The Disappearing Defined Benefit Pension and Its Potential Impact on the Retirement Incomes of Baby Boomers

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This article uses a microsimulation model to estimate how freezing all remaining private-sector and one-third of all public-sector defined benefit (DB) pension plans over the next 5 years would affect retirement incomes of baby boomers. If frozen plans were supplemented with new or enhanced defined contribution (DC) retirement plans, there would be more losers than winners, and average family incomes would decline. The decline in family income would be much larger for last-wave boomers born from 1961 through 1965 than for those born from 1946 through 1950, because younger boomers are more likely to have their DB pensions frozen with relatively little job tenure. Higher DC accruals would raise retirement incomes for some families by more than their lost DB benefits. But about 26 percent of last-wave boomers would have lower family incomes at age 67, and only 11 percent would see their income increase.

Introduction

The percentage of workers covered by a traditional defined benefit (DB) pension plan that pays a lifetime annuity, often based on years of service and final salary, has been steadily declining over the past 25 years. From 1980 through 2008, the proportion of private wage and salary workers participating in DB pension plans fell from 38 percent to 20 percent (Bureau of Labor Statistics 2008; Department of Labor 2002). In contrast, the percentage of workers covered by a defined contribution (DC) pension plan—that is, an investment account established and often subsidized by employers, but owned and controlled by employees— has been increasing over time. From 1980 through 2008, the proportion of private wage and salary workers participating in only DC pension plans increased from 8 percent to 31 percent (Bureau of Labor Statistics 2008; Department of Labor 2002). More recently, many employers have frozen their DB plans (Government Accountability Office 2008; Munnell and others

2006). Some experts expect that most private-sector plans will be frozen in the next few years and eventually terminated (Aglira 2006; Gebhardtsbauer 2006; McKinsey & Company 2007). Under the typical DB plan freeze, current participants will receive retirement benefits based on their accruals up to the date of the freeze, but will not accumulate any additional benefits; new employees will not be covered. Instead, employers will either establish new DC plans or increase contributions to existing DC plans.

Selected Abbreviations	
CB	cash balance
COLA	cost-of-living adjustment
DB	defined benefit
DC	defined contribution
DI	Disability Insurance

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These trends threaten to shake up the American retirement system as we know it because of vast differences between DB and DC pension plans, including differences in coverage rates within a firm, timing of accruals, investment and labor market risks, forms of payout, and effects on work incentives and labor mobility. DB pensions are tied to employers who, consequently, bear the responsibility for ensuring that employees receive pension benefits. In contrast, DC retirement assets are owned by employees who, therefore, bear the responsibility for their own financial security.

This article simulates how the shift from DB to DC pensions might affect the distribution of retirement income among boomers under two different pension scenarios: one that maintains current DB pensions, and one that freezes all remaining DB plans in addition to a third of all state and local plans over the next 5 years. The analysis uses the Social Security Administration's (SSA's) Modeling Income in the Near Term (MINT) microsimulation model to describe the potential impact of the pension shift on boomers at age 67. The article examines both changes in retirement income and the numbers of winners and losers, and it compares these outcomes among individuals grouped by sex, educational attainment, marital status, race/ethnicity, years of paid employment, and quintiles of lifetime earnings and retirement income. Of principal concern is whether income from increased DC plan coverage will compensate for the loss of DB plan benefits.

Background

There are two general types of pensions: DC plans and traditional DB plans. In DC plans—which include 401(k) plans—employers, employees, or both employers and employees make tax-deferred contributions

to a retirement account in the employee's name. The contribution amount can be set either as a particular share of salary or a given dollar amount. At retirement, workers receive the funds that have accumulated in their accounts, generally as lump-sum distributions (Johnson, Burman, and Kobes 2004), although they can also use the proceeds to purchase annuities in the marketplace.

Traditional DB plans provide workers with guaranteed lifetime annuities that begin at retirement and promise benefits that are typically expressed as a multiple of years of service and earnings received near the end of one's career (for example, 1 percent of average salary received during the final 3 years on the job, multiplied by the number of years of service). Plan participants cannot collect benefits until reaching the plan's retirement age, which varies among employers. Some plans allow workers to collect reduced benefits at specified early retirement ages.

The value of future retirement benefits from DC plans increases each year by the value of employee and employer contributions to the plan plus any investment returns earned on the account balance. As long as market returns are relatively stable and participants and their employers contribute consistently over time, account balances will increase steadily each year until retirement. Because equity returns are volatile in the long run as well as the short run (Stambaugh 2009), the expected income from DC retirement accounts of those reaching retirement age can vary greatly over different time periods (Burtless 2009). But the plans themselves are not designed to produce age-varying growth rates.[1]

In contrast, the growth pattern of future benefits by design varies by age in DB plans. Pension wealth—the present discounted value of the stream of future expected benefits—grows slowly in typical DB plans for young workers, increases rapidly once workers approach the plan's retirement age, but then levels off or can even decline at older ages. Pension wealth is minimal at younger ages because junior employees typically earn low wages and have completed only a few years of service. In addition, if a worker terminates employment with the firm, benefits at retirement are based only on earnings to date, and their present value is low because the worker receives them many years in the future. The present value of DB benefits rises rapidly as workers increase tenure with their current employer, as their earnings increase through real wage growth and inflation and as they approach the time when they can collect benefits. Workers in

traditional DB plans often lose pension wealth, however, if they stay on the job beyond a certain age or seniority level. Growth in promised annual retirement benefits typically slows at older ages as wage growth declines. Some plans also cap the number of years of service that workers can credit toward their pensions, and others cap the share of preretirement earnings that the plan will replace in retirement. In addition, pension wealth can decline for workers who remain on the job past the plan's retirement age if the increase in annual benefits from an additional year of work is insufficient to offset the loss caused by a reduction in the number of pension installments. As a result, traditional DB plans often create a strong disincentive to continue working for the same employer at older ages.

Historical Trends

For the last quarter of a century, the occupational pension structure in the United States has been shifting from DB to DC plans (Buessing and Soto 2006; Copeland 2006; Wiatrowski 2004). Analysts have attributed the trend to a number of factors. First, government regulations have tended to favor DC plans over DB plans (Gebhardtsbauer 2004; Ghilarducci 2006). This began in the early 1980s after Internal Revenue Service regulations implemented a provision of the 1978 Revenue Act, which allowed employees to make voluntary contributions to employer-sponsored retirement plans with pretax dollars.[2] Subsequent tax legislation enacted in the 1980s, including the Tax Equity and Fiscal Responsibility Act of 1982 and the Tax Reform Act of 1986, reduced incentives for employers to maintain their DB plans (Rajnes 2002). Since then, the adoption of DB pension plans by new businesses has virtually halted and has been replaced by the adoption of 401(k)-type pension plans that permit voluntary employee contributions (Munnell and Sunden 2004). One study found that increased government regulation was the major factor in 44 percent of DB plan terminations in the late 1980s (Gebhardtsbauer 2004). Another study noted that from 1980 through 1996, government regulation increased the administrative costs of DB plans by twice as much as those of similar-sized DC plans (Hustead 1998).

Second, the employment-sector shift away from manufacturing toward service and information technology decreased the availability of DB plans, as new firms in growing sectors of the economy adopted DC plans instead (Wiatrowski 2004). These structural changes in the economy are estimated to explain from 20 percent to 50 percent of the decline in DB pension plans (Clark, McDermed, and Trawick 1993; Gustman and Steinmeier 1992).

Finally, some analysts suggest that worker demand has partly contributed to the popularity of DC plans over DB plans (Aaronson and Coronado 2005; Broadbent, Palumbo, and Woodman 2006). They assert that employees prefer DC plans because these plans are portable across jobs, balances are more transparent, and assets are managed by employees themselves (Broadbent, Palumbo, and Woodman 2006; Munnell and Soto 2007).

The Pension Protection Act of 2006 may fuel the trend away from DB plans and toward DC plans by increasing DB plan reporting and disclosure rules, requiring stricter DB funding rules, making permanent the increases in DC contribution limits in the 2001 tax cuts, and facilitating the use of default participation rules in DC plans (AARP 2007; Center on Federal Financial Institutions 2006). Beyond this, the financial situation in 2008 resulted in at least a one trillion dollar loss in the value of assets held in private-sector DB plans (Munnell, Aubrey, and Muldoon 2008a) and another trillion dollar loss in state and local plans (Munnell, Aubrey, and Muldoon 2008b). Although the economic crisis has hurt the funding status of DB plans, legislation signed on December 23, 2008, will provide some pension funding relief (Groom Law Group 2008; Klose and Tooley 2009).

The Future of Pensions

The future of pensions remains uncertain as even employers with financially healthy DB plans consider whether to eliminate them over time. By December 2006, many American companies had instituted "freezes" in their DB pensions and replaced them with new or enhanced DC pensions (Smith and others 2007; VanDerhei 2007). In its survey of single-employer DB sponsors, the Government Accountability Office (2008) found that about half had one or more frozen plans; 23 percent of plan sponsors had completely frozen their plans with no further benefit accruals (hard freezes), and 22 percent had frozen either the years of service or the salary pension base. In 2007, a survey of private-sector DB plan sponsors by Mercer and the Employee Benefits Research Institute found that over a third of DB sponsors had recently frozen their DB pension plans, and a third of the remaining employers expected to freeze or close their plans in the next 2 years (Vanderhei 2007). Some experts expect that most private-sector plans will be frozen or terminated

within the next few years (Aglira 2006; Gebhardts-bauer 2006; McKinsey & Company 2007).

This is essentially what happened in the United Kingdom (U.K.) with private-sector DB pensions. When the British adopted transparent financial accounting standards and the government taxed pension plan accumulations it deemed to be excessive, the percent of assets "in terminated or frozen status" increased from 35 percent in 1998 to 70 percent in 2006 (Munnell and Soto 2007). A Towers Perrin 2008 survey of private employers in the United Kingdom documented the shift away from DB pensions through plan freezes and found that the percentage of new employees able to join a DB plan declined from 67 percent in 2002 to only 11 percent in 2008. Almost half of employers surveyed expected to make further changes to their pension schemes in the next 5 years, partly in response to personal account legislation proposed to become effective in 2012 (Towers Perrin 2008).

The future prospects for DB pension plans in the public sector are more favorable. Very little of the shift from DB to DC plans has occurred in the public sector (Anderson and Brainard 2004; Broadbent, Palumbo, and Woodman 2006; Munnell, Haverstick, and Soto 2007; Turner and Hughes 2008). Although some state and local governments in the United States have introduced DC plans in some form or another, only Michigan and Alaska have primary plans that require new employees to join a DC plan. Other states that have introduced DC plans have maintained their DB plans (Munnell and others 2008). Additionally, unlike in the private sector where the primary motivation for establishing DC plans is economic, in the public sector the primary motivation appears to be political (Munnell and others 2008).

Nonetheless, public-sector DB pension plans may also face increasing stress in future years. About a third of state and local government pension plans were less than 80 percent funded in 2006, and the share of underfunded plans increased to 46 percent with the 2008 stock market crash (Munnell, Aubry, and Muldoon 2008b). Correcting the funding deficit in the current recession may be particularly difficult as state and local tax revenues plummet. Financial and political pressures may push some of these government plans to freeze along with private-sector plans.

Methodology

Our analysis is based on projections of the major sources of retirement income from SSA's MINT microsimulation model, which was developed by the agency's Office of Research, Evaluation, and Statistics with substantial assistance from the Brookings Institution, RAND Corporation, and Urban Institute. Starting with data from the 1990–1993 and 1996 panels of the Census Bureau's Survey of Income and Program Participation (SIPP) matched to SSA's earnings and benefit records through 2004, MINT projects the future life course of persons born from 1926 through 1965. MINT independently projects each person's marital changes, mortality, entry to and exit from Social Security Disability Insurance (DI) rolls, and age of first receipt of Social Security and pensions benefits. It also projects family income including Social Security benefits, pension income, asset income, earnings, Supplemental Security Income (SSI), income from nonspouse co-resident family members, and imputed rental income.[3]

MINT directly measures the experiences of survey respondents as of the early 1990s—representing the first third to the first half of the lives of boomers—and changes in earnings and Social Security benefits through 2004 using SSA administrative records. MINT then projects individuals' characteristics and incomes into the future until death, accounting for major changes in the growth of economy-wide real earnings, the distribution of earnings both between and within birth cohorts, and the composition of the retiree population. All of these factors will affect the retirement income of future boomer retirees.[4] The projections in this article are based on MINT5.[5] More detail on MINT can be found in Appendix A and in Smith and others (2007).

Projecting Pensions in MINT

MINT projects employer-sponsored DB, DC, and cash balance (CB) pension plans.[6] Pension benefits are based on an individual's entire work history (real and simulated) up to the projected retirement date. SIPP self-reported data provide baseline information about pension coverage on current and past jobs. The MINT baseline was recently updated to reflect pension plan structures through December 2006, including DB pension plan freezes and conversions to CB plans. The pension module uses data from the PENSIM[7] model to impute future job changes and pension coverage on future jobs from the time of the SIPP interview through age 50. After age 50, the pension module assumes that no further job changes take place.

With each job separation, MINT projects that some workers cash out their accumulated DC balances.

The probability of cashing out is higher for younger workers than for older workers and higher for those with low account balances than for those with high account balances. Vested workers take-up DB benefits at the latter of the plan's early retirement age or projected retirement age. Workers selecting a joint and survivor pension receive a reduced benefit with a 50 percent survivor annuity. MINT assigns a cost-of-living adjustment (COLA) to pensions based on sector prevalence.[8] See Toder and others (2002) for more details about the treatment of COLAs in the MINT pension module.

MINT projects DC pension participation and contributions using the 1996 SIPP matched to SSA's Detailed Earnings Records.[9] DC pension participation is estimated using a logit model. Separate models of the probability of participation are estimated for those who contributed to a plan in the previous year and those who did not contribute. DC contributions are estimated using a random-effects Tobit model. This model allows for both an individual permanent and random error. It also controls for the statutory annual contribution limit.

The share of account balances and contributions allocated to stocks and bonds varies by age on the basis of Employee Benefits Research Institute and Investment Company Institute data. Every 5 years, the model rebalances the portfolios according to the allocation strategy for the individual's attained age category. Subsequent contributions match the allocation strategy of the attained age, if different.

The MINT model accumulates DC account balances from the time of the SIPP survey to 2005 using historical price changes and historical returns for stocks, long-term corporate bonds, and long-term government bonds. MINT assumes a real rate of return for stocks of 6.5 percent, a real rate of return for corporate bonds of 3.5 percent, and a real rate of return for government bonds of 3.0 percent. Rates of return for individuals are varied assuming a standard deviation of 17.28 percent for stocks and 2.14 percent for bonds. In every year, 1 percent is subtracted from each of the stock and bond real rates of return to reflect administrative costs.

MINT projects DB pensions using the Pension Benefit Guaranty Corporation's (PBGC's) Pension Insurance Modeling System (PIMS). DB plan formulas, which are randomly assigned to DB participants, are based on broad industry, union status, firm size categories, and whether the firm offers dual (DB and DC) coverage.[10] MINT uses actual benefit formulas

to calculate benefits for federal government workers and military personnel, and uses tables of replacement rates from the Bureau of Labor Statistics to calculate replacement rates for state and local government workers. The model projects conversions of pension plan type (from DB to CB or DB to DC) using actual plan change information for plans included in the PIMS data.

If a worker is assigned to a plan that freezes, DB pension accruals stop as of the freeze date. The pension module assumes that all firms with jointly offered DB and DC plans increase the employer-match provisions of the existing plan and that all firms with stand-alone plans offer a substitute DC plan.[11] In the first year of a DB plan freeze, DC pension participation is estimated using the model for those who contributed to a DC pension in the previous year. That is, the pension module treats workers in the first year of the freeze as though they had previously contributed to a DC pension and maintains their tenure. After the first year of the freeze, DC pension participation is estimated using either the model for those who contributed to a DC pension in the previous year or the model for those who did not contribute. Workers are assigned to one of these two models based on their predicted participation status in a DC pension in the first year of the freeze.

MINT uses the 1997 to 2003 Form 5500 public-use data to identify DB plans that converted to CB plans over that time period. Workers are assigned CB plans based on the transition provisions described in the summary plan description. If a worker is grandfathered into the DB plan, the worker retains the existing DB plan. If a worker is offered a choice, the pension module calculates the expected DB and CB benefit at the date of the conversion and assigns the worker the plan type that offers the higher expected benefit. Workers who join the firm after the conversion date are assigned the CB plan. At retirement, all CB accruals are paid out as a lump sum, which is added to other retirement account assets.

Our analysis focuses on how a more rapid substitution of DC for DB plans would affect incomes of boomers at age 67 and therefore how it would affect the living standards of current workers in their retirement years. But the changes could also affect workers' living standards before age 67 through changes in wages and employee saving. For example, employers may increase wages when they freeze DB plans. If DB plan freezes represent a net reduction in total compensation for mid-career workers, employers may

keep them whole by increasing wages. Alternatively, employers may use DB plan freezes, instead of wage cuts, as a way to reduce compensation. Either way, employers may prefer to reduce DB plan obligations as a share of total compensation for the reasons discussed above. In addition, when employers introduce new DC plans, the funding of employees' retirement changes from total employer funding (under DB plans) to mixed employee and/or employer funding. Employees' contributions reduce current consumption and workers' current living standards. These two effects of the substitution of new or enhanced DC plans for DB accruals—higher wages and higher employee contributions—have offsetting effects on workers' current living standards, but may not offset each other exactly. A more complex model of wage determination would be needed to simulate the total effects of DB plan freezes on worker well-being over a lifetime.

Measuring Income in Retirement from DB Pension Plans and DC Retirement Accounts

MINT computes income from financial assets by determining the real (price-indexed) annuity a family could buy if it annuitized 80 percent of the total savings amount. The annuity value calculated is used for that year's imputation of income from financial assets only. The annuity is recalculated each year to reflect changes in wealth amounts, based on the model of wealth spend-down, and changes in life expectancy, given that the individual lived another year. For married couples, MINT assumes a 50 percent survivor annuity.

We measure income from financial wealth and DC retirement accounts as annuities in order to ensure comparability with DB pensions and Social Security benefits, which are also annuities. Without this adjustment, MINT would overstate the loss in retirement well-being because of the shift from DB pension income to DC assets; one dollar in DB pension wealth produces more measured income than one dollar in DC wealth. This happens because measured DB income includes both a return on accumulated assets and some return of principal, whereas measured financial wealth and retirement account income includes only the return on accumulated assets. We do, however, discount the annuity return by 20 percent to reflect the fact that people cannot necessarily purchase actuarially fair annuities and, if they choose to spend-down their wealth outside of annuities based on life expectancy, they run the risk of depleting their assets if they live longer than expected.

This income measure differs conceptually from asset income as measured by the Census Bureau and other analysts, which includes only the rate of return on assets (interest, dividends, and rental income) and excludes the potential consumption of capital that could be realized if a person spent down his or her wealth. The Census Bureau and many analysts include this consumption of capital from DC retirement accounts only if people choose regularly to withdraw money from their accounts. MINT treats 80 percent of the annuity value as income without regard to how much is actually withdrawn.

Pension Simulations

We test whether the distribution of economic well-being at age 67 significantly differs between the MINT baseline and an alternate DB pension scenario that significantly increases the share of frozen DB plans as has happened in the United Kingdom.

The "baseline scenario" represents the pension structure in the United States, including known pension plan freezes as of the end of 2006.[12] It maintains current employer plans, but permits DB and DC coverage to evolve over time with changes in the composition of employment and in factors influencing workers' DC plan participation and contribution rates. The alternative scenario, which we refer to as the "U.K. scenario" uses the same methodology as the MINT baseline pension scenario, but assumes that all private-sector DB pensions and a third of public-sector DB pensions will be frozen with no further benefit accruals (hard freeze) within 5 years. In each year from 2007 through 2011, an additional 20 percent of firms are randomly simulated to freeze their DB plans. Although this is more extreme than what has occurred in the United Kingdom, particularly with respect to public-sector DB pensions, it serves as an upper bound for what might happen to the pension structure in the United States. We assume that employers who freeze their plans will either establish a DC plan, if none exists, or increase contributions to their existing plan.

The U.K. scenario will have little effect on boomer DB coverage, but will affect DB accruals. Current employees will not lose their DB coverage, but will have less pension wealth at retirement because their pensions will be based on their accruals only up to the time of the freeze. Because frozen plans are closed to new employees, however, workers who are projected to start new jobs with DB pensions under the baseline will lose DB coverage under the simulated pension freezes. For the most part, only these job

changers will see their DB coverage status change under the option. (Some existing employees who are not vested in a plan, however, gain DB coverage they otherwise would not have because we assume that all existing employees become vested at the time of the pension freeze.)

We analyze the characteristics and family income of individuals born in the boomer cohorts when they reach age 67 (the age by which most people will have retired). We assume husbands and wives share resources within the family. All reported income projections are in annual per capita (per person) 2007 dollars. Our sample sizes are large (over 100,000 records), therefore differences between most variables in the simulations will be statistically significant.

Because the boomer cohort includes individuals born over a 19-year period, the pension freezes will affect its members differently. The oldest boomers, who were at or near retirement age when the first new plan freezes occurred in 2007, will have their DB pensions frozen with lengthy job tenures causing them to lose only a few high benefit-accrual years, but will also have relatively few years to boost their

DC account balances before retirement. The youngest boomers, who will be under age 50 when the last projected new plan freezes occur in 2011, will have their DB pensions frozen with relatively little job tenure and lose many years of DB wealth accrual, but will also have relatively more years to accumulate DC pension wealth before retirement. To better understand the differential impact of DB pension freezes on the retirement incomes of boomers, we report results separately for four waves of boomers born from 1946 to 1950 (first-wave boomers), from 1951 to 1955 (second-wave boomers), from 1956 to 1960 (third-wave boomers), and from 1961 to 1965 (last-wave boomers).[13]

Boomers in the last wave are nearly twice as likely as their earlier counterparts to be Hispanic and are less likely to be college educated (Table 1). For example, 14 percent of last-wave boomers are Hispanic, compared with only 8 percent of first-wave boomers; only 28 percent of last-wave boomers are college graduates, compared with 32 percent of first-wave boomers. Relative to first-wave boomers, last-wave boomers are also less likely to be married at age 67 and more likely to be never married or divorced. Because pension

Table 1.
Percentage distribution of selected characteristics projected for individuals at age 67

Characteristic	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
All	100	100	100	100
Sex				
Women	52	52	53	53
Men	48	48	47	47
Marital status				
Never married	5	6	7	8
Married	67	65	63	62
Widowed	10	10	10	10
Divorced	18	19	20	21
Race/ethnicity				
Non-Hispanic white	77	74	72	69
Non-Hispanic black	9	10	10	10
Hispanic	8	10	12	14
Other	6	6	6	7
Education				
High school dropout	11	11	11	13
High school graduate	57	60	61	60
College graduate	32	30	27	28
Labor force experience				
Less than 20 years	13	12	12	11
20 to 29 years	10	11	11	12
30 or more years	77	77	77	77

SOURCE: Authors' computations of MINT5 (see text for details).

coverage varies significantly by race/ethnicity, education, and other characteristics, differences in the composition of cohorts may mitigate or exacerbate the impact of the pension shift on retirement outcomes.

Results

We begin by looking at the level and composition of retirement income under the baseline and U.K. scenarios. An assessment is then made on how the accelerated decline in DB coverage will affect different demographic groups. Next we examine numbers and characteristics of winners and losers from the change in pension coverage. What might be driving the projected outcomes is then discussed. We end with reporting mean per capita family income at age 67 in 2007 dollars. Because the mean statistic is not representative when the data are skewed, we exclude individuals with family wealth in the top 5 percent of the distribution.

Projected Sources of Retirement Incomes Under the Baseline and U.K. Scenarios

Among the first wave of boomers, 85 percent are expected to have income from financial assets, and 48 percent will have earnings, either their own or their spouses' (Table 2). Only 3 percent of individuals are projected to receive SSI payments, but 85 percent will have imputed rental income from homeownership and 94 percent will receive Social Security benefits. Under the baseline scenario, 50 percent of first-wave boomers are projected to have family DB pension benefits and 76 percent are projected to have DC retirement

accounts. Pension coverage does not change under the U.K. scenario for first-wave boomers because no one who had DB coverage before the freeze loses their coverage (although, as we show below, their benefits are reduced), and because first-wave boomers are near or at retirement age and are less likely than younger workers to take-up DC pensions when newly offered.

Compared with the first wave of boomers, the last wave of boomers is equally likely to have income from assets (86 percent versus 85 percent), but less likely to have earnings (42 percent versus 48 percent). Under the baseline, last-wave boomers are 6 percentage points less likely than first-wave boomers to have DB pension benefits (44 percent versus 50 percent), but are equally likely to have DC retirement accounts (77 percent versus 76 percent). The U.K. scenario accelerates the shift from DB to DC pensions, reducing the share of last-wave boomers with DB pensions by an additional 2 percentage points and increasing the share with DC retirement accounts by 2 percentage points, compared with the baseline. Freezing more DB plans does not cause many boomers to lose DB coverage because all workers with existing DB plans retain them, even though they stop accruing benefits, and some workers who are not vested gain coverage. The only workers who lose coverage under the U.K. scenario are those who started a new job that provides a DB pension subject to a hard freeze. The U.K. scenario also increases the numbers with DC coverage only slightly because many of the affected workers already had DC coverage from their prior or current jobs.

Table 2.
Percent of individuals with family income at age 67, by scenario and income source (in percent)

Scenario and income source	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
Baseline				
Income from assets	85	86	86	86
Earnings	48	44	42	42
SSI payments	3	2	2	2
Imputed rental income	85	85	84	83
Social Security benefits	94	94	95	94
DB pension benefits	50	48	46	44
Retirement accounts	76	76	77	77
Total income	100	100	100	100
United Kingdom				
DB pension benefits	50	48	46	42
Retirement accounts	76	77	78	79
Total income	100	100	100	100

SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Projections exclude individuals with family wealth in the top 5 percent of the distribution.

Under the baseline, average per capita family DB pension benefits are projected to decline over time from $5,100 for first-wave boomers to $3,000 for last-wave boomers, and income from DC retirement accounts is projected to increase over time from $6,200 for first-wave boomers to $7,700 for last-wave boomers (Table 3). For boomers in the first wave, average per capita family DB pension benefits are expected to be only about $200 lower under the U.K. scenario than under the baseline, and average income from DC retirement accounts increases by less than $100. For boomers in the last wave, average per capita family DB pension benefits are expected to be about $1,100 lower under the U.K. scenario than under the baseline, and average income from DC retirement accounts is projected to be about $300 higher. Over time, the declines in DB pension benefits and the increases in income from DC retirement accounts are greater under the U.K. scenario than under the baseline. Furthermore,

under both scenarios, the decline in DB benefits is greater than the increase in income from DC retirement accounts. As a result, per capita family income at age 67 is about $100 lower for first-wave boomers and about $700 lower for last-wave boomers under the U.K. scenario than under the baseline.[14] On average, the additional income from DC retirement accounts under the U.K. scenario replaces only part of the lost income from DB pensions. This is largely because the pension freezes deprive boomers, especially those in the last wave, of their high accrual years for DB pension wealth; and the replacement DC plan does not generate assets large enough to replace the lost DB wealth.

Subgroup Differences in Projected Retirement Outcomes

The impact of the simulations on different demographic groups will depend on whether they typically have pension benefits. Individuals who are married,

Table 3.
Mean family income per person at age 67, by scenario and income source (in thousands of 2007 dollars)

Scenario and income source	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
Baseline				
Income from assets	7.1	7.3	7.0	6.9
Earnings	10.7	9.6	9.2	9.5
SSI payments	0.1	0.1	0.1	0.1
Imputed rental income	3.0	3.0	2.8	2.8
Social Security benefits	12.7	13.1	13.1	13.1
DB pension benefits	5.1	4.1	3.4	3.0
Retirement accounts	6.2	6.8	7.5	7.7
Total income	45.0	44.0	43.2	43.0
United Kingdom				
Income from assets	7.1	7.2	6.9	6.8
Earnings	10.8	9.6	9.3	9.6
SSI payments	0.1	0.1	0.1	0.1
Imputed rental income	3.0	3.0	2.8	2.8
Social Security benefits	12.7	13.1	13.1	13.1
DB pension benefits	4.8	3.5	2.6	2.0
Retirement accounts	6.2	6.9	7.6	8.0
Total income	44.8	43.5	42.5	42.3
Difference between baseline and U.K. scenarios				
Income from assets	0.0	0.0	0.0	0.0
Earnings	0.0	0.0	0.0	0.1
SSI payments	0.0	0.0	0.0	0.0
Imputed rental income	0.0	0.0	0.0	0.0
Social Security benefits	0.0	0.0	0.0	0.0
DB pension benefits	-0.2	-0.6	-0.9	-1.1
Retirement accounts	0.0	0.1	0.2	0.3
Total income	-0.1	-0.5	-0.7	-0.7

SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Because of rounding, income components may not sum to total.

non-Hispanic white, and college educated have more experience in the labor force and are in the highest shared lifetime earnings and retirement income quintiles; they are also most likely to have DB pensions and DC retirement accounts (Table 4).[15]

Demographic groups most likely to have pensions also have higher average family incomes and are projected to be most affected by the pension shift.

Under the baseline, mean family income per person is highest for men, married adults, non-Hispanic whites, college graduates, those with 30 or more years of labor force experience, and those in the top quintile of shared lifetime earnings—in every boomer wave (Table 5). Both the absolute and percentage declines in average family income per person between the baseline and U.K. scenarios are largest for many of these

Table 4.
Percent of individuals with family pensions at age 67 under the baseline scenario, by selected characteristics and pension type

	DB benefits				Retirement accounts			
Characteristic	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
All	50	48	46	43	75	75	76	76
Sex								
Women	51	49	47	44	74	74	74	75
Men	49	48	46	42	76	77	78	78
Marital status								
Never married	36	35	31	30	55	61	61	63
Married	54	53	51	48	81	82	83	83
Widowed	43	44	41	39	60	63	64	64
Divorced	42	38	39	36	65	64	66	67
Race/ethnicity								
Non-Hispanic white	52	50	49	46	80	80	81	81
Non-Hispanic black	49	48	45	40	60	64	65	67
Hispanic	38	39	37	35	51	58	61	65
Other	37	38	34	37	63	64	66	71
Education								
High school dropout	29	29	29	28	40	44	48	49
High school graduate	50	48	47	43	75	75	76	77
College graduate	58	55	53	51	88	88	88	89
Labor force experience								
Less than 20 years	27	24	23	22	38	37	39	41
20 to 29 years	39	37	35	34	58	60	61	59
30 or more years	55	53	51	48	83	83	84	85
Shared lifetime earnings								
Bottom quintile	24	25	24	23	32	35	37	39
2nd quintile	47	44	42	39	70	71	71	72
3rd quintile	56	54	52	48	85	86	86	86
4th quintile	62	62	57	55	93	92	92	93
Top quintile	62	58	57	56	96	96	96	96
Income quintile								
Bottom quintile	21	23	23	22	36	38	40	43
2nd quintile	46	47	44	40	69	71	73	73
3rd quintile	61	56	52	49	85	85	85	85
4th quintile	61	59	58	54	93	92	92	92
Top quintile	62	59	57	54	96	95	95	95

SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Shared lifetime earnings is the average of wage-indexed shared earnings between ages 22 and 62, where shared earnings are computed by assigning each individual half the total earnings of the couple in the years when the individual is married and his or her own earnings in years when nonmarried.

Table 5.
Mean family income per person at age 67, by selected characteristics (in thousands of 2007 dollars)

Characteristic	Baseline				Difference between baseline and U.K. scenarios			
	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
All	45.0	44.0	43.2	43.0	-0.1	-0.5	-0.7	-0.7
Sex								
Women	42.8	41.9	41.4	40.8	-0.1	-0.4	-0.6	-0.7
Men	47.4	46.3	45.1	45.6	-0.2	-0.6	-0.7	-0.7
Marital status								
Never married	39.4	41.1	38.0	38.3	0.0	-0.6	-0.7	-0.7
Married	46.7	45.3	44.1	44.3	-0.1	-0.5	-0.7	-0.7
Widowed	40.3	41.6	40.8	39.7	-0.2	-0.4	-0.6	-0.7
Divorced	42.7	41.8	43.1	42.4	-0.2	-0.5	-0.8	-0.8
Race/ethnicity								
Non-Hispanic white	49.1	48.6	48.0	47.6	-0.2	-0.6	-0.8	-0.8
Non-Hispanic black	31.3	32.2	31.3	31.2	0.0	-0.5	-0.5	-0.8
Hispanic	26.3	26.3	27.6	29.2	-0.1	-0.1	-0.4	-0.2
Other	40.3	38.0	39.1	46.1	-0.1	-0.3	-0.4	-0.6
Education								
High school dropout	19.2	19.0	20.1	21.0	-0.1	-0.1	-0.2	-0.3
High school graduate	38.4	37.9	37.6	36.5	-0.1	-0.4	-0.6	-0.6
College graduate	68.2	67.6	68.2	69.8	-0.2	-0.8	-1.2	-1.2
Labor force experience								
Less than 20 years	22.2	20.7	21.8	22.0	-0.1	-0.1	-0.2	-0.2
20 to 29 years	32.0	31.3	30.6	29.6	0.0	-0.1	-0.3	-0.3
30 or more years	50.7	49.4	48.3	48.5	-0.2	-0.6	-0.8	-0.8
Shared lifetime earnings								
Bottom quintile	16.8	16.9	16.9	16.9	0.0	0.0	-0.1	-0.1
2nd quintile	29.3	27.4	27.5	26.9	-0.1	-0.1	-0.2	-0.3
3rd quintile	41.4	39.7	37.7	38.0	-0.1	-0.4	-0.5	-0.6
4th quintile	56.5	56.1	53.5	52.9	-0.2	-0.7	-0.8	-0.8
Top quintile	85.8	87.5	88.1	90.0	-0.3	-1.3	-2.0	-2.0
Income quintile								
Bottom quintile	11.0	10.9	10.7	10.7	0.0	0.0	0.0	0.0
2nd quintile	23.3	22.6	22.1	21.8	0.0	-0.1	-0.1	-0.2
3rd quintile	36.6	35.5	34.7	33.8	-0.1	-0.3	-0.4	-0.4
4th quintile	58.0	56.9	55.3	55.0	-0.2	-0.8	-0.9	-0.9
Top quintile	110.3	111.0	110.0	112.9	-0.5	-1.5	-2.3	-2.5

SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Shared lifetime earnings is the average of wage-indexed shared earnings between ages 22 and 62, where shared earnings are computed by assigning each individual half the total earnings of the couple in the years when the individual is married and his or her own earnings in years when nonmarried.

same groups (Table 6). For the last-wave boomers, however, non-Hispanic blacks experience the largest percentage decline in income among race/ethnicity groups, nonmarried individuals experience greater percentage declines in income than married individuals, and women experience a slightly larger percentage decline in income than men. Blacks and nonmarried individuals have lower DC participation rates than non-Hispanic whites and married individuals and are less likely to voluntarily contribute enough to the substitute DC plan to make up for the lost DB benefits. The loss is greater for last-wave boomers who have more years of lower contributions. Still, the overall percentage declines in income are greater in the highest than in the lowest quintiles of individuals ranked either by shared lifetime earnings or retirement income at age 67.

Table 6.
Percent change in mean family income per person at age 67 between the baseline and U.K. scenarios, by selected characteristics

Characteristic	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
All	-0.3	-1.1	-1.6	-1.6
Sex				
Women	-0.3	-1.0	-1.5	-1.7
Men	-0.3	-1.2	-1.7	-1.6
Marital status				
Never married	0.0	-1.5	-2.0	-1.8
Married	-0.3	-1.1	-1.5	-1.5
Widowed	-0.4	-0.9	-1.4	-1.8
Divorced	-0.5	-1.2	-1.8	-1.8
Race/ethnicity				
Non-Hispanic white	-0.3	-1.1	-1.6	-1.7
Non-Hispanic black	-0.1	-1.6	-1.5	-2.6
Hispanic	-0.3	-0.4	-1.4	-0.8
Other	-0.3	-0.8	-1.1	-1.2
Education				
High school dropout	-0.3	-0.5	-0.8	-1.6
High school graduate	-0.3	-1.1	-1.5	-1.6
College graduate	-0.3	-1.2	-1.8	-1.7
Labor force experience				
Less than 20 years	-0.3	-0.4	-0.7	-1.0
20 to 29 years	0.0	-0.4	-1.1	-0.9
30 or more years	-0.3	-1.2	-1.7	-1.8
Shared lifetime earnings				
Bottom quintile	0.0	-0.2	-0.5	-0.9
2nd quintile	-0.3	-0.5	-0.7	-1.1
3rd quintile	-0.3	-0.9	-1.4	-1.6
4th quintile	-0.4	-1.3	-1.5	-1.4
Top quintile	-0.4	-1.5	-2.3	-2.2
Income quintile				
Bottom quintile	0.0	0.0	-0.1	-0.1
2nd quintile	0.2	-0.4	-0.6	-0.8
3rd quintile	-0.3	-0.7	-1.2	-1.2
4th quintile	-0.4	-1.4	-1.7	-1.6
Top quintile	-0.5	-1.4	-2.1	-2.2

SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Shared lifetime earnings is the average of wage-indexed shared earnings between ages 22 and 62, where shared earnings are computed by assigning each individual half the total earnings of the couple in the years when the individual is married and his or her own earnings in years when nonmarried.

Who Are the Winners and Losers?

The accelerated switch from DB to DC plans illustrated in the U.K. scenario produces both losers and winners. Many boomers will lose under the U.K. scenario, particularly mid- and late-career employees whose pension benefits will be frozen before reaching their highest accrual rate, those who contribute little or nothing to DC plans, and those who have lower than average market returns. Others, however, may gain from the shift from DB to DC plans, especially those who currently fare poorly under DB plans because they have intermittent work histories or change jobs frequently and those with high rates of return on their retirement account investments.

Our simulations show that the losers greatly outnumber the winners (Table 7).[16] When the shift

Table 7.
Percent of individuals who win and lose at age 67 between the baseline and U.K. scenarios, by selected characteristics

	Winners				Losers			
Characteristic	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
All	7	8	9	11	12	18	22	26
Sex								
Women	6	7	9	10	10	17	21	25
Men	9	9	10	12	14	20	23	27
Marital status								
Never married	4	4	6	7	6	14	17	20
Married	9	9	11	13	13	20	24	28
Widowed	4	5	7	9	8	14	16	22
Divorced	5	5	7	8	9	14	18	24
Race/ethnicity								
Non-Hispanic white	8	8	10	11	13	20	24	28
Non-Hispanic black	5	6	8	10	10	16	18	22
Hispanic	5	6	7	9	8	11	17	18
Other	5	7	9	9	10	14	15	23
Education								
High school dropout	3	4	5	6	6	8	11	14
High school graduate	7	8	9	11	12	18	21	24
College graduate	10	9	11	12	15	22	28	34
Labor force experience								
Less than 20 years	2	2	3	4	3	5	6	9
20 to 29 years	4	7	7	9	5	9	14	16
30 or more years	9	9	11	12	14	21	25	30
Shared lifetime earnings								
Bottom quintile	1	2	4	6	2	4	6	9
2nd quintile	5	7	8	10	8	12	15	21
3rd quintile	8	9	10	12	13	19	23	26
4th quintile	10	10	12	13	16	25	28	30
Top quintile	13	11	12	13	20	31	37	44
Income quintile								
Bottom quintile	1	2	4	6	2	3	6	8
2nd quintile	5	8	8	10	6	11	15	19
3rd quintile	7	10	10	12	13	19	23	25
4th quintile	11	9	12	13	18	26	29	30
Top quintile	13	11	12	12	20	32	38	48

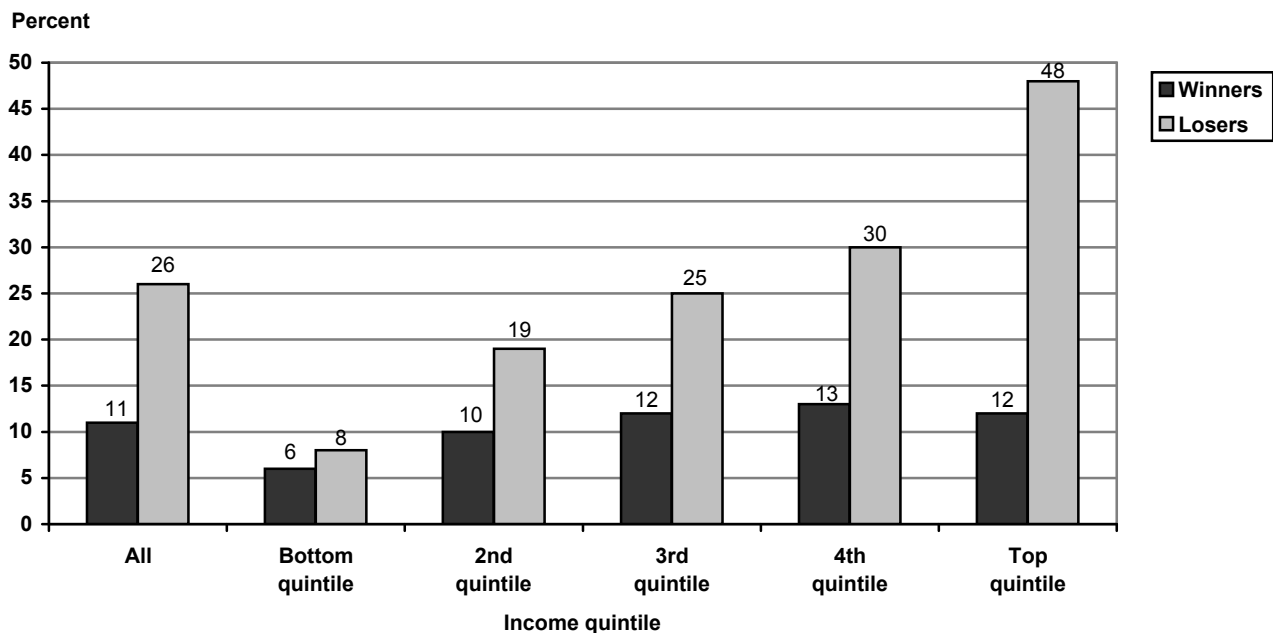SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Shared lifetime earnings is the average of wage-indexed shared earnings between ages 22 and 62, where shared earnings are computed by assigning each individual half the total earnings of the couple in the years when the individual is married and his or her own earnings in years when nonmarried. Winners and losers are defined as having at least a $10 change in income between the baseline and U.K. scenarios.

from DB to DC pensions is accelerated under the U.K. scenario, only 7 percent of first-wave boomers, 8 percent of second-wave boomers, 9 percent of third-wave boomers, and 11 percent of last-wave boomers would see their retirement incomes increase. There are many more who would lose under the U.K. scenario—12 percent of first-wave boomers, 18 percent of second-wave boomers, 22 percent of third-wave boomers, and 26 percent of last-wave boomers. Boomers in high socioeconomic groups are most likely to win and lose because they are the people with pension benefits in the baseline scenario that may potentially be frozen. For example, 12 percent of last-wave boomers in the highest income quintile are projected to be winners, compared with only 6 percent of their counterparts in the lowest income quintile; and 48 percent of last-wave boomers with the highest incomes are projected to be losers, compared with only 8 percent of those with the lowest incomes (Chart 1). All in all, 60 percent of last-wave boomers in the highest income quintile will experience a change (either positive or negative) in their per capita family income because of the change in pension schemes. Note that the percentage affected is higher than the 54 percent of last-wave boomers

in the highest income quintile who are projected to have family DB pension benefits in the baseline scenario (see Table 4). This apparent discrepancy occurs because some individuals (especially those with higher income) wait until after age 67 to retire and collect their DB pensions. These individuals will appear as winners in Table 7 because the increase in DC retirement account income has not yet been offset by the lower future DB pension income. Also, we assume workers who are not vested under the baseline scenario become immediately vested under a pension freeze, thereby gaining DB pension income. Many of the people who would gain pension coverage as a result of the freeze under the U.K. scenario may have previously changed jobs or dropped out of the labor force at a relatively young age because of a disability and have not become vested under the baseline.

It is also worth noting that among last-wave boomers, there are about four times as many losers than winners in the highest income quintile, but only slightly more losers than winners in the lowest quintile. High-income workers are significantly more likely than low-income workers to lose under the U.K. scenario because they are more likely to be

Chart 1.
Percent of last-wave boomers who win and lose income at age 67 between the baseline and U.K. scenarios, by income quintile

SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Winners and losers are defined as having at least a $10 change in income between the baseline and U.K. scenarios.

constrained by the statutory contribution thresholds in 401(k) plans, which limit their ability to replace lost DB pension wealth. These thresholds will increase in the future with changes in prices per the Pension Protection Act of 2006. Because wages are projected to increase faster than prices, later cohorts of workers will be more constrained by the statutory contribution thresholds in 401(k) plans than earlier cohorts, and these constraints will mostly affect higher-income workers who are the ones far most likely to contribute the maximum. Furthermore, many DB plans provide higher accrual rates for workers with earnings above the Social Security taxable maximum, so the loss of DB benefits is also especially high for some high-income workers. These highly compensated workers who are affected by DB pension freezes replace their relatively generous DB plan with a more constrained DC plan.

The percentage of those who lose relatively large amounts of income under the U.K. scenario is also concentrated among the highest income quintiles. The U.K. scenario reduces income at age 67 by 5 percent or more for 15 percent of last-wave boomers in the top income quintile, but by only 3 percent of those in the bottom quintile (Chart 2). In contrast, the share of large winners is fairly evenly distributed among income quintiles. The population subgroups least likely to gain large amounts of income under the U.K. scenario are high school dropouts, those with less than 20 years of labor force experience, and those in the bottom quintile of lifetime earnings (Table 8).

The amounts that winners gain and losers lose at age 67 are generally greater for last-wave boomers than those in the first-wave because last-wave boomers have more years to compound gains or loses in DC accounts and accrue benefits in DB accounts before reaching age 67. The differences do not monotonically rise by cohort because of the nonlinear DB accrual patterns by age. Among winners, average per capita family incomes are projected to increase by $2,100 for first-wave boomers and by $2,800 for last-wave boomers (Table 9). Among losers, average per capita family incomes are projected to decline by $2,600 for first-wave boomers and by $4,200 for last-wave boomers (Table 9). Boomers in high socioeconomic groups, who are most likely to have pensions and who have the most benefits at risk, are projected to experience the largest absolute gains and losses, although

Chart 2.
Percent of last-wave boomers who win and lose 5 percent or more income at age 67 between the baseline and U.K. scenarios, by income quintile
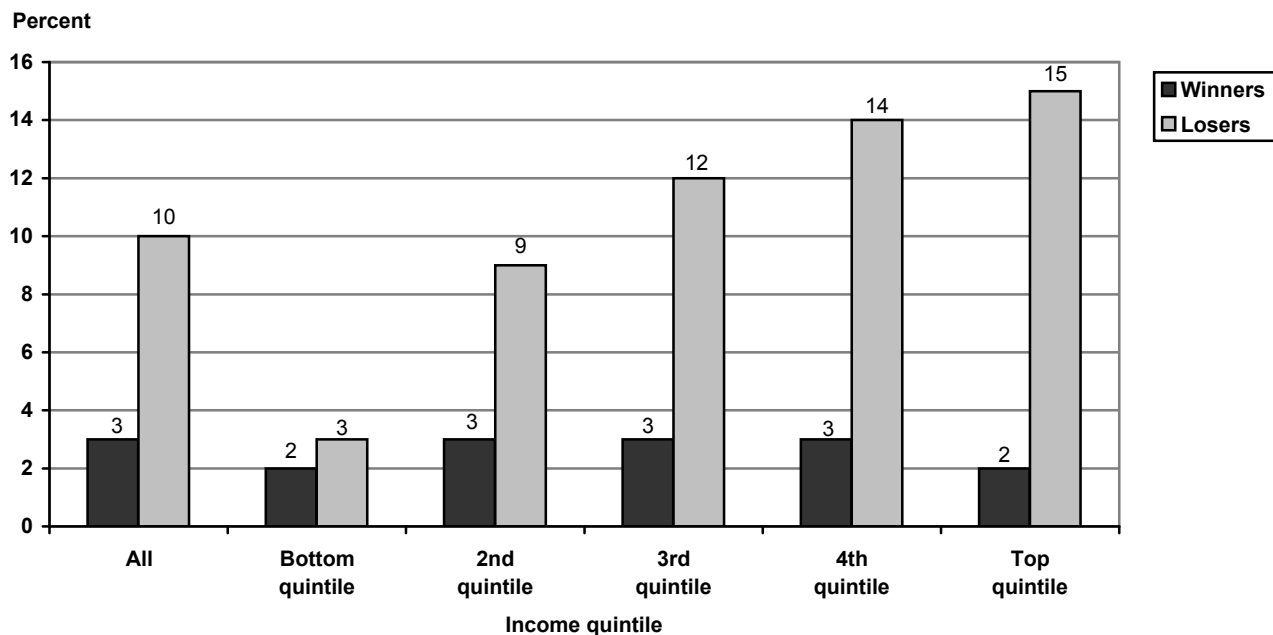
Percent

SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Sample includes individuals with a change of $10 in per person family income at age 67 between the baseline and U.K. scenarios. Projections exclude individuals with family wealth in the top 5 percent of the distribution. Winners and losers are defined as having a 5 percent or more change in income between the baseline and U.K. scenarios.

Table 8.
Percent of individuals who win and lose 5 percent or more of income at age 67 between the baseline and U.K. scenarios, by selected characteristics

Characteristic	Winners				Losers			
	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
All	1	1	2	3	3	7	9	10
Sex								
Women	1	1	2	2	3	7	9	11
Men	1	1	2	3	3	8	10	10
Marital status								
Never married	1	1	2	3	1	7	8	8
Married	1	1	2	3	3	8	10	11
Widowed	1	1	1	3	2	6	7	9
Divorced	1	1	2	2	3	6	9	11
Race/ethnicity								
Non-Hispanic white	1	1	2	3	3	8	10	11
Non-Hispanic black	1	1	2	3	3	7	10	12
Hispanic	1	1	2	2	3	3	7	7
Other	0	1	2	2	1	5	5	7
Education								
High school dropout	0	1	1	1	1	2	4	6
High school graduate	1	1	2	3	3	7	10	11
College graduate	1	1	2	3	4	8	10	12
Labor force experience								
Less than 20 years	0	0	1	1	1	1	2	4
20 to 29 years	1	1	1	2	2	3	6	6
30 or more years	1	1	2	3	4	9	11	12
Shared lifetime earnings								
Bottom quintile	0	0	1	1	1	1	2	3
2nd quintile	1	1	2	3	2	4	6	8
3rd quintile	1	1	2	3	3	8	10	12
4th quintile	1	1	3	4	4	11	13	13
Top quintile	2	2	2	3	5	12	15	16
Income quintile								
Bottom quintile	0	1	1	2	1	1	2	3
2nd quintile	1	1	2	3	2	4	7	9
3rd quintile	1	1	2	3	4	8	11	12
4th quintile	1	1	2	3	4	12	15	14
Top quintile	1	1	1	2	5	10	12	15

SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Sample includes individuals with a change of $10 in per person family income at age 67 between the baseline and U.K. scenarios. Projections exclude individuals with family wealth in the top 5 percent of the distribution. Shared lifetime earnings is the average of wage-indexed shared earnings between ages 22 and 62, where shared earnings are computed by assigning each individual half the total earnings of the couple in the years when the individual is married and his or her own earnings in years when nonmarried. Winners and losers are defined as having a 5 percent or more change in income between the baseline and U.K. scenarios.

Table 9.
Change in mean family income per person at age 67 for winners and losers between the baseline and U.K. scenarios, by selected characteristics (in thousands of 2007 dollars)

Characteristic	Winners				Losers			
	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
All	2.1	1.8	1.8	2.8	-2.6	-3.7	-4.2	-4.2
Sex								
Women	2.0	2.1	1.7	3.0	-2.6	-3.6	-4.0	-4.2
Men	2.1	1.5	1.8	2.5	-2.5	-3.9	-4.3	-4.3
Marital status								
Never married	3.8	1.4	2.7	4.7	-2.5	-5.3	-6.2	-6.1
Married	2.1	1.5	1.5	2.3	-2.4	-3.3	-3.5	-3.8
Widowed	1.3	4.8	1.8	4.1	-3.0	-4.7	-4.8	-5.5
Divorced	1.7	1.9	2.9	3.6	-3.3	-4.7	-5.9	-5.0
Race/ethnicity								
Non-Hispanic white	2.1	1.9	1.7	3.0	-2.7	-3.8	-4.3	-4.5
Non-Hispanic black	3.2	1.5	3.3	1.6	-1.8	-3.9	-4.2	-4.6
Hispanic	1.6	1.1	1.2	2.7	-2.2	-1.6	-2.9	-2.6
Other	0.8	2.0	2.0	1.7	-1.6	-4.2	-4.3	-3.2
Education								
High school dropout	1.0	1.3	1.1	1.0	-1.5	-1.7	-2.1	-2.8
High school graduate	1.4	1.6	1.3	2.1	-1.9	-3.0	-3.3	-3.4
College graduate	3.1	2.2	2.9	4.7	-3.8	-5.6	-6.7	-6.1
Labor force experience								
Less than 20 years	0.9	1.3	1.3	1.1	-3.1	-2.5	-3.3	-3.3
20 to 29 years	2.5	1.4	0.8	1.4	-2.2	-2.6	-3.1	-2.6
30 or more years	2.1	1.8	1.9	3.0	-2.6	-3.8	-4.3	-4.4
Shared lifetime earnings								
Bottom quintile	1.9	0.5	0.5	0.7	-1.5	-1.2	-1.6	-2.2
2nd quintile	0.8	0.6	1.2	1.3	-1.5	-1.6	-1.8	-2.0
3rd quintile	1.6	1.1	1.1	1.4	-1.8	-2.5	-2.8	-3.1
4th quintile	1.8	2.2	2.5	3.1	-2.5	-3.8	-4.0	-4.0
Top quintile	3.1	3.1	2.7	6.4	-3.9	-6.1	-7.5	-7.6
Income quintile								
Bottom quintile	0.9	0.7	0.7	0.8	-0.6	-0.7	-0.6	-0.7
2nd quintile	2.1	0.6	1.1	1.4	-1.0	-1.2	-1.6	-1.6
3rd quintile	1.3	1.7	1.4	2.2	-1.5	-2.2	-2.5	-2.7
4th quintile	1.7	1.7	2.3	3.1	-2.2	-3.7	-4.2	-4.4
Top quintile	3.1	3.3	2.5	5.8	-4.6	-6.8	-8.2	-8.0

SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Shared lifetime earnings is the average of wage-indexed shared earnings between ages 22 and 62, where shared earnings are computed by assigning each individual half the total earnings of the couple in the years when the individual is married and his or her own earnings in years when nonmarried. Winners and losers are defined as having at least a $10 change in income between the baseline and U.K. scenarios.

not necessarily the largest gains and losses as a share of income.[17] For example, average per capita family income among winners in the last wave of boomers is projected to increase by about $5,800 for those with the highest incomes, but by only about $800 for those with the lowest incomes. In comparison, average per capita family income among losers in the last wave of boomers is projected to decline by about $8,000 for those with the highest incomes, but by only about $700 for those with the lowest incomes.

What is Driving the Outcomes?

Retirement incomes may increase under the U.K. scenario for several reasons. First, some workers may increase their DC contributions or earn above average returns on their DC retirement accounts, boosting their wealth relative to what they would accrue in DB plans. Second, some workers increase accruals in DB accounts because they become vested when plans are frozen.[18] Third, some workers whose DB plans are frozen or who never acquire DB coverage may delay retirement and work longer because DC pensions, unlike DB pensions, do not encourage early retirement (Butrica and others 2006). Indeed, we find that

winners are projected to have higher per capita family earnings and slightly higher Social Security benefits under the U.K. scenario than under the baseline because of delayed retirement (Table 10).

Overall, winners among first- and second-wave boomers experience increases in income from both DB pensions and DC retirement accounts. In contrast, winners among third- and last-wave boomers experience losses in their DB pensions and increases in their DC retirement accounts, with income losses in DB pensions being much smaller than income gains in DC retirement accounts.

For those whose family incomes decline under the U.K. scenario, the reduction is driven almost totally by a reduction in DB benefits. Losers experience much larger DB pension losses under the U.K. scenario than winners, but have very modest increases in income from retirement account balances, compared with winners. Losers, compared with winners, also have much more retirement wealth under the baseline and thus have much more to lose from a change in pension coverage. Their average per capita family DB pensions range from 1.4 to 2.5 times higher than those of

Table 10.
Mean family income per person at age 67 for winners and losers, by income source (in thousands of 2007 dollars)

	Baseline				Difference between baseline and U.K. scenarios			
Income source	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
Winners								
Income from assets	8.6	7.9	7.9	7.3	0.0	0.0	-0.1	-0.1
Earnings	19.4	14.1	11.8	13.3	0.5	0.5	0.6	1.3
SSI payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imputed rental income	3.7	3.5	3.2	2.9	0.0	0.0	0.0	0.0
Social Security benefits	14.4	14.4	13.9	13.7	0.0	0.0	0.1	0.1
DB pension benefits	8.3	4.9	4.1	2.9	1.1	0.5	-0.1	-0.6
Retirement accounts	9.4	9.1	9.7	9.5	0.4	0.8	1.3	2.1
Total income	63.9	53.8	50.6	49.5	2.1	1.8	1.8	2.8
Losers								
Income from assets	7.6	8.0	8.4	9.4	0.0	0.0	0.0	-0.1
Earnings	14.8	11.0	10.7	11.3	0.0	-0.1	-0.1	-0.1
SSI payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imputed rental income	3.7	3.5	3.4	3.6	0.0	0.0	0.0	0.0
Social Security benefits	15.4	15.8	15.3	15.3	0.0	0.0	0.0	0.0
DB pension benefits	11.6	10.2	8.4	7.2	-2.6	-3.8	-4.3	-4.3
Retirement accounts	11.3	11.8	12.1	12.1	0.1	0.2	0.3	0.2
Total income	64.4	60.3	58.3	58.9	-2.6	-3.7	-4.2	-4.2

SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Winners and losers are defined as having at least a $10 change in income between the baseline and U.K. scenarios.

winners, but they are also projected to have average per capita family DC retirement accounts that are 1.2 to 1.3 times higher than those of winners. For all boomers projected to lose income, the increase in DC retirement accounts offsets less than 6 percent of the decline in DB pension benefits. This huge ratio of DB benefit losses to DC benefit gains could occur for a variety of reasons, including the loss of high-accruing years in DB plans, low participation or contribution rates in the new DC retirement accounts, or lower than average investment returns on retirement account assets.[19]

Conclusions

In recent years, the United States has seen a significant shift away from DB pension plans to DC plans. This shift may accelerate rapidly as more large companies, even those with financially solvent plans, freeze their DB plans and replace them with new or enhanced DC plans. A dramatic shift away from DB plans, as has happened among private-sector DB plans in the United Kingdom, would produce both losers and winners among future boomer retirees. On balance, there would be more losers than winners and average family incomes would decline. The decline in family income is expected to be much larger for last-wave boomers born from 1961 to 1965 than for first-wave boomers born from 1946 to 1950, because last-wave boomers are more likely to have their DB pensions frozen with relatively little job tenure. We project that 26 percent of last-wave boomers would have lower family incomes at age 67, and 10 percent of them would experience at least a 5 percent decline. Although retirement incomes would increase for some families under the alternative pension scenario, only 11 percent of the last-wave boomers would see their incomes increase, and only 3 percent would experience a gain of 5 percent or more.

Demographic groups most likely to have pensions under the baseline scenario are projected to be those most affected by the accelerated freezing of DB plans, namely non-Hispanic whites, college graduates, those with many years of work experience, and those in the highest lifetime earnings and retirement income quintiles. Because the groups most likely to have DB plans have the most income at risk but also the largest potential gains from substituting DB pensions with additional DC wealth, they are projected to experience both the largest losses and the largest gains from the pension transition. For example, average per capita

family income among losers in the last wave of boomers is projected to decline by $8,000 for those with the highest incomes, compared with only $700 for those with the lowest incomes. Also, average per capita family income among winners in the last wave of boomers is projected to increase by $5,800 for those with the highest incomes, but by only $800 for those with the lowest incomes.

Last-wave boomers are more likely than their predecessors to be high school dropouts, minority, and unmarried—characteristics that are associated with low earnings during working years and economic vulnerability in retirement. But these groups are less likely to have pensions in any form and therefore are much less affected by the shift from DB to DC plans. It is likely, however, that a future with fewer DB plans will generate a new class of economically vulnerable retirees among formerly better-off retirees who were relying on their DB pension income but now, through either bad luck or poor planning, will end up with insufficient resources in retirement.

The net decline in retirement income among boomer cohorts that results from substituting ongoing DB plans with frozen DB plans combined with improved DC plans is to some degree a transitory phenomenon. If people are to participate in DB and DC plans at different times during their working careers, the worst scenario for them is to hold a DB plan early in their career and a DC plan late in their career. When workers switch from DB to DC plans in midcareer, they lose the high-accrual years in their DB plans and have fewer years to accumulate DC wealth. Compared with retirement outcomes under this scenario, most workers would be better off participating in either a DB or DC plan during their entire career. More than any other birth cohort, the boomer cohorts will experience the transition from DB to DC plans in midcareer and, as our simulations show, on average suffer declines in their projected retirement incomes. Generation-Xers and those who come later may fare better depending on participation rates, contribution rates, and market returns.

The build-up of retirement assets is a complex process that varies with earnings, family changes, job changes, health status, individual choices, and fluctuations in housing and stock prices, among other factors. Policymakers need to know the impact of significant shifts in pension provisions on retirement well-being so that they can assess the alternative policy options of

shoring-up DB plans before those plans disappear or letting them slowly fade away, while focusing on ways to encourage higher participation rates and sounder investment choices within DC plans. In particular, if stock market declines close to retirement age cause significant losses in DC retirement accounts for some investors, policymakers may want to develop mechanisms to reduce risk in retirement assets. As more workers enter retirement with assets held outside of annuities, policymakers could also develop options to encourage people to use their increased retirement wealth to purchase annuities instead of spending it down rapidly. Finally, as policymakers consider proposals to improve the solvency of the Social Security system, they must recognize that the shift from DB to DC pensions means that Social Security will increasingly become the only source of guaranteed lifetime benefits of which most retirees can rely.

Appendix A

MINT begins with pooled SIPP data from 1990 to 1996. The 1990 to 1993 panels include individuals born from 1926 to 1965. The 1996 panel includes individuals born from 1926 to 1972. Using a cloning process, MINT also creates individuals born from 1973 to 2018 and immigrants that arrive after 1996.

The SIPP data include numerous demographic characteristics, including marriage history, migration history, health and disability status, and the number and relationships of people in the household. The SIPP also contains detailed income and wealth characteristics such as home equity, financial assets, pension characteristics and assets, Social Security benefits and SSI payments, and income from wages and salaries, self-employment, and pensions.

MINT uses earnings from Social Security administrative data for the years 1951 through 2004 for individuals with a valid Social Security number, matched to the 1990–1993 and 1996 SIPP panels. The model statistically imputes an earnings record for all non-matched respondents by selecting a similar respondent with a valid match. Matching variables in this imputation include age, sex, education, self-reported SIPP earnings, immigration age, and deferred contribution pension status.

MINT then projects annual earnings and disability onset through age 67 using a "nearest neighbor"

matching procedure. The model starts with a person's own SSA-recorded earnings from 1951 to 2004. The nearest neighbor procedure statistically assigns to each "recipient" worker the next 5 years of earnings and DI entitlement status, based on the earnings and DI status of a "donor" MINT observation born 5 years earlier with similar characteristics. The splicing of 5-year blocks of earnings from donors to recipients continues until earnings projections reach age 67. A number of criteria are used to match recipients with donors in the same age interval. These criteria include sex, minority group status, education level, DI entitlement status, self-employment status, average earnings over the prior 5-year period, presence of earnings in the 4th and 5th years of the prior 5-year period, and age/sex group quintile of average prematch period earnings. An advantage of this approach is that it preserves the observed heterogeneity in age/earnings profiles for earlier birth cohorts in projecting earnings of later cohorts.

In a subsequent process, for all individuals who never become DI recipients, MINT projects earnings, retirement, and benefit take-up from age 55 until death. These earnings replace the earnings generated from the splicing method from age 55 until retirement. This postprocess allows the model to project behavioral changes in earnings, retirement, and benefit take-up in response to policy changes. MINT then calculates Social Security benefits based on earnings histories and DI entitlement status of workers, marital histories, and earnings histories of current and former spouses.

Social Security benefits in MINT are calculated using a detailed Social Security benefit calculator. MINT's calculated benefits use earnings from the Summary Earnings Record and should generate actual benefits from the Master Beneficiary Record. Calculated and actual benefits will not match in cases when the benefits are based on a former spouse. MINT selects former spouses (where earnings histories are available), and to ensure consistency in benefits with earnings and spouse characteristics, it uses calculated Social Security benefits. MINT's benefits are based on full-year values even in the first year of benefit take-up. The actuarial reduction factor accounts for the age in months at take-up, but there is no adjustment in annual benefits for part-year receipt.

MINT projects pension coverage and benefits starting with the self-reported pension coverage information in the SIPP. It then links individuals to pension plans and simulates new pension plans along with job changes. Pension accruals depend on the characteristics of individuals' specific pension plan parameters and simulated job tenure. The model also projects wealth from DC retirement accounts (that is—defined contribution plans, individual retirement accounts, and Keogh plans) to the retirement date based on initial account balances and projected new contributions and investment earnings.

This simulation model also projects housing equity and nonpension, nonhousing wealth (that is—vehicle, other real estate, and farm and business equity; stock, mutual fund, and bond values; checking, saving, money market, and certificate of deposit account balances—less unsecured debt). These projections are based on random-effects models of wealth accumulation estimated from the Panel Survey of Income Dynamics, the Health and Retirement Study, and the Survey of Income and Program Participation. Explanatory variables include age, recent earnings and present value of lifetime earnings, number of years with earnings above the Social Security taxable maximum, marital status, sex, number and age of children, education, race, health and disability status, pension coverage, self-employment status, and last year of life.

In addition, MINT also projects living arrangements, SSI payments, and income of nonspouse co-residents from age 62 until death. Living arrangements depend on marital status, age, sex, race, ethnicity, nativity, number of children ever born, education, income and assets of the individual, and date of death. For those projected to co-reside, MINT uses a "nearest neighbor" match to assign the income and characteristics of the other family members from a "donor" file of co-resident families from pooled 1990 to 1993 SIPP panels. After all incomes and assets are calculated, MINT calculates SSI eligibility and projects participation and payments for eligible participants.

Finally, MINT calculates annual state and federal income taxes from federal and state tax calculators and additional data from a statistical match with an enhanced Statistics of Income (SOI) file. The statistical match uses a minimum distance function. The key match variables are filing status, age of family head, wage and salary earnings, self-employment earnings,

pension income, Social Security benefits, home equity, and financial assets. The enhanced SOI is used as the data source for interest, dividends, rental income, and itemized deductions; these variables are needed to calculate income tax liabilities.

The enhanced SOI file used with MINT is based on the 2001 SOI file that is statistically matched to the 1996 SIPP to add home equity, financial assets, and age. This match uses a minimum distance function that includes filing status, state, number of exemptions, wage and salary income, self-employment income, Social Security income, pension income, individual retirement account distributions, interest, dividends, rental income, alimony, and unemployment compensation.

This report calculates asset income based on the annuity that families could purchase from 80 percent of financial assets. MINT uses this annuity income to calculate retirement income; not the SOI imputed interest, dividends, and rental income. The model uses the potential annuity instead of capital income from assets as an income measure to treat families with DC pensions in a manner comparable to that of families with DB pensions. The potential annuity amount will exceed the return on capital—interest, dividends, and rental income—because the annuity includes repayment of principal in addition to capital income. This places the measured income from DC accounts on an equivalent scale with reported DB pension income, which includes both the return on assets and repayment of principal.

Finally, MINT projects income and demographic transitions annually from the SIPP interview year until the earlier of emigration, institutionalization, death, or 2099. The earnings and benefit status come directly from the administrative data through 2004. Per capita income and assets depend on economic and demographic variable (marriage, divorce, and death) changes over the period.

Appendix B

Table B-1 expresses the average change in mean per person family income as a percent rather than as a dollar value for winners and losers. Tables B-2 and B-3 estimate the income levels and amount of change for winners and losers, respectively, by the level of percent change in income.

Table B-1.
Percent change in mean per person family income at age 67 for winners and losers between the baseline and U.K. scenarios, by selected characteristics

	Winners				Losers			
Characteristic	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
All	3.2	3.3	3.5	5.6	-4.0	-6.1	-7.1	-7.2
Sex								
Women	3.3	4.1	3.5	6.3	-4.1	-6.2	-7.0	-7.6
Men	3.1	2.7	3.5	5.0	-3.9	-6.1	-7.2	-6.9
Marital status								
Never married	4.0	2.8	5.1	8.2	-4.4	-7.7	-9.6	-8.9
Married	3.3	2.8	2.9	4.8	-3.8	-5.7	-6.4	-6.7
Widowed	1.8	8.6	3.2	8.3	-4.4	-7.3	-7.7	-9.5
Divorced	2.9	3.9	6.2	7.2	-4.9	-7.0	-8.9	-7.6
Race/ethnicity								
Non-Hispanic white	3.1	3.2	3.1	5.7	-4.0	-6.1	-7.0	-7.3
Non-Hispanic black	5.9	4.0	8.5	5.1	-4.2	-7.8	-9.4	-10.2
Hispanic	3.4	3.1	3.1	6.3	-5.0	-3.9	-7.3	-6.4
Other	1.5	4.1	4.0	2.9	-2.5	-6.1	-6.6	-4.4
Education								
High school dropout	3.0	4.6	3.6	4.4	-3.8	-5.2	-6.8	-8.8
High school graduate	2.7	3.5	3.1	5.2	-3.6	-5.8	-6.7	-7.5
College graduate	3.7	3.0	4.0	6.1	-4.4	-6.6	-7.8	-6.8
Labor force experience								
Less than 20 years	1.8	2.8	3.4	4.0	-5.1	-5.7	-8.8	-8.5
20 to 29 years	4.4	3.4	2.1	4.3	-4.3	-5.2	-7.0	-6.9
30 or more years	3.2	3.3	3.6	5.7	-4.0	-6.2	-7.1	-7.2
Shared lifetime earnings								
Bottom quintile	7.7	2.1	2.5	3.3	-5.5	-5.5	-7.6	-10.1
2nd quintile	2.4	2.3	4.2	4.6	-4.1	-4.8	-5.8	-6.9
3rd quintile	3.4	2.8	2.6	3.7	-3.9	-5.8	-6.9	-7.2
4th quintile	2.9	3.8	4.5	5.5	-3.9	-6.3	-6.8	-6.9
Top quintile	3.4	3.5	3.1	7.0	-4.0	-6.4	-7.7	-7.3
Income quintile								
Bottom quintile	6.4	5.9	5.8	6.8	-4.6	-5.3	-5.0	-6.0
2nd quintile	8.7	2.5	5.0	6.4	-4.3	-5.2	-7.0	-7.2
3rd quintile	3.5	4.8	4.0	6.6	-4.2	-6.1	-7.0	-8.1
4th quintile	2.9	3.1	4.3	5.7	-3.8	-6.6	-7.5	-7.9
Top quintile	2.8	3.0	2.4	4.9	-4.0	-6.0	-7.0	-6.8

SOURCE: Authors' computations of MINT5 (see text for details).

NOTE: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Shared lifetime earnings is the average of wage-indexed shared earnings between ages 22 and 62, where shared earnings are computed by assigning each individual half the total earnings of the couple in the years when the individual is married and his or her own earnings in years when nonmarried. Winners and losers are defined as having at least a $10 change in income between the baseline and U.K. scenarios.

Table B-2.
Percent of individuals who win, mean family income per person (in thousands of 2007 dollars), and percent change in family income at age 67 for winners, by income source and level of income change

	Baseline				Difference between baseline and U.K. scenarios			
	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
Less than 2% change in family income								
Winners (%)	5.0	5.0	6.0	5.0	. . .	. . .	. . .	. . .
Income source ($)								
Income from assets	9.2	8.9	9.1	8.2	0.0	0.0	-0.1	-0.1
Earnings	22.5	16.1	14.6	16.5	0.0	0.0	0.0	0.0
SSI payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imputed rental income	3.9	3.6	3.5	3.2	0.0	0.0	0.0	0.0
Social Security benefits	14.3	14.1	13.7	13.4	0.0	0.0	0.0	0.0
DB pension benefits	7.2	4.3	3.7	2.2	0.0	0.0	-0.2	-0.3
Retirement accounts	10.1	9.7	10.7	10.5	0.4	0.4	0.6	0.8
Total income	67.2	56.7	55.3	54.0	0.4	0.4	0.4	0.4
2% to less than 5% change in family income								
Winners (%)	1.0	1.0	2.0	3.0	. . .	. . .	. . .	. . .
Income source ($)								
Income from assets	8.7	5.3	6.1	7.0	0.0	-0.1	-0.1	-0.2
Earnings	11.7	9.9	8.6	12.6	0.0	0.1	0.0	0.1
SSI payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imputed rental income	3.2	3.5	2.7	2.6	0.0	0.0	0.0	0.0
Social Security benefits	14.5	14.7	14.2	13.6	0.0	0.0	0.0	0.0
DB pension benefits	11.0	5.4	4.8	2.8	1.1	0.2	-0.1	-0.4
Retirement accounts	6.9	7.8	9.0	10.0	0.7	1.2	1.6	2.1
Total income	56.0	46.6	45.3	48.6	1.8	1.5	1.4	1.6
Greater than or equal to 5% change in family income								
Winners (%)	1.0	1.0	2.0	3.0	. . .	. . .	. . .	. . .
Income source ($)								
Income from assets	5.3	5.8	6.3	6.0	0.0	0.1	0.0	0.0
Earnings	11.5	9.4	6.7	7.3	3.6	3.7	3.4	5.0
SSI payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imputed rental income	3.5	3.0	2.8	2.7	0.0	0.0	0.0	0.0
Social Security benefits	14.8	15.3	14.4	14.2	0.2	0.3	0.4	0.3
DB pension benefits	11.7	7.1	4.7	4.3	6.4	3.5	0.0	-1.4
Retirement accounts	8.4	7.8	7.3	6.9	0.6	2.1	3.0	4.6
Total income	55.2	48.4	42.1	41.5	10.7	9.6	6.8	8.6

SOURCE: Authors' computations of MINT5 (see text for details).

NOTES: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Winners are defined as having at least a $10 increase in income between the baseline and U.K. scenarios.

. . . = not applicable.

Table B-3.

Percent of individuals who lose, mean family income per person (in thousands of 2007 dollars), and percent change in family income at age 67 for losers, by income source and level of income change

	Baseline				Difference between baseline and U.K. scenarios			
	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)	First boomers (1946–1950)	Second boomers (1951–1955)	Third boomers (1956–1960)	Last boomers (1961–1965)
Less than 2% change in family income								
Losers (%)	5.0	7.0	8.0	11.0	. . .	. . .	. . .	. . .
Income source ($)								
Income from assets	9.4	9.8	11.4	13.4	0.0	0.0	0.0	0.0
Earnings	17.9	14.8	15.1	17.1	0.0	0.0	0.0	0.0
SSI payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imputed rental income	4.0	3.7	4.0	4.4	0.0	0.0	0.0	0.0
Social Security benefits	14.9	14.9	14.7	15.6	0.0	0.0	0.0	0.0
DB pension benefits	6.0	4.7	3.0	3.1	-0.4	-0.5	-0.5	-0.5
Retirement accounts	13.8	12.9	12.1	12.9	-0.1	0.0	0.1	0.2
Total income	66.0	60.8	60.3	66.5	-0.6	-0.5	-0.4	-0.3
2% to less than 5% change in family income								
Losers (%)	4.0	4.0	4.0	4.0	. . .	. . .	. . .	. . .
Income source ($)								
Income from assets	7.0	8.0	7.8	7.9	0.0	0.0	0.0	0.0
Earnings	12.2	9.6	8.7	10.0	0.0	0.0	0.0	0.0
SSI payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imputed rental income	3.8	3.5	3.3	2.7	0.0	0.0	0.0	0.0
Social Security benefits	15.9	15.9	15.3	14.3	0.0	0.0	0.0	0.0
DB pension benefits	12.5	8.0	5.4	4.2	-2.1	-1.8	-1.9	-1.9
Retirement accounts	10.7	12.3	12.9	11.2	0.1	-0.1	0.1	0.2
Total income	62.1	57.3	53.4	50.2	-2.0	-1.9	-1.8	-1.7
Greater than or equal to 5% change in family income								
Losers (%)	3.0	7.0	9.0	10.0	. . .	. . .	. . .	. . .
Income source ($)								
Income from assets	5.5	6.7	6.5	6.5	0.0	-0.1	-0.1	-0.1
Earnings	13.1	8.9	8.3	6.8	-0.1	-0.1	-0.1	-0.2
SSI payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imputed rental income	3.4	3.5	3.1	3.3	0.0	0.0	0.0	0.0
Social Security benefits	15.7	16.3	15.8	15.5	0.0	0.0	0.0	0.0
DB pension benefits	18.8	15.6	13.4	11.9	-6.4	-7.6	-8.1	-8.5
Retirement accounts	8.4	10.6	11.9	11.7	0.3	0.5	0.4	0.3
Total income	64.9	61.6	58.9	55.8	-6.2	-7.2	-7.8	-8.6

SOURCE: Authors' computations of MINT5 (see text for details).

NOTES: Projections exclude individuals with family wealth in the top 5 percent of the distribution. Losers are defined as having at least a $10 decrease in income between the baseline and U.K. scenarios.

. . . = not applicable.

Notes:

[1] The 2008 stock market crash will have little impact on the relative results in this study as most of the shift in DB pension accruals and new contributions to DC plans are projected to occur after the stock market crash. Siegel (2007), based on over 200 years of financial data, found that markets fluctuate around a mean trend. This "mean reversion" implies that one could reasonably expect the market to at least partially recover after the 2008 market crash. If the stock market does partially recover, Butrica, Smith, and Toder (2009) project that future retirees will lose very little retirement income and those that continue to invest in stocks after the crash can actually benefit from buying stocks on sale that subsequently grow at above average market returns.

[2] Before 1978, employees could make voluntary contributions to thrift saving plans established by employers; interest accruals within the plans were tax-free until withdrawal, but the contributions were not deductible. Contributions by employers to DC plans were tax-exempt, but employees did not have the option of making voluntary tax-deductible contributions.

[3] Imputed rental income is the return that homeowners receive from owning instead of renting, in the form of reduced rent, less costs of homeownership. It is estimated as a 3.0 percent real return on home equity (the difference between the house value and the remaining mortgage principal).

[4] MINT5 uses projections by SSA's Office of the Chief Actuary of net immigration, disability prevalence through age 65, mortality rates, and the growth in average economy-wide wages and the consumer price index from the intermediate cost scenario in the 2008 Old-Age, Survivors, and Disability Insurance Trustees Report (Board of Trustees 2008).

[5] Updated with Board of Trustees (2008) assumptions and technical corrections, November 2008 (MINT5ex-V5HIGH and MINT5exV5LOW).

[6] CB plans are a hybrid type of pension plan in which employers guarantee rates of return, as in a DB plan, but the employee receives a separate account that increases in value from both employer contributions and the plan rate of return, as in a DC account.

[7] PENSIM is a microsimulation model developed by Martin Holmer of the Policy Simulation Group. This model is used for the analysis of the retirement income implications of government policies affecting employer-sponsored pensions. The PENSIM projections of employee pension coverage are calibrated by worker age, broad industry group, union status, and firm size to the 2008 National Compensation Survey (http://www.bls.gov/ncs/ebs/benefits/2008/benefits_retirement.htm).

[8] COLAs are more prevalent in public-sector plans than in private-sector plans.

[9] The DER includes longitudinal values for taxable and deferred earnings based on IRS W-2 Forms from 1992 to 2004.

[10] PIMS is a model developed by the PBGC. It contains data for a sample of over 600 DB plans. The model estimates future pension costs that must be borne by PBGC as a result of the bankruptcies of firms with DB plans.

[11] The pension module assigns the actual DC provisions of the plan if they are known. Otherwise, DC plan parameters are imputed based on the distribution of known plans.

[12] See Smith and others (2007, Table 8.9) for a list of the 25 baseline frozen pension plans and characteristics of the replacement DC plans.

[13] Boomers are typically represented as those born from 1946 to 1964. For analytical purposes, however, we define the boomer cohort as those born from 1946 to 1965.

[14] Income components may not sum to the total because of rounding.

[15] Our earnings measure is "shared lifetime earnings"— the average of wage-indexed shared earnings from ages 22 to 62, where shared earnings are computed by assigning each individual half the total earnings of the couple in the years when the individual is married and his or her own earnings in years when unmarried.

[16] We define winners and losers as those with at least a $10 change in their per capita family income at age 67 between the baseline and U.K. scenarios.

[17] Table B-1 shows the percent change in per capita income for winners and losers for the same subgroups as shown in Table 9.

[18] Some workers may also receive higher DB benefits after the freeze because of an increase in the earnings the plan replaces. This can happen if the pension replaces the average of the last 5 years of covered earnings and a higher-earning year before the freeze substitutes for a lower-earning year after the freeze.

[19] Table B-2 shows mean family income at age 67, by income source for individuals that gain less than 2 percent, 2 percent to 5 percent, and 5 percent or more. Table B-3 shows the same information for losers.

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