

Meeting California's Retirement Security Challenge

edited by

Nari Rhee

UC Berkeley Center for Labor Research and Education

October 2011

Meeting California's Retirement Security Challenge

edited by

Nari Rhee

UC Berkeley Center for Labor Research and Education

October 2011

ACKNOWLEDGEMENTS

The UC Berkeley Center for Labor Research and Education gratefully acknowledges the support of International Brotherhood of Electrical Workers Local 1245, Service Employees International Union California State Council, and Californians for Retirement Security for this project. We would also acknowledge the following people for their contribution to this volume: Ken Jacobs for editorial guidance, Jenifer MacGillvary for layout and graphic design, and Sylvia Williams for copy-editing and proofreading assistance.

The views expressed in this volume are those of the authors and do not necessarily represent the Regents of the University of California, UC Berkeley Institute for Research on Labor and Employment, UC Berkeley Center for Labor Research and Education, or collaborating organizations or funders.

Table of Contents

1. Introduction: The Coming Age of Retirement Insecurity	4
<i>Jacob Hacker</i>	
2. California Workers' Retirement Prospects	21
<i>Sylvia A. Allegretto, Nari Rhee, Joelle Saad-Lessler and Lauren Schmitz</i>	
3. Life Expectancy in California's Diverse Population: Recent Estimates by Race/Ethnicity and Neighborhood Social Class	42
<i>Christina A. Clarke and Amal Harrati</i>	
4. The Employer Case for Defined Benefit Pensions	57
<i>Beth A. Almeida and Christian E. Weller</i>	
5. Designing a More Attractive Annuitization Option: Problems and Solutions	76
<i>Anthony Webb</i>	
6. High Performance Pensions for All Californians	94
<i>Teresa Ghilarducci</i>	
Author Biographies	113

CHAPTER 1

Introduction: The Coming Age of Retirement Insecurity

by Jacob Hacker

We live in the waning days of the Golden Age of Retirement. Today's retirees are living in a world that is, in a very real sense, already gone: a world of widespread retirement security created by public and private policies that pooled a substantial amount of risk across workers and generations. Unfortunately, their children and especially their grandchildren are coming of age in a fundamentally different world—one that involves much greater individual risk and responsibility and which promises much more unequal retirement prospects. With limited savings and less secure benefits, younger workers face a new world of retirement (in)security.

A generation ago, if a worker had been offered a retirement plan by his or her employer, it would have been a traditional guaranteed pension—also called a Defined Benefit (DB) pension—that looked much like Social Security. Today, those workers who are lucky enough to participate in an employer-sponsored retirement plan are mostly enrolled in Defined Contribution (DC), individual account plans like 401(k)s, in which returns are neither predictable nor guaranteed.

A generation ago, the assumption was that Social Security would provide a strong foundation of retirement planning for decades to come. Today, despite reforms in the late 1970s and early 1980s, the program is projected to run short of the funds necessary to pay full benefits sometime in the next quarter century. And while there are fixes that would preserve the basic structure of Social Security as it currently exists—none of them without trade-offs—there are also calls to fundamentally transform the system by reducing benefits, further raising the retirement age, and converting the program into a system of private accounts.

In these respects and others, retirement security provides a powerful example of a larger economic transformation that I call the “Great Risk Shift.” Over the last generation, economic risk has shifted from broad structures of insurance, whether sponsored by the corporate sector or by government, onto the fragile balance sheets of American families (Hacker, 2008b). As a result, Americans increasingly find themselves on a shaky financial tightrope, without an adequate safety net to catch them if they fall. This shift has occurred across nearly all major facets of Americans’ economic lives—their jobs, their health care, their balancing of work and family, their assets, and, yes, their retirement—and it has fundamentally reworked Americans’ relationships to their employers, their government, and each other.

As sweeping as the Great Risk Shift has been, however, we can chart a different future. To be sure, nothing will quickly reverse decades of erosion in traditional sources of guaranteed retirement income for those who are near retirement. Most private sector employers are loathe to return to DB pensions, and the U.S. faces difficult choices with regard to social insurance programs in an era of increased austerity. And yet the decisions that we as a society make today could usher in a new era of broad retirement security for coming generations of retirees—if our policies are updated to reflect new social and economic realities, and restore broad risk sharing in a way that is both fiscally sustainable and socially equitable. Much of this work must happen at the federal level. At the same time, states can serve, and are serving, as a proving ground for innovative new policies, particularly with regard to retirement savings for private-sector workers.

This volume brings together rigorous academic and policy research in order to inform these choices for California policymakers, employers, and workers. Taken together, the contributions address the following questions. What retirement prospects do California workers face? What are major obstacles for US workers and firms in providing for adequate and secure retirement income? How can state level policies improve retirement prospects for California workers who lack access to an adequate workplace pension?

In order to provide a context for these issues, this Introduction explores why American retirement security as we have come to know it is in peril—why we have transited from the Golden Age to a much more uncertain and unequal world. Central to this story is the replacement of the traditional “three-legged stool” of Social Security, traditional private pensions, and private savings with a much more wobbly “two-legged stool” of Social Security and private savings (both inside and outside of individual DC retirement accounts). The second part of the Introduction considers several alternative responses to the increased shift of retirement-income and health-cost risks onto workers. The final section outlines the research articles in this volume.

1. THE GOLDEN AGE AND ITS DISCONTENTS

To grasp the foundations of the Golden Age requires understanding America’s distinctive public-private system for providing economic security. We often assume that the United States does little to provide economic security compared with other rich capitalist democracies. This is only partly true. The United States does spend less on government benefits as a share of its economy, but it also relies far more on private workplace benefits, such as health care and retirement pensions. Indeed, when these private benefits are factored into the mix, the U.S. framework of economic security is not smaller than the average system in other rich democracies; it is actually slightly larger (Hacker, 2008a). Moreover, private employment-based benefits are extensively subsidized through the tax code—mainly, through the forgiveness of income and payroll taxes on non-cash compensation.¹ With the help of hundreds of billions of dollars in tax breaks, American employers serve as the first line of defense for millions of workers buffeted by the winds of economic change.

From a Three-Legged Stool to a Two-Legged Stool

America’s framework for providing retirement security was historically referred to as a “three-legged stool.” Social Security, private pensions, and personal savings—each “leg” was supposed to

carry an important part of the weight of securing workers' retirement. For lower-income workers, Social Security was far and away the most important leg of the stool, providing a lion's share of retirement income (Frolik & Kaplan, 2010, pp. 282-3). But for middle- and higher-income workers, tax-favored private pensions were assumed to be vital for achieving a secure retirement—especially after the Employee Retirement Income Security Act of 1974 put in place rules designed to ensure that DB pension plans would be properly run, broadly distributed, and secure (Purcell & Staman, 2009).

The problem is that this unique employment-based system is coming undone, and in the process, risk is shifting back onto workers and their families. As recently as 25 years ago, more than 80% of large and medium-sized firms offered a DB pension; today, less than a third do, and the share continues to fall (Langbein, 2006). Companies are rapidly "freezing" their defined-benefit plans (that is, preventing new workers from joining the plan) and shifting them over to alternative forms (such as the so-called cash-balance plan) that are more like 401(k)s. For workers fortunate enough to participate in an employer sponsored retirement plan, 401(k) plans have become the default vehicle for private retirement savings.

The expansion of 401(k)s has not led to an overall increase in employer sponsored retirement plan coverage. Instead, 401(k)s have largely substituted for traditional pension plans, and the share of workers offered any plan at their place of work has actually declined. In 1979, just over half of private wage and salary workers aged 18–64 who worked half-time or longer were covered by an employer sponsored retirement plan. Thirty years later, the share had fallen to less than 43% (Economic Policy Institute, 2011). For younger private workers, even college-educated workers, traditional pensions are essentially unavailable; they are lucky if they have access to a 401(k).

The one exception to this story is, of course, the public sector, where DB pensions remain the norm—almost certainly because of the much higher rates of unionization in the public sector than in the private sector (Munnell, Haverstick, & Soto, 2007, pp. 2-3). Recently, these pensions have become a source of controversy for two reasons. First, in part because of the severe downturn of 2007–2008, many states' plans are substantially under-funded (Dalton, 2011). The scale of this shortfall is frequently overstated and funding ratios have improved with recovering stock values. But states will nonetheless have to increase contributions to plans going forward (which currently represent a little less than 4% of state expenditures) or reduce future outlays (which is difficult given union contracts) to achieve adequate funding (Lav & McNichol, 2011, pp. 3-4). It is crucial to note, however, that "state and local plans do not face an immediate liquidity crisis; most plans will be able to cover benefit payments for the next 15–20 years" (Munnell, Aubry, & Quinby, 2010, p. 14).

The second reason for controversy is more political than economic. As private DB pensions have disappeared, the argument that the public sector should follow suit becomes increasingly powerful. Yet assessing the virtue of such a shift requires examining the shortcomings of 401(k)s and other DC plans alongside the financial problems faced by public DB plans.

401(k) plans are not "pensions" as that term has been traditionally understood, i.e., a fixed benefit in retirement. They are essentially private investment accounts sponsored by employers. As a result, they greatly increase the degree of risk and responsibility placed on individual workers in retirement planning.

Traditional DB plans are generally mandatory and paid for largely by employers (in lieu of cash wages) (Frolik & Kaplan, 2010, p. 361-363). Thus, they represent a form of forced savings. DB plans are also insured by the federal government and heavily regulated to protect participants against

mismanagement (Ibid.). Perhaps most important, their fixed benefits protect workers against the risk of market downturns and the possibility of living longer than expected (so-called longevity risk) (Broadbent, Palumbo, & Woodman, 2006).

None of this is true of DC plans. Participation is voluntary, and many workers choose not to participate or contribute inadequate sums (Munnell & Sundén, 2006, pp. 2-3). Plans are not adequately regulated to protect against poor asset allocations or corporate or personal mismanagement (see Stabile, 2002). The federal government does not insure DC plans, and DC accounts provide no inherent protection against market or longevity risks (Jefferson, 2000). Indeed, some features of DC plans—namely, the ability to borrow against their assets, and the distribution of their accumulated savings as lump-sum payments that must be rolled over into new accounts when workers lose or change jobs—exacerbate the risk that workers will prematurely use retirement savings, leaving inadequate income upon retirement. Perversely, this risk falls most heavily on younger and less highly paid workers, the very workers most in need of protection.

As DB pensions vanish, Social Security is the only guaranteed pension left for the vast majority of private sector workers. Yet the role of Social Security has declined in the last 20 years. The wealth represented by expected Social Security benefits fell in the 1980s and 1990s, due both to the maturation of the program and cutbacks that occurred in the late 1970s and early 1980s (Wolff, 2002). Looking forward, Social Security is expected to replace a smaller share of pre-retirement income than it did in the past (CBO, 2005). That is true even if Social Security pays promised benefits—an assumption that is safer than many believe but still hinges on favorable economic and demographic trends and some adjustments in the program (Ibid.; Sanders, 2011; AARP, 2010).

In essence, we have moved from the traditional three-legged stool of retirement security to a much more wobbly two-legged stool—Social Security and private savings (inside and outside of 401(k)s). Rather than enjoying the protections of pension and retiree health plans that pool risk broadly, Americans are increasingly facing these risks on their own. The greatest impact has been on the middle class, which relied much more heavily on DB pensions than either poor or affluent households. As private risk protections have eroded, in short, retirement savings has become at once less equal and more risky.

Unequal Retirement

Public and private pensions were designed to provide a secure retirement income after a lifetime of labor—once only the province of the best-off workers—through a public-private partnership that included even workers of modest means. Today, Social Security still provides a guaranteed foundation of retirement security for low- and middle-income workers. But private employer sponsored retirement plans no longer provide the risk protections they once did to a large chunk of less-affluent households. Moreover, private retirement savings are virtually nonexistent among moderate-income families.²

This is not a coincidence. The incentives for higher-income Americans to save have ballooned with the expansion of tax-favored investment vehicles like 401(k)s. But because the tax breaks for these benefits are skewed toward higher-income Americans, most Americans receive modest benefits from these costly tax breaks. In 2011, tax breaks for retirement pensions and accounts cost the federal government over \$140 billion in forgone tax revenue. Roughly 80% of these tax subsidies for retirement saving accrue to the top 20% of the population. Only 7% accrue to the bottom 60% of the population (Hanlon, 2010).

The reasons for this stark disparity are threefold. First, lower-income Americans face much lower marginal tax rates, making tax exclusions and deferments worth much less to them. Second, lower-income Americans are least likely to have access to tax-favored accounts (and low-wage employers have less reason to provide such accounts, because the tax advantages for their workers are so much more limited). And third, lower-income Americans have the least discretionary income to contribute to tax-favored accounts. Living paycheck to paycheck, they need the greatest incentive and assistance to save. Instead, the tax benefits for retirement are structured so that they provide the greatest rewards to higher-income workers (Ibid.).

These skewed incentives are reflected in 401(k) account balances. It is often claimed that the “average” American has tens of thousands of dollars in their 401(k), but in fact, roughly three-quarters of account holders have less than the widely cited average of \$60,000 (Van Derhei, Holden, Copeland, & Alonso, 2007, p. 13). The median among account-holders is less than \$20,000 (Ibid., p. 15). Additionally, all these figures include only those who *have* 401(k)s; only half of workers have access to a DC plan and only around a third contribute to one (Dietz, 2006). Overall, around 70% of DC plan and IRA assets are held by the richest fifth of Americans (Progressivity and Savings, 2004).

Much ink has been spilled comparing the returns of 401(k)s and old-style pensions. But the central issue for retirement security is not the return, but the risk. Retirement wealth has not only failed to rise for millions of families; it has also grown more risky, as the nation has shifted more of the responsibility for retirement planning from employers and government onto workers and their families.

Risky Retirement

The private retirement fortunes of all but today’s oldest workers are dependent on the fate of 401(k)s. This means, in turn, that private retirement fortunes are dependent on the future of financial markets. As the recent gyrations of the stock market reveal, financial markets provide an inherently risky basis for retirement planning.

To be sure, there is nothing that requires that 401(k)s be invested in stocks. Workers are free to buy bonds or a conservative mix of stocks and bonds, and indeed, a significant share of workers invest their 401(k)s too conservatively for their age (not surprisingly, these tend to be lower-income workers) (Munnell & Sunden, 2004, pp. 75-77). Still, stocks do deliver a higher overall return (Uccello, 2000, pp. 10, 14). The problem is that this return comes with higher risk, and 401(k)s place all of this higher risk on workers, offering little of the investment guidance and none of the protections against economic loss that are inherent in DB pensions.

The risks posed by 401(k)s go beyond investment risks to encompass nearly all of the managerial and savings responsibilities imposed on workers. Indeed, by far the greatest problem posed by 401(k)s is the simplest—they encourage insufficient savings. This contrasts with DB pensions. Because of their typical universality within workplaces and usually substantial employer contributions, DB pensions represent a powerful form of forced prefunding of retirement. Savings in 401(k)s, by contrast, are much more spotty, even when workers have them and employers match their contributions. Bluntly put, leaving virtually all contribution and investment decisions to workers is a recipe for retirement income shortfalls. As behavioral economists have extensively documented, workers “are slow to join advantageous plans, make infrequent changes, and adopt naïve

diversification strategies” that leave them without enough income on which to retire (Thaler & Benartzi, 2007, pp. 16-17).

A telling example of the risks is provided by one of the most distinctive features of DC plans: the ability of workers to take their account balance as a “lump sum” (that is, in the form of cash) when they leave an employer. This benefits workers who change jobs frequently—but only if they save the money. Unfortunately, “[t]he vast majority of people who receive lump sum distributions do not roll over the funds into qualified accounts” (Burman, Coe, & Gale, 2001, p. 4), such as IRAs and other 401(k)s—despite the fact that they must pay taxes on all their benefits, as well as a penalty of 10% if they are younger than 55 (p. 1).

A clue to the source of this seemingly irrational behavior is provided by research on what affects workers’ use of lump sum distributions. Workers who are laid off are nearly 47% less likely to roll over their distributions (Engelhardt, 2003, pp. 333, 337). Workers who relocate to get a new job are 50% less likely to roll over their contributions; workers who leave work to care for a family member are 77% less likely (Ibid., p. 337). “Overall,” as one economist concludes, “the evidence suggests that [DC] pension assets have been used to buffer economic shocks to the household” (Ibid., p. 334). Workers are beggaring long-term retirement security to deal with short-term shocks.

Finally, it is not so easy to turn a retirement account into a lifetime guaranteed income of the sort that Social Security and DB pensions provide. To protect oneself against this risk requires purchasing an annuity. Yet most people do not use their 401(k) accounts to buy an annuity—in part because of inherent weaknesses of the annuity market, in part because their balances are too small to make the transaction worthwhile, and in part because they discount the possibility that they will outlive their assets (Restoring Retirement Security, 2008).

The Fallout

The true effects of the 401(k) revolution on income in retirement have yet to be seen. We will only know them with certainty when today’s younger workers start retiring. But even before the recent economic downturn, the signs were troubling. Among Americans aged 64–74 in 2005 (that is, born between 1931 and 1941), nearly a third lost 50% or more of their financial wealth between 1992 and 2002—a rate of wealth depletion that will soon leave them confronting a complete exhaustion of their assets, a much-reduced standard of living, or both. The rate of wealth depletion was even higher among those who reported they were in poor health (Copeland, 2005, p. 18).

At the same time, debt is a rapidly growing among families with heads of household older than 55. Between 1992 and 2007, the median debt level among older families with debt rose from \$15,923 to \$43,000 (in 2007 dollars), with the largest percentage increase occurring among the oldest of the aged (75 or over). The share of older families with debt also rose substantially—from 54% to 63% (Copeland, 2009, pp. 2-3).

A significant part of this rise is represented by credit-card debt—the most costly form of credit for most consumers. During the 1990s, credit-card debt grew by around half among all consumers, but it grew by 200% among seniors aged 65–69. Research on the cause is limited, but the basic realities are clear: relatively fixed and modest incomes alongside rapidly rising medical costs. In addition, during this recent severe downturn, many older Americans found themselves in the position of providing financial support to their children (Harkness, 2010).

These results suggest that while much attention has been paid to the accumulation of assets *for* retirement, far less has been devoted to the issue of how Americans manage their assets *in* retirement. DB pensions and Social Security ensure that workers receive a relatively stable income as long as they live. There are no such guarantees when it comes to IRAs and 401(k) plans, and there is every reason to think that many retirees will exhaust their accounts well before they die (Brown, 2000, p. 2).

The other side of the coin of wealth depletion is asset accumulation—and retirement savings in 401(k)s—is, ironically, both inadequate and excessively at risk. The risk of market volatility has been driven home by the stock-market gyrations of recent years. Just between mid-2007 and October 2008, an estimated \$1 trillion in retirement wealth was lost in 401(k)s and individual retirement accounts (The Effects of Recent Turmoil, 2008). A 2009 survey found that two-thirds of adults aged 50–64 years lost money in mutual funds, individual stocks, or 401(k) accounts, with the vast majority losing more than 20% of their investments; most who had no losses had no investments (Morin & Taylor, 2009).

To be sure, we cannot yet know how sustained these losses will be. After all, the market has recovered markedly since the stock market downturn of 2007 and 2008. Moreover, those nearing retirement are potentially the most vulnerable to market risks insofar as they have the least time to recover losses before they retire. The point is that market volatility is a serious threat to retirement security, and coping with it is left almost entirely up to 401(k) holders. As with rising debt levels of the aged, what we know is that even among those with at least one foot in the Golden Age of retirement, retirement insecurity is becoming more common.

What we also know is that these signs of strains are only the tip of an emerging iceberg, for they appear amid a long term decline in the retirement-preparedness of younger Americans. According to researchers at Boston College (Munnell, Webb, & Golub-Sass, 2009), the share of working-age households that are at risk of being financially unprepared for retirement at age 65 has risen from 31% in 1983 to 43% in 2004, and a projected 51% in 2009. Younger Americans are far more likely to be at risk than older Americans: roughly half of those born from the mid-1960s through the early 1970s are at risk of being financially unprepared, compared with 35% of those born in the decade after World War II. In every age group, low-income Americans are the least financially prepared.

2. RESTORING RETIREMENT SECURITY

The promise of private retiree benefits at their heyday was a secure retirement income that, when coupled with Social Security, would allow older Americans to spend their retired years in relative comfort. That promise is now in grave doubt. But reforms could strengthen social security and make private retirement accounts work better as a source of secure retirement income for ordinary workers and their families—in a way that is consistent both with Americans' basic priorities for retirement policy and with the imperatives of long term fiscal responsibility.

Strengthening Social Security

In the context of the financial crisis and increased private risk-bearing, securing our one guaranteed system of retirement security, Social Security, is all the more essential. To do this, however, will require addressing Social Security's funding shortfall. Although the program has run a surplus

since the early 1980s, it will soon start drawing down this surplus—which requires remitting special bonds held by the program (and thus will increase strains on the rest of the federal government) (Frolik, 2008). If no changes are made in the program, it is projected to be able to pay around three-quarters of promised benefits after the mid-2030s (Social Security and Medicare Board of Trustees, 2010). This is a far cry from bankruptcy, but it does require changes to the program to place it on a stronger long-term foundation.

The last two decades have been consumed by a debate over “privatization” of Social Security—that is, its whole or partial replacement by mandatory individual savings accounts (see generally Ferrara and Tanner, 1998; Tanner, 2004). Private accounts by themselves, however, would make Social Security’s finances worse not better. This is because Social Security is a pay-as-you-go system, with younger workers’ contributions to the program financing benefits for current retirees. If these contributions were instead diverted into private accounts, the funds needed to pay promised benefits would have to come from somewhere else, or, more precisely, from new taxes, new benefits cuts, new borrowing, or some mix of the three. The only way to pay these “transition costs” is to take something away from someone—retirees in the form of lower benefits, all Americans in the form of higher taxes or reduced spending on other valued ends, or future generations in the form of new government debt.

Even more important, privatization proposals would seriously undermine Social Security’s role as an insurance program. The program was originally designed to pool risk across millions of citizens and use the power of government to guarantee against the major threats to family income during retirement. It offers a guaranteed benefit that is more generous to families with low lifetime incomes, to families whose heads are disabled or pass away, and to those who have the good fortune to live a long time after retirement (elderly widows are the chief example) (Hacker, 2008b, p. 132). The program also protects all families against the risk of large drops in their assets due to stock market or housing price instability, as well as the risk of unexpected inflation, which can devastate families on fixed incomes (Marmor and Mashaw, 2001).

In contrast, privatization would replace guaranteed benefits with the returns on workers’ accounts, which could vary greatly from person to person. Those disabled before retirement, those who end up living a long time after retirement, those with low incomes, those who retire when the stock market drops—all might end up with less than they would have enjoyed had they received the guaranteed benefit. In short, a social insurance program would be replaced by a system that shifted much more risk onto the shoulders of individual workers and their families, which is precisely the transformation that has taken place in the private sector with such negative consequences for retirement income and security.

Fortunately, dealing with the future financial threats to Social Security does not require abandoning the core elements of the program: guaranteed lifetime benefits paid on retirement, provided as a right, and linked to lifetime earnings. The funding shortfall within the program—substantial, but hardly insurmountable—could be closed by making Social Security benefits and the payroll taxes that fund them modestly more progressive and by tying benefits to future longevity so that fortunate generations that live longer than the last receive slightly less from the program than now promised (see, e.g., Diamond & Orszag, 2005).

What this means in detail should be up for debate, but four important considerations should guide these discussions. First, the early retirement age for Social Security (now 62) should only be

raised in tandem with increased longevity of the least advantaged workers. This is because most of the gains in average life expectancy over the last generation have been enjoyed only by higher-wage workers, while less affluent workers are not living markedly longer than they used to (Manchester and Topoleski, 2008). Absent an increase in early retirement age, moreover, raising the age at which full benefits are received (now 65 and slated to rise to 67 in future years) amounts simply to a blunt cut in benefits, since workers can receive reduced benefits before the normal retirement age (SSA, 2011).

Second, the financing of Social Security should be made more progressive. As wages have grown more unequal over the last generation, more and more of the highest wages are exempt from the Social Security payroll tax—which is capped at around \$100,000 in annual earnings (SSA, 2010). Because of the progressive benefit structure (high-income workers receive the lowest rate of return from the program), raising the cap results in far more revenue flowing into the program than new spending on benefits. In fact, eliminating the payroll tax cap would by itself close the long-term Social Security funding shortfall (Reno and Lavery, 2005). Removing the cap completely would weaken the link between contributions and benefits and likely create substantial opposition from high-income taxpayers. Nonetheless, it should be significantly raised.

Third, there is a strong case for taxing capital income as well as wage income—as was recently done for the Medicare portion of the payroll tax, which, importantly, is not capped like the Social Security tax (Frolik & Kaplan, 2010, p. 58). Another alternative would be to dedicate a portion of a restored estate tax, one that would tax a larger portion and share of the richest estates than the current tax, to Social Security's long-term financing.

Finally, serious consideration should be given to investing a portion of the Social Security trust fund in private equities. Certainly, there are risks to direct public investment in the stock market. Other countries, however, have successfully created models for passive investment that have allowed them to increase the returns of the prefunded portions of their system (Social Security Privatization, 1999). The advantage of such pooled investment—which is similar to what traditional DB pensions do, but on a broader scale and with a much greater capacity to spread risk—is that it allows for the diversification of market risk, both across individuals and over time, something that cannot be done with voluntary private accounts.

Strengthening the Private Retirement Savings System

Even with a secure Social Security system, today's workers will need other sources of income in retirement. Yet 401(k)s as they are presently constituted are not the solution. Too few workers are offered them, enroll in them, or put adequate sums in them—a reflection of perverse incentives built into their very structure—and they place too much of the risk of retirement planning onto individuals, with too little information and insurance to help families build a secure retirement.

At the federal level, proposals for reform fall into three main camps: incremental fixes to 401(k)s at one end, complete replacement of 401(k)s with an alternate tier of mandated savings in a federally sponsored program at the other end, and large-scale 401(k) reform in the middle of the spectrum.

The incremental approach is exemplified by the Pension Protection Act of 2006, which tried to encourage employers to automatically enroll their workers in 401(k)s.³ The research is clear that workers required to opt out of 401(k)s rather than opt in are much more likely to participate in plans

(Randall, 2009). So far, however, results of the Act have been mixed, with surprisingly few employers adopting automatic enrollment (See Brown, 2010). Moreover, automatic enrollment does little to address other key concerns with 401(k)s, including the skewed tax subsidies for them, low contribution rates, leakage from the system due to lump-sum distributions, and, most fundamental of all, the reality that many employers do not offer a 401(k) at all.

On the other side of the spectrum, thoughtful pension experts have proposed to replace tax breaks for private retirement accounts with a system of mandatory, government managed accounts with a guaranteed rate of return that would supplement Social Security, forming a “second tier” of compulsory retirement savings (Munnell, 2009, pp. 23-24; see also Ghilarducci, this volume). Contributions would be mandatory, but unlike Social Security, benefits would be fully prefunded and there would be no redistribution from high-income to low-income workers. Most proposals in this category call for converting today’s regressive tax subsidies into a flat credit deposited into workers’ accounts in order to more effectively help low- and middle-wage workers save. Cash-out would be prohibited or highly restricted. Like Social Security, spouses would legally share benefits. These proposals generally envision that 401(k)s would gradually cease to exist, or become a tertiary tier for more affluent households to save additional sums without the benefit of guaranteed returns or tax subsidies.

Besides their mandated contributions, two key features of these proposals require mention. First, while workers could see their individual account balances, their funds would be pooled and invested by professionals rather than individually managed by workers themselves. Second, workers’ savings would be partially or fully protected from the risk of market fluctuations through a guaranteed rate of return, with the government bearing market risk. The risk depends on the level and extent of the guarantee, and there is some debate about how to value that risk. Proponents argue that this risk must be weighed against the consequences if a large number of workers retire without having adequate income.

In terms of large-scale 401(k) reform, there have been several proposals for “universal 401(k)s” that have received substantial notice in recent years (Center for American Progress, 2011). My own, more robust version of such a proposal (Hacker, 2008; Hacker, 2011) would allow all workers to save in a single account throughout their working life, whether or not their employer offers a traditional pension plan. Employers would be encouraged to match employer contributions to these 401(k)s, and government could provide special tax breaks to employers that offered better matches to lower-wage workers. The plan features automatic enrollment, and a default contribution rate sufficient to finance retirement along with Social Security. Existing tax breaks for 401(k)s would be replaced with a flat retirement savings credit that would be placed in the accounts of all workers. Workers would contribute to this plan with after-tax dollars, and earnings on these contributions would not be taxed until withdrawals were made (Medill, 2011, pp. 104-5).

Unlike the present system, these universal 401(k)s would be governed by the same rules that now protect traditional pension plans against excessive investment in company stock. Moreover, the default investment option would be a low-cost index fund with a mix of stocks and bonds that automatically shifts over time as workers age to limit market risk as workers approach retirement—commonly known as a target or life-cycle fund. To help workers plan ahead, moreover, 401(k) balances would be reported to account holders not simply as a cash sum, but also a monthly benefit

amount that workers would receive when they retired if they had average life expectancy—just as Social Security benefits are reported.

3. CALIFORNIA'S RETIREMENT SECURITY CHALLENGE

Because Social Security and 401(k)s are based in federal policy, meaningful policy reform to strengthen workers' retirement security must happen at the national level. Nonetheless, states can serve as important laboratories for policy innovation, as well as contribute to a better retirement security framework with their own policies. States and local governments have a huge stake in improving workers' retirement income prospects, not least because declining retirement security among older Americans is likely to greatly strain state and local budgets in the coming decades.

With the national context laid out, the remainder of this volume looks at the retirement security challenge for state policymakers and stakeholders,

The first two articles provide critical original data analysis on California retirement realities. In "California Workers' Retirement Prospects," Sylvia Allegretto, Nari Rhee, Joelle Saad-Lessler, and Lauren Schmitz analyze official data on California residents to profile income and poverty among current retirees, identify workplace retirement plan coverage trends, and project workers' retirement income prospects. They find that Social Security provides a critical buffer against poverty among today's retirees, but that the retirement future of the state's workforce appears bleak. Less than half of civilian workers are covered by any kind of employer sponsored retirement plan at their primary job, and most of this group is covered by a 401(k) type plan. Startlingly, nearly half of today's workers will be poor or near-poor if they retire at age 65, given current patterns in workplace retirement plan coverage, earnings, savings, and debt. This has profound implications for the state of California.

Some argue that the solution to this dilemma, and to rising pension and social insurance costs for employers and government, is for workers to delay retirement well into their late 60s. Such proposals are founded on increasing average life expectancy. At the same time, the length of time that a worker can expect to live past his or her working years has direct bearing on the quality of life in retirement. Christina A. Clarke and Amal Harrati review a substantial body of research demonstrating that life expectancy gains have unevenly distributed, and that there is a widening longevity gap by race, education, and income. They present original research highlighting marked inequality in mortality by race and class (as measured by neighborhood socioeconomic status) among California residents, a pattern that holds not just at birth but during prime working years and at retirement age. Racial differences in life expectancy are most pronounced between Asians and Blacks. The authors also find that socioeconomic disparities in life expectancy are marked among Whites and among Blacks; and that though this class difference diminishes between birth and adulthood, it persists to a significant degree at ages 45 and 65. In other words, the number of years that a California worker can expect to live after prime working age and after age 65 varies significantly depending on his or her race and socioeconomic status. This is a critical factor that needs to be considered in the retirement age debate.

In light of the shortcomings of the current system of providing for retirement security, the next three articles in this volume explore various solutions through which workers' retirement income can be improved.

In “The Business Case for Defined Benefit Pensions,” Beth A. Almeida and Christian E. Weller outline the labor market reasons for employers to favor DB pensions and—in light of the the sharp decline DB pensions in the private sector—explores plan design features that could make them more attractive to employers. They review research on labor recruitment, retention, and productivity and DB pensions, concluding that the deferred compensation structure of DB pensions may help employers recruit workers who are more likely to be loyal and to support the organizational mission; keep employees in mid-career, when they are most productive; and encourage older, less productive employees to exit at the right time for the employer. They identify key plan features that could facilitate employer support for DB pensions and which advantage multi-employer and public sector pensions: stand-alone entities separated from employer operations, regular contributions, and economies of scale. They observe that DB pension coverage could be expanded via a coordinating mechanism that aggregates private employers into similarly structured plans.

In “Designing a More Attractive Annuitization Option: Problems and Solutions,” Anthony Webb addresses the problem of converting individual account balances into a secure income stream and assesses the potential role of annuities in a publicly sponsored retirement plan. While traditional pensions provide lifelong monthly benefits to workers, 401(k)s provide lump sums. Workers could theoretically convert some or all of their account balance into a lifelong income stream by purchasing annuities from private insurance carriers, but these annuities are unattractively priced for individuals who anticipate living to average life expectancy for their age and gender. Webb highlights the reasons for market failure in private annuities, and considers the value of annuitization to low-wage workers, most of whose retirement wealth is already annuitized through Social Security and who may not expect to live very long. He argues that a publicly sponsored retirement savings program could offer more attractive returns on annuities by creating a group annuity market and reducing administrative costs.

Finally, in “High Performance Pensions for All Californians,” Theresa Ghilarducci proposes two new policies with which the State of California could help private sector workers lacking a pension meet three key goals of retirement security policy: adequate savings, managed investment risk, and steady lifelong income during retirement. The first policy is to establish California Guaranteed Retirement Accounts (CGRAs), which would provide a guaranteed average real return of 2–4% on contributions and offer low-cost annuities. Ghilarducci argues that this is best done through a large, established public pension fund like CalPERS or CalSTRS that already has economies of scale and investment expertise, although a more feasible route might be to have the Treasurer’s Office administer a plan through private financial firms, with the state offering a guaranteed return investment vehicle as an option to workers if it is willing to bear a degree of risk. Based on a Monte Carlo scenario using historical financial market data, Ghilarducci argues that a real return of 3% runs minimal risk to the state of ever having to use general revenues to pay CGRA benefits. The second policy is to replace state income tax deductions for retirement contributions with a flat \$145 tax credit towards every worker’s retirement savings, at no extra expense to the State of California, in order to create a fairer tax subsidy that encourages broader retirement savings participation.

4. CONCLUSION

Over the last generation, America's public-private framework for providing retirement security has come undone. The "three-legged stool" of retirement security (Social Security, private defined-benefit pensions, and private savings) has given way to a much less stable two-legged stool (Social Security and private savings) that is also being forced to bear the increasing burden of health care costs in old age. It is fashionable to say that these changes are inevitable, that they reflect inexorable demographic and budgetary challenges that dictate ever more risk-shifting onto Americans. This is false. The picture of retirement that we see today is indeed a vision of the past. If we do not act, future retirees will face a more unequal and risky retirement than do those living in the waning days of the Golden Age of Retirement. But that does not mean that we cannot develop a new image of retirement for the future that, like the old, provides people with the means to enjoy broad economic security both during their working lives and during retirement.

* * *

Endnotes

¹ See 26 U.S.C. §§ 105(b), 106(a) (2010); and Joint Committee on Taxation (2008, 14).

² According to a recent analysis of families with earnings between two and six times the federal poverty level (\$40,000 to \$120,000 for a family of four) and headed by working-age adults, more than half of middle-class families have no net financial assets whatsoever, excluding home equity, and nearly four in five middle-class families do not have sufficient non-housing assets to cover three-quarters of essential living expenses for even three months should their income disappear. Essential living expenses include food, housing, clothing, transportation, health care, personal care, education, personal insurance, and pensions (Wheary, Shapiro, and Draut, 2007).

³ The Money Alert, Pension Protection Act overview. Retrieved March 10, 2011 from <http://www.themoneyalert.com/PensionProtectionAct.html>.

References

- AARP. (2010, Jun. 23). *Our right: Keeping Social Security strong*. Washington, DC: AARP. Retrieved from http://www.aarp.org/work/social-security/info-08-2009/keeping_Social_Security_strong.html?cmp=RDRCT-STRSS_JUN23_010.
- Bartlett B. (2009, May 14). The 81% tax increase. *Forbes.com*. Retrieved from <http://www.forbes.com/2009/05/14/taxes-social-security-opinions-columnists-medicare.html>.
- Broadbent, J., Palumbo, M., & Woodman, E. (2006, Dec.). The shift from defined benefit to defined contribution pension plans: Implications for asset allocation and risk management. Commission on Global the Financial System Working Paper. Retrieved from <http://www.bis.org/publ/wgpapers/cgfs27broadbent3.pdf>.
- Brown, J.R. (2000). How should we insure longevity risk in pensions and Social Security? Chestnut Hill, MA: Center for Retirement Research at Boston College. Retrieved from http://crr.bc.edu/images/stories/Briefs/ib_4.pdf.

- Brown, S. K. (2010, Jun.). Automatic 401(k) plans: Employer views on enrolling new and existing employees, Executive Summary. Washington, DC: AARP. Retrieved from <http://assets.aarp.org/rgcenter/econ/auto401k.pdf>.
- Burman, L.E., Coe, N.B., & Gale, W.G. (2001). What happens when you show them the money: Lump sum distributions, retirement income security and public policy. Washington, DC: Urban Institute. Retrieved from http://www.brookings.edu/papers/2001/0103saving_gale.aspx.
- Center for American Progress. (2011). 15 new ideas: Universal 401(k). Retrieved Mar. 10, 2011 from <http://www.americanprogress.org/projects/15newideas/pensions.html>.
- Congressional Budget Office. (2005). Updated long-term projections for Social Security. Retrieved from <http://www.cbo.gov/ftpdocs/60xx/doc6064/03-03-LongTermProjections.pdf>.
- Copeland, C. (2005, Jan.). Changes in wealth for Americans reaching or just past normal retirement age. EBRI Issue Brief No. 227. Washington, DC: Employee Benefit Research Institute. Retrieved from <http://www.ebri.org/pdf/briefspdf/0105ib1.pdf>.
- Copeland, C. (2009, Oct.). Debt of the elderly and near elderly, 1992–2007. *Notes*, 30(10), 2–14. Washington, DC: Employee Benefit Research Institute. Retrieved from http://www.ebri.org/pdf/notespdf/EBRI_Notes_10-Oct09.DebtEldly.pdf.
- Dalton, M. (2011, Jan. 28). Crisis forces look at pension reforms. *Wall Street Journal*. Retrieved from <http://online.wsj.com/article/SB10001424052748704721104576106870540913668.html>.
- Diamond, P.A., & Orszag, P.R. (2005). Saving Social Security: The Diamond-Orszag Plan. *The Economists' Voice*, 2(1), 3–4. Retrieved from http://www.brookings.edu/papers/2005/04saving_diamond.aspx.
- Dietz, E. (2006, Apr. 26). Access to defined contribution retirement plans among workers in private industry, 2005. Bureau of Labor Statistics. Retrieved from <http://www.bls.gov/opub/cwc/cm20060425ch01.htm>.
- Economic Policy Institute. (2011). Retirement security eroding: Private-sector, employer-provided pension coverage, 1979–2009. Retrieved September 9, 2011 from <http://www.stateofworkingamerica.org/charts/view/202>.
- The effects of recent turmoil in financial markets on retirement security: Hearing before the House Committee on Education & Labor, 110th Cong. 2 (2008) (Statement of Peter R. Orszag). Retrieved from <http://www.cbo.gov/doc.cfm?index=9864>.
- Engelhardt, G. (2003). Reasons for job change and the disposition of pre-retirement lump-sum pension distributions. *Economic Letters*, 81(3), 333–339.
- Ferrara, P.J., & Tanner, M.D. (1998). *A New Deal for Social Security*. Washington, DC: Cato Institute.
- Frolik, L.A. (2008). Core values in conflict. *Elder law: Economic planning for the golden years: Symposium issue. Phoenix Law Review* 1(2).
- Frolik, L.A. & Kaplan, R.L. (2010). *Elder Law in a Nutshell*. St. Paul, MN: West Group.
- Hacker, J. S. (2008a). *The Divided Welfare State: The Battle over Public and Private Benefits in the United States*. Cambridge: Cambridge University Press.
- Hacker, J. S. (2008b). *The Great Risk Shift: The New Economic Insecurity and the Decline of the American Dream*. Oxford: Oxford University Press.

- Hacker, J. S. (2011). Restoring retirement security: The market crisis, the “Great Risk Shift,” and the challenge for our nation. *Elder Law Journal*, 19(1).
- Hanlon, S. (2010, Mar. 7). *Tax expenditure of the week: Tax-free retirement savings*. Center for American Progress. Retrieved from http://www.americanprogress.org/issues/2011/01/te_011911.html.
- Harkness, D.S. (2010). The Credit Card Act of 2009: Welcome relief or too little, too late for vulnerable seniors? *Banking and Financial Services Policy Report*, 29(9), 12-22. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1748560.
- Jefferson, R. (2000). Rethinking the risk of defined contribution plans. *Florida Tax Review*, 4(9), 607-683.
- Joint Committee on Taxation (1979). General Explanation of the Revenue Act of 1978 (H.R. 13511, 95th Congress, Public Law 95-600). Joint Committee Print. Washington, DC: U.S. Government Printing Office.
- Joint Committee on Taxation. (2008). Estimates of federal tax expenditures for fiscal years 2008-2012. Publication No. JCS-2-08. Washington, DC: U.S. Government Printing Office. Retrieved from <http://www.gpo.gov/fdsys/pkg/CPRT-110JPRT45156/html/CPRT-110JPRT45156.htm>.
- Langbein, J.H. (2006, Apr.). Understanding the Death of the Private Pension Plan in the United States (unpublished manuscript).
- Lav I.J. & McNichol, E. (2011, Jan. 20). Misunderstandings regarding state debt, pensions, and retiree health costs create unnecessary alarm: Misconceptions also divert attention from needed structural reforms. Washington, DC: Center on Budget and Policy Priorities. Retrieved from <http://www.cbpp.org/files/1-20-11sfp.pdf>.
- Manchester, J. & Topoleski, J. (2008, Apr. 17). Growing Disparities in Life Expectancy. CBO Economic and Budget Issue Brief. Washington, DC: Congressional Budget Office. Retrieved from http://www.cbo.gov/ftpdocs/91xx/doc9104/04-17-LifeExpectancy_Brief.pdf.
- Marmor, T.R. & Mashaw, J.L. (2001). The future of entitlements. In J. Krieger & M.E. Crahan (Eds.), *The Oxford Companion to Politics of the World* (pp. 246-248). New York: Oxford University Press.
- Medill, C.E. (2011). *Introduction to Employee Benefit Law: Policy and Practice*. West Academic Publishing.
- Morin, R. & Taylor, P. (2009, May 14). Not your grandfather’s recession—literally: Different ages, different downturns. Washington, DC: Pew Research Center. Retrieved from <http://pewresearch.org/pubs/1223/not-your-grandfathers-recession-literally>.
- Munnell, A. H. & Sundén, A. (2004). *Coming Up Short: The Challenge of 401(k) Plans*. Washington, DC: Brookings Institution Press.
- Munnell, A. H. & Sundén, A. (2006, Mar.) 401(k) plans are still coming up short. CRR Issue Brief No. 43. Chestnut Hill, MA: Center for Retirement Research at Boston College. Retrieved from http://crr.bc.edu/images/stories/Briefs/ib_43.pdf.
- Munnell, A. H. (2009). Bigger and better: Redesigning our retirement system in the wake of the financial collapse. In *Shared Responsibility, Shared Risk: Government, Markets, and Social Policy in the Twenty First Century*. Berkeley, CA: Berkeley Center on Health, Economic, and Family Security. Retrieved from http://www.law.berkeley.edu/files/chefs/10.16.09_Presenters_Research_Summary_Pamphlet.pdf.

- Munnell, A.H., Aubry, J.P., & Quinby, L. (2010). Public pension funding in practice. NBER Working Paper No. 16442. Washington, DC: National Bureau of Economic Research. Retrieved from <http://www.nber.org/papers/w16442.pdf>.
- Munnell, A.H., Haverstick, K. & Soto, M. (2007). Why have defined benefit plans survived in the public sector? Chestnut Hill, MA: Center for Retirement Research at Boston College. Retrieved from http://crr.bc.edu/images/stories/Briefs/slp_2.pdf.
- Munnell, A.H., Webb, A., & Golub-Sass, F. (2009). The National Retirement Risk Index: After the crash. CRR Issue Brief No. 9-22. Chestnut Hill, MA: Center for Retirement Research at Boston College. Retrieved from http://crr.bc.edu/images/stories/Briefs/IB_9-22.pdf.
- Progressivity and savings: Fixing the nation's upside-down incentives for savings: Hearing before the House Committee on Education & the Workforce, 108th Cong. 5 (2004) (Testimony of Peter R. Orszag). Retrieved from <http://www.brookings.edu/views/testimony/orszag/20040225.pdf>.
- Purcell, P. & Staman, J. (2009). Summary of the Employee Retirement Income Security Act. CRS Publication No. RL34443. Washington, DC: Congressional Research Service. Retrieved from <http://aging.senate.gov/crs/pension7.pdf>.
- Randall, D.K. (2009, Aug. 19). 401(k) rethink. *Forbes.com*. Retrieved from <http://www.forbes.com/forbes/2009/0907/investing-retirement-ira-saving-401k-rethink.html>.
- Reno, V. P. & Lavery, J. (2005, Feb.). *Options to balance Social Security funds over the next 75 years. Social Security Brief*. Washington, DC: National Academy of Social Insurance. Retrieved from http://www.law.cornell.edu/socsec/course/topic13/SS_Brief_18.pdf.
- Restoring retirement security: The market crisis, the "Great Risk Shift," and the challenge for our nations: Hearing before House Committee on Education & Labor, 110th Cong. 4 (2008) (Testimony of Jacob Hackworth).
- Sanders, B. (2011, Mar. 2). Op-Ed., Defending Social Security. *The Hill*. Retrieved from <http://thehill.com/opinion/op-ed/147153-defending-social-security>.
- Social Security Administration. (2010, Dec. 28). Automatic increases: Contribution and benefit base. Retrieved from <http://www.ssa.gov/oact/cola/cbb.html>.
- Social Security Administration. (2011, Feb. 9). Full Retirement Age. Retrieved from <http://www.ssa.gov/retirement/1960.html>.
- Social Security and Medicare Boards of Trustees. (2010, Aug. 5). Status of the Social Security and Medicare Programs: A Summary of the 2010 Annual Reports. Retrieved from <http://www.ssa.gov/oact/TRSUM/index.html>.
- Social Security privatization: Experiences abroad: Hearing before the House Task Force on Social Security Committee on the Budget, 106th Cong. 2-7 (1999) (Testimony of David L. Crippen, Director, Congressional Budget Office). Retrieved from <http://www.cbo.gov/ftpdocs/12xx/doc1283/052599.pdf>.
- Stabile, S. (2002). Freedom to choose unwisely: Congress' misguided decision to leave 401(k) plan participants to their own devices. *Cornell Journal of Law and Public Policy*, 11, 361-402.
- Tanner, M.D. (Ed.). (2004). *Social Security and its Discontents: Perspectives on Choice*. Washington, DC: Cato Institute.

- Thaler, R. H. & Benartzi, S. (2007, Jan.). The behavioral economics of retirement savings behavior. AARP Public Policy Institute Working Paper No. 2007-02. Washington, DC: AARP. Retrieved from <http://www.retirementmadesimpler.org/Library/The%20Behavioral%20Economics%20of%20Retirement%20Savings%20Behavior%20-%20Full.pdf>.
- Uccello, C.E. (2000). 401(k) Investment decisions and Social Security Reform. (Paper presented at the Retirement 2000 Conference). Washington, DC: Urban Institute. Retrieved from http://www.urban.org/Uploadedpdf/401k_investment.pdf.
- Van Derhei, J., Holden, S., Copeland, C. & Alonso, L. (2007, Aug.). *401(k) plan asset allocation, account balances, and loan Activity in 2006*. Employee Benefit Research Institute Issue Brief No. 308. Washington, DC: EBRI. Retrieved from http://www.ebri.org/pdf/briefspdf/EBRI_IB_08-20073.pdf.
- Wheary, J., Shapiro, T.M., & Draut, T. (2007). By a thread: The new experience of America's middle class. New York: Demos: The Institute on Assets and Social Policy at Brandeis University. Retrieved from <http://www.demos.org/pubs/BaT112807.pdf>.
- Wolff, E. (2002). *Retirement Insecurity: The Income Shortfalls Awaiting the Soon-to-Retire*. Washington, DC: Economic Policy Institute.

CHAPTER 2

California Workers' Retirement Prospects

by Sylvia A. Allegretto, Nari Rhee, Joelle Saad-Lessler, and Lauren Schmitz

INTRODUCTION

While public debate rages about the costs of pensions and Social Security, there is inadequate attention to the parallel crisis of retirement insecurity facing millions of workers who will not have enough assets to meet their basic needs in old age, much less maintain their pre-retirement standard of living. This has significant long-term ramifications for individuals, families, and all levels of government in the decades to come.

In this article, we assess California workers' retirement prospects in relation to the United States (US) as a whole, drawing on data from the Current Population Survey (CPS) and the Survey of Income and Program Participation (SIPP). First, in order to establish a frame of reference against which to consider workers' retirement readiness, we examine the income sources and poverty status of current retirees. Next, we measure workers' access to employer sponsored retirement plans, including coverage by Defined Benefit (DB) pensions that offer secure benefits versus Defined Contribution (DC) plans in which workers bear all financial risk. Finally, we project California workers' retirement income based on available data about assets, debt, and earnings and compare it to the federal poverty threshold in order to determine the percentage of workers at risk for serious economic hardship when they retire. Throughout this analysis, we identify disparities by gender, race, income, firm size, and other variables as available data permits.

Our key findings are as follows:

First, Social Security forms the bedrock of retirement income for the vast majority of retirees in California, with employer sponsored retirement plans making up the second most important source of income. Low- and middle-income retirees—the bottom 25% and the middle 50%—rely overwhelmingly on the single pillar of Social Security, in contrast to upper-income retirees who have a variety of income sources. Employer-sponsored retirement plans make up the second largest source of income for middle-income retirees and the largest source for high-income retirees (the top 25%). While Social Security has helped reduce the poverty rate among retirees in general, women and minorities are disproportionately represented among retirees in poverty and among low-income retirees.

Second, California workers are under-served by employer sponsored retirement plans, and there are marked disparities in plan access and participation by age, class of worker (private vs. public), and firm size. Nearly half of workers in the state are employed by firms that do not offer a retirement plan, and only 44% of workers actually participate in a plan. The retirement plan coverage gap is concentrated in the private sector and among small businesses, compared to high rates of coverage in the public sector and, to a lesser extent, among large firms employing over 1,000 workers. Significantly, most private sector workers who participate in a retirement plan through their employer only have access to a 401(k) type plan which does not guarantee retirement income.

Third, we project that nearly one-half of California workers will face significant economic hardship in retirement, with incomes below 200% of the federal poverty threshold for individuals. All age groups are at significant risk, with young workers age 25–44 and low-wage workers being the most at risk. Notably, even middle-wage workers face substantial risk of not having enough retirement income to be self-sufficient. While having any kind of retirement plan improves the likelihood of having enough retirement income to meet basic expenses, workers whose primary plan is a DC plan, i.e., a 401(k) type individual account, are at much higher risk than those who participate in a DB pension.

1. THE ECONOMIC STATUS OF CURRENT RETIREES

In order to evaluate the retirement future of today's workers, it helps to first understand the economic status of current retirees. In this section, we analyze data from the Current Population Survey (CPS) March Supplement (US Bureau of Labor Statistics (BLS), 2011), to determine key sources of income and poverty rates among today's retirees.

Sources of Retiree Income

Analyses of retirement security typically refer to the “three-legged stool” of retirement income: Social Security, employer sponsored pensions, and private savings. Our analysis shows that the actual number of “legs” supporting people's retirement depends heavily on their income level. Retirees with lower incomes tend to balance on a single pillar—Social Security—while the well-off may have four or five substantial income sources. **Table 2.1** shows sources of retiree income for the United States and for California, overall and by income level.

The top quarter of the table shows total income for all groups and its sources. Data are three-year averages for 2007–09. For the purposes of this analysis, retirees are defined as people age 60 and older who did not work during the reference period and who cited retirement as the reason that they did not work.¹ The average annual retiree income is \$23,540 in the US overall and \$25,984 in California. The most important source is Social Security, which accounts for 50.6% and 43.5% of total retiree income in the US and California, respectively.² Income from (employer-sponsored) retirement funds is the second largest source of income, at 27.1% for the US and 27.5% for California. “Other” income, which can include personal savings, proceeds from the sale of stocks or bonds, survivor's benefits, or a combination of sources, ranks third, at 14.8% and 16.1% of income for the US and California. The remaining categories—dividends, rents, and Supplemental Security Income (SSI, also known as “disability”)—together account for 7.5% and 12.8%, of total retiree income in the US and California.

Table 2.1

Sources of Income for Retirees, US and California, 2007–09

	United States			California		
	Mean	Std. Dev.	Shares	Mean	Std. Dev.	Shares
All						
Total Income*	\$23,540	\$21,512	100.0%	\$25,984	\$25,637	100.0%
Social Security	11,909	7,365	50.6%	11,305	7,507	43.5%
Retirement Funds	6,373	13,215	27.1%	7,156	15,079	27.5%
Dividend	1,011	4,847	4.3%	1,571	6,503	6.0%
Rental	636	5,266	2.7%	1,390	7,994	5.4%
Supplemental Security	120	1,021	0.5%	370	1,730	1.4%
Other	3,489	10,268	14.8%	4,191	11,817	16.1%
Bottom 25%						
Total Income	\$7,081	\$2,688	100.0%	\$6,962	\$2,781	100.0%
Social Security	6,149	3,268	86.8%	5,508	3,597	79.1%
Retirement Funds	225	1,130	3.2%	252	1,246	3.6%
Dividend	76	463	1.1%	85	441	1.2%
Rental	12	479	0.2%	3	552	0.0%
Supplemental Security	276	1,356	3.9%	793	2,420	11.4%
Other	343	1,062	4.8%	321	1,084	4.6%
Middle 50%						
Total Income	\$17,575	\$4,851	100.0%	\$18,145	\$5,806	100.0%
Social Security	13,009	4,965	74.0%	12,757	5,558	70.3%
Retirement Funds	2,538	5,019	14.4%	2,819	5,738	15.5%
Dividend	287	1,213	1.6%	313	1,197	1.7%
Rental	169	1,257	1.0%	313	1,647	1.7%
Supplemental Security	76	803	0.4%	320	1,604	1.8%
Other	1,496	3,312	8.5%	1,623	3,594	8.9%
Top 25%						
Total Income	\$51,936	\$25,470	100.0%	\$60,713	\$29,401	100.0%
Social Security	15,471	10,429	29.8%	14,202	10,229	23.4%
Retirement Funds	20,196	19,718	38.9%	22,745	22,686	37.5%
Dividend	3,396	9,124	6.5%	5,576	12,036	9.2%
Rental	2,196	10,212	4.2%	4,936	15,278	8.1%
Supplemental Security	54	1,004	0.1%	48	831	0.1%
Other	10,623	18,167	20.5%	13,207	20,559	21.8%

*For Total Income comparisons of US vs CA; all are statistically different except for the Bottom 25% figures.

Note: Three years (2008-10) of the March CPS were appended to assure an adequate number of observations for California and to allow for demographic analyses on race, gender, and income. Figures are three-year averages, 2010 dollars. Retirees are at least 60 years old; income less than or equal to \$0 not included. Income cutoffs calculated separately for the U.S. and California. Income brackets are for individual incomes. Totals may not add up due to rounding.

Source: Authors' analysis of March Current Population Survey, 2008-10. Data are from 2007-09.

California retirees have higher average individual income than US retirees overall (\$25,984 vs. \$23,540), which is not surprising given that personal income is generally higher in California. But this difference does not hold true at all income levels. Among the bottom 25%, California retirees have about the same income as the US cohort (\$6,962 vs. \$7,081).³ Among the top 25% the California advantage in average income is large, \$60,713 for the state versus \$51,936 for the US as a whole. In other words, there is greater income inequality among retirees in California than in the US as a whole.

Sources of income vary considerably by income group. The pie charts in **Figure 2.1** illustrate the income sources for California retirees in each of three income groups, drawing on Table 2.1. For those in the bottom 25% of the retiree income distribution, approximately 90% of income comes from government-sponsored programs—79.1% from Social Security, a government sponsored pension, and 11.4% from SSI, a means-tested aid program. As income increases, the share of Social Security decreases and SSI declines significantly. For the middle 50% of the retiree income distribution, Social Security still constitutes a large majority of income (70.3%), with SSI making up a minute fraction (1.8%) and retirement funds accounting for the most significant income source (15.5%) after Social Security. In the top 25% income group, Social Security represents a much smaller portion of income (just 23.4%), retirement funds (37.5%) make up the largest single source of income, and the remainder comes from a variety of personal assets (property that generates rental income, stocks or bonds that pay dividends, and other financial assets). The pie charts illustrate how crucial Social Security is for both low- and middle-income retirees, and the role of employer sponsored retirement plans as the most important non-governmental resource in providing a secure retirement.

Race and Gender Distinctions

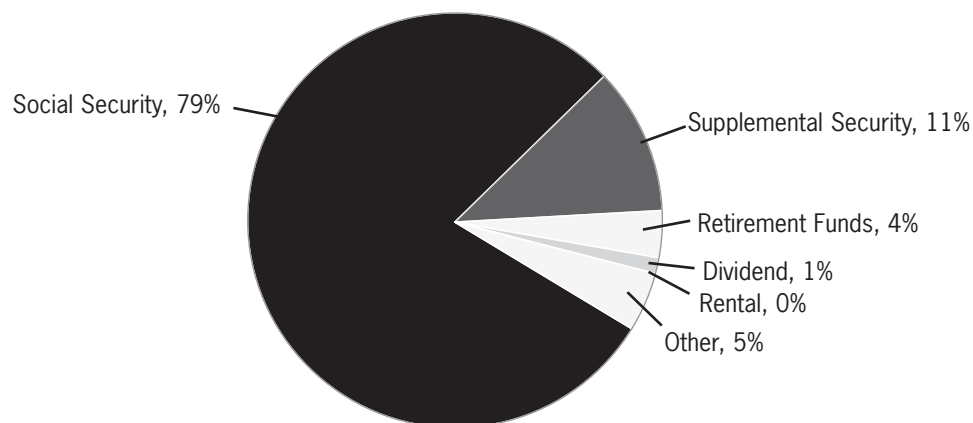
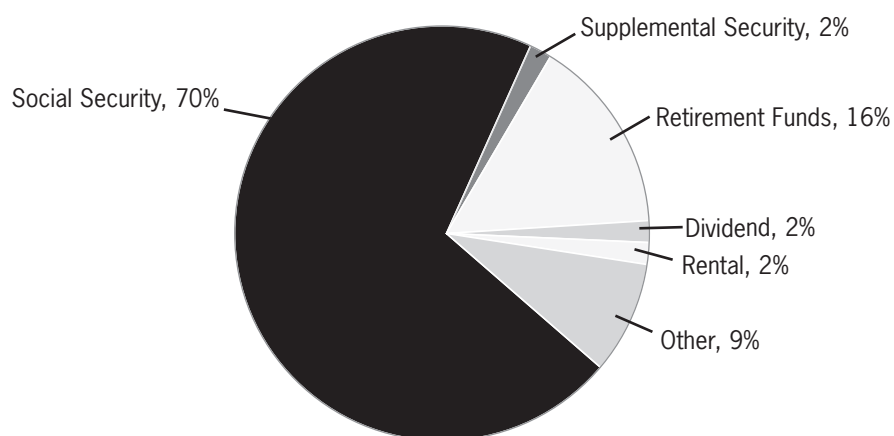
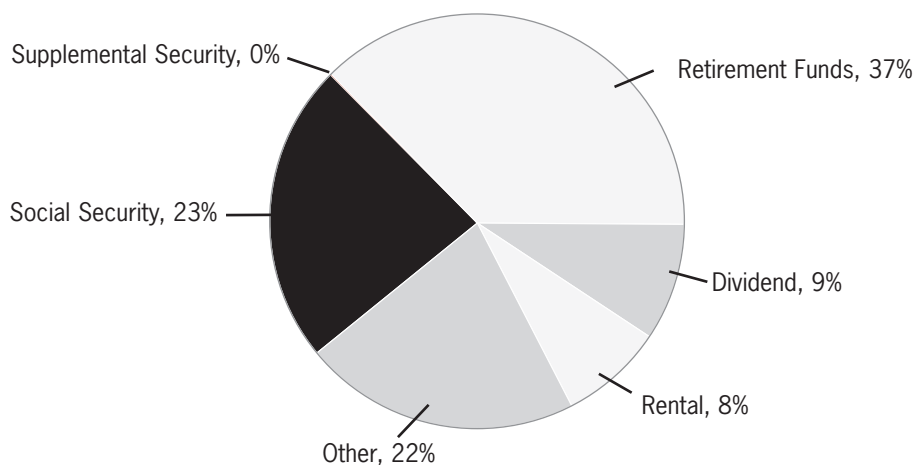
Table 2.2 provides insight into race and gender disparities in retiree income. To begin, the table shows the race and gender breakdown within each of the three income levels (rows sum to 100%) for the US and California. The percentage of the total population made up by each racial group, or gender, is listed in parentheses.

For the US, Whites are underrepresented in the bottom 25% (72.7% of income group vs. 82.1% of population) but overrepresented in the top 25% (88.3% vs. 82.1%). The opposite is true for Blacks, who are overrepresented in the lower income tier (9.8% of income group vs. 7.8% of population) and underrepresented in the top income tier (5.7% vs. 7.8%). The same pattern holds for Hispanics and other races.

One of the stark differences in racial makeup between California and the US overall is the proportion of retirees who are Hispanic—16.0% in California compared with 6.0% in the US as a whole. Another is the larger share made up by the “Other race” category in California compared to the US average, mostly attributable to the large Asian population in the state. Even controlling for these differences, US minorities are overrepresented in the bottom 25%, and whites are overrepresented in the top tier in California, as in the US as a whole. It is perhaps not surprising that the racial disparities that are well-documented in wages and incomes also carry through in retirement.

Looking at the gender composition of each income bracket, we find that women are overrepresented among low-income retirees. Given that life expectancy for women is longer than for males (Kochanek et al., 2011), it is not surprising that women make up a large share of retirees: 58.1% and 58.5% in the US and California, respectively. However, in the US, women account for a much

Figure 2.1

Sources of Retiree Income, by Income Group, California, 2007–09**Bottom 25%****Middle 50%****Top 25%**

Note: Totals may not add up due to rounding.
Source: Data taken from Table 2.1.

Table 2.2

Gender, Race, and Retiree Income, 2007–09, US and California

Income Group	United States				California			
Distributions of race and gender within each income group (rows sum to 100%)								
	White	Black	Hispanic	Other	White	Black	Hispanic	Other
	(82.1%)*	(7.8%)	(6.0%)	(4.1%)	(66.0%)	(5.0%)	(16.0%)	(13.0%)
Bottom 25%	72.7%	9.8%	11.2%	6.3%	49.1%	4.8%	25.9%	20.2%
Middle 50%	83.7%	7.8%	5.0%	3.5%	67.3%	5.5%	15.5%	11.7%
Top 25%	88.3%	5.7%	2.9%	3.1%	80.4%	4.2%	7.0%	8.3%
	Male	Female			Male	Female		
	(41.9%)	(58.1%)			(41.5%)	(58.5%)		
Bottom 25%	21.8%	78.2%			25.8%	74.2%		
Middle 50%	42.1%	57.9%			41.4%	58.6%		
Top 25%	61.7%	38.3%			57.3%	42.7%		

* Shares of total sample in parentheses.

Note: Three years (2008-10) of the March CPS were appended to assure an adequate number of observations for California and to allow for demographic analyses on race, gender, and income. Figures are three-year averages, 2010 dollars. Retirees are at least 60 years old. Income brackets are for individual incomes. Totals may not add up due to rounding.

Source: Authors' analysis of March Current Population Survey, 2008-10. Data are from 2007-09.

larger share—approximately three out of four retirees (78.2%)—of the lowest 25% income group. Conversely, of those in the top 25% income tier, women are underrepresented (38.3%) and men are overrepresented (61.7%). This general pattern holds true for California, though women are slightly more likely to fall into the top income tier in the state compared to the US overall.

Incidence of Poverty

An analysis of poverty among retirees compared to the general population yields two main observations. One is that Social Security plays an important role in protecting the elderly from poverty, although the poverty rate is slightly higher among retirees in California than those in the US as a whole. The other is that female retirees are significantly more likely to be poor than male retirees.

National trends provide important context for understanding the role of Social Security as a safety net against poverty. As the Great Recession dragged on from December 2007 through the first half of 2009, the overall US poverty rate increased from 12.5% to 14.3%. But the poverty rate for people 65 years of age and over *fell* from 9.7% to 8.9% over the 2007-09 period. This improvement was due, in part, to Social Security. Poverty rates among older people in the US decreased dramatically during the 20th century: the official poverty rate of those age 65 and older fell from 35% in 1960 to 10% in 1995, and similarly steep declines have been documented back to at least 1939 (Engelhardt and Gruber, 2004). While poverty was once prevalent among the elderly, the poverty rate among today's retirees and elderly is the lowest for any age cohort. By contrast, the rate of poverty for the general population has not declined significantly since the late 1960s, and over the last four decades has been strongly

cyclical, increasing during recessions and decreasing during economic expansions.⁴ The effect of Social Security has been to protect retirees from the cyclical fluctuations of poverty, and it has helped to sustain the long-term trend toward decline for decades.

An important caveat for this analysis is that the basis for poverty statistics in the US—the Census Bureau's federal poverty threshold—is widely acknowledged as an inadequate measure of economic hardship in high-cost regions like California. It is instead an absolute measure of severe economic deprivation that does not account for geographical variations in cost of living. For example, the 2011 federal poverty threshold is \$11,344 for single individuals under 65 years of age and \$10,458 for those 65 and over (Census Bureau, 2010). Our analysis of worker retirement readiness later in this paper uses 200% of the poverty threshold as a measure of significant economic hardship. However, in order to facilitate national comparison, the following analysis is based on the regular federal poverty threshold.

Table 2.3 presents three-year average (2007–09) poverty rates for the entire population and for retirees in the US and California. The table confirms that poverty rates for retirees are lower than for the general population. The average US poverty rate for the three-year span is 13.4% for the general population age 16 and older, compared to 10.4% for retirees. However, the rate for female retirees is 11.9%, significantly higher than the 8.4% rate for male retirees. In California, the poverty rate for the population age 16 and older is slightly higher at 14.2% while the rate for retirees is 10.2% for both sexes, 11.2% for females, and 8.6% for males. In the US and California, approximately two of every three retirees who are in poverty are women.

The bottom portion of Table 2.3 shows poverty rates by the three income tiers. Of retirees in the bottom tier, about one in three (34.6% in the US, 31.3% in California) are in poverty. This would seem to indicate that those with less means who rely almost exclusively upon Social Security and SSI are not always able to secure enough income to keep them out of poverty.

Table 2.3

Retiree Poverty by Gender and Income, 2007–09, US and California

	United States			California		
	Rate	Number	Share	Rate	Number	Share
Total Population age 16 years and over	13.4%	40,224,473		14.2%	5,190,204	
All retirees	10.4%	3,167,090		10.2%	327,396	
By Gender						
Male	8.4%	1,051,718	33.2%	8.6%	113,820	34.8%
Female	11.9%	2,115,372	66.8%	11.2%	213,576	65.2%
By income						
Bottom 25%	34.6%	2,963,861	93.6%	31.1%	298,658	91.2%
Middle 50%	1.4%	203,230	6.4%	2.0%	28,738	8.8%
Top 25%	0.0%	0	0.0%	0.0%	0	0.0%

Source: Authors' analysis of March Current Population Survey, 2008–10. Data are from 2007–09. See Table 2.2 notes.

2. RETIREMENT PLAN COVERAGE AMONG WORKERS

The above analysis highlights the importance of employer sponsored retirement plans as a source of income to supplement Social Security, which has been effective in protecting most retirees from severe economic deprivation—as measured by the federal poverty threshold—but which does not guarantee enough income to meet basic expenses. In this section, we assess employer sponsored retirement plan coverage for current workers, a key factor in their readiness for future retirement. We analyzed two datasets to assess retirement plan coverage. First we employ the CPS March Supplement to determine trends in retirement plan access, take-up, and participation rates over time. Because the CPS does not distinguish the type of retirement plan in which workers participate, we analyze SIPP 2008 panel data to determine coverage by DB (defined benefit) and DC (defined contribution) plans. In addition, we refer to published results for the Pacific region from the National Compensation Survey (BLS, 2009) to provide supplemental data.

Overall Retirement Plan Coverage

Retirement plan coverage in the workplace can be described by three key statistics: access rate, participation rate, and take-up rate. Access rate is the share of all workers whose employer offers a retirement plan (even if not all workers qualify). Participation rate is the share of all workers who participate in their employer's retirement plan. Take-up rate is the number of workers who participate in their employer's retirement plan, divided by the number of workers whose employer offers a plan.

Table 2.4 shows employer sponsored retirement plan coverage among employed workers in the United States and California for the three-year periods 1987–89, 1997–99, and 2007–09. The first period captures an economic expansion capped by a recession that started in July 1990. The second was a period of robust expansion, tight labor markets, and real wage growth across the entire wage spectrum that eventually came to an end with the 2001 recession. The third span includes the Great Recession, the most severe downturn since the Great Depression. Coverage rates are analyzed for all employees age 25–64, then for private sector, public sector, full-time employees, and firm size.

In the United States, the overall access rate for pension plans—the percentage of employees age 25–64 whose primary employer offered a retirement plan to any of their employees—is 59.3%, 64.5% and 58.1% across the three time spans. During the second span, a period of tight labor markets and relatively strong bargaining power for workers, firms were more apt to offer retirement benefits. Yet even then, one in three workers was not offered a plan from their employer. Notably, retirement plan access in California was lower across the three spans: 53.6%, 57.6% and 52.0% of employees, respectively.

Not all workers whose employer offers a retirement plan actually participate in that plan. The take-up rate hovered near 84% for the US in the three time spans, and increased slightly for California from 82.1% in 1987–89 to 85.2% in 2007–09. The CPS does not indicate the reasons why the remaining share of workers did not participate in their employer's plan, but not all non-participation is voluntary, because employers often impose restrictions based on the length of time on the job and number of hours worked.

Ultimately, the majority of workers in California and the US do not participate in any kind of employer sponsored retirement plan. The participation rate is less than 50% in both the US and California for all three periods, except for the US in 1997–1999. Again, workers in California fare

Table 2.4

Employer Sponsored Retirement Plan Coverage, US and California

	United States			California		
	1987-89*	1997-99*	2007-09*	1987-89*	1997-99*	2007-09*
All						
Access	59.3%	64.5%	58.1%	53.6%	57.6%	52.0%
Take-up	83.8%	83.5%	84.4%	82.1%	83.5%	85.2%
Participation	49.7%	53.9%	49.0%	44.0%	48.1%	44.3%
Private sector						
Access	52.7%	59.7%	52.7%	46.5%	51.9%	45.8%
Take-up	81.9%	81.5%	82.1%	79.4%	81.5%	83.0%
Participation	43.1%	48.6%	43.3%	36.9%	42.3%	38.1%
Public sector						
Access	88.7%	88.0%	83.9%	87.5%	87.6%	82.8%
Take-up	89.0%	90.0%	91.2%	88.9%	89.8%	91.1%
Participation	78.9%	79.3%	76.5%	77.8%	78.7%	75.5%
Full-Time Employees**						
Access	67.2%	70.2%	63.8%	60.4%	63.5%	58.2%
Take-up	89.3%	88.5%	88.8%	87.7%	88.4%	89.5%
Participation	60.0%	62.1%	56.6%	53.0%	56.1%	52.1%
Firm Size						
Firm size <25						
Access	19.8%	27.3%	25.1%	16.5%	21.5%	19.7%
Take-up	78.7%	79.6%	82.8%	79.5%	76.0%	83.7%
Participation	15.6%	21.7%	20.8%	13.1%	16.4%	16.5%
Firm size 25-99						
Access	42.1%	54.2%	49.9%	34.4%	43.6%	39.4%
Take-up	80.8%	80.0%	81.8%	76.7%	79.6%	82.6%
Participation	34.0%	43.4%	40.8%	26.4%	34.7%	32.5%
Firm size 100-499						
Access	62.0%	69.6%	63.5%	53.3%	58.6%	55.1%
Take-up	82.7%	82.3%	83.1%	79.7%	82.0%	83.2%
Participation	51.3%	57.3%	52.8%	42.5%	48.1%	45.8%
Firm size 500-999						
Access	74.6%	78.2%	70.7%	71.9%	72.9%	68.0%
Take-up	82.6%	84.0%	84.9%	80.3%	82.4%	83.2%
Participation	61.6%	65.7%	60.0%	57.8%	60.1%	56.6%
Firm size 1,000+						
Access	83.4%	83.7%	76.6%	81.6%	81.2%	75.4%
Take-up	85.5%	85.1%	85.4%	84.1%	85.9%	86.7%
Participation	71.2%	71.2%	65.5%	68.6%	69.7%	65.4%

* Each three-year span represents appended data for those three years; figures reported are three year averages.

** Full time is defined as working 50+ weeks and 35+ hours per week during the year.

Source: Authors' analysis of March CPS, 1988-90, 1998-2000, and 2008-10. Data are from 1987-89, 1997-99, and 2007-09, respectively. Figures are three-year averages.

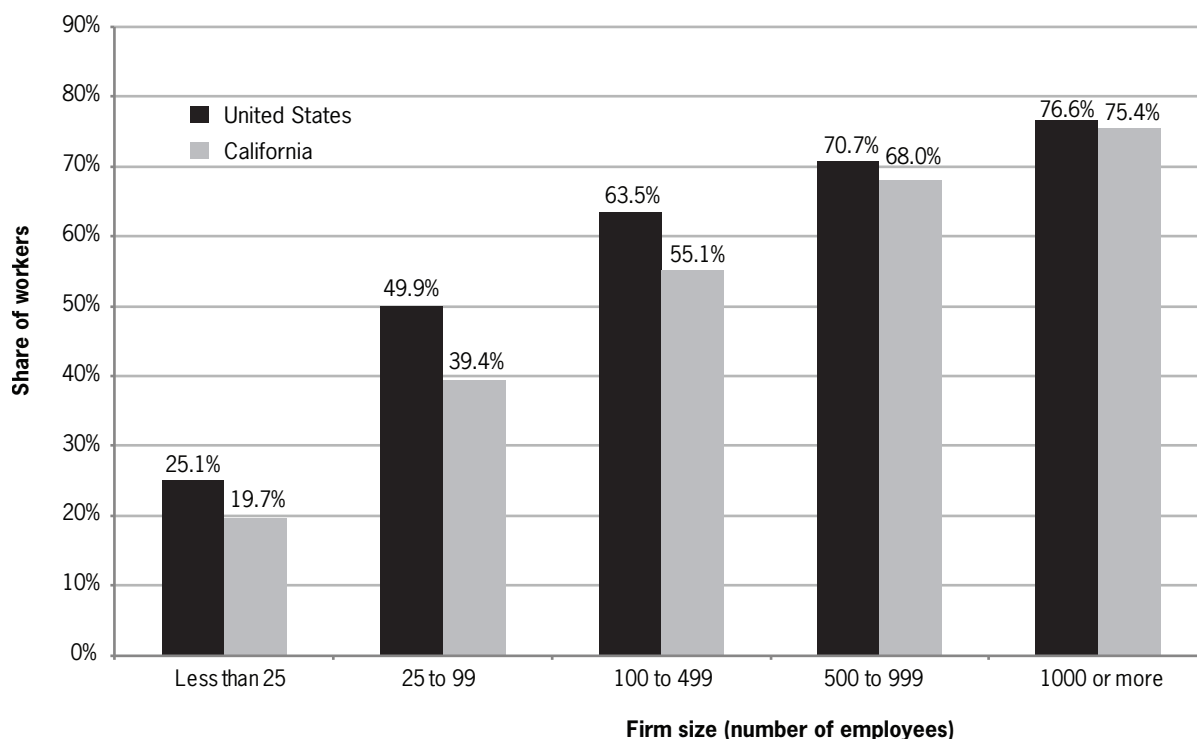
somewhat worse than the in the US as a whole because the state's 2007–09 participation rate was 44.3%.

The table further breaks out rates for full-time workers, private sector workers, public sector workers, and firm size. Significant differences emerge across these breakouts. Retirement plan coverage rates among full-time workers are higher than for the total workforce in both the US and California across the three time spans, though again California rates are significantly lower than the national average. Indeed, both access and participation rates for workers in California lag behind those of the US in all categories, with the largest differences for private sector and smaller firms. Much of the policy debate that has followed on the heels of the recession has centered on small business job creation and Table 2.4 gives some insight as to why, in general, the quality of jobs in smaller firms is not as good as in large firms. In the US, on average, just one in four (25.1%) firms with fewer than 25 employees offered their workers a retirement plan over the 2007–09 span; the share was just one in five (19.7%) in California. In contrast, the access rate for firms with at least 1,000 workers was three out of four (76.6% for US and 75.4% for California).

The step-wise progression of increasing rates of access by firm size is illustrated in **Figure 2.2**. Rates for the US are generally higher than those for California, especially within the three smallest firm sizes, but the gap narrows for firms with more than 500 employees. In other words, the disparity in employer sponsored retirement plan access by firm size is more pronounced in California than in the US as a whole.

Figure 2.2

**Employer Sponsored Retirement Plan by Firm Size, US and California
2007–09**



Source: See Table 2.4.

Primary Retirement Plan Type: Defined Benefit vs. Defined Contribution

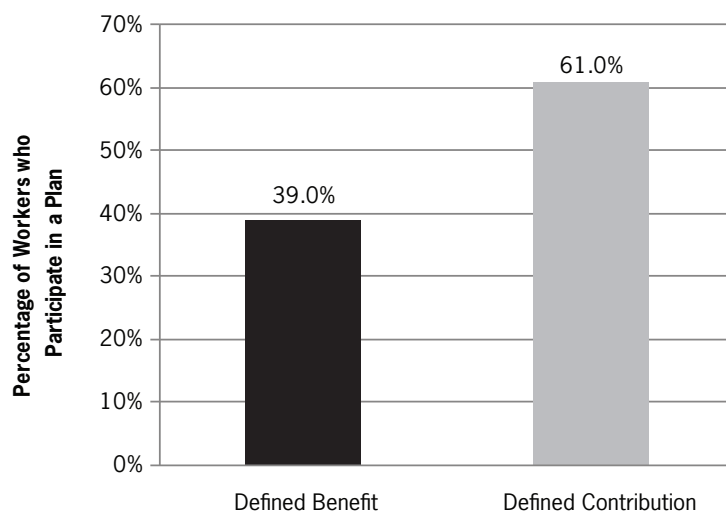
While participating in any kind of employer sponsored retirement plan is important for workers' retirement security, the type of plan also matters. There are two main types of plans. DB plans provide guaranteed benefits and usually entail significant employer funding.⁵ Nationally, 75% of DB plans are traditional pensions in which guaranteed monthly benefits are calculated as a percentage of final earnings, based years of service and age. The remainder consist of cash balance plans which provide a guaranteed rate of return on contributions—or, alternately, annual credits based on years of service—and in which benefits are accrued as a notional account balance rather than a monthly payment. The account balance can be withdrawn as a lump sum or, in some cases, an annuity (an insurance contract for a lifetime income payout in exchange for a lump sum payment). DC plans offer no guarantees; rather, they are retirement savings plans to which workers contribute—with or without matching employer contributions—and in which individuals direct investments and assume all risks. Employer contributions to DC plans may take the form of cash, stocks, or in some cases profit sharing. The most common types of DC plans are the 401(k) plan in the private sector and the 403(b) plan in the public sector.

There are few official datasets available for the state level that report DB vs. DC plan participation among workers. The CPS does not specify the types of retirement plans in which workers participate. The NCS, which includes an employer survey of benefits, only reports this data at the national and regional level. Fortunately, a national household survey, the SIPP 2008 panel (U.S. Bureau of the Census, 2011) includes questions on this topic and identifies the state in which respondents reside. However, readers should note that the SIPP yields estimates that are considerably less precise than those derived from the CPS because its sample is significantly smaller.⁶ In addition, the universes for the following estimates are somewhat different from those used in the CPS analysis. Therefore, they are not directly comparable to the above CPS data.

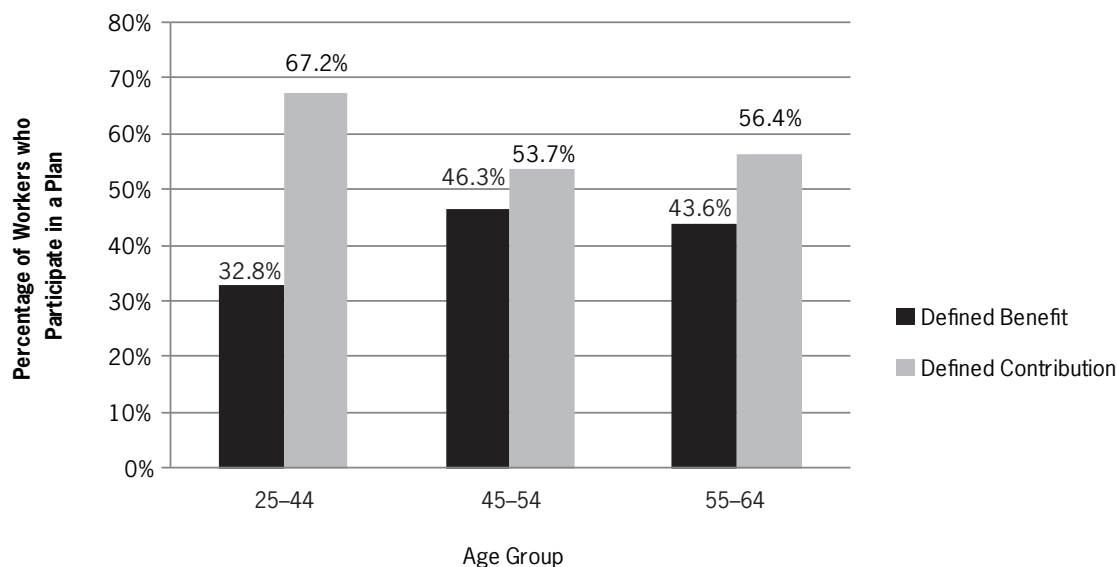
Among California workers age 25–64 who participated in an employer sponsored retirement plan in 2009, 39% have a DB plan as their primary plan and 61% have a DC plan as their primary plan (**Figure 2.3**). This is comparable to national data for all firms from the Bureau of Labor Statistics' National Compensation Survey. Some might find it surprising that the DB plans have even 39% market share as a primary retirement plan. A key explanation is the stark difference in take-up rates between DB and DC plans: 94% versus 69%, respectively, among civilian workers.⁷ This is in part due to the fact that DB plans automatically enroll workers and entail mandatory contributions, while DC plans generally require individual workers to actively enroll, usually without significant employer contributions.

DB vs. DC plan coverage varies with age, class of worker (private vs. public), and firm size. Among workers who participate in an employer sponsored retirement plan, young workers, private sector workers, and employees of small firms are least likely to participate in a DB pension as opposed to a DC plan such as a 401(k).

Young workers, in addition to being less likely to have access to a workplace retirement plan as described above, are also less likely to participate in a DB plan (**Figure 2.4**). Only 32.8% of workers age 25–44 had a DB plan as their primary retirement plan on the job in 2009, compared to 46.3% and 46.3% among 45–54 and 55–64 year olds, respectively.

Figure 2.3**Primary Retirement Plan Type, 2009, California**

Source: Authors' analysis of SIPP 2008 panel data. Universe is California residents age 25-64 who worked during the reference period (April-July 2009), had positive earnings, were not unpaid familyworkers, and were not in the Armed Forces, and who reported participating in a retirement plan at their primary job.

Figure 2.4**Primary Retirement Plan Type by Age Group, 2009, California**

Source: Authors' analysis of SIPP 2008 panel data. Universe is California residents age 25-64 who worked during the reference period (April-July 2009), had positive earnings, were not unpaid family workers, and were not in the Armed Forces, and who reported participating in a retirement plan at their primary job.

Public sector workers are much more likely to have a DB plan than are private sector workers. This difference is mostly due to significantly higher union density. A greater share of public compensation takes the form of deferred compensation via pension benefits, negotiated through collective bargaining. Our analysis of SIPP data found that in 2009, among private sector workers covered by a retirement plan, one-third (32.1%) had a DB plan while over two-thirds (67.9%) only had a DC plan. In contrast, somewhat more than half (55.9%) of public sector workers had a DB plan as their primary plan, and somewhat less than half (44.1%) relied solely on a DC plan. We note that this DB pension coverage estimate for public sector workers may be too low.⁸ Public sector data for the Pacific region from the National Compensation Survey, which excludes federal employees, yields a considerably higher estimate: of those who participated in a retirement plan in 2009, approximately 95% have a DB pension as their primary plan (BLS, 2009).⁹

For DB vs. DC coverage by detailed firm size, the SIPP sample for California was too small to yield reliable estimates. Again, we refer to the NCS data for the Pacific region. In 2009, approximately 62% of workers covered by a retirement plan in firms with 100 or more employees participated in a DB pension, while 38% participated in only a DC plan. In contrast, in firms with fewer than 100 employees only about 29% of workers participated in a DB pension and 71% in only a DC plan.¹⁰

3. RETIREMENT INCOME PROJECTIONS

In this section, we estimate the retirement readiness of California workers by projecting what their retirement income will be at age 65 and comparing it to the federal poverty threshold. We find that a significant proportion of California workers are not prepared for retirement, and that a majority of young workers face bleak retirement prospects. The risk of being poor or near-poor is very high for low-wage workers, but middle-wage workers also face significant risk of being near-poor in retirement. Workers who participate in an employer sponsored retirement plan of any kind are somewhat less likely to be poor or near-poor than average, but those who participate in a DB plan are much more likely to be able to meet basic expenses in retirement than those who only have a DC plan.

To arrive at the estimates detailed below, we analyzed data from the most up-to-date and comprehensive survey on individual and household income and assets that offers state level information: the Survey of Income and Program Participation (SIPP) 2008 panel.¹¹ We used this data to calculate current asset balances and project future asset balances for each worker, and determine the amount of monthly income that would be generated by the latter based on current interest rates for life annuities. We also projected lifetime and final earnings in order to estimate DB pension income and Social Security benefits for each worker. We calculated the lifelong income stream that would be generated by these assets using market annuity rates. We added up the monthly annuity, DB pension, and Social Security payments to arrive at total projected monthly retirement income. Finally, we compared each worker's projected monthly retirement income to the federal poverty threshold for individuals. (Detailed methodology can be found in the **Appendix**.)

We use 200% of the federal poverty threshold as the income cutoff below which retirees will face significant economic hardship and have difficulty meeting basic expenses including health care costs. As discussed in Section 1, 200% of the federal poverty threshold is a well accepted measure in high-cost areas like California. However, while official poverty statistics are normally calculated at the

family level, we simply compare projected individual retirement income to the poverty threshold for single individuals.¹² The federal poverty threshold for a single adult in 2009 was \$11,161 annually, or \$930 monthly.¹³ Therefore, we consider workers to be at risk if their projected retirement income is \$1,860/month or less in 2009 dollars.

This model predicts whether workers will have enough to live on in relation to an absolute standard of living, twice the federal poverty threshold. However, retirement security is typically defined in terms of having enough retirement income to maintain one's pre-retirement standard of living. This is usually operationalized through a target earnings replacement ratio, e.g., 70–100% of final earnings depending on income level. Because most California workers would need income far exceeding 200% of federal poverty level to meet this standard, our model probably understates the lack of retirement readiness in the state.

Table 2.5 shows the percentage of California workers age 25–64 whose retirement incomes will fall at or below poverty (<100%), near poverty (101–200%), or above poverty (201–300% and >300%). Outcomes are projected by age group: young (25–44), peak working age (45–54), and near retirement (55–64). A worker considered to be at risk for serious economic hardship in old age if his or her retirement income falls under 200% of the poverty threshold for individuals.

Table 2.5

Retirement Readiness Among California Workers, by Age Group

	Age 25–44	Age 45–54	Age 55–64	All Workers 25–64
Ratio of Projected Retirement Income to Poverty Threshold				
≤ 100%	25.9%	20.8%	13.7%	22.3%
101–200%	29.0%	18.5%	19.3%	24.4%
201–300%	11.9%	14.1%	13.9%	12.9%
> 300%	33.2%	46.6%	53.1%	40.4%
Total	100.0%	100.0%	100.0%	100.0%
Share of workers at risk for serious economic hardship in retirement				
Below 200% of poverty threshold	54.9%	39.3%	33.1%	46.7%

Note: Totals may not add up due to rounding.

Source: Authors' projections based on SIPP 2008 panel data; data from 2009. See chapter Appendix for income projection methodology. Universe is California residents age 25–64 who worked in the reference period (the past four months), had positive earnings, were not unpaid family workers, and were and are not in the Armed Forces.

A strikingly large proportion of workers age 25–64 (46.7%) are at risk for serious economic hardship in retirement. There is significant variation in the proportion at risk across age groups. Almost one-third (33.1%) of workers near retirement age and almost two-fifths (39.3%) of workers in prime working age are at risk. Young workers are most at risk: over half (54.9%) are at risk having incomes below 200% of the poverty threshold if they retire at age 65.

The risk of being poor or near-poor in retirement is also closely related to wage level (**Table 2.6**). The vast majority (84.6%) of workers in the bottom 25% of the earnings distribution are at risk of economic hardship in old age. In fact, 70.2% are at risk of falling below the poverty threshold, and another 14.4% are at risk of falling below 200% of the threshold.

Table 2.6**Retirement Readiness Among California Workers, by Income Group**

	Bottom 25% (\$20,784/yr or less)	Middle 50% (20,785–\$68,688)	Top 25% (\$68,689 and above)
Ratio of Projected Retirement Income to Poverty Threshold			
≤ 100%	70.2%	7.9%	1.6%
101–200%	14.4%	39.3%	5.2%
201–300%	6.4%	16.0%	13.3%
> 300%	9.1%	36.8%	80.0%
Total	100.0%	100.0%	100.0%
Share of workers at risk for serious economic hardship in retirement			
Below 200% of poverty threshold	84.6%	47.2%	6.8%

Note: Totals may not add up due to rounding.

Source: See Table 2.5.

Significantly, the middle class also faces substantial risk of not having enough retirement income to meet even basic expenses. Among workers in the middle 50% of the earnings distribution, a startling share, nearly half (47.2%), are projected to have retirement incomes below 200% of the poverty threshold.

Table 2.7 shows retirement income prospects among workers who participated in a DB plan vs. a DC plan as their primary retirement plan. Only 7.4% of workers who have a DB plan are projected to have retirement incomes below 200% of the poverty threshold, compared to 28.7% of workers whose primary retirement plan is a DC plan. It appears that having any kind of retirement plan improves likely retirement income outcomes. At the same time, workers who rely exclusively on a DC plan are four times as likely workers with DB plans to have retirement incomes inadequate to meet basic needs.

While working past age 65 will improve outcomes somewhat—by increasing Social Security monthly benefits and by shortening the number of years over which to stretch out other retirement assets—working longer cannot serve as a real solution to this crisis if workers do not accumulate sufficient retirement wealth in addition to Social Security. The Employment Benefits Research Institute (EBRI), based on its Retirement Security Projection Model (RSPM®), projects the probability of US households having enough resources to cover basic expenses and uninsured health care costs in retirement, taking into account various market risks. EBRI (VanDerhei & Copeland, 2011) estimates

Table 2.7**Retirement Readiness Among California Workers, by Primary Retirement Plan Type**

	Defined Benefit	Defined Contribution
Ratio of Projected Retirement Income to Poverty Threshold		
≤ 100%	1.8%	4.9%
101–200%	5.6%	23.8%
201–300%	8.9%	20.1%
> 300%	83.7%	51.3%
Total	100.0%	100.0%
Share of workers at risk for serious economic hardship in retirement		
Below 200% of poverty threshold	7.4%	28.7%

Note: Totals may not add up due to rounding.

Source: See Table 2.5.

that among Baby Boom and Generation X households, those in the bottom quartile (bottom 25%) of the preretirement income distribution would need to defer retirement age to 84—close to average life expectancy at 65—before two out of five households would have a 70% probability of success” (p. 1). The second and third quartiles (comprising the middle 50%) would need to defer retirement age to 75 to reach the same threshold (Ibid., p. 14, Figure 8).

4. CONCLUSION

California workers are poorly prepared for retirement. Nearly half of California workers—including a large majority of young workers age 25–44—are projected to lack sufficient resources to meet basic expenses when they retire. Most workers in the state are not in a good position to improve these prospects because of low rates of access to secure retirement savings vehicles through the workplace. Retirement plan access is even lower in California than in the US as a whole, and workers in the private sector and especially in small businesses are most in need of improved access to a high quality retirement plan.

In order to fully understand the implications of these trends, we need to consider them in tandem with two key findings on the economic status of current retirees—first, that Social Security is a key pillar for the vast majority of California retirees, and second, that retirement income from employer plans is critical in order to retire with enough resources to meet basic needs. These realities, taken together with our projection that nearly half of today’s workers are headed towards serious economic hardship in retirement, lead to the following conclusion: In order for most California workers to avoid destitution in retirement, they will need full Social Security benefits when they retire; and in

order to enjoy a reasonable standard of living in which they can meet basic expenses, they need a stronger retirement savings system than currently exists. While the political debate over Social Security must be resolved at the national level, California policymakers, businesses, unions, and workers should weigh the long term social and fiscal implications of a workforce that, over time, enters retirement in deepening economic distress, and look for effective policy solutions to improve the retirement income security of all Californians.

* * *

Appendix: Retirement Income Projection Methodology

In order to project retirement income in this study, we use data from waves 3 and 4 of the **2008 panel of the Survey of Income and Program Participation (SIPP)**. Specifically, we use data from the Retirement Expectations module in wave 3 of the 2008 SIPP panel, as well as data from the Assets and Liabilities, Real Estate, Stocks and Mutual Funds, Value of Business, Rental Properties, Interest Earning and Other Financial Assets modules in wave 4 of the 2008 SIPP panel. The reference period is different for wave 3 and wave 4. The data for these modules was collected in the 4th reference month for each rotation (from April 2009–July 2009 for wave 3, and August 2009–November 2009 for wave 4).

Because waves three and four are four months apart, their samples are not identical. Wave three contains 95,252 observations, while wave four contains 91,219 observations for the US. The merged data set has 84,994 observations. There were 10,258 observations in Wave 3 that were not in Wave 4. There were 6,225 observations in Wave 4 that were not in Wave 3. Since the merged data set drops a number of observations, it does not exactly mimic population numbers in the general population. For example, the weighted population count for the US is 301 million from wave 3 alone, and 302 million from wave 4 alone. But the merged sample represents 282 million, which is less than the 301 million actually in the US population. Therefore, we had to choose which weights to use. We use weights from the fourth reference month of wave 4 data for the merged sample following the advice of statisticians at the SIPP. The logic behind this choice is that since there is attrition in the sample, the wave 4 sample reflects the population that remained in the sample as of November 2009.

The working sample for this study is limited to civilian residents of the state of California who are age 25–64, who stated that they worked at some point in the reference period (the past four months), and who had positive earnings; it also excludes unpaid family workers.

The Retirement Expectations module asks respondents whether their primary source of income in the previous 4 months was from a job or a business. Based on that answer, occupation, industry, firm size, and class of worker status was assigned from the most important job/business for the person. Our sample does not drop businesses that were unincorporated, or that earned or expected to earn less than \$2,500 per year. For such businesses, firm size was assigned to be less than 25 employees.

Sponsorship of a retirement plan was defined by the respondent's answer to the question about whether their employer (at their most important job/business) offers a retirement plan, or if later in the survey, the respondent said that their employer offers a 401(k) plan.

Participation in a retirement plan was ascertained once a respondent stated that their employer sponsors a retirement plan, if they said they participated in such a plan, or if they said they participated in a 401(k) plan through their employer.

The worker's **primary retirement plan** was deemed to be a Defined Benefit (DB) plan if they answered that the plan was based on earnings and years on the job, or if it was a cash balance plan, or if they stated that the plan benefits would be increased or decreased because of participation in the Social Security program. Alternatively, the most important plan was determined to be a Defined Contribution (DC) plan if it is an individual account plan, if it is a 401K plan, or, for those who had only one plan, if they stated that they could choose the investments in the plan, if they could take (or had already) taken out a loan against the plan, or if the contributions to the plan are tax deferred *and* employer contributions depend fully or in part on the employee's contributions. The latter characteristics were asked about all retirement plans, not just the primary plan; therefore they could only be used to ascertain the nature of the *most important* retirement plan for those who had only one retirement plan.

Respondents in the sample were asked about the value of their assets. This is the main value of the SIPP data over CPS data. The SIPP sample gives us a snapshot of earnings and assets for workers aged 25–64 in 2009. **Assets** include non interest earning checking accounts (jointly owned and solely owned), interest earning accounts (jointly owned and solely owned), bonds and securities (jointly owned and solely owned), savings bonds (solely owned), equity in stocks and mutual funds (jointly owned and solely owned), cash value of life insurance policies, equity in other financial investments, market value of IRA and KEOGH accounts, the value of solely owned retirement DC accounts, the equity in rental properties not on the land of residence jointly owned and solely owned, home equity (adjusted for share of ownership), mobile home (adjusted for share of ownership), other real estate (adjusted for share of ownership), business equity (adjusted for share of ownership), and money owed to the respondent for the sale of a business. We then subtract the debt owed jointly and solely for loans, store bills, credit cards, and other debt. This gives us a measure of **current net worth**.

We decided not to forecast earnings growth and growth in assets and debt by choosing among competing macroeconomic forecasting models; instead, we based our estimates of earnings growth and growth in assets and debt on the recent past.

We use this data to forecast **final net worth** and earnings when the workers reach age 65. In order to forecast final net worth, we run a regression of current net worth on social and economic characteristics including age interacted with an indicator for three age categories: 25–44, 45–54, 55–64. The estimated coefficient on age is the amount that net worth increases each year a person ages, and this coefficient differs for each of the age categories. Moreover, the value of the coefficient divided by the average value of net worth for each age category yields the yearly growth rate of net worth that would attain for a typical worker following the age profile of net worth. We then apply this yearly growth rate to current net worth (plus a 2.5% yearly inflation adjustment) for each year a person lives until they reach age 65. The growth rates we get are 6.75% for 25–44 yr old workers, 4.6% for 45–54 yr old workers, and 4% for 55–64 yr old workers. For workers whose current net worth is zero or negative, final net worth is calculated as \$1 times the growth rate plus the current net worth (if we applied the growth rate to current net worth, their final net worth would get progressively more negative).

We then convert the value of final net worth into a monthly **annuity**. The annuity formula for a single life annuity (no beneficiaries, and no left over value upon death) is

$$P = R \left[\frac{1 - (1 + i)^{-n}}{i} \right] = R \cdot a_{\bar{n}|i}$$

where P is the present value of the annuity, R is the periodic annuity payment, i is the interest rate and n is the number of payment periods. We use the Fidelity Guaranteed Income Calculator to derive the annuity value of different levels of future net worth for a male (and separately, for a female) age 65 who was born on June 1, 1944, and lives in California. This calculation is done for males and females separately because of their different life expectancies (different value of n). Based on the R we get from the Fidelity Guaranteed Income Calculator, we calculate the value of *a* for males and females, which is 158.98 for males and 169.49 for females for a present value of \$100,000. According to the US Center for Disease Control (publication in 2010 using 2007 data), life expectancy at age 65 for males is 17.2 years, while for females it is 19.9 years. Because the life expectancy estimates used by the Fidelity Guaranteed Income Calculator are not disclosed, we calculate the annual rate of return on the annuities offered using our life expectancy estimates. These yield annual interest rates in the range of 3.17–3.66% depending on gender as of July 21, 2011. In reality, the annual interest rate offered by commercial annuity providers is lower than this estimate for a number of reasons. One, annuity companies assume longer life expectancy because of adverse selection (they recognize that individuals who want to buy an annuity know they are likely to live longer than the average individual). Two, a commercial annuity provider is a for-profit entity, and they will require a sales or load fee. It is also worth noting that the annual interest rate on annuities is not inflation protected, meaning that the real rate of return will fall as a person ages.

We calculate the **income stream from a DB plan** as final earnings x 1.5% x the number of years of tenure through retirement (tenure so far + years to retirement). This is divided by 12 to convert it to a monthly stream of income. We assume that all workers who currently participate in a DB plan will remain in such a plan until retirement, which is optimistic. In order to forecast **final earnings**, we run a regression of current earnings on social and economic characteristics including age interacted with an indicator for three age categories: 25–44, 45–54, 55–64. The estimated coefficient on age is the amount that earnings increase each year a person ages, and this coefficient differs for each of the age categories. Moreover, the value of the coefficient divided by the average value of earnings for each age category yields the yearly growth rate of earnings that would attain for a typical worker following the age profile of earnings. We then apply this yearly growth rate to current earnings (plus a 2.5% yearly inflation adjustment) for each year a person lives until they reach age 65. The earnings growth rates we get are 3.5% for 25–44 yr old workers, 3% for 45–54 yr old workers, and 2.9% for 55–64 yr old workers.

We also compute a forecast of monthly **Social Security benefits** for each respondent. We use the worker's final monthly earnings to construct the **Average Indexed Monthly Earnings (AIME)**. This assumes that the wage indexed earnings for the 35 highest earning years all yielded the same value—the final earnings. This assumption overstates workers' AIME and therefore yields higher social security benefits than would actually accrue. The **Primary Insurance Amount (PIA)** is

calculated using the 2009 bend points, where $PIA = 0.9 * (AIME \text{ between } 1 - \$744) + 0.32 * (AIME \text{ between } \$744 \text{ and } \$4483) + 0.15 * (AIME \text{ above } \$4483)$. The PIA is the Social Security monthly benefit.

The **forecast total monthly income** in retirement is the sum of the monthly annuity, the monthly DB income stream (if the respondent's primary plan is a DB plan) and the Social Security monthly benefit, less \$100 for part B Medicare premium obligations. This constructed measure of monthly income upon retirement is then compared to a forecast poverty threshold upon retirement for California workers, to gauge how each respondent in the sample will fare when they reach age 65 and retire. We forecast the poverty threshold upon retirement by adjusting the annual Federal poverty threshold for inflation (2.5% per year) for each year until the worker reaches age 65. The monthly Federal poverty threshold for a single person in 2009 is \$930 ($\$11,161 / 12$).

The **deficit fraction** for each worker is calculated as the forecast total monthly income divided by the monthly value of the poverty threshold, and the result is multiplied by 100. When the deficit fraction is 100%, that means that the respondent's total monthly income is just equal to the poverty threshold. We refer to individuals whose deficit fraction is at or below 100% as **poor**. Individuals whose deficit fraction is between 100–200% are considered **near poor**, while those whose deficit fraction is above 200% are considered to have **adequate resources** for retirement.

Geographical Coverage of the Data

All estimates from the SIPP data are for residents of the state of California.

Endnotes

¹ A significant share of seniors continue to work for pay even after they have nominally retired, and research shows that those work tend to have higher total income than those who do not, even though Social Security payments are reduced after earnings reach a certain threshold. Because we wanted to understand the income and poverty profiles of people in full retirement, we chose to exclude working seniors from the sample.

² Includes railroad retirement income.

³ Not statistically different.

⁴ However, over the economic expansion from 2002 to 2007 poverty increased from 12.1% to 12.5%.

⁵ Most private sector DB pensions are exclusively funded by the employer. Responsibility for funding for public sector DB pensions is generally shared between employer and employee. In either case, assuming that the pension is pre-funded with regular contributions, investment returns cover the majority of benefits.

⁶ In addition, SIPP consistently yields higher estimates of pension coverage than does the CPS due to differences in survey method (Sanzenbacher, 2006). Our analysis of SIPP 2008 Panel data yields an estimate of 58.8% of workers employed by firms that offered a retirement plan during April-July 2009, compared to 52.0% from the CPS in 2009.

⁷ NCS Employment Benefits Survey, March 2009, Table 2 "Retirement benefits: Access, participation, and take-up rates, civilian workers." Retrieved September 8, 2011 from <http://www.bls.gov/ncs/ebs/benefits/2010/ownership/civilian/table02a.htm>.

⁸ However, because public sector workers were over-represented in the data, we do not believe that the low DB coverage estimate for public sector workers diluted the coverage estimate for the overall workforce.

⁹ According to the NCS, 89% of state and local employees in the Pacific Region (California, Oregon, Washington, Hawaii and Alaska) participated in a retirement plan; 85% in a DB plan; and 26% in a DC plan. This yields a primary DB plan rate of 95%—the percentage of employees participating in a DB plan (85) divided by the percentage of employees participating in all plans (89).

¹⁰ Authors' calculations from published data. See previous note.

¹¹ The 2008 SIPP panel began in 2008 and is continuing until 2012. The data we draw on comes from the fourth reference month of Waves 3 and 4 of the panel, which were collected in 2009.

¹² For married couples, the combined income at 200% of individual poverty threshold would have been just over \$43,600 in 2009. This is about 70% of the \$63,882 median income for two-person families in California in 2007-2009 (three-year estimate) from the American Community Survey (Table B19119). Retrieved August 9, 2011 from http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=ACS.

¹³ For the purposes of this study, we chose to use the Census Bureau's threshold 2009 for a single adult under age 65 (\$11,161 in 2009) rather than the threshold for an adult age 65 and older (\$10,289).

References

- Engelhardt, G. V. & Gruber, J. (2004). Social Security and the evolution of elderly poverty. Working Paper No. 10466. Cambridge, MA: National Bureau of Economic Research. Retrieved from <http://www.nber.org/papers/w10466>.
- Kochanek, K. D., Xu, J., Murphy, S. L., Miniño, A. M., & Kung, H. C. (2011, Mar.). Deaths: Preliminary data for 2009. *National Vital Statistics Reports*, 59(4). Retrieved from http://www.cdc.gov/nchs/data/nvsr/nvsr59/nvsr59_04.pdf.
- Munnell, A. H., Golub-Sass, F., & Muldoon, D. (2009, Mar.). An update on 401(k) plans: Insights from the 2007 SCF. Center for Retirement Research Issue in Brief No. 9-5. Chestnut Hill, MA: Center for Retirement Research at Boston College. Retrieved from http://crr.bc.edu/images/stories/IB_9_5_UPDATED.pdf.
- Sanzenbacher, G. (2006). Estimating pension coverage using different data sets. Center for Retirement Research Issue in Brief No. 51. Chestnut Hill, MA: Center for Retirement Research at Boston College. Retrieved from http://crr.bc.edu/images/stories/Briefs/ib_51.pdf.
- U.S. Bureau of Labor Statistics. (2009). *National Compensation Survey: Employee Benefits in the United States*, March 2009. Retrieved from <http://www.bls.gov/news.release/pdf/ebs2.pdf>.
- U.S. Bureau of Labor Statistics. (2011). *Current Population Survey, Annual March Social and Economic Supplement*. Washington, DC: Census Bureau. Available at <http://www.bls.census.gov/cps/ads/sdata.htm>.
- U.S. Bureau of the Census. (2011). *Survey of Income and Program Participation*. Washington, DC: Census Bureau. Available at: <http://www.census.gov/sipp/>.
- VanDerhei, J. & Copeland, C. (2011, Jun.). The impact of deferring retirement age on retirement income adequacy. EBRI Issue Brief No. 358. Washington, DC: Employment Benefits Research Institute. Retrieved from http://www.ebri.org/pdf/briefspdf/EBRI_IB_06-2011_No358_Defr-Ret.pdf.

CHAPTER 3

Life Expectancy in California's Diverse Population: Recent Estimates by Race/Ethnicity and Neighborhood Social Class

by **Christina A. Clarke** and **Amal Harrati**

INTRODUCTION

In the current economic downturn, scholars, journalists and lawmakers are paying close attention to the impact of increasing life expectancy on defined-benefit pension and health care programs including Social Security and Medicare. The age for full Social Security benefits has already been raised to 67 and policymakers are debating whether age at eligibility for entitlements should be raised even further for younger workers. The justification for raising the age at eligibility relates largely to recent improvements in life expectancy, particularly among working-age adults. However, life expectancy differs widely across population subgroups defined by race and social class; further, disparities between some groups have been widening over time. Accounting for life expectancy differentials among population subgroups is important to accurate projection of future retirement policy for Californians, one of the most diverse populations in the United States with respect to race, ethnicity, immigration, education, and wealth. **Table 3.1** shows this diversity as reflected in the 2000 US Census. This article reviews existing research on differences in life expectancies by population groups in the United States (US) and presents detailed life expectancy estimates for the California population according to four important dimensions: age, sex, race/ethnicity, and socioeconomic status (SES).

1. BACKGROUND

Historical Trends

The twentieth century in the US has been characterized by a vast improvement in life expectancy and years of healthy life lived. A male born in 2010 could expect to live on average 25.7 years longer than a male born in 1910, from 49.9 to 75.6 years of age. Moreover, while historic gains in life expectancy were made through improvements in infant mortality, the second half of the twentieth century marked a shift towards improvements in working age and older ages (Cutler, Rosen, & Vijan, 2006; Lichtenberg, 2004).

Table 3.1

Detailed California Population Characteristics, 2000 and 2010

	2000		2010	
Total Population	33,871,648	100.0	37,253,956	100.0
Sex				
Male	16,874,892	49.8	18,517,830	49.7
Female	16,996,756	50.2	18,736,126	50.3
Age				
Under 19 years	10,234,571	30.1	10,452,042	28.1
20 to 34 years	7,610,350	22.4	8,083,826	21.7
35 to 44 years	5,485,341	16.2	5,182,710	13.9
45 to 54 years	4,331,635	12.8	5,252,371	14.1
55 to 59 years	1,467,252	4.3	2,204,296	5.9
60 to 64 years	1,146,841	3.4	1,832,197	4.9
65 to 74 years	1,887,823	5.6	2,275,336	6.1
75 to 84 years	1,282,178	3.8	1,370,210	3.7
85 years and over	425,657	1.3	600,968	1.6
Race				
One race specified	32,264,002	95.3	35,438,572	95.1
White	20,170,059	59.5	21,453,934	57.6
Black or African American	2,263,882	6.7	2,299,072	6.2
Asian	3,697,513	10.9	4,861,007	13.0
Other single race	6,132,548	18.1	6,824,559	18.3
Two or more races	1,607,646	4.7	1,815,384	4.9
Hispanic Ethnicity				
Hispanic or Latino (of any race)	10,966,556	32.4	14,013,719	37.6
Not Hispanic or Latino	22,905,092	67.6	23,240,237	62.4
White alone	15,816,790	46.7	*	*
Total Population age 25 years and over	21,298,900	100.0	*	*
Educational Attainment				
Less than 9th grade	2,446,324	11.5	*	*
9th to 12th grade, no diploma	2,496,419	11.7	*	*
High school graduate (includes equivalency)	4,288,452	20.1	*	*
Some college, no degree	4,879,336	22.9	*	*
Associate degree	1,518,403	7.1	*	*
Bachelor's degree	3,640,157	17.1	*	*
Graduate or professional degree	2,029,809	9.5	*	*

* 2010 US Census data not yet available at time of publication

Source: U.S. Census Bureau, Census 2000 Summary File 1, Matrices P1, P3, P4, P8, P9, P12, P13, P17, P18, P19, P20, P23, P27, P28, P33, PCT5, PCT8, PCT11, PCT15, H1, H3, H4, H5, H11, and H12. 2010 Census Summary File 1, Tables P5, P8, PCT4, PCT5, PCT8, P12, P13, PCT11 and PCT12.

However, life expectancy at birth in the US is lower than most parts of Western Europe and other parts of the industrialized world. In addition, variability in the age at death seems to be greater in the US than in other economically developed nations (Wilmoth & Horiuchi, 1999). It has long been recognized that persons of lower socioeconomic status (SES) have higher mortality in the US (Kitagawa & Hauser, 1973). Socioeconomic differences in mortality, however, are likely confounded by race, ethnicity, gender, and even geography. Moreover, it is likely that each of these factors have complex influences on life expectancy, exerting independent but also compounding effects.

Understanding Life Expectancy in Sociodemographic Subgroups

In the US, it is difficult to routinely monitor life expectancy according to certain sociodemographic characteristics like race/ethnicity and SES because they require two disparately collected sources of data (death certificates and population estimations) categorized uniformly with the same measure. It is also complicated because the very concepts of race/ethnicity and social class can be nebulous in the US. Different administrative or health data resources may not categorize race and ethnicity uniformly, especially with respect to persons of multi-racial background. These same data resources may not collect social class indicators and there is no universal consensus on how to measure them anyway. Thus, varying methodologies have been adopted by prior studies exploring racial and socioeconomic differences in life expectancy. Moreover, the compounding effects of various dimensions of SES with race, region, and other factors may make it difficult to correctly model and interpret estimates. Despite these complications, researchers have reported on persistent gaps in mortality between sociodemographic groups in the United States.

Race

Race is perhaps the most frequently studied demographic factor with respect to life expectancy and mortality. Large mortality differentials have been well-studied between Black and White populations in the United States in prior decades, although there is suggestive evidence that these gaps have been shrinking. National life tables show a difference in life expectancy at birth of 8.3 years between Blacks and Whites around 1950, which dropped to 6.9 years around 1990. Still, that gap remains when life expectancy is measured for adults; at age 30, the Black-White difference in life expectancy fell more modestly, from 5.9 years around 1950 to 5.6 years around 1990 (Wilmoth & Dennis, 2006).

Existing studies do not agree on the question of whether Black-White mortality differences can be explained by variation in SES. Some authors (Lantz et al., 1998; Menchik, 1993) report that excess mortality among Blacks disappears after taking account of differences in SES. On the other hand, some studies with larger samples (Hummer, Rogers, Nam, & LeClere, 1999; Rogers, 1992; Sorlie, Rogot, Anderson, Johnson, & Backlund, 1992; Sorlie, Backlund, & Keller, 1995) found that Blacks have a statistically significant mortality disadvantage even after controlling for SES. This ambiguity is in part due to differing effects of SES and race across causes of death; Black-White mortality differentials for homicide and some forms of cancer can be explained largely by differences in SES while for others, including cardiovascular disease, the most common cause of death, disparities still persist.

Reliable information on mortality rates among Hispanic and Asian populations is available only since 1990; there have been a handful of studies suggesting lower relative mortality (Barringer, Gardner, & Levin, 1993; Liao et al., 1998; Sorlie, Backlund, Johnson, & Rogot, 1993). Relative mortality estimates for Native Americans are still difficult to obtain (Snipp, 1997; Young, 1997). The mortality difference between Hispanics and non-Hispanics is especially intriguing because Hispanics in the United States have low levels of mortality in spite of their socioeconomic disadvantage, a phenomenon that has been called “an epidemiological paradox” (Markides & Coreil, 1986). This advantage is most pronounced at middle and older ages (Sorlie et al., 1993). Mortality among Asian and Pacific Islander populations, generally classified into a single “Asian/Pacific Islander” grouping, is generally lower than among any other group (Barringer et al., 1993; Gardner, 1980; Hummer et al., 1999; R. G. Rogers, Hummer, & Nam, 2000). This advantage has been observed across all adult age groups and for all major categories of cause of death. Still, there is considerable nativity and SES diversity among Asian sub-populations that are hidden by grouping them together.

Education and income

Ever since a seminal study by Kitagawa and Hauser (1973), showing differences of 4 (women) to 6 (men) years of life expectancy at age 25 between persons with the highest and lowest levels of education, studies of mortality differentials in the US have favored the use of educational attainment as the primary indicator of social class. A number of studies conclude that in the last four decades, educational differences in mortality have been increasing and widening (Feldman, Makuc, Kleinman, & Cornoni-Huntley, 1989; Pappas, Queen, Hadden, & Fisher, 1993; Rogot, Sorlie, Johnson, & Schmitt, 1992). Some studies suggest a widening for adult males but a narrowing for females (Preston & Elo, 1995; Rogot et al., 1992), and estimates of the comparable differences between low and high education levels range from 2 years to a remarkable 7.6 years of added life from birth.

Duleep (1989) used records from the Social Security Administration (CPS-SSA) to compare relative mortality differences by income during 1973–1978 and found that the relative mortality differences by income had widened over the period. Pappas et al. (1993) also concluded that relative mortality differences by income widened between 1960 and 1986 for all major population subgroups (race, sex, etc.). Schalick et al. (2000) showed similar results using data from 1967 and 1986. Their findings show that, using a relative measure of inequality, mortality differences have increased.

Measures of healthy life expectancy, calculated as the number of remaining years of life free of disability or major illness, reveal even starker differences among educational levels. Differentials between 1970 and 1990 for those with high and low education are large and widening for Black men and women and White men (Crimmins & Saito, 2001; Geronimus, Bound, & Waidmann, 1999). For White men, for example, healthy life expectancy at young adult ages (24–45 years old) are up to 200 percent higher for college graduates than those with only a high school diploma.

Residential context

It is well established that the risk of death is related to the socioeconomic and racial/ethnic characteristics of individuals, but it is also argued that community features (e.g., built environment) have a direct impact on the health and mortality of individuals residing in that community (Wilmoth & Dennis, 2006). A number of studies spanning the period 1960 to 1990 demonstrate a consistent

mortality advantage to rural areas (Kitagawa & Hauser, 1973; Smith, Anderson, Bradham, & Longino, 1995), with estimates that rural residents have death rates 5–9% lower than urbanites.

The interaction between poverty, race and geography is well documented by Geronimus et al. (1999) who found that poor Blacks in the rural South display a much smaller mortality disadvantage compared to poor Blacks in the urban North at comparable levels of socioeconomic status. These findings also highlight that variation in life expectancy exists by urbanity and also by region as separate and independent factors. Moreover, the excess mortality of these poor communities is explained little by the widely publicized causes of homicide and AIDS, but rather by higher levels of chronic disease, especially cardiovascular disease.

Studies using area-based measures of socioeconomic status

Death certificates are filled out by physicians at the time of death and generally do not include detailed individual level race/ethnicity, income, education or other measures of SES. However, residential address at death is a common, uniform data item that can be linked to U.S. Census data regarding neighborhood SES. Depending on the geographic granularity of the Census data available for the time period in question, larger areas like counties or smaller areas like census tracts (averaging 4,000 persons) or census block groups (average size 1,500 persons) can be used to define the area-level measure. One caveat in using area-level measures is that in the absence of individual-level measures of SES, they represent a mix of individual-level and contextual influences that are not easy to disentangle.

Singh and Siahpush (2006) used a deprivation index consisting of 11 education, occupation, wealth, income distribution, unemployment, poverty, and housing quality indicators to assign SES to all U.S. counties. They found that those in less-deprived counties experienced a longer life expectancy at each age than their counterparts in more-deprived groups, and importantly, that the gap widened over their study time frame. In 1980–82, the overall life expectancy at birth was 2.8 years longer for the least-deprived group than for the most-deprived group. By 1998–2000, the absolute difference in life expectancy at birth had increased to 4.5 years. In another novel approach, Murray, Kulkarni, and Ezzati (2006) divided the US population into eight distinct groups based on race, income and county characteristics, calling them the “Eight Americas.” They found that life expectancy for males in the lowest status group was 21 years lower than life expectancy for females in the highest status group. Kulkarni et al. (2011) updated these county-based studies by estimating life expectancies by age, sex and county for the U.S. from 2000 to 2007 and found that the gap in life expectancy remained relatively unchanged, at 20.1 years between the highest and lowest groups in the US.

Using a similar methodology, we (Clarke et al., 2010) assigned a smaller, census block group-based SES index measure to all deaths occurring in California during a three year period (1999–2001) and found a 19.6 year gap in life expectancy between the socioeconomic groups with the longest life expectancy and the shortest. We also clearly showed that race/ethnicity and neighborhood SES had independent influences on mortality in California’s diverse population.

Overall, our review of the existing work addressing sociodemographic differences in life expectancy confirms that life expectancy and mortality differentials for demographic sub-groups of the US population are substantial and may be growing. Still, data limitations and methodological differences make precise estimates difficult to compare across studies. Newer methodologies such as

those based on residential attributes provide a promising way to bridge the gap between disparate data sources. Using such a methodology, we present detailed estimates of life expectancy for Californians according to race, age and neighborhood-specific SES.

2. METHODS

Our methods were originally developed to examine SES differentials in the occurrence of cancer in California (Clarke, Glaser, Keegan, & Stroup, 2005; Parikh-Patel, Bates, & Campleman, 2006; Yost, Perkins, Cohen, Morris, & Wright, 2001), but they also allowed us to calculate neighborhood-specific death and life expectancy rates, on which we have reported previously from a health disparities standpoint (Clarke et al., 2010). These rates thereby represent a snapshot of the life expectancy experience of the entire California population, and as such, do not capture the life expectancy experience of a single birth cohort in California. Furthermore, they may underestimate the experience of the workforce.

In brief, our method required detailed, neighborhood-level data from the California Department of Health Services and the US Census Bureau. From the former, we obtained data for all 689,036 deaths recorded in California during the 3-year period January 1, 1999 to December 31, 2001 (one year before and after the 2000 US census). We defined mutually exclusive racial/ethnic groups for analysis as Hispanic (regardless of race), Asian/Pacific Islander, Black, and White. Each decedent's residential address was geocoded to one of the 21,920 US Census Bureau-defined census block groups in California and assigned to each of these block groups an SES index derived by Yost et al. (2001) from principal components analysis of seven census data items: education level, proportion with a working-class job, proportion unemployed, median household income, proportion below 200% of poverty threshold, median rent, and median home value. From the 2000 US Census, we obtained population counts for each California block group by age, sex, and racial/ethnic classification and estimated block-group populations for racial/ethnic categories comparable to the death certificate data. Finally, we calculated mortality rates and life tables (Oreglia, 1981) for groups defined by age, sex, race/ethnicity and neighborhood SES quintiles. A detailed description of our method is available in the **Appendix**.

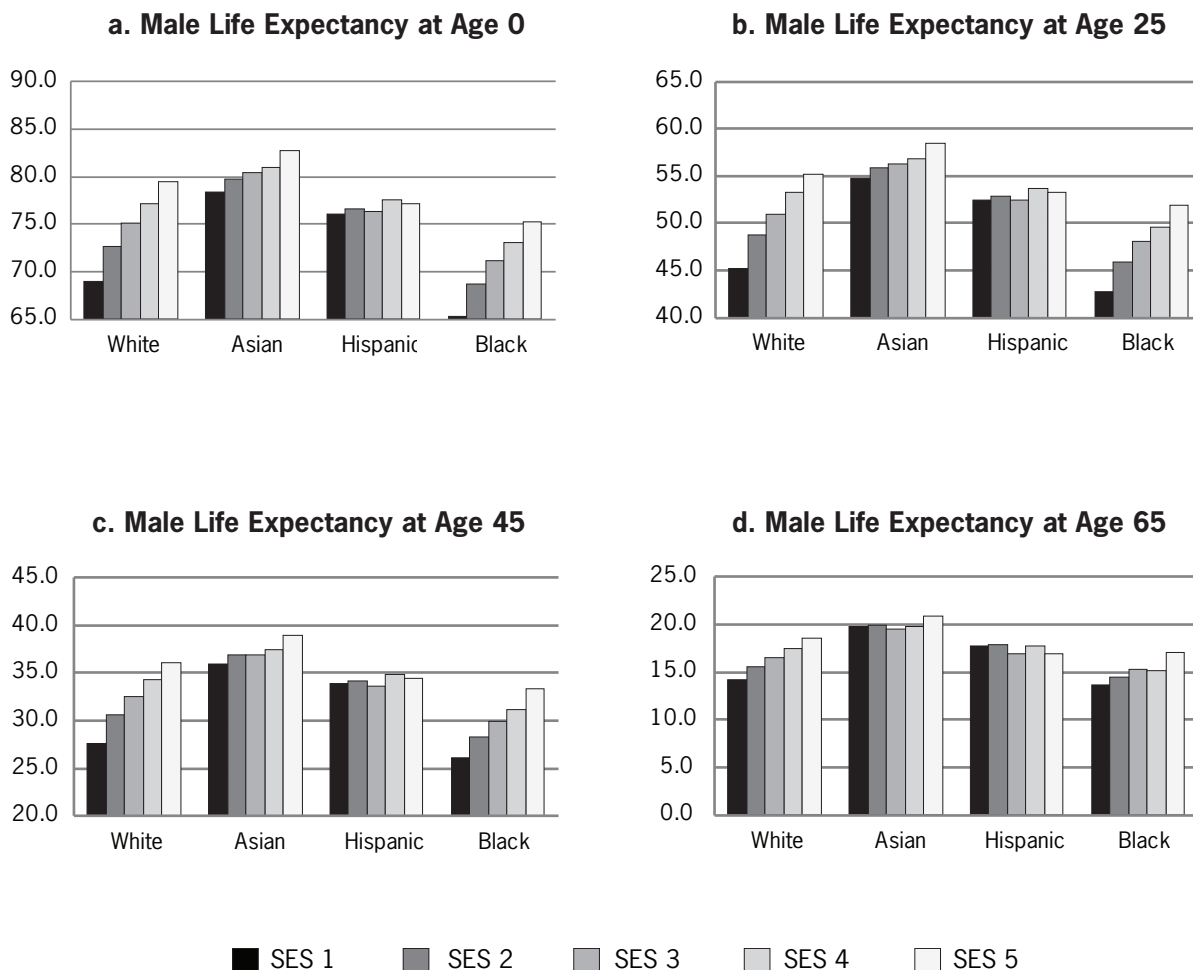
3. RESULTS

Figures 3.1 and 3.2 show life expectancy estimates at different ages (birth, ages 25, 45, and 65) for diverse populations in California, confirming substantial variation across age, sex, race/ethnicity, and neighborhood SES. For males, life expectancy at birth ranged over 17 years, from 65.3 years for Black males living in the lowest 20% of neighborhoods categorized by SES up to 82.7 years for Asian males living in the highest 20% of neighborhoods. For females, life expectancy at birth ranged 12 years from a low of 72.8 for Black women in the poorest neighborhoods to 84.9 for Asian women in the third (middle) and fourth 20% of neighborhoods. **Tables 3.2 and 3.3** summarize life expectancy estimates for ages 45 and 65 with associated 95% confidence intervals indicating their statistical stability.

Several important patterns are apparent from the data shown in these figures. First, as is well-recognized, females had higher life expectancy at birth than males even when matched for

Figure 3.1

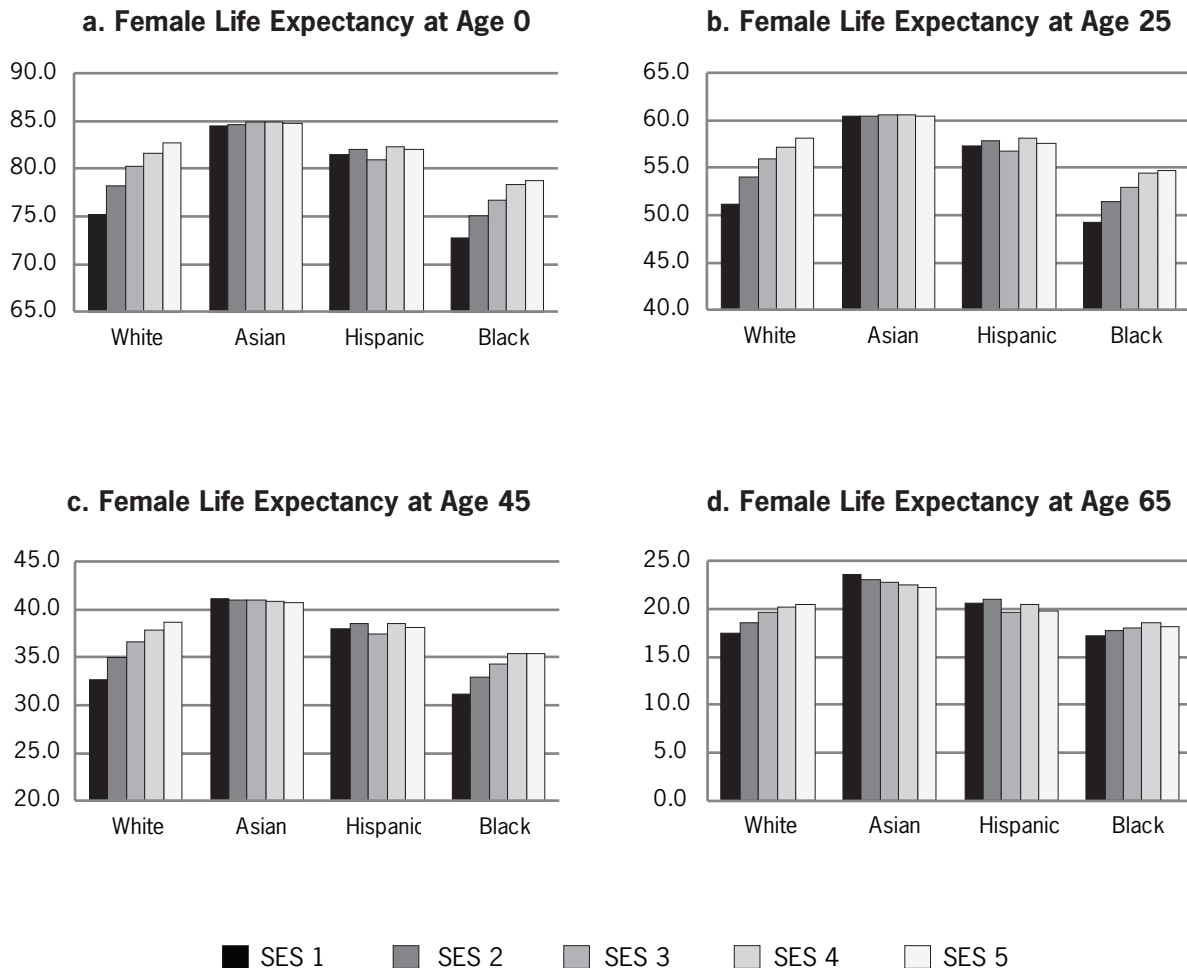
Male Life Expectancy at Ages 0, 25, 45 and 65 (years of life remaining)



race/ethnicity and neighborhood SES, 2–8 more years than their male counterparts. By age 65, this difference decreased to 1–4 years. Second, the influence of neighborhood SES on life expectancy varied among racial/ethnic groups. It was an important mediator of life expectancy among Whites and Blacks, and to some extent Asian males at early ages, but had minimal influence among Hispanics and Asian women. SES differentials in life expectancy among Whites and Blacks were clearly more pronounced at birth and in youth, but still marked at retirement age. Third, Asians had the highest and Blacks had the lowest life expectancy when matched for sex and neighborhood SES, generally a difference of 5–7 years. Life expectancy at birth exceeded 80 years for all Asian and Hispanic women regardless of socioeconomic ranking, and White women and Asian men living in higher SES neighborhoods.

Figure 3.2

Female Life Expectancy at Ages 0, 25, 45 and 65 (years of life remaining)



Looking in more detail at life expectancy at 65, currently the normative retirement age, Figures 3.1d and 3.2d show that the group with the highest life expectancy, Asian women living in the lowest quintile of neighborhoods ranked by SES (23.6 years), had nearly 4 more years of life expected than men in the same group (19.8 years) and 10 years more than that of the group with the lowest life expectancy, Black males living in the lowest 20% of SES neighborhoods (13.6 years). Among Whites and Black males, SES remained an important predictor of life expectancy, with 3–4 years of difference between the lowest and highest categories of neighborhoods. However, race/ethnicity was a more profound discriminator of life expectancy, with differences of about 4–6 years between most Black and Asian groups, matched for sex and neighborhood SES.

Table 3.2

Life Expectancy at Age 45 by Sex, Race/Ethnicity, and Socioeconomic Status (SES)

Population Group	Neighborhood SES Quintile					
	1 (lowest) e ₀ (95% ci)	2 e ₀ (95% ci)	3 e ₀ (95% ci)	4 e ₀ (95% ci)	5 (highest) e ₀ (95% ci)	Overall e ₀ (95% ci)
Males						33.5 (33.4,33.6)
White	27.6 (27.4,27.8)	30.6 (30.5,30.7)	32.5 (32.4,32.6)	34.3 (34.2,34.4)	36.1 (36.0,36.2)	33.2 (33.1,33.3)
Asian	36.0 (35.6,36.4)	36.9 (36.6,37.2)	36.9 (36.6,37.2)	37.5 (37.2,37.8)	38.9 (38.6,39.2)	37.5 (37.4,37.6)
Hispanic	33.9 (33.7,34.1)	34.2 (34.0,34.4)	33.6 (33.4,33.8)	34.8 (34.5,35.1)	34.4 (34.0,34.8)	34.0 (33.9,34.1)
Black	26.1 (25.8,26.4)	28.3 (27.9,28.7)	29.9 (29.5,30.3)	31.1 (30.6,31.6)	33.3 (32.6,34.0)	28.8 (28.6,29.0)
Females						37.3 (37.2,37.4)
White	32.7 (32.5,32.9)	35.0 (34.9,35.1)	36.7 (36.6,36.8)	37.8 (37.7,37.9)	38.7 (38.6,38.8)	36.9 (36.8,37.0)
Asian	41.2 (40.8,41.6)	41.0 (40.7,41.3)	41.0 (40.7,41.3)	40.9 (40.7,41.1)	40.8 (40.6,41.0)	41.0 (40.9,41.1)
Hispanic	38.0 (37.8,38.2)	38.6 (38.4,38.8)	37.4 (37.2, 37.6)	38.6 (38.3,38.9)	38.1 (37.8,38.4)	38.1 (38.0,38.2)
Black	31.2 (30.9,31.5)	33.0 (32.7,33.3)	34.3 (33.9,34.7)	35.4 (34.9,35.9)	35.4 (34.8,36.0)	33.3 (33.1,33.5)

Table 3.3

Life Expectancy at Age 65 by Sex, Race/Ethnicity, and Socioeconomic Status (SES)

Population Group	Neighborhood SES Quintile					
	1 (lowest) e ₀ (95% ci)	2 e ₀ (95% ci)	3 e ₀ (95% ci)	4 e ₀ (95% ci)	5 (highest) e ₀ (95% ci)	Overall e ₀ (95% ci)
Males						17.1 (17.0,17.2)
White	14.2 (14.0,14.4)	15.5 (15.4,15.6)	16.5 (16.4,16.6)	17.5 (17.4,17.6)	18.5 (18.4,18.6)	16.9 (16.8,17.0)
Asian	19.8 (19.4,20.2)	19.9 (19.6,20.2)	19.5 (19.2,19.8)	19.8 (19.5,20.1)	20.9 (20.6,21.2)	20.0 (19.9,20.1)
Hispanic	17.7 (17.5,17.9)	17.9 (17.7,18.1)	16.9 (16.7,17.1)	17.8 (17.5,18.1)	16.9 (16.5,17.3)	17.5 (17.4,17.6)
Black	13.6 (13.3,13.9)	14.4 (14.0,14.8)	15.3 (14.9,15.7)	15.2 (14.7,15.7)	17.0 (16.3,17.7)	14.6 (14.4,14.8)
Females						19.8 (19.7,19.9)
White	17.5 (17.3,17.7)	18.6 (18.5,18.7)	19.6 (19.5,19.7)	20.2 (20.1,20.3)	20.4 (20.3,20.5)	19.6 (19.5,19.7)
Asian	23.6 (23.2,24.0)	23.0 (22.7,23.3)	22.8 (22.5,23.1)	22.5 (22.3,22.7)	22.2 (22.0,22.4)	22.8 (22.7,22.9)
Hispanic	20.6 (20.4,20.8)	21.0 (20.8,21.2)	19.6 (19.4,19.8)	20.5 (20.2,20.8)	19.8 (19.5,20.1)	20.4 (20.3,20.5)
Black	17.2 (16.9,17.5)	17.7 (17.4,18.0)	18.0 (17.6,18.4)	18.5 (18.0,19.0)	18.1 (17.5,18.7)	17.7 (17.5,17.9)

4. DISCUSSION

This broad assessment of life expectancy in the general population of California, to our knowledge the first to consider race/ethnicity and social class simultaneously, suggests several dynamics key to future planning of retirement security. As would be expected in a diverse population, life expectancy varied substantially among groups defined by sex, race, and neighborhood SES, with absolute differences in life expectancy at age 65 varying 10 years between the group with the lowest expectancy of 13.6 years (Black males living in the poorest neighborhoods) and that with the highest expectancy of 23.6 years (Asian women living in the poorest neighborhoods). Thus, sex, race, and SES are important but complex mediators of life expectancy in California and all should be considered in meaningful projections of life expectancy and associated retirement needs.

Among White and Black populations, we observed substantial variation in life expectancy (about 6–10 years) according to our multidimensional measure of neighborhood SES. Notably, this variation declined as populations aged, but nonetheless indicates that neighborhood SES is a meaningful differentiator of health status and life expectancy in these populations. We were not able to remove from these general population estimates those persons who are permanently disabled or otherwise not in the workforce, who may have been disproportionately concentrated in lower SES neighborhoods, which may mean that the SES variation in life expectancy among members of the workforce are less pronounced.

Asian and Hispanic populations, two of the most rapidly growing in California, had some of the highest absolute life expectancy estimates calculated here. Our estimates suggest that Asian and Hispanic women in California born in 2000, regardless of SES group, will live well past age 80, potentially two decades after retirement age. Further work should be done to disentangle the influence of nativity on these absolute estimates, as it is likely an important differentiator of life expectancy. Immigrants tend to be self-selected for their health and resilience, giving them longer life expectancies than their contemporaries in their home countries, and important to death registration, may be more likely to return to their home country (Palloni & Arias, 2004) when ill. The combined effect of these “immigrate when-healthy” and “emigrate-when-sick” movements may lead to overall inflation of life expectancy calculations for immigrant groups. Thus, it is possible that the life expectancy estimates reported here represent slight overestimates of the true experience of Asian and Hispanic populations in California. As these populations represent an ever-changing mix of foreign-born and US-born populations with varying levels of acculturation, it is also not surprising that neighborhood SES did not meaningfully influence life expectancy in these groups. It would be important to assess life expectancy separately for Asian ethnic groups, including the largest groups of Chinese, Filipino, Japanese, and Korean, and also for Hispanic ethnic subgroups, as these are well-recognized to be heterogeneous with respect to nativity, age at immigration, occupation and other characteristics relevant to both health and retirement.

Our method of using neighborhood information to assign a uniform, area-based metric for SES from existing health and administrative databases has allowed us to detect and measure health and life expectancy disparities among various California subpopulations. This strategy could have represented an important resource for future planning, but unfortunately, the 2010 census did not include a long-form, and thereby did not collect neighborhood information regarding SES or its

proxies. Thus, it is uncertain if in the future it will be feasible to update these assessments with more current data.

In this chapter, we reviewed research findings on variations in life expectancy by race and social class as well as widening disparities in life expectancy among some groups. We also analyzed mortality among California residents, finding significant variation in life expectancy by race and neighborhood SES. Variation in life expectancy across diverse populations is substantial at age 65, albeit of a lower magnitude than at birth. Policymakers may wish to take such variation into account in order to understand how the many sociodemographic groups comprising the California population will be differentially affected by retirement age policy.

* * *

Appendix: Detailed Methodology

We obtained detailed, census block group-level data regarding deaths from the California Department of Health Services and population counts from the US Census Bureau. From the former, we obtained data for all 689,036 deaths recorded in California during the 3-year period January 1, 1999 to December 31, 2001 (one year before and after the 2000 US census). This data contained information regarding the decedents' age, sex, race/ethnicity, causes of death, and residential address at death, but, notably, does not include information about workforce participation. Using the race/ethnicity information, we defined mutually exclusive racial/ethnic groups for analysis: Hispanic (regardless of race), Asian/Pacific Islander, Black, and White. We additionally used a US Census-based Hispanic surname list to reclassify 8,420 (9.6%) additional persons as Hispanic, as Hispanic classification has been shown previously to be underreported on death certificates (Rosenberg, Maurer, Sorlie, Johnson, et al., 1999) and in other health studies, surname lists have improved overall validity of ethnic classifications compared to self-report (Morgan, Wei, & Virnig, 2004; Perez-Stable, Hiatt, Sabogal, & Otero-Sabogal, 1995; Stewart, Swallen, Glaser, Horn-Ross, & West, 1999; Wei, Virnig, John, & Morgan, 2006). Using the residential address information, we geocoded each address to one of the 21,920 US Census Bureau-defined census block groups in California and assigned to each of these block groups an SES index derived previously (Yost et al., 2001) from principal components analysis of seven census data items: education level, proportion with a working-class job, proportion unemployed, median household income, proportion below 200 percent of poverty line, median rent, and median home value. We grouped the indices into SES quintiles based on the statewide distribution. For the 24,613 (3.7%) death certificates which lacked the address detail needed for accurate geocoding, we imputed an SES quintile value through proportional allocation by race/ethnicity within the smallest known geographic area (ZIP code when available, county otherwise). All analyses were repeated to exclude imputed data, and differences were negligible.

From the 2000 US Census, we obtained population counts for each California block group by age, sex, and racial/ethnic classification. Because the death certificate data were based on single race categories, we reclassified the 5% of California residents who reported at least two races into single race categories using the National Center for Health Statistics' county-level bridged-race population estimates for 2000 (National Center for Health Statistics, 2005). Because the US Census Bureau publicly releases block group-level population counts by age and sex for each race separately, for

Hispanics, and for non-Hispanic Whites, but not for non-Hispanic Blacks, non-Hispanic Asians/Pacific Islanders, or non-Hispanic Native Americans, we used a ranking procedure (iterative proportional fitting) (Deming & Stephan, 1940) to estimate these populations by age and sex using the known marginal totals.

Finally, we constructed life tables using mortality rates calculated by age, sex, race/ethnicity and neighborhood SES quintiles. Mortality rates were calculated using average annual deaths over the period 1999 to 2001 divided by the population estimates. Thus, we produced 40 abridged life tables, one for each combination of sex, race/ethnicity, and SES quintile, tabulated using California's Center for Health Statistics methodology (Oreglia, 1981). Our life tables for Blacks, Whites, and Asians/Pacific Islanders were very similar to published tables (Ficenec, 2004; Johnson, 2004), whereas our life expectancy estimates for Hispanics were 1 to 1.5 years lower than published estimates, presumably related to our use of a Hispanic surname list to classify more deaths as Hispanic. We used bootstrap methods to estimate 95 percent confidence intervals (Shao, 1996) for each life expectancy estimate to account for uncertainty due to sample size and the imputation of neighborhood SES for those death certificates that could not be precisely geocoded.

References

- Barringer, H. R., Gardner, R. W., & Levin, M. J. (1993). *Asians and Pacific Islanders in the United States. The Population of the United States in the 1980s: A Census Monograph Series*. New York: Russell Sage Foundation.
- Clarke, C. A., Glaser, S. L., Keegan, T. H., & Stroup, A. (2005). Neighborhood socioeconomic status and Hodgkin's lymphoma incidence in California. *Cancer Epidemiology Biomarkers and Prevention*, 14(6), 1441-1447.
- Clarke, C. A., Miller, T., Chang, E. T., Yin, D., Cockburn, M., & Gomez, S. L. (2010). Racial and social class gradients in life expectancy in contemporary California. *Social Science & Medicine*, 70(9), 1373-1380.
- Crimmins, E. M., & Saito, Y. (2001). Trends in healthy life expectancy in the United States, 1970-1990: gender, racial, and educational differences. *Social Science & Medicine*, 52(11), 1629-1641.
- Cutler, D. M., Rosen, A. B., & Vijan, S. (2006). The value of medical spending in the United States, 1960-2000. *New England Journal of Medicine*, 355(9), 920-927.
- Deming, W. E., & Stephan, F. F. (1940). On a least squares adjustment of a sampled frequency table when the expected marginal totals are known. *The Annals of Mathematical Statistics*, 11(4), 427-444.
- Duleep, H. (1989). Measuring socioeconomic mortality differentials over time. *Demography*, 26(2), 345-351.
- Feldman, J. J., Makuc, D. M., Kleinman, J. C., & Cornoni-Huntley, J. (1989). National trends in educational differentials in mortality. *American Journal of Epidemiology*, 129(5), 919-933.
- Ficenec, S. (2004). *Abridged Life Tables for California, 2002*. Retrieved from <http://www.cdph.ca.gov/pubsforms/Pubs/OHIRLifeTables2002.pdf>.
- Gardner, R. W. (1980). Ethnic differentials in mortality in Hawaii. *Hawaii Medical Journal*, 39, 6.

- Geronimus, A. T., Bound, J., & Waidmann, T. A. (1999). Poverty, time, and place: variation in excess mortality across selected US populations, 1980-1990. *Journal of Epidemiology and Community Health*, 53(6), 325-334.
- Hummer, R. A., Rogers, R. G., Nam, C. B., & LeClere, F. B. (1999). Race/ethnicity, nativity, and U.S. adult mortality. *Social Science Quarterly*, 80(1), 136-153.
- Johnson, H. P., Hayes, J.M. (2004). The demographics of mortality in California. *California Counts: Population Trends and Profiles*, 5(4).
- Kitagawa, E. M., & Hauser, P. M. (1973). *Differential Mortality in the United States: A Study in Socioeconomic Epidemiology*. Cambridge, MA: Harvard University Press.
- Kulkarni, S. C., Levin-Rector, A., Ezzati, M., & Murray, C. J. L. (2011). Falling behind: life expectancy in US counties from 2000 to 2007 in an international context. *Population Health Metrics*, 9(16).
- Lantz, P. M., House, J. S., Lepkowski, J. M., Williams, D. R., Mero, R. P., & Chen, J. (1998). Socioeconomic factors, health behaviors, and mortality. *JAMA: The Journal of the American Medical Association*, 279(21), 1703-1708.
- Liao, Y., Cooper, R. S., Cao, G., Durazo-Arvizu, R., Kaufman, J. S., Luke, A., & McGee, D. L. (1998). Mortality patterns among adult Hispanics: findings from the NHIS, 1986 to 1990. *American Journal of Public Health*, 88(2), 227-232.
- Lichtenberg, F. R. (2004). Sources of U.S. longevity increase, 1960-2001. *Quarterly Review of Economics and Finance*, 44(3), 31.
- Markides, K. S., & Coreil, J. (1986). The health of Hispanics in the southwestern United States. *Public Health Report*, 101(13), 13.
- Menchik, P. (1993). Economic status as a determinant of mortality among black and white older men: Does poverty kill? *Population Studies*, 47, 427-436.
- Morgan, R. O., Wei, II, & Virnig, B. A. (2004). Improving identification of Hispanic males in Medicare: use of surname matching. *Med Care*, 42(8), 810-816.
- Murray, C., Kulkarni, S., Michaud, C., Tomijima, N., Bulzacchelli, M., Iandiorio, T & Ezzati, M. (2006). Eight Americas: Investigating mortality disparities across race, counties, and race-counties in the United States. *PLoS Medicine* 3(9), 1513-1524.
- National Center for Health Statistics (Producer). (2005). Bridged-race Vintage 2004 postcensal population estimates for July 1, 2000- July 1, 2004, by year, country, single-year of age, bridged race, Hispanic origin, and sex. Available at http://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm#vintage2004.
- Oreglia, A. (1981). Methodology for Constructing Abridged Life Tables for California, 1977. *Data Matters*, 8101021. Sacramento, CA: Center for Health Statistics, California Department of Health Services.
- Palloni, A., & Arias, E. (2004). Paradox lost: explaining the Hispanic adult mortality advantage. *Demography*, 41(3), 385-415.
- Pappas, G., Queen, S., Hadden, W., & Fisher, G. (1993). The increasing disparity in mortality between socioeconomic groups in the United States, 1960 and 1986. *New England Journal of Medicine*, 329(2), 7.
- Parikh-Patel, A., Bates, J. H., & Campleman, S. (2006). Colorectal cancer stage at diagnosis by socioeconomic and urban/rural status in California, 1988-2000. *Cancer*, 107(Supplement 5), 1189-1195.

- Perez-Stable, E. J., Hiatt, R. A., Sabogal, F., & Otero-Sabogal, R. (1995). Use of Spanish surnames to identify Latinos: comparison to self-identification. *Journal of National Cancer Institute. Monographs*, (18), 11-15.
- Preston, S. H., & Elo, I. T. (1995). Are educational differentials in adult mortality increasing in the United States? *Journal of Aging and Health*, 7(4), 476-496.
- Rogers, R. (1992). Living and dying in the U.S.A.: Sociodemographic determinants of death among blacks and whites. *Demography*, 29(2), 287-303.
- Rogers, R. G., Hummer, R. A., & Nam, C. B. (2000). *Living and Dying in the U.S.A.: Behavioral, Health and Social Differentials of Adult Mortality*. San Diego, CA: Academic Press.
- Rogot, E., Sorlie, P. D., Johnson, N. J., & Schmitt, C. (1992). *A Mortality Study of 1.3 Million Persons by Demographic, Social, and Economic Factors: 1979-1985 Follow up. U.S. National Longitudinal Mortality Study. Second Data Book*. Washington, DC.
- Rosenberg, H. M., Maurer, J. D., Sorlie, P. D., Johnson, N. J., MacDorman, M.F., Hoyert, D.C., Spitler, J.F. & Scott, C. (1999). Quality of death rates by race and Hispanic origin: A summary of current research, 1999. *Vital and Health Statistics*, 2(128).
- Schalick, L. M., Hadden, W., Pamuk, E., Navarro, V., & Pappas, G. (2000). The widening gap in death rates among income groups in the United States from 1967-1986. *International Journal of Health Services*, 30(1), 14.
- Shao, J. & Sitter, R. R. (1996). Bootstrap for imputed survey data. *Journal of the American Statistical Association*, 91(435), 1278-1288.
- Singh, G. K., & Siahpush, M. (2006). Widening socioeconomic inequalities in US life expectancy, 1980-2000. *International Journal of Epidemiology*, 35(4), 969-979.
- Smith, M. H., Anderson, R. T., Bradham, D. D., & Longino Jr., C. F. (1995). Rural and urban differences in mortality among Americans 55 years and older: Analysis of the National Longitudinal Mortality Study. *The Journal of Rural Health*, 11(4), 274-285.
- Snipp, C. M. (1997). The size and distribution of the American Indian population: Fertility, mortality, migration, and residence. *Population Research and Policy Review*, 16(1), 61-93.
- Sorlie, P., Rogot, E., Anderson, R., Johnson, N. J., & Backlund, E. (1992). Black-white mortality differences by family income. *The Lancet*, 340(8815), 346-350.
- Sorlie, P. D., Backlund, E., Johnson, N. J., & Rogot, E. (1993). Mortality by Hispanic status in the United States. *JAMA: The Journal of the American Medical Association*, 270(20), 2464-2468.
- Sorlie, P. D., Backlund, E., & Keller, J. B. (1995). US mortality by economic, demographic, and social characteristics: The National Longitudinal Mortality Study. *American Journal of Public Health*, 85(7), 949-956.
- Stewart, S. L., Swallen, K. C., Glaser, S. L., Horn-Ross, P. L., & West, D. W. (1999). Comparison of methods for classifying Hispanic ethnicity in a population-based cancer registry. *American Journal of Epidemiology*, 149(11), 1063-1071.
- Wei, I.I., Virnig, B. A., John, D. A., & Morgan, R. O. (2006). Using a Spanish surname match to improve identification of Hispanic women in Medicare administrative data. *Health Services Research*, 41(4 Pt 1), 1469-1481.

- Wilmoth, J., & Dennis, M. (2006). Social differences in older adult mortality in the United States: Questions, data, methods, and results. In J.M. Robine, E. M. Crimmins, S. Horiuchi & Z. Yi (Eds.), *Human Longevity, Individual Life Duration, and the Growth of the Oldest-Old Population* (Vol. 4, pp. 297-332): Springer Netherlands.
- Wilmoth, J., & Horiuchi, S. (1999). Rectangularization revisited: Variability of age at death within human populations. *Demography*, 36(4), 475-495.
- Yost, K., Perkins, C., Cohen, R., Morris, C., & Wright, W. (2001). Socioeconomic status and breast cancer incidence in California for different race/ethnic groups. *Cancer Causes Control*, 12(8), 703-711.
- Young, T. K. (1997). Recent health trends in the Native American population. *Population Research and Policy Review*, 16(1), 147-167.

Reference URLs have been updated since the print version of this report.

CHAPTER 4

The Employer Case for Defined Benefit Pensions

by **Beth A. Almeida and Christian E. Weller**

INTRODUCTION

The Great Recession and housing crisis destroyed trillions of dollars in household wealth after 2007. The precipitous decline of housing and stock market value has drastically reduced retirement income security in the United States. The Center for Retirement Research (CRR) at Boston College shows that the share of U.S. households who will not be able to maintain their standard of living in retirement has grown to over 50% (Munnell, Webb, & Golub-Sass 2009). And, the Employee Benefit Research Institute calculates that many households will not be able to compensate for this lack of retirement income security by simply working longer. It would take too long to recover the losses, jobs may not be available, and people's health may be failing in old age (VanDerhei & Copeland, 2011). Thus the current economic crisis has exposed the deep vulnerability of working Americans' retirement prospects.

Defined benefit (DB) pensions are a key source of retirement income security, since they offer guaranteed lifetime benefits. DB pensions, in combination with Social Security, typically provide for a solid middle class retirement, more so than the equivalent amounts of other savings, e.g., in 401(k) plans (Porell & Almeida, 2009; CRR, 2010). Households without DB pensions, but with other savings face a number of risks and hence economic costs that drastically reduce their retirement income security (Weller, 2010). The economic security associated with DB pensions explains their popularity in public opinion polls (Matthew Greenwald and Assoc., 2004; Matthew Greenwald and Assoc. & NIRS, 2009b).

The continuation of DB pensions as a key source of middle-class retirement income security will depend on employers' willingness to offer DB pensions. DB pensions offer key benefits to employers that cannot be found in other retirement benefits. At the same time, there can be drawbacks of DB pensions to employers, depending on how they are structured. Many of these drawbacks can be mitigated, as illustrated by the experiences of public sector pensions and multi-employer pensions in the private sector. Specifically, DB pensions tend to be more stable, implying greater attractiveness to employers, if they meet the following criteria: they are stand-alone entities that are not combined with employers' other business interests, they are pooled entities, where risks and costs are spread across

several employers, and there are regular contributions from employers, employees, or both, such that pension plans can take advantage of dollar cost averaging to avoid large funding swings.

This chapter will make the following points:¹ First, DB pensions enable employers to recruit qualified employees, especially those who will make a long-term commitment and who are invested in the future success of their employers, rather than those looking for short-term economic gains. Second, DB pensions are effective retention tools. They provide an incentive for employees to stay with an employer for more time than otherwise would be the case, since DB pensions defer some part of people's compensation into the future. Third, DB pensions can contribute to greater employee productivity due to better recruitment and longer tenure. Fourth, DB pensions are a highly efficient means of delivering benefits. DB pensions incorporate a number of insurance benefits to employees that do not exist with defined contribution (DC) plans. The cost of offering the same level of lifetime retirement income to employees is thus lower with DB pensions than with DC plans. Fifth, DB pensions work with the cyclical nature of employers' workforce management goals, while DC plans can work against them. Employees with DC plans are more likely to retire when economic times are good, savings are high, and employers' needs for experienced employees are greatest. In other words, DC plans can work against employers' goals of keeping talent on board during an economic boom. Similarly, in an economic downturn, employees with DC plans may find the value of their accounts impaired, and thus will try to stay on their job longer, just at the time when employers may be looking to reduce the size of their workforce. Sixth, DB pensions can remain an integral part of the retirement income landscape under the right circumstances. The experiences of private and public pension plans show that DB pensions are more stable if they are stand-alone entities with pooled investments that receive regular contributions from employers and employees.

1. DB PENSIONS: THE BASICS

DB pensions fall into three categories. The first is single-employer plans or "corporate plans," which cover the employees of one private sector employer and are part of the employer's operations. The second consists of plans that cover more than one employer in the private sector: multi-employer plans—also called Taft-Hartley—and multiple employer plans. The primary distinction is that Taft-Hartley plans are collectively-bargained and multiple employer plans are not. Both multi- and multiple employer plans are entities that are separate from a single employer and operate as stand-alone organizations. They cover the employees of several employers and are organized by industry, (such as construction), occupation (such as operating engineers), or both. Oversight of collectively bargained multi-employer plans is exercised by a joint labor-management board of trustees in which one half of the trustees come from the employer side and the other half from the employee side. Multiple employer plans are also overseen by a trustee or trustees, but there is no requirement of joint labor-management representation on the board. The third category includes public pension plans for the employees of state and local governments. Some public pension plans cover employees of only a single jurisdiction, e.g., a single city or town. The largest public pension plans cover employees from a wide range of public employers, for example, a state-wide teacher pension plan that covers employees in many school districts, or a state-wide municipal pension plan that includes local governments across the state. Plans like these function in a manner similar to multi- or multiple employer plans.

Pension plans are typically well regulated to ensure participants' benefit security. Both single and multi-/multiple employer plans in the private sector are governed by the Employee Retirement Income Security Act of 1974 (ERISA), which designates the U.S. Department of Labor (DOL) as the primary pension regulator, with some regulations, e.g., for investments and taxes, being also administered by the Securities and Exchange Commission (SEC) and the Internal Revenue Service. Public pension plans fall under state laws, which often can go further to protect workers than the private sector does. For example, public pension benefits in some jurisdictions enjoy legal protection against reductions that apply to both already-earned benefits and not-yet-earned benefits, while private sector employees are only protected against cuts of already earned retirement benefits.

About one-fifth of private sector employees and the overwhelming majority of public employees are potentially eligible to receive a future DB pension from their current employers (BLS, 2011; EBRI, 2011). Lifetime retirement benefits are generally based on a formula that considers the employee's years of service to the employer, age at retirement, and earnings history. Beneficiaries often have to work for at least five years in the private sector and possibly longer in the public sector before benefits become vested, i.e., before they earn a non-forfeitable and legally protected right to their benefits. Pension plans are "pre-funded" systems, i.e., benefits are financed by contributions made into the pension fund over the course of an employee's career, which grow as a result of investment earnings on accumulated assets. Pension contributions in the private sector are typically made by employers, but in the public sector a shared financing model dominates, with both employers and employees contributing. Employee contributions, where they exist, are typically made at a fixed percentage of their salary, regardless of whether the pension plan is underfunded or overfunded. Employers bear the risk if plans have too few assets to pay all promised benefits and more contributions are necessary. They do have some discretion, however, with regards to the timing and amount of contributions to their pension plans.

Traditionally, DB pensions have served as a form of deferred compensation, unlike other forms of retirement savings. Unlike employer contributions to a DC plan, which an employee can take with them when they leave an employer (provided they have met any vesting requirements), an employee must wait until retirement age to begin drawing benefits from a DB pension.

Since employers have some discretion in structuring DB pensions, many are designed with built-in incentives to retain skilled talent. Specifically, in final-pay plans that offer benefits based on an employee's pay at the end of a career, retirement benefits make up a smaller share of total compensation earlier in employees' careers, as compared with later (Cahill & Soto, 2003; Clark & Schieber, 2000; Johnson & Uccello, 2001).

However, some DB pensions do not defer compensation. So called "cash balance" pension plans are DB plans, but they resemble retirement savings plans in key aspects. A growing share of single employer pensions offered by private employers are cash balance plans (Weller, 2005a). Employers and/or employees contribute and employers again bear the risk of asset values falling too low to pay for promised benefits. Each worker in a cash balance plan has a notional (hypothetical) account designed to look like a DC plan, even though all funds are invested as one large pension pool. An employee's notional account is credited with an amount equal to a fixed share of a worker's earnings each year and the account balance increases annually at a pre-determined interest rate, the interest credit. Notional account balances can be taken and "rolled over" into other retirement plans when an employee switches jobs (Cahill & Soto, 2003; Clark & Schieber, 2000; Johnson & Uccello, 2001). If

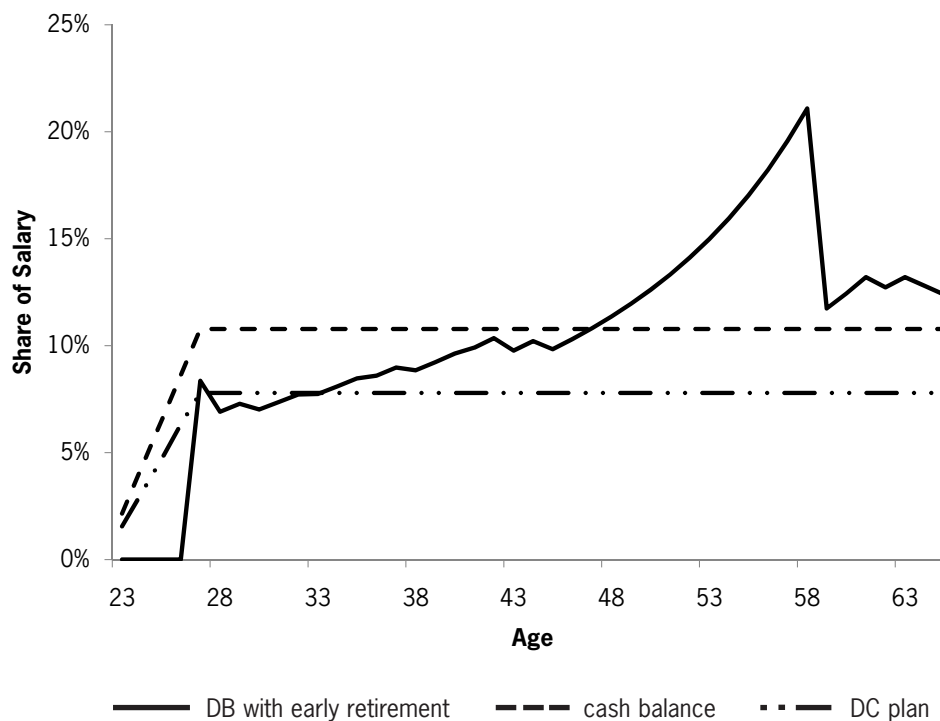
funds are not rolled over, the retirement benefit is determined by the employee's entire career earnings, not just those at the end of a career.

Figure 4.1 illustrates the differences between a plan design that defers compensation and those that do not. The annual benefit accruals under a typical final-pay pension plan, a cash balance pension plan, and a retirement savings plan are shown. The x-axis shows the employee's years of service and the y-axis shows the annual amount of retirement benefits relative to annual salary that the employee earns under each plan. Once the initial vesting requirement is met, employees earn an increasing amount of retirement benefits, relative to earnings, until they reach early retirement eligibility (in this example, after 35 years of service) in the final-pay plan, whereas in the other types of plans, benefit accrual is the same year-to-year, after vesting. Employees still earn additional benefits after the early retirement incentive is expired in the final-pay DB plan, but the annual accrual is less than during the years leading up to the early retirement age. These differences beg the question, which structure is preferable—an accelerating (then decelerating) benefit accrual, or a flat accrual pattern?

From the employer's perspective, a non-linear benefit accrual pattern may be advantageous. The acceleration in benefit accruals, which occurs later in the career, provides employees strong incentives to remain on the job. This enables the employer to recoup training costs incurred early in

Figure 4.1

Annual Wealth Changes for Employee Entering in 2011 Relative to Earnings under DB Plan, Cash Balance Plan, and DC Plan, Constant Normal Cost



Source: Weller (2011).

the employee's career and to take advantage of greater productivity that comes with experience, points to which we will later return. The early retirement incentive in this example may be a way for the employer to manage the size of the workforce at a future point, without having to resort to layoffs. By comparison, the flat benefit accruals of the cash balance and DC plans create no specific incentives to stay on with an employer or to depart. An employer may need to develop alternative strategies to achieve these objectives.

3. INDIVIDUAL RISK EXPOSURE IN DB PLANS AND DC PLANS

Employers bear a number of risks with DB pensions, which are shifted onto individuals in DC plans.² Individuals with DC plans need to make investment and withdrawal decisions for themselves. DC plans thus expose individuals to a number of key risks, which we label market, investment, and longevity risks.³ The fact that DB plans shield workers from these risks explains their popularity among employees and has significant implications for firm level productivity.

Market risk includes the risk of living through a prolonged trough in financial markets, such that the rates of return on individual savings are below long-term averages. Conversely somebody who lives through a prolonged market upswing such as from 1983 to 2000, will reap well above-average rates of return and thus above-average retirement income just because of the historical period during which they worked, saved, and invested. DB pensions promise a benefit that is independent of stock market performance during any given employee's lifetime, as long as employers keep their pension plans well supported, as we discuss further below. Employees with a DB pension hence will receive similar benefits, relative to their earnings, whether they had the good fortune to live and work through an up market or the bad luck of doing so through a prolonged down market on Wall Street. Employees with DC plans, by contrast, are exposed to market risk (Munnell & Sunden, 2004).

Investment risk is the risk of making unlucky or unwise decisions. Relatively large investments in employer stock in individuals' DC plans are a common example of investment risk (Munnell & Sunden, 2004). Investing retirement account assets in employer stock, as was the case for many employees at Enron, exposes both an employee's current and future economic wellbeing to the fate of one single employer. DB pensions avoid such investment risks, either because of federal regulations of private sector pensions under the Employee Retirement Income Security Act of 1974 (ERISA) or because of state rules and regulations for public sector DB pension plans, which mandate prudent investment practices such as portfolio diversification. For example, Weller and Wenger (2009a) show that public sector DB pensions were prudently managed before the financial crisis hit in 2007. That is, a diverse set of state regulations generally worked as intended to protect the retirement savings of millions of public employees from undue financial market risks.

Longevity risk is the risk of outliving one's savings. This risk is often discounted or misunderstood by employees saving for retirement. Often financial seminars will inform employees of their "average life expectancy," with employees concluding that if they save up enough money to last for the average life expectancy, they should be financially secure. But no individual is "average" — half of people will live *longer* than the average life expectancy, and risk outliving their savings. An individual would need to save enough to last for the "maximum" life expectancy to eliminate longevity risk. DB pensions can guarantee a lifetime stream of income more efficiently than a group of individuals, each

saving on their own, because pensions pool longevity risks. Unlike individuals, pensions can plan for the average life expectancy of their beneficiaries, since with a large enough pool, the life expectancy of a group will be quite predictable, whereas an individual's life expectancy is quite uncertain. DB pensions can insulate employees from fundamental risks, whereas DC plans tend to expose employees to these risks.⁴ The greater risk protection with DB pensions serves to explain a large part of their attractiveness to both employees and employers.

4. EMPLOYEE RECRUITMENT, RETENTION, AND PRODUCTIVITY

DB pensions can be highly effective recruitment and retention tools for employers (Friedberg & Owyang 2005; Gustman et al., 1994; Ippolito, 1997; Nalebluff & Zeckhauser, 1984) because they protect employees from key risks and because they defer compensation. The recruitment and retention effects may contribute to higher productivity, especially among skilled workers, when DB pensions are present than when they are absent.

Recruitment

The recruitment value of DB pensions lies in their intrinsic insurance functions. Individuals are generally not particularly fond of risk and prefer ways to reduce that risk, especially when it comes to something as substantial as retirement savings. Browning and Lusardi (1996) present a comprehensive overview of the fundamental economic argument why social insurance improves people's happiness ("utility" for economists), considering that people are risk averse.

Employees thus value the offer of some social insurance protections from their employers in the form of DB pensions. Employees generally value DB pensions more than DC plans. Ippolito (1997), for instance, finds that employees value pensions so highly that they would willingly forego higher wages for guaranteed retirement income, possibly reducing the costs of recruiting skilled employees. Watson and Wyatt (2005) reports that employees of firms with DB pensions had twice the probability of citing the retirement plan as an important factor in choosing their employer as employees at firms with only retirement savings plans; and that employees of firms with DB pensions placed a much greater importance on both attraction to and retention at their current employer than employees at firms with retirement savings plans. MetLife (2008) similarly finds that 72% of employees cited retirement benefits as an important factor in their loyalty to their employer. And, a survey of employers from Diversified Investment Advisors (2004) finds that 84% of DB pension sponsors—employers—believed that their DB pension has some impact on employee retention, with 31% stating that they thought this impact was major. The survey further finds that 58% of large employers (those with more than 25,000 employees) believed that their DB pension has a major impact on employee retention. Employers that offer pensions are able to attract sought-after employees because employees are attracted, in part, to employers with a DB pension.

Retention

The retention effect of DB pensions has been robustly documented in economic research as lower employee turnover (Allen, Clark, & McDermed, 1993; Even & MacPherson, 1996; Kotlikoff &

Wise, 1987; Munnell, Haverstick, & Sanzenbacher, 2006; Nyce, 2007). Allen, Clark, and McDermed (1993) offer evidence that employee tenure is greater at firms that offer DB pensions than at firms that do not. Even and MacPherson (1996) similarly conclude that firms without DB pensions experienced substantially higher turnover rates, ranging from an increase of about 20% in employee turnover to over 200%. The effect of DB pensions on employee turnover tends to be greater at smaller firms than at larger ones. And Munnell, Haverstick, and Sanzenbacher (2006) quantify the reduced attrition associated with DB pensions, suggesting that lower DB pension coverage and higher DC plan coverage beginning in the 1990s correlated with higher turnover rates at private sector employers. Offering a DB pension increases tenure with the employer by four years, according to their estimates, as compared to having no retirement system in place, and by 1.3 years compared to offering only a DC plan. The combination of a DB pension and DC plan increases tenure by 3.1 years, relative to only offering a DC plan.

Productivity

Employers with DB pensions may also be better able to attract desirable skilled employees due to self-selection. Ippolito (1997), for instance, focuses on the attraction effect of DB pensions and considers how employers use retirement plans to select employees interested in making a long-term commitment to their employers. Employees who delay gratification and who are less focused on immediate rewards are more attractive employees for employers that offer DB pensions. Nyce (2007) also finds that employees who are more likely to stick with a job also tend to be more likely to accept employment that offers a DB pension in the first place.

DB pensions, thus, may be superior for employers looking to attract employees who will share in the employer's mission. There is some tentative evidence comparing private sector workers, where DB pensions have become less prevalent, with public sector workers, where the vast majority is covered by DB pensions, that shows that public employees are more likely to value their work and that public employees are more likely to invest in their skills than their private sector counterparts. Houston (2000), for instance, shows that public employees are more likely to place a higher value on the intrinsic reward of work that is important and provides a feeling of accomplishment than are private employees. Wright (2001) similarly finds that public employees valued their work more than private sector employees, due to the inherent nature of public sector organizations that addressed complex social functions, supplying goods and services that cannot necessarily be bought and sold in a private market. Those who enter public service may place a higher value on carrying out acts for the good of their community, and the resulting internal satisfaction that these acts provide, than their private sector counterparts. It stands to reason that these employees value the work and its long-term rewards, including the deferred compensation from a DB pension, more than immediate financial rewards in the form of a salary. DB pensions may serve as a tool for employers to attract these employees by offering them their preferred compensation structure.

Moreover public employees tend to invest more in their skills than private sector employees, possibly because of the long-term commitment function of DB pensions. Because they reward long tenure, DB pensions may provide incentives for highly skilled employees like researchers, computer programmers, and lawyers, to stick with public service instead of seeking better-paid positions in the private sector. Public school teachers, for instance, who face strict certification requirements,

also tend to turn over less frequently than their private sector counterparts (Cannata, 2008; Guarino et al., 2006). DB pensions may serve as an incentive for employees to maintain and improve their skills because they know that a long tenure with one employer will be rewarded through deferred compensation.

Better recruitment of targeted employees, increased retention of skilled employees, and greater commitment to the employer translate into higher productivity with DB pensions than with other compensation forms. Dorsey (1995), for example, finds that some labor productivity gains can be attributed to DB pension coverage. More recently, Hall (2006) finds, based on an analysis of firms moving from DB pensions to DC plans, that those firms that dropped the DB pension experienced loss of productivity between 1995 and 2000, relative to firms that retained their DB pensions. This loss of productivity may be due to greater turnover after the switch to a DC plan, since more experienced and more skilled employees are leaving more quickly and are replaced with less experienced, less skilled employees, thus reducing average labor productivity growth. And Weller (forthcoming) shows that there is a substantial risk of lower teacher effectiveness following a switch from a DB pension to a DC plan or cash balance plan, based on the existing literature.

5. ECONOMIC EFFICIENCIES OF DB PENSIONS

DB pensions tend to be an efficient form of employee compensation. Employers can deliver retirement income security at a lower cost with DB pensions than with DC plans. This efficiency can further increase productivity since employers have to pay less to achieve the same level of economic security and thus happiness for their employees.

There are several aspects to the efficiency of DB pensions.

First, DB pensions achieve higher rates of return on investments than do DC plans. This is in part due to DB pensions' capacity to mitigate idiosyncratic risk through professional management and prudent investing practices, as discussed previously. Conservative estimates put the advantage at about 100 basis points per year (i.e., one percentage point in additional returns). This advantage, compounded over a career, translates into a 26% reduction in employer cost to provide a given level of retirement benefits (Almeida & Forna, 2008). Another reason for DB pensions' superior investment returns is that unlike DC plans, which are invested with a fixed retirement date in mind, pensions can invest for a much longer time horizon. Individuals saving for retirement are (correctly) advised to reduce investment risk towards the end of their career, however, this necessarily means foregoing potential investment earnings. DB pensions, by contrast, have a much longer investment horizon than individuals who face the biological reality of aging. Pensions that maintain a healthy balance of new entrants, middle aged workers, and retirees can ride out the ups and downs of financial markets, avoiding selling assets when markets are distressed, which is sometimes a necessity for individuals. This superior ability to absorb market risk has a material effect, lowering employer costs by about 5% over a career (Ibid.).⁵

Second, because of DB pensions' better ability to manage longevity risk as compared with DC plans, employer costs are reduced. Individuals attempting to "self-insure" against longevity risks must accumulate far more assets than a DB pension would, essentially because the employee must plan for the "maximum" life expectancy, while the DB pension needs only to plan for the average life

expectancy. This is an expensive proposition. Employer costs under a DB pension are 15% lower thanks to longevity risk pooling (Ibid.). The benefit security is thus greater per dollar invested in a DB pension than in DC plans.

Third, the actual retirement decision offers additional efficiencies to employers with DB pensions. DB pensions can encourage “efficient retirement,” such that employees withdraw from the labor force at the optimal time, when their productivity decreases. Lazear (1983), for instance, argues that DB pensions can function similar to severance pay in encouraging efficient retirement as employees age and their productivity starts to level off or even to decrease. And, Nalebluff and Zeckhauser (1984) argue that the features of most DB pensions can be designed to facilitate employees’ retirement decisions.

The evidence suggests that efficient retirement indeed works as DB pensions incentivize crucial employees—those committed to the success of the organization—to stay with the organization. The retirement decision under a DB pension positively interacts with other advantages of DB pensions. Employees tend to feel more committed to their employer when a DB pension is present and those employees who feel particularly committed to their employer in the presence of a DB pension tend to retire about two years later than employees who are less committed (Luchak, Pohler & Gellattly, 2008). Employees who care about the success of the organization, are hence more likely to contribute productively to that employer, when covered by a DB pension.

Fourth, DB pensions reduce the pro-cyclical bias towards retirement—retiring during the good times when employers need employees the most and sticking around during the bad times when employers need employees the least. This bias is evident from retirement decisions during financial market swings (Weller, 2006; Weller & Wenger, 2009b). Employees with DB pensions will make their retirement decisions based on a number of factors, including the level of benefits that they have earned, since that will be a major factor in their post-retirement well-being. Because pensions are pre-funded, with assets held in a trust for the sole benefit of employees and retirees, DB pension benefits are independent of employers’ immediate financial fortunes in the private sector and even more so in the public sector, where benefits are often constitutionally protected. The number of people retiring will not vary all that much between recessions and recoveries, if employees are covered by a DB pension.

Retirements will vary substantially when employees are covered by DC plans. Employees have a greater incentive to retire during an economic boom period, because their DC plans are flush. But those are also exactly the times when employers will need skilled employees most since labor markets tend to be strong as well (Weller & Wenger, 2009b). The opposite holds true in recessions, when employers with retirement savings plans encounter a phenomenon known as job lock, whereby employees become more likely to stay on the job as a recession unfolds. This is because recession brings with it a financial market decline that reduces the value of DC plan assets. Employees may hence decide to work longer to make up for these losses. But, employees who want to work longer in this instance will have to try to stay with their existing employer since unemployment rates also go up in a recession. As a result, when employers that offer DC plans start looking to reduce the size of their workforce, they may be more likely to have to resort to layoffs, as compared with employers that offer DB pensions.

This problem of pro-cyclical retirement timing is further exacerbated by employers reducing their contributions to their employees’ retirement savings plans during an economic downturn

(Munnell & Sunden, 2004). What employers may view as a necessary cost-savings measure, can exacerbate job lock.

Employees thus have more incentives to stay with an employer as economic times worsen, if their primary benefits come in the form of DC plans. In a 2008 survey of recent retirees, 76% indeed reported that their ability to afford retirement was an extremely or very important factor in their decision to retire, and 81% of those with a DB pension reported that the DB benefit itself was either extremely or very important in determining retirement affordability (Helman et al., 2008). DC plans can thus exacerbate labor market swings, while DB pensions tend to generate more stable employment relations over the course of the business cycle. Employers may consequently incur larger employment related costs to manage their workforce and thus reduced productivity with retirement savings plans than is the case with DB pensions.

6. FACILITATING EMPLOYER SUPPORT FOR DB PENSIONS

Employers in the private sector have been cutting back on DB pensions even though they can offer a number of advantages to both employers and employees. This contrasts with a more stable situation under multi-employer and public employee DB pension plans. Coverage by multi-employer pension plans has been much more stable than that by single employer plans in recent decades, although substantially fewer employees are covered by multi-employer plans than by single employer plans (Almeida, 2007). Also, public employers (state and local governments) have stuck with their DB pensions, even as they faced growing financial demands from their pension plans and revenue shortfalls due to the economic crises of 2001 and 2007-2009. Governmental employers have dealt with their financial challenges in many cases by modifying benefits. Thirty-nine states made changes to their pension plans between 2001 and 2010. However, only one state, Alaska, switched from a DB pension to a retirement savings plan (Pew, 2011). All other states introduced a combination of higher employee and employer contributions and slower benefit growth, but generally maintained DB pensions as the only or the primary retirement benefit (see Pew, 2011; Boivie & Weller, forthcoming; and Wojcik, 2008 for more details).

The contrasting experience of single employer DB pension plans in the private sector on the one hand and private sector, multi-employer DB plans and public sector DB plans on the other, suggests that there are features of these latter plans that make them more attractive to employers than single employer plans.

Three features stand out in this comparison that can explain the difference in the trends we observe and thus inform future DB pension design. These features are: organizations that are separate from other employer operations, regular contributions from employers and employees, and economies of scale and scope that stem from pooling risks and investments.

Employer surveys confirm the reasons for employers abandoning single employer DB pensions. As new legal changes for private sector pensions were discussed in the early 2000s, employers indicated that by far their primary concern—with 33% of employers listing it as their main concern—was the possible cost volatility associated with the legal changes (Hewitt, 2003). Munnell et al. (2006) similarly argue that unpredictable changes and risk exposure were a driving force for economically healthy employers to abandon their DB pensions. The proposed legal changes that

ultimately became law with the Pension Protection Act of 2003 introduced greater volatility to valuation of pension plan assets and liabilities and thus greater volatility to the amount that an employer would have to contribute from year to year, at least for employers who were not used to making regular contributions to their DB pension plans (Weller, 2005b). Regular contributions to stand-alone entities lower this uncertainty since the chance of underfunding and catch-up contributions is mitigated.

The desire to cut benefit costs in the face of increasing global competition and rising health care expenditures also contributed to the decline of DB pensions (Hewitt, 2003; Munnell et al., 2006). Hewitt (2003) finds that 19% of employers listed overall cost as their main concern. The experience of public DB pensions, though, has shown that employers can handle these competing challenges without abandoning DB pensions.

Other often-cited reasons, especially employee mobility, play a minor role in employers' concerns over DB pensions. Hewitt (2003) finds that only 2% of employers list employee mobility and 6% lack of employee appreciation as their main concern with their DB pensions.

DB pensions thus should be more stable in an environment with high economic efficiency—to reduce costs—and predictable contributions that are ideally not comingled with other operations of the employer.

Stand-Alone Entities

One of the common characteristics of private sector multi-employer plans and most public pension plans is that they are entities separate from the employer's other operations.⁶ While it is the case for every pension plan that investments are held in a trust separate from other employer funds, the plan oversight structure can vary greatly. When it comes to single-employer plans, the employer "wears two hats." As plan trustee, the employer is as a fiduciary of the plan, meaning that they owe a duty of loyalty to plan participants and decisions must be guided by the best interest of the plan's beneficiaries. As the plan sponsor, the employer performs "settlor" functions—adopting the plan, changing its provisions, and funding the plan. Sometimes the line between these two functions can become murky. By contrast, a governance structure that is independent of a single employer or individual, such as the joint labor-management trustee model that prevails among multi-employer plans, or diverse boards drawn from various stakeholders that can be found in public pension plans, means that pension trustees and pension plan administrators can focus on prudently managing their investments to ensure benefit income security, without having to simultaneously worry about an individual employer's finances. Put differently, employers do not have to worry about the management of their pension plan investments and the administration of contributions and benefits, but leave those to a separate organization—the pension plan. Employers and pension plans can each manage their own responsibilities and not be distracted by the demands of the other.

Regular Contributions

Both multi-employer and public pension plans tend to receive regular contributions. These are predictable contributions to DB pension plans paid on a monthly, quarterly, or semi-annual basis, either calculated as a fixed dollar amount per hour worked, or as constant share of employees'

salaries. With multi-employer plans, contributions are made by employers, pursuant to collective bargaining agreements (Almeida, 2007). And in the public sector, employees generally contribute a fixed share of their salary to state and local government DB plans, with employer contributions often (though not always) varying year-by-year according to the economic needs of the plan. In 2004, for workers covered by Social Security, the median employer contribution to public plans was 7% of salary while employees contributed an additional 5% of salary (Munnell & Soto, 2007).

Contributions to private sector single-employer plans, by contrast, can be quite volatile. By law, employers contribute to their pension plans depending on two factors: how well funded the DB pension is, and the benefits that have been earned in that year by current employees. If a plan is “well funded,” meaning that the assets in the pension trust are sufficient to cover the current and future costs of all benefits, employers may not be required to contribute anything to the pension. Conversely, if a plan is “poorly funded,” with assets insufficient to cover the cost of all future benefits, the employer may be required to contribute substantial sums. ERISA and the Internal Revenue Code regulate the way employers have to calculate the amount that they need to contribute to their single-employer pension plans. These regulations were last updated with the Pension Protection Act of 2006, which created greater volatility in the amount that employers have to contribute (Weller, 2005b; Weller & Baker, 2005), but which did not require regular employer contributions.

Regular contributions offer several advantages to employers, even if they are made by employees.⁷ First, regular contributions are predictable. Employers know what they have to pay when they participate in a private sector multi-employer plan and they know what their pension plan will receive on a regular basis in the case of state and local government DB pension plans. Second, regular contributions allow pension plans to take advantage of dollar cost averaging, an investment process that works as follows. The same amount of contributions buys a lot of comparatively cheap investments in the middle of a crisis, while it pays more dearly for investments during a market upswing. The result is an average price that pension plans pay for their investments over a number of months, years, and even decades. This average price for investments is below the high price for investments during a financial market peak and above the price for investments during a financial market trough. A drop from the market peak thus hurts pension plans less than if they had not used dollar cost averaging; and DB pension plans that receive regular contributions can take advantage of an upswing from a market trough. Dollar cost averaging serves as an insurance against market swings for investors. Third, regular contributions lower the chance of pension plan underfunding. DB pension plans that receive regular contributions have to rely less on the investment performance of their assets to pay for promised benefits. A sharp drop in financial markets as occurred in 2000–2001 and 2008–2009 will thus have less of an effect than in a case where DB pension plans do not receive regular contributions.

Economies of Scale

Multi-employer plans and public pension plans achieve substantial economies of scale that most individual employer plans cannot achieve. Because of their large asset pools, multi-employer and public sector DB pension plans may be able to drive down administrative costs and reduce asset management and other fees (Council of Institutional Investors, 2006; Munnell & Soto, 2007; Weller

and Jenkins, 2007). Furthermore, investment decisions in multi-employer and public sector DB pensions are made by professional investment managers whose activities are overseen by trustees. DB pension plan assets are broadly diversified and managers follow a long-term investment strategy. Weller and Wenger (2009) find, for instance, that state and local plans exercise a great deal of prudence, tending to rebalance their assets regularly in response to large price changes. Also, public sector plans' holdings of higher-risk/higher-return assets increases when these plans have higher funding levels, thereby indicating that plans do not "chase return" in response to lower funding levels (Weller & Wenger, 2009), and public sector plans' holdings of equities is smaller when demands on employers in the form of higher contributions increase.

Another advantage of larger DB plans is that they can take advantage of broader diversification strategies. In recent years, some DB plans have allocated a small percentage of their holdings to include so-called "alternative" investments such as private equities, venture capital, and hedge funds. These investments can help to improve the returns and/or reduce the overall risk of a plan's portfolio by introducing assets whose returns are uncorrelated (Flynn and Lum, 2007; Seco, 2005; Phillips & Surz, 2003; Indjic & Partners, 2002; Watson Wyatt, 2008).

Policy Applications

The knowledge that stand-alone entities, regular contributions, and pooled resources may make DB pensions more attractive to employers has influenced the development of policy proposals. Two examples are worth highlighting here. One is the Benefit Platform for Life Security proposal by the ERISA Industry Council (ERIC), an employer association, envisioned for the private sector. The other is the possibility of opening existing public sector pensions to other employee groups.⁸

ERIC's Marc Ugoretz (2007) proposes the 'Guaranteed DB Plan' as part of a broader benefits "platform." This would be a DB pension option offered to employees without retirement benefits through third party, private sector, benefit providers. An employer would select a service provider or Benefits Administrator that would offer a standardized plan to its workforce. Employers, on behalf of their employees, would regularly and voluntarily contribute to the plan. Employees would receive a guaranteed monthly benefit upon retirement. Employees would not be permitted to access their savings before retirement, but assets would be portable between jobs as long as the employee stays with the same Benefits Administrator. Benefits would be calculated as a flat percentage of pay that increases each year at a predetermined interest rate. Upon retirement, the employee's accumulated savings would be converted to a monthly annuity.

The benefit formula of the Guaranteed DB Plan is thus akin to a cash balance plan, rather than a traditional final-pay DB pension. Employers may hence be able to access the efficiencies of DB pensions and may benefit from the recruitment benefits of DB pensions, but may not enjoy the advantages of DB pensions as retention tool since there is no deferred compensation (Weller, forthcoming).

Another possibility to broaden DB pension coverage may be the expansion of existing public sector DB pensions to private sector employees. Although current regulations create hurdles to "mixing" public and private sector employees in a single plan, the potential benefits of such an approach can be seen in the experience of the Municipal Employees Retirement System (MERS) of Michigan. MERS is a public retirement system that serves municipalities across the state. Recently, access to

MERS has been expanded to employees of tribal governments in Michigan, which previously had not offered DB pensions to their workforces (MERS, 2010). Extending this model further could include public pension systems creating a separate, distinct DB pension plan for private-sector employers that are too small to deal with the costs and administrative complexities of offering a pension on their own. The public retirement system would administer the plan, collecting contributions, investing assets, and paying out benefits, often with the involvement of private financial service providers. This would enable small businesses to access the economies of scale that come with participation in a multiple employer plan and offer high quality benefits to their employees at a modest cost. As any plan covering private sector employees, the pension would be regulated under ERISA.

Like the ERIC proposal, this type of public-private partnership approach would leverage the strengths of stand-alone entities, with the possibility of regular contributions from employers, and with the economic advantages of economies of scale. The benefit formula could be a traditional DB pension formula, thereby offering employers all of the typical benefits associated with DB pensions: recruitment, retention, and efficiency.

7. CONCLUSION

We review the evidence on the benefits of DB pensions for employers in this chapter. Employers can use DB pensions to their advantage to recruit skilled employees that are committed to the long-term success of the organization, they can more easily retain skilled employees with DB pensions than is the case with alternative benefits, and they can deliver retirement benefits more efficiently with DB pensions, thus saving money and potentially increasing productivity.

DB pensions tend to fare better under certain circumstances than others. The evidence for U.S. employers in the private and public sector suggests that DB pensions are more stable if they operate as stand-alone entities that are separate from the employers' other operations, receive regular, stable contributions from the employees, employers, or both, and if they are large enough to take advantage of the benefits of economies of scale in their administration and investments.

This evidence also suggests that the promotion of stable DB pensions may not necessarily require large policy changes. But, the examples of the private and public sector where DB pensions are comparatively stable, specifically multi-employer plans and state and local government plans, indicate that the promotion of stable DB pensions requires some coordination mechanism to bring together several employers to implement the three characteristics we highlighted—stand-alone entities, regular contributions, and economies of scale. We present two proposals—one from an industry association and one from a state-wide municipal DB pension plan—to show where the coordination of employers could come from. It could either be through public seed funding of stand-alone DB pension plans or through the expansion of already existing public sector DB pensions to private sector employers and their employees.

The lessons from our discussion are thus twofold. First, DB pensions offer employers a number of attractive advantages. Second, employers could enjoy these advantages at relatively low costs, given the right circumstances. It would not require massive policy changes at the federal or the state level to start creating these circumstances.

* * *

Endnotes

¹ Our chapter primarily focuses on private sector pensions. We will compare DB pensions to defined contribution (DC) plans. Different account types are prevalent in different sectors, specifically 401(k) plans are common among private sector employers, while 403(b) plans are more common among public employers.

² See Weller (2010) for a survey of the literature and an analysis of individual responses to increased risk exposure, when DB pensions are not present.

³ The greater risk exposure under DC plans than under DB plans is intentional. The economic logic originally went that more risk poses a cost to individuals, who generally do not like risk. Individuals should consequently save more to compensate for the greater risk (see Browning and Lusardi, 1996 for a summary of the related literature). More recent research—behavioral economics—has shown that this logic has its limits since it makes unrealistic behavioral assumptions about individual decisions (see DellaVigna, 2009 for a review of the relevant literature). It assumes that individuals fully understand complex risks, completely understand how to protect themselves from these risks, and will follow this knowledge. Humans generally do not have the full appreciation of all of the complexities and even when they do, they do not necessarily act on that knowledge. Greater risk exposure has resulted in more savings, but not enough to compensate for the full increase in individual risk exposure (Weller, 2010).

⁴ Cash balance plans theoretically offer employees insurance protections similar to those of traditional DB pensions. Most cash balance plans in the private sector, though, offer employees the option to get all of their retirement money up front upon retirement in the form of lump sum distribution (Weller, 2005a). This can expose individuals again to potential market, investment, and longevity risks.

⁵ Cash balance DB pensions may need to hold more cash to accommodate employee withdrawals due to increased benefit portability, which lowers the average rate of return.

⁶ See Almeida (2007) for a detailed discussion of multi-employer plans and Weller (2008) for details of public pension plans.

⁷ Economists generally treat all contributions as being borne by employees, regardless of who actually makes the contribution.

⁸ Weller and Helburn (2010) summarize a range of proposals, including these two, to show the possibilities for state governments to increase retirement income security for private sector employees.

References

- Allen, S.G., Clark, R.L., & McDermid, A. (1993). Pensions, bonding, and lifetime jobs. *Journal of Human Resources*, 28(3), 463–481.
- Almeida, B. (2007). Multi-employer plans: Plan design for the future. In T. Ghilarducci and C. Weller (Eds.), *Employee Pensions: Policies, Problems, And Possibilities*. Ithaca, NY: Cornell University Press for the Labor and Employment Relations Association.
- Boivie, I., & Almeida, B. (2008). Patience is a virtue: Asset allocation patterns in DB and DC plans. NIRS Issue Brief. Washington, DC: National Institute on Retirement Security.

- Boivie, I., & Weller, C. (forthcoming). The fiscal crisis, public pensions, and implications for labor and employment relations. Forthcoming in D. Mitchell (Ed.), *Impact of the Great Recession on Public Sector Employment*. Ithaca, NY: Cornell University Press for the Labor and Employment Relations Association. Forthcoming 2012.
- Browning, M., & Lusardi, A. (1996). Household saving: Micro theories and micro facts. *Journal of Economic Literature*, 34(4), 1797-1855.
- Bureau of Labor Statistics. (2011). *National Compensation Survey*. Washington, DC: BLS.
- Cahill, K., & Soto, M. (2003). How do cash balance plans affect the pension landscape? CRR Issue Brief No. 14. Chestnut Hill, MA: Center for Retirement Research at Boston College.
- Cannata, M. (2008). Teacher qualifications and work environments across school types. Policy Brief. Arizona State University, Tempe, AZ, and University of Colorado at Boulder, Boulder, CO.
- Center for Retirement Research. (2010). National Retirement Risk Index fact sheet 2. Chestnut Hill, MA: Center for Retirement Research at Boston College.
- Clark, R., & Schieber, S. (2000). An empirical analysis of the transition to hybrid pension plans in the United States. Paper presented at the "Public Policies and Private Pensions" conference sponsored by the Brookings Institution, Stanford Institute for Economic Policy Research, and TIAA-CREF Institute, Washington, DC, September 21. Retrieved from http://www.brookings.edu/es/events/pension/01clark_schieb.pdf.
- Council of Institutional Investors. (2006). *Protecting the nest egg*. Washington, DC: CII.
- DellaVigna, S. (2009). Psychology and economics: Evidence from the field. *Journal of Economic Literature*, 47(2), 315-372.
- Diversified Investment Advisors. (2004). *Diversified Investment Advisors report on retirement plans*. Purchase, NY: Diversified Investment Advisors.
- Dorsey, S. (1995). Pension portability and labor market efficiency: a survey of the literature. *Industrial and Labor Relations Review*, 48(2), 276-292.
- Employee Benefits Research Institute. (2011). *EBRI data book*. Washington, DC: EBRI. Retrieved from <http://www.ebri.org/pdf/publications/books/databook/DB.Chapter%2010.pdf>.
- Even, W.E., & MacPherson, D.A. (1996). Employer size and labor turnover: The role of pensions. *Industrial and Labor Relations Review*, 49(4), 707-728.
- Flynn, C., & Lum, H. (2007). *DC plans underperformed DB funds*. Toronto, ON: CEM Benchmarking, Inc.
- Fornia, W., & Almeida, B. (2008). A better bang for the buck: The economic efficiencies of DB plans. Washington, DC: National Institute on Retirement Security.
- Friedberg, L., & Owyang, M.T. (2005). Explaining the evolution of pension structure and job tenure. Working Paper. St. Louis, MO: Federal Reserve Bank of St. Louis.
- Guarino, C.M., Santibañez, L., & Daley, G.A. (2006). Teacher recruitment and retention: A review of the recent empirical literature. *Review of Educational Research*, 76(2), 173-208.
- Gustman, A.L., Mitchell, O.S., & Steinmeier, T.L. (1994). The role of pensions in the labor market: A survey of the literature. *Industrial and Labor Relations Review*, 47(3), 417-438.

- Hall, T. (2006). An empirical analysis of pensions for the labor market. Paper presented at the Society of Labor Economics Eleventh Annual Meetings. May 5-6, 2006. Cambridge, MA.
- Helman, R., Copeland, C., VanDerhei, J., Salisbury, D. (2008). *EBRI 2008 Recent Retirees Survey: Report of findings*. Issue Brief No. 319. Washington, DC: Employee Benefits Research Institute.
- Hewitt Associates. (2003). *Survey Findings: Current Retirement Plan Challenges, Employer Perspectives 2003*. Chicago, IL: Aon Hewitt.
- Houston, D.J. (2000). Public service motivation: A multivariate test. *Journal of Public Administration Research and Theory*, 10(4), 713-728.
- Indjic, D., & Partners, F. (2002). Strategic asset allocation with portfolios of hedge funds. *Alternative Investment Management Association Journal* (December): 29-33.
- Ippolito, R.A. (1997). *Pension plans and employee performance: Evidence, analysis, and policy*. Chicago, IL: The University of Chicago Press.
- Johnson, R., & Uccello, C. (2001). The potential effects of cash balance plans on the distribution of pension wealth in midlife. Final Report to the Pension and Welfare Administration, U.S. Department of Labor, Washington, DC: Urban Institute.
- Kotlikoff, L.J., & Wise, D.A. (1987). The incentive effects of private pension plans. In Bodie, Z., Shoven, J.B., & Wise, D.A. (Eds.), *Issues in pension economics* (pp. 283-336). Chicago: University of Chicago Press.
- Lazear, E.P. (1983). Pensions as severance pay. In Z. Bodie & J.B. Shoven (Eds.), *Financial Aspects of the United States Pension System*. Chicago: University of Chicago Press.
- Luchak, A.A., Pohler, D.M., & Gellattly, I.R. (2008). When do committed employees retire? The effects of organizational commitment on retirement plans under a defined-benefit pension plan. *Human Resource Management*, 47(3), 581-599.
- Matthew Greenwald and Associates, Inc. (2004). *Retirement plan preferences survey: Report of findings*. Schaumburg, IL: Society of Actuaries.
- Matthew Greenwald and Associates, Inc. and National Institute on Retirement Security. (2009). *Pensions and retirement security: A road map for policy makers*, Washington, DC: NIRS.
- MetLife. (2008). Sixth annual study of employee benefits trends: Findings from the National Survey of Employers and Employees. New York, NY: MetLife, Inc.
- Municipal Employees Retirement System. (2010). Legal and legislation. Lansing, MI: MERS. Retrieved May 21, 2010, from www.mersofmich.com.
- Munnell, A.H. and Sunden, A. (2004). *Coming Up Short: The Challenge of 401(k) Plans*. Washington, DC: Brookings Institution Press.
- Munnell, A.H., & Soto, M. (2007). State and local pensions are different from private plans. Center for Retirement Research, State and Local Pension Plans, No. 1. Chestnut Hill, MA: Center for Retirement Research at Boston College.
- Munnell, A.H., Golub-Sass, F., Soto, M., & Vitagliano, F. (2006). Why are healthy employers freezing their pensions? CRR Issue Brief No. 44. Chestnut Hill, MA: Center for Retirement Research at Boston College.

- Munnell, A.H., Haverstick, K., & Sanzenbacher, G. (2006). Job tenure and pension coverage. CRR Working Paper 2006-18. Chestnut Hill, MA: Center for Retirement Research at Boston College.
- Munnell, A.H., Webb, A., & Golub-Sass, F. (2009). *The National Retirement Risk Index: After the crash*. CRR Issue Brief 2009-22. Chestnut Hill, MA: Center for Retirement Research at Boston College.
- Nalebluff, B., & Zeckhauser, R. (1984). *Pensions and the Retirement Decision*. NBER Working Paper No. 1285. Cambridge, MA: National Bureau of Economic Research.
- Nyce, S. (2007). Behavioral effects of employer-sponsored retirement plans. *Journal of Pension Economics and Finance*, 6(3), 251-285.
- Pew Center on the States. (2011). *Pension and Retiree Health Care Reform in the States*. Washington, DC: Pew. Retrieved from http://www.pewcenteronthestates.org/initiatives_detail.aspx?initiativeID=61599.
- Phillips, K.S., & Surz, R.J. (2003). *Hedge Funds: Definitive Strategies and Techniques*. New York, NY: John Wiley and Sons.
- Porell, F., & Almeida, B. (2009). *The Pension Factor: Assessing the Role of DB Plans in Reducing Elder Hardships*. Washington, DC: National Institute on Retirement Security.
- Seco, L.A. (2005). Hedge funds: Truths and myths. *Revista de Economía Financiera*, 6, 82-114.
- Ugoretz, M. (2007). *A New Benefit Platform for Life Security*. Washington DC: The ERISA Industry Committee (ERIC).
- VanDerhei, J., & Copeland, C. (2011). The impact of deferring retirement age on retirement, income adequacy. EBRI Issue Brief No. 358. Washington, DC: Employee Benefit Research Institute.
- Watson Wyatt Worldwide. (2005). How do retirement plans affect employee behavior? *Watson Wyatt Insider*, April. Retrieved from <http://www.watsonwyatt.com/us/pubs/insider/showarticle.asp?ArticleID=14596>.
- Watson Wyatt Worldwide. (2008). DB vs. 401(k) plans: Investment returns for 2003-2006. *Watson Wyatt Insider* 18(5).
- Weller, C. (forthcoming). What does the literature tell us about the possible effect of changing retirement benefits on public employee effectiveness? PERI Working Paper. Amherst, MA: Political Economy Research Institute at the University of Massachusetts Amherst. Forthcoming 2011.
- Weller, C. (2010). Did retirees save enough to compensate for the increase in individual risk exposure? *Journal of Aging and Social Policy*, 22(2), 152-171.
- Weller, C. (2008). How public sector pension plans provide adequate retirement savings in an efficient and sustainable way. Testimony before the Joint Economic Committee of the U.S. Congress, July 10. Available at http://www.americanprogressaction.org/issues/2008/retirement_testimony.html.
- Weller, C. (2006). The recent stock market fluctuations and retirement income adequacy. *Eastern Economic Journal*, 32(1), 67-81.
- Weller, C. (2005a). Ensuring retirement security with cash balance plans. Washington, DC: Center for American Progress.
- Weller, C. (2005b). Better funding rules can help employers honor their pension promises. Washington, DC: Center for American Progress.

- Weller, C., & Baker, D. (2005). Smoothing the waves of pension funding: Could changes in funding rules help avoid cyclical under-funding? *Journal of Policy Reform*, 8(2), 131-151.
- Weller, C., & Helburn, A. (2010). States to the rescue. *Journal of Pension Benefits*, 18(1), 37-47
- Weller, C., & S. Jenkins. (2007). Building 401(k) wealth one percent at a time: Fees chip away at people's retirement nest eggs. CAP Economic Policy Report. Washington, DC: Center for American Progress.
- Weller, C., & Wenger, J. (2009a). Prudent investors: the asset allocation of public pension plans. *Journal of Pension Economics and Finance*, 8(4), 501-525.
- Weller, C., & Wenger, J. (2009b). Integrated labor and financial market risks: Implications for individual accounts for retirement. *Journal of Aging and Social Policy*, 21(2), 256-276.
- Wojcik, J. (2008). Public entities generally keep traditional pension plans. *Business Insurance*, August 11.
- Wright, B.E. (2001). Public sector work motivation: A review of the current literature and a revised conceptual model. *Journal of Public Administration Research and Theory*, 11(4), 559-586.

CHAPTER 5

Designing a More Attractive Annuitization Option: Problems and Solutions

by **Anthony Webb**

INTRODUCTION¹

This chapter evaluates the role of annuities in the drawdown (decumulation) phase of a publicly sponsored retirement plan—whether a cash balance plan that guarantees a rate of return on contributions or an auto IRA—designed to meet the needs of private sector workers who do not have access to a pension through their employer. I assume that during the accumulation phase, plan members invest in a collective investment fund that will make funds available to them on retirement. The objective during the drawdown phase is to convert that plan balance into a lifetime income.

One way of achieving this objective is to purchase an annuity. In return for the payment of a lump sum, an insurer agrees to provide the purchaser with a lifetime income. Theoretical calculations demonstrate that annuities have the potential to increase the financial well-being of typical retired households. Households who do not annuitize face the challenge of managing wealth drawdown over an uncertain lifespan. If they spend their wealth too rapidly, they run the risk of outliving that wealth. Conversely, if they are excessively cautious, they unnecessarily restrict their consumption. Annuities solve this problem by providing insurance against outliving one's wealth. Resources are reallocated from those who die young to those who are unlucky enough to live unusually long. Money that would otherwise be “wasted” by passing as bequests is used to increase consumption.

Notwithstanding the above theoretical calculations, rates of voluntary annuity purchase (annuitization) in the individual market are vanishingly small. In 2009, sales of immediate annuities (products where, in return for a lump sum, the purchaser receives a lifetime income starting immediately) totaled only \$7.5 billion.² Brown (2007) considers a variety of rational and behavioral explanations. He concludes that while there are undoubtedly rational explanations for some people choosing not to annuitize some part of their retirement wealth, behavioral biases likely contribute to the lack of demand.

These behavioral biases can be overcome by mandating annuitization, but at the cost of reducing the well-being of those who would rationally choose not to annuitize. Mandates also may improve annuity pricing by increasing the proportion of low-risk, high-mortality individuals in the

risk pool. Opt-outs, referred to in the literature as defaults, enable those who would rationally choose not to annuitize to opt out. Although defaults have been shown to be effective at overcoming behavioral biases to participation in 401(k) plans, it is not clear that they would be equally effective at encouraging annuitization.

This chapter considers the distributional consequences of mandates and defaults, identifying potential winners and losers. The distributional consequences depend on both the terms on which the plan is able to offer annuitization and the value participants place on the longevity insurance annuities provide. The low-wage workers for whom the proposed plan is designed may differ from the population average in ways that affect the value of annuitization. They likely will have a shorter life expectancy. A large portion of their wealth already may be annuitized through Social Security. Both of the above factors will reduce the value of annuitization at any given price. But low-wage workers may well spend a larger-than-average portion of their income on necessities, resulting in their placing a higher-than-average value on insurance against both longevity and financial risk.

I show that there is potential for a publicly sponsored retirement plan to offer annuity rates that are substantially more favorable than those currently available in the individual market. An annuitization mandate would achieve this objective by reducing administrative costs and eliminating adverse selection within the plan. But it is still possible to achieve substantial improvements on the above rates even without resorting to mandates or defaults by adopting a low-cost distribution channel and using both the potential sales volume and the attractive risk profile of plan participants to negotiate favorable rates with insurance companies. Yet, further rate improvements might be achieved through longevity and investment risk sharing.

The remainder of the chapter is organized as follows. Section 1 reviews theoretical calculations of the value of annuitization to households managing wealth drawdown in retirement and considers their applicability to low-wage workers. Section 2 considers why households choose not to annuitize, and evaluates the merits of a mandate, a default, or an opt-in. Section 3 investigates ways in which the annuity rates offered to participants in the proposed plan could be increased relative to those obtainable in the individual annuity market. And Section 4 considers what type or types of annuity should be offered and what portion of accumulated wealth should be annuitized.

1. THEORETICAL CALCULATIONS OF THE VALUE OF ANNUITIZATION

Economists measure the value of annuities in terms of annuity equivalent wealth (AEW). They first calculate an optimal drawdown of unannuitized wealth, in which the household chooses a drawdown rate that trades off the risk of outliving its wealth against the cost of unnecessarily restricting its consumption. They then calculate AEW, defined in the literature as the factor by which unannuitized wealth must be multiplied so that the household is indifferent between undertaking an optimal drawdown and purchasing an actuarially fair annuity. An actuarially fair annuity is defined as one where the expected present value of the income stream, discounted by a rate of interest and population average annual survival probabilities, equals the premium paid. When AEW exceeds one, the household would be better-off if it could annuitize on actuarially fair terms; when it is less than one, the household would be worse-off.

In reality, annuities are less than actuarially fair, reflecting administrative expenses, the need for the insurer to hold reserves, and, importantly, adverse selection—the use of private information about risk type when deciding whether to purchase insurance. But calculations that assume actuarial fairness provide a benchmark that is informative of the potential value of annuitization and of the distributional consequences of mandates and defaults.

Mitchell, Poterba, Warshawsky, and Brown (1999) and Brown and Poterba (2000) among others, have shown that for plausible parameter values, AEW for households with population-average mortality is substantially in excess of one, and that, in theory, such households would be substantially better-off if they were able to annuitize on actuarially fair terms. The above calculations assume that households place no value on liquidity and lack a bequest motive. But different and perhaps more realistic assumptions would not necessarily result in lower estimates of AEW.³ For example, households with a bequest motive should still annuitize wealth in excess of the amount they wish to leave as a bequest. Concerns about the risk of uninsured medical expenses might actually increase the demand for annuitization rather than the demand for liquidity because Medicaid typically treats annuitized wealth more favorably than an equivalent amount of unannuitized wealth.⁴ At the same time, the above calculations make other assumptions that result in the potential gains from annuitization being understated. Specifically, they assume that households possess both the skills required to calculate an optimal drawdown strategy and the willpower required to adhere to it, and are able to earn the same returns as those achieved by the insurance company, while paying zero investment management expenses.

Low-wage workers are arguably at higher risk of mismanaging the drawdown of unannuitized wealth than current 401(k) participants. They may either spend their wealth too rapidly, or go to the other extreme and be afraid to make any withdrawals. They may lack the financial skills required to invest in anything other than short-term deposits, which offer a low return that fluctuates considerably over time (Van Rooj, Lusardi, & Alessie, 2007).

In designing a publicly sponsored retirement plan, policymakers are likely to be particularly concerned about meeting the needs of low-wage workers who are least likely to have access to a workplace pension. These workers are likely to have higher-than-average mortality and would, therefore, on average, receive their annuity payments for fewer years. This significantly reduces the money's worth of the annuity—the expected present value of the income stream, divided by the premium paid. But Brown (2003) shows that the average individual in high mortality groups would still be willing to purchase an annuity on terms that were actuarially fair to individuals who have population-average mortality. This is because the high mortality household who chooses not to annuitize will still plan to set aside wealth to finance consumption in the event that it survives to advanced old age, even though that survival probability is lower than average.

The above authors assumed that either none or one-half of household wealth was held in pre-annuitized form. But most workers hold the majority of their wealth in pre-annuitized form through Social Security and defined benefit pensions, so that, given the above preference parameters, the above calculations will overstate the value of annuitization to typical households. Taking account of household-level variation in both mortality risk and proportion of pre-annuitized wealth, Gong and Webb (2008) show that 16% of all married-couple households would perceive themselves as being made worse-off if they annuitized on terms that were actuarially fair to a household with population-

average mortality.⁵ Again assuming the above preference parameters, it is likely that an even larger percentage of low-wage workers would perceive themselves as being made worse-off because low-wage workers typically will have high mortality rates and very high proportions of pre-annuitized wealth.

The above theoretical calculations require assumptions to be made about households' capacity and willingness to bear risk. They assume that households exhibit constant relative risk aversion (CRRA). For a household with CRRA preferences, the terms on which it is willing to bear risk depend on the proportion of its wealth at risk, not on the dollar amount at risk. Given this assumption, the value of annuitization depends on the proportion of wealth that is not yet annuitized. But the use of this assumption may overstate the willingness of low-wage workers to bear risk, and correspondingly understate the value they might place on annuities. If low-wage workers spend a larger portion of their income on necessities, they arguably may be more averse to the risk of being required to cut consumption in the event that they live unusually long.

To summarize, the value of annuitization depends on households' risk preferences, mortality risk, the level of actuarial unfairness of annuities, and the alternative investment and drawdown options open to the household. A far-sighted and financially sophisticated household may be better-off not annuitizing its pension wealth, particularly if it has other sources of lifetime income. But low-wage households typically adopt very conservative investment allocations, investing in short-term deposits offering a low and uncertain income yield. If this is the alternative, then annuitization is likely to be preferable, even for high mortality households.

2. WHY DON'T HOUSEHOLDS ANNUITIZE AND WHAT ARE THE MERITS OF MANDATES OR DEFAULTS?

In this section, I consider why so few households choose to annuitize their retirement savings, and evaluate the merits of annuitization via mandate, default, or opt-in. I show that the desirability of mandates and defaults depends not only on why we believe households choose not to annuitize but also on our weighting of the welfare of various household types.

Brown (2007) evaluates a variety of rational and behavioral explanations for the almost complete absence of voluntary annuitization. Actuarial unfairness is prominent among the rational explanations. It is argued that although households might be willing to purchase an actuarially fair annuity, prevailing market prices are very far from fair.

While it is generally agreed that private market annuities are actuarially unfair, it is difficult to quantify the precise degree of actuarial unfairness. The estimate depends on whether one discounts the income stream using interest rates on Treasury bonds, arguing that annuities are backed by state level guaranty funds, or at the higher corporate bond interest rate, and whether one accounts for management fees on alternative non-annuitized investments.⁶

Using 1995 data, and assuming population average mortality and a corporate bond interest rate, Mitchell, Poterba, Warshawsky, and Brown (1999) estimated joint life annuity money's worth at 79.2%. Multiplying this money's worth by estimates of AEW for married couples suggests that full annuitization is marginally worthwhile for the average household (Brown & Poterba, 2000). But if

households are rational, and theoretical models capture relevant aspects of the annuitization decision, we still would expect those with better-than-average mortality to annuitize most of their wealth and for many others to annuitize at least a portion.

Other rational explanations include the presence of a bequest motive, that Social Security and defined benefit pensions already provide households with sufficient longevity insurance, and a desire for liquidity in the face of uncertain health care costs. These factors may explain why some households might choose not to annuitize part of their wealth. But it is hard to see how they can explain the almost complete absence of voluntary annuitization.⁷

The second category is explanations that attribute the lack of annuitization to behavioral factors. It is argued that annuities are too complex. While some annuities can be complex, the basic contract is extremely simple—the household hands over a lump sum and, in return, the insurance company issues a check every month for as long as the household lives.⁸ Well-documented psychological biases are arguably of greater importance.⁹ First, households find it hard to think of surviving to advanced old age as a bad outcome that they need to insure against, and instead frame the annuity purchase as a risky gamble that they will lose if they die young (Agnew, Anderson, Gerlach, & Szykman, 2008; Brown, Kapteyn, & Mitchell, 2010). Second, annuity valuation involves actuarial calculations that are almost certainly beyond the ability of most households. Households may resort to heuristics, leading them to systematically overvalue lump sums relative to income streams (Warner & Pleeter, 2001).

In other contexts, for example the 401(k) participation decision, mandates and defaults usually are proposed as an antidote to behavioral biases, or as a means of overcoming ignorance and procrastination. The annuity market differs in that mandates and defaults likely will improve annuity prices by increasing the number of low-risk, high-mortality households in the annuity pool, potentially improving annuity rates for all participants. One can identify three household types: 1) those who would annuitize at the original rates; 2) those who would not annuitize at the original rates, but would at the more favorable rates made possible by the mandate; and 3) those who would prefer not to annuitize, even at the more favorable rates. The first two groups are made better-off by a mandate. The third group is made worse-off. If the third group was sufficiently small, one might favor mandates and defaults, even if one believed that households were acting rationally in choosing not to annuitize at current prices.

It is difficult to assess what proportion of plan participants might fall into this last category. As mentioned above, Gong and Webb (2008) estimated that 16% of the population would be made worse-off as a result of mandatory annuitization on terms that were actuarially fair to households who have population average mortality. Plan participants likely would have higher-than-average mortality, increasing the proportion that would be worse-off at any assumed level of actuarial unfairness. But it is unclear whether a mandate would result in terms that were more or less actuarially fair than those assumed by Gong and Webb (2008). Although plan members likely would be an attractive risk pool, this likely would be insufficient to offset the administrative and other costs faced by the insurer.

An alternative to an annuitization mandate is to default households into annuities. In theory, a default allows high mortality households to opt out of annuitization, eliminating the losses they would otherwise suffer, but at the cost of reducing the gains to the remainder of the participants, who no longer benefit from the participation of high-mortality households in the pool. In practice, if high-

mortality groups suffer from low levels of financial literacy, they may not understand the consequences of inaction, and may remain annuitized even when clearly disadvantageous. This problem could be addressed, at least in part, by allowing households defaulted into annuitization to opt out again within a specified period.

Both mandates and, to a lesser extent, defaults, have a further potentially significant disadvantage. If households are resolute in their opposition to annuitization, a mandate may reduce program participation.¹⁰ Although defaults have been shown to be effective in increasing 401(k) participation rates, it may be unwise to draw parallels with the annuitization decision. Households likely understand that they ought to be saving for retirement, but suffer from procrastination and time inconsistent preferences. The behavioral impediments to annuitization may be quite different, with many households perceiving annuitization as financially disadvantageous.¹¹

It is difficult to assess the likely effectiveness of an annuitization default. TIAA-CREF is unique among 401(k)/403(b) plan providers in giving prominence to annuities. But even it has not made annuities the default. Yakoboski (2010) reports that TIAA-CREF achieves an annuitization rate of 19%—far higher than zero, but also far lower than the annuitization rates theoretical models indicate might be optimal. It is possible that the framing of educational material also might affect the annuitization rate. Traditional 401(k) plans give prominence to the individual's account balance, often making little or no mention of the lifetime income that it can produce.

It might be better to give greater prominence to the individual's retirement income target, the proportion that can be satisfied from Social Security and past contributions, and the further proportion that can be satisfied from prospective contributions. To illustrate, the plan might offer a retirement financial planning tool in which the participant selected a contribution rate and a planned age of retirement. The tool would show projected retirement income, both in dollars and as a replacement, and the portions that would come from Social Security, past contributions to the plan, and projected contributions to the plan. Although the participant would be told the current value of his account, the focus of the tool would be on the replacement rate, not on current or projected retirement wealth.

To summarize, an annuitization mandate will reduce the impact of adverse selection, but at the cost of reducing the well-being of those who would rationally choose not to annuitize. A default will have a smaller impact on adverse selection. There is a risk that, on the one hand, the default may be over-ridden, rendering it ineffective, and on the other hand, that households may be defaulted into an inappropriate choice.

On balance, I favor a default. Although it may not be very effective, I think it is unlikely to do much harm. Where a mandatory annuitization requirement risks a significant number of workers choosing to not participate in the retirement savings plan, I think it unlikely that a default that allows people to opt-out of annuitizing their savings would significantly reduce participation rates. Although some households may be defaulted into an inappropriate choice, this must be weighed against the fact that households also may make inappropriate choices in the absence of a default.

3. HOW CAN THE COST OF ANNUITIZATION TO PLAN PARTICIPANTS BE REDUCED?

At prices currently prevailing in the individual annuity market, and depending on the mortality and risk characteristics of participants, annuitization may confer only a marginal benefit on the members of a state sponsored retirement plan for private sector workers. A key objective should be to improve prices, to increase the incomes of those who annuitize, justify the use of a default, and increase participation rates.

In this section, I consider three ways in which the cost of annuitization to plan participants can be reduced.¹² I first consider the role of distribution channels. I then consider the potential for the proposed plan to negotiate more favorable annuity rates as a result of the attractive socioeconomic characteristics of its prospective annuitants. Finally, I consider the potential for costs to be further reduced through annuitant participation in investment and aggregate mortality risk, the latter being the risk faced by the insurance company that mortality rates decline faster than expected.

Distribution Channel

Immediate annuities are standardized products. One might therefore expect to find substantial price competition, with households making price comparisons and the market being dominated by more competitively priced products.

In reality, there is considerable price variation, both between companies and across distribution channels. Annuities are sold through four main channels: commissioned agents; a variety of annuity websites; mutual fund companies such as Fidelity and T. Rowe Price; and, finally, Income Solutions, a company offering what it terms “institutional” pricing to Vanguard investors, plan sponsors, and the clients of certain fee-only advisors. Not all insurance companies utilize all of the above distribution channels.¹³

Within the commission channel, prices vary substantially between companies. Mitchell, Poterba, Warshawsky, and Brown (1999) analyzed 1995 data and found that the average income on a typical annuity product—a joint life, two-thirds survivor nominal annuity, payable monthly in arrears, was 21% higher for the top 10 payout companies than for the bottom 10. More recent surveys have found a smaller, but still substantial, variation. *The Wall Street Journal* (2010) found, with one exception, an 11.4% variation among the top 20 insurance companies. This variation was largely unrelated to the carrier’s perceived financial strength. Pechter (2011) conducted a similar analysis and found about a 10-percent price variation. I found it difficult and time-consuming to gather price data, and conclude from both my own efforts and the above research that price competition is weak within the commission channel, and that even financially sophisticated households would find it difficult to obtain the most competitive prices.¹⁴

Prices also vary substantially across distribution channels. Pechter (2011) reports that when the same company distributes through both the Income Solutions and commissioned channel, the Income Solutions price is consistently more favorable. But this comparison understates the potential price reduction. The Income Solutions platform facilitates price comparison by providing households with comparisons of price and insurer financial rating. Hueiler (2010) estimates that a household using

Income Solutions might typically achieve a 6.4% increase in income over that obtainable through the commissioned channel, and potentially as much as 15%. Pechter (2011) further reports that the Income Solutions prices are more favorable than those obtainable on the annuity websites studied, and slightly more favorable than those quoted on the Fidelity website.

The above analysis treats annuities as standardized products that differ only to the extent that there is variation in the insurer's financial stability. In reality, annuities are sold in a package that includes financial advice. The quality of that advice may vary across distribution channels, as may the cost of provision. A potential concern with the Income Solutions and other Internet-based distribution models is that a significant portion of prospective participants may not be computer literate, may be unable to interpret the data provided, and may not even have Internet access. If an Internet-based distribution model is adopted, the pension plan may need to engage in education and outreach initiatives.

Obtaining Annuity Rates that Reflect Prospective Purchasers' Risk Characteristics

In contrast to other insurance products, and with the exception of a nascent market in impaired life annuities, annuity prices are based solely on age and gender. Brown, Liebman, and Pollet (2002) document very substantial socioeconomic differences in mortality. The average mortality rates of blacks, and non-minorities with less than a high-school education, are substantially higher than population averages. It seems plausible that participants in the proposed plan would likewise have higher-than-average mortality rates, particularly if the plan were to adopt an annuitization default, and that default resulted in a decrease in the level of adverse selection.

Kelli Hueler of Hueler Associates informs me that insurers participating in the Income Solutions platform have demonstrated a willingness to adjust their premiums if they believe that substantial sales volumes may result. She considers they also might be willing to adjust premiums based on mortality data.

Indications of the potential for price improvements based on mortality data can be obtained from life tables. The Society of Actuaries publishes two sets of relevant life tables.¹⁵ Annuity 2000 is a set of tables designed to reflect the mortality rates of individual annuitants.¹⁶ These tables do not vary with socioeconomic status, reflecting the paucity of data on individual annuitants, so that they are of limited applicability to annuitants in the proposed plan. RP-2000 is a set of tables designed to reflect the mortality rates of participants in employee pension plans. The RP-2000 mortality rates are higher, reflecting the fact that annuitization is mandatory, or at least widespread, in defined benefit pension plans. Although the RP-2000 tables include white-/blue-collar and small amount mortality adjustments, they may overstate the mortality rate of participants in the proposed plan if annuitization is voluntary.

I calculate an indication of the potential price improvement by comparing the expected present value of an annuity to a couple with RP-2000 mortality, and its expected present value to a couple with RP-2000 mortality, after the application of the blue-collar or small amount adjustment factors.¹⁷ The expected present value is 1.6% lower for blue-collar annuitants, and 2.7% lower for those receiving small amounts.¹⁸ The differences are surprisingly small. In contrast, Brown (2002) calculat-

ed an 8.2 percentage point difference between the expected present value of a joint life annuity to a white college-educated couple, and its value to a white couple with less than a high-school education, and a further 6.7 percentage point difference for black couples with less than a high-school education. I conjecture that the relationship between mortality and socio-economic status is non-linear, and that there is relatively modest socio-economic variation in mortality among the types of individuals who are covered by defined benefit pension plans.¹⁹ The extent to which participants in the proposed plan will have higher mortality may depend on its ability to attract members of traditionally disadvantaged groups.²⁰

Annuitant Participation in Investment and Aggregate Mortality Risk

Further price reductions might be achieved if annuitants were to participate in both investment and aggregate mortality risk. Insurance companies cannot perfectly hedge either of these risks. They face default risk on corporate bonds, and may be unable to match the timing of their anticipated annuity payments with that of bond interest and maturities. They also face the risk that annuitants may, on average, live longer than expected. Insurance companies hold reserves against the above risks. If they were to share these risks with annuitants, they might be able to offer more favorable annuity rates, reflecting reductions in both reserve requirements and the volatility of insurance company shareholder returns.

From the annuitant's perspective, the risk that he or she might survive beyond his or her life expectancy is far greater than the risk that the annuity payments might be reduced because people, on average, live longer than expected. Given the relatively conservative nature of insurance companies' investment portfolios, it is similarly unlikely that an annuitant would suffer a substantial income reduction as a result of poor investment returns.

A model for such a risk-sharing arrangement is the TIAA fixed annuity. TIAA prices its annuities by reference to an assumed prospective investment return and realized annuitant mortality, subject to a small adjustment to reflect prospective mortality improvements. The annuity comprises a fixed component and a "dividend," the latter being adjusted to reflect realized investment returns and mortality experience. It is difficult to compare TIAA annuity rates with those payable on fixed annuities. TIAA has a high-risk annuitant pool of long-lived university employees, but has historically benefited from high annuitization rates that may have reduced the effects of adverse selection. They also may adopt relatively conservative initial annuity rates, reasoning that households are averse to annuity income reductions.

But it is not clear that an annuity in which annuitants share investment and longevity risk will offer a higher expected return than one in which the income is guaranteed. The mortality assumptions upon which insurance companies base their annuity prices are not publicly available. If, as some actuaries believe, insurance companies are underestimating the pace of mortality improvements, insurance companies may be underpricing fixed annuities, and households might do better to lock in prices based on current mortality tables.

Hedging Interest Rate Risk

A significant risk faced by participants in the proposed plan is that they may retire at a time when interest rates are unusually low, and annuity rates are unfavorable. If annuitization is to be a

mandate or default, then this risk can be partially hedged by shifting participants' portfolio allocations into bonds in the years preceding retirement. If the proposed plan is to provide rate of return guarantees, then this risk could be further reduced by expressing those guarantees in terms of retirement income, as opposed to rates of return during the accumulation phase, enhancing the value of those guarantees, and potentially reducing their cost.

“Buying” Annuities from the Social Security Administration

Households that delay claiming Social Security benefits receive an increase in the amount of those benefits. A retired worker who delays claiming from age 66 to 70 currently receives a 32% increase in the amounts of his own retired worker benefit and his spouse's survivor benefit. He can be thought of as “purchasing” additional annuity income from the Social Security Administration with the benefits foregone.

Table 5.1 shows that for single individuals, and especially for married men, and assuming current mortality tables, the terms on which the Social Security Administration “sells” inflation indexed annuities are considerably more favorable than those obtainable from insurance companies.²¹ A publicly sponsored retirement plan might therefore consider selling temporary annuities that would enable households to delay claiming Social Security. To illustrate, consider a household that was entitled to Social Security benefits of \$1,000 a month at a Social Security Full Retirement Age of 66, and which had accumulated \$250,000 in the proposed public pension plan and which planned to retire and claim benefits at age 66. This household would delay claiming Social Security benefits until age 70, at which age it would receive \$1,320 a month from the Social Security Administration. At age 66, it would purchase a four-year annuity paying \$1,320 a month, with payments ceasing at age 70, the age at which the household planned to claim Social Security, and would purchase a lifetime annuity with the remainder of its plan assets.

Table 5.1

Comparison of Annuity Rates with Returns from Delayed Claiming of Social Security

Delay From	Single Male		Married Couple	
	Social Security Benefits	Annuity	Social Security Benefits	Annuity
66 to 67	\$80.00	54.65	\$80.00	39.30
67 to 68	80.00	61.52	80.00	43.96
68 to 69	80.00	68.92	80.00	48.96
69 to 70	80.00	74.69	80.00	54.31

Notes: All amounts are in dollars per month. It is assumed that the husband is entitled to \$1,000 a month retired worker benefit at age 66. The wife is assumed to be three years younger than the husband. The table compares the additional retired worker and survivor benefit obtained as a result of delay with the single or joint life inflation indexed annuity that could be purchased with an amount of financial assets equal to the Social Security benefits foregone. The calculations assume that delayed claiming of retired worker benefit does not result in any loss of spousal benefit. Annuity rates are provided by Income Solutions as of August 7, 2011.

4. WHAT TYPE OF ANNUITY SHOULD BE OFFERED?

In this section, I consider what type of annuity should be provided and what portion of retirement wealth should be defaulted into an annuity, in the event that a default is provided.

The overwhelming majority of immediate annuities provide benefits that are fixed in nominal terms. Even at a 2.5% inflation rate, the real value of the income will halve over 28 years. Assuming population average mortality, there is a 27% probability that one or both spouses turning 65 in 2011 will survive for at least 28 years.

It is unclear how well a gradual decline in income accords with household preferences. Medical expenses increase with age, reflecting both the effects of age and proximity to death, and medical cost inflation. But households may have a preference for larger income early in retirement.²² One alternative to a fixed annuity is one that provides an inflation-protected income. Although the money's worth of the two annuity types are often similar (Gong & Webb, 2010), the inflation-protected annuity typically provides an initial income that is 30% lower than that provided by the nominal annuity.²³

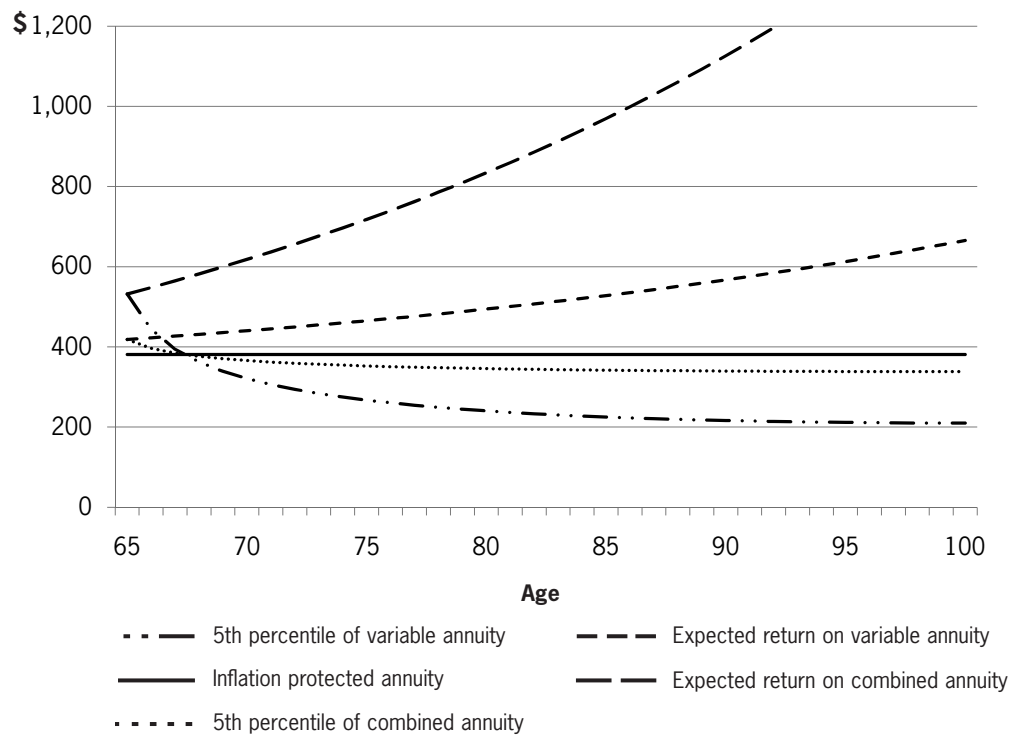
Poverty among the elderly is concentrated among widows (McGarry & Schoeni, 2005), and the inflation-protected annuity is therefore likely to be a more effective means of alleviating poverty. But the low initial income may discourage annuitization in the first place, while the shifting of income from younger to older ages will relatively disadvantage high mortality households.

Another alternative is a variable immediate annuity. This provides an income that fluctuates with the performance of an underlying investment portfolio. If the portfolio return exceeds a target rate, typically 3.5 or 5%, the annuitant's income increases by the amount of the excess return. If it falls short, the income is correspondingly reduced. In return for bearing this risk, the annuitant receives a higher current and prospective return. Both investment advisors and economic theory suggest that a mixed stock-bond portfolio is appropriate for households approaching retirement. If a mixed stock-bond portfolio is optimal immediately before retirement, the optimal annuitization strategy is likely to involve replacing the portfolio's bond portion with a fixed or inflation indexed annuity, and replacing the stock portion with a variable immediate annuity, with possibly some further rebalancing at older ages.

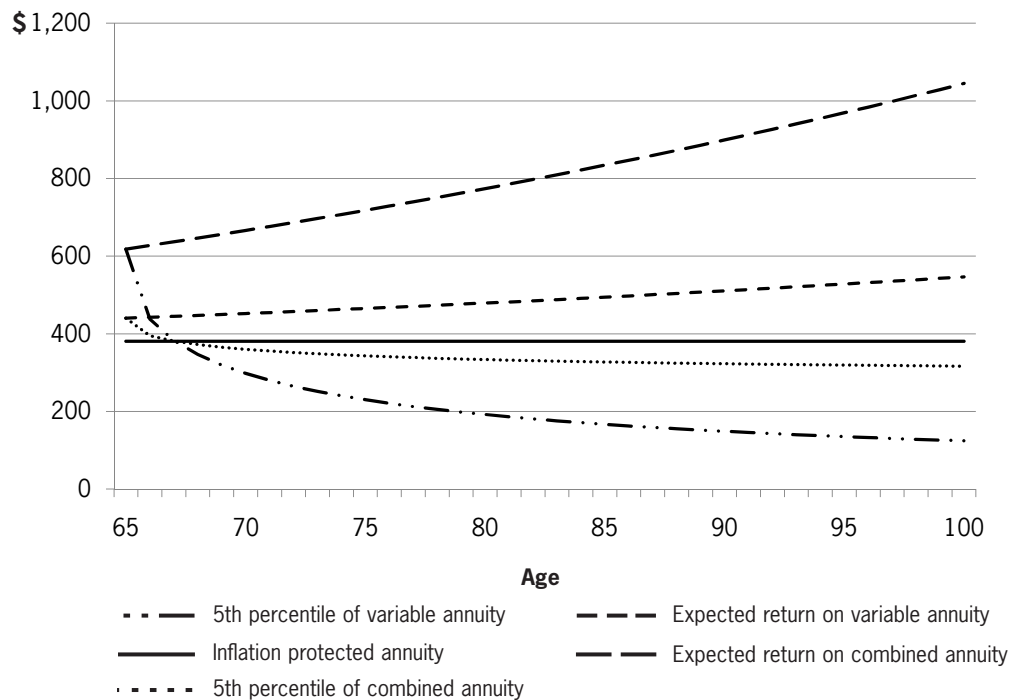
The question of how the household should optimally allocate its wealth between fixed and variable annuities is part of the larger question of how the household should allocate its portfolio between stocks and bonds over the life-cycle. One view might be that low-income households cannot afford to take risks with their savings. A contrary view is that as low-income households hold larger proportions of their wealth in low-risk assets such as Social Security and housing equity, they should actually invest their financial assets less conservatively.²⁴ The optimal allocation will vary from household to household, depending on financial situation and risk preferences, but is likely to comprise some combination of inflation-protected and variable immediate annuities. There is a risk that this may overly complicate the design of the annuitization stage, discouraging annuitization. The optimal strategy might therefore involve a single product, comprising a fixed nominal annuity and a variable immediate annuity. **Figures 5.1 and 5.2** show the expected monthly income that a married couple household would receive from a variable immediate annuity, an inflation-protected annuity, and a combined product invested 75% in an inflation-protected annuity and 25% in a variable immediate

Figure 5.1

Comparison of Monthly Income on Variable and Inflation Protected Immediate Annuities
3.5% Assumed Return, \$100,000 premium

**Figure 5.2**

Comparison of Monthly Income on Variable and Inflation Protected Immediate Annuities
5% Assumed Return, \$100,000 premium



annuity, assuming retirement at age 65 and a \$100,000 investment. The dashed lines indicate the levels below which the income from the variable and combined annuities would be expected to fall 5% of the time, and the dotted line the floor below which the income on the combined annuity would never fall. Although the variable immediate annuity offers the prospect of an income that will increase in real terms, there is significant risk of suffering substantial income declines, particularly at older ages. The combined product places a floor below which the household's income can never fall, yet offers some potential for the household's income to increase in both nominal and real terms.

The Special Case of the Advanced Life Deferred Annuity

Annuities are particularly effective as a means of financing consumption at advanced ages. Annuities are able to provide higher returns than equivalent unannuitized investments by reallocating wealth from those who die young to those who live unusually long. Suppose that at age 65, the probability of surviving to age 66 is 99%, and that the probability of surviving to age 100 is 1%, and that the real rate of interest is 3%. An individual can finance consumption of \$100 at age 66 by placing \$97.08 in a bank account and withdrawing it one year later. An insurance company, with zero expenses and facing a large annuitant pool, 99% of whom will survive to age 66, can charge \$96.11. But even with a small 1-percent sales load, the insurance company will have to charge \$97.08 and will be uncompetitive with self-insurance.

The cost of self-insuring a single \$100 payment at age 100 is \$35.54. At a 3% rate of return, this will grow to \$100 by age 100. But the insurance company, knowing that only 1% of its customers will live to age 100, can charge only \$3.55, and will still be competitive, even if it applies a heavy sales load.

Scott, Watson, and Hu (2007) show that households who wish to annuitize only part of their wealth are better-off purchasing annuities that pay out at advanced ages, termed an advanced life deferred annuity (ALDA) by Milevsky (2005). Gong and Webb (2010) show that, at currently prevailing levels of actuarial unfairness, the ALDA dominates both immediate annuitization and an optimal drawdown of unannuitized wealth. As the level of actuarial unfairness decreases, immediate annuitization becomes relatively more attractive and the immediate annuity comes to dominate both alternatives.

Although the ALDA is attractive in theory, it is unclear whether households would be willing to purchase. If households frame the annuitization decision as a risky gamble that they will lose if they die young, they may regard the ALDA as particularly risky, given the high probability that they will die before payments commence.

What Proportion of Retirement Wealth Should be Annuitized?

Theoretical calculations (Yaari, 1965) show that full annuitization is optimal when annuities are actuarially fair. Given commonly assumed preference parameters, the value of additional purchases declines as the portion of wealth that is annuitized increases, so that when annuities are actuarially unfair, it may be optimal to annuitize only part of one's wealth or sometimes none at all. As mentioned previously, a desire for liquidity in the face of uncertain medical expenses might further reduce the value of annuitization.

But, as also mentioned, it is possible that the above preference parameters overstate the risk tolerance of households on low incomes. If the objective of the pension is to keep households out of

poverty, regardless of how long they live or how much they spend on medical costs, then it might be better to default households into annuitizing sufficient wealth to lift their total income, inclusive of Social Security, to a certain multiple of the poverty line. Precedent for this approach is the proposal by the United Kingdom government to incent individuals to annuitize sufficient defined contribution wealth to raise their income, inclusive of Retirement Pension, to £20,000.²⁵

At What Age Should the Annuity be Provided?

A married couple that delays retirement and annuity purchase from age 62 to 70 increases the income provided by an inflation-indexed annuity by 30.8%. A worker who delays claiming Social Security benefit from age 62 to 70 increases the amount of that benefit by 76%. The above percentages understate the returns to delay because they do not take account of additional pension plan contributions.

But many of the participants in the proposed plan may be unable to delay retirement, due to ill-health or lack of employment opportunities. For others, the disutility of work may be sufficiently high or their remaining life expectancy sufficiently short to justify early retirement. For yet others, in marginal employment, it may not be even meaningful to speak of retirement. So while the plan should stress the benefits of delay, it will probably be appropriate to give considerable flexibility.

5. CONCLUSION

Theoretical calculations show that for plausible preference parameters, annuitization can substantially increase the well-being of many retired households. However, rates of voluntary annuitization remain extremely low. Although it may be rational for some households not to annuitize, it seems likely that behavioral biases contribute to the lack of demand.

One solution is to mandate annuitization. This not only overcomes behavioral impediments to annuitization, but also improves annuity prices by overcoming adverse selection. But it suffers from two important disadvantages. First, it reduces the well-being of individuals who would rationally choose not to annuitize even at the more favorable rates made possible by a mandate. Second, it may deter individuals from participating in the plan. I therefore favor an appropriately designed default.

I consider there is potential for a publicly sponsored retirement plan to offer considerably more favorable annuity rates than those obtainable in the individual annuity market. First, participants could be provided with an Internet-based annuity price comparison service. I estimate that this might increase annuity payouts by 6.4%, relative to the average payout obtainable in the voluntary market. Second, plan participants are likely to experience higher mortality rates than current annuitants. Based on plausible assumptions about the socioeconomic characteristics of plan participants, this might justify a further 2 to 6% increase in annuity rates. Depending on sales volumes, it might take a considerable time for participant insurers to make appropriate rate adjustments. This process might be expedited if the administrator of the plan gathered data on participant risk characteristics.

I analyze alternative annuity products, and propose a combined inflation protected variable immediate annuity that provides an inflation-indexed guaranteed minimum level of income, with the potential for income to increase during the course of retirement, depending on the performance of the stock market.

* * *

Endnotes

¹ The research reported here was performed pursuant to a grant from the University of California, Berkeley. The opinions and conclusion expressed are solely those of the author and do not represent the opinions or policy of the University of California, Berkeley or Boston College. I would like to thank John Ameriks, Michael Heller, Kelli Hueler, Rick Miller, and Paul Yakoboski for helpful advice.

² <http://www.annuityfyi.com/blog/2011/01/immediate-annuity-stats/>. Sales of deferred annuities were substantially greater. But these are not very annuity-like in that they provide substantial death and surrender benefits that reduce the amounts that can be paid to survivors.

³ A disadvantage of more complex and realistic models is that they often obscure the relationships between preference parameters and annuity valuation.

⁴ Annuities are able to offer a higher return than similar unannuitized investments because of the “mortality credits,” the reallocation of wealth from those who die to the pool of survivors. These credits increase with age. Medical costs may actually increase the value of annuitization if they result in households preferring greater consumption at older ages, when mortality credits are higher.

⁵ Brown (2003) calculates AEW for individuals. Brown and Poterba (2000) show that marriage reduces the value of annuitization because the household benefits from longevity risk pooling, so the average married couple in high mortality groups would have somewhat lower AEW. In contrast, Gong and Webb (2008) calculate AEW for married couples.

⁶ The term structure of interest rates is usually upward sloping in the sense that bonds with longer maturities have higher yields. Bonds can be “stripped,” decomposed into the individual coupon payments and eventual return of principal. The literature uses the yields on bond STRIPS to arrive at a term structure of interest rates that can then be used to calculate expected present values. There is no market for Treasury Inflation Protected Securities STRIPS, and Sun and Webb (forthcoming) recover a STRIPS term structure from the term structure of TIPS yields.

⁷ One explanation that is sometimes offered (Pang & Warshawsky, 2007; Milevsky & Young, 2007) is that households should delay annuitization to take advantage of the equity premium. But households can invest in variable immediate annuities, products that provide the benefits of annuitization while also providing exposure to equity markets. Uncertainty about health care costs might actually increase the value of annuitization because most such costs are incurred in advanced old age, and the additional return provided by annuities, relative to equivalent unannuitized investments, is greatest at such ages.

⁸ Deferred annuities can be highly complex, with many riders and benefits. But these products are not the subject of the current analysis.

⁹ Many low-income and minority households have a sometimes justified mistrust of financial institutions that may make them reluctant to undertake transactions that they fear they may not fully understand, and which require the financial institution to fulfill its obligations into the far-distant future.

¹⁰ The Investment Company Institute (2010) reports that 70% of Americans are opposed to an annuity mandate.

¹¹ My analyses of a 2008 Health and Retirement Study module indicates that older households regard having a regular income in retirement as important, but also attach importance to control over their investments and having access to their savings.

¹² Defined benefit pension plans are prohibited from using gender to determine annuity rates (U.S. Supreme Court, 1988). I assume that the proposed plan would not be similarly prohibited.

¹³ Income Solutions has negotiated prices with insurance companies, and arrives at a retail price by applying a 2 -percent markup to those prices.

¹⁴ I discovered that it was almost impossible to collect price data over the phone. I was almost invariably referred to a local commissioned agent.

¹⁵ A more radical approach would be to charge annuity prices based on the household's health status and other risk characteristics. Fong (2011) calculates pricing schedules. This would add to administrative costs, but might reduce adverse selection by making annuitization attractive to low risk households. Although she shows that insurance companies would be justified in offering low-risk households substantially more favorable annuity rates, it is possible that the incomes of many of these households might be too low for them to participate in the proposed plan. It is not clear whether the Income Solutions model could be adapted to incorporate medical underwriting.

¹⁶ Both the Annuity 2000 and RP-2000 tables are period tables. They reflect the mortality rates of individuals alive in a particular year. They can be converted into cohort tables, reflecting the mortality rates of people born in a particular year, using a projection scale, typically Projection Scale AA.

¹⁷ "Small amount" is defined as under \$6,000 a year. Mortality rates are projected using Projection Scale AA.

¹⁸ The SOA does not report data for the combined effects of small annuity sizes and blue-collar. The effects may well not be multiplicative.

¹⁹ Dushi and Webb (2006) document a non-linear relationship between mortality rates and wealth deciles.

²⁰ A Society of Actuaries individual annuity experience study finds that mortality rates among individuals with annual annuity incomes of less than \$2,500 were substantially higher than those predicted by the Annuity 2000 table. Society of Actuaries 2000-04 Individual Payout Annuity Experience Report, April 2009. <http://www.soa.org>.

²¹ Spousal benefit can only be claimed once her (or his) spouse has claimed retired worker benefit. A worker who delays claiming retired worker benefit may reduce the value of his spouse's spousal benefit. A worker who has attained his full retirement age can "claim and suspend" thereby enabling his spouse to obtain her spousal benefit. Sun and Webb (forthcoming) show that even if households do not claim and suspend, it is almost invariably optimal to delay claiming Social Security, financing consumption during the interval between retiring and claiming by drawing on financial assets.

²² Leisure activities may be more enjoyable when in good health, or when one's spouse is there to share them.

²³ In July 2011, the rates quoted by Income Solutions for nominal annuities with income payments increasing by 3% a year (somewhat above consensus estimates of the anticipated long-run rate of inflation) are significantly more favorable than those for inflation-indexed annuities. This appears to reflect both the smaller number of companies offering inflation-indexed annuities and an inflation risk premium. The attractiveness of the inflation-indexed product therefore depends on the value placed on insurance against an unanticipated upsurge in inflation.

²⁴ Although housing wealth is a risky asset in that its market value fluctuates, it provides valuable insurance against fluctuations in rents. Low-income households may face greater labor market risks, justifying a more conservative allocation of financial assets.

²⁵ Under current United Kingdom law, individuals who do not annuitize their pension wealth by age 75 are subject to punitive taxation. The government is proposing to allow individuals who can

demonstrate that they have adequate annuitized income additional flexibility in the drawdown of their remaining pension wealth (HM Treasury, "Removing the Requirement to Annuitize By Age 75." July, 2010).

References

- Agnew, J. R., Anderson, L. R., Gerlach, J. R., & Szykman, L. R. (2008). Who chooses annuities? An experimental investigation of the role of gender, framing, and defaults. *American Economic Review Papers and Proceedings*, 98(2), 418-422.
- Brown, J. R. (2002). Differential mortality and the value of individual account retirement annuities. In M. Feldstein and J. B. Liebman (Eds.), *The Distributional Aspects of Social Security and Social Security Reform* (pp. 401-446). Chicago IL: The University of Chicago Press.
- Brown, J. R. (2003). Redistribution and insurance: Mandatory annuitization with mortality heterogeneity. *Journal of Risk and Insurance*, 70(1), 17-41.
- Brown, J. R. (2007). Rational and behavioral perspectives on the role of annuities in retirement planning. Working Paper No. 13537. Cambridge, MA: National Bureau of Economic Research.
- Brown, J. R., Kapteyn, A., & Mitchell, O. S. (2010). Framing effects and expected social security claiming behavior. Working Paper No. 2010-42. Philadelphia: Pension Research Council.
- Brown, J. R., Liebman, J. B., & Pollet, J. (2002). Estimating life tables that reflect socioeconomic differences in mortality. In M. Feldstein and J. B. Liebman (Eds.), *The Distributional Aspects of Social Security and Social Security Reform* (pp. 447-457). Chicago IL: The University of Chicago Press.
- Brown, J. R., & Poterba, J. (2000). Joint life annuities and annuity demand by married couples. *Journal of Risk and Insurance*, 67(4), 527-53.
- Dushi, I. & Webb, A. (2006). Rethinking the sources of adverse selection in the annuity market. In P. A. Chiappori and C. Gollier (Eds.), *Competitive Failures in Insurance Markets: Theory and Policy Implications* (pp. 185-212). Cambridge, MA: MIT Press.
- Fong, J. H.Y. (2011). Beyond age and sex: enhancing annuity pricing. Pension Research Council Working Paper 2011-05. Philadelphia: Pension Research Council.
- Gong, G. & Webb, A. (2008). Mortality heterogeneity and the distributional consequences of mandatory annuitization. *Journal of Risk and Insurance*, 75(4), 1055-1079.
- Gong, G. & Webb, A. (2010). Evaluating the advanced life deferred annuity: An annuity people might actually buy. *Insurance: Mathematics and Economics*, 46, 210-221.
- Hueler, K. H. (2010). The retirement savings challenge: Making savings last a lifetime. Written Statement for the Record Before the United States Senate Special Committee on Aging. Retrieved from <http://aging.senate.gov/events/hr222kh.pdf>.
- Investment Company Institute. (2010). Enduring confidence in the 401(k) system: Investor attitudes and actions. Washington, DC: ICI. January. Retrieved from http://www.ici.org/pdf/ppr_10_ret_saving.pdf.
- McGarry, K. & Schoeni, R. F. (2005). Medicare gaps and widow poverty. *Social Security Bulletin*, (66), 58-74.

- Milevsky, M. (2005). Real longevity insurance with a deductible: Introduction to advanced-life delayed annuities (ALDA). *North American Actuarial Journal*, 9(4), 109-122.
- Milevsky, M. A. & Young, V. R. (2007). The timing of annuitization: investment dominance and mortality risk. *Insurance: Mathematics and Economics*, 40(1), 135-44.
- Mitchell, O., Poterba, J., Warshawsky, M. J., & Brown, J. J. (1999). New evidence on the money's worth of individual annuities. *American Economic Review*, 89(5), 1299-1318.
- Pang, G. & Warshawsky, M. (2007). Optimizing the equity-bond-annuity portfolio in retirement: The impact of uncertain health expenses. Watson Wyatt Technical Paper. Arlington, VA: Watson Wyatt.
- Pechter, K. (2011). Channel surfing for low-cost SPIAs. *Retirement Income Journal*, 103. Retrieved from <http://retirementincomejournal.com/issue/may-25-2011/article/channel-surfing-for-low-cost-spias>.
- Scott, J. S., Watson, J. G., & Hu, W. Y. (2007). Efficient annuitization: Optimal strategies for hedging mortality risk. Working Paper No. 2007-09. Philadelphia: Pension Research Council.
- Sun, W. & Webb, A. (forthcoming). How much do households really lose by claiming Social Security at age 62. *Journal of Risk and Insurance*, forthcoming 2011.
- U.S. Supreme Court. (1988). Florida v. Long, 487 U.S. 223; June 22. Retrieved from <http://supreme.justia.com/us/487/223/>.
- Van Rooj, M., Lusardi, A., & Alessie, R. (2007). Financial literacy and stock market participation. Working Paper No. 13565. Cambridge, MA: National Bureau of Economic Research.
- Wall Street Journal
- Warner, J. T., & Pleeter, S. (2001). The personal discount rate, evidence from military downsizing programs. *American Economic Review*, 91(1), 33-53.
- Yaari, M. E. (1965). Uncertain lifetime, life insurance and the theory of the consumer. *Review of Economic Studies*, 32, 137.
- Yakoboski, P. (2010). Retirees, annuitization and defined contribution plans. TIAA-CREF Institute, *Trends and Issues*, April.

CHAPTER 6

High Performance Pensions for All Californians

by **Teresa Ghilarducci**

INTRODUCTION

California, like the United States (US) as a whole, faces a serious retirement security crisis. A significant proportion of California workers—including a majority of workers under 40—are at risk for serious economic hardship in old age (Allegretto, Rhee, Saad-Lessler, and Schmitz, this volume). This paper proposes state level policy measures to improve the retirement income security of all Californians.

Two facts lay at the heart of the upcoming retirement income shortfall. First, although the U.S. relies on employer-based savings and investment vehicles to help workers build retirement wealth to supplement Social Security, most private employers do not offer any type of retirement plan at all. Medium and small firms are least likely to sponsor any kind of plan mainly because retirement plans are a voluntary expense, like health insurance, and because small firms have less revenue and managerial expertise to navigate regulations and administrative burden. Thus less than 38% of private sector workers across all sized firms in California participate in an employer sponsored retirement plan (Ibid.).

Second, since the early 1980s, private employers have shifted from defined benefit (DB) pensions to defined contribution (DC), individual retirement savings plans like 401(k) plans (Ghilarducci & Sun, 2006). In California, two out of five plan participants now rely solely on a 401(k)-type plan retirement plan rather than a secure DB pension (Allegretto et al., this volume). While DB pension funds are managed expertly and efficiently by professionals, those with individual accounts face high, often invisible fees and the challenging burden of realizing their own investment returns in order to achieve adequate retirement wealth. Also, unlike workers with secure DB pension benefits, those who rely exclusively on 401(k) type accounts have no insurance against running out of money if they live longer than they anticipated, or against market collapses that erode the value of their hard-earned retirement funds.

All workers, whether or not they are covered by a 401(k) style plan or an individual retirement account (IRA), need a financial institution that will administer their retirement savings in a more efficient, low cost way that earns a secure and sufficient rate of return and preserves savings for

retirement. They need a retirement plan that guarantees a rate of return for an annuity that converts their savings into a secure income stream, and does not require financial sophistication and luck in financial markets. Commercial individual directed accounts like 401(k)s, 403(b)s, and IRAs do not meet these needs and most workers and employers end up not using them. Most workers have difficulty with the myriad risks associated with 401(k) plans and IRAs and many employers are resistant to adopt complicated 401(k) plans that do not meet the needs of their middle- and low-income workers (Ghilarducci, 2008; also see Hacker, this volume).

The policy challenge, then, is not just to expand access to existing individual account based retirement arrangements, but to address critical failures in the existing system to meet three key criteria for retirement income security: adequate contributions; low-cost, quality investment vehicles that are professionally managed and, ideally, shield individual workers from investment and market risks; and a lifetime payout of income at retirement.

This study proposes a two-part solution to improve California workers' retirement income security: one, provide access for private sector workers to functional retirement plans that include a guaranteed return on contributions and access to low-cost annuities, and two, replace the tax deductions for retirement contributions with a tax credit so that each worker receives \$145 a year at no extra expense to the State of California.

The first part of the study describes the first plank of the solution by presenting options that will provide all Californians with a choice to invest their retirement savings in a low cost, guaranteed, and accessible retirement savings vehicle. These options will help all private sector workers, especially those who do not have access to a high quality employer sponsored retirement plan, prepare for retirement.

The best option is for a large state pension fund like the California Public Employees' Retirement System (CalPERS) or the California State Teachers' Retirement System (CalSTRS) to create California Guaranteed Retirement Accounts (CGRAs) for private sector workers. Imagine that the public pension fund is a bank with public employees standing in a queue in front of a teller's window. We propose opening up another teller's window for private sector workers to deposit their retirement savings. California residents would benefit from the excellent money management skills of the fund's professional investors. This proposal would not impose a cost burden on the state. Moreover, the resulting influx of money into the California pension funds could help the California economy while it boosted the savings rates of California workers.

The CGRA would offer a guaranteed average real return ranging between 2% and 4%, as determined by its own Board of Trustees. Annuitization of the full account balance (i.e., purchase of an insurance contract for monthly income) at age 65 would generate a secure lifelong income stream to supplement Social Security. For the average full time worker in California who contributes 5% of her earnings starting at age 25 and earns a 3% guaranteed rate of return on their contributions after inflation, the CGRA will generate nearly \$1,000 a month (in today's dollars) in inflation-protected retirement income starting at age 65, replacing about one-fifth of pre-retirement income.

A less ambitious solution that is not nearly as effective but perhaps more immediately feasible, is for the State Treasurer's Office—which already sponsors ScholarShare for saving and investment toward college expenses—to create an exchange of private for-profit investment and money management entities. In order to qualify to participate in the exchange, these entities would

offer retirement savings vehicles that charge low fees; minimize investment and market risks and provide steady returns; and offer low-cost annuities. The State Treasurer's Office could provide an investment vehicle with guaranteed returns similar to those proposed for the CGRA, and workers could choose from among these different risk-return options.

The second part of the study extends discussion of the proposed retirement plan option, the CGRA, by focusing on the feasibility of the guaranteed rate of return. It demonstrates how the state guaranteeing a 3% real rate of return runs very little risk that the fund will earn less than the guaranteed rate over the long term and consequently require the state to make up a shortfall.

The third part of the study explains why the State of California should convert the income tax deduction for retirement accounts into a tax credit, which will help low and moderate income workers who now, under current law, receive no or very little government subsidies from a tax deduction. California currently mimics federal tax policy, which subsidizes the highest earners the most. The minimum wage worker obtains nothing from such tax break because their income is too low. However, states can craft their own tax incentives. California tax expenditures for retirement contributions totaled \$2.3 billion in 2010. If this amount was converted into a pension credit, every California worker would see \$145 deposited into their retirement account each year. This would be important seed money for the workers who need it most.

Principles for Retirement Security

The American system of employer sponsored retirement savings has severe problems in all three key areas: accumulation, investment, and payout. A functioning retirement system would allow employees and workers to save consistently and invest in financial vehicles that charge low fees; minimize investment and market risks while providing steady returns; and offer low cost annuities. Criteria for a functioning pension system are discussed by the Government Account Office (2009a) and detailed by Retirement USA (R-USA),¹ a coalition representing think tanks, unions, advocacy groups and academics. R-USA identifies 12 core principles for a quality pension system:²

- 1) **Universal coverage.** Every worker should be covered by a retirement plan that supplements Social Security.
- 2) **Secure retirement.** Workers should be able to count on a steady lifetime income stream.
- 3) **Adequate income.** The average worker should have sufficient income, together with Social Security, to maintain a reasonable standard of living in retirement. (Author's note: This is often defined as 70–100% of pre-retirement earnings.)
- 4) **Shared responsibility.** Employers, employees and the government should each contribute towards a worker's retirement account. The government should subsidize the contributions of lower-income workers.
- 5) **Required Contributions.** Employers and employees should be required to contribute a specified percentage of pay, and the government should subsidize the contributions of lower-income workers.

- 6) **Pooled assets.** Contributions to the system should be pooled and professionally managed to minimize costs and financial risks.
- 7) **Payouts only at retirement.** No withdrawals or loans should be permitted before retirement, except for permanent disability.
- 8) **Lifetime Payouts.** Benefits should be paid out over the lifetime of retirees and any surviving spouses, domestic partners, and former spouses.
- 9) **Portable Benefits.** Benefits should be portable when workers change jobs.
- 10) **Voluntary savings.** Additional voluntary contributions should be permitted, with reasonable limits for tax-favored contributions.
- 11) **Efficient and Transparent Administration.** The system should be administered by a governmental agency or by private, non-profit institutions that are efficient, transparent, and governed by boards of trustees that include employer, employee, and retiree representatives.
- 12) **Effective Oversight.** The system should be administered by a governmental agency dedicated solely to retirement security.

Members of Congress (GAO, 2009b) and the Obama Administration (GAO, 2009c) have recognized that the current system does not provide retirement income security and that better investment options for workers, including those with a guaranteed rate of return, are needed. On the other hand, the Obama administration has not endorsed mandating participation, which is a critical requirement to achieve universal coverage. Instead, the Administration proposes to expand already-expensive federal tax deductions for retirement contributions—over \$120 billion—and to add tax credits costing over \$50 billion a year. They also propose to automatically enroll workers into commercial retirement accounts, but continue to allow workers to opt out and to withdraw contributions and earnings before retirement.

Despite the widely recognized problem of high and hidden fees in commercial retirement accounts, the administration is silent about how workers would get improved access to a pooled annuity or investment pool that would be able to offer much lower expenses. In the absence of inadequate federal reform, and in the face of declining retirement plan coverage in the workplace, I propose that states help their residents save for an adequate retirement income.³

The most efficient way to meet the above criteria for workers who do not have access to an employer sponsored pension is through a publicly sponsored retirement savings plan. Some propose that such a plan take the form of individual accounts like IRAs or 401(k) plans. However, a system in which millions of workers carry and individually manage their own accounts is inherently inefficient, generating high administrative costs that would ultimately have to be absorbed by workers.

In addition, a system of individually directed accounts still exposes workers to a host of risks that can only be partially mitigated through careful plan design. One such design option is defaulting workers' contributions into a lifecycle or target fund that automatically re-balances in order to gradually shift from equities to bonds as workers near retirement. Provided that workers do not engage in ill-advised trading or try to time the market, this design decreases idiosyncratic investment-decision

risk (the risk of making the wrong investment decisions). However, this automatic investment design feature would still leave workers exposed to a significant degree of market risk (the risk of drastic or sustained decline in the financial market). Finally, commercial target date fund can have high fees associated with them and afford no real protection against longevity risk (the risk of living longer than expected and running out of savings).

I have proposed a national Guaranteed Retirement Account (GRA) which combines the best features of DB and DC plans, including guaranteed retirement benefits that last a lifetime, low administrative costs, and steady contributions (Ghilarducci, 2007 & 2008). It is essentially a portable, publicly sponsored cash balance plan with automatic contributions through payroll deduction; pooled, professionally managed funds; a guaranteed rate of return; and a strong annuitization component. Retirement benefits are tied to contributions rather than final pay, and the guaranteed rate of return is set high enough to be attractive to workers but low enough to pose very little risk to the guarantor. The GRA is the only reform proposal that fulfills each of the 12 core requirements outlined above. This study adapts the GRA concept to propose a California Guaranteed Retirement Account (CGRA), outlined below with consideration for what is possible at the state level.

1. CALIFORNIA GUARANTEED RETIREMENT ACCOUNT (CGRA)

I propose a version of the GRA called a California Guaranteed Retirement Account, provided by a large, prudently managed public pension fund like CalPERS or CalSTRS or, alternately, through a regulated exchange of private for-profit financial entities. The key elements of the plan are as follows:

Structure. CGRAs are like cash balance plans in which professionals invest and manage pooled savings.

Participation. Participation in the program is open to all private sector workers who do not currently participate in a comparable or better DB plan. Employers who do not offer such a plan would be required to enroll their employees in a CGRA. The state may choose between mandatory enrollment for workers or automatic enrollment with a worker opt-out provision.

Contributions. A default contribution rate of 5% of pay will be automatically deducted from payroll and deposited into each worker's CGRA. Workers may choose to reduce or opt out of contributions. Employers may voluntarily contribute to help workers reach or exceed the 5% savings rate.

Refundable tax credit. Employee contributions are offset through a \$145 refundable state tax credit, which takes the place of tax breaks for 401(k) plans and similar individual accounts and is indexed to wage inflation.

Fund management. The accounts are administered by a large public pension fund. Alternatively, they can be administered by private financial service providers through a regulated exchange created by the State Treasurer's Office, which could offer its own guaranteed investment vehicle. Though funds are pooled, each worker is able to track the dollar value of their accumulations.

Investment earnings. The pooled funds are conservatively invested in a balanced portfolio.⁴ However, participants earn a fixed rate of return—initially set at 3%—adjusted for inflation, guaranteed by the public pension fund, the state, or a private insurer who would appropriately capitalize the risk. The trustees may periodically adjust the guarantee within a range of 2–4% average real rate of return. Investment earnings in excess of the guarantee will be deposited into a Rainy Day Fund. With widespread participation and regular contributions, this guarantee would pose very little risk for the insuring institution.

Retirement age. Participants begin collecting retirement benefits at the same time as Social Security, and therefore no earlier than the Social Security Early Retirement Age. Funds cannot be accessed before retirement for any reason other than death or disability. By minimizing the fund’s liquidity requirements, this feature allows the CGRA to offer a guaranteed rate of return.

Retirement benefits. Account balances are converted to inflation-indexed annuities upon retirement to ensure that workers do not run out of retirement income while they still live. However, individuals can opt to take a partial lump sum equal to 10% of their account balance or \$10,000 (whichever is higher), or to opt for survivor benefits in exchange for a lower monthly check. A full-time worker who works 40 years and retires at age 65 can expect a benefit equal to roughly 20% of pre-retirement income, adjusted for inflation, assuming a 3% real rate of return on contributions and on their CGRA annuity.

Death benefits. Account balances of participants who die before retiring will be transferred to the CGRAs of designated beneficiaries; those who die after retiring can bequeath half their final account balance after benefits received, payable as a lump sum or transfer to another CGRA.

Table 6.1 illustrates how the CGRA can help California workers achieve significant guaranteed retirement income to supplement Social Security. The table presents estimated CGRA account balances, CGRA annuity payments (based on female life expectancy), and Social Security benefits for low- and middle-wage workers who start contributing at age 25 and 45. It shows the advantage of early participation. A 25-year old worker saving 5% over a 40-year career would receive an annuity payment equal to slightly over 20% of pre-retirement earnings. A 45-year old would have to contribute 10% of pay to achieve a slightly lower benefit at retirement. Participants can choose to increase their contributions in order to have more income in retirement. Because of the effect of compound interest, saving a small additional amount beginning early in one’s career yields a larger monthly benefit than contributing twice the amount 20 years later.

I explain below how the CGRA meets the three primary criteria for retirement income security—accumulating enough assets, investing efficiently, and lifetime income—more effectively than the current system of commercial retirement savings accounts.

Table 6.1

**Projected Income Replacement Rate from CGRA and Social Security,
Female Full Time Workers**

	45 years old today, contributing 10% of earnings		25 years old today, contributing 5% of earnings	
	Low-Wage	Middle-Wage	Low-Wage	Middle-Wage
Earning assumptions				
Current annual earnings	30,000	45,000	25,000	35,000
Final annual earnings at age 65	31,536	52,560	33,151	55,252
Final monthly earnings	2,628	4,380	2,763	4,604
CGRA balance at age 65 (with 3% guaranteed real return)	90,617	142,606	118,839	177,780
Monthly retirement income				
CGRA inflation protected annuity (3% real return)	504	794	661	990
Estimated Social Security benefit	1,204	1,631	1,208	1,627
CGRA annuity + Social Security	1,708	2,425	1,869	2,617
Percentage of final earnings replaced				
CGRA annuity	19.2%	18.1%	23.9%	21.5%
Social Security	45.8%	37.2%	43.7%	35.3%
CGRA annuity + Social Security	65.0%	55.4%	67.7%	56.8%

Source: Calculations by Joelle Saad-Lessler and Nari Rhee. See **Appendix** for detailed methodology.

Accumulating Enough for an Adequate Pension

The first major problem with the current system is that most workers do not save enough of their earnings towards retirement. The CGRA improves retirement wealth accumulation among private sector workers in California in three ways.

Access

The CGRA will expand retirement savings plan access and participation. Currently, 62% of private sector workers in California do not participate in an employer sponsored retirement plan, compared to 57% in the US as a whole. Workers in small and medium size firms are markedly disadvantaged in their access to employer sponsored retirement plans: in California, 84% of people working for employers with 25 or fewer workers do not participate in a retirement plan at work. (Allegretto et al., this volume). The CGRA can be made available to all workers whose employer does not offer a comparable retirement plan (either a DB pension or a cash balance plan with similar guaranteed returns and lifetime income benefit).

The actual extent to which the CGRA will improve participation depends on whether worker participation is mandatory, or automatic with opt-out. Universal participation requires a mandate, but it may not be politically feasible. Auto-enrollment with the opportunity for individuals to opt-out may be the next best option. Unfortunately, it is a distant second best option because the latest research (GAO, 2010; Beeferman and Becker, 2010) suggests that auto-enrollment with opt-out will not yield high enough participation rates to fund an adequate pension for most low income and middle income workers. The experience with automatic enrollment in employer sponsored 401(k) plans is that a large share of workers will likely opt out at some point and never re-start their contributions.

Assistance reaching the savings target

The second relates to helping workers achieve an adequate savings rate. In order to attain retirement income adequacy—replacement of about 80% of pre-retirement earnings—all workers need to contribute at least 20% of pay over their careers. But only the most affluent workers would be able to achieve such a savings rate without assistance. In practice, private sector workers are required to contribute 12.4%, split evenly with their employer, via the Social Security (Old-Age, Survivors, and Disability Insurance, or OASDI) payroll tax. This provides the average retiree with minimal subsistence. Workers who are enrolled in both a DB plan and Social Security are well on their way to accumulate enough retirement assets because the average DB contribution as a percent of pay is 5%.

Low-wage and middle-wage workers need employer and government assistance to help fund the savings gap between Social Security and a decent retirement. Workers in DB pensions and those in some 401(k) type plans benefit from employer contributions towards their retirement plan. Higher income workers receive the vast majority of government aid for retirement, which takes the form of an income tax deduction, because they have a higher income tax rate. Unfortunately, most California workers have neither type of help to reach their savings target because their incomes—and therefore their income tax rates—are low, and because they receive no help from their employer. Therefore I propose that, in tandem with the implementation of the CGRA, the State of California convert its income tax deduction for retirement contributions into a flat tax credit in order to help all workers save. Such a tax credit will provide important seed money for all California workers to save towards retirement, especially low wage workers who need this help the most.

Limited liquidity

Regardless of whether participation is mandatory or automatic with opt-out, or the source of contributions, CGRA account balances should only be allowed to be withdrawn at retirement except in cases of permanent disability. By limiting the fund's liquidity requirements, this restriction allows the CGRA to invest in a way that realizes a higher return over the long term and thus support a meaningful guaranteed rate of return for workers.

Investing Efficiently

Even if workers save enough, paying too much in fees and investing incorrectly can significantly erode retirement savings. Pension savings should be managed professionally in pooled accounts so that the fees are low and returns are high. The best policy is to offer a guaranteed investment vehicle.

Individuals who have self-directed accounts like 401(k) plans and IRAs have difficulty factoring in fees when comparing rates of return, to their detriment.⁵ They also tend to invest irrationally. This problem was illustrated during the period of stock market volatility following Standard and Poor's downgrade of U.S. Treasury bills on Friday, August 5, 2011. On Monday, August 8, trading in 401(k) plans was over eight times the average daily level. The most active sellers were ordinary workers, moving their 401(k) money into cash and money market funds (AON Hewitt, 2011). This behavior should not be a surprise; human beings investing their own retirement funds will always do the human thing—panic trying to protect themselves—which is usually the wrong thing. The 401(k)/IRA model expects workers with no financial expertise to do the work of professional investors, with the same unhappy results one would expect if they pulled their own teeth or did their own electrical wiring.

Ultimately, workers using 401(k) plans or IRAs or other self-directed accounts are likely facing much higher risks and lower returns than professional investors (see Munnell, Soto, Libby, & Prinzivalli, 2006; Ivkovića & Weisbenner, 2009; Barber & Odean, 2000 & 2011).

Given these realities, pooled, professionally managed accounts are the best choice for California workers. Furthermore, a guaranteed return investment option should be available similar to the TIAA portion in TIAA-CREF (Teachers Insurance Annuity Association-College Retirement Equities Fund). TIAA-CREF provides retirement plans to nonprofit sector employers and covers a large number of university professors and researchers. Most members participate in the TIAA Traditional Annuity, which takes in a defined percentage of payroll and buys an annuity that pays a minimum guaranteed rate, plus additional annual credits based on portfolio performance, during the accumulation phase. When the worker retires, they can convert the account balance into a lifelong income annuity. The rate changes each year, determined by a governing board of trustees. The guaranteed rate has ranged from a nominal rate of 2.9% to 4.2% since the TIAA inception in 1916. For the CGRA, I propose a guaranteed real rate of return instead.

The CGRA would be attractive because their contributions would be well-managed. The program would allow Californians to take advantage of professional managers that charge the lowest fees. Also, the CGRA would provide guaranteed return within a range of rates that will help smooth out returns and make retirement income more secure. The level of feasible guarantee would depend on default vs. opt-in participation and liquidity (see below).

What level of guarantee makes sense? Assuming that the state backs the CGRA, I propose an inflation-adjusted rate of 3%. This may seem low from the standpoint of individual investors, who might expect to earn a higher rate of return if they invest correctly in low-fee investment vehicles, given historic returns on equities. However, the primary objective of a retirement plan is not to maximize the account value, but to secure an adequate income replacement rate. A cash balance style retirement plan with an attractive annuitization component, detailed below, is able to replace more income at a given rate of return during the accumulation phase than a 401(k) plan in which retirees have to buy expensive annuities on the private market. Most workers would place high value on the prospect of a *guaranteed* retirement income to last a lifetime, and would be willing to trade off the possibility of higher returns leading up to retirement.

Guaranteed Retirement Income through Annuities

The third problem with most private sector retirement plans is that they do not provide an adequate payout structure. Even if workers save enough and invest well with low fees, they could pay too much in buying an annuity on the private market, use up their assets too early, or leave accidental bequests. It is worth noting here that the individual who has a secure monthly income through a DB plan or an annuity has a higher level of well being than the individual who has a lump sum with an equivalent net present value. This is because as we age, the uncertainty associated with investing our own money in a DC retirement plan detracts from our feeling of well-being (Bender, 2004).

There is a strong argument that most households would benefit from annuitizing their wealth but are deterred by the high cost of commercial annuities (see Webb, this volume). Two key reasons are high administrative costs/load fees and, importantly, adverse selection: in the same way that individual market health insurance premiums are high because sick people are more likely to participate, private annuities are expensive because people who expect to live a long time are more likely to purchase them. This results in annuities being “actuarially unfair,” in that those who live to average life expectancy do not get their money’s worth. There is a need to mitigate adverse selection and to design annuities to be more fair to lower-income, shorter-lived workers, to the extent feasible under current regulations. Significantly, Webb (Ibid.) notes that for various reasons, lower-income, shorter-lived workers may still benefit from purchasing annuities that are actuarially fair to those with population average life expectancy.

The only way to avoid adverse selection in annuity markets—and thereby price annuities more attractively for everyone—is to mandate annuities as is done in Social Security and DB plans. For this reason, it is important that at least some portion of the accounts be required to be annuitized, with reasonable provisions for partial cash-out. The proposed CGRA limits cash-out at requirement to 10% of account balance or \$10,000, whichever is greater.

2. CREDIBLE AND AFFORDABLE GUARANTEE

As mentioned above, the idea of guaranteeing a rate of return to American workers during the accumulation phase of their retirement planning has received increased interest from Congress and the Obama Administration. A guaranteed real rate of return of 3% is significant enough to be attractive to workers. The vitally important question, then, is whether a 3% average real rate of return is a safe guarantee for the state to backstop. Is the state putting itself and taxpayers at risk by guaranteeing this level of return?

To answer this question, this section relies on modeling techniques developed by David Stubbs (2010a; 2010b) to gauge the probability that the CGRA fund would ever fall short of funds and need to tap general tax revenues to meet its promises. We assume 5% of pre-tax wages contributed by every private sector worker in California, and a guaranteed return of 3% a year over inflation credited to each account holder. When a worker retires, inflows to the CGRA are assumed to drop to zero and benefits are paid. If investment earnings fall short of the guaranteed 3% real return after administrative expenses, the net worth of the system (market value of assets minus guaranteed benefits) for current participants will be negative. Faster growth in assets, however, would lead to positive system net worth for current participants.

If a CGRA holder dies before exhausting their claims, a death payment of half of their remaining claim balance is returned to the family. The other half is kept within the GRA system as part of the Rainy Day Fund (RDF). This fund exists to shield the CGRA system from prolonged periods of investment underperformance. If, however, the participant lives longer than anticipated, he or she will continue to receive payments from the CGRA system regardless of the initial contributions. That is why the rate of return guaranteed to participants (3% real) is deliberately low to help ensure that invested assets grow faster than the liabilities based on them.

The model assumes that the annual payout is simply a function of the balance of the account at retirement, the number of years of expected retirement for the individual and the rate of return on the funds as they await dispersal. That annuitization calculation is applied to the account balances accumulated—i.e., contributions plus compound interest—assuming the guaranteed rate of return. The difference between the resulting annuity benefit, and the asset value of the account based on contributions and *actual* investment earnings, helps to insure the benefit.

For example, Ms. X, a typical California worker, starts full time work in 2010 at age 25 earning \$35,000. Her income steadily grows to a peak of approximately \$55,000, in 2010 dollars, at age 65 in the year 2040. Throughout this time, 5% of her salary is being committed to the CGRA, which promises her a return of 3% after inflation. At age 65, the value of her claim on the CGRA—or the nominal account balance—is nearly \$178,000. If the fund generates a real return of 4% after costs, then the value of her contributions after actual investment return is roughly \$224,000, 26% higher than the claim she has on the CGRA.

At the point of retirement, the CGRA annuitizes her \$178,000 account balance assuming a life expectancy of 84.9 years and a retirement period of 19.9 years. The CGRA also continues to promise her a 3% real return annuity rate, resulting in an annual payment of approximately \$11,900. If Ms. X dies before she reaches 84.9 years, half the remaining actual balance of her CGRA account is returned to her family and half is retained in the CGRA's RDF. Even if she lives longer than expected, she is not a burden on others in the system or on the RDF. This is because the value of the assets associated with her account is still positive at age 85. Indeed, assuming the assets continued to grow at 4% real after costs, then by paying out \$11,900 every year, the balance of the assets would not reach zero until age 96. The RDF would be preserved to insure against the taxpayer sustained periods of low returns.

Monte Carlo simulations projected the returns of the CGRA using data from Ibbotsen that provided annual total return data on six asset classes—the S&P 500, an index of small stocks, long term corporate bonds, 30-day treasury bills, intermediate term treasury bonds and long term treasury bonds—for the years 1926 to 2008. A “balanced portfolio” allocated 25% each to the S&P 500, small stocks and corporate bonds, 25% to Treasury Portfolio composed of equal shares of each of the three different treasury maturities. All returns accounted for the Consumer Price Index. Mean and median annual compound percentage returns for every overlapping 20-, 30-, and 40-year period were calculated. The minimum annual real return and the Sharpe ratio was also calculated as was the percentage of periods in which the average real return was in excess of 3%. The 83 years of data enabled calculation of returns for 63 years overlapping 20-year periods, 53 overlapping 30 year periods and 44 overlapping 40-year periods.

Here are the results: a balanced portfolio for any 20-year period since the 1920s would have earned a median real average annual return of 5.98%. Investing for any 30- or 40-year period, on

average, produced annual compound real returns equal to 5.53% and 5.67% respectively. Indeed, even if one invested at the worst possible 20-year period, the annual average real compound return would still have exceeded 2%, while the worst 30- and 40-year periods produced average annual compound real returns of 3.24% and 4.14%, respectively.

Of most interest is the percentage of periods in which the real average annual compound real rate of return exceeded 3%, the return that a CGRA system would guarantee to participants. For over 93% of the 20-year periods in which the balanced portfolio could have been invested, the average annual real return exceeds the 3% mark. In the longer time frames of 30 and 40 years, there is not a single period in which the return was below 3%. There would be times when investment returns would undershoot the 3% real return which the CGRA owes to the account holders, but these would be balanced by the excess funds generated when returns exceeded it. Indeed, the data suggests a median long term annual real return of over 5%. A growing surplus would accumulate in the CGRA system over time, providing ever greater insurance against the possibility of a sustained period of disappointing returns. A board of trustees could, if necessary, adjust rates within the 2–4% range every three to five years in order to keep the fund and RDF solvent.

We assume a rather high 50 basis points of assets fee, which would still allow the CGRA to meet its obligations if a 3.5% real annual return was achieved. CGRA Fund management would probably be lower because of the massive economies of scale and a passive investment strategy.

While we have done our best to construct a model of feasibility using conservative assumptions, there is inherent risk associated with the unknown future.

There is some debate about how to value that risk where a government entity is concerned. Researchers at the Center for Retirement Research at Boston College (Munnell et al., 2009) examined the implications of a government entity guaranteeing a real rate of return on a retirement savings plan, assuming that workers contribute steadily between age 22 and retire at age 65. They calculate that if the government has the same level of risk aversion as the market, the cost of insuring a meaningful guarantee prospectively would be prohibitively high. (In contrast, Jefferson (2000) argues with regard to 401(k) plans that it would be feasible to a commercial insurer to guarantee a meaningful average rate of return, provided the plan was invested and managed according to strict criteria.) Ultimately, however, Munnell et al. cite evidence suggesting that the government is less risk averse than the market—in part because it has a longer time horizon—and calculate that under this assumption the state would not incur any net cost if it insured a guaranteed average real return of 3%. The model assumes that the government keeps the surplus earnings over the guaranteed rate; it is the same with the proposed CGRA (assuming the state or a public pension fund backs the guarantee), with the added detail that the surplus is held in reserve against periods when average real returns fall below 3%.

Critics say that people already have the opportunity to earn a guaranteed rate of return in a well-constructed portfolio of laddered TIPS, inflation indexed Treasury bonds. The answer is that the TIPS rate is unnecessarily low; it assumes almost 100% liquidity is required. The government is one of the few entities that could create an institution that collects funds for the dedicated purpose of paying an annuity at retirement, and that could take on more risk with a more diversified portfolio for a greater return because it is serving this function over a long period of time. The CGRA is a proposal for just such an institution that provides a convenient and safe way for ordinary workers to save for retirement.

3. FAIR AND EFFICIENT TAX SUBSIDIES FOR RETIREMENT SAVING

Government subsidies for voluntary retirement plans are indirect. They take the form of favorable tax treatment under federal and state and local tax law called “tax expenditures,” which are tax revenues not collected because a certain activity is favored by the tax code. Federal and state subsidies for retirement plans take the form of tax breaks for contributions and investment earnings during the accumulation phase. They are only taxed when a worker retires and withdraws the funds, which is usually at a much lower income tax rate. Tax breaks are incentives to engage in a desirable activity. They are generally used when a legislature does not want to mandate the activity.

A public budgetary policy problem becomes evident when tax incentives are expensive and fail to achieve the desired behavior. In this case, most tax expenditures for retirement savings go to top earners. Because those individuals would have saved for retirement even without the tax breaks, these benefits are a windfall and represent “wasted” tax dollars.

Let us take the example of a person over age 50 earning \$340,000 in combined income from a job and a consulting business. The person shelters \$93,000 in retirement funds—the combined maximum for a self-employed 401(k) and an employer sponsored 401(k), including catch-up contributions—or 27.4% of income. Their marginal income tax rate is 9.3% for California and 33% for the federal government.⁶ Thus they receive a tax subsidy of \$39,339 including \$8,649 from the State of California. In contrast, a minimum wage worker earning \$16,000 a year and contributing 27.4% of pay, \$4,376, would only get \$88 from the State of California through the income tax deduction because their marginal state income tax rate is 2%. This system is not only unfair, but wasteful because it awards hefty tax subsidies to those who do not need them in order to save, and fails to provide an effective incentive for those who truly need assistance in order to save for retirement.

Also, since tax expenditures are not appropriated in the budget, legislators are not forced to systematically scrutinize them for their efficiency or fairness. Given continued decline in retirement plan coverage despite the rapid increase in retirement plan tax expenditures, it is time to call the income tax deductions for retirement saving a failure.

California forgoes over \$2.3 billion in favoring contributions to 401(k)-type plans (**Table 6.2**). Replacing the tax deduction with a revenue-neutral tax credit would partially offset the increased savings workers currently need to set aside if they want to maintain a reasonable standard of living in retirement. Each worker in California would receive a \$145 refundable tax credit, which could be deposited directly into their CGRA or other qualified retirement account. States should advocate for the same conversion at the federal level, where the tax credits would amount to roughly \$600 per worker, and would cover a 2.5% contribution rate to a retirement account for workers earning \$24,000.

4. DISCUSSION

Californians need a CGRA because current commercial options are not serving their needs. Not only are fewer employers opting to provide a convenient way for individuals to save, but the options they have are not helping people accumulate enough, invest well, or secure an income for life.

Public sector plans earn more returns for less money than 401(k) plans and IRAs, sometimes by a significant amount; estimates of the difference in the rate of return range from 20–40% more.⁷ The

Table 6.2**Tax Expenditure Estimates for 401(k), IRA, and Keogh Retirement Accounts,
Fiscal Year 2009/2010, US and California**

	Total tax expenditures (in millions)	Tax expenditure per worker
United States	\$68,986	\$600
California	\$2,300	\$145

Source: US (i.e., federal) estimates obtained from the White House Office of Management and Budget (2011). California estimates obtained from the Franchise Tax Board (2010). For California, 50% of reported contributions to employer sponsored pensions are assumed to be for defined contribution or 401(k) plans; IRA and Keogh plan data are reported separately.

reasons are straightforward. The scale of the investments is larger in institutional funds, the fees are lower, and professional managers understand the upside of taking on appropriate investment risk. Individuals who are not in a DB plan do not have access to the skills of these professional managers and rely on sales representatives for commercial retail providers of 401(k) plans and IRAs, or to make investment decisions by themselves. Being averse to financial risk and lacking the skills, time and resources that professional money managers take for granted, individuals do poorly managing their own individual financial accounts. We know this from more than 30 years of experience with the current 401(k) system.

Therefore, the most persuasive reason to let individuals have access to a large public pension plan like CalPERS or CalSTRS, via the CGRA, is that they can get a guaranteed return on their assets. The guarantee should be optimally set at 3%, though trustees should have the flexibility to adjust the rate between 2% and 4% in response to long term economic conditions. Perhaps federal aid could be made available to help public sector plans if they allow for the voluntary participation of individuals in their plans, providing efficient and transparent investment management services that are not available in the commercial retail markets for 401(k) and IRAs.

A government guarantee of a 3% real rate of return for CGRAs is attractive to workers, but does not put the government at significant risk of having to make up the difference with tax revenue. Monte Carlo simulations show this prediction holds up whether the government invests retirement contributions in a balanced portfolio of stocks including small stock, corporate bonds and Treasury securities, or a portfolio in which those asset classes are weighted by their total investable value. There has never been a 40-year period in which these portfolios yield an average annual real return of less than 3.5%—a rate that is adequate to cover a 3% guaranteed return on contributions plus administrative expenses. The small risk the government would bear in order to back this guarantee needs to be set against the enormous positive economic returns from improved retirement income security and, conversely, the potential fiscal consequences of a large percentage of workers entering retirement without sufficient resources to meet basic needs.

An alternative platform for the CGRA is that the state of California could engineer pension exchanges overseen by the State Treasurer's Office. The state could issue charters to commercial private firms to handle retirement accounts that meet specific rules and standards.

5. CONCLUSION

One of the biggest hurdles to spurring retirement savings is that nearly half of workers don't have access to a retirement account through their employer. Many work for small businesses, which often lack resources to navigate the relevant regulations. To help these workers, the state and federal governments should provide "off-the-shelf" options that businesses can offer to workers with limited regulatory burdens.

All Californians need access to good pension plans that includes a guaranteed return and a flow of annuity income. The CGRA can expand this access to millions of California workers, helping them to improve their retirement income security. For young workers who save 5% of their earnings, the CGRA will offer a monthly benefit equivalent to about 20% of pre-retirement earnings. A middle-wage worker can receive nearly \$1,000 in guaranteed retirement income, beginning at age 65, for the rest of her life. Replacing the tax deduction for retirement contributions with a tax credit will allocate subsidies more efficiently and fairly.

The biggest beneficiaries of the California Guaranteed Retirement Account would be workers whose employer does not sponsor any retirement plan and who only have access to an IRA, which typically charges high fees and provides substandard financial advice. Allowing private sector employees to contribute to a state managed fund in order to earn a guaranteed rate, or to pick from a limited number of funds—managed by private providers—with different risk profiles would allow private sector employees to get some of the same benefits of professional investment management that workers have with DB retirement plans in which contributions are pooled and invested by professionals who can manage risk prudently. Moreover, these private individual accounts are portable.

This proposal would increase retirement plan availability in California, thereby countering the long-term decline in rates of sponsorship by employers. It would also help raise the amount of retirement savings people accumulate by shielding them from the high fees and poor investment choices they face when they are left to fend for themselves in the retail market. If all Americans had access to this type of plan, the stock market would be less volatile, current retiree income would be more stable, Americans would save more for retirement, and the tax code would be more efficient. Commercial providers of 401(k) plans and IRAs would have to improve their performance in the face of more competition.

A lot of money is at stake to be invested and managed. The CGRA fund in 2050 will range from \$1.6 trillion to \$4 trillion in 2009 dollars (depending on the real investment return of 2–4%, representing between 36% and 89% of the California GDP (Stubbs, 2010b). While the 401(k) lobby has been a powerful force against more 401(k) regulation, the CGRA is a triple win for workers, employers and institutional managers.

Workers would benefit from a vastly improved retirement system that offers an opportunity to retire with dignity. Institutional managers and investors in hedge funds and private equity firms, currently shut out of the retail 401(k) world, would benefit from CGRA assets to help manage. And conscientious employers who would like to provide better options for their employees should also support CGRAs (Arias and Ghilarducci, 2010).

* * *

Appendix: Methodology for Estimating CGRA and Social Security Benefits

The lifetime earnings trajectory from the present until age 65 was projected for four model workers: low-wage 25-year old, middle-wage 25-year old, low-wage 45-year old, and middle-wage 45-year old. For low-wage workers and middle-wage workers, we calculated approximate 25th percentile and 50th percentile earnings, respectively, for full time/year round workers from the March 2011 CPS for the following age groups: 25–30, 45–50, and 55–64. The results were used to construct the following baseline earnings trajectories: \$25,000 at age 25, \$30,000 at age 45, and \$30,000 at age 65 for low wage workers, and \$35,000 at age 25, \$45,000 at age 45, and \$50,000 at age 65 for middle wage workers. In order to account for future economy-wide real wage growth, we assumed an additional growth factor of 0.25% per year—a rate that is close to historical median wage growth in the US since the 1970s—to final earnings at age 65 for all workers and additionally to age 45 earnings for the two 25-year old workers. We then assumed constant annual earnings growth between the above age points (25, 45, and 65) to arrive at earnings estimates for each year.

The CGRA account balance at age 65 for each worker was calculated by applying a 3% interest rate to the sum of each year’s contribution (5% of earnings for today’s 25 year olds and 10% of earnings for today’s 45-year olds) and the balance from the previous year.

The CGRA annuity monthly payout was calculated assuming population life expectancy for women at age 65 of 19.9 years (U.S. Census Bureau, 2010, Table 105), or 238.8 months; a real interest rate of 3% a year, or 0.0025% per month; and no survivor benefits. If the life expectancy for CGRA annuitant population is one year greater, the monthly annuity amount will be reduced by 3.5%. If it is 3 years greater, the amount will be reduced by 9.5%. Inclusion of survivor benefits would also reduce the annuity payment. (Survivor benefits here refer to continuing annuity payments; however, the CGRA proposal includes a death benefit payout of half the remaining account balance to designated beneficiaries.)

Social Security benefits were estimated by summing the indexed earnings from the 35 highest earnings years. Because all values in Table 6.1 are in today’s (i.e., real) dollars, the indexing factor was calculated to be 0.81% per year—the net of the 3.59% average annual growth in the Social Security Administration’s National Average Wage Index from 1989 to 2009 (SSA, 2010), less the 2.78% average inflation rate (CPI-U) over the same period. Earnings were multiplied by the indexing factor for all years until age 60. Thereafter, actual earnings were used. For the two 45-year old workers, indexed earnings for the previous 15 years were assumed to be the same as at age 45. The sum of the highest 35 years’ worth of indexed earnings was divided by 420 arrive at the AIME (average indexed monthly earnings). The PIA (primary insurance amount) was then calculated using the following bend points, inflated by 0.81% per year (the same as the indexing factor): 90% of the first \$749 of AIME + 32% of the AIME above \$749 and below \$4517 + 15% of AIME above \$4517. Finally, a reduction of 13.3% for claiming Social Security benefits two years before the full retirement age of 67 is applied in order to arrive at the estimated monthly Social Security benefit amounts in Table 6.1.

Endnotes

¹ This coalition was formed in 2008; see <http://www.retirement-usa.org/>.

² Adapted from Retirement USA principles, retrieved September 11, 2011 from <http://www.retirement-usa.org/our-principles>.

³ I am not the first researcher to advocate publicly sponsored retirement plans at the state level; see Weller and Helburn (2010) and Baker (2006).

⁴ Of course, a simple balanced portfolio is not the only option for investing CGRA funds; a portion could be directed to domestic infrastructure assets which could help meet the \$2 trillion investment required in the next five years just to maintain existing infrastructure. (American Society of Engineering, 2009).

⁵ In an uncommonly frank study the firm that rates mutual funds for their performance, Morningstar, concluded that investors would have done better had they kept a portfolio of funds for 30 years, rather than sell the losers and buy the high performers every quarter. This is because performance fluctuated and trading fees greatly reduced net returns. Report available at <http://moneywatch.bnet.com/economic-news/blog/daily-money/morningstar-low-mutual-fund-fees-trump-our-star-ratings/1142/>.

⁶ The earnings will accumulate tax free and only later, when the worker retires will he pay income tax on the distributions—presumably at a much lower rate because his income will be lower.

⁷ A good summary of the studies of fee differences between institutional investors and individual investors is provided by Laidler and Robston (2007).

Resources

Arias, D. & Ghilarducci, T. (2010). Pension reform's stake in employers. SCEPA Working Paper 2011-3. New York: Schwartz Center for Economic Policy Analysis. Retrieved from <http://www.economicpolicyresearch.org/working-papers/288-pension-reforms-stake-in-employers.html>

Baker, Dean. 2006. Universal Voluntary Accounts: A step towards fixing the retirement system. Working paper. Washington, DC: Center for Economic and Policy Research. Retrieved from http://www.cepr.net/documents/publications/universal_voluntary_accounts.pdf.

Barber, B. & Odean, T. (2011). The behavior of individual investors. Working paper. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1872211.

Barber, B. & Odean, T. (2000). The common stock investment performance of individual investors. *Journal of Finance*, 55(2), 772-806.

Beeferman, L. & Becker, M. B. (2010, Sep.). Going on automatic: The right path toward retirement income security for all? Capital Matters Occasional Paper Series No. 6. Cambridge, MA: Harvard Law School Labor and Worklife Program.

Bender, K. A. (2004). The well-being of retirees: Evidence using subjective data. CRR Working Paper No. 2004-24. Chestnut Hill, MA: Center for Retirement Research, Boston College. Retrieved from http://crr.bc.edu/working_papers/the_well-being_of_retirees_evidence_using_subjective_data.html

- Franchise Tax Board. (2010). *2010 California Income Tax Expenditures: Compendium of Individual Provisions*. Sacramento, CA: California Franchise Tax Board.
- Ghilarducci, T. (2008). *When I'm Sixty-Four: The Plot against Pensions and the Plan to Save Them*. Princeton, NJ: Princeton University.
- Ghilarducci, T. and Sun, W. (2006, Jul.). How defined contribution plans and 401(k)s affect employer pension costs. *Journal of Pension Economics and Finance*, 5(2), 175-196.
- Ghilarducci, T. (2007, Nov.). Guaranteed Retirement Accounts: Toward retirement income security. EPI Working Paper No. 204. Retrieved from <http://www.gpn.org/bp204/bp204.pdf>.
- Government Accountability Office. (2009a). *Private Pensions: Alternative Approaches Could Address Retirement Risks Faced by Workers but Pose Trade-offs*. GAO-09-642. Washington, DC: U.S. Government Accountability Office. Retrieved from <http://www.gao.gov/products/GAO-09-642>.
- Government Accountability Office. (2009b). *Retirement Savings: Automatic Enrollment Shows Promise for Some Workers, but Proposals to Broaden Retirement Savings for Other Workers Could Face Challenges*. GAO-10-31. Washington, DC: U.S. Government Accountability Office. Retrieved from <http://www.gao.gov/products/GAO-10-31>.
- Government Accountability Office. (2009c). *Alternative Approaches Could Address Retirement Risks Faced by Workers but Pose Trade-Offs*. GAO-09-642. Washington, DC: U.S. Government Accountability Office. Retrieved from <http://www.gao.gov/products/GAO-09-642>.
- Government Accountability Office. (2005, Sep.). *Tax Expenditures Represent a Substantial Federal Commitment and Need to Be Reexamined*. GAO-05-690. Washington, DC: U.S. Government Accountability Office. Retrieved from <http://www.gao.gov/new.items/d05690.pdf>.
- Ivkovića, Z. & Weisbenner, S. (2009). Individual investor mutual fund flows. *Journal of Financial Economics*, 92(2), 223-237.
- Jefferson, R. T. (2000). Rethinking the risk of defined contribution plans. *Florida Tax Review*, 4(9), 607-683.
- Laidler, D. & Robson, W. B. P. (2007, Jun.) Ill-defined benefits: The uncertain present and brighter future of employee pensions in Canada. C.D. Howe Institute Commentary No. 250. Toronto, ON: C.D. Howe Institute. Retrieved from http://www.cdhowe.org/pdf/commentary_250.pdf.
- Munnell, A. H., Aubry, J. P., Hurwitz, J. & Quinby, L. (2011, Apr.). The role of defined contribution plans in the public sector. Center for Retirement Research Issue Brief No. 16. Chestnut Hill, MA: Center for Retirement Research.
- Munnell, A. H., Golub-Sass, A., Kopcke, R. W., & Webb, A. (2009, Feb.). What does it cost to guarantee returns? Center for Retirement Research Issue Brief No. 9-4. Chestnut Hill, MA: Center for Retirement Research at Boston College. Retrieved from http://crr.bc.edu/images/stories/Briefs/ib_9-4.pdf.
- Munnell, A. H., Soto, M., Libby, J. & Prinzivalli, J. (2006, Sep.). Investment returns: Defined Benefit vs. 401(k). Center for Retirement Research Issue Brief No. 52. Chestnut Hill, MA: Center for Retirement Research at Boston College. Retrieved from http://crr.bc.edu/images/stories/Briefs/ib_52.pdf.
- Office of Management and Budget, White House. (2011). Analytical Perspectives report for fiscal year. Washington, DC: White House Office of Management and Budget.

- Office of the Vice President. (2010, Feb.). Annual Report of the White House Task Force on the Middle Class. Washington, DC: Office of the Vice President. Retrieved from <http://www.whitehouse.gov/sites/default/files/microsites/100226-annual-report-middle-class.pdf>.
- Social Security Administration. (2010, Oct. 29). National Average Wage Index. Retrieved from <http://www.ssa.gov/oact/cola/AWI.html>.
- Stubbs, D. (2010a). What real rate of return could a Guaranteed Retirement Account credibly and safely offer? Schwartz Center for Economic Policy Analysis (SCEPA) Working Paper 2010-4. New York: New School for Social Research Department of Economics.
- Stubbs, D. (2010b). "Modelling a Guaranteed Retirement Account System in the United States." Schwartz Center for Economic Policy Analysis (SCEPA) Working Paper 2010 3 New York: New School for Social Research Department of Economics.
- U.S. Census Bureau. (2010). *Statistical Abstract of the United States: 2011* (130th Edition). Washington, DC, 2010. Retrieved from <http://www.census.gov/compendia/statab/>.
- U.S. Census Bureau. (2011). *Current Population Survey: 2011 Annual Social and Economics Supplement*. Generated on August 26, 2011 from DataFerrett at <http://dataferrett.census.gov/TheDataWeb/index.html>.
- Voorhees, J. (2010, Feb. 1). White House budget seeks \$4B for transportation infrastructure bank. *New York Times*. Retrieved from <http://www.nytimes.com/gwire/2010/02/01/01greenwire-white-house-budget-seeks-4b-for-transportation-i-444.html>.
- Weller, C. & Helburn, A. (2010). States to the rescue: Policy options for state government to promote private sector retirement savings. Working paper. Boston, MA: University of Massachusetts, Boston Department of Public Policy and Public Affairs.

AUTHOR BIOGRAPHIES

Sylvia Allegretto, Ph.D., is an economist and Deputy Chair of the Center on Wage and Employment Dynamics at the UC Berkeley Institute for Research on Labor and Employment. Previously, she worked at the Economic Policy Institute (EPI) where she co-authored two editions of *The State of Working America* (with L. Mishel and J. Bernstein). Dr. Allegretto has published numerous working papers and journal articles on economic inequality, unemployment duration, family budgets, low wage labor markets, the minimum wage, and the sub-minimum wage received by tipped workers. She received her Ph.D. in Economics from the University of Colorado, Boulder.

Beth A. Almeida is an economist who researches, writes, and consults on retirement issues. Previously, she served as the first Executive Director of the National Institute on Retirement Security (NIRS). Before joining NIRS, she served as Assistant Director for Strategic Resources for the International Association of Machinists and Aerospace Workers, where she played a key role in pension and benefit restructuring during the post-9/11 airline industry crisis. Her research on retirement issues has been published in edited volumes and cited in Congressional testimony, national media, and trade media. She earned an M.A. in Economics from the University of Massachusetts Amherst.

Christina A. Clarke, Ph.D., M.P.H., is an epidemiologist at the Cancer Prevention Institute of California (CPIC), and a Consulting Assistant Professor at the Stanford Cancer Institute. As Co-Investigator for the Greater Bay Area Cancer Registry—part of the National Cancer Institute's Surveillance Epidemiology and End Results (SEER) program and the California Cancer Registry—Dr. Clarke monitors changes in cancer incidence and survival patterns among various population subgroups, particularly those defined by geography, race/ethnicity, and socioeconomic status. She received her M.P.H. in Epidemiology from Tulane University, and her Ph.D. in Epidemiology from UC Berkeley.

Teresa Ghilarducci, Ph.D., is a labor economist and nationally-recognized expert in retirement security. She is Professor of Economics, the Bernard L. and Irene Schwartz Chair in Economic Policy Analysis, and Director of the Schwartz Center for Economic Policy Analysis at The New School. Previously, she was a professor of Economics for 25 years at the University of Notre Dame, where she served for 10 years as Director of the school's Higgins Labor Research Center. She is author of *When I'm Sixty Four: The Plot Against Pensions and the Plan to Save Them* and *Labor's Capital: The Economics and Politics of Employer Pensions*, and co-author of *Portable Pension Plans for Casual Labor Markets* (with G. Mangum, J. Peterson, and P. Phillips). Professor Ghilarducci frequently testifies before the U.S. Congress and is a media source on pensions and labor economics.

Jacob S. Hacker, Ph.D., is Stanley Resor Professor of Political Science and Director of the Institution for Social and Policy Studies at Yale University. An expert on the politics of US health and social policy in cross-national perspective, he is the author of several books including *The Great Risk Shift*; *The Divided Welfare State: The Battle over Public and Private Benefits in the United States*; and *Winner-Take-All Politics: How Washington Made the Rich Richer—And Turned Its Back on the Middle Class* (with Paul Pierson). Professor Hacker has also authored a wide range of popular writings on American politics and public policy, with a focus on health and economic security.

Amal Harrati is a Ph.D. candidate in the Department of Demography at UC Berkeley. Her current research focuses on the relationship between health and economic outcomes at older ages. Her research interests include social security and retirement, health care reform, and elderly well-being. Prior to her doctoral studies, she worked as a research analyst at Harvard University's Joint Center for Housing Studies studying housing demographics. She received her M.A. in Economics from UC Santa Barbara and her B.A. in Economics from UC Los Angeles.

Nari Rhee, Ph.D., is a staff researcher at the UC Berkeley Center for Labor Research and Education (CLRE) where she coordinates the Retirement Security Project. She was previously a Postdoctoral Researcher and Visiting Scholar at CLRE. Dr. Rhee has published journal articles and working papers on a range of issues affecting low-wage workers and working families, including regional income inequality and poverty, local economic development policy reform, workforce development in long term care, and pensions and retirement security. She received her M.A. in Urban Planning from UC Los Angeles and her Ph.D. in Geography from UC Berkeley.

Joelle Saad-Lessler, Ph.D., is Assistant Professor of Economics at Long Island University and a research economist at the Schwartz Center for Economic Policy Analysis (SCEPA). She has extensive experience in econometric modeling, statistical programming, and data analysis. Dr. Saad-Lessler's publications span a range of issues, from the impact of immigration on local wages, to the economics of international child labor, and the economic impact of global warming. She received her Ph.D. in Economics from Columbia University.

Lauren Schmitz is a Ph.D. student in economics at the New School for Social Research, and a research assistant at the Schwartz Center for Economic Policy Analysis (SCEPA). Her past work has been on public and international economics, including evaluating the efficacy of public funding for cultural and social nonprofits and work on the causes and consequences of global imbalances. Currently, her work at SCEPA is focused on retirement policy and pension reform, including the relationship between US labor market conditions and the employer provision of fringe benefits.

Anthony Webb, Ph.D., is a research economist at the Center for Retirement Research at Boston College. Dr. Webb's published research includes a number of studies of annuity markets, the role of annuities in managing wealth decumulation in retirement, the Social Security claiming decision, and the impact of aggregate mortality risk on annuity providers and sponsors of defined benefit pension plans. He received his Ph.D. in Economics from UC San Diego. Previously, he was employed as an economic adviser to the British government, providing policy advice on taxation of personal savings.

Christian E. Weller, Ph.D., is Associate Professor of Public Policy at the University of Massachusetts Boston; Senior Fellow at the Center for American Progress; a research scholar at the University of Massachusetts Amherst's Political Economy Research Institute; an institute fellow at the University of Massachusetts Boston's Gerontology Institute; and a research associate at the Economic Policy Institute. Professor Weller has published extensively on retirement security and pensions. His work is frequently cited in the press and he is often a guest on national TV and radio programs. He is editor of *Retirement Security in the Great Recession*; co-author of *Retirement Income: The Crucial Role of Social Security* (with E. Wolff), and co-editor of *Employee Pensions: Policies, Problems and Possibilities* (with T. Ghilarducci). He holds a Ph.D. in Economics from the University of Massachusetts Amherst.

Institute for Research on Labor and Employment
University of California, Berkeley
2521 Channing Way
Berkeley, CA 94720-5555
(510) 642-6432
<http://laborcenter.berkeley.edu>



UC Berkeley Center for Labor Research and Education

The Center for Labor Research and Education (Labor Center) is a public service project of the UC Berkeley Institute for Research on Labor and Employment that links academic resources with working people. Since 1964, the Labor Center has produced research, trainings and curricula that deepen understanding of employment conditions and develop diverse new generations of leaders.