


CHALLENGES TO PUBLIC PENSION SYSTEMS


by

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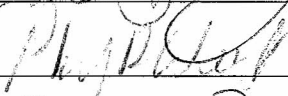


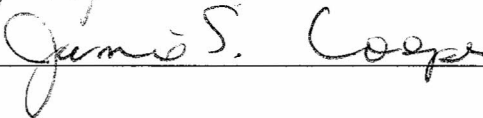
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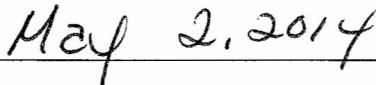
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A Thesis submitted in partial fulfillment of the requirements for the degree of Master of Arts, as in Master of Economics at George Mason University

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Abstract

CHALLENGES TO PUBLIC PENSION SYSTEMS

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The poor funding status and liability measurement of state and local public pensions could be the defining issue for state-level fiscal policy for the next several decades. These chapters attempt to address several problems associated with pension management and measurement. Chapter One details many aspects of Kentucky Retirement System that have contributed to its funding and management woes. Chapter Two details the purpose of discounting within pension funds and how an alternative discount rate would increase stated liabilities in one of Kentucky's pension plans. Chapter Three details the transfer of market-related risks from pensioners to taxpayers and discusses the potential impact of a large and ongoing opportunity for arbitrage within most pension systems.

Chapter One

Public pensions have become a hot topic in recent years. A global recession and the resulting tests of the creditworthiness of various nations and states have brought the issue into the fore. The reason is simple. Pension and other post-retirement benefits promised to state and local workers constitute sometimes ironclad contracts that states will have a difficult time escaping if fiscal stability is to be maintained. Given the nature of these contracts, the measured creditworthiness of many states is suspect if the credibility of the promise to pay pensions is as strong or stronger than the promise to pay bonds. In a worst-case “fiscal triage” scenario, it’s possible that holders of state and local bonds would find themselves behind pensioners in line for payment. An evaluation of many aspects of public pensions is therefore in order.

This chapter examines Kentucky Retirement Systems (KRS), which plans for the retirements of state and local employees in the Commonwealth of Kentucky. The agency does this primarily through several defined-benefit (DB) pension plans covering hundreds of participating state and local agencies and other quasi-governmental groups.

This chapter describes defined-benefit pension plans and some problems generally associated with those plans. More specifically, it deals with some of the problems unique to Kentucky. For example, the promise made to Kentucky pensioners is legally among

the strongest among the United States.¹ The paper also considers decisions made by various parties that affect and are affected by the pension plans operated by Kentucky Retirement Systems, including workers, lawmakers and actuaries.

This chapter does not explicitly deal with issues associated with the health insurance obligations associated with KRS, nor does it deal with a similar but distinct pension plan operated on behalf of Kentucky's public school teachers. Both insurance benefits and the similar pension and insurance programs administered on behalf of Kentucky's teachers could profoundly affect outcomes for Kentucky government workers, retirees and taxpayers for decades to come, and they are all part of the same larger problem of long-term open-ended post-retirement payments.

The Basic Equation

Public pension plans obey a basic formula for balancing inflows and outflows. Contributions from workers and employers combined with investment income must equal benefits paid combined with expenses of the plan, or:

$$C + I = B + E.$$

That is, benefits and expenses may not exceed investment income and contributions. This formula, while useful, produces some potentially troubling assumptions about how public pension plans can operate.

¹ Final Report of the Blue Ribbon Commission on Public Retirement Systems, 2007
http://finance.ky.gov/NR/rdonlyres/500BD448-0A79-4871-A7AE-E00505A0E63B/0/BRC_FINAL_Report_122120071.pdf

As consultant Thomas J. Cavanaugh wrote to William Thielen, Chief Operations Officer for KRS in 2008:

Of course, the problem with the formula is that in order to figure out exactly how much to contribute, the plan would have to be closed to new members and allowed to operate until all retirees were deceased. At that point, the benefits and expenses actually paid out, and the investment income actually earned would be known and, using the equation above, the true cost could be determined. Since the vast majority of plans are ongoing and have no intention of closing, and since even with a closed plan it takes a very long time before all benefits are finally paid out, plan sponsors hire actuaries to estimate the true cost of their plans and to create a budget to make systematic contributions to meet that cost.²

The first part of this statement is demonstrably false. Beneficiaries, at retirement, are able to designate survivors who may receive additional pension payments for many years after the retiree has died. The spirit of the comment is meant to illustrate how closing the system can give us an increasingly clear picture of its costs, which is largely true. But Mr. Cavanaugh offers the very opaqueness and difficulty in predicting the systems' costs as a reason to maintain it as-is without learning its true cost or making any disruptive changes.

The side of the $C + I = B + E$ formula that is more easily predicted includes benefits and expenses. Those elements can be predicted with a relatively high level of confidence.

The number of people in the system, the benefits they may be eligible to draw at any

² Financial Note for House Bill 1 of the 2008 Special Legislative Session <http://www.lrc.ky.gov/RECORD/08SS/HB1/FN.doc>

given point, their likely lifespans, cost-of-living adjustments, etc., are known or at least very predictable. Expenses represent a small and constant or shrinking share of plan outflows and are probably the most predictable of any of the formula elements.³

But the other side of this equation, contributions and investment income, is less predictable. Contributions from the state and agencies are only predictable to the extent that they have no discretion about making the annual contribution.

One “public employer” that may simply abandon its obligation to the pension fund, at least in the short run, is the Kentucky General Assembly. Lawmakers appropriate to the pension fund on a regular basis in irregular amounts, amounts often inconsistent with the Annual Required Contribution detailed by plan actuaries.⁴ Here Kentucky is not unique. State legislatures generally contribute to pensions at unpredictable levels from year to year.^{5,6}

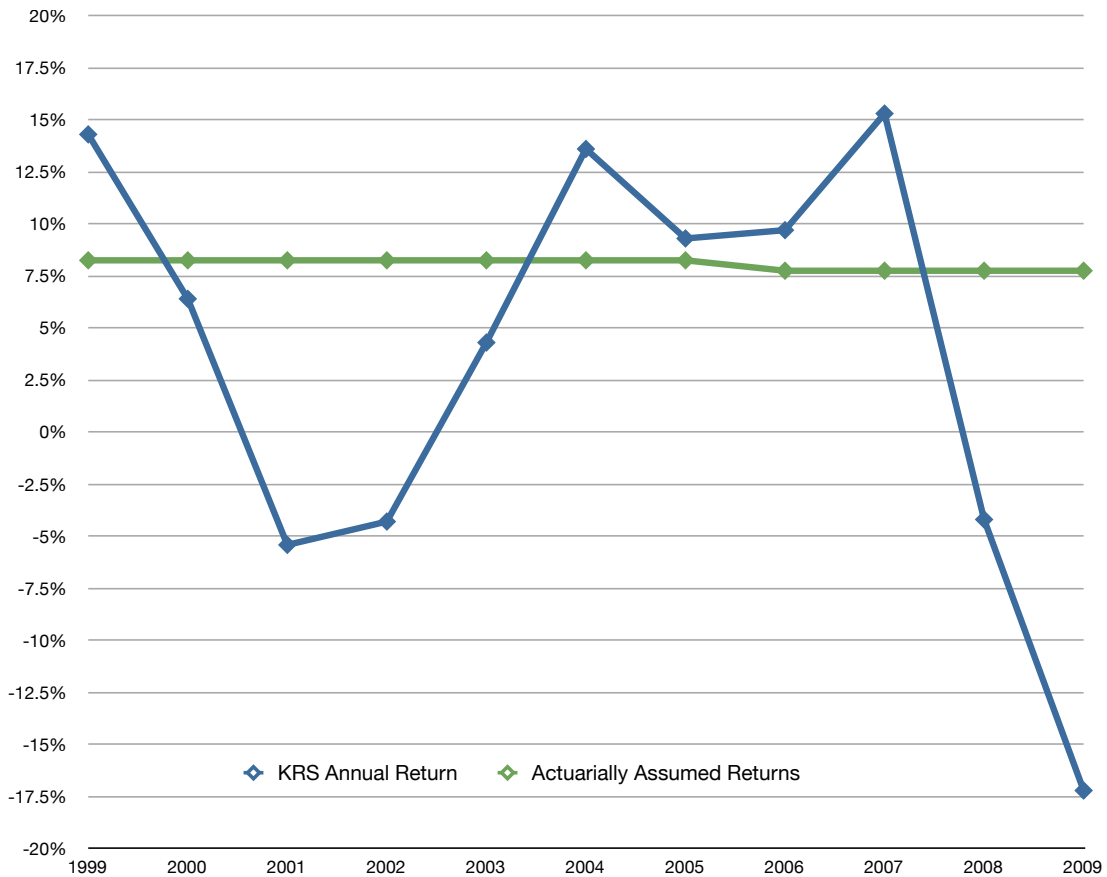
Investment returns are, for obvious reasons, even more volatile. Market returns are subject to rapid changes in market conditions, recession, booms, natural disasters and news events. (Figure 1)

³ Consolidated Annual Financial Report, Kentucky Retirement Systems 2004, p. 4

⁴ Consolidated Annual Financial Report, Kentucky Retirement Systems, 2009

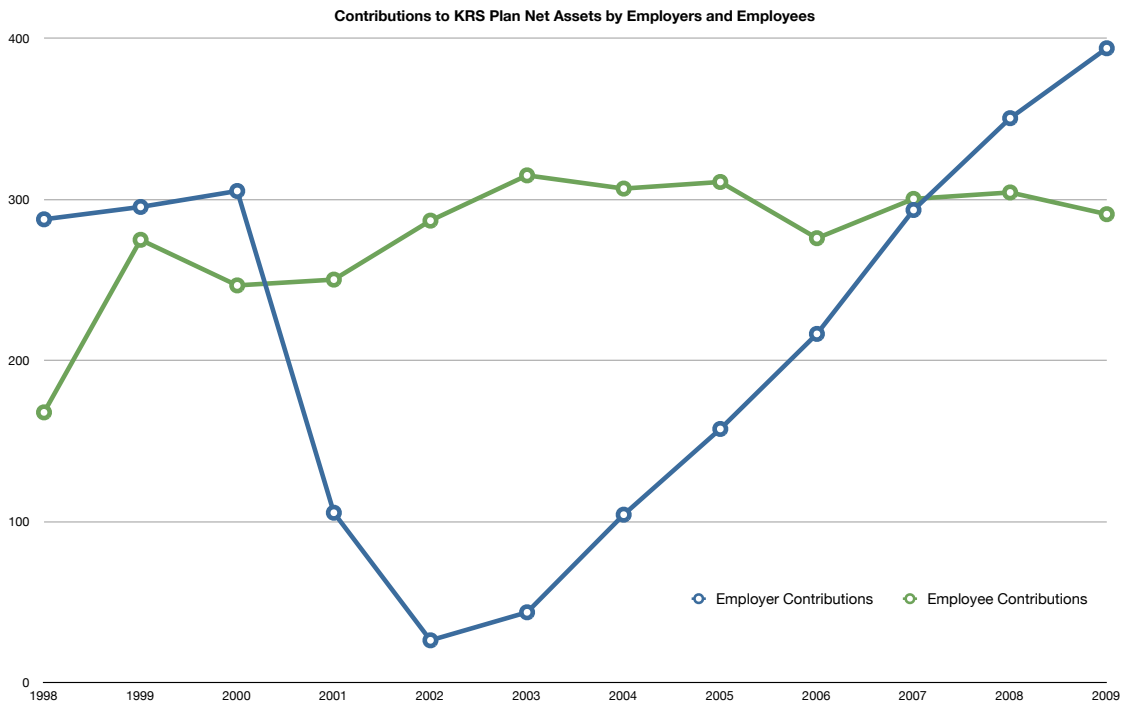
⁵ Olivia S. Mitchell and Robert S. Smith, “Pension Funding in the Public Sector” *The Review of Economics and Statistics*, Vol. 76, No. 2 (May, 1994), pp. 278-290 <http://www.jstor.org/stable/2109882>

⁶ Document detailing recommended versus actual employer contributions over the years provided by William Thielen, COO of Kentucky Retirement Systems



[FIGURE 1: Returns vs. Assumed Returns] The chart details the difference between actual returns as reported by Kentucky Retirement Systems’ Consolidated Annual Financial Reports and actuarial estimates of returns for the purpose of discounting liabilities. The actuarially assumed returns are updated every five years through “Experience Studies.” Actual investment returns occur as they happen.

For the purposes of planning for the future, actuaries and plan managers treat contributions and investment income as interchangeable. That is, less-than-hoped-for investment income or previous-year employer/employee contributions may simply be “made up” by an increase in the annual required contribution (ARC) calculated by actuaries each year.



[FIGURE 2: Employer contributions versus employee contributions to KRS Plan Net Assets, 1998-2009]

In fact, these assumptions are implicit in the methods used by actuaries. Contributions to public pension plans, which are made through coercive taxation, are treated as guaranteed by actuaries. The payments that taxpayers make to pensions funds are treated as risk-free payments.⁷ No accounting is made for the possibility that contributions will not, in fact, be made by governments or subagencies through taxpayers, and perhaps rightly so.

In short, the risks of pension obligations not being met by combined investment income and member/employer contributions are borne exclusively by taxpayers.

Problems of Basic Assumptions

Kentucky Retirement Systems managers make assumptions about returns on assets (ROA). They do so in order to provide lawmakers and employers with information about expected assets and liabilities of the pension systems and recommend how much money to contribute to keep the plans properly funded.

The assumption about annual investment returns pulls double duty as the plan's discount rate, creating an expectation and estimate about what the plan's assets will be at some point in the future. Relatively small swings in assumed return can yield large changes in the actuarial deficit/surplus in the retirement plans.

⁷ Andrew Biggs, "An Options Pricing Method for Calculating the Market Price of Public Sector Pension Liabilities," AEI WORKING PAPER #164, February 26, 2010 <http://www.aei.org/paper/100088>

Colorado was recently noted to be one of few states that actually provides data on what small changes in the assumed rate of return would do to the larger actuarial surplus/deficit:

The \$30 billion Colorado state pension fund is one of a tiny number of government plans to disclose how much difference even a slight change in its projected rate of return could make. Colorado has been assuming its investments will earn 8.5 percent annually, on average, and on that basis it reported a \$17.9 billion shortfall in its most recent annual report. But the state also disclosed what would happen if it lowered its investment assumption just half a percentage point, to 8 percent. Though it might be more likely to achieve that return, Colorado would earn less over time on its investments. So at 8 percent, the plan's shortfall would actually jump to \$21.4 billion. Contributions would need to increase to keep pace.⁸

Kentucky does not report how changes in investment returns away from current assumptions would affect liabilities. Kentucky's actuarially assumed rate of investment return has moved downward (from 8.25% to 7.75% with a slightly higher assumed rate of inflation) to reflect lower market returns during the 2000s. But even that rate of return doesn't necessarily track with actual returns over any given ten-year period.

⁸ Mary Williams Walsh, "Public Pension Funds Are Adding Risk to Raise Returns" The New York Times, March 8, 2010

For the years in which consolidated annual financial reports (CAFRs) are available on the web, 1999 through 2009, the average actual rate of investment return was 3.8% compared to the 7.75% to 8.25% assumed by actuaries over the past decade.⁹

The Map is Not the Territory

It would be one thing if actuarially assumed rates of return misrepresented reality without practical consequence. The problem, as noted by the *Times* in reference to Colorado, is that these assumptions determine all estimates of actuarial liability that states must confront through legislative action. For Kentucky and dozens of other states, that means an understated actuarial liability.

To the extent that lawmakers are confronted with an artificially small, if still very large, actuarial liability, political incentives to confront the problem with additional appropriations or more dramatic reforms to the system may be seriously muted. In Kentucky, lawmakers and local officials rightly fear that a growing share of tax revenues will go to feed growing pension liabilities. But adjusting the assumed rate of return may simply not be a politically feasible option. As Trent May, chief investment officer of Wyoming's state pension fund, told *The New York Times*, "Nobody wants to adjust the rate, because liabilities would explode."¹⁰

Mr. May makes clear an idea that lawmakers in Kentucky might prefer to believe, that actual liabilities are somehow controlled by statistical estimates of those liabilities. That

⁹ Data compiled from Kentucky Retirement Systems CAFRs FY1999-FY2009

¹⁰ Mary Williams Walsh, "Public Pension Funds Are Adding Risk to Raise Returns" *The New York Times*, March 8, 2010

would be a charitable assessment. A more candid assessment is that lawmakers would prefer to avoid being made aware of the size of the liabilities to begin with. Being made aware of the liabilities' true size imposes costs on lawmakers to either deal with the problem or accept political risks for not doing anything about it.

Defined-Benefit vs. Defined-Contribution

Defined-benefit (DB) plans, such as those operated by Kentucky Retirement Systems, and defined-contribution (DC) plans differ in important ways that have implications for how governments treat the differing obligations.

Perhaps the most important difference for governments is that defined-benefit plans do not require lawmakers to recognize the full cost of a worker's employment upfront. The costs of post-retirement benefits do not have to be paid until the worker retires, often years after a promised benefit becomes law. As such, the net present cost of any benefit under a defined-benefit system is rarely recognized and rarely even calculated by lawmakers. Those promises are essentially costless. In fact, plan contributions made by public employers vary widely and for different reasons.¹¹

Consider this example in Kentucky. Kentucky's Personnel Cabinet allows state workers to give blood and receive a payment in the form of four hours of paid leave which needn't be taken immediately. The same goes for state workers who choose to vote in elections. That leave accrues and workers may end up accruing leave at a faster rate

¹¹ Olivia S. Mitchell and Robert S. Smith, "Pension Funding in the Public Sector," *The Review of Economics and Statistics*, Vol. 76, No. 2 (May, 1994), pp. 278-290 <http://www.jstor.org/stable/2109882>

than they otherwise would. For the purposes of pensions, accrued leave may be, in a sense, “cashed in” at retirement. But the decision to grant benefits like additional leave can be done without regard to the future cost of that benefit to taxpayers. It’s not a relevant calculation for lawmakers. There simply is no price to be paid. There are few, if any fringe benefits to which actuarial calculations apply at the time the benefit is granted, at least for the purposes of pensions.¹²

To the credit of actuaries that evaluate Kentucky Retirement Systems on an annual basis, the default assumptions include the cashing in of the maximum accrued leave and a maximizing of similar benefits. This calculation, however reasonable, doesn’t do anything directly to curb the granting of fringe benefits without regard to their cost.

Defined-contribution plans require that contributions be made in close proximity to the worker’s provision of any given amount of labor on behalf of the government. That is to say that a government’s contribution to a privately-held 401(k)-style plan must be made when payroll is made. The value of the promise made by the lawmaker must be recognized, calculated and delivered in close proximity. For lawmakers, defined-contribution plans can frustrate what otherwise might be a simple arbitrage between the political benefits of a given pledge to workers and the actual financial burden to taxpayers.

Fringe benefits, under a defined-contribution retirement plan, must be made in the short run and in cash. The cost is recognized fully and immediately.

¹² Kentucky Personnel Cabinet Leave Information, Blood Donation Leave <http://personnel.ky.gov/stemp/emphb/leave.htm>

The more full recognition of employee benefits upfront may frustrate the satisfaction of parochial interests that contribute more directly to incumbency, but it does force lawmakers and other decisionmakers to recognize the costs of a given action in concert with the action's benefits, political and otherwise.

Workers

While it's generally true that the actions of workers within public pension systems are predictable, that is only necessarily true to the extent that workers believe the commitment made to them by their employers is credible. State workers can reasonably be expected to possess the most knowledge about Kentucky's defined benefit pension system and it's therefore reasonable to assume that these workers are sensitive to the credibility of Kentucky's promise to pay promised benefits.

A worker's pension is determined through a basic formula that looks something like this (with few variations): Years of service * Benefit Factor * Average of Five High Salary Years = Pension Benefit

For a standard state worker, benefits are maximized at 27 years. For most state workers, the benefit factor is 2.2% of compensation (or slightly less for newer hires) at 27 years. That means that a state worker who takes advantage only of the basic pension benefit will be able to take home around 60% of their highest earning years. Different benefit factors apply based upon recent changes in statute and employment categories.¹³

¹³ Kentucky Retirement Systems Benefit Factor Tables http://kyret.ky.gov/uploads/employees/benefit_factor_2009.pdf

But workers are able to take advantage of benefits that have been promised over the years by lawmakers. Only recently have these benefits begun to be curtailed, but those changes do not apply to those already in the retirement systems.

Here are a few of the benefits available to KRS-covered workers:

- Workers may purchase service credit. This benefit can be exploited by younger workers who expect to retire from state government at full pensions. That is, the incentive for a younger worker is to purchase service credit at an earlier, lower salary.

The actuarial cost calculation for purchases of service credit is not influenced by the purchaser increasing an actuarial deficit in the pension fund.

- Workers may elect to reduce current payments in order to extend payments to a survivor.¹⁴ That essentially means workers are able to treat monthly pension benefits as an annuity that may be inherited. There are restrictions, but this is one reason that the stream of payments guaranteed under Kentucky Retirement Systems may extend for many years after a worker dies.

- “All benefits attributable to service earned on or before December 31, 1997, are exempt from Kentucky income tax. The portion of the member’s benefits earned January 1, 1998 and after is subject to Kentucky income tax.”¹⁵

¹⁴ Service Credit Purchase Payment Options http://kyret.ky.gov/index.php/employees/payment_options

¹⁵ Retiree Handbook, Kentucky Retirement Systems <http://kyret.ky.gov/archive/publications/RetireeHandbook.pdf>

- The contract that workers receive as members of Kentucky Retirement Systems is known as an “inviolable contract.”¹⁶ Almost none of the benefits pledged to a state worker through statute may be reduced or rescinded with the notable exception of cost of living adjustments. Most benefits simply accrue to the contract as the worker moves through his career.

The strength of the legal promise made by Kentucky to workers is among the strongest in the United States. So workers may have little reason to doubt the ability of Kentucky to make payments for many decades, even as other state spending priorities must be sacrificed.

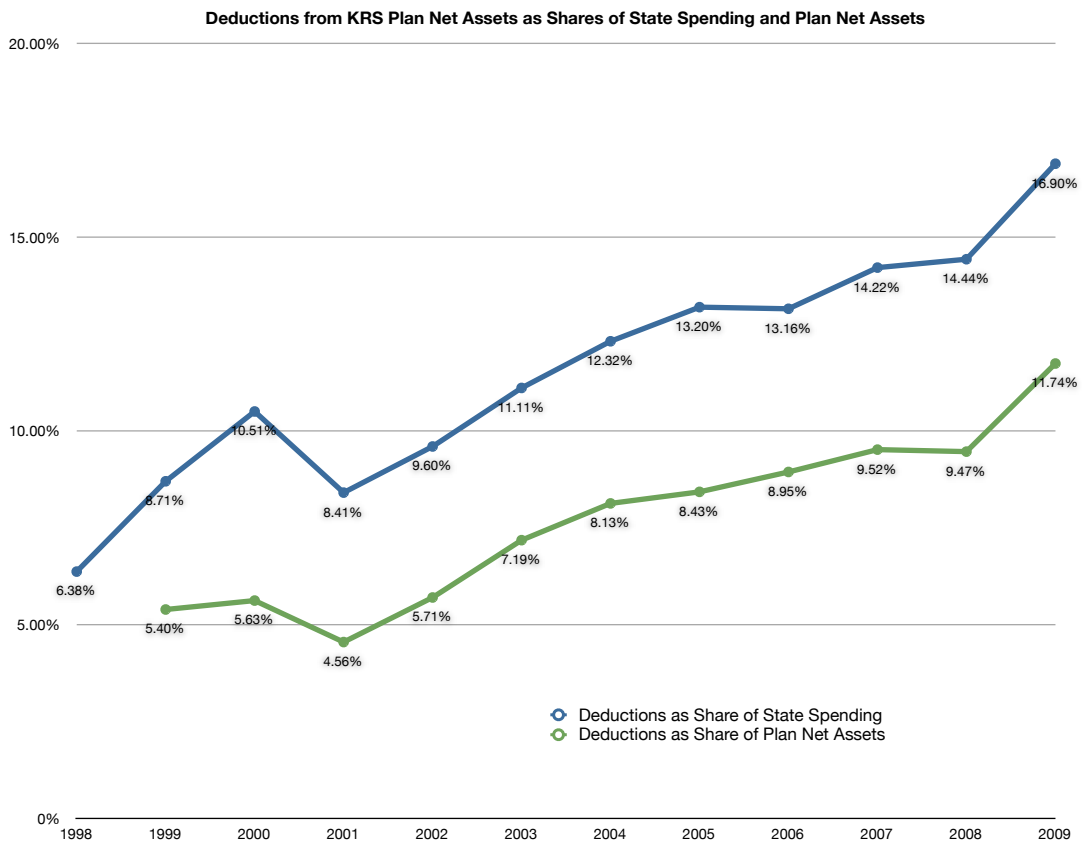
The extent to which this belief remains true will depend on just how credible that promise remains. Lawmakers have been reluctant to consider any sweeping change to the system, but if workers believe that the promises made to them are threatened by promises made to newly enrolled employees, they may be inclined to support change for future hires.

There is another consideration here. While the retirement schedules of state workers appear to be predictable, a sudden change in the credibility of the promise to Kentucky government workers may induce many current workers to seek earlier retirements in order to receive benefits that they feel are threatened by some radical action. Something of that nature may reduce, rather than lengthen, the longevity of the program.

Lawmakers

¹⁶ <http://finance.ky.gov/NR/rdonlyres/275A2978-5DDE-4138-A7F5-AF02D17D7F97/0/Statebystatememo10.pdf>

Lawmakers control Kentucky’s pursestrings. When it comes to managing the retirements of members of Kentucky Retirement Systems, lawmakers are tasked with making biennial appropriations to the pension funds. That appropriation in its entirety is known as the Annual Required Contribution (ARC) and represents the amount of money actuaries believe will best keep (or move) KRS pensions at (or toward) full funding.



[FIGURE 3: Deductions from KRS Plan Net Assets as Shares of State Spending and Plan Net Assets]

Lawmakers have routinely failed to make the recommended (it's hardly required) contribution to the pension funds over the past decade.^{17 18} Reasons for this should seem obvious.

Appropriation of the ARC itself is subject to political constraints. Other demands on state funds may be more immediate and short-run political benefits (incumbency chief among them) are likely higher for appropriations elsewhere than a contribution to the KRS pension funds. Lawmakers benefit considerably from the ability to arbitrage short-run political benefits from the costs associated with a failure to make appropriate pension contributions over years.

Another reason for lawmakers failure to fund pensions to the actuarially approved level is that the obligation is not the same as an obligation to pay a bond. Bonded obligations are direct obligations on lawmakers to make a specific appropriation on an annual basis or the bond will be in default. Default on a bond threatens a state's bond rating, which would result in higher borrowing costs. These ends can be directly attributed to lawmakers who fail to budget appropriately.

That's not so with pension obligations, though financial rating houses have threatened Kentucky's bond rating should it not undertake reform of its pension system. But it's not clear what the trigger would be to a downgrade in credit. Reform is multidimensional. Bond payments are binary.

¹⁷ Consolidated Annual Financial Report, Kentucky Retirement Systems, 2009

¹⁸ Document detailing recommended versus actual employer contributions over the years provided by William Thielen, COO of Kentucky Retirement Systems

In any case, the direct obligation of lawmakers is to assure that payments to retirees and beneficiaries are made in a timely manner, not that the ARC is funded at a given level in any particular year. The plan net assets, the nest egg of Kentucky Retirement Systems, sat most recently at almost ten billion dollars.¹⁹ KRS would be able to meet obligations for many years to come if investment income proceeds apace. Lawmakers, at least in the short run, face another muted incentive to appropriate funds today for benefits that will not be paid for many years.

It's also not clear that lawmakers would ultimately be held to account for the failure of KRS to make a payment to pensioners in the case of exhaustion of plan assets. First, many lawmakers will themselves be retired and will be able to avoid at least the political costs of such an event. Also, investment income constitutes a large component of ongoing plan net assets. Investment income contributes mightily to maintenance of asset levels as payouts to retirees continue to increase. Any failure of KRS to tender payments in the face of exhausted assets may be laid politically at the feet of a poor environment for investment or poor investment decisions by bureaucrats and advisors at KRS, whether or not that complaint is legitimate.

The bulk of current lawmakers are themselves members of a retirement system similar in technical structure to others managed by Kentucky Retirement Systems, though new lawmakers (those first elected in 2014 and beyond) will not receive defined-benefit pension benefits. Since “years of service credit” is a key metric in determining post-

¹⁹ Consolidated Annual Financial Report, Kentucky Retirement Systems, 2009

retirement benefits for lawmakers, they may face an increased incentive to maintain incumbency to maximize benefits associated with their own public pension plan. In any case, it should otherwise not be assumed that lawmakers will dispatch their duties as lawmakers without consideration to their status as public pension plan participants.

But there is another aspect of public pensions and lawmakers that deserves consideration for a less-than-obvious impact.

In 2005, lawmakers passed a change to their own retirement plan that allowed them to move to jobs outside the legislature and retain their years of service credit.²⁰ In essence, it allowed lawmakers to accept jobs of much higher pay outside the legislature, use the higher salary for the calculation of pension benefits and retire once those benefits had been maxed out. This type of activity is known as “salary spiking” and is well-known to occur in public pension systems.²¹

Interestingly, this provision of law appears to have shifted some power out of the legislature to Kentucky’s governor. For senior lawmakers, those approaching the requisite 27 years of employment to max out a pension, three years in a high-paying job could double or triple their eventual pension payments. The Governor of Kentucky, uniquely suited to make cushy appointments, began taking advantage of this provision in 2005.

²⁰ House Bill 299, Kentucky General Assembly Regular Session 2005 <http://www.lrc.ky.gov/RECORD/05RS/HB299.htm>

²¹ Karen Steffen, “State Employee Plans,” Pensions in the Public Sector, Pension Research Council, 2001

Then-Gov. Ernie Fletcher appointed several lawmakers out of their positions in the legislature and into positions elsewhere. Kentucky journalist Lowell Reese documented several of the appointments and indicated that they could be worth, in at least a couple of cases, an additional \$1.8-million in lifetime wealth.²² Current Gov. Steve Beshear has appointed several senior lawmakers into positions outside the legislature and it is clear that they have benefited mightily from enhanced pensions. The ability of the governor to appoint lawmakers out of the legislature into high-paying jobs has always existed, but the extent of the benefit to those lawmakers increases dramatically.

Enticing lawmakers out of the legislature for the purpose of enhanced pensions has had the unintended effect of giving the governor the ability to remove obstacles or reward friends with potentially millions of dollars in enhanced pension benefits. To the extent that lawmakers hope to benefit from this arrangement, the likelihood that this information will be made public goes down.

Judges

Judges are charged with interpreting and providing guidance on the law. The relevant law with regard to Kentucky Retirement Systems is the so-called “inviolable contract” that governs all arrangements between employees and government for the purposes of pensions.

²² “Legislators’ Great Pension Bonanza,” Kentucky Roll Call, August 19, 2009.

That contract, as explained by then-Gov. Ernie Fletcher's Blue Ribbon Commission on Public Retirement Systems, is a very strong legal promise on behalf of Kentucky taxpayers:

The Kentucky statement of intent is one of the strongest among the states. Its statute expressly states that pension benefit laws "constitute an inviolable contract of the Commonwealth and the benefits provided therein shall ... not be subject to reduction or impairment by alteration, amendment, or repeal." See, e.g., KRS 16.653, 61.692, 78.852.. Thus, under Kentucky law, pension benefits for public employees and retirees are a contractual right, and those benefits may not be reduced or terminated by the legislature retrospectively.²³

Kentucky judges are themselves members of a public pension system that takes advantage of this inviolable contract and is managed by Kentucky Retirement Systems. Judges are asked to rule on the legitimacy of these contracts. They should not be assumed to act without regard to their participation in a public pension plan through Kentucky Retirement Systems.

Local Agencies

A large number of the agencies whose employees participate in Kentucky Retirement Systems are unable to avoid making their annual "employer contribution" as recommended by Kentucky Retirement Systems. Contributions on behalf of state

²³ Final Report of the Blue Ribbon Commission on Public Retirement Systems, 2007 http://finance.ky.gov/NR/rdonlyres/500BD448-0A79-4871-A7AE-E00505A0E63B/0/BRC_FINAL_Report_122120071.pdf p. 32

government workers, as noted below, is “subject to state budget approval” by lawmakers each biennium. But local governments must make these contributions at the direction of the board of Kentucky Retirement Systems. The Annual Required Contribution, for local governments, is exactly that.

The section relating to the County Employees Retirement System (CERS) of the most recent KRS Consolidated Annual Financial Report states:

State statute requires active members to contribute 5% of creditable compensation. . . . Employers contribute at the rate determined by the Board to be necessary for the actuarial soundness of the systems, as required by Kentucky Revised Statute 61.565 and Kentucky Revised Statute 61.752. KERS rates are subject to state budget approval.²⁴

The ARC for local governments is usually expressed as a share of payroll, a share that local governments must devote to employee retirement at the direction of the board of Kentucky Retirement Systems without regard to most other priorities.

The problems with this arrangement are manifold. Kentucky Retirement Systems, under this arrangement, may “tax” local governments to make up for poorer-than-expected investment returns. KRS does exactly that. Local governments also may not opt out of the system in favor of a defined-contribution plan or other arrangement for new-hires:

²⁴ Consolidated Annual Financial Report, Kentucky Retirement Systems, p. 155, 2009

When an agency first participates with one of the Retirement Systems administered by KRS, each employee working in a regular full-time position is given the option to elect or reject retirement coverage. After the agency begins participating, any new eligible employees are mandated to participate in the Retirement Systems.²⁵

Local agencies will have to contend with a growing share of payroll going to support pensions. That expense threatens to crowd out many basic local government services. The realities of a failure to make changes to pensions will be most felt by local agencies with finite budgets and a growing financial burden to bear in state pensions.

Information Problems

Researchers who study public pension systems have done remarkable work puncturing many of the troubled assumptions of actuaries. But one observation about Kentucky's public pension system that seems obvious given the incentives at work: Credible information about the pension plans themselves are subject to the same political constraints as any decisions that would govern the system.

Information about public employee salaries is a matter of public record. Information on the durations of service of public employees is likewise public record. But information on which former public employees are collecting pensions and through which system they collect them are not matters of public record. The secrecy of those records is

²⁵ "Kentucky Retirement Systems Reporting Official Manual 2006-2007," Kentucky Retirement Systems, p. 9

protected by statute, but that secrecy is not a benefit covered by the “inviolable contract.”²⁶

The secrecy of pension contract and benefit information is relevant for a few reasons. One is simply that the public may have a strong and legitimate interest in knowing, just as it is entitled to know who is working for the state and what that compensation is, who is receiving benefits for having worked for the state and what the post-employment benefit is. Given that many recipients of monthly payments from Kentucky Retirement systems never worked for any state agency is of particular relevance.

Additionally, the extent to which some public employees engage in what is known as “salary spiking” (mentioned earlier in association with lawmakers) for pension purposes is legendary, but nearly impossible to document with the secret status of those records.

Another action often undertaken by state workers, though, is the accrual of multiple pensions. To the extent that revealing this fact and the parties engaged in it speeds the recognition of the inequities of the system, it may be useful for state taxpayers to made aware of the extent of this tactic.

The secrecy of the system poses an additional challenge for researchers who might want to challenge assumptions about the supposed longevity of the funds themselves. Secrecy also frustrates efforts by others who might wish to discover costly and as-yet-unknown exploits used by workers to boost pension benefits, workers who may well know more about vagaries of the system than the lawmakers who designed it.

²⁶ Personal interview, William Thielen, KRS Chief Operations Officer, March 9, 2010

The Stakes

The stakes for reforming Kentucky Retirement Systems are high. Over the past decade, deductions have increased steadily while investment returns have been all over the map. Contributions, at least those from the Kentucky General Assembly, are subject to the political and fiscal constraints of lawmakers.

As the financial crisis took its toll in 2007 and 2008, KRS assets took tremendous losses. The share of plan net assets devoted to benefits and other payments rose to more than 11%. If those same deductions were treated as a share of the state budget, they would now total nearly 17% of state spending. (see chart, Page 12) Absent a dramatic and sustained market recovery in the next few years, it is likely that deductions will consume an increasing share of plan net assets. The most immediate concern for lawmakers is therefore twofold: Prevent Kentucky Retirement Systems from paying out more in benefits than it takes in through contributions and investments and, failing that, prevent KRS from becoming a paygo system. Under a paygo system, there are no assets to buffer taxpayers from the full and immediate costs of retiree pension payments. If Kentucky Retirement Systems falls into a paygo system, the choice between continuing pension payments or meeting other state priorities (schools, roads, courts, police) will become far more stark.

Avenues for Reform

In announcing his Blue Ribbon Commission on Public Employees Retirement Systems in April 2007, then-Gov. Ernie Fletcher said:

When our state employees, county employees, state police and teachers began their careers in public service, they were promised a level of benefits upon which they have based their retirement plans and those promises will be kept. The committee's charge is to focus on how we meet those commitments and responsibly plan for the future.²⁷

Meeting those commitments and responsibly planning for the future have been operating at cross purposes. The 2007 panel made a few good recommendations, few of which have been followed by the General Assembly. In 2008, major rating houses Moody's and Fitch began the process of preparing Kentucky lawmakers for downgrades to state-issued bonds by downgrading their outlooks for Kentucky debt. To the extent that a downgrade to bonds occurs, Kentucky's government will have to pay far more to finance its operations.

Such a threat demonstrates that Kentucky Retirement Systems undermines any value it may deliver to taxpayers by making Kentucky's government more costly. It should be understood that government workers work on behalf of taxpayers and citizens. Any system designed to serve the needs of state workers must, at the very least, not unduly burden taxpayers with unnecessary costs, let alone bankrupt the state.

- The retirement benefits promised to the current wave of state workers threatens to crowd out basic public desires like public safety officers, road construction and other

²⁷ Press Release, "GOVERNOR FLETCHER APPOINTS COMMISSION MEMBERS TO STUDY STATE RETIREMENT SYSTEMS," Office of the Kentucky Governor, April 4, 2010

infrastructure. Kentucky lawmakers should immediately take the following actions to end the growth of liabilities associated with Kentucky Retirement Systems:

- Make all relevant KRS participant information public immediately. More than 300,000 current and former state workers are included in Kentucky Retirement Systems. Those workers past and present have no legitimate privacy claim on the amount of taxpayer-funded pension they are receiving. The information should be available to the public for the purposes of independent study and the possible discovery of new information about how the systems are being utilized.
- Close Kentucky Retirement Systems to new enrollees. All payments made to current retirees are for work that has already been done on behalf of Kentucky. That means that taxpayers are still paying for work done decades ago and the cost continues to rise. The wholesale separation of inviolable pledge with the payment of that pledge fails to align pension costs and benefits in a manner that serves the needs of taxpayers.
- Bond a portion of the Annual Required Contribution (ARC) to Kentucky Retirement Systems pension funds. Lawmakers have show little will to maintain plan net assets in a way that will continue to buffer taxpayers from KRS becoming a paygo system. Bonding a portion of the ARC would provide a larger buffer between taxpayers and a paygo system.

- Freeze salaries and end COLAs for KRS plan members (workers and retirees). A large contributor to actuarial deficits are COLAs granted to current workers and retirees and COLAs are one benefit not subject to the “inviolable contract.”
- Buy out “inviolable contracts” as funding allows. Kentucky may be able to stem some losses by accepting bids for a portion of the present value of workers’ pension benefits. Workers do not always prefer a stream of payments and may find a buyout an easier way to leave state employment. Exploiting workers time preferences for cash can reduce liabilities. These auctions should be designed to reduce, rather than contribute to actuarial liabilities.
- Require current workers to pay the full net present value of service credit. Only workers who expect to earn positive returns by purchasing service credit do so. Requiring workers to pay something closer to the actual value of that credit would stem some losses to taxpayers.
- Reduce the discount rate for the calculation of actuarial liabilities. Actuarial liabilities within KRS are dramatically underestimated by any reasonable standard. Using a risk-free rate of return to discount benefits will give lawmakers a clearer picture of the liabilities taxpayers face.
- End civil service at Kentucky’s government. The risk of losing one’s job is quite low in Kentucky government. That is a big reason why Kentucky’s pensions are so attractive. The likelihood of making it through 27 years of government work, maximizing pension benefits, is very high.

Kentucky's pensions problems, as a burden to taxpayers, will continue to worsen whether or not lawmakers undertake reform. But reform is the only way for the problem to get better while possibly averting even more difficult decisions years and decades from now.

The first step toward fixing the problem is purely informational. Lawmakers must demand and confront accurate information about the nature and size of the pension problem. The public must be allowed to know how the system is being used and abused. And Kentucky Retirement Systems must empower its actuaries and consultants to create more robust information for everyone's benefit.

Chapter Two

State-based public pensions face increasing scrutiny as their financial stability is tested. In 2012 the Pew Center on States estimated that the pension liability associated with state-level public employees had grown by \$120 billion to \$1.38 trillion in the 2010 fiscal year.²⁸ But this figure understates the true value of pension liabilities and encourage states to contribute at lower levels than would be recommended by many financial economists. The challenge for state governments charged with making the payments necessary to stave off a collapse of the pension funds is manifold: 1) Represent the size of the liability clearly and accurately, 2) make payments to pension funds that clearly reflect the net present cost of post-employment benefits currently being accrued by government workers (future pensioners) to shrink the unfunded portion of pension liabilities, and 3) minimize the cost (to taxpayers and workers) of transitioning from the current system to one in which costs recognized today appropriately align with payments to be made in years to come. For Kentucky, these problems are particularly pronounced. The state is routinely counted among states with pension systems with very low

²⁸ “The Widening Gap Update,” Issue Brief, Pew Center on States, June 2012.
<http://www.pewstates.org/research/reports/the-widening-gap-update-85899398241>

funding.²⁹ This chapter attempts to address challenges 1) and 2) by providing an estimate of on-budget net present cost of a state-level public sector worker where pension costs are accurately represented.

A ‘Fiscal Illusion’ in State Pensions

To the extent that the public generally views state government and its workers as beneficial, we can assume that there is some price that the public might be willing to pay to have those services provided by the public sector. But the post-employment benefits paid out workers comes years and decades after the worker has left the public workforce. Combined with a large and growing unfunded pension liability, this time inconsistency generates what Buchanan³⁰ (via Amilcare Puviani) and others call a “fiscal illusion.”

The fiscal illusion generally refers to a public-sector activity in which the costs of the activity are opaque, semi-transparent or otherwise not confronted by taxpayers in in the current period. Niskanen³¹ describes something of a fiscal illusion in his critique of the popular “starve the beast” theory, the idea that depriving the government of tax revenue would effectively constrain the growth of government. He argues that low tax

²⁹ “KRS Fund One of the Worst-Funded Nationwide,” Kevin Wheatley, The Frankfort State-Journal, Dec. 6, 2012. <http://www.state-journal.com/latest%20headlines/2012/12/06/krs-fund-one-of-the-worst-financed-in-u-s>

³⁰ Buchanan, James M., Public Finance in Democratic Process: Fiscal Institutions and Individual Choice. 1999. Library of Economics and Liberty. 17 December 2012. <<http://www.econlib.org/library/Buchanan/buchCv4c10.html>>.

³¹ Niskanen, William A., “Limiting Government: The Failure of ‘Starve the Beast’” Cato Journal, Fall 2006. <http://www.cato.org/pubs/journal/cj26n3/cj26n3-8.pdf>

rates in an environment of increased spending distorts perceptions of the value government delivers. Niskanen writes, “It is most implausible that reducing the current tax burden of federal spending would *reduce* the amount of federal services that voters demand.”

In the case of Kentucky’s public pension funds, the fiscal illusion is one of public obligation (implicit debt) to government workers over a time frame far longer than the working life of state workers. Workers eligible for pensions in Kentucky can expect to work a career of 27 years to max out their pensions, but can receive significant cash payments that continue for as long or longer than a worker’s public-sector career. Taxpayers may believe they are paying one price for government workers (cash wages and other benefits paid during the career of the workers), but are in fact paying a far higher price (pension costs and other post-employment benefits) years and decades later.

As with many different aspects of state fiscal policy, there are few incentives for lawmakers to directly correct this illusion. In fact, lawmakers face some persistent incentives to maintain and even increase the size of the illusion.

Lawmakers derive short-run political benefits (continued incumbency and enhanced reputation, for example) by providing government workers with additional post-employment benefits that impose relatively few costs in the current period. Lawmakers have the ability to then shift the costs of these benefits into the future by underfunding promised benefits and using actuarial methods that underrepresent the present value of future liabilities. *Recognizing and making payments based on the present value of the full*

cost of public-sector workers could help align the incentives of lawmakers with those of taxpayers with respect to post-employment benefits like pensions.

Why Discount the Future?

In order to understand why the discount rates used by actuaries to value pensions are based on inaccurate assumptions, we have to answer a seemingly simple question: Why should we discount the future at all?

In a world of finite resources and unlimited wants, *the needs of our futures must compete with our needs today*. We must choose what we are willing to do without today in order to have something else we know we'll want in the future. As an extreme example, consider this: We know today has value because we choose not to save 100% of our earnings. Likewise, the future is not valueless or people wouldn't care about establishing credit, accruing home equity or saving. In the context of retirement, savings typically takes the form of 401(K) investments and other accounts. We can think of this most easily as an attempt by each of us to smooth consumption over a lifetime.³² We forego consumption today to secure consumption years into the future.

We also discount the future because *we're never totally sure the future will arrive*, or arrive in the manner we expect. For example, if we all lived in a sort of "Logan's Run" world in which everyone who turned 25 faced "renewal" (read: execution), then we

³² Thomas J. Sargent, "Rational Expectations." The Concise Encyclopedia of Economics. 2008. Library of Economics and Liberty. 10 December 2012. <<http://www.econlib.org/library/Enc/RationalExpectations.html>>

would be unlikely to save for retirement.³³ We would spend our dollars far more quickly and attempt to enjoy life a great deal more in the short run. The flip side might be a world in which we were all guaranteed to live to 200, but would be forcibly removed from the workforce after age 75. In that world, we'd likely have to save high shares of our incomes to plan for 125 years of zero wages.

The truths that *today's needs must compete with tomorrow's needs* and that *the future is largely unknown* are really two sides of the same coin with respect to retirement planning. We all want to be prepared to retire with adequate resources, but we don't want to sacrifice too much today. Further, we don't really know what form the future will take. So we necessarily count it as somewhat less important than today. As a colleague of mine once put it, "Life is not a defined-benefit proposition."³⁴

Expected Rates of Return versus Discount Rates

In pensions as in any other area of finance, a discount rate allows us to consider a stream of future payments (or a known liability due at a known future date) as a probable outcome. How probable we consider that outcome to be determines the discount rate. The present value of a known future liability (at least the value we expect to see) is a function of the chosen discount rate and the size of the future liability. Discounting that future value back to the present then tells us, at any given moment, what assets we need in our

³³ "Logan's Run," (1976). <http://www.imdb.com/title/tt0074812/>

³⁴ Author's conversation with José Piñera, September, 2012.

possession to prepare for that future obligation. The discount rate, therefore, is a tool for us to avoid a liability of unanticipated size.

A higher discount rate means a higher likelihood that we will not have to make any or some portion of that stream of future payments and therefore, we set aside fewer of our present resources to meet that somewhat-less-than-certain outcome. We are literally discounting the future *more* when we use higher discount rates; we expect that the future obligation is less likely to come due. As we shall see, this concept is poorly understood within public pension finance.

Some media outlets (and even, on occasion, Kentucky's own pension fund managers) confuse the concept of a discount rate with the concept of anticipated rate of return on assets. In a presentation³⁵ made to Kentucky Public Pensions Task Force in 2012, Kentucky Retirement Systems' interim director William A. Thielan and Chief Information Officer T.J. Carlson presented a slide containing the following information:

“The higher the investment return assumption (discount rate), the lower the present value of future liabilities and the corresponding annual required contribution needed to fund those liabilities.”

³⁵ William A. Thielan and T.J. Carlson, “Kentucky Retirement Systems Overview,” Kentucky Retirement Systems PowerPoint presentation. July 24, 2012. https://kyret.ky.gov/images/uploads/news/KRS_Overview-_July_24_2012_FINAL.pdf

Dean Baker, in a paper entitled “The Origins and Severity of the Public Pension Crisis,”³⁶ shows that even economists sometimes fail to grasp the distinction between expected rates of return and discount rates:

“The argument that pension funds should only assume a risk-free rate of return in assessing pension fund adequacy ignores the distinction between governmental units, which need be little concerned over the timing of market fluctuations, and individual investors, who must be very sensitive to market timing.”

At first blush, the confusion is reasonable. But clarity is critical if we want to understand what should be done to bring pension contributions by employers in line with the near-certain stream of payments to present and future retirees.

The choice of a discount rate is an assessment based on the likelihood of a future payment or payment stream coming due. An expected rate of return on a given portfolio of stocks and bonds has nothing directly to do with that assessment. Rather than matching returns, actuaries should match the risk profile of the liability with an investment vehicle of identical risk. Pairing equivalent market risks between liabilities and investments hedges that risk.

Nonetheless, expected rates of return are often rooted in the long-term performance of assets of that type like stock indexes and other market aggregates, but those aggregates have long and variable swings in performance. It may be simpler to put it this way: *The*

³⁶ Dean Baker, “The Origins and Severity of the Public Pension Crisis” Center for Economic and Policy Research, February 2011. <http://www.cepr.net/index.php/publications/reports/the-origins-and-severity-of-the-public-pension-crisis>

risk of returns not coming in as expected in a typical stock portfolio is far higher than the risk that state governments will not have to make pension payments. Matching the risk profiles of assets and liabilities should be of the highest priority for pension managers. Unfortunately, as noted above, distinguishing expectations of rates of return from discount rates is rarely present in the accounting practices of state pension plans.

Kentucky's Pension Liability, as Stated

Kentucky's state government manages three funds for government workers, all under the umbrella of Kentucky Retirement Systems³⁷. The individual funds are the Kentucky Employees Retirement System (KERS), the County Employees Retirement System (CERS) and the State Police Retirement System (SPRS). Two programs are then split into Hazardous and Non-Hazardous job classifications, which determines the required career length for maximizing pension benefits and some of the post-employment benefits themselves. For simplicity this paper only considers the cases of the employees whose jobs are considered Non-Hazardous in the Kentucky Employee Retirement System. KERS is not the largest of the three systems in terms of active members, but the data for employers is managed at the state level and not by individual counties, which makes the collection of that data far easier. KERS also represents the largest portion of the unfunded liability associated with state pensions. The unfunded liability of a pension fund is the portion of the liability that isn't covered by current assets in the pension fund.

³⁷ Kentucky Retirement Systems <http://kyret.ky.gov>

The \$1.38 trillion figure for the total nationwide state-and-local-government pension obligations is likely understated to a significant degree for a couple of reasons.³⁸ First, pension payments made to retirees are virtually guaranteed.³⁹ Public sector workers in Kentucky face far lower turnover than in the private sector and their employment benefits contracts are legally identified as “inviolable,” meaning the payments are *very nearly as secured as a bond payment*.⁴⁰

The reason this matters is that state pension liabilities in Kentucky and elsewhere are not discounted as if they are virtually guaranteed. *As noted earlier, KRS uses discount rates and expected rates of returns on assets as identical figures in their calculations.*

Liabilities are discounted at a rate far higher than the rate recommended by financial economists. The University of Chicago’s Booth School surveys economists on various issues of the day.⁴¹ More than 97% of economists surveyed “agree” or “strongly agree” with the following statement, “By discounting pension liabilities at high interest rates under government accounting standards, many U.S. state and local governments understate their pension liabilities and the costs of providing pensions to public-sector

³⁸ Lisa Lambert and Hilary Russ, “U.S. public retiree benefits gap grows to \$1.38 trillion.” Reuters.com. June 18, 2012. <http://www.reuters.com/assets/print?aid=USBRE85H1OQ20120618>

³⁹ Robert Novy-Marx and Joshua Rauh, “The Revenue Demands of Public Employee Pension Promises,” NBER Working Paper, 2012. http://www.nber.org/papers/w18489.pdf?new_window=1

⁴⁰ Kentucky Revised Statutes, <http://www.lrc.state.ky.us/krs/161-00/714.PDF>

⁴¹ Chicago Booth School IGM Forum Survey, October 1, 2012. http://www.igmchicago.org/igm-economic-experts-panel/poll-results?SurveyID=SV_87dlrlXQvZkFB1r

workers.” More than 90% of surveyed economists also “agreed” or “strongly agreed” that, “During the next two decades some U.S. states, unless they substantially increase taxes, cut spending, and/or change public-sector pensions, will require a combination of severe austerity budgets, a federal bailout, and/or default.”

The anticipated rate of return for state pension funds has frequently been in the neighborhood of 7% to 9%. For many years, Kentucky’s state pension manager, Kentucky Retirement Systems, used a rate of return of 8.25%. They have since lowered the expected return (treated as identical to the government’s “discount rate”) to 7.75%, but it still remains far higher than the so-called “risk-free rate” that is found in more certain investments like U.S. Treasury securities and some corporate bonds.

Estimating Actual Liabilities and the Annual Pension Payments for State Government

Defined-benefit pension plans must plan for the future by setting aside sufficient resources to fund retiree pensions. But the plans that pension funds make are not for an individual or a family, but thousands or tens of thousands of workers. Further, the plans made on behalf of workers are not individualized plans. The pension fund doesn’t close its doors when the last retiree dies. To be clear, *there is no last retiree* in almost all defined-benefit plans. Unless they have been closed to new entrants, public pension plans are meant to function on an open basis into perpetuity. That fact alone means that pension planning must be made conservatively, consistent with enduring and widely applicable

principles of finance. With respect to discounting future payments to retirees, public pension finance does not follow principles used in almost any other field of finance.

Outside public pension funds, the risk of not having to make the agreed-upon payments is “default risk.” It’s the risk of the payor becoming unable to make the required payments. When entities (corporations, governments and individuals) borrow money, they must do so at a rate that reflects the opportunity cost of capital. The cost of borrowing for the entity incorporates market-related risks, like default risk, and prices borrowing costs accordingly. In short, any market-related risk that could stop or interrupt the flow of repayment of the debt is priced into the cost of borrowing.

Inside public pension funds, discount rates are used to estimate the size of the liability. Discount rates are used to determine the necessary assets on hand. But these rates do not reflect the cost of capital for lenders. This is for two reasons: 1) the “lenders” in question are the taxpayers of the jurisdiction operating the pension fund and 2) they are not, strictly speaking, *willing* participants in the transaction, nor are they the ultimate recipients of the future payments for which the pension fund must borrow. The “repayment” when it comes to taxpayer-funded pension contributions is supposed to come in the form of lower overall pension costs to taxpayers in the long run by using equity returns as the primary funding source for future pension payments.

Governments generally command low interest rates when they seek to borrow in the broader financial markets. The rates they can command are in part a reflection of the fact that the stream of payments that governments will eventually repay is viewed as very

stable. Taxpayers are ultimately the source of those funds and markets view those payments as extremely reliable. In other words, lending to governments is often viewed as “risk free” and this borrowing can command the risk-free interest rate, typically (though not as much lately) embodied by rates paid on U.S. Treasuries.

Financial economists stress that when discounting, the rate used should reflect the risk associated with payers being unable to make a payment. In the case of pensions, that default risk is the risk of government being unable to exact required revenues from taxpayers and is treated as effectively nonexistent. Since the outflow of pension benefits is guaranteed, the appropriate rate should be the risk-free rate.

The aim here is to discover is a realistic estimate of the total net present cost for a typical year’s work for a typical state government worker in Kentucky. This chapter develops a reality-based measure of the size of the liability and the demands that liability places on taxpayers today so as not to unduly burden taxpayers tomorrow. Such a measure is meant to minimize any “fiscal illusion” about the true cost of providing employee benefits among pensioners, taxpayers and lawmakers.

In order to construct an accurate picture of the costs each year of a state worker's employment truly adds to the unfunded pension liability, I'll construct a very basic model.⁴²⁴³

⁴² Financial economist M. Barton Waring estimates that the mid-point of a future public pension stream is typically 15 years. If we take the present actuarial value of assets and compound it at the reported discount rate, we get the approximate value of a lump-sum payment that would have to be made in 15 years to satisfy the average series of payments. Discounting that lump sum back in time at the risk-free Treasury rate gives us the risk-free valuation of pension assets.

⁴³ Eileen Norcross and Roman Hardgrave, "Accounting for the Cost of a Public Sector Worker in New Jersey," Working Paper. Mercatus Center at George Mason University. September 2011. <http://mercatus.org/publication/accounting-cost-public-sector-worker-new-jersey>

[TABLE 1: Valuation of Pension Assets held on behalf of Kentucky Employees Retirement Systems (Nonhazardous)]

	Jul 1, 2011
	KERS (Nonhazardous)
Actuarial Accrued Liability	\$11,182,142,032
Actuarial Value of Assets	\$3,276,986,087
Market Value of Assets	\$3,538,878,093
Unfunded Actuarial Liability	\$7,905,155,945
Actuarial Covered Payroll	\$1,731,632,748
Total Active Members	46,617
Average Salary	\$37,145.95
Actuarial Discount Rate	0.0775
Adjusted Discount Rate	0.0364
FV of Actuarial Liability (15 Years)	\$34,259,749,779.8
PV of AL at Adjusted Discount Rate	\$20,038,865,116.81
PV of UAL at Adjusted Discount Rate	\$16,499,987,023.81

Using the described method and a discount rate of the average of 10-year and 20-year U.S. Treasury Bond priced on June 30, 2011⁴⁴, the present value of the unfunded actuarial liability jumps from nearly \$8 billion to more than \$16 billion, an increase of more than 100%.

Using the active membership and actuarial covered payroll (itself an actuarial estimate) and the number of active participants, we can derive a rough salary estimate of \$37,145.95.⁴⁵

In 2011, actuaries recommended that lawmakers contribute 4.38% of employee salaries as the “normal cost,” which is supposed to be the share of total payroll that will keep the system stable and solvent. Since 2006, the share of payroll lawmakers have been asked to contribute just to keep up with a growing unfunded actuarial liability has gone from 11.83% of payroll to more than 23%. Clearly *the normal cost contributions have been insufficient to shrink the unfunded portion of the stated liability.*

When we apply the risk-free discount rate to the normal cost share, like the size of the unfunded liability itself, it more than doubles to 9.14%. For the average worker in the

⁴⁴ Rates on an average of 10-year and 20-year U.S. Treasury securities from June 30, 2011.

<http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=longtermrateYear&year=2011>

<http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/Historic-Yield-Data-Visualization.aspx>

⁴⁵ Consolidated Annual Financial Statements of the Kentucky Retirement Systems, 2011.

<http://kyret.ky.gov>

KERS program, the change in the price of that worker's employment is more than \$1,700.

[TABLE 2: Impact on Total Compensation of Using a Risk-Free Treasury Rate to Discount Pension Liability]

Full-time Salary (Average KERS Worker)	\$37,145.95	Estimate based on Kentucky Retirement Systems CAFR 2011
Health Insurance	\$10,502.64	Estimate based on Personnel Cabinet Benefits
OPEB (Other Post Employment Benefits)	\$6,136.51	16.52% of Salary
Employer Share of Payroll Taxes	\$3,343.14	Estimated at 9% of salary
Normal Cost Stated	\$1,626.99	4.38%
Normal Cost Discounted at Treasury Rate	\$3,395.93	9.14%
Total Payroll with Stated Normal Cost	\$58,755.23	
Total Payroll with Risk-Free Normal Cost	\$60,524.17	

Some problems emerge when attempting to use Personnel Cabinet Data for estimating a worker's payroll within state government. I'm not aware of a way to identify a worker halfway through his/her government employment career. The method used assumes that the average worker is approximately halfway through a full career in Kentucky state government, though it's not clearly true.

I have not calculated the "normal cost" associated with providing Other Post-Employment Benefits (OPEB) like health insurance, because those benefits do not function like cash payments to beneficiaries⁴⁶. They are not based solely on a share of salary, but also on some measure of benefit levels and cost inflation for various insurance coverages. The calculation here merely presents Kentucky Retirement Systems' contribution to the pension fund, which is more than 16% of payroll. It's worth noting that while the pension fund is 33% funded according to Kentucky's actuaries, the insurance fund aimed at providing insurance to former and present workers is funded at just 10% according to those same actuaries. As of this writing, it's also not clear that post-employment insurance benefits are guaranteed contractually to workers.

Implications for State Fiscal Policy

It may be heartening to note that the estimates presented here only raise the price of a state worker by \$1700 per year. Sadly, within the Kentucky Employee Retirement System (just one of three systems managed by the umbrella Kentucky Retirement Systems), the

⁴⁶ Actuarial Valuation of pension and insurance funds from the Kentucky Retirement Systems, June 30, 2011. <https://kyret.ky.gov/uploads/transparency/valuations/2011-06-30-valuation.pdf>

total annual increase in payments to provide for the retirements of future and many current workers would add an additional \$101-million to annual state spending. The County Employee Retirement System's total covered payroll is \$2.2 billion, nearly \$500 million more than the one studied here. CERS also contains a sizable and growing unfunded liability.

The story doesn't improve from there. Even if lawmakers awoke in January and decided to contribute the extra \$1700 per employee to the pension fund, there is no reason to believe that the unfunded portion of the pension liability would begin to shrink. "Normal cost," after all, is merely an attempt to pay the accrued liability of one worker's *most recent year of service*. It does nothing to correct the large gap created by years of underfunding, rosy assumptions, benefit add-ons, a decade of sluggish economic performance and two recessions. Even in the fiscal year detailed in this paper, Kentucky lawmakers contributed to the KERS pension fund less than half of what actuaries recommended. That recommended contribution itself was a number far lower than what this paper recommends.

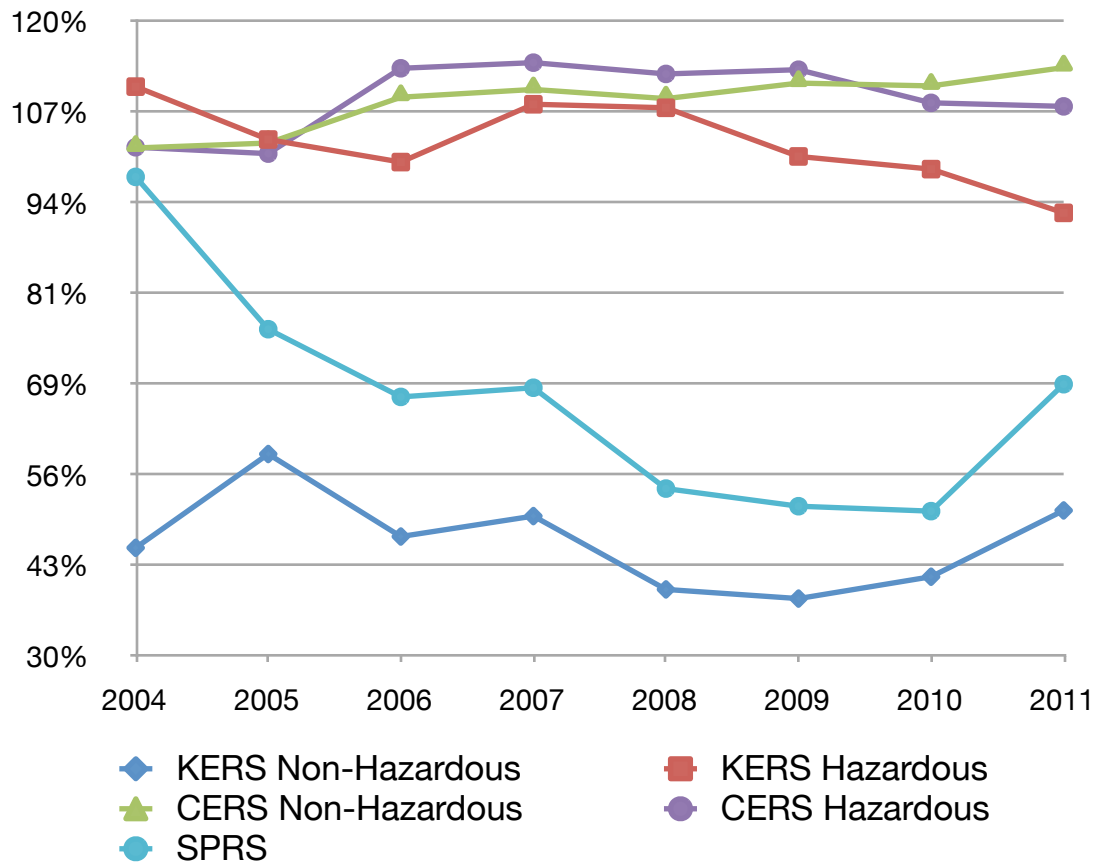
The additional funding required to bring Kentucky's pension system to the point at which the liability ceases to grow means boosting contributions to the pension funds by nearly 5% of covered payroll. Within KERS, we know that's an increase in spending of about \$82-million each year. A similar boost for *all* Kentucky Retirement Systems'

managed funds would mean an increase in pension contributions of more than \$200-million each year.⁴⁷

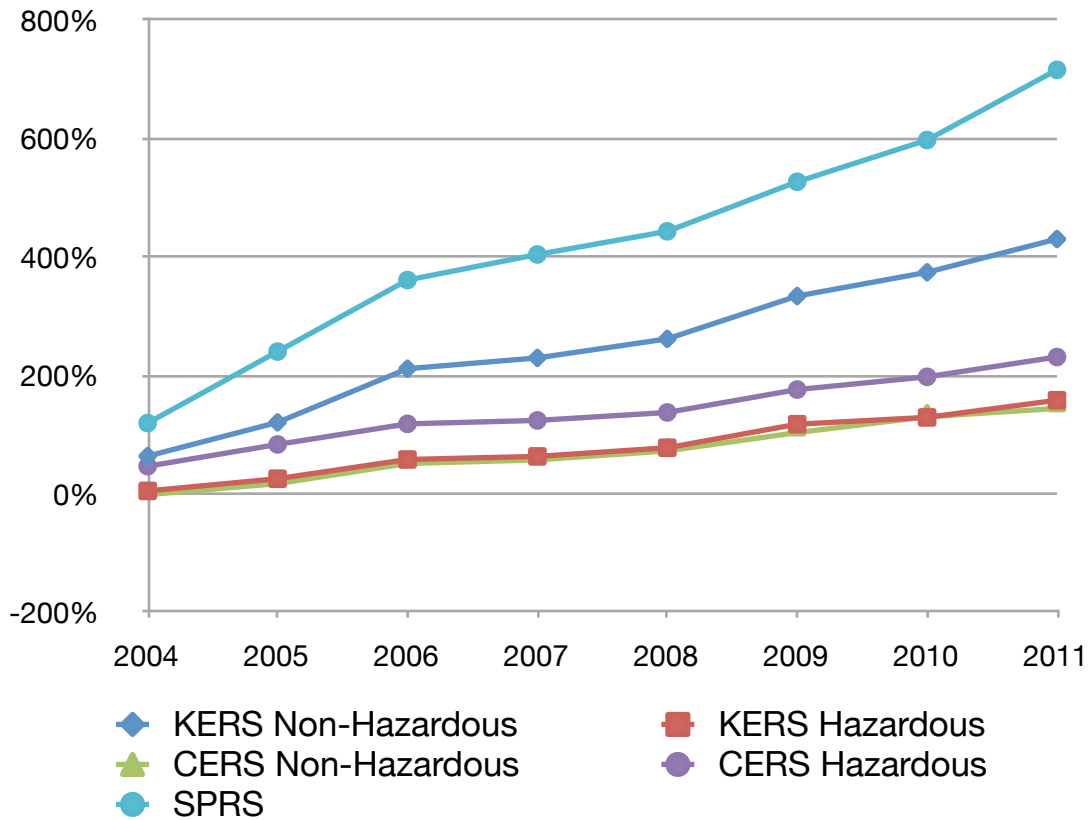
Policy Recommendations

Kentucky's lawmakers have shown little interest in making cuts to other areas of state government in order to make the pension contributions requested by actuaries. This reticence comes at a time when the pension funds have faced dramatic declines following market declines from 2007 through much of 2009. Further, lawmakers are required by statute to contribute the full Annual Required Contribution for both the State Police Retirement System and the Kentucky Employee Retirement System, yet routinely choose not to do so [Figure 4] in favor of other priorities.

⁴⁷ Author's calculations.



[FIGURE 4: Share of contributions requested by actuaries that is actually contributed by employers] Note that SPRS and KERS Non-Hazardous are both considerably lower than the others. These are two of the three funds funded directly by Kentucky’s General Assembly. The other is the KERS Hazardous fund. Further, it’s worth noting that Kentucky counties seem to regularly contribute more than what actuaries actually request.



[Figure 5: Official Unfunded Actuarial Accrued Liability (UAAL) As a Share of Covered Payroll] Note here that the two systems that have grown most dramatically are KERS Non-Hazardous and SPRS. The following chart details one reason for that more-dramatic increase: Lawmakers tend to contribute far less than actuaries recommend. But it's worth noting that the UAAL is also now above 100% for every pension fund, despite the fact that counties typically contribute *more* than actuaries recommend.

Of the reforms undertaken in recent years, in 2008 lawmakers agreed to ramp up contributions over more than a decade *to* the levels actuaries request. This is roughly equivalent to slowly increasing credit card payments up to the minimum payment level even as you charge an increasing amount each year. In 2013, lawmakers agreed to more-quickly move payments to the actuarially-requested levels, but that doesn't address the chronic problem associated with understated normal cost and overstated actuarial assets.

Some of the following actions could assist Kentucky lawmakers in the process of grappling with a pension liability considerably larger than lawmakers and pension managers acknowledge:

- 1.) Require Kentucky Retirement Systems to produce alternative scenarios of funding status using discount rates that reflect the likelihood that Kentucky's taxpayers will be compelled to pay 100% of pension obligations. In other words, KRS should annually detail to lawmakers scenarios under which pension liabilities are discounted at risk-free rates.

- 2.) Give the public a clearer picture of the pension system by providing data on outflows to individual retirees. The extent of so-called "pension spiking" remains largely unknown because the terms of individual contracts with public sector workers are kept secret. Efforts at reform would benefit from a public airing of the extent to which some state workers (including many lawmakers) have engaged in this practice. Publicity surrounding many of California's egregious pension-spiking practices have informed changes to the CalPERS system.

3.) Suspend cost-of-living adjustments (COLAs) for retirees and current pension-eligible state workers until the unfunded liability (measured using risk-free discount rates) is dramatically reduced or eliminated.

4.) Consider changing retirement plans for newly hired state workers in which contributions to workers' retirements must be rendered at the same time the cost is recognized. In short, pay for benefits today rather than promising to pay for them at some nonspecific future date. Kentucky's General Assembly spent much of the 1990s and 2000s adding numerous benefit add-ons for state workers while simultaneously failing to make recommended contributions to pension plans. Simple 401(k) plans with a generous match would easily align the contributions with contribution promises.⁴⁸ In short, the pain would be now rather than later.

The bottom line for lawmakers should be focused on getting a clear picture of pension liabilities already owed and pushing toward a system in which liabilities are accrued and recognized at the same time they are funded.

Additional Considerations

As mentioned earlier, the County Employee Retirement System (CERS) represents a far larger pension obligation, though its funding status has been far more stable than the fund for state workers (KERS). This owes to the fact that CERS receives funding from county governments, which must make contributions as they are dictated by the General

⁴⁸ It's worth noting that my estimate for normal cost, if given to workers in the form of a 401(k) match, would represent a more generous match than most private-sector workers receive in their retirement accounts today.

Assembly. KERS, on the other hand, is only funded to the extent that the General Assembly itself makes direct appropriations. The General Assembly has not made these payments with the size and regularity requested by the pension system's actuaries.

The extent that an increase in the annual required contribution (ARC) raises the overall price of a typical worker may contribute to a downward pressure on local governments' provision of basic public services. Consider that pension contributions made by local governments are expressed and collected as a share of payroll and not as a flat dollar figure. That means the contribution is a function, in a sense, of the payroll-intensive services that local governments provide. To the extent that local governments are constrained in attempts to borrow or raise new revenues to pay these costs, it may simply be easier to avoid hiring new workers and avoid providing a consistent level of public services. Expressing the increase in salaries (including pension payments) as a share of local governments' total budgets could prove instructive for lawmakers seeking to reform the state's pension system.

One additional consideration concerns the degree to which Kentucky may alter the contract it has with each pension-eligible worker. In Rhode Island, federal courts will decide if that state may proceed with changes to their contracts with workers.^{49 50} The

⁴⁹ "Rhode Island Judge Has Stake in Pension Case Outcome," The New York Times, Mary Williams Walsh, December 4, 2012. <http://www.nytimes.com/2012/12/05/business/rhode-island-judge-has-stake-in-pension-case-outcome.html>

⁵⁰ "Small State Gets Big Pension Push," Michael Corkery and Brad Reagan, December 11, 2012. <http://online.wsj.com/article/SB10001424127887324339204578171340979593744.html>

reason Rhode Island's own courts will not hear these cases is because every judge in the state also has a near-identical contract. Kentucky operates in a similar fashion. If courts ultimately find that states can alter the terms of inviolable labor contracts with workers, much pain could be avoided for taxpayers in the long run as benefits are adjusted to comport with available funds. Allowing states to change contracts that were once considered inviolable may provide state officials a reprieve from the generous promises of the past, the change should be viewed as as a less-than-ideal solution. State governments, like the rest of us, should take great pains to honor their agreements.

Chapter Three

State pension plans can be thought of as multi-stage transfer payments from taxpayers to retirees. Taxpayer dollars flow into pension funds and, later, are withdrawn and given to pensioners, hopefully with a large increase driven mostly by stock market returns. Only a small fraction of pension fund assets are attributable to direct contributions from taxpayers. Most of the value has come from returns on equities. The pension fund acts as a buffer between pensioner and taxpayer - a large volume of assets that pensioners draw upon - like a collective nest egg. While returns on a stock portfolio (including the portfolio's principal) are less-than-guaranteed, we should always remember that the defined-benefit payments to pensioners are often guaranteed contractually. Like most contracts, the promises made between states and pensioners should be given all due respect.

We've already considered how pension funds may understate the liability associated with pensions, thus understating the "normal costs" of maintaining a stable pension fund from which workers draw retirement income. That understatement then drives requests by actuaries and plan managers for annual required contributions.

The problems of understating liabilities within state pension may actually be deeper, requiring more than mere adjustments to normal cost. While actuaries and plan sponsors

allow for the regular understatement of liabilities, and thus the normal cost associated with pensioner's retirements, pension funds also appear to misunderstand the nature of the taxpayer-government relationship within the context of pension fund management.

In finance, a "swap" is the exchange between parties of cash flows for two different financial instruments. You might, for example, exchange with a counterparty the cash flows from different kinds of bonds to make a wager or hedge a risk. Pension fund managers have for years engaged in something very close to a "debt-for-equity swap", accepting the typically higher returns on equities and then using those returns to make good on contractual guarantees made to state government retirees.⁵¹ In essence, state pension funds have been borrowing from taxpayers to fund a guaranteed outflow to retirees. Here's a blackboard example that captures how swaps functions in the private sector:

1. An investor borrows a million dollars and buys a million dollar's worth of U.S. Treasuries. At the end of the borrowing period, the investor will pay back the million dollars plus the treasury rate interest. There's nothing interesting about this. You borrow the money at the rate at which the bond pays you and you pay back the bond plus the interest. You've made no money and you may have wasted your time.

2. Now consider that the investor, instead of holding the government bonds, instead buys a large mix of equities. He has taken a risk-free, no-profit transaction

⁵¹ Bader, Lawrence. 2001. Pension forecasts, part 2: The model has no clothes, Pension Section News (June): 14–15.

and turned into a risky, but potentially profitable one. At the end of the investment period, the investor *must* sell his portfolio and pay back the borrowed amount at the Treasury rate. His portfolio's returns, if above the Treasury rate, are profit. If his returns fell below the Treasury rate, he would have to pay the difference. Again, potentially profitable but risky.

In finance, "the law of one price" is a basic building block. It predicts that a rational investor would not pay more for a million dollars of equities than a million dollars in bonds and that markets tend to push prices for identical goods (or cash flows) toward identical prices. Once an investor has adjusted for the risks inherent in equities, the prices of the two assets will tend toward convergence. If the prices did not tend toward convergence after accounting for risk, a rational investor could repeatedly exploit risk-free arbitrage gains. The Modigliani-Miller Theorem, though problematic for particular real-world applications (deductibility of interest for enterprises that pay taxes, among others), similarly argues that a particular method of financing an enterprise does not tend to fundamentally improve the value of the enterprise. An enterprise that finances itself through debt would not appear to potential buyers to have a higher value than an enterprise financed with the company's equity.

Pension fund managers appear not to behave as if this reality exists. That's because their assumptions⁵² inform them that, at least for public pension fund management, that reality doesn't exist. Pension fund managers must make an implicit assumption about the

⁵² "Selection of Economic Assumptions for Measuring Pension Obligations," Draft revision to ASOP 27 Draft, Actuarial Standards Board, March 31, 2011.

nature of the relationship between government and taxpayer, that taxpayers constitute an immovable backstop against risk that would otherwise accrue to retirees.

Let's consider the hypothetical case of a pension fund planning for one worker with one taxpayer footing the bill:

1. Interest rates and inflation are fixed. The worker works for 27 years, at the end of which the pension fund will give the worker a one-time payment. In each of the 27 years, the taxpayer pays into the pension fund the "normal cost" of that year's portion of the liability that will come due at the end of 27 years. We could think of this as the taxpayer purchasing an annuity for the worker and making payments over time to assemble the funds necessary to make this purchase. Each year, in other words, the taxpayer is shrinking the size of the unfunded liability so that the retirement date, the final taxpayer payment and the purchase of the annuity on behalf of the worker all occur effectively at the same time.

2. Rather than planning for the purchase of an annuity, pension fund managers instead undertake a plan to make the one-time payment to the worker in the form of the returns on a portfolio that is mostly invested in the stock market. [Pension funds typically invest half or more of pension assets in equities. (Pennacchi and Rastad, 2011)] Given even the typical stock market volatility, it is now considerably less clear that the pension fund will have the funds necessary to make that one-time payment. It's also important to note that the fund could hold far more funds than would be necessary to make the payment. In the case of high

stock returns, the pension fund could be flush with cash and the taxpayer would have to make smaller or nonexistent normal cost payments. It's possible that over those 27 years, low-to-negative stock returns, the pension fund managers could demand additional payments from the taxpayer to keep the size of the liability tracking with actuarial expectations. By investing in stocks, the required payments could swing up or down in order to keep the pension fund whole.

Pension fund managers, in this case, have transferred the risk associated with a stock portfolio to the taxpayer. In doing so, pension fund managers must implicitly assume that taxpayer's losses to keep the pension fund whole are effectively limitless, that the backstop provided by taxpayers is as secure as the guaranteed outflows to retirees.⁵³

Public pension actuaries may broadly reject the notion that the above 27-year example can be used to draw meaningful conclusions about the reasonable management of risk.⁵⁴ They argue that, because pension funds and the governments they serve are designed to last into perpetuity, the long run will bear out the assumptions and methods they employ. The risk of stock investing, they argue, evens out over long horizons and high average expected rates of return can be more easily leveraged.

⁵³ Gold, Jeremy. 2002. Risk Transfer in Public Pension Plans (Draft)

⁵⁴ Comment on "Actuarial Methods and Public Pension Funding Objectives: An Empirical Examination," Ryan Labs Asset Management, 2010, Society of Actuaries.

There are two reasons to doubt that pension fund managers are correct that risks “even out” over the long run. As Bodie⁵⁵ and Waring⁵⁶ have argued, the common idea that pension funds manage the risk of holding stocks by simply holding stocks longer is problematic.

Bodie uses a Black-Sholes-Merton options pricing model to make an intuitive argument: If one wants to insure against the possibility of missing a required payment when it comes due, the price of that insurance increases - in both real terms and as a share of the total portfolio - with the time horizon. The price of the insurance, far from decreasing, increases over time.

Waring makes a strongly related argument. He argues that while pension fund managers treat risk as something that dissipates over the long run, we are never strictly in the long run. Waring shows that though actuaries build their models around the expected rock-solid return of around 8% annually, they never actually *get* the expected return. What pension funds receive is a randomized draw that, in the long run, averages to around 8% per year. The difference between expecting to receive the long-run average return each and every year and the reality that returns are highly variable cannot be overlooked.

⁵⁵ Bodie, Zvi, On The Risk of Stocks in the Long Run (December 1994). Harvard Business School Working Paper No 95-013. Available at SSRN: <http://ssrn.com/abstract=5771>

⁵⁶ Waring, M. Barton, *Pension Finance: Putting the Risks and Cost of Defined Benefit Plans Back Under Your Control*, Kindle Location 1597, Wiley Publishing 2012.

It would be inappropriate to think of the kind of arbitrage plan managers may engage in the same way we would think of arbitrage in the case of the investor who has discovered a durable way to pocket cash on repeated exploitation of an arbitrage opportunity. That investor merely pockets risk-free excess cash. Pension fund managers do not directly pocket cash (as far as we know) for having made a series of fortunate wagers on the broad direction of stocks and bonds.

The arbitrage that occurs in state pension funds comes in the form of, in years of high returns, allowing legislators to divert funds that would otherwise shore up pensions to parochial interests that increase the likelihood of incumbency. Taxpayers may benefit in these high-return years as the requests for pension fund contributions shrinks or disappears and lawmakers move funds to other priorities. In this way, pension fund managers and plan sponsors are able to effectively “expense” the upside of taking on additional risk.

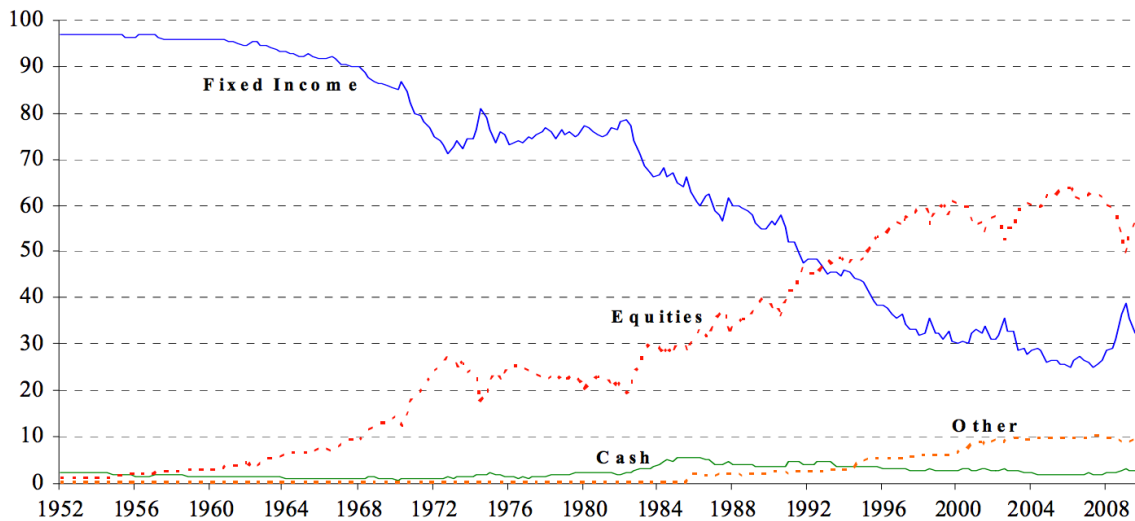
This worked out quite well throughout the 1980s and 1990s. Pension fund holdings rose dramatically on high stock-market returns. Lawmakers sweetened pension benefits for workers as state governments were told by pension fund managers that only small contributions would be needed because pensions were well-funded.

In years with low-to-negative stock market returns, however, the price of taking on additional risk must be paid. In U.S. states, this has taken the form of prioritizing pension funding above other interests and, as local governments do not directly control how much

of their payrolls must be paid to pension funds, delayed hiring or layoffs to mitigate hikes in the annual contribution to pension funds.

The Role of the Government Accounting Standards Board

Among its many roles, the Government Accounting Standards Board (GASB) sets rules that most pension funds choose to follow in order to provide plan sponsors with timely, relevant information about plan activities. To be clear, GASB does not directly instruct state pension funds how they must behave, but states may (and often do) instruct pension funds to treat GASB guidance as received wisdom.



[FIGURE 6: The Transition of U.S. State-and-Local Pension Assets from Fixed-Income Assets into Equities and Alternative Investment Vehicles⁵⁷]

⁵⁷ George Pennacchi and Mahdi Rastad (2011). Portfolio allocation for public pension funds. *Journal of Pension Economics and Finance*, 10, 00 221-245 doi:10.1017/S1474747211000102

In the specific case of state and local pension fund management, GASB rules have afforded pension funds wide latitude to set both reporting and funding mechanisms. Following the financial crisis and recession that drove many state pension funds into dangerously unfunded territory, however, GASB has instituted changes that are meant to provide pension plan sponsors with better information about how the funds operate. Unfortunately, there are reasons to believe that instead of fostering a tendency toward careful investment decisions and transparency, the new rules could threaten to nudge pension fund managers to allocate a higher share of their portfolios into risky investments.

Most pension funds assign a single rate that discounts the pension liability at the rate at which fund managers expect to earn returns on assets. We've already seen why this seemingly intuitive convenience is incoherent when we consider what discount rates are meant to discount. Pension fund managers have broad latitude to set this rate.

However, the changes that GASB has introduced asks pension funds to create a "blended" discount rate based on the return assumptions of individual categories of assets.⁵⁸

Most state and local pension funds are invested primarily in equities, followed by bonds and then assorted other asset categories (real estate, cash and so-called alternatives

⁵⁸ Munnell, et al., "How Would GASB Proposals Affect State and Local Pension Reporting?" Center for Retirement Research at Boston College. http://crr.bc.edu/wp-content/uploads/2011/11/slp_23.pdf

like private equity funds). By using a blended discount rate, pension fund managers will be compelled to assign discount rates to holdings in each asset category, thus forming a new discount rate for the overall portfolio based on how much of the current fund is invested in each category.

In a way, this change removes some flexibility from pension fund managers to choose the discount rate and compels them to be more realistic in their assessments. But return assumptions, when used in place of a real discount rate on a liability, still provide opportunities and incentives to maximize the discount by moving assets into higher-risk categories. The additional temptation to hide stagnant returns by shifting assets to higher risk categories, essentially doubling down after losses, may be quite strong.

[TABLE 3: Two pension funds' assets and their treatment under new GASB guidance]

	Plan 1	Plan 2
Payment due in 27 years	\$150000.00	\$150000.00
Stocks	\$13000.00	\$7000.00
Bond Assets	\$7000.00	\$13000.00
Discount rate on bond assets (risk-free)	3%	3%
Discount rate on stock assets	9%	9%
Blended discount rate (based on share of assets in each category)	6.9%	5.1%
Actuarial value of assets today	\$121179.19	\$76613.15
Funded ratio	81%	51%
PV of Estimated Shortfall (UAL)	\$4757	\$19158

Consider two similar pension funds. They both owe the same lump-sum liability at the end of 27 years, the pension-maximizing length of a career for a worker in Kentucky's state public sector. The first is invested mostly in stocks, the other mostly in bonds. In present value, they both have equal assets. Further, the two funds assign the

same return assumptions to the two categories of investment: 3% for bonds and 9% for equities.

But, because the discount rate is a function of these return assumptions and the relative holdings in two asset classes, the first pension fund clearly appears to be better funded. But there are two roles of the discount rate in this example. One is to project asset values forward based on the expected return to generate a funding ratio, a typical (though misleading) measure of pension fund health. The other function is to take whatever expected shortfall exists and discount it back to present value. Here again, a higher discount rate means a lower present value of the unfunded liability. This magnifies the importance to plan managers to raise the discount rate when convenient.

Discounting the unfunded portion of the liability back to the present gives the first pension fund a present value of the unfunded liability of less than a third of the second.

Commentary

The GASB rules appear to be intended to broadly, if slowly, reduce the discount rates on pension fund liabilities, allowing plan sponsors to get a clearer picture of the liabilities taxpayers are facing. The unintended consequence of asking fund managers to blend discount rates based on asset holdings may ultimately encourage the kind of irresponsible investing that GASB's directors seek to avoid.

The transition that pension funds undertook from holding fixed-income assets to equities that occurred slowly and steadily from the 1970s through the late 2000s was not an accident. It was likely a well-intended calculation that state-and-local governments, by

virtue of their unique structure, could take advantage of higher stock returns without accepting the same risks that every other market participant must endure. That was, it should now seem fairly clear, was a costly error.

The problems that miscalculation has created are not fundamentally improved through reforms of the guidance under which pension plan sponsors may or may not operate.

Putting pension funds back under the control of state lawmakers and breaking the institutional inertia that has grown up around longstanding practices will require a broader recognition that risk has been transferred to the next generation of retirees, taxpayers and even the lawmakers who must make difficult changes to systems through which most of the political rents were collected years ago.

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Biography

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