis in these pension plans than is revealed in the above tables.

The financial crisis and recession have had a negative impact on all state pension systems. But the previous analysis reveals that some of these pension plans have fared worse than others. The Colorado Public Employees' Retirement Association (PERA) and the Kansas Public Employees Retirement System (KPERS) have among the highest unfunded liabilities per capita, as reported in Table 4. An in-depth analysis reveals some serious flaws common to both of these state retirement systems. Restoring fiscal balance will require fundamental reforms in both PERA and KPERS.

The Schedule of Funding Progress

The GASB sets standards for reporting pension plans offered by state and local governments. Unfunded liabilities in pension plans must be reported as debt in financial statements of state and local jurisdictions. Further, these standards require that state and local governments show progress toward eliminating unfunded liabilities over a 30-year amortization period. If pension plans fail to meet these standards, actuaries must report that the plans are not in actuarial balance. Bond rating agencies, such as Standard and Poors, take this information into account in rating the bonds issued by state and local government.

The GASB standards require that pension funds report two schedules of information regarding the funding status of the plans: (1) The Schedule of Funding Progress and (2) The Actuarial Contribution Rate.

The following is a summary of funding progress in the two case studies.

1. *The Colorado Public Employees' Retirement Association (PERA)*

PERA uses an asset smoothing methodology to smooth the effects of market fluctuations. The smoothing methodology is used to determine the actuarial value of assets. The actuarial value of assets calculates the value of assets by spreading market gains and losses over four years. Table 5 shows the unfunded liabilities and funded ratio using actual market value and actuarial value of assets on December 31, 2008.

The market value of assets was $29.5 billion, or $9.6 billion less than the actuarial value of assets calculated by actuaries. This is based on the spreading of gains and losses over four years, rather than the year in which they occurred. The funding ratio of PERA fell to 51.8 percent based on the market value of assets compared to 68.5 percent, based on the actuarial value of assets.

TABLE 5.
PERA Unfunded Liabilities & Funded Ratio Using Market and Actuarial Value of Assets, December 31, 2008

	Market Value of Assets	Actuarial Value of Assets
Actuarial accrued liability	$57.0 billion	$57.0 billion
Assets held to pay those liabilities	29.5 billion	39.1 billion
Unfunded actuarial accrued liability	27.5 billion	17.9 billion
Funding Ratio	51.80%	68.50%

Source: http://www.copera.org/pdf/5/5-20-08.pdf, p. 31

TABLE 6.
KPERS Unfunded Liabilities & Funded Ratio Using Market and Actuarial Value of Assets, December 31, 2008

	Market Value of Assets	Actuarial Value of Assets
Actuarial accrued liability	$20.1 billion	$20.1 billion
Assets held to pay those liabilities	9.9 billion	11.8 billion
Unfunded actuarial accrued liability	10.2 billion	8.3 billion
Funding Ratio	49.30%	58.70%

Source: Kansas Public Employees Retirement System (2009A) p.4.

2. *The Kansas Public Employees Retirement System (KPERS)*

KPERS assumes it will earn an eight percent return on assets in the long run. This estimated return on assets is used to determine the actuarial value of assets. KPERS sets a range around the actual market value of assets. The estimated actuarial value of assets can be no less than 80 percent and no more than 120 percent of the actual market value of assets.

Since the estimated value of assets on December 31, 2008 was in excess of 120 percent of the actual market value of assets, the actuarial value of assets was set at the upper limit of 120 percent of the actual market value of assets.

Table 6 shows that KPERS reported an actuarial value of assets $1.9 billion greater than the market value of the same assets. The funding ratio of KPERS fell to 49.3 percent, based on the market value of assets, compared to 58.7 percent, based on the actuarial value of assets.

The asset smoothing methodology determines the timing when actual market experience is recognized in the financial statements. Unfunded liabilities not recognized in the current accounting period will be recognized in financial statements in future years. Since employer contribution rates are set based on the actuarial value of assets in the current accounting period, some of the losses in the current accounting period are deferred to future years.

The Actuarial Contribution Rate

The actuarial process is the basis for determining employer and employee contributions into the pension plan. To meet GASB standards, the pension plan must calculate an actuarial contribution rate that will eliminate unfunded liabilities in the system within a 30-year amortization period.

The actuarial contribution rate is a schedule of employer contributions required to meet this standard.

The actuarial contribution rate includes two components:

- A 'normal cost' for that portion of projected liabilities allocated by the actuarial cost method for the service of members during the year following the valuation date.

- An 'unfunded actuarial contribution' to cover the excess of projected liabilities over the actuarial value of assets.

The Annual Required Contribution Rate (ARC) is the employer contribution rate required to meet the maximum 30-year amortization standard.

PERA

Table 7 compares the ARC rate with the actual contribution rates for each division in PERA. The table also shows the Amortization Equalization Disbursement (AED), Supplemental Amortization Equalization Disbursement (SAED), and Contribution Rate Available for Funding. Table 7 shows that the actual contribution rates fell well short of the ARC rates for all of these divisions.

TABLE 7.

PERA Actuarial and Statutory Contribution Rates, December 31, 2008

Trust Fund	Annual Required Contribution	Actual Employer Contribution Rate	AED	SAED	Contribution Rate Available For Funding
State Division	18.45%	10.15%	1.40%	0.50%	11.03%
State Troopers		12.85%	1.40%	0.50%	13.73%
School Division	17.18%	10.15%	1.40%	0.50%	11.03%
Local Government Division	11.95%	10.00%	1.40%	0.50%	10.88%
Judicial Division	17.66%	13.66%	1.40%	0.50%	14.54%
HealthCare	1.11%				1.02%

Source: http://www.copera.org/pdf/5/5-20-08.pdf, p. 24

The amortization period is the number of years it will take to pay off the unfunded actuarial accrued liability for each division based on the assumptions underlying the plan. Table 8 shows for PERA the amortization periods based on current funding and benefits and with future AED and SAED increases.

The GASB standard is for a system to demonstrate that unfunded liabilities will be paid off within a 30-year amortization period. If the amortization period is infinite, it means that the unfunded liabilities cannot be paid off, even if all the assumptions are met. The state division has an infinite amortization period, even with future AED and SAED increases. The school division has an infinite amortization period with current funding, and a 75-year amortization period with Future AED and SAED contributions. The only division that meets GASB standards is the local government division.

TABLE 8.

PERA Amortization Periods Based on Current Funding and Benefits, and with Future AED and SAED Increases

Trust Fund	Amortization Period With Current Funding	Amortization Period With Future AED and SAED Increases
State Division	Infinite	Infinite
School Division	Infinite	75 Years
Local Government Division	29 Years	19 Years
Judicial Division	Infinite	48 Years
HealthCare	39 Years	39 Years

Source: http://www.copera.org/pdf/5/5-20-08.pdf, pp. 28, and 61-68.

KPERS

As a result of legislation enacted in 1993, the KPERS system calculates a statutory contribution rate. The purpose was to set statutory payments as a level percentage of payrolls to pay off unfunded liabilities in the system over a 40-year amortization period. The legislation set a cap on the amount by which the statutory contribution rate could increase each year. This statutory cap, which has been changed periodically, is currently 0.60 percent for all KPERS systems.

Due to these statutory caps, the statutory contribution rates for state, school and local employers have fallen well below the actuarial contribution

rates. As reported in Table 9, the shortfall between these rates is 2.36 percent, 6.19 percent and 3.68 percent, respectively, for the state, school and local systems.

TABLE 9.

KPERS Actuarial and Statutory Contribution Rates, December 31, 2008 Valuation

System	Actual Required Contribution	Statutory	Difference
State	11.13%	8.77%	2.36%
School	14.96%	8.77%	6.19%
Local	10.42%	6.74%	3.68%
Police and Fire	17.88%	17.88%	0%
Judges	26.38%	26.38%	0%

Kansas Public Employees Retirement System (2009A) p.7.

To meet GASB standards, the KPERS system must demonstrate that the statutory contribution rate will converge with the actuarial contribution rate within a 30-year amortization period. Given the assumptions in these projections, the dates when the statutory and actuarial contribution rates converge are 2022 for the state group and 2020 for the local group. The statutory and actuarial contribution rates for the school group do not converge within the amortization period. The school system is not in actuarial balance with respect to either GASB standards, or the statutory requirements set in the 1993 legislation.

The investment losses in 2008 have caused a serious deterioration in the funded status of the KPERS system. $1.9 billion of these losses are not accounted for in estimating the above actuarial contribution rates due to the smoothing of asset values. To underscore the impact of these market losses, contribution rates are calculated based on the market value of

assets. Table 10 compares the actuarial contribution rates with these contribution rates, based on market values of assets. Using market valuation of assets, the employer contribution rate for the state/school system would have to increase to 16.5 percent, almost double the statutory contribution rate. The employer contribution rate for the police and fire system would have to increase from 17.8 percent to 20.86 percent.

TABLE 10.

Contribution Rates Using Actuarial and Market Valuations, December 31, 2008 (Dollars in Millions)

	State / School		KP & F	
	Actuarial	Market	Actuarial	Market
Actuarial Liability	$14,492	$14,492	$2,098	$2,098
Asset Value	8,252	6,877	1,480	1,233
Unfunded Actuarial Liability	6,240	7,615	618	865
Funded Ratio	57%	47%	71%	59%
Contribution Rate				
Normal Cost Rate	8.53%	8.53%	14.71%	14.71%
Unfunded Actuarial Liability Payment	9.56%	11.62%	9.70%	12.68%
Total	18.09%	20.15%	24.41%	27.39%
Employee Rate	4.00%	4.00%	6.53%	6.53%
Employer Rate	14.09%	16.15%	17.88%	20.86%

Kansas Public Employees Retirement System (2009A) p.8.

A Risky Investment Strategy

A major flaw in the design of the Colorado and Kansas state pension systems is the assumption regarding the rate of return on assets. In fact, many state pension systems assume a rate of return of eight percent or above. Actuaries generally recommend an assumed rate of return on assets substantially below eight percent. For example, the Employee Retirement Income Security Act (ERISA) recommends that private employers assume a 6.1 percent return on assets in private pension plans.

Because these pension systems assume a high return on assets, they must invest in a diversified portfolio of assets including equities as well as fixed income assets. The higher the ratio of equities relative to fixed income assets, the more volatile the portfolio is likely to be. Because of this volatility, some economists question the use of equities in public pension plans. The high ratio of equities in the portfolios of our two case studies has resulted in great volatility in the value of their assets.

PERA

The PERA system assumes a rate of return on assets of 8.5 percent. Like many state pension plans across the country, the PERA system has experienced a drastic decline in its investment portfolio valuation. Table 11 reports that, as of December 31, 2008, the market value of assets held in PERA was $29.5 billion. This was a decrease of $11.9 billion from the December 31, 2007 figure of $41.4 billion. The return on assets in that year was a negative 28 percent.

A decade ago, PERA administrators had most of the assets of the plan in equities. When the stock market bubble burst in 2001, PERA suffered a sharp drop in the value of assets in the portfolio. PERA then shifted more of the portfolio into fixed income assets and promised to pursue more prudent investment policies. Recent evidence reveals that PERA administrators continue to repeat mistakes they have made in the past, resulting in the accumulation of even greater unfunded liabilities in the plan.

TABLE 11.

Market Valuation of PERA Investment Portfolio (Dollars in Millions)

Investment Type	Market Value Dec. 31, 2007	Percent of Total Market Value	Market Value Dec. 31, 2008	Percent of Total Market Value
Domestic Equity	$17,895	43.30%	$11,312	38.40%
International Equity	$6,502	15.70%	$3,902	13.20%
Fixed Income	$9,903	23.90%	$7,843	26.60%
Alternative	$3,205	7.70%	$2,631	8.90%
Real Estate	$3,120	7.60%	$2,604	8.90%
Timber	$462	1.10%	$446	1.50%
Cash and Short Term	$286	0.70%	$747	2.50%
Total	$41,373	100.00%	$29,485	100.00%

Source: Comprehensive Annual Financial Reports, December 31, 2007 and December 31, 2008, p.78

TABLE 12.

Actual and Target Shares in the PERA Portfolio

	12/31/2007 Actual	2007 Target	2007 Ranges	12/31/2008 Actual	2008 Target	2008 Ranges
Domestic Stocks	43.30%	45%	42%-48%	38.40%	43%	40%-46%
Fixed Income	23.90%	25%	22%-28%	26.60%	25%	22%-28%
International Stocks	15.70%	15%	12%-18%	13.20%	15%	12%-18%
Alternative Investments	7.70%	7%	4%-10%	8.90%	7%	4%-10%
Real Estate	7.60%	7%	4%-10%	8.90%	7%	4%-10%
Timber/ Opportunity Fund	1.10%	1%	0%-2%	1.50%	3%	0%-6%
Cash and Short Term Investments	0.70%	0%		2.50%	0%	

Source: http://www.copera.org/pdf/5/5-20-08.pdf, p. 21

The PERA asset allocation reported in Table 12 reveals a portfolio heavily weighted toward equities. The target share for equities is 75 percent and for fixed assets is 25 percent. The current position reported in Table 12 is less risky than the target portfolio because of the sharp drop in value for equities over the past year—illustrating precisely why such a high target share for equities can cause volatility.

KPERS

KPERS assumes an eight percent return on assets, and invests in a diversified portfolio of assets including equities as well as fixed income assets. KPERS has also experienced a drastic decline in its investment portfolio valuation. As of December 31, 2008, the market value of assets held in KPERS was $9.9 billion. This was a decrease of $4.3 billion from the December 31, 2007 figure of $14.2 billion. The annualized dollar weighted rate of return for 2008 measured on the market value of assets was negative 28.5 percent.

TABLE 13.

Kansas Public Employees Retirement System Investment Performance Report Total Portfolio Net Asset Value $9,814.9 Million December 31, 2008

Portfolio	Asset Value ($Millions)	Current Position (Percent)	Target Value (Percent)
Domestic Equity	2,621.8	27.8	28.0
International Equity	1,653.4	17.8	22.0
Global Equity	469.9	5.0	5.0
Real Estate	799.5	8.1	10.0
Alternative Investment	397.8	4.0	6.0
Subtotal for Equity Assets	5,942.4	62.7	71.0
Fixed Income	1,998.7	18.7	14.0
Real Return	1,412.3	14.4	14.0
Cash Equivalent	453.7	4.2	1.0
Subtotal for Fixed Income Assets	3,864.7	37.3	29.0

Source: Kansas Public Employees Retirement System (2009D) p.1.

The KPERS asset allocation reported in Table 13 also reveals a portfolio heavily weighted toward equities. The target share for equities is 71 percent, and for fixed income assets is 29 percent. The current position reported in Table 13 is less risky than the target portfolio because of the sharp drop in value for equities over the past year—illustrating, as with PERA, precisely why such a high target share for equities can cause volatility.

We can compare the volatility in the Colorado and Kansas state pension plans with the volatility in the California Public Employees Retirement System (CALPERS). CALPERS reported a 23 percent decline in the value of assets in the system over the past year. Moody's Investors Service reports that it put the Aaa rating of CALPERS on review for downgrade for the first time. Moody's is also considering a downgrade in the Aaa rating of the California State Teachers Retirement System. A lower rating for these pension plans will mean increased borrowing costs for state and local jurisdictions in California.

The pension plans in our case studies reported a sharper decrease in the value of assets in the system than that for the CALPERS system over the same time period. Therefore, they should expect a similar downgrade in their bonds.

No one can predict the future returns on assets; however, the assumption of an eight percent return on assets must be questioned. If future returns on assets continue to fall below the assumed rate of return, the funded status of the system will deteriorate further. In those circumstances, it is possible that these state pension plans will not be in actuarial balance or meet GASB standards over a 30-year amortization period.

Why the Funding Crises in State Pension Plans May Be Worse When Evaluated by Private Pension Plan Requirements

A recent study by the National Bureau of Economic Research (NBER) suggests that the funding status in public pension funds is worse than reported (Novy-Marx and Rauh, 2009). These pension systems are likely to experience significant funding shortfalls in future years, even if the economy recovers and financial markets stabilize. These funding shortfalls will impose a heavy burden on future generations.

The potential for future funding shortfalls in pension plans can be estimated from future assets and future liabilities. Future liabilities are estimated based on the current actuarial value of liabilities, the discount rate employed by the plan, and the amortization period. Future assets are estimated based on the expected growth rate and volatility of the plan's assets.

The NBER study of a sample of state pension plans finds that future underfunding in these plans is actually greater than that reported in their financial statements because of the accounting rules used to estimate future assets and future liabilities in the system.

The NBER study, and other studies as well, points out that the eight percent average discount rate used by these state pension systems is almost certainly too high (Novy-Marx and Rauh, 2009; Barclays Global Investors, 2004). This discount rate assumption is based on the GASB ruling 25 and the Actuarial Standards of Practice (ASOP) item 27. These standards require a discount rate determined by the accrued return on pension plan assets. Critics argue that the discount rate should be based on the market risk inherent in the system liabilities (Novy-Marx and Rauh, 2009; Gold, 2002; Bader and Gold, 2004).

Support for the critics' position comes from the discount rate used in private pension plans. In contrast to government pension plans, private pension plans use a discount rate applied to liabilities that is a blend of corporate bond yields and Treasury bond yields. The NBER study uses a lower discount rate to estimate the present value of future liabilities in their sample of state pension systems. In 2005, the present value of liabilities in these state plans—based on an eight percent discount rate—is estimated at $2.5 trillion. Using the municipal bond rate to determine the discount rate results in an estimated present value of liabilities equal to $3.1 trillion. Whereas, using the Treasury rate as the discount rate, the present value of liabilities is estimated at $4.0 trillion.

Using these lower discount rates to estimate the present value of future liabilities results in much higher estimates of unfunded liabilities in these state pension plans. In their financial statements, these public pension plans estimate unfunded liabilities at $312 billion. The NBER study estimates unfunded liabilities at $901 billion using the municipal bond discount rate and $1.9 trillion using the U.S. Treasury discount rate. Unfunded liabilities as a ratio of assets in the plans is estimated at 41 percent and 86 percent, respectively, for these lower discount rates.

One way to assess the magnitude of the funding crises in state pension plans is to use the same government standards as those applied to private defined-benefit pension plans. Private defined-benefit pension plans are considered 'safe' by government standards if they have enough assets to support at least 80 percent of pension benefit obligations *(Life and Health Insurance News.com, 2009)*. In 2008, only nine percent of a sample of state and local government pension plans met this standard (Munnell, A. H., Aubrey, J., and Muldoon, D., 2008).

Private defined-benefit pension plans are considered 'critical' if the value of assets in the plan is 65 percent or less of pension benefit obligations *(Life and Health Insurance News.com, 2009)*. In 2009, more than half of state and

local government pension plans are likely to fall in this 'critical' category. Using market values for portfolio assets, both the PERA and KPERS systems fall into this critical category.

The most important finding in the NBER study is the prospect of future underfunding in state pension plans based on more realistic discount rates. Using a 15-year amortization period, the NBER study estimates conservatively that there is a 50 percent chance of underfunding greater than $750 billion; a 25 percent chance of underfunding greater than $1.75 trillion; and a 10 percent chance that underfunding will exceed $2.48 trillion. These estimates do not include any underfunding in other post-employment benefit (OPEB) plans in these state pension systems (Novy-Marx and Rauh, 2009).

Conclusion

State pension systems are experiencing a funding crisis. The recent collapse of financial markets has resulted in a significant decrease in the value of their portfolios. But the funding crisis is not just the result of problems in financial markets. The funding problems have emerged over several decades and are symptomatic of the poor incentive structure guiding the governance of many defined-benefit public pension plans. While the financial market turmoil has exacerbated these problems, many of these state pension plans are facing a long-run deterioration in funding status.

Many of these state pension plans assume a rate of return on assets of eight percent or more. Because they assume a high rate of return on assets, these plans often invest in portfolios heavily weighted towards equities, resulting in greater volatility in the value of assets, funding ratios, and unfunded liabilities. Even with the eight percent assumed rate of return on assets, employers would have to significantly increase contribution rates to bring the plans into actuarial balance. This would be difficult in the current recession and revenue shortfall.

The financial crises encountered over the past decade reveals that many state pension plans are fundamentally flawed. Using more realistic assumptions regarding the rate of return on assets, as well as assumptions regarding the actuarial value of liabilities, it is highly unlikely that these plans will achieve actuarial balance over the amortization period.

The solution to the funding crises in plans such as PERA and KPERS will require fundamental reform. Everything should be on the table, including changes in benefits and increased employee and employer contribution rates. These plans should also consider replacing their defined-benefit plans with defined-contribution plans for new employees.

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