Center for American Progress

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Progressive Ideas for a Strong, Just, and Free America

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REWARDING HARD WORK: GIVE PENNSYLVANIA FAMILIES A SHOT AT MIDDLE CLASS RETIREMENT BENEFITS

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EXECUTIVE SUMMARY

After working for decades, Pennsylvania's teachers and firefighters, police officers and nurses, and other public sector employees should look forward to enjoying a secure middle class retirement. Retirement security, though, has already eroded in the private sector because some employers have walked away from a shared obligation to fund a secure retirement. Today, half of Pennsylvania's private sector employees get no retirement savings through their employers. And now, in the public sector, calls have been made to follow private sector trends and to replace the pension plans that public sector workers have been counting on with substantially weaker retirement plans. Such a move by the state would deny these critical public servants the middle class retirement they've been planning for.

Instead of engaging in this race to the bottom alongside the private sector, state policy makers should be working with the private sector to bolster its citizens' pension plans. Pennsylvania's policymakers should step up to the plate and offer some retirement income security to public and private sector workers by:

- Shoring up public sector employees' traditional defined benefit (DB) pensions, which provide retirees with a guaranteed amount of money each year based on years of service, retiree's final annual earnings, and the age when the worker first takes the pension.

- Making more widely available private sector 401(k)-style defined contribution (DC) plans, which pay out upon retirement based on how much employers and workers contribute to a retirement fund that's invested in stocks and bonds.

Achieving these two progressive objectives is necessary to ensure Pennsylvania's current and future retirees a comfortable middle class retirement. And these objectives are not just the fair and responsible thing to do; they are also both affordable and critical to Pennsylvania's future economic growth. Here's why:

1. *Stronger public sector DB pensions can be funded responsibly through sensible reforms that in turn would strengthen Pennsylvania's economic competitiveness*. State government has the authority to strengthen DB pensions for about 600,000 workers in Pennsylvania's public sector and can do so without massive new fiscal outlays. Sharp drops in the stock market after 2000 created a misperception that public sector DB pensions will be an unsustainable drain on public dollars, but sensible reforms would enable state governments to maintain DB pensions for state and local government employees.

These reforms would guarantee regular contributions, thereby reducing the pressure on the state to increase pension contributions when economic times are bad and encouraging the state to raise contributions when times are good. These reforms would be good for retirees, employers, and the state economy because they would:

- Give a typical public sector worker in Pennsylvania an adequate, although not generous, retirement income equal to about 75 percent to 80 percent of their pre-retirement income. According to professional advisors and economists, this is typically adequate to maintain approximately the same standard of living after retirement.

- Maintain the ability of state and local governments to attract and retain talented professionals, who would otherwise be drawn to higher paying jobs in the private sector if public sector DB pension benefits are allowed to deteriorate.

- Require regular, manageable contributions from state government and school districts so that stock market booms, such as in the late 1990s, do not lead to periods when employers contribute little or no money to public sector pension plans and leave them vulnerable when financial markets weaken again.

- Allow DB plans to retain their valuable role in the economy. Well funded pension plans invest in many assets and they are a particularly important source of financing for venture capital firms. Venture capital firms finance small privately held startup companies in exchange for an equity stake in the companies. Pennsylvania venture capital firms in 2005 received 20 percent of their resources from the DB pension plans for state government employees.

2. *More widely available private sector DC pensions can be offered with help from the state government, ensuring that more Pennsylvanians save for their retirement and creating more pension fund money for investment in the state economy.*

   To improve private sector pension coverage, Pennsylvania should make it easier for small employers and individual workers to enroll in DC plans. With these plans, individuals and their employers would gain much-needed access to retirement savings vehicles. Specifically, the state government could:

   - Provide low-cost access for employers to establish 401(k)-style DC retirement savings vehicles for their employees, an approach previously recommended by the Keystone Research Center.

- Require that all employers with 10 or more employees offer their employees automatic deductions into Individual Retirement Accounts, or IRAs, just as many employers today offer direct deposits for employees' paychecks.

- Partially match employer or individual retirement contributions for low-wage earners, providing a needed incentive for increased retirement savings.

Pennsylvania's policymakers must represent the interests of its hard-working citizens. They should not lower Pennsylvanians' chances of a secure middle class retirement but rather strengthen retirement security for public-and private-sector employees alike. The state government has an obligation to do so not just as a matter of fairness but also to ensure the state has the human resource management tools necessary to attract and retain a skilled workforce and the increased savings needed to invest in a growing economy.

INTRODUCTION

American families expect a decent standard of living as a reward for a life of hard work. And why shouldn't they? Many families have two people working full time, trying to put at least some money away for retirement after paying for essentials such as housing, health care, transportation and their kids' education.

Yet more and more middle class families today worry about their retirement income security, and with good reason. Social Security, the basic foundation of retirement security, faces repeated conservative attacks aimed at weakening the most stable source of middle class retirement security. Meanwhile, even healthy companies are reneging on their defined benefit, or DB pension promises to employees, and fewer and fewer employers are now offering matching contributions to their employees' 401(k)-style DC pension plans. This pressure on families' retirement savings plans comes amid lagging income growth due to flat wages and amid higher costs of health care, housing, transportation, and education.

These trends have left more and more American families fending for themselves, and families in Pennsylvania are no exception. Working Pennsylvanians with pension plans fear for their future retirement income security, while one half of all Pennsylvania's private sector hourly and salaried workers have no pension or retirement savings plan from their employers at all.

Securing middle-class retirement for the vast majority of hard working families is a shared responsibility. After all, nobody wants to see millions of indigent elderly wondering the streets of Scranton and Harrisburg, St. Mary's and Chambersburg, Pittsburgh and Philadelphia. It is in the long-term fiscal and economic interest of Pennsylvania to proactively address retirement savings problems in the state today by persuading both employers and employees to better prepare for retirement.

Specifically, Pennsylvania's policymakers can strengthen existing pensions and give more private sector workers opportunities to save for retirement. Many state and local governments already offer DB pensions, which are an important pathway into middle-class retirement and a vital human resource tool in a world where competition for high skilled workers is increasing. With sensible reforms, Pennsylvania will be able to sustain these pensions over time.

Moreover, Pennsylvania can take steps to improve retirement security in the private sector. The state government could offer a low-cost investment option, targeted especially at small businesses, which could help to improve access to low cost savings options with limited risk. And state policy makers could partially match savings contributions by low-wage earners to encourage the less well off among us to save for retirement, too.

A decent retirement is a commonly accepted reward for a lifetime of hard work. What's more, ensuring that all Pennsylvanians can prepare for a decent retirement helps boost the state's economic competitiveness and savings rate. That's why it is a shared responsibility between the government, employers and employees to make sure that the vast majority of hard working Pennsylvanians can reap this reward.

Pennsylvania's Public Pension Plans Serve Employers' and Employees' Needs Well

In the public sector, DB plans are still the most prominent retirement savings vehicle. Under a DB plan, employees are guaranteed a benefit upon retirement, usually based on years of service, age and average earnings in the employee's final years. Employees, therefore, receive part of their compensation for performing a job today in the future. Benefit promises are typically backed by the strength of the employer or, in the case of school districts in Pennsylvania, by state government.

Workers in Pennsylvania can contribute directly to public sector DB plans through deductions from their wages. They also contribute indirectly to DB pensions by accepting lower wages compared to private sector jobs in exchange for guaranteed retirement income security. Once employees have made this contribution, it is the responsibility of the employer to ensure that a DB pension plan has sufficient funds to cover promised pension payouts. If the assets in a DB pension portfolio perform less well than expected in financial markets, employers must then make up the difference. Conversely, if those pension assets perform better than expected, employers generally do not have to make further contributions to their DB plan as long as the plan remains over funded.

Employers are often willing to assume the responsibility for fully funding DB plans because these plans are a retention tool for employers. DB plans give employees an incentive to stay with an employer for prolonged periods of time, noted professor Sewin Chan of New York University and Ann Huff Stevens of Yale University in their 2004 study, "Do Changes in Pension Incentives Affect Retirement: A Longitudinal Study of Subjective Retirement Expectations." Professor Christopher Ruhm of the University of North Carolina detailed similar findings in his 1996 paper "Do Pensions Increase the Labor Supply of Older Men."

In Pennsylvania, today, DB plans are especially valuable for retaining professional and skilled workers such as experienced nurses, firefighters, police officers, and teachers. Most of the top Pennsylvania public sector occupations fall into those categories (table 1).[1]

Pension Plans Are More Than Retirement Vehicles

Pension are obviously key to individuals' retirement plans, yet they also play a critical role in the economy at large. They increase the total pool of savings available to U.S. and Pennsylvania financial markets, play a special role in financing innovation and job creation, are a vital source of personal saving, and play a critical role in improving how corporations are run.

Pension plans are large financial investors that invest in all types of assets, including stocks and bonds, real estate, venture capital, hedge funds, among others. Keith Brainard of the National Association of State Retirement Administrators estimates that public-sector pension plans own 10 percent of the nation's corporate equities. Such large investments make it easier for companies to receive funding for their investments from capital markets and it lowers the volatility of such funding because companies have to borrow less money overseas.

If DB plan coverage declines, it will be harder to raise personal saving rates. As a result, the U.S. would have to borrow money elsewhere, predominantly overseas. To attract these capital inflows, interest rates in the U.S. will be higher than they otherwise would need to be, which would put a damper on economic growth in the long run.

Importantly, DB pension plans help to boost personal savings and thus keep interest rates lower than they otherwise would be. Employees essentially have to save money in a DB plan since they cannot opt out of this employer-provided retirement saving vehicle. In Pennsylvania, public sector employees contribute their own money and their savings are augmented by employer contributions to the state's pension plans. Against the back drop of the first negative personal saving rates in the United States since the Great Depression, it is critical to vastly improve the amount families save, which would be harder to do if DB pension coverage declined.

Pension plans also play a critical role in financing innovation and job creation, primarily by providing money to venture capital firms, which finance predominantly smaller, privately owned companies in exchange for an equity stake in the company. In Pennsylvania, public sector DB plans have been investing up to one percent of their assets in venture capital funds since the early 1980s.

In fact, DB pension plans are the primary source of capital for venture capitalists in the U.S. Typically, more than 40 percent of venture capital funds come from pension plans, money that is critical for bridging financing gaps for small- and medium-sized companies and startups. In many cases, these types of privately owned companies are unable to secure enough financing for their investments from more traditional sources of financing, such as banks or from the bond and stock markets. Venture capitalists can step in to secure financing that will lead to more investments and job creation.

This is important since these types of companies are disproportionately the ones that are investing in new technology and in new employees. Even though the risk exposure of the pension plans is limited, these investments bring vital financial sources to the state's small business sector.

Because of their local nature, DB pension plans can direct their resources towards the creation of jobs and innovation in their state. Pennsylvania-based venture capital funds received about 20 percent of the venture capital funding from SERS in 2005 and invested those funds in small and medium sized Pennsylvania companies, such as Brandywine Senior Care, a provider of senior care that employs 790 Pennsylvanians, and St. George Crystal, a crystal manufacturing and design company with 265 Pennsylvanian employees.

In addition, DB plans are a vital tool in improving corporate governance. More and more chief executives and other members of America's well-compensated senior management teams have been in the news in recent months because many receive large compensation packages and pay increases—even though their company's stock has performed poorly. Others have made headlines because they have engaged in questionable practices, such as the backdating of stock options. Pension plans are large institutional investors with a vested interest in rooting out practices that are harmful to their investments.

Consequently, public sector pension plans, which are often among the nation's largest institutional investors, have engaged in numerous efforts individually or through cooperation in forums, such as the Council of Institutional Investors, to improve corporate governance. The evidence is mounting that well-governed companies with strong shareholder oversight are more efficient in allocating their resources and pension plans, especially public sector plans have strengthened their corporate governance efforts.

For instance, University of Chicago professor Marianne Bertrand and professor Sendhil Mullainathan of Harvard University found that CEOs of poorly governed companies are often rewarded for pure luck. Their study, titled "Do CEOs Set Their Own Pay? The Ones Without Principles Do," published in 2000, also discovered that CEOs of poorly governed companies have to forfeit less in salaries and benefits to receive the same amount of performance-based compensation as CEOs of well-governed companies.

The upshot: Pension plans are not just a retirement benefit for employees; they also play a critical role in the workings of the nation's financial markets, fostering job creation and innovation; and improving corporate governance and efficiency.

Table 1
Top Twenty Public Sector Occupations in Pennsylvania, 2005

Occupation	Total	Share of total (in percent)
Elementary and middle school teachers	82,691	14
Secondary school teachers	36,554	6
Secretaries and administrative assistants	29,616	5
Police and sheriffs patrol officers	25,742	4
Teacher assistants	23,553	4
Social workers	19,071	3
Janitors and building cleaners	18,654	3
Bailiffs, correctional officers, and jailers	14,243	2
Counselors	13,814	2
Managers, all other	12,993	2
Special education teachers	12,302	2
First-line supervisors/managers of office and administrative support workers	11,252	2
Postsecondary teachers	11,088	
Bus drivers	8,453	1
Word processors and typists	7,833	1
Registered nurses	7,422	1
Lawyers, Judges, magistrates, and other judicial workers	7,209	1
Preschool and kindergarten teachers	7,202	1
Accountants and auditors	7,161	1
Miscellaneous community and social service specialists	6,108	1

Notes: Authors' estimates based on monthly data from the BLS' Current Population Survey.

For more educated public sector workers in Pennsylvania, DB benefits help compensate for wages that are below averages for Pennsylvania private sector workers with the same level of education (table 2 and figure 1). Indeed, the average wage for Pennsylvania private sector workers with a college degree or higher is a full 18 percent above the same average in the public sector.

Nearly half of Pennsylvania's public sector workers are in this college-educated group that receives much lower salaries than similarly educated workers in the private sector. As a result, wages are generally higher in the private sector than in the public sector. Specifically, if the same workforce that is currently working in the public sector went into the private sector, they would earn 9.4 percent more. The weighted average of hourly earnings for the public sector is $18.64.

Assuming the same composition by education in the private sector, the comparable figure would be $20.38 per hour. That is, on average, people with similar educational levels could expect to earn 9.4 percent in Pennsylvania's private sector than in its public sector.

Since highly skilled workers have lower wages in the public sector, the cost of pension benefits that are a fraction of pre-retirement wages is lower than it would at private sector wage levels.

Table 2
Public and Private Sector Wages in Pennsylvania in 2005, by Educational Attainment

Educational Attainment	Public sector		Private sector	
	Average wage	Share of public sector workforce	Average wage	Share of private sector workforce
Less than high school	$11.50	3.5%	$9.63	11.2%
High school	$14.26	31.0%	$13.74	39.3%
Some college	$15.27	17.6%	$15.04	24.4%
Bachelor's degree or higher $23.23	47.9%	$27.45	25.1%	

Notes: Authors' estimates based on monthly data from the BLS' Current Population Survey.

DB plans in the public sector offer employees a high degree of retirement security: all employees are automatically covered; financial risks are borne by employers; and many public sector pensions are somewhat portable, which allows employees can remain in the same pension plan if they move to another public sector employer that participates in the same plan. Portability could be especially valuable, for example, to teachers and other public sector workers who have opportunities to perform the same job almost anywhere in the state.

The Adequacy of Pennsylvania's Public Sector Pension Benefits

Pensions not only matter to employers; they are also a critical pathway into middle-class retirement for many workers. To understand if people have saved enough for retirement, analysts typically relate a worker's expected retirement income to their pre-retirement income. The ratio of retirement income to pre-retirement income is called the replacement rate. Based on studies of retiree consumption, a replacement rate of about 75 percent to 80 percent is typically considered sufficient to maintain the same standard of living after retirement as before.

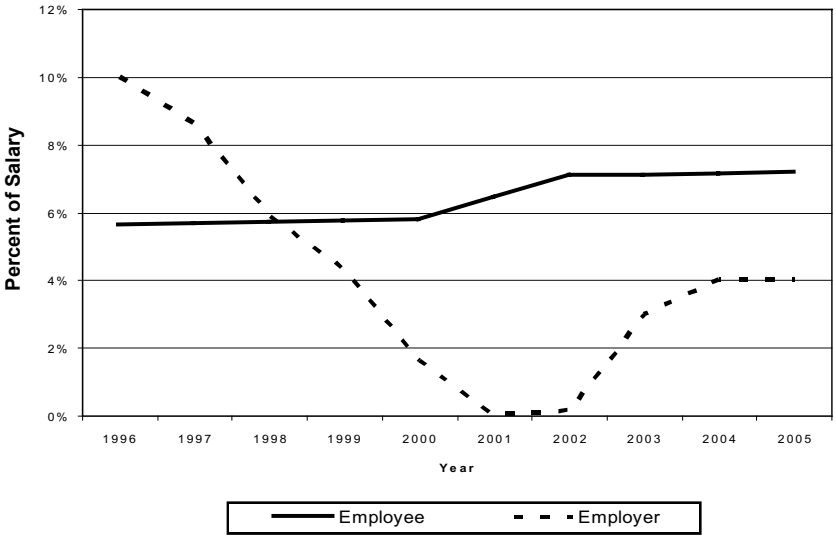
Retirement income can be lower than pre-retirement income. The reasons: work-related expenses disappear and retired workers no longer have to save for retirement. Anything below 75 percent to 80 percent, however, means that workers will on average experience a lower standard of living — in the quality of the food, clothing, housing, vacation, health care, and other goods and services that they can afford.

In Pennsylvania, two pension plans—Public School Employees' Retirement System (PSERS) and State Employees' Retirement System (SERS)—are the largest public sector DB plans.[2] These plans were modified in 2001 so that most workers in the future will receive pension benefit equal to their years of service times 2.5 percent of their average salary in their three highest earning years, which are often also their final earning years (see below for more details on employee and employer contributions). Prior to this change, employees received a benefit for each year of service equal to 2 percent of the average of their three highest earning years.[3]

Employee Contributions to Pennsylvania's Public Pensions

Public sector DB pensions in Pennsylvania are financed by contributions from employers and from employees. Today, under the PSERS plan, most newly hired Pennsylvania public sector employees contribute 7.5 percent of their salary each year to their pension. Thus, if an employee earns $50,000 per year, they contribute $3,250 of this to their DB pension. Under SERS, most newly hired employees contribute 6.25 percent of their salaries. Employees make these contributions in good stock market years and bad. The employer—a school district or state or local government—must contribute however much above the employee's contribution is necessary to ensure the financial viability of the plan. In the latter part of the 1990s and in the early part of the current decade, employees made all the additional contributions to their pension plan and employers' contributed nothing. In 2001, when the PSERS and SERS plans increased the pension increment for each year of service from 2 to 2.5 percent of the employees' average salary in the three final years, employees' deductions from salary to pay for this pension also increased.

Figure 1
Employer and Employee Contributions to PSERS, 1996 to 2005



Notes: All figures are in percent. Sources are PSERS (2005).

Key points about figure 1:

- Employees substantially and regularly contribute to Pennsylvania's public sector pensions.
- Employee contributions have gradually increased, while employer contributions have been more volatile.

Employee contributions to the PSERS pension plan have gradually increased over time as employees have made regular contributions. In contrast, employer contributions went from a high of 10 percent in 1996 to a low of zero percent in 2001 (figure 1) as the strong stock market of the late 1990s allowed employers to take a contribution holiday.

How do Pennsylvania's public sector pension plans stack up against the 75 percent-to-80 percent standard necessary to maintain their standard of living after retirement? At the new 2.5 percent contribution level, typical workers do reach this threshold but do not exceed it. That is, in exchange for below market wages and for substantial contributions, Pennsylvania's public sector employees can often expect to meet the minimum threshold for a decent standard of living in retirement.

To simulate the typical PSERS retiree, we assume a career with 30 years of service and a retirement age of 62. This is a somewhat longer period of service and an older retirement age than is typical. Generally, PSERS employees retired at age 59 with an average of 26 years of service, according to PSERS State of the Fund analysis in 2005. (These averages do include people who did not work a full career under the plan).

Towards the end of their career, employees covered by PSERS had earnings of about $70,000 in 2004. This puts the typical PSERS employee nearing retirement close to the typical earnings assumed for a high lifetime earner under Social Security, according to a 2006 analysis by the Social Security Administration. This hypothetical lifetime earnings path is also used here to estimate what the typical PSERS retiree can expect in retirement from Social Security and from PSERS.

The typical SERS employee has different characteristics. The average SERS employee nearing retirement (between the ages of 56 and 64) earned approximately $50,000 in 2004, according to SERS Comprehensive Annual Financial Report in 2006 similar to the earnings path of a medium wage earner of the examples provided by the Social Security Administration that same year. In addition, most workers covered by SERS in this age group had close to 15 years of service in 2005.[4]

Thus we assume in this report that the typical SERS worker first works for 15 years in a SERS-covered job and then works for another 15 years in a non-covered job before retiring at age 62. We also assume that for the years an employee worked in non-covered employment they saved 6 percent of their earnings in a 401(k) plan, for which they paid one percent of assets annually in fees.

The simulation results for the typical PSERS and SERS retirees show that the benefits can provide workers with an adequate retirement benefit if they work a full career covered by these pension benefits The combined benefits for both workers are shown in figure 2.

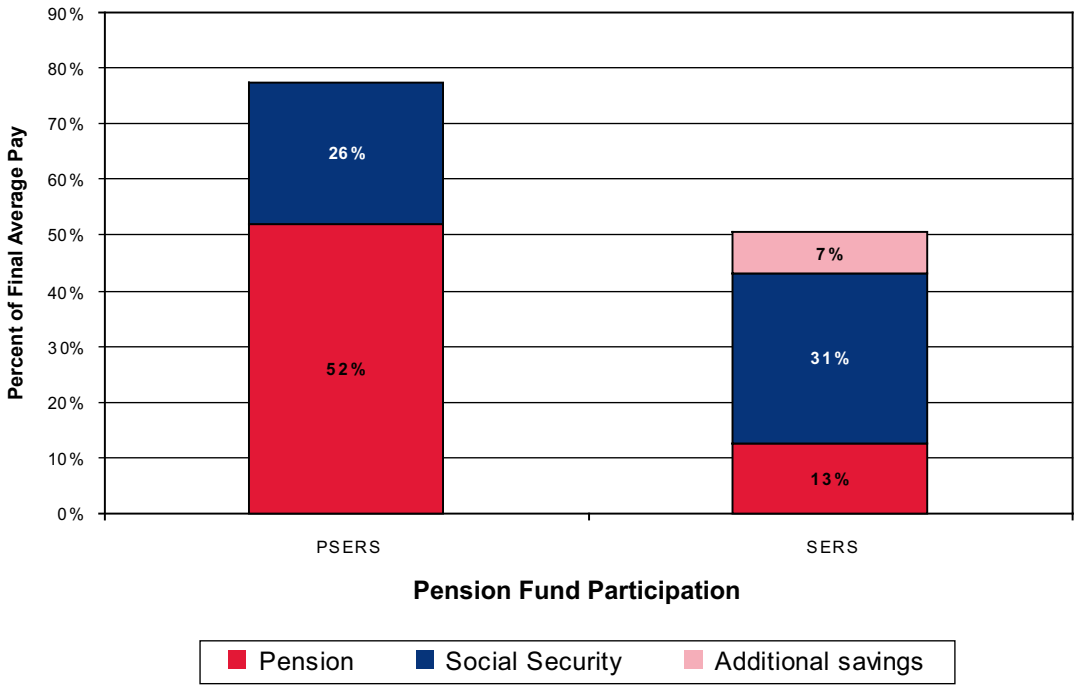
A typical PSERS employee can expect a total retirement benefit that is equal to 78 percent of their pre-retirement earnings. He or she can expect to get the equivalent of 78 percent of their highest three years of earning each year in retirement since the benefits are calculated. All benefits are calculated that they increase each with inflation.[5] A typical SERS employee can expect a retirement benefit that is equal to 51 percent of pre-retirement earnings.

Of course, for SERS employees who work much more than 15 years or who work in jobs covered by SERS right before retiring, replacement rates will be higher Importantly, for workers retiring from a state government job, inflation will erode a replacement rate that is based on their final three years and not on earnings they had 15 years before retirement.[6]

For the PSERS employee, the majority of benefits come from their state pension, which is the result of longer service and the fact that Social Security offers, relatively speaking, lower benefits to higher income earners. For the SERS employee, the majority of benefits comes from Social Security, which unlike Pennsylvania public sector pensions, is adjusted for inflation each year.

Figure 2

Replacement Rates for Typical State Employees, Retiring in 2020



Notes: All figures are percent of three years of highest average pay.

Key points about figure 2:

- A typical worker with a 30-year career covered by PSERS can expect a retirement income from her or his pension and from Social Security that is generally considered adequate retirement income.
- A typical worker with a 15-year career covered by SERS can expect a retirement income, from his or her pension, from 401(k) type savings, and from Social Security, that still falls short of standards for adequacy.

Although Pennsylvania's primary DB plans offer employees the chance to accrue enough savings to come close to what can be called a middle-class retirement, there are some distributional issues.[7] In particular, because of the lack of a cost-of-living adjustment, women experience lower real replacement rates than men because of higher life expectancies.

In addition, even though minorities are expected to achieve higher real replacement rates than whites this is a result of lower life expectancies. As (hopefully) life expectancies of minorities become more similar to those of whites, their real replacement rates under Pennsylvania's DB plans should decline faster than those of whites. The bottom line: public sector workers in Pennsylvania have a shot at a secure middle-class retirement after a full career working for the state or a locality so long as no moves are made to change the current pension plans.

The Affordability of Pennsylvania Public Sector Pensions

The public policy question, though, is not only whether pensions offer an adequate retirement benefit but also whether public sector employers can continue to pay for these pensions. Public sector DB plans experienced financial difficulties in recent years, which raises the question of the long-term sustainability of these plans.[8]

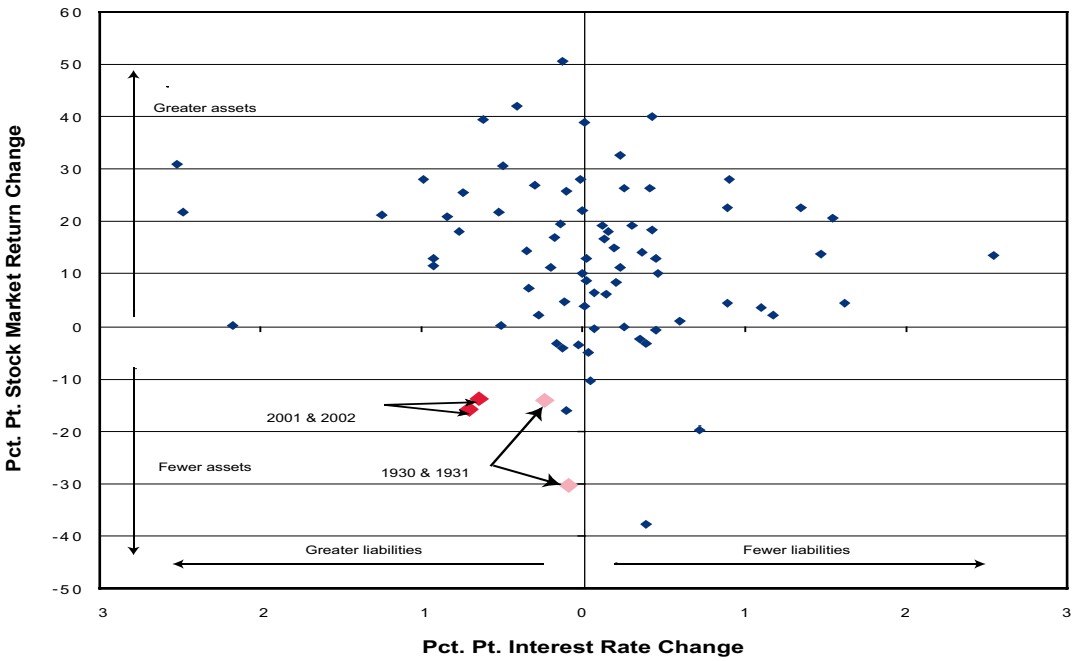
These financial difficulties, however, are the result of a highly unusual confluence of financial market trends in 2001 and thereafter. The stock market dropped sharply in 2001 and 2002 and interest rates declined to very low level and remained low for several years.
Although stock market and interest rate declines are common characteristics of most recessions, the declines in 2001 and 2002 were very unusual. Generally, lower stock market returns mean fewer assets and thus contribute to pension underfunding.

Similarly, with lower interest rates, pension funds have to assume lower future earnings on their assets and thus employers will be required to put more money into their pension plans.[9] While recessions are often characterized by declining stock prices and interest rates, the combination was especially pronounced in 2001 and 2002. In fact, the only parallel to this combination of extreme changes was the Great Depression (figure 3). That is, the years after 2000 were the confluence of extreme financial market circumstances that are unlikely to be repeated any time soon.

The upshot: employers have undoubtedly struggled to make contributions to their pension plans, yet the volatility of contributions in recent years are the result of extraordinary circumstances. In a rush to condemn DB pensions, many opponents of these important benefits overlook the extreme nature of the financial market trends underlying the rising demands on employers in recent years.

Figure 3

Stock Market and Interest Rate Changes



Notes: Red markers denote the years 2001 and 2002 and green markers the years 1930 and 1931. Authors' calculations based on Shiller (2001) and Tradetools.com (2006).

Key points about figure 3:

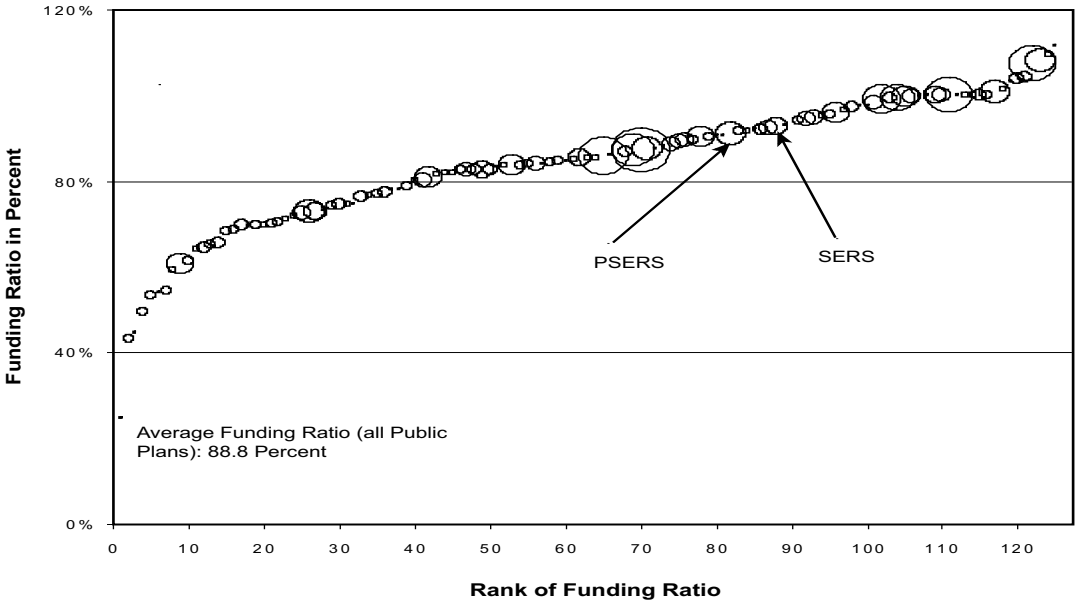
- Stock market declines reduce the assets available to pension plans to pay for pensions.
- Interest rate declines increase the value of pension promises made to beneficiaries–a pension plan's liabilities.
- Large and persistent declines of stock prices and interest rates are rare.
- The only period comparable to the most recent declines was the Great Depression.

In this bear market, PSERS had an investment return of -7.4 in 2001 and -5.3 percent in 2002. At the same time, SERS saw rates of return of -7.9 percent in 2001 and -10.9 percent in 2002, according to a 2004 Joint State Government Commission report. According to PSERS data, these were the only losses other than a small loss in 1981 during the period from 1979 to 2006.[10] Prior to the impact of the market drop, based on financial indicators through 2000, PSERS had a ratio of assets to liabilities of 123.8 percent. That is, it was over funded. By the middle of 2004, the same ratio had slipped to 91.2 percent, according to PSERS 2005 report. For SERS, the funding ratio dropped from a high of 132.4 percent at the end of 2000 to 92.9 percent at the end of 2005, according to its 2006 report.

Despite these drops, Pennsylvania's two large DB plans are in better shape than those of other states (figure 1). Out of a total of 125 public sector plans, PSERS and SERS are in the top 50 out of 125 plans with respect to their funding ratios. Both plans have funding ratios above the median and average funding ratios for all public DB funds.

Figure 4

Public Pension Funding Levels by Plan Size



Source: Authors' calculations based on NASRA (2006). Bubble size reflects plan asset size. Data reflect the most recent plan year available. With a few exceptions, data are for plan years 2004 or plan years 2005.

Key points about figure 4:

- PSERS had a funding ratio of 91.2 percent in 2004. It ranked 43rd out of 125 pension plans in term of funding levels, according to a 2006 report by the National Association of State Retirement Administrators.
- SERS had a funding ratio of 92.9 percent in 2005. It ranked 37th out of 125 state plans, according to the same report.

In Pennsylvania, better than expected fund performances in the late 1990s led to benefit increases and allowed employers to make fewer contributions, leaving the plans less well prepared for the inevitable downturn on Wall Street. This problem was made worse because the Pennsylvania legislature passed Act 9 of 2001, when the plans were overfunded. This law made a number of changes to the Pennsylvania plans that increased their future obligations. Among these changes was the shortening of the vesting period from 10 years to 5 years and a higher replacement rate for final average pay. Subsequently, Act 38 of 2002 was passed, which increased benefits by offering beneficiaries cost of living adjustments starting in 2002 and 2003. At the same time, though, only minimal regular contributions were required of the state.[11] A better approach would have been to require the sate to make larger immediate contributions in line with higher benefits.[12]

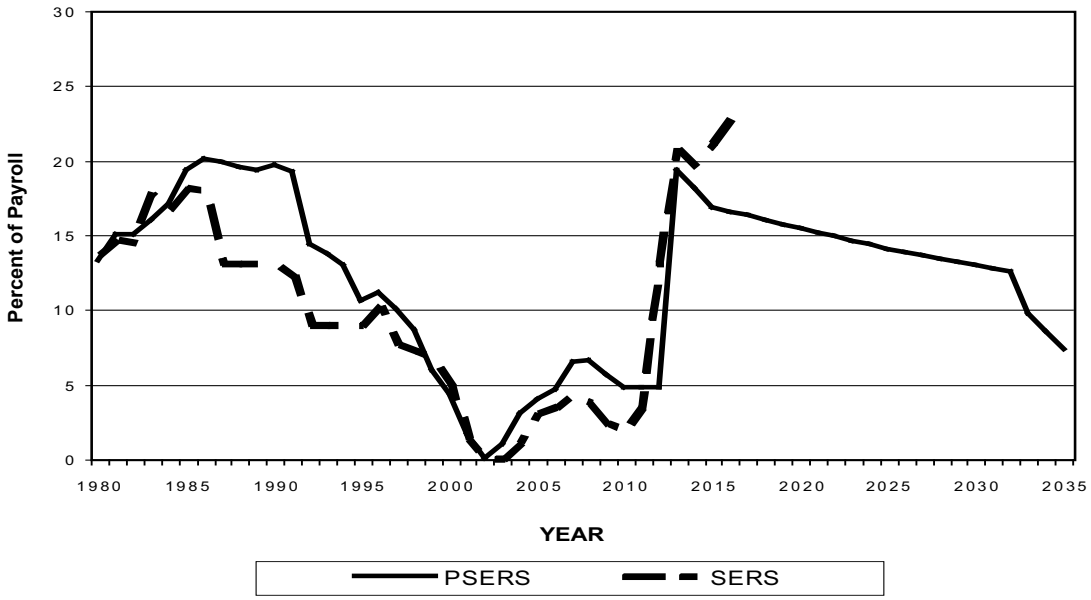
Figure 5 shows that financial market swings and changes to funding rules resulted in large contribution swings in the past and are projected to do the same in the future. Based on data starting in the 1980s, employer contributions peaked at 19.7 percent of payroll for PSERS in 1990 and 18.1 percent of payroll for SERS in 1985. Thereafter, employer contributions to both plans dropped to zero in 2002.

Since then, employer contributions have grown again, quickly reaching 4.0 percent of payroll starting with the plan year that began on July 1, 2004 (figure 5). In the future, Pennsylvania law requires minimum contributions of 4 percent of payroll. Contributions are projected to amount to 11.2 percent in 2012 and to 9.0 percent for SERS by 2011, according to Joint State Government Commission calculations in 2004.

Under current projections (and unless funding rules are changed) contributions will spike to nearly 23 percent for SERS in 2012 and 19 percent for PSERS (figure 4). Without any change in policy, these spikes would quickly subside to levels similar to those reached in the late 1980s and early 1990s. As discussed in the policy section of the paper below, prudent regulatory changes this year or next could avoid the 2012 spike.

Figure 5

Pension Contributions, Actual and Projected, 1980 to 2037



Notes: All figures are percent of payroll. PSERS contributions are exclusive of health care premium assistance. Data for PSERS provided by PSERS as unaudited actuarial estimates of total employer contributions. Health insurance contributions are based on 2005 estimates and subtracted from total. Data for SERS are from SERS (2006b).

Key points about figure 5:

- Pension contributions in Pennsylvania have been very volatile in the past and are expected to experience large swings in the future.
- Contributions through 2012 for PSERS and 2011 for SERS are modest in historical comparison.
- Contributions are expected to spike after 2012 for PSERS and after 2011 for SERS because of low employer contributions in the past, benefit improvements, and shortened amortization periods.
- The spikes in pension contributions are expected to bring employer contributions to similar levels as in the late 1980s and early 1990s.
- After an initial spike, contributions are projected to go down. Although data for SERS are not available after 2016, past projections, e.g. from the JSGC in 2004, showed a similar declining pattern as for PSERS after the initial spike.

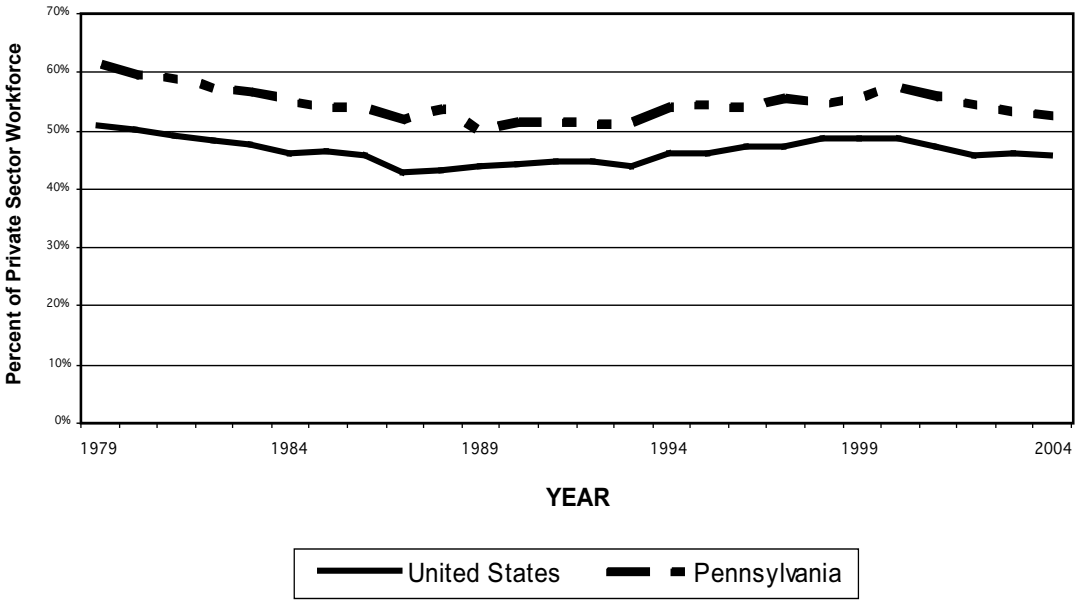
Private Sector Retirement Savings Challenges

In the private sector in Pennsylvania and across the country, employees seeking a secure path into middle-class retirement face four challenges. First, many employees are not covered by a pension on their job. Second, even some households who have a pension have very little savings accrued. Third, employees who are fortunate enough to have retirement savings find those savings increasingly exposed to risk, thereby reducing the likelihood that they will have enough saved for a decent standard of living in retirement. Fourth, with DC plans, administrative costs can consume a substantial portion of retirement savings.

Even though Pennsylvania's private sector pension coverage was above average in 2004, almost half of private sector workers in Pennsylvania had no pension through their employer (figure 4). In fact, between 2002 and 2004, a little more than half of all private sector workers between the ages of 18 and 64 had an employer-based pension (figure 4).

Figure 6

Private Sector Pension Coverage in the United States and Pennsylvania, 1979 to 2004



Authors' calculations based on Current Population Survey.

Key points about figure 6:

- Private sector pension coverage—counting both DB and DC plans— is relatively low. Less than half of all private sector workers nationwide have a pension.
- Pennsylvania has slightly higher pension coverage than the United States as a whole. Still, in 2004, only 52.5 percent of private sector Pennsylvania workers were covered by an employer sponsored pension.

Even many households who are covered by an employer-sponsored pension at some point in their career ultimately do not have enough retirement savings for a decent standard of living. Indicative of this, 44.1 percent of families in America nearing the retirement ages of between 56 and 64 could not meet the basic threshold of replacing 75 percent of their pre-retirement income in retirement. Also, 21.1 percent, more than one-fifth of families nearing retirement, could expect retirement income below half of their pre-retirement income, according to a 2005 study by Christian Weller of the Center for American Progress and Edward Wolff of New York University for the Economic Policy Institute entitled "Retirement Income: The Crucial Role of Social Security."

The shortfalls were larger for minorities, single women, and renters than for their counterparts (table 5). Although data at the state level are not available, there is no reason to believe that these shortfalls and their distribution differ materially in Pennsylvania.

Table 3
Distribution of Private Pension Wealth and Replacement Ratios, 2001

Type of households, 47 to 64	Mean DC and DB plan wealth (2001 dollars. Figures in thousands of dollars	Share of households with expected retirement income less than 75 percent of current income	Share of households with expected retirement income less than 50 percent of current income
Total, 56 to 64	179.4	44	21
Non-Hispanic white	199.7	50	25
African-American or Hispanic	68.0	52	40
Married couple	236.1	51	24
Single men	116.7	48	27
Single women	68.9	59	39
Homeowners	207.1	50	25
Renters	44.8	63	40

Notes: All figures are for families near retirement, i.e. between the ages of 56 and 64. All dollar figures are in thousands of 2001 dollars. Replacement rates are based on total wealth, which includes Social Security. Source is C. Weller and E. Wolff, "Retirement Income: The Crucial Role of Social Security, 2005."

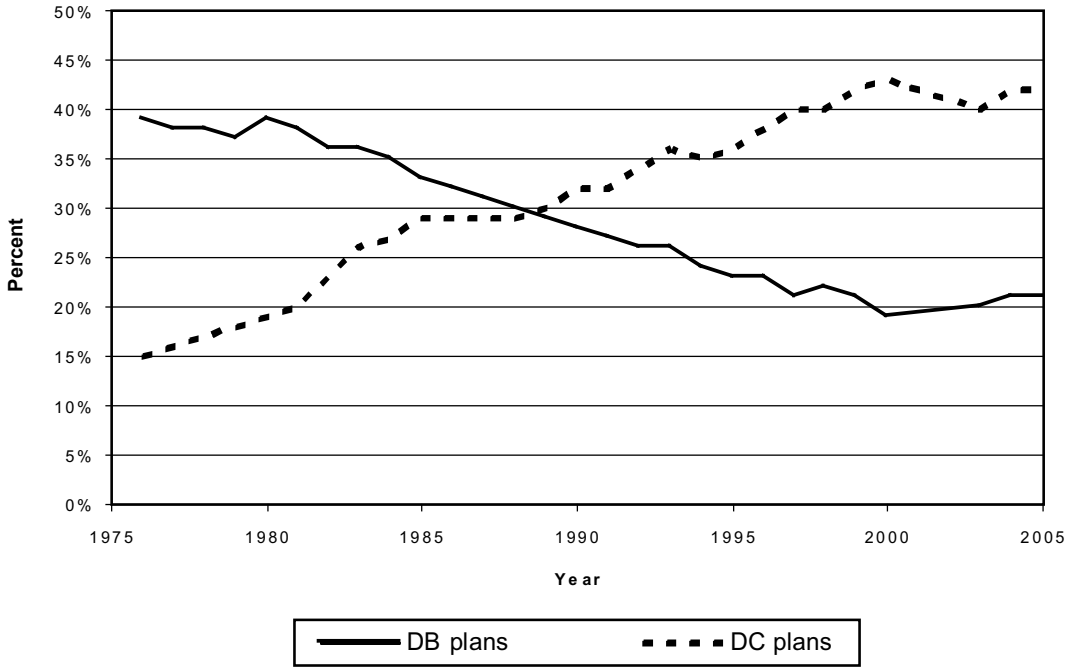
Often, financial and economic risks materialize and reduce retirement savings to less than what was expected. There are three forms of risk that can jeopardize people's retirement savings:

- idiosyncratic risk, or investing a large share of savings in one asset or one asset class, such as the employer's own stock;
- longevity risk, or retirees living longer than expected and thus left with little or no savings at the end of their life; and
- market risk, or exposure to a long bear market in stocks and bonds upon retirement.

Exposure to these three risks tends to be lower under DB plans than under DC plans. Yet the big shift away from DB plans to DC plans over the past 30 years (only one in five private sector workers with a pension now has a DB plan, down from two in five) means that more and more employees are exposed to more retirement security risk (figure 7). Changes in the pension world have weakened the shared responsibility for middle-class retirement security by substantially reducing the risks taken by employers and increasing the risks taken by employees who are generally less well equipped to do so.

Under DC plans, employees typically contribute a share of their income to an individual account. Employers may also contribute to this account, either matching what the employee puts in or even without an employee contribution.[13] Employee and employer contributions are generally pre-income tax contributions,[14] but there is a contribution maximum. There is no guarantee of future benefits under a DC plan and the employee assumes all risks associated with the uncertainty of the investment return on retirement savings. This is true even if an employer sponsor of a DC plan controls the range of investment choices, vendors, and fees.

Figure 7
Pension Plan Coverage In the U.S.



Notes: All figures are in percent. Sources are EBSA (2004) and BLS (2005).

Key points about figure 6:

- Private sector pension coverage has shifted from DB plans to DC plans, exposing workers to greater risks.
- In 2005, 21 percent of private sector workers were covered by a DB plan, down from 39 in 1976.
- In 2005, 42 percent of private sector workers were covered by a DC plan, up from 15 percent in 1976.

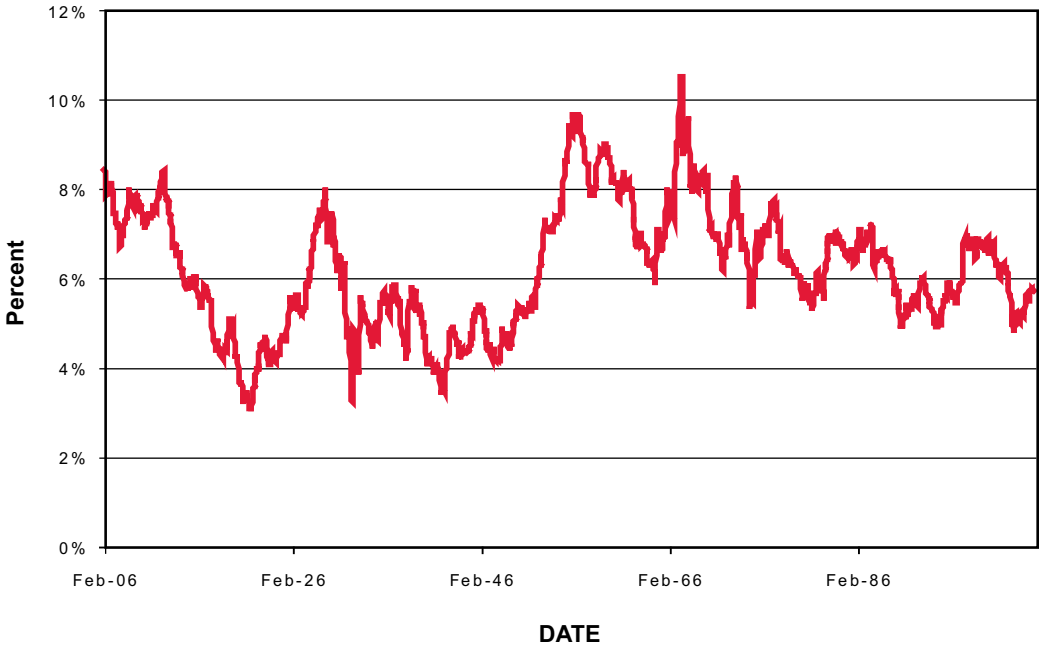
The fact that employees bear all the investment risk is, for instance, highlighted in the case when an employer invests employees' money in one asset or one asset class, such as the employer's own stock. Now, a worker's current paycheck and its retirement income are tied to the well being of one employer. In contrast, all DB plans protect employees from such risk by diversifying—spreading the plan's assets under professional management. If one employer's stock fails, the fund can still provide promised benefits. All DC plans should also do so.

Longevity risk in DC plans can also be hedged against. To protect against this risk, DC savings can be converted into an annuity—a guaranteed regular lifetime benefit payment that is similar to the payout from a DB plan. Most DC plans, however, do not offer annuities as a disbursement option, leaving individuals to purchase them separately.

The costs of a lifetime annuity amount to about 5 percent of total savings, with smaller account balances accruing larger costs, according to a 2000 study titled "The Costs of Annuitizing Retirement Payouts from Private Accounts," by James Poterba and Mark Warshawsky of the Massachusetts Institute of Technology. For a person retiring at 65 with an average life expectancy, this reduction in the total amount of savings that are available for benefits means a cut in monthly benefit payments by 15 to 20 percent, according to Poterba and Warchawsky. Studies by the Congressional Budget Office in 2004 and 1998 support this analysis, as does a study published in 1999 by the Brookings Institute.[15]

Finally, employees face greater financial market risk in DC plans than in DB plans, especially exposure to a prolonged bear market in stocks. While the real rate of return of the stock market has averaged 6.6 percent over the past 100 years, its average rate of return over 35-year periods has fluctuated between 3 percent and 10 percent (figure 8). Sources: Shiller (2001), TradeTools.com (2006), Weller, (2005b).

Figure 8
35-year Average Total Real Rate of Return



Sources: Shiller (2001), TradeTools.com (2006), Weller, (2005b).

Key points about figure 8:

- The stock market can experience long-term swings.
- After accounting for inflation, the average rate of return over a 35 –year period has been as low as 3.4 percent and as high as 10.5 percent.
- Employees cannot predict the average rate of return over their working career.

Under real world conditions, real replacement rates would have fluctuated between less than 20 percent and more than 100 percent for workers retiring after working for 35 years between 1979 and 2004 if they saved 10 percent of her earnings over a period of 35 years, according to a 2005 Center for American Progress report by Christian Weller titled "Social Security Privatization: The Retirement Savings Gamble."

To insure against market risk, individuals with savings in DC plans could buy insurance that would offer them a minimum rate of return while they invest their money. The costs of guaranteed minimum benefits are non-trivial. To guarantee the rate of return on bonds with a balanced portfolio (50 percent stocks and 50 percent bonds) over a 40-year period, investors would have to spend 16 percent of their contributions to their accounts on the guarantee, according to several recent studies by Wharton School of Business professors Marie-Eve Lachance, Olivia Mitchell and Kent Smetters.

Alternatively, workers could delay retirement, though this may not always be possible. Often long periods of low rates of return are followed by high unemployment rates. Exactly when workers would need to work longer, the opportunities to do so are becoming scarcer, according to

forthcoming analysis by Weller of the Center for American Progress. In the opposite case, when markets are going strong, workers should have a strong incentive to retire due to strong financial market performances—exactly when employers are facing labor shortages.

It is important to re-emphasize here that these fluctuations do not exist under DB plans, where the employer bears all financial market risk. Because DB plans are expected to be around for a long time, DB plans can theoretically wait until market conditions improve again. Because of this longer expected time horizon, there are two mechanisms by which DB plans address market risk. First, valuations of assets and liabilities often average out over a number of years of actual experience; short-term fluctuations are thus reduced. Second, DB plans typically are allowed to cover shortfalls over a number of years. Pennsylvania's Act 40 of 2003, for example, established a 30-year amortization schedule for unfunded liabilities.

A final challenge for employees with DC plans is the cost of professional management for these plans. The Congressional Budget Office in 2004 estimated that the costs for individual accounts, such as 401(k)s, amount to an average of 0.8 percent of assets for large plans and to about one percent of assets annually for smaller plans. More recently, an unpublished manuscript by Austan Goolsbee at the University of Chicago Graduate School of Business finds that the Investment Company Institute put the average fee for equity funds at 1.25 percent of assets and the average fee for bond funds at 0.88 percent in 2002.

Over the course of a lifetime, this amounts to a substantial loss in savings. Assuming annual contributions of 2 percent of earnings, total account balances would be reduced by 21 percent over an entire working life for large plans with average fees of 0.8 percent of assets and by 30 percent under small plans with 1.0 percent of assets in annual fees, according to the 2004 report by the Congressional Budget Office. These fees and reductions are higher than for DB plans since those are better able to take advantage of economies of scale, according to the same report.[16]

Some writers have suggested, explicitly or implicitly, that replacing a DB plan with a DC plan would save the state money. One such report is a 2006 study by Richard Dreyfuss of the Commonwealth Foundation in Harrisburg, Pa., titled "Beneath the Surface: Pennsylvania's Looming Pension and Healthcare Benefits Crisis." But swapping DB plans for DC plans wouldn't save money unless employers cut benefits at the same time they move from a DB plan to a DC plan. Indeed, given the higher costs of managing large number of individual accounts, DC plans ordinarily require a cut in benefits even when the employer puts in the same amount of money.

In addition to more costly fund management issues, DC plans also require costs to convert DC pension savings into annuities. Overall, the move from DB plans to DC plans involves a shift of risk from employer to employees and, in many cases, does in fact involve employers substantially reducing how much they invest in employees' retirement security.

Strengthen Pennsylvania's Public Pensions and Raise Overall Retirement Security

To improve the chances for Pennsylvania's public and private sector workers to reach a secure middle-class retirement after decades of hard work, the state's policy makers face a dual challenge: DB pension plans need to be strengthened and DC plans need to be improved. Although reforms to improve valuable private sector DB plans require action at the federal level, the challenges associated with public sector DB plans are the states' responsibility to tackle. And, even though much of the work to improve DC plans will have to be done at the federal level, states also have opportunities to improve these plans for their own population.

Strengthening Public DB Plans

It's important to re-emphasize that the current strains on public sector pensions are a result of an extraordinary financial market downturn, for which public sector DB plans were often inadequately prepared because they had made insufficient contributions beforehand. This leads to two policy responses.

First, the tendency of DB plans to become under funded during recurring economic downturns—evident in extreme form in the recent recession—can be addressed by making sure that the valuations of assets and liabilities reflect the long-term nature of the plans. Doing this ensures that changes in short-term market conditions do not lead to large fluctuations in estimates of whether a fund is over funded or under funded. This, in turn, could help to smooth employer contributions, thereby avoiding the kinds of spikes currently projected for 2012.

The basic premise of such changes is that they should be more pro-cyclical, allowing employers to contribute more during good times and contribute less during bad times.
One alternative may be to mirror the rules for liabilities and use, for example, a 20-year smoothing for stock prices, as suggested by Weller and Dean Baker of the Center for Economic and Policy Research in their 2005 study "Smoothing the Waves of Pension Funding: Could Changes in Funding Rules Help Avoid Cyclical Under Funding?"[17]

This process assumes that stocks will adjust towards a long-run average over a long enough period of time. If stock prices are above long-term averages with respect to corporate earnings, they are discounted and vice versa. Actuaries have proposed similar approaches (see References, page 36, under Macdonald, 2006; Andrews 2003). This approach would reduce the value of stocks on the books of a pension plan, when stock prices are high and when the effect that the funding ratio – assets to liabilities – would be lower, too. The result is that employers would have to make more contributions than they otherwise would when times are good and fewer contributions when times are bad.

Second, in exchange for less contribution volatility, employers should be required to make regular contributions that adequately reflect the cost increases associated with newly earned benefits during the current period. Currently, employers are more likely to have to make contributions to their pension plans only when times are bad, exacerbating budgetary pressures. It is possible to change

the funding rules so that benefits are protected, employers have more certainty associated with the funding of their pension plans, and budgetary pressures are reduced. Specifically, employers should contribute the amount of benefits that employees earned in a given period. Employers should contribute the amount that, together with interest, will allow the pension plan to pay the additional benefits promised in that period (not counting benefit increases under the plan, which would be paid for separately on a phased-in schedule).

These contributions are called normal cost contributions. The Joint State Government Committee in 2004 advocated for such a change to Pennsylvania's plans by increasing regular contributions above the current required level of 4 percent of payroll. PSERS report in 2005 also notes that normal cost contributions by the employer for the years 2001 through 2005 would have been above 7 percent of payroll, much higher than the actual contributions made by employers. For instance, in 2005, the estimated normal cost contribution would have been 7.61 percent of payroll, while employers only contributed 4.0 percent.

To combat the fear that too much of the employer's money will be tied up in an over-funded pension plan, the rules could allow an employer to reduce regular contributions, if the funding ratio exceeds a previously specified threshold, such as 120 percent or 130 percent of accrued liabilities.

At present in Pennsylvania, SERS and PSERS are allowed to live off their past good times for 10 years, sheltering the employer from the real costs of maintenance. That is, the pension plans are able to count past performance against current contributions through the use of sophisticated accounting techniques. The expectation is that the past overfunding of Pennsylvania's plans reduces required contributions through FY 2011-2012 for PSERS and FY 2010-2011 for SERS. Once past investment gains are fully phased in, demands on employers will sharply rise. Reductions of contributions disappear and required contributions become quite high. More smoothing and substantial regular contributions can help avoid such spikes in the future.

The P.U.S.H. to Strengthen DC Plans

Stronger DC pension plans will require more **P**ooling to reduce administrative costs, **U**niversal coverage, more **S**ecure savings, and more **H**ybrid plans, hence the acronym P.U.S.H. A large number of PUSH-type proposals, summarized below, are being pressed for at the federal level, yet these same ideas can be incorporated by state-level policymakers, including those in Pennsylvania.

These proposals, if enacted, would make DC pensions look more like multiple employer DB plans, which are common in the public sector. The fact that public policy experts are looking for ways to make DC plans look more like multiple employer DB plans should give pause to policymakers intent on destroying public sector DB plans.

Pooling

Pooling a large number of small accounts could offer cost savings. The idea is to establish one large fund for private sector employers to join. Investment options could be limited to a few index funds, which spread their investments across a large number of assets, such as stocks and bonds, to mirror the stock market or the bond market at large.

The costs of such a plan would be minimal because it would be administered by a non-profit entity, the government, and because the government could take advantage of economies of scale by managing a large number of small accounts with limited investment options. The risks for the employee would be low because investments are spread out. Small employers, who often worry about the costs and administrative burdens associated with setting up a retirement savings plan for their employees, would be more willing to establish a retirement savings plans than is currently the case.

Universal Coverage and Secure Savings

Universal coverage could come in three types: "automatic 401(k)s," a proposal put forth by the Brookings Institute's William Gale, Mark Iwry and Peter Orszag; "automatic IRAs," a proposal from Irwy and David John at the Retirement Security Project; or "universal 401(k)s," proposed by Gene Sperling at The Center for American Progress.

Under an "automatic 401(k)", employees who work for an employer that offers a 401(k) plan would be automatically enrolled in that plan, but could opt out if they so desired. Other features include: automatic default investment options that would replace the current practice of allocating funds towards safe and low return money market mutual funds; automatic escalation that would increase contribution rates over time; and automatic roll-overs into IRAs upon a worker's termination of employment.

In comparison, "Automatic IRAs" would require employers with 10 or more employees to offer employees the opportunity to sign up for automatic payroll deductions into designated IRAs. Finally, "Universal 401(k)s" would offer progressive saving incentives to employees who save via a 401(k) plan.[18] Progressive saving incentives mean that the state would match what employees themselves save, with the matching ratio higher for the lowest-income workers.

All three of these proposals would reduce risks and increase savings in DC plans. Assets would be well diversified since investment options would be limited to a small set of index funds. In addition, automatic enrollment would mean more regular contributions by employees than is now the case and greater savings rates at the state and national levels.

Hybrid Plans

Other proposals aim to lower longevity risk under DC plans by offering alternatives pension products that would annualize pension payments over the life of retirees. Under these types of proposals, however, the biggest tax incentives would accrue to savers who already have the most wealth, as the Center for American Progress's Weller noted in his 2005 study, "Insuring Retirement Income with Cash Balance Plans." More research needs to be done to design better tax incentives for families to turn their savings into lifetime annuities in order to reduce the chance of depleting their funds before they die.

State Proposals to Improve DC Plans

A number of proposals already exist in Pennsylvania and policymakers could draw on proposals from other states to improve DC plans along the lines discussed in the previous section. Specifically, Pennsylvania could establish a pooled investment option, require automatic payroll deductions into IRAs, and offer progressive saving incentives.

A number of states, including Pennsylvania, already have proposals for pooled investment options for private sector employers. For instance, In Washington, Seattle's Economic Opportunity Institute has called for the creation of "Washington Voluntary Accounts," or DC pension plans that would be administered by the Washington State Department of Retirement Systems. EOI's Steve Idemoto has also proposed that savings for low-income earnings be matched by the state government in his study titled "Washington Voluntary Accounts: A Proposal for Universal Pension Access."

In 2002, the Keystone Research Center in Pennsylvania adapted the EOI concept and proposed the establishment of Pennsylvania Voluntary Accounts. Similarly, Michigan Governor Jennifer Granholm has proposed a new program to offer a state-administered DC plan to Michiganders whose employers do not offer a pension, although the specifics are not fully developed yet. Governor Rendell's Task Force for Working Families included a similar recommendation. The Task Force proposed to create a PennIRA, whereby small employers could offer a low cost, low risk investment option to their employees. This investment option would be administered by the state.

In addition, Pennsylvania could establish automatic IRAs. All the employer would have to do is offer payroll deduction into an IRA to his or her employees.[19] Governor Rendell's Task Force for Working Families included the possibility of payroll deductions into PennIRAs in its final report in 2005.

Moreover, Pennsylvania already offers a small savings match to low-income families, called the Family Savings Account. Established in 1997, this program uses state dollars to match 50 percent of savings, up to $500 per year or $1,000 over two years for an individual. In order to obtain the $1,000 ($500 per year) maximum match, a family would have to save at least $2,000 over two years. Individual savers are expected to save $10 per week during the two-year period.

The Family Savings Account program is only meant to get families started on building wealth. It is not a long-term matching program. To qualify, savers must also obtain financial education from community groups to qualify for government matches. All workers with incomes below 200 percent of the poverty line are eligible. Families above this are no longer eligible.

Governor Rendell's 2005 Task Force for Working Families, however, proposed a number of improvements to this matching credit. These include expanding the length of the program from 2 years to 3 and making income eligibility requirements depend on the regional cost of living. Additional improvements could expand this program or establish similar ones to build retirement wealth for low-income Pennsylvanians. Directions for improvements include no time limit for matches, at least for retirement savings, and the gradual phase-out of eligibility. By raising the incentives to save and lowering the obstacles to doing so, more low income families in the state of Pennsylvania could build real retirement wealth.

CONCLUSION

For Pennsylvania's workers, converting public sector DB pension plans to DC plans would substantially lower their chances to reach a secure middle-class retirement. If Pennsylvania's policymakers represent the interests of hard-working Pennsylvanians, they will seek to strengthen not undermine retirement security for the middle class, both in the public and the private sector.

Instead, retirement income security for middle-class families in Pennsylvania requires a broad based strategy that acknowledges this is a shared responsibility between the government, employers, and employees. The large public sector plans in Pennsylvania today offer workers the chance to achieve a middle-class standard of living in retirement. Moreover, the existing public sector DB plans provide the state with the human resource management tools necessary to attract and retain a skilled workforce. Pennsylvania, however, needs to consider policy changes to regularize its contributions to public sector DB plans to strengthen the long-term sustainability of these plans.

State lawmakers should address the lack of adequate private sector pension coverage for workers with DC pension plans, and especially for those private sector workers in Pennsylvania not covered by any employer pension. These steps could include providing low-cost and secure investment options, easier access to retirement saving accounts, and progressive savings incentives that provide strong incentives to save for those who need them most.

Appendix

Table A.1: Summary Table of of PSERS and SERS

<table>
<tr><th></th><th colspan="3">PSERS</th><th colspan="2">SERS</th></tr>
<tr><td>Minimum vesting period</td><td colspan="3">5 year cliff (prior to 2001, 10 years)</td><td colspan="2">5 year cliff (prior to 2001, 10 years)</td></tr>
<tr><td>Length of averaging for calculating final average pay</td><td colspan="3">3 years</td><td colspan="2">3 year</td></tr>
<tr><td>Lump sum distribution available?</td><td colspan="3">yes</td><td colspan="2">yes</td></tr>
<tr><td rowspan="14">Cost-of-living adjustments (COLAs)</td><td colspan="3">Not part of benefit formula COLAs:
1967 (first since 1917), 1974, 1979, 1984, 1989, 1994, 1998, 2002-3

Act 38 (2002-3):</td><td colspan="2">Not part of benefit formula COLAs:
1968 (first since 1923, average increase 6.76%), 1974 (23.3%), 1979 (25.0%), 1984 (9.94%), 1988 (9.5%), 1994 (6.48%), 1998, 2002

Act 38 (2002):</td></tr>
<tr><td colspan="2">Date of Retirement</td><td>COLA</td><td>Date of Retirement</td><td>COLA</td></tr>
<tr><td colspan="2">Before 7/2/80</td><td>25.00%</td><td rowspan="5">Before 7/2/90</td><td rowspan="5">8.00-25.00%</td></tr>
<tr><td colspan="2">7/2/80 – 7/1/83</td><td>15.00%</td></tr>
<tr><td colspan="2">7/2/83 – 7/1/88</td><td>10.00%</td></tr>
<tr><td colspan="2">7/2/88 – 7/1/90</td><td>8.00%</td></tr>
<tr><td colspan="2">7/2/90 – 7/1/94</td><td>9.00%</td></tr>
<tr><td colspan="2">7/2/94 – 7/1/98</td><td>7.50%</td><td rowspan="5">After 7/2/90</td><td rowspan="5">2.27-9.00%</td></tr>
<tr><td colspan="2">7/2/98 – 7/1/99</td><td>6.35%</td></tr>
<tr><td colspan="2">7/2/98 – 7/1/99</td><td>4.87%</td></tr>
<tr><td colspan="2">7/2/00 – 7/1/01</td><td>3.08%</td></tr>
<tr><td colspan="2">7/2/01 – 7/1/02</td><td>2.27%</td></tr>
<tr><td rowspan="5">Employee contribution rate</td><td>Membership Class</td><td>Enroll-ment Date</td><td>Contribution Rate</td><td>Membership Class</td><td>Contribution Rate</td></tr>
<tr><td>T – C</td><td>Prior to 7/22/83</td><td>5.25%</td><td>A</td><td>5.00%</td></tr>
<tr><td>T – C[20]</td><td>On or after 7/22/83</td><td>6.25%</td><td>AA[21] (most)</td><td>6.25%</td></tr>
<tr><td>T – D</td><td>Prior to 7/22/83</td><td>6.50%</td><td rowspan="2">Special Classes[22]</td><td rowspan="2">Various</td></tr>
<tr><td>T – D</td><td>On or after 7/22/83</td><td>7.50%</td></tr>
<tr><td>Early retirement subsidy</td><td colspan="3">Between 55 and 62, with 25 years of service. Benefits reduced 3% per year, .25% per month.</td><td colspan="2">No special early retirement subsidy</td></tr>
<tr><td>Maximum replacement ratio</td><td colspan="3">100 percent or the maximum allowed under Internal Revenue Code 415.</td><td colspan="2">100 percet or the maximum allowed under Internal Revenue Code 415.</td></tr>
<tr><td>30 and out, regardless of age?</td><td colspan="3">35 years and out, regardless of age</td><td colspan="2">35 years and out, regardless of age</td></tr>
</table>

Multiplier for final pay	T – C		2% * Final Average Salary * Years of Credited Service	A		2% * Final Average Salary * Years of Credited Service
	T – D[23]		2.5% * Final Average Salary * Years of Credited Service	A A		2.5% * Final Average Salary * Years of Credited Service
Year of normal retirement age	62 with at least one year of service 60 with 30 years of service Any age after 35 years of service			60 for most jobs 50 for police (and some legislators) Any age after 35 years of service		
Assumed discount rate of liabilities	Investment Return	Inflation	Real Return	Investment Return	Inflation	Real Return
	8.5%	3.5%	5%	8.5%	3%	5.5%

Sources: PSERS (2005), SERS (2005), and NASRA (2006). Final average pay refers to the three years of highest earnings.

A.2: Accrual Simulations

For the simulations used in the text and for the additional simulations, the following assumptions and calculations are made:

- Earnings are taken from the 2006 Social Security Trustees' Report (SSA, 2006). Past records and maximum earnings are taken from SSA (2006).
- Inflation assumptions are taken from the 2006 Social Security Trustees' Report (SSA, 2006).
- Full-time career earnings are for 30 years in the text and for 40 years in the appendix. A 40-year career is a rare occurrence under the Pennsylvania public pension system. As of June 30, 2004, only 4.2 percent of retirees had 40 or more years of service.
- Part-time career earnings are 15 years for the example used in the text and 20 years in the appendix. It is assumed that a workers first works for the state under covered employment and then works for another 20 years in the private sector.
- For dual earner couples, it is assumed that only one spouse has a public sector career (full-time or part-time), while it is assumed that the other spouse has a full-time career in the private sector.
- It is assumed that private sector employment is covered by a DC plan with an annual contribution rate of 6 percent of earnings. This is likely overstating the actual contribution rate for the typical household, given low coverage.
- Investment returns are assumed to be 3.6 percent in real terms. This is one percent lower than is usually assumed for balanced portfolios (CSSS, 2001), but it corrects for the fact that lower growth and earnings projections for the future are inconsistent with historical average rates of return (Baker, 1997).
- Costs for investments and annuities are assumed to be 0.5 percent per year, substantially lower than current market costs.
- For years prior to 2005, historical prices are used. Data are taken from Shiller (2001), Tradetools.com (2006), and BOG (2006).
- Retirement age is assumed to be 65. That is, already scheduled benefit cuts under Social Security reduce the replacement rates at retirement.
- A worker's benefit under PSERS and SERS is calculated as either 2.5 percent or 2.0 percent of the average of the final three years of earnings per year of service.
- There are no cost-of-living adjustments assumed since there are none scheduled in Pennsylvania.
- Nominal benefit streams are converted into net present value lump sums using the risk free interest rate from SSA (2006). They are then converted into inflation adjusted benefit streams to be comparable to Social Security benefits. This methodology is similar by the one employed by JSGC (2004).
- Replacement rates are expressed as the ratio of annual benefits to final pay.
- Mortality assumptions for men and women and whites and blacks are taken from NCHS (2005). For projections for future life expectancy rates, see Weller (2005c).

The text highlighted the likely retirement income experience of the typical PSERS and SERS worker. Specifically, the majority of people retired under PSERS had less than 30 years of service within the system (PSERS, 2005b). Also, towards the end of their career, employees covered by PSERS had earnings of about $70,000 in 2004. This puts the typical PSERS employee nearing retirements close to a high lifetime earner under SSA's assumptions. In comparison, the average SERS employee nearing retirement, i.e. between the ages of 56 and 64, earned approximately $50,000 in 2005 (SERS, 2006b), i.e. close to, but above a medium lifetime earner as defined by SSA (2006). Most workers covered by SERS in this age group had less than 20 years of service in 2005. For simplicity reasons, the text gave only expected average retirement incomes.

To gain a sense of the range of outcomes, additional examples are calculated here. As before all examples include pension and Social Security benefits and, for those workers not working a full career under PSERS or SERS, retirement savings in a 401(k).

First, the calculations show what benefits would look like if people actually worked for 40 years, instead of 30 years under either PSERS or SERS and retired at age 65, instead of 62. Importantly, only a very small fraction of workers retire with such a long career at age 65 under either plan (PSERS, 2005; SERS, 2006b). Workers, though, who do should expect to have retirement income that is above the minimum standards of retirement income adequacy. After all, the public pension system is designed to retain high skilled workers for long periods of time by trading off pensions against wages, as discussed earlier. Because high skilled workers in the public sector receive below market wages, it should be easier for them to achieve a replacement rate that meets the adequacy standard laid out earlier.

To keep consistent with earlier examples, the same examples are calculated for a worker who spends only half her career covered by PSERS or SERS, in this case 20 years. From the data presented earlier, these cases are more applicable to the SERS population than the PSERS population.

Second, these additional hypothetical examples vary replacement rates by race. Because of lower life expectancies for minorities, inflation will have less of an effect on their pension benefits than for whites.[24] Consequently, their expected replacement rates should be higher than for whites. However, it is important to be clear that this cannot be a justification for turning a blind eye to the abysmal fact that life expectancies for minorities have persistently remained below those of whites.

Third, the examples developed here also includes example by marital status. In the case of married couples, only one earner is assumed. That is, benefits should be higher than for singles due to spousal benefits under Social Security.

Fourth, the examples are calculated for different years in the future. Two factors will reduce future expected replacement rates. Social Security benefits are already scheduled to decline and rising life expectancies will mean that there is more time for inflation to eat away at pension benefits.

Finally, the examples are calculated with a 2.5 percent rate for each year of service as well as with a 2.0 percent rate for each year of service since some workers are still covered by the old benefit formulas.

Table A-1 shows the examples for a 2.5 percent replacement rate. As expected, workers with a full career of 40 years under Pennsylvania's public sector plans would see a replacement rate of above 100 percent. It is important to keep in mind that this is a rare occurrence and that it is intentional since highly skilled, long-term public sector employees are expected to receive a benefit for their long tenure. Yet, this replacement rate cannot be considered overly generous, as is implied by Dreyfuss (2006). With replacement rates of 2.5 percent of final average pay per year of service, the typical full career public sector worker can expect a total real replacement rate of about 105 percent if they are single and of closer to 90 percent if they are married. That is, full career employees with typical earnings in Pennsylvania clear the hurdle for an adequate standard of living in retirement, but many still experience a pay cut upon retirement.

If a worker does not work a full career, only low income workers can meet the minimum thresholds for retirement income adequacy. That is, Pennsylvania's public sector pension plans do remain an important pathway into middle-class retirement for many low and moderate income workers who would not have the same opportunity in the private sector. Importantly, these are truly minimum thresholds for low income workers. Lower income workers generally need higher replacement rates, since important expenditures in retirement, particularly health care costs, are fixed costs that do not vary with income. Less generous public-sector pensions would mean that janitors and bus drivers, secretaries and administrative assistants, teacher assistants and preschool teachers would lose one of their few shots at real retirement security.

Table A-2
Hypothetical Replacement Rates with 2.5 Percent of Final Average Pay Per Year of Service, by Demographic Characteristics

Retiring at age 65 in	White men	White women	White married couples – dual earners	Black men	Black women	Black married couples – dual earners
Low scaled earnings – non full-career ($17,162 in 2006)						
2010	82%	80%	91%	84%	81%	95%
2020	81%	80%	84%	83%	81%	88%
2030	76%	76%	76%	79%	77%	79%
2040	75%	76%	76%	78%	76%	80%
Middle-scaled earnings – non-full career ($38,137 in 2006)						
2010	68%	67%	77%	70%	68%	81%
2020	67%	66%	71%	69%	67%	74%
2030	64%	63%	63%	66%	64%	66%
2040	63%	63%	64%	65%	64%	67%
High scaled earnings – non-full career ($59,494 in 2006)						
2010	62%	60%	71%	64%	61%	75%
2020	61%	60%	64%	63%	61%	68%
2030	57%	57%	57%	60%	58%	60%
2040	57%	57%	58%	59%	58%	61%

Maximum scaled earnings – non-full career ($94,200 in 2006)						
2010	57%	55%	62%	59%	56%	66%
2020	58%	57%	62%	60%	58%	66%
2030	57%	56%	56%	59%	57%	60%
2040	56%	56%	57%	59%	57%	61%
Low scaled earnings – full career ($17,162 in 2006)						
2010	128%	126%	114%	130%	127%	118%
2020	127%	126%	107%	130%	127%	111%
2030	123%	122%	99%	126%	124%	103%
2040	122%	122%	97%	125%	123%	101%
Middle scaled earnings – full career ($38,137 in 2006)						
2010	115%	113%	100%	117%	114%	104%
2020	114%	113%	94%	116%	114%	98%
2030	110%	110%	86%	113%	111%	90%
2040	109%	109%	84%	113%	111%	88%
High scaled earnings – full career ($59,494 in 2006)						
2010	108%	106%	94%	110%	107%	98%
2020	107%	106%	87%	110%	107%	91%
2030	104%	104%	80%	107%	105%	84%
2040	103%	103%	78%	106%	105%	82%
Maximum scaled earnings – full career ($94,200 in 2006)						
2010	103%	101%	86%	105%	102%	89%
2020	102%	101%	84%	104%	102%	88%
2030	99%	98%	77%	102%	100%	81%
2040	98%	98%	76%	101%	99%	80%

Notes: All figures are in percent of the highest three years of earnings, as PSERS and SERS define final earnings in terms of highest three years of earnings. All earnings profiles are derived from SSA (2006). Demographic differences in replacement rates are the result of differential life expectancies.

Also as expected, replacement rates vary with demographic characteristics and over time. African-Americans receive slightly higher replacement rates than whites, and married couples see benefits relative to their incomes above those of singles. In all instances, replacement rates are declining over time because Social Security benefits are cut and because inflation can take a bigger bite out of pension benefits.

Finally, a lower replacement rate offers the same employees a total benefit that falls further short of average adequacy standards. With a few exceptions, the expected replacement rates are below 60 percent for a public sector employee who does not work a full career covered by PSERS or SERS.

Table A-3
Hypothetical Replacement Rates with 2 Percent of Final Average Pay Per Year of Service, by Demographic Characteristics

Retiring at age 65 in	White men	White women	White married couples – dual earners	Black men	Black women	Black married couples – dual earners
Low scaled earnings – non full-career ($17,162 in 2006)						
2010	82%	80%	91%	84%	81%	95%
2020	81%	80%	84%	83%	81%	88%
2030	76%	76%	76%	79%	77%	79%
2040	75%	76%	76%	78%	76%	80%
Middle-scaled earnings – non-full career ($38,137 in 2006)						
2010	68%	67%	77%	70%	68%	81%
2020	67%	66%	71%	69%	67%	74%
2030	64%	63%	63%	66%	64%	66%
2040	63%	63%	64%	65%	64%	67%
High scaled earnings – non-full career ($59,494 in 2006)						
2010	62%	60%	71%	64%	61%	75%
2020	61%	60%	64%	63%	61%	68%
2030	57%	57%	57%	60%	58%	60%
2040	57%	57%	58%	59%	58%	61%
Maximum scaled earnings – non-full career ($94,200 in 2006)						
2010	57%	55%	62%	59%	56%	66%
2020	58%	57%	62%	60%	58%	66%
2030	57%	56%	56%	59%	57%	60%
2040	56%	56%	57%	59%	57%	61%
Low scaled earnings – full career ($17,162 in 2006)						
2010	128%	126%	114%	130%	127%	118%
2020	127%	126%	107%	130%	127%	111%
2030	123%	122%	99%	126%	124%	103%
2040	122%	122%	97%	125%	123%	101%
Middle scaled earnings – full career ($38,137 in 2006)						
2010	115%	113%	100%	117%	114%	104%
2020	114%	113%	94%	116%	114%	98%
2030	110%	110%	86%	113%	111%	90%
2040	109%	109%	84%	113%	111%	88%
High scaled earnings – full career ($59,494 in 2006)						
2010	108%	106%	94%	110%	107%	98%
2020	107%	106%	87%	110%	107%	91%
2030	104%	104%	80%	107%	105%	84%
2040	103%	103%	78%	106%	105%	82%

Maximum scaled earnings – full career ($94,200 in 2006)						
2010	103%	101%	86%	105%	102%	89%
2020	102%	101%	84%	104%	102%	88%
2030	99%	98%	77%	102%	100%	81%
2040	98%	98%	76%	101%	99%	80%

Notes: All figures are in percent of the highest three years of earnings, as PSERS and SERS define final earnings in terms of highest three years of earnings. All earnings profiles are derived from SSA (2006). Demographic differences in replacement rates are the result of differential life expectancies.

A.3 Asset Smoothing

The first basic simulation model referenced in the text is developed in Weller and Baker (2005) and works as follows. First, the difference between market price and trend price is calculated:

$$(\frac{MP}{TP})_t = \frac{MP_t}{TE_t * \overline{PE}} = \frac{MP_t}{TE_{t-1} * (1+e) * \overline{PE}} \quad (1)$$

where MP is the current market price (S&P 500) and TP is the trend price. The trend price is equal to the trend earnings, TE, times the long-term average price to earnings ratio, PE, since 1927. The trend earnings are equal to the trend earnings in the previous period after having grown at the average earnings growth rate, e, of 5.0 percent. Next, it is assumed that the difference between market price and trend price disappears after 20 years, generating an adjustment to stock prices of:

$$AF_t = \frac{1}{1 - r_{adj}}^{t} \quad (2)$$

where the adjustment rate, radj, is defined as:

$$r_{adj,\,t} = \ln(\frac{TP}{MP})_t / 20 * 100 \quad (2')$$

such that the adjusted price, Padj, is described by:

$$P_{adj,\,t} = MP_t * AF_t \quad (2'')$$

Since the expected rate of return to stocks is the sum of the rate of capital appreciation and the dividend yield – dividends relative to market price – the adjustment made to the price also affects the expected dividend yield:

$$DY_{adj,\,t} = \frac{D_t}{P_{adj,\,t}} \quad (3)$$

where the adjusted dividend yield, DYadj, is equal to the ratio of dividends, D, to the adjusted market price, Padj. Further, assets other than stocks earn the same long-term interest rate as used in the calculation of the liability discount rate.

A theoretically equivalent, but more intuitive method in terms of applicability for public sector plans has been developed by MacDonald (2003). Ed Macdonald of Cavanaugh MacDonald Consulting LLC has applied for a patent for the Smoothed Valuation Interest Rate (Macdonald, 2006).[25] Here, liability discount rates are increase d after a period of underperforming investments over the typical look back horizon, generally five years. The adjustment assumes, similar to the previous method that assets returns will correct for this underperformance over the long-run, e.g. twenty years. That is, going forward expected rates of return should be higher than the long-run average, thus allowing for lower liabilities. The opposite would be the case after a period of above average investment performances. Further, Andrews (2003) sketched out another valuation approach that nevertheless rests on the same logic. Under this proposal, asset returns of private sector DB plans are deflated after a period of above average performances. Yet, rather than describing a deterministic path, Andrews (2003) advocates for a weighted probability distribution. The difference between Macdonald's methodology and the others is that it takes into account the total fund performance of a specific plan, whereas Weller and Baker's and Andrews' method rests on the financial market performance and not on the specific fund performance. That is, the latter methodologies require separate calculations for each equity assets, whereas Macdonald's methodology uses only one calculation for a plan's entire portfolio.

This method determines a smoothed discount rate. Smoothing is based at least on an assumed long-term discount rate and an actual return on market value for one or more preceding time periods, e.g. five years. This smoothed discount rate is used instead of the assumed long-term discount rate when determining the employer liabilities and pension contributions. Specifically, the calculation involves solving the following equation:

$$E = (1 + D) \text{ ^N} \qquad (4)$$

Where E is the compounded expected return, N is the length of time, and D is the assumed long-term discount rate.

The compounded actual return is calculated as:

$$A = \prod_{i=1}^{n} (1 + A_t) \qquad (5)$$

Where A is the compounded actual return is the actual returns in each sub-period over the entire length of the look back period, n.

The adjusted expected rate of return, AEI, is then:

$$AEI = \left(\frac{E}{A}\right)^{\frac{1}{N-n}} - 1 \qquad (6)$$

The smoothed discount rate is equal to the adjusted expected rate of return over the future period of time. The method further allows for the adjusted expected rate of return over the future to move within a corridor, giving employers some flexibility in pension funding and contributions.[26]

A.4 Glossary

Annuity: Regularly scheduled disbursements from a pension fund according to an insurance contract. Payments may be for the lifetime of the individual, or may be transferred to a beneficiary upon death.

Assets: The collection of securities, such as stocks and bonds, and liquid cash held by a retirement plan.

Cash balance plans: A participant's account is credited each year with a percentage of wages, at a linked interest rate. Changes in the value of the plan's investments do not directly affect benefits, which are defined in terms of an account balance. Lump sum distributions are a common option, but so are defined annuities.

Cost of living adjustment (COLA): Increases in benefits in retirement. These increases are paid by defined benefit plans to account for increased prices and expanded consumption needs. In Pennsylvania, COLAs are granted by the legislation.

Coverage rate: The percentage of workers who are participants in a retirement savings vehicle, either DB or DC plan.

Cyclical volatility (pro and counter): Changes in funding levels due to fluctuations in stock prices and interest rates over the course of the business cycle.

Discount rate: The rate of return used to calculate pension liabilities.

Defined benefit (DB) pension: A pension where the employee is guaranteed a benefit upon retirement, usually based on years of service, age and final earnings.

Defined contribution (DC) plan: A savings plan where employees contribute a share of their income to an individual account, whose investment choices, vendors, and fees are controlled by the employer.

Disbursement option of DC plan assets: see annuity or lump-sum distribution.

Employer default risk: The chance that your employer will go into bankruptcy or will otherwise be unable to cover its commitments to its DB pension plan.

ERISA: Employee Retirement Income Security Act of 1974, which guides private sector retirement savings.

Final average pay: Used to calculate a DB pension benefit. For instance, a worker may earn 2.5 percent of final average pay for each year of service as a pension benefit. Under Pennsylvania's two large pension plans, SERS or PSERS, pay is averaged over the final three years of services with the public sector employer for purposes of calculating an employee's benefits.

Idiosyncratic risk: The chance of large investment losses because of a lack of diversification of assets. It is an illustration of "too many eggs in one basket".

Individual retirement accounts (IRA): Tax-advantaged accounts that hold cash contributions that can be used to purchase securities to held for retirement. These retirement savings vehicles are not employer based.

Liabilities: The amount necessary that would pay, together with assumed interest earnings, for the sum of all promised future payments of benefits in a retirement plan.

Longevity risk: The chance of outliving one's savings.

Lump-sum distribution: The amount of a payment available in the present estimated to be equal to a future series of benefit payments under a DB plan.

Market risk: The chance that there will be prolonged slump in prices for equities and other securities that might be elements of a retirement security vehicle.

Pension funding ratio: The ratio of pension assets divided by liabilities.

Political risk: The risk that an elected official or officials will reduce benefits for pensioners.

Retirement income adequacy (replacement ratio): Household may on average be considered adequately prepared for retirement if they can maintain a similar real level of consumption as during its working years. A retirement plan that can replace 75-80 percent of pre-retirement with the total of their retirement income is on average considered to be adequately prepared. However, since retirees face fixed costs in retirement, specifically for health care, replacement rates should decline with income. Lower income earners need to replace more of their pre-retirement income than higher income earners.

Retirement savings plan: Any fund, such as a defined benefit pension, individual retirement account, or defined contribution account (like a 401(k)), that represents a worker's investments or reserves for retirement.

Retirement wealth: The sum of pension wealth from defined benefit and defined contribution plans plus the expected retirement benefits from Social Security.

Smoothing (of assets and liabilities): Averaging prices of stocks and bonds over pre-determined periods to reduce price fluctuations. This is a reflection of "what goes up, must come down".

Vesting period: The amount of time an employee must work before they become entitled to their benefits as defined by the plan. PSERS and SERS have five year vesting.

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Endnotes

[1] Public sector DB plans are also beneficial to the state's economy. See text box on page 6 for details.

[2] See the appendix for a detailed summary of both plans.

[3] Some employees had the choice of continuing to contribute at a lower level and receiving a pension benefit equal to their years of service time 2 percent. For simplicity, however, and because most workers will in the future receive a pension equal to 2.5 percent of final salary times years of service, we consider only this case in the text.

[4] Specifically, the median years of service for men 0and women between the ages of 60 and 64 was between 10 and 14 years, and the median years of service for men and women between the ages of 55 and 59 was between 15 and 19 years in 2005 (SERS, 2006b).

[5] The simulations assume no COLA increase for SERS or PSERS. To make the non-inflation adjusted pension benefits comparable to Social Security benefits, which increase with inflation, they are recalculated. The total stream of benefits is translated into a lump sum amount upon retirement. This lump sum amount is then translated into an annual benefit that increases each year with inflation. The result is that each year's expected benefit is equal to the same percentage of pre-retirement benefits in inflation adjusted terms.

[6] The simulations assume that each worker works for a number of years covered by Social Security, but no retirement savings plan before coverage by SERS or PSERS commences. That is, each worker qualifies for full Social Security benefits with the only reduction being the early retirement discount.

[7] See the appendix for additional details.

[8] The exposure to political risks is limited. Similar to rules in the private sector, Pennsylvania's public sector DB plans cannot cut benefits that have already been earned (JSGC, 2004). Employers can only reduce future benefits.

[9] There is an offsetting short-term effect since pension plans experience holding gains on their bonds as bond prices rise, when interest rates fall.

[10] Data from various years of PSERS' Comprehensive Annual Financial Report.

[11] See the policy section for a discussion of what such regular contributions may look like.

[12] Act 38 of 2002 required that Pennsylvania made minimum contributions of 1 percent of payroll, which was increased gradually to 4 percent of payroll under Act 40 of 2003 (JSGC, 2004). In fiscal year 2006, the employer contribution is thus 4 percent, after which it reverts back to 1 percent of payroll.

[13] Within certain limits, workers can contribute to an Individual Retirement Account (IRA), in essence a DC plan controlled by the worker. The tax advantages of IRA contributions are greater for workers who are not participating in an employer sponsored qualified plan. The contribution limits to IRAs, however, are substantially lower than the dollar contribution limits for employer- sponsored DC plans. Aside from their contribution limits, IRAs operate very similarly, although employees generally have more investment options.

[14] Employee contributions are still subject to FICA taxes.

[15] The reduction in benefits is larger than the cut in the amount savings because beneficiaries not only lose their savings as fees to an insurance company that offers the annuity product, they also lose any interest earned on those savings during their retirement.

[16] Professional management of DB plans also means better diversification of assets (Appell, 2004).

[17] At the same time that more smoothing is allowed, the current practice of credit balances should be eliminated.

[18] While Sperling (2005) suggested a proportional refundable credit plus a phased out matching for lower income earners, CAP (2005) proposed only a proportional refundable tax credit.

[19] The Governor's Task Force for Working Families (2005) recommended the creation of a savings vehicle for working families, dubbed the PennIRA. It would have combined features of PVA and automatic IRAs.

[20] All employees who enrolled after 7/1/01 enter in Class T-D. Previously enrolled employees were given the option to remain at the lower contribution rate in T-C or they could join T-D.

[21] Class AA is all members who began employment after 7/1/01 and all those in Class A who elected to join it.

[22] Enforcement officers, judges, legislators, etc.

[23] Final average salary in PSERS is the average of the three highest salary years, unless the employees are part-time.

[24] The figures here do not adjust for differences in mortality by income. Adjusting for such differences would exacerbate the separate trends (Weller, 2005c).

[25] The methodology is patented under US Patent no. 20050015284.

[26] See MacDonald (2003) for more details.

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