Tax Considerations in
a Mandatory Universal Pension System

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Abstract

A confluence of demographic and economic pressures are challenging the ability of the U.S. retirement system to deliver the standard of living in old age that retirees have come to expect in the post-war era. The major pressures are various and include increased longevity in retirement and unsustainable growth built into benefit promises. Our retirement system can be thought to have four pillars—Social Security, employer pensions, private wealth and retiree health benefits—all of which are straining to provide adequate income in old age. In a nutshell, the present retirement system threatens to fall short in providing the aged with financial security just as we call upon it to do more than it ever has before. How will the breach between the retirement we desire and the retirement current systems can finance be filled? One way might be to establish a mandatory universal pension system (MUPS) to ensure that *all* workers are covered by a pension and are able to save more during their working years to provide them with adequate incomes when they retire. The simplest design for a MUPS would be to piggyback a system of individual retirement savings accounts onto the existing Social Security withholding system. MUPS pensions would be fully portable, could boost the stock of private savings, and could ease the burden on Social Security to meet presently unrealistic benefit commitments *without* altering the current program—merits which ought to find common ground among both liberals and conservatives.

This paper develops such a mandatory pension system and estimates its revenue and distributional consequences. More specifically, this paper develops options for a system of mandatory individual accounts in which, starting in 2006, each employee or self-employed worker is required to contribute 3 percent of covered payroll to an individual account (i.e., 3 percent of up to $94,200 in 2006). These accounts would be held by the government, invested in secure equity funds and annuitized on retirement.

In the long-run, we estimate that a MUPS could replace an additional 14.5 percent of final wages for men, 13.3 percent of final wages for women, 14.5 percent for one-earner couples, and 13.9 percent for two-earner couples, over and above their Social Security benefits. (Estimates under a MUPS option that provides subsidies are higher for low-wage earners). This paper also shows that targeted subsidies or grants could result in even greater supplemental retirement benefits for most low- and moderate-income workers.

1. Introduction

A confluence of demographic and economic pressures is challenging the ability of the U.S. retirement system to deliver the standard of living in old age that retirees have come to expect in the post-war era.[1] The major pressures are various and include: increased longevity in retirement,[2] lower birth rates, shorter career spans, unsustainable growth in benefits relative to contributions, the current era of low interest rates and heightened global competition. Employers have been curtailing benefit promises to workers since the early 1990s, and while lawmakers have yet to bring into line the mushrooming federal benefits scheduled in law with projected financing, most believe that benefit cuts are inevitable in some form. Absent a rise in overall contributions to the retirement system, the economic security of future retirees is in question.

Our retirement system can be thought to have four pillars. Each of these pillars contributes to an overall standard of living for households throughout their retirement. The first pillar, Social Security, will be unable to pay full benefits as scheduled in law without additional financing after 2040. The second pillar, employer-provided pensions, currently covers less than half of U.S. workers, and the extent to which these pensions replace career wages in the future is uncertain. Meanwhile, private wealth, which is the third pillar, is being called upon to stretch over longer and longer spans of life spent in retirement. Retiree health care (taking federal and employer benefits together) is the fourth pillar and has the most precarious financing situation out of any of the pillars,[3] raising the prospect that future retirees will have to pay more out-of-pocket for their health care in the future.[4] If nothing changes, workers and their families will increasingly assume more of the risk *and* direct cost in providing adequately for their own retirement.

In a nutshell, the present retirement system threatens to fall short in providing the aged with financial security just as we call upon it to do more than it ever has

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[1] A number of studies have come to the conclusion that currently working-age families will have trouble continuing their standards of living into retirement. For example, see Eric Engen, William Gale, and Cori Uccello, "The Adequacy of Household Savings," CRR WP 2000-01, Chestnut Hill, MA: Center for Retirement Research at Boston College, January 2000; and Alicia Munnell and Mauricio Soto, "What Replacement Rates do Households Actually Experience in Retirement?" CRR WP 2005-10, Chestnut Hill, MA: Center for Retirement Research at Boston College, August 2005.

[2] In 1945, men could expect to live another 12.0 years while women could expect to live 15.5 years. By 2010, when the baby boomers are retiring in earnest, men can expect to live for 17.3 years while women can expect to live 20.0 years. (Authors' calculations based on mortality estimates from the Social Security Office of the Chief Actuary, 2005). Those are increases of 44 percent and 30 percent, respectively—in other words, Social Security, pensions and private savings are being stretched to maintain a standard of living over markedly longer spans in retirement.

[3] Most prominently, the Medicare Hospital Insurance (Part A) Trust Fund will be exhausted by 2018. Medicare Board of Trustees, Annual Report of the Boards of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds (2006), 3.

[4] See Richard Johnson and Rudolph Penner, "Will Health Care Costs Erode Retirement Security?" CRR Issue Brief No. 23, Chestnut Hill, MA: Center for Retirement Research, October 2004.

before. It will likely require a broad re-casting of the nation's present social insurance programs to address the breach between the retirement Americans desire and the retirement current systems can finance. A key element of this greater reform could be the establishment of a mandatory universal pension system (MUPS), to ensure that all workers are covered by a pension and are able to save more during their working years to provide them with adequate incomes when they retire.[5] The simplest design for a MUPS would be to piggyback a system of individual retirement savings accounts onto the existing Social Security withholding system. MUPS pensions would be fully portable, could boost the stock of private savings and could ease the burden on Social Security to meet presently unrealistic benefit commitments without altering the current program—merits which ought to find common ground among both liberals and conservatives. This paper develops such a mandatory pension system and estimates its revenue and distributional consequences. While all four pillars of the retirement system require substantive reform to ensure adequacy and continuity of benefits during old age, a mandatory pension system is a big step in the right direction.

More specifically, this paper develops several options for a system of mandatory individual accounts in which, starting in 2006, each employee or self-employed worker is required to contribute 3 percent of covered payroll to an individual account (i.e., 3 percent of up to $94,200 in 2006). Employers would not have to contribute. These accounts could be managed by the government and invested in broad-based equity and bond funds, with the balances annuitized on retirement at age 65. Additionally, this kind of mandatory universal pension system could provide needed retirement income for millions of employees of small- and medium-size firms that currently do not offer pension plans.

Section 2 builds the case for a mandatory universal pension system. Section 3 offers a simple model for a mandatory universal pension system of individual retirement savings accounts. Section 4 describes our methodology. Section 5 estimates the revenue and distributional implications of the mandatory pension system we specify. Section 6 addresses the real world challenges to implementing such a system. Finally, Section 7 offers some concluding comments.

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[5] Note that the other explicit part of filling the breach is encouraging workers to work longer and retire later, meaning workers will save more and pay more in income taxes and social security (and MUPS) contributions. For the economic and fiscal benefits that making everyone work an additional year can make, see Barbara Butrica, Richard Johnson, Karen Smith and C. Eugene Steuerle, "Does Work Pay At Older Ages?" Washington, DC: The Urban Institute, 2004.

2. Why a *Mandatory* Pension System

A mandatory pension system would enroll all workers in a pension plan and compel workers to contribute to that pension plan every year they work, even if they change jobs. While Social Security covers better than 95 percent of the workforce, the overall coverage rate for employer retirement plans has held relatively steady in recent years, with only about half of private-sector employees participating in an employer-sponsored retirement plan. For example, just 48.3 percent of all wage and salary workers age 21 to 64 were participating in an employment-based retirement plan in 2004, up only slightly from the 46.1 percent participating in 1987.[6] Even with tax incentives and employer-matching contributions, many employees may not save for retirement on a voluntary basis.[7]

The problem is especially acute for low-income workers. For example, while 69.5 percent of workers with annual earnings of $50,000 or more participated in a plan in 2004, only 18.2 percent of workers earning between $10,000 and $15,000 participated that year.[8] Similarly, while 52.8 percent of full-time workers participated in a pension

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[6] Craig Copeland, "Employment-Based Retirement and Pension Plan Participation: Geographic Differences and Trends, 2004" (Washington, DC: Employee Benefit Research Institute Issue Brief No. 286, 2005), 25-26 (Figure 15). See also Bureau of Labor Statistics, *National Compensation Survey: Employee Benefits in Private Industry in the United States, 2005* (Washington, DC: U.S. Department of Labor Bulletin, Summary 05-01, 2005), 5 (Table 1); Patrick J. Purcell, "Pension Sponsorship and Participation: Summary of Recent Trends," Washington, DC: Congressional Research Service, U.S. Congress, September 2005; Patrick J. Purcell, "Participation in Retirement Plans: Findings form the Survey of Income and Program Participation," Washington, DC: Congressional Research Service, U.S. Congress, October 2005.

[7] See, for example, Daniel Halperin, "Special Tax Treatment for Employer-Based Retirement Programs: Is It 'Still' Viable as a Means of Increasing Retirement Income? Should It Continue?" *Tax Law Review* 49 (1993): 1-52, 35; Olivia Mitchell, Stephen Utkas and Tongxuan (Stella) Yang, "Turning Workers into Savers? Incentives, Liquidity, and Choice in 401(k) Plan Designs," National Bureau of Economic Research Working Paper No. 11726, 2005 (finding that about 60 percent of non-highly-compensated workers would participate in a typical 401(k) plan whether or not the employer provided matching contributions, another 10 percent more would join the plan as a result of incentives, but the remaining 30 percent would not participate at all); James Choi, David Laibson, and Bridgette Madrian, "$100 Bills on the Sidewalk: Suboptimal Saving in 401(k) Plans," Philadelphia, PA: Pension Research Council Working Paper No. 2006-4, 2006; William Gale, Jeffrey Liebman, Peter Orszag, and Emmanuel Saez, "Saving Incentives for Low- and Middle-Income Families: Evidence from a Field Experiment with H&R Block," National Bureau of Economic Research Working Paper No. 11680, 2005 (finding modest effects on take-up and amounts contributed to individual retirement accounts when low- and middle-income taxpayers were offered a 50 or 20 percent match and even less modest effects from the existing Saver's Tax Credit); Gary Engelhardt and Anil Kumar, "Employer Matching and 401(k) Saving: Evidence from the Health and Retirement Study," CRR WP 2004-18, Chestnut Hill, MA: Center for Retirement Research at Boston College, May 2004 (finding that the elasticity of contributions is 0.15-0.27 overall, with 60 percent of this effect coming from pension participation and the remaining 40 percent from the intensiveness of the match).

[8] Copeland, "Employment-Based Retirement and Pension Plan Participation: Geographic Differences and Trends, 2004," 8-9 (Figure 2). See also Patrick J. Purcell, "Retirement Savings and Household Wealth: A Summary of Recent Data," Washington, DC: Congressional Research Service, U.S. Congress, December 2003.

plan, just 19.4 percent of part-time workers participated.[9] Furthermore, low-income workers tend to concentrate at smaller firms.[10] Small firms (which are also, typically, newer firms) face greater risk and uncertainty than larger more established firms, and so are unwilling to add significantly to their fixed costs by offering pensions. At the same time, their workers prefer additional cash wages to pension coverage, if put to a vote.

Participation in individual retirement account (IRA) plans is even lower than participation in employment-based plans. For example, only 16.7 percent of American workers over the age of 16 had an IRA or Keogh in 2002.[11] Moreover, only 3.4 million tax returns for 2003 showed deductible IRA contributions that year, and their deductible contributions totalled just over $10 billion.[12] Another 1.2 million returns showed Keogh/self-employed contributions totalling almost $18 billion. As with employment-based plans, participation in IRAs and Keoghs tends to be highest among those who are older, those who have attained a higher educational level, and those who have a higher income level.[13]

By simulating the repeal of tax benefits for contributions to retirement accounts, we can actually see how these tax benefits are distributed across incomes. Table 1 shows how the present value of tax benefits[14] connected with DC pensions and IRAs is distributed across cash income classes.[15] Contributions made to retirement accounts will reduce the present value of income taxes in 2006 by an average of $672 per tax

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[9] Similarly, only about 12.4 percent of contingent workers participated in an employer-provided pension plan. See Bureau of Labor Statistics, "Contingent and Alternative Employment Arrangements, February 2005" (Washington, DC: U.S. Department of Labor News Release No. USDL 05-1433, 2005), 4, Table 9.

[10] See William Even and David Macpherson, "Improving Pension Coverage at Small Firms," Presented at the Hudson Institute in Washington, DC, May 2006.

[11] Craig Copeland, "IRA and Keogh Assets and Contributions," *EBRI Notes* 27 (Washington, DC: Employee Benefit Research Institute, No. 1, January 2006): 2-9, 7 (Figure 6).

[12] Ibid., 6 (Figure 5).

[13] Ibid., 7 (Figure 6).

[14] We measure the value of tax subsidies in terms of the discounted present value of tax savings compared with an equivalent contribution made to a taxable account. See Appendix B for more details.

[15] Cash income includes wages and salaries, employee contribution to tax-deferred retirement savings plans, business income or loss, farm income or loss, Schedule E income, interest income, taxable dividends, realized net capital gains, Social Security benefits received, unemployment compensation, energy assistance, Temporary Assistance for Needy Families (TANF), worker's compensation, veteran's benefits, supplemental security income, child support, disability benefits, taxable IRA distributions, total pension income, alimony received and other income including foreign earned income. Cash income also includes imputed corporate income tax liability and the employer's share of payroll taxes. This puts the income measure on a pretax basis. See http://www.taxpolicycenter.org/TaxModel/income.cfm for more discussion of income measures. Note that since cash income is a broader measure than adjusted gross income (AGI), some people with low reported AGI actually appear in higher income quintiles because they have other income such as pension contributions or tax-exempt bond interest that does not appear in AGI. As a result, some people in higher income quintiles are eligible for income-tested tax benefits, and more people in the bottom quintile of cash income are subject to income tax than in the bottom quintile of AGI.

return, or an average of 1.35 percent of after-tax income. Or, as shown in the table (top panel, column 5), tax filers would *lose* an average of $672 if current tax benefits were taken away. However, 65 percent of these benefits go to tax filers in the top quintile of cash income, and 84 percent go to filers in the top two quintiles. By contrast, the bottom quintile receives almost no tax benefit since few people at this income level owe much tax, are in a high tax bracket, or participate and contribute significant amounts to a pension plan.

TABLE 1
Repeal of Current Law Tax Benefits for Contributions to DC Pensions and IRAs
Distribution of Federal Tax Benefits by Cash Income Percentile, 2006[1]

	1	2	3	4	5	6	7	8	9	10
	Percent of Tax Units[3]		Percent Change in After-Tax Income[4]	Share of Total Federal Tax Change	Average Federal Tax Change		Share of Federal Taxes		Average Federal Tax Rate[5]	
Cash Income Percentile[2]	With Tax Cut	With Tax Increase			Dollars	Percent	Change (% Points)	Under the Proposal	Change (% Points)	Under the Proposal
Lowest Quintile	0.01	11.01	-0.35	0.8	27	10.9	0.0	0.4	0.3	3.4
Second Quintile	0.10	43.34	-1.00	5.6	188	13.3	0.2	2.3	0.9	8.0
Middle Quintile	0.04	41.92	-1.06	9.7	327	6.4	0.1	7.8	0.9	15.1
Fourth Quintile	0.02	48.87	-1.23	18.6	625	5.4	0.1	17.5	1.0	19.5
Top Quintile	0.03	61.18	-1.54	65.3	2,196	4.6	-0.3	71.8	1.2	26.2
All	0.04	41.22	-1.35	100.0	672	5.1	0.0	100.0	1.1	22.0
Addendum										
Top 10 Percent	0.1	63.6	-1.5	45.4	3,056	4.1	-0.5	55.9	1.1	27.6
Top 5 Percent	0.1	59.8	-1.2	28.0	3,761	3.2	-0.8	43.3	0.9	28.4
Top 1 Percent	0.2	52.5	-0.5	6.2	4,185	1.2	-1.0	24.8	0.4	29.6
Top 0.5 Percent	0.3	51.9	-0.4	3.4	4,548	0.8	-0.8	19.9	0.3	30.2
Top 0.1 Percent	0.3	53.4	-0.2	0.8	5,609	0.3	-0.6	12.0	0.1	31.5

Baseline Distribution of Income and Federal Taxes
By Cash Income Percentile, 2006[1]

	1	2	3	4	5	6	7	8	9
	Tax Units[3]		Average Income (Dollars)	Average Federal Tax Burden (Dollars)	Average After-Tax Income[3] (Dollars)	Average Federal Tax Rate[4]	Share of Pre-Tax Income Percent of Total	Share of Post-Tax Income Percent of Total	Share of Federal Taxes Percent of Total
Cash Income Percentile[2]	Number (thousands)	Percent of Total							
Lowest Quintile	28,703	19.6	7,923	246	7,678	3.1	2.5	3.0	0.4
Second Quintile	29,289	20.0	20,116	1,411	18,705	7.0	6.4	7.5	2.1
Middle Quintile	29,279	20.0	35,940	5,099	30,842	14.2	11.4	12.4	7.7
Fourth Quintile	29,283	20.0	62,270	11,534	50,736	18.5	19.8	20.4	17.5
Top Quintile	29,282	20.0	189,863	47,584	142,280	25.1	60.3	57.2	72.1
All	146,417	100.0	62,970	13,198	49,772	21.0	100.0	100.0	100.0
Addendum									
Top 10 Percent	14,642	10.0	281,205	74,445	206,759	26.5	44.7	41.5	56.4
Top 5 Percent	7,323	5.0	421,832	116,203	305,630	27.6	33.5	30.7	44.0
Top 1 Percent	1,464	1.0	1,159,675	339,597	820,078	29.3	18.4	16.5	25.7
Top 0.5 Percent	732	0.5	1,825,082	547,028	1,278,054	30.0	14.5	12.8	20.7
Top 0.1 Percent	146	0.1	5,274,153	1,656,698	3,617,455	31.4	8.4	7.3	12.6

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0305-3a).
(1) Baseline is current law.
(2) Tax units with negative cash income are excluded from the lowest quintile but are included in the totals. For a description of cash income, see
http://www.taxpolicycenter.org/TaxModel/income.cfm
(3) Includes both filing and non-filing units. Tax units that are dependents of other taxpayers are excluded from the analysis.
(4) After-tax income is cash income less: individual income tax net of refundable credits; corporate income tax; payroll taxes (Social Security and Medicare); and estate tax.

(5) Average federal tax (includes individual and corporate income tax, payroll taxes for Social Security and Medicare, and the estate tax) as a percentage of average cash income.

Further evidence suggests that federal tax subsidies for saving, as currently designed, do little to encourage saving. The secular decline in personal retirement savings has coincided with a steady rise in the tax subsidies available for retirement savings, such that by 2005 these tax subsidies surpassed the level of total personal savings.[16] (See Figure 1.) One reason is that retirement subsidies are really applied to deposits, not saving. Households often borrow on one side of their ledgers (i.e., through a mortgage or home equity loan) what they deposit in tax-subsidized accounts on the other. So not only do retirement incentives do a weak job in helping low-income Americans, among middle- and higher-income taxpayers, they have had limited effectiveness in raising saving rates and encouraging choices that would support retirement needs. Moreover, these $100 billion or more of annual tax expenditures for retirement savings are topsy-turvy in their targeting, with the overwhelming majority of the subsidies going to higher-income, higher-wealth households that would likely save in any case.[17]

Figure 1
Retirement Savings Incentives Versus Personal Savings, 1985-2005
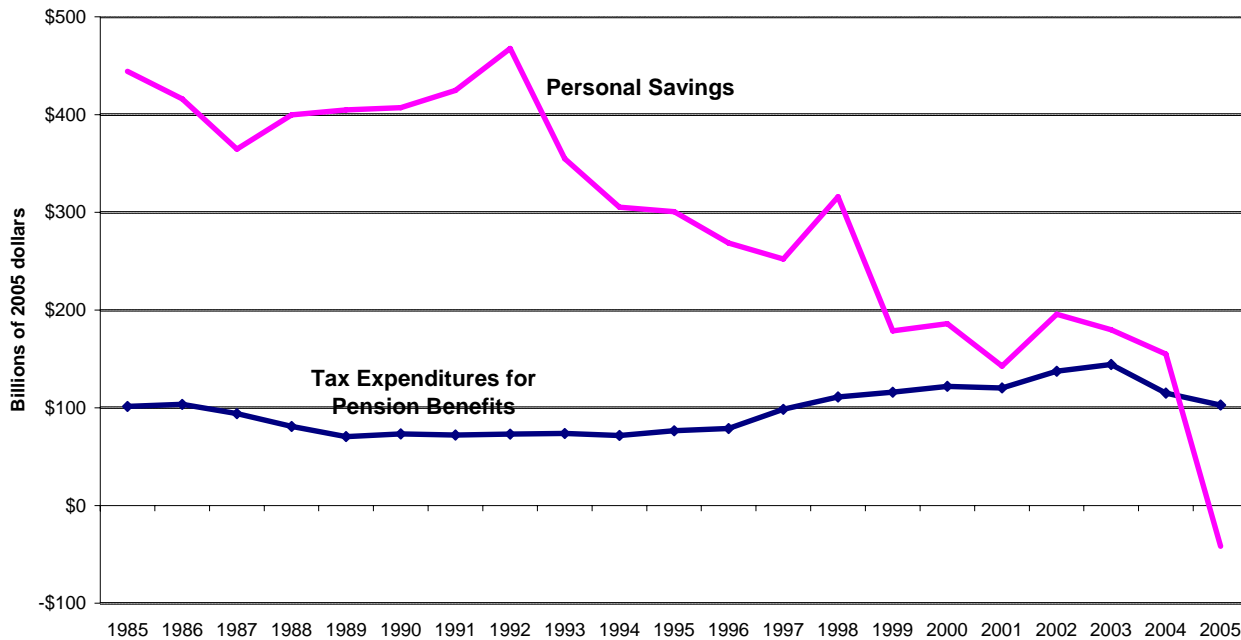
Note: Tax expenditures are not strictly additive. The cash flow measures above do not reflect the present value of pension subsidies. Source: The Urban Institute, 2006. Based on data from the Office of Management and Budget, Analytical Perspectives (prior to 1990, Special Analyses), Budget of the United States Government, various years. Personal savings data from the Bureau of Economic Analysis NIPA Table 2.1.

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[16] See Elizabeth Bell, Adam Carasso and C. Eugene Steuerle, "Retirement Savings Incentives and Personal Savings," *Tax Notes*, December 20, 2004.

[17] Ibid.; Peter Orszag, "Strengthening Retirement Security," Testimony before the Joint Economic Committee, U.S. Congress, March 10, 2004.

A deep literature already exists describing the components of our four-pillar retirement system, their patterns of coverage and participation, measurements of individual and aggregate retirement savings and health benefit accumulation, and quantification of the incentives (federal and employer) and their estimated effects on savings behavior.[18] The major (and projected) trends that concern us in this paper are as follows.

- The shift away from participation in defined benefit (DB) plans to cash balance plans[19] in some cases but more and more to defined contribution (DC) plans, where the employee bears all the financial risk.
- The rise of the different IRA plans since the 1980s and increased participation in them (by those who already have a higher likelihood of also participating in a pension plan).
- The substantial increase in women's labor force participation, starting in the 1970s, and their concomitant increase in pension participation.
- As shown in Figure 2, the rise in two-earner couples, particularly couples where each spouse will eventually be eligible for pension and entitlement benefits based on his or her own earnings record. (Accompanying this trend are a steep decline in the number of one-earner couples and a rise in the number of single-headed households).
- The impending shortfalls in Social Security and Medicare. For Social Security, the projected exhaustion of the Social Security retirement trust funds in 2040 diminishes the capacity of the program to pay benefits—after 2040, Social Security will only be able to pay benefits out of current year payroll tax receipts which implies about a 25 percent across-the-board cut in benefit payments in 2040 and gradually increasing to nearly a 30 percent cut by 2080. The expectation is that Medicare's trust funds will be exhausted much sooner, by 2018.

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[18] For instance, see Eric Toder et al., "Modeling Income in the Near Term: Revised Projections of Retirement Income Through 2020 for the 1931-1960 Birth Cohorts," compiled by the Urban Institute, Brookings Institution and others for the Social Security Administration, February 2002; William Gale and Peter Orszag, "Private Pensions: Issues and Options," Discussion Paper No. 9, The Urban-Brookings Tax Policy Center, April 2003; Leonard Burman, William Gale, Matthew Hall and Peter Orszag, "Distributional Effects of Defined Contribution Plans and Individual Retirement Accounts," Discussion Paper No. 16, The Urban-Brookings Tax Policy Center, August 2004; and William Gale, "The Impact of Pensions and 401(k) Plans on Saving: A Critical Assessment of the Literature," Washington, DC: The Brookings Institution, September, 1999.

[19] Cash balance plans are similar to defined benefit plans in that the employer makes contributions on the employee's behalf and bears the financial risk, but the accrual structure of cash balance plans is more linear (which actually favors younger workers) and ultimately less generous than that of traditional defined benefit plans.

Figure 2
Composition of Households by Employment Status: 1940-2005
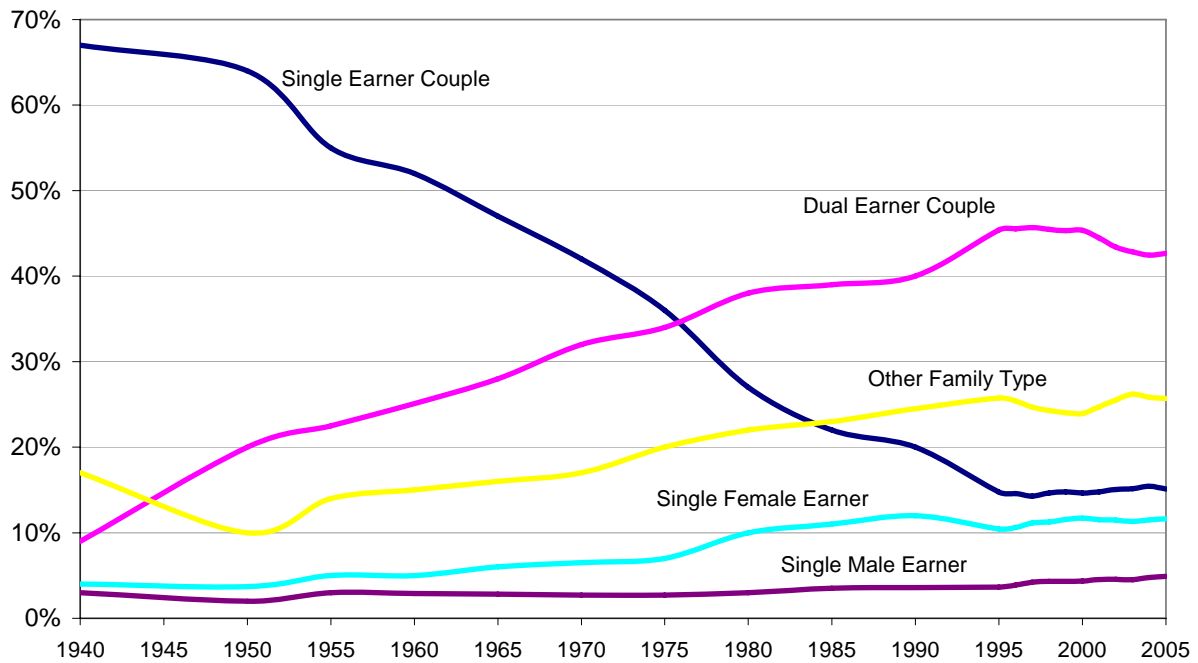
Note: Chart points sum to 100% at any single point in time. Source: Hayghe (1990); U.S. Bureau of Labor Statistics (2006). Based on chart in Barbara Butrica, Howard Iams, and Karen Smith, "It's All Relative: Understanding the Retirement Prospects of Baby Boomers.," Washington, DC: The Urban Institute, November 2003.

It is useful to take a snapshot of the wealth distribution of the near elderly that includes "accrued" Social Security and Medicare "wealth."[20] Figure 3 shows that for nearly two-thirds of households, Social Security and Medicare wealth dominate all other forms of wealth, including home value and pensions. If we also factor in the shortfalls in Social Security and Medicare benefits (absent any meaningful increases in federal payroll tax contributions), the prospects for a comfortable retirement for most baby boomers is under threat.

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[20] One can estimate Social Security and Medicare wealth by summing the annual benefit streams received over a lifetime, adjusting for interest, inflation and mortality, i.e., finding the insurance or actuarial present value of these benefits, evaluated at a certain age like 65.

Figure 3

Average Value and Composition of Household Wealth, Ages 51-61, by Wealth Decile

In $ Thousands	First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth	Tenth
☐ Pension	$2	$9	$26	$47	$68	$114	$169	$251	$361	$526
■ Other Financial	$2	$14	$25	$44	$74	$102	$148	$214	$359	$1,391
⊞ Housing	-$8	$15	$34	$50	$73	$93	$110	$129	$151	$244
◳ Medicare	$171	$171	$171	$171	$171	$171	$171	$171	$171	$171
▥ Social Security	$57	$93	$127	$155	$173	$183	$193	$201	$214	$218

Wealth Decile
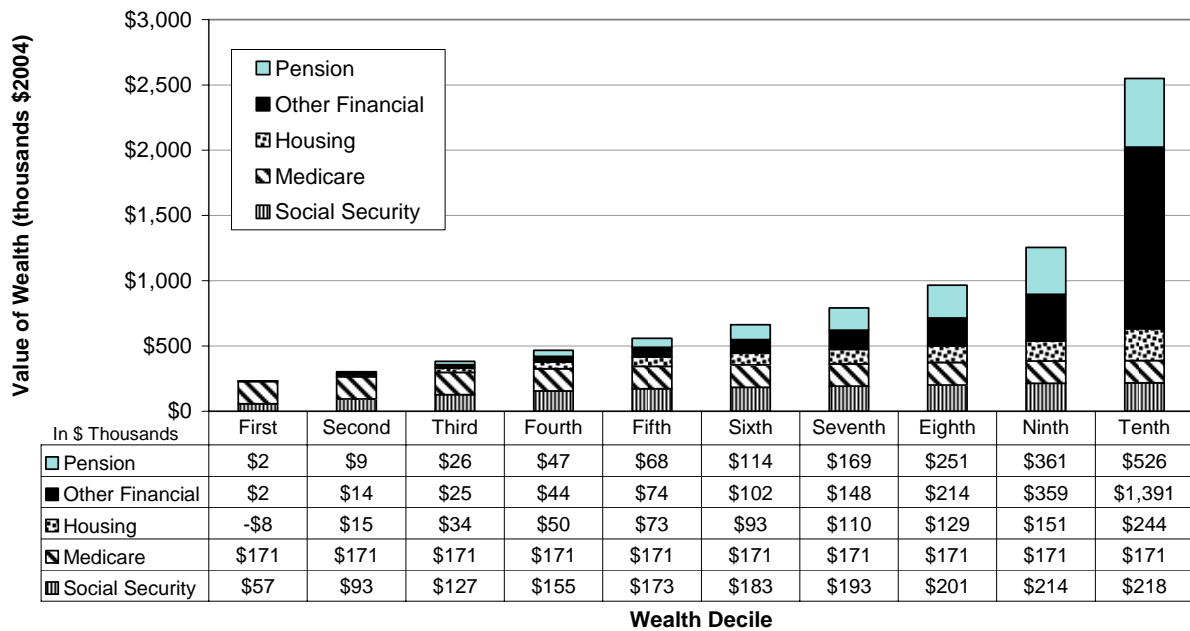
Note: Private pensions (which includes DB and DC pensions), Social Security, other financial (which includes IRA and Keoughs), and housing wealth data come from Moore and Mitchell (2000), based on a sample of households from the Health and Retirement Survey in which at least one member was age 51-61 in 1992. Medicare wealth is from Steuerle and Carasso (2004). Source: Moore, James F., and Olivia S. Mitchell. 2000. "Projected Retirement Wealth and Savings Adequacy." In *Forecasting Retirement Needs and Retirement Wealth*, edited by O.S. Mitchell, P.B. Hammond, and A.M. Rappaport. Philadelphia: Univ. of Pennsylvania Press; C. Eugene Steuerle and Adam Carasso. 2004. "The USA Today Lifetime Social Security and Medicare Benefits Calculator: Assumptions and Methods." Washington, DC: The Urban Institute.

A couple of studies note that, despite the shift from generous and less risky[21] DB pensions to less generous, more risky DC pensions, overall pension wealth might increase due to the increased numbers of working women and two-earner couples.[22] Also, since the "golden age" of DB plans was associated with one-earner households, while DC and IRA plans are increasingly associated with two-earner households—and overall pension participation has risen over time—it is not clear that two or more

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[21] By less or more "risky" we mean the following. Employers bear the investment risk in a DB plan and set the implicit contributions (and returns on those contributions) for workers at a level that produces a relatively generous pension that replaces a set amount of worker wages, contingent on years of service. Employees, meanwhile, bear the investment risk in a DC plan, and it is up to them to gauge the correct level of annual contributions and estimate a likely long-run return on those contributions such that their accumulated DC wealth replaces a reasonable fraction of their final year's wage, assuming they annuitize. Employers have teams of actuaries and investment managers to manage their DBs, while an employee has just his or her own financial literacy and personal guesses about future economic circumstances to rely on, although some employees may also have access to financial counseling at work.

[22] See Barbara Butrica and Cori Uccello, "How Will Boomers Fare at Retirement?" AARP Public Policy Institute, Washington, DC: AARP, 2004; and Barbara Butrica, Howard Iams, and Karen Smith, "It's All Relative: Understanding the Retirement Prospects of Baby Boomers," Washington, DC: The Urban Institute, November 2003.

somewhat less generous pensions will be unable to pull off the job done in earlier times by one, more generous pension. Finally, a couple that shares a household usually does not require twice the income of one person to live comfortably. The upshot is that, contrary to the flurry of headlines over the last 10 years concerning the upheaval in pension plans, eroding pension wealth appears to be less of a threat to future retirees than other factors.[23] What is much more salient is the long-standing *lack* of enrollment and participation in pension plans by low-income and non-white workers,[24] which a mandatory savings system would finally address.

The policy conclusions of recent research as well as the formal proposals for pension reform correctly identify and quantify in significant detail the many shortcomings of our present patchwork pension system. However, the solutions they propose, for the most part, keep the country within the present policy patchwork, consolidating brands of retirement accounts and reshuffling incentives.[25] For example, recent proposals have called variously for repealing requirements and limits on contributions to qualified pension plans, enhancing pension portability, centralizing pension plan administration and fiduciary responsibility, creating "smart" participation and investment defaults, and realigning tax incentives that are currently skewed toward the wealthy, among others. These are all laudable and sensible efforts. However, because none of these proposals address the voluntary nature of pension participation by employees or employers, and because other tax shelters in the tax code are left in place, the impact on private savings is unclear. Many households will likely shift around their savings portfolios from taxable to non-taxable accounts in the event of reform without necessarily creating new net savings in the process.

A mandatory universal pension system could compel workers (either directly, or with the participation of their employers) to set aside a large enough share of their earnings over their careers to fund significant retirement benefits, even while allowing for offsetting declines in contributions to other saving vehicles.

Mandatory savings proposals are not new. In 1981, for example, the President's Commission on Pension Policy recommended adoption of a Mandatory Universal Pension System (MUPS).[26] The proposal would have required all employers to contribute at least 3 percent of wages to private pensions for their workers. The

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[23] See, for example, Munnell and Soto, "What Replacement Rates Do Households Actually Experience in Retirement?"

[24] See, for example, Purcell, "Pension Sponsorship and Participation: Summary of Recent Trends."

[25] For a comprehensive summary of the issues as well as potential reforms, both big and small, see the "Conversation on Coverage National Policy Forum," convened by the Pension Rights Center in Washington, DC, July 22, 2004; William Gale and Peter Orszag, "Private Pensions: Issues and Options," Discussion Paper No. 9, Washington, DC: The Urban-Brookings Tax Policy Center, April 2003.

[26] President's Commission on Pension Policy, *Coming of Age: Toward a National Retirement Income Policy* (1981).

proposal drew little interest at the time. Recently, however, there has been renewed interest in mandated pensions.[27]

Many analysts have recently called for replacing a portion (or all) of the current Social Security system with a system of private, individual accounts. These accounts might operate in a similar fashion to current employer-sponsored 401(k) plans or IRAs.[28] These individual account proposals often recommend that the government would maintain much of the current Social Security system, but add on, or carve out, 2, 3, or even 5 percent of payroll for a system of individual accounts. For example, Model 1 of President Bush's 2001 Commission on *Strengthening Social Security and Creating Personal Wealth for All Americans* called for the creation of voluntary personal accounts that would carve 2 percentage points of taxable payroll out of the current Social Security system.[29] Most recently, a bipartisan proposal by Jeffrey Liebman, Maya MacGuineas, and Andrew Samwick would couple mandatory 3 percent individual accounts (1.5 percent add-on, 1.5 percent carve-out) with concomitant Social Security benefit cuts.[30]

The simplest design for a mandatory pension system would be to piggyback a system of individual retirement savings accounts onto the existing Social Security withholding system. Employees (and possibly employers) could be required to contribute some percentage of payroll each year into these accounts, with or without a

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[27] See, for example, Jeffrey Liebman, Maya MacGuineas and Andrew Samwick, "Nonpartisan Social Security Reform Plan" (2005), available at <http://www.nonpartisanssplan.com./pages/1/index.htm>; Jonathan B. Forman, "Universal Pensions," *Chapman Law Review* 2 (1995): 95-131, 114-116; World Bank, *Averting the Old Age Crisis: Policies to Protect the Old and Promote Growth* (Washington, DC: World Bank, 1994), 74; Estelle James and Dimitri Vittas, "Mandatory Saving Schemes: Are They the Answer to the Old Age Security Problems?," in Zvi Bodie, Olivia S. Mitchell and John Turner, eds., *Securing Employer-Based Pensions: An International Perspective* (Pension Research Council, Philadelphia, PA: University of Pennsylvania Press, 1996): 151-182; Albert B. Crenshaw, "Make 'em Provide Pensions," *Washington Post*, January 29, 2006, at F1; and David E. Morse, "From the Editor: Rethinking Employee Benefits, Part 3: Should Pensions Be Voluntary?," *Benefits Law Journal* 19 (No. 1, Spring 2006): 1-4.

[28] See, for example, *Advisory Council on Social Security, Report of the 1994-1996 Advisory Council on Social Security* (Washington, DC: 1994-1996 Advisory Council on Social Security, 1997); National Commission on Retirement Policy, *The 21st Century Retirement Security Plan* (Washington, DC: Center for Strategic & International Studies, 1998), 3-4; Committee for Economic Development, *Fixing Social Security: A Statement by the Research and Policy Committee of the Committee for Economic Development* (New York: Committee for Economic Development, 1997), 39-41.

[29] President's Commission to Strengthen Social Security, *Strengthening Social Security and Creating Personal Wealth for All Americans: Report of the President's Commission* (Washington, DC: President's Commission to Strengthen Social Security, 2001). See also *Advisory Council on Social Security, Report of the 1994-1996 Advisory Council on Social Security* (Proponents of the so-called Individual Accounts approach called for 2 percent add-on accounts, and proponents of the so-called Personal Security Accounts approach called for a 5 percent carve-out).

[30] Liebman, MacGuineas, and Samwick, "Nonpartisan Social Security Reform Plan." See also Stephen C. Goss and Alice H. Wade, "[Actuaries'] Memorandum" (Social Security Administration, November 17, 2005), available at http://www.nonpartisanssplan.com./pages/1/index.htm; and Congressional Budget Office, "Long-Term Analysis of the Liebman-MacGuineas-Samwick Proposal" (February 8, 2006).

federal subsidy for certain groups (e.g., the poor, the unemployed and those taking time out of the labor force to have children). These accounts could be centralized, managed by the government and invested in broad-based equity and bond funds, with the balances annuitized (in whole or in part) on retirement.[31]

This paper develops a model for a mandatory universal pension system of individual retirement savings accounts and estimates the tax, budget and distributional consequences of that system.

3. How a Mandatory Universal Pension System Might Work

The simplest design for a mandatory universal pension system (MUPS) would be to piggyback (i.e., add on rather than carve out) a system of individual retirement savings accounts onto the existing Social Security withholding system. How big a system (3 percent of payroll, 6 percent, more), how to distribute the financing (employee only or, employee and employer, plus subsidies from government), how to tax contributions, investment earnings and withdrawals, and how to arrange account administration (pooled, federally-administered or private, individually administered) and what age of retirement or first access to set, are the major design issues. Clearly, there are a number of ways a MUPS could be set up. In this paper, we describe a MUPS design where only employees and the self-employed contribute 3 percent of payroll to an account (with two variants that allow for a federal subsidy to low-income workers).[32] We assume that these individual accounts would operate like traditional IRAs; that is, contributions are deductible, and the earnings accumulate tax-free until retirement, but withdrawals are taxable.

In this paper, we describe a MUPS that entails annual 3-percent-of-payroll contributions for both employees and the self-employed up to the Social Security taxable maximum. These contributions would be deductible from both income and payroll taxes (like current employer contributions to employee pension plans).[33] To put

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[31] Alternatively, financial institutions could hold these individual accounts and individual workers could direct their investments.

[32] Economic theory predicts the same overall burden on employees, regardless of how the contribution burden is divided between employee and employer. Contributions paid by the employer will come at the price of lower wages paid to the employee. The income tax consequences of splitting the contribution between employee and employer would also be virtually the same, given that we allow the full amount of contributions to be income tax deductible and payroll tax exempt—more on this later.

[33] As noted in subsequent tables, the effect of deducting MUPS contributions from Social Security taxes effectively lowers Social Security credited earnings by 3 percent for workers earning below the wage cap and will therefore slightly lower expected Social Security benefits by a percent or two.

this 3 percent contribution rate in perspective, Social Security retirement contributions are 10.6 percent of covered payroll (5.3 percent both from employee and employer), while Disability is 1.8 percent (0.9 percent from employees and employers) and Medicare is 2.9 percent (1.45 percent from employees and employers). Thus, the accounts we describe represent another tier to the social insurance system that is a little less than one-third the size of current Social Security retirement contributions and a little less than one-fifth the size of Social Security, Disability and Medicare combined.

Clearly, many avenues exist for arranging how MUPS contributions are invested and managed. At one extreme, the federal government could pool all worker contributions into a single private market portfolio (e.g., 60 percent in the Wilshire 5000 and 40 percent in government and corporate bonds) with a government guaranteed return (e.g., 3 percent real), regardless of how the portfolio performed. This would lend a defined benefit feel to a MUPS, pooling risk and minimizing administrative costs— but also minimizing worker investment choice and control over MUPS accounts. At the other extreme, workers would choose their own portfolio (but with a "smart" default provided), could change investments periodically, and would bear all of the investment risk, like a defined contribution plan. Additionally, while workers would have maximal control over their MUPS accounts, administrative costs would be high, reducing annual accruals and the effective real rate of return. Beyond assuming a 3 percent real and effective rate of return on MUPS accounts, we do not speculate how such accounts would work in practice.

In this working paper version, a MUPS would *not* replace or repeal any element of the current retirement system, e.g., Social Security, DBs, DCs, the various IRA/Keogh plans discussed above or the Saver's Tax Credit. In some variations, the MUPS would take advantage of a new, refundable and indexed version of the Saver's Tax Credit to deliver subsidies for low-income contributors, described in more detail in the next section.

4. Methodology

We assume the MUPS begins operation on January 1, 2006. Starting on that date, every employee or self-employed worker is required to contribute 3 percent of covered

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Also of note, the deduction of contributions from income taxes results only in a *deferral* of income taxation until retirement as MUPS distributions are ultimately subject to income taxation when received. On the other hand, the deduction of contributions from payroll taxes results in a complete exemption, as MUPS distributions are exempt from payroll taxation (just like other pension distributions).

payroll to an individual account (i.e., 3 percent of up to $94,200 in 2006).[34] That is, we assume the MUPS will apply to the exact same wage base as current Social Security payroll taxes. For ease of modeling, we assume that all workers under age 70 who would normally participate in Social Security—plus all federal, state, local and non-profit employees—would contribute to a MUPS plan.

Following earlier Urban-Brookings Tax Policy Center work, we make a conservative assumption about the rate of return on these individual accounts.[35] We assume a 3 percent real rate of return (6 percent nominal rate of return with a 3 percent inflation rate)—about the same as is assumed in the 2006 Social Security trustees report.[36] We do not explicitly address here whether a MUPS is federally or individually administered, although the impact on system costs would be notable. We also assume 0.9 percent real wage growth in the long term, consistent with the Social Security trustees.[37] Finally, we also assume that the taxpayer's marginal tax rate is the same at retirement as during contribution years, and that all amounts contributed plus investment returns will be left in the account until age 65 and then annuitized. [38,39]

We use a microsimulation tax model to simulate the revenue and distributional implications of the MUPS options as compared to current law upon the federal tax system. As is more fully explained in Appendix A, the tax model computes the change in tax liability for a representative sample of some 200,000 households (taken from the IRS's Statistics of Income files) in going from current law to a new reform. As more fully explained in Appendix B, our methodology for estimating the tax benefits

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[34] The underlying model is updated for actual inflation-adjustments once a year, typically in April. Consequently, this paper relies on aging the 2005 model. Pertinent here, for example, the model that we use projected that the wage cap for 2006 would increase to just $93,000, while the Social Security Administration actually increased the earnings cap for 2006 to $94,200. We do not believe that such minor differences undermine our model to any significant extent.

[35] See Burman et al., "Distributional Effects of Defined Contribution Plans and Individual Retirement Accounts," 6-8, 21.

[36] Ibid., 21; Social Security Board of Trustees, *2006 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds* (2006), 92 (estimating a nominal interest rate of 5.7 percent— 2.8 percent inflation plus 2.9 percent real growth). We note, in passing, that the President's Commission to Strengthen Social Security used a more liberal 4.6 percent real rate of return assumption. (See President's Commission to Strengthen Social Security, *Strengthening Social Security and Creating Personal Wealth for All Americans: Report of the President's Commission*, Actuaries Memo, 17-18.)

[37] We do not simulate any stochastic variation in terms of these assumptions, although we note here that if real returns undershoot or if real wage growth exceeds these projections, than a MUPS' contribution to total replacement rates may be less than the estimates we provide in the next section.

[38] An earlier age like 62 (or setting a minimum age for penalty-free withdrawals like 59½ as currently exists for IRAs) might be worth considering, since lower-income groups tend to have shorter life expectancies. Lawmakers may also wish to allow some amount of death benefits. However, such options would also lessen the MUPS accounts' improvement of overall replacement rates.

[39] Again, see Burman et al., "Distributional Effects of Defined Contribution Plans and Individual Retirement Accounts," 6-8.

associated with retirement savings provisions utilizes present-value measures and assumes implicitly that workers and retirees face the same marginal tax rates. (Note that under this method, a traditional IRA and a Roth IRA would yield identical after-tax benefits for a given worker). One limitation of the tax model is that it does not include estimates of the wealth and tax benefits associated with defined benefit plans—although it does estimate the contributions to and tax benefits from defined contribution plans. In any case, the MUPS options we detail do not make any changes to existing defined benefit or defined contribution plans.

We use a different model to illustrate how much prototypical workers—e.g., a worker who always earned a low wage, the average wage or a high wage—would accumulate under a MUPS system by age 65. The model calculates lifetime tax contributions and benefits for both the current Social Security system (Old Age and Survivors Insurance only, not Disability Insurance) and one with a piggy-backed MUPS system for cohorts turning 65 in 2005, 2025, 2045, and 2065.[40] Accumulated MUPS balances are annuitized and replacement rates are calculated. The capabilities and underlying assumptions of this illustrative model are more fully explained in Appendix C.

The tables described in the next section present several sets of calculations. We present estimates of the MUPS "base" option and two variants.

5. Results

Section 5.1 considers the consequences of immediately adopting a mandatory universal pension system that requires each employee or self-employed worker to contribute 3 percent of covered payroll to an individual account. Unlike the current Social Security system, a system of mandatory 3-percent-of-earnings individual accounts would not progressively tilt benefits in favor of workers with low lifetime wages. Consequently, in Section 5.2, we consider options that could provide federal subsidies for low-wage workers.

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[40] Compare President's Commission to Strengthen Social Security, *Strengthening Social Security and Creating Personal Wealth for All Americans: Report of the President's Commission*, Actuaries Memo, 73.

5.1 The Basic Mandatory Universal Pension System (MUPS) Option

5.1.1 Income Adequacy

At the outset, this section considers the retirement income adequacy of Social Security benefits and of individual account benefits. In that regard, Table 2 shows the projected annual Old-Age and Survivors Insurance (OASI) benefits in 2005 dollars available to various generational cohorts of Single Males, Single Females, One-Earner Couples and Two-Earner Couples in their first year of retirement, by earnings.[41] For example, a single man with average lifetime earnings who turned 65 in 2025 is scheduled to receive a Social Security benefit of $16,394 in his first year of retirement.[42] Table 3 shows that a single, average-wage earner could also expect an individual account benefit of $2,555, for a total retirement income of $18,949, shown in Table 4.

TABLE 2
OASI Benefit in First Year of Retirement

Year Cohort Turns 65	Single Male				Single Female				One-Earner Couple				Two-Earner Couple			
	Low	Avg	High	Tax Max	Low	Avg	High	Tax Max	Low	Avg	High	Tax Max	Low-Low	Avg-Avg	High-High	Max-Max
1945	2,681	3,514	4,409	5,332	2,681	3,514	4,409	5,332	4,021	5,271	6,613	7,997	5,362	7,028	8,818	10,663
1965	5,531	8,494	9,292	9,292	5,649	8,757	9,561	9,561	8,296	12,742	13,938	13,938	11,180	17,252	18,853	18,853
1985	7,395	12,223	15,330	15,999	7,395	12,223	15,330	15,999	11,093	18,334	22,995	23,998	14,791	24,445	30,660	31,997
2005	9,007	14,848	19,544	22,463	9,007	14,848	19,544	22,463	13,511	22,272	29,316	33,695	18,636	30,720	40,435	46,476
2025	9,948	16,394	21,725	26,296	9,948	16,394	21,725	26,296	14,922	24,591	32,588	39,444	22,949	37,832	50,128	60,668
2045	12,222	20,082	26,744	32,463	12,222	20,082	26,744	32,463	18,334	30,123	40,116	48,695	28,201	46,334	61,708	74,906
2065	15,197	24,996	33,231	40,304	15,197	24,996	33,231	40,304	22,795	37,494	49,847	60,456	35,067	57,678	76,682	93,001
(Shortfall)																
2045	9,205	15,124	20,142	24,449	9,205	15,124	20,142	24,449	13,808	22,686	30,213	36,674	24,721	40,616	54,093	65,661
2065	10,949	18,009	23,942	29,038	10,949	18,009	23,942	29,038	16,423	27,014	35,914	43,557	30,166	49,618	65,966	80,004

In 2005 dollars. Assumes survival to age 65. Since IA contributions are deductible from Social Security, participants are credited with slightly lower Social Security earnings (and therefore, benefits) than they would otherwise have, e.g., an average earning non-participant retiring in 2065 would receive a benefit of $25,326, compared to $24,996 shown above.

TABLE 3
Individual Account Benefit in First Year of Retirement

Year Cohort Turns 65	Single Male				Single Female				One-Earner Couple				Two-Earner Couple			
	Low	Avg	High	Tax Max	Low	Avg	High	Tax Max	Low	Avg	High	Tax Max	Low-Low	Avg-Avg	High-High	Max-Max
1945	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1965	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2025	1,150	2,555	4,088	6,243	1,037	2,305	3,689	5,633	1,150	2,555	4,088	6,243	2,187	4,861	7,777	11,876
2045	3,427	7,615	12,184	18,618	3,118	6,929	11,086	16,941	3,427	7,615	12,184	18,618	6,545	14,544	23,270	35,558
2065	4,696	10,436	16,698	25,540	4,304	9,566	15,305	23,409	4,696	10,436	16,698	25,540	9,001	20,002	32,003	48,950

In 2005 dollars. Assumes survival to age 65. Individual accounts assumed to earn a 3% real rate of return.

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[41] Note that the definitions of "low," "average," "high" and "tax max" come from the Social Security Administration. In our model, an average-wage worker is someone who is assumed to work every year from age 22 through age 64, retiring on her 65th birthday, and earn the average wage in the economy every year ($38,670 in 2006). A low-wage worker earns 45 percent of the average wage in every year; a high-wage worker earns 160 percent of the average wage in every year; and a tax max wage worker earns right at the Social Security taxable maximum wage ($94,200 in 2006) in every year. In a one-earner couple, only the male is assumed to have earnings. While these are highly idealized wage earning patterns, they are useful for demonstrating the impact of various Social Security and pension reforms.

[42] Readers will note that women workers with identical earnings patterns receive more than their male counterparts from Social Security as they have longer life expectancies.

TABLE 4
Total (OASI + IA) Benefit in First Year of Retirement

Year Cohort	Single Male				Single Female				One-Earner Couple				Two-Earner Couple			
Turns 65	Low	Avg	High	Tax Max	Low	Avg	High	Tax Max	Low	Avg	High	Tax Max	Low-Low	Avg-Avg	High-High	Max-Max
1945	2,681	3,514	4,409	5,332	2,681	3,514	4,409	5,332	4,021	5,271	6,613	7,997	5,362	7,028	8,818	10,663
1965	5,531	8,494	9,292	9,292	5,649	8,757	9,561	9,561	8,296	12,742	13,938	13,938	11,180	17,252	18,853	18,853
1985	7,395	12,223	15,330	15,999	7,395	12,223	15,330	15,999	11,093	18,334	22,995	23,998	14,791	24,445	30,660	31,997
2005	9,007	14,848	19,544	22,463	9,007	14,848	19,544	22,463	13,511	22,272	29,316	33,695	18,636	30,720	40,435	46,476
2025	11,098	18,949	25,814	32,539	11,098	18,949	25,814	32,539	16,072	27,146	36,676	45,687	25,136	42,693	57,905	72,544
2045	15,649	27,697	38,928	51,081	15,649	27,697	38,928	51,081	21,760	37,738	52,300	67,312	34,746	60,878	84,978	110,464
2065	19,893	35,432	49,929	65,844	19,893	35,432	49,929	65,844	27,491	47,930	66,545	85,996	44,067	77,680	108,685	141,951
(Shortfall)																
2045	12,632	22,739	32,326	43,067	12,320	22,047	31,222	41,384	17,234	30,301	42,397	55,291	31,266	55,160	77,363	101,219
2065	15,645	28,445	40,640	54,578	15,252	27,572	39,244	52,443	21,119	37,450	52,611	69,097	39,167	69,620	97,969	128,954

In 2005 dollars. Assumes survival to age 65. Individual accounts assumed to earn a 3% real rate of return.

It is, perhaps, more interesting to consider what happens to a single man with average earnings who reaches age 65 in 2065, by which point a mandatory universal pension system implemented in 2006 would be mature. He could expect a Social Security benefit of $24,996 (from Table 2) and $10,436 (from Table 3), for a total retirement income of $35,432 (from Table 4). The additional two lines in Table 2 (and in Tables 4, 5 and 7) factor in the shortfall in Social Security, assuming an across-the-board cut in retirement benefits. Under this scenario, this same male retiree could expect to receive annual Social Security benefits of only $18,009, or nearly $7,000 less. What we observe then is that a fully mature MUPS system would provide this worker with an additional $10,436, which would more than fill in the gap created by the reduction in Social Security benefits.

Tables 5 through 7 express these benefits in terms of replacement rates; that is, as a percentage of workers' wages in their final year of work (age 64 in the model). In 2065, for example, that single man's $24,996 Social Security benefit would replace 34.7 percent of his final wage (from Table 5), and his $10,436 individual account benefit would replace 14.5 percent of his final wage (from Table 6), for a total replacement rate of 49.1 percent (from Table 7). Under a shortfall scenario, however, the replacement rate under Social Security would fall to just 25.0 percent (from Table 5); hence the worker's replacement after including his individual account benefit would be just 39.5 (from Table 7), still better than what he could have expected to receive under an unconstrained Social Security system alone.[43]

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[43] However, these estimates are static and do not correct for the tendency of workers to reduce other forms of savings when confronted by a new, mandatory savings scheme. While these tables only show Social Security and MUPS benefits, they omit other sources of retirement savings (e.g., employer pensions, homes and other financial wealth) which workers might save less in as a result of a MUPS. The issue of workers offsetting new savings with dissaving elsewhere is addressed a little later.

TABLE 5
OASI Replacement Rates: (PIA as a Percent of Final Wage)

Year Cohort Turns 65	Single Male				Single Female				One-Earner Couple				Two-Earner Couple			
	Low	Avg	High	Tax Max	Low	Avg	High	Tax Max	Low	Avg	High	Tax Max	Low-Low	Avg-Avg	High-High	Max-Max
1945	28.7	16.9	13.3	11.9	28.7	16.9	13.3	11.9	43.0	25.4	19.9	17.8	28.7	16.9	13.3	11.9
1965	44.9	31.0	21.2	20.7	45.9	32.0	21.8	21.3	67.4	46.6	31.8	31.0	45.4	31.5	21.5	21.0
1985	52.1	38.7	30.4	23.3	52.1	38.7	30.4	23.3	78.1	58.1	45.5	35.0	52.1	38.7	30.4	23.3
2005	53.9	40.0	32.9	23.7	53.9	40.0	32.9	23.7	80.9	60.0	49.4	35.6	55.8	41.4	34.0	24.5
2025	47.1	35.0	29.0	22.9	47.1	35.0	29.0	22.9	70.7	52.4	43.4	34.4	54.4	40.3	33.4	26.4
2045	46.6	34.5	28.7	22.8	46.6	34.5	28.7	22.8	70.0	51.7	43.1	34.2	53.8	39.8	33.1	26.3
2065	46.8	34.7	28.8	22.8	46.8	34.7	28.8	22.8	70.3	52.0	43.2	34.3	54.0	40.0	33.2	26.4
(Shortfall)																
2045	35.1	26.0	21.6	17.2	35.1	26.0	21.6	17.2	52.7	39.0	32.4	25.8	47.2	34.9	29.0	23.1
2065	33.7	25.0	20.8	16.5	33.7	25.0	20.8	16.5	50.6	37.5	31.1	24.7	46.5	34.4	28.6	22.7

We, of course, note that since women have longer life expectancies, a woman who accumulates the exact same individual account balance as a male will have to stretch that balance out across more years of retirement, on average, and thus will see a lower annual MUPS benefit. This reality would also affect her replacement rate from an individual account. For example, an average-wage single women retiring at 65 in 2065 would see a smaller *annual* individual account benefit of just $9,566 (from Table 3) that replaces just 13.3 percent of her final wage (from Table 6).[44]

Table 6 shows the principal long-run benefit of this MUPS design. At maturity, 3 percent accounts would replace (up to the earnings cap) about 14.5 percent of the final wages of all men and 13.3 percent of the final wages of all women, thereby providing significant supplemental income for millions of retirees that could fill the gap left by a shortfall in Social Security or make up for less intensive participation in current employer pension plans.

TABLE 6
Individual Account Replacement Rates Only: (IA as a Percent of Final Wage)

Year Cohort Turns 65	Single Male				Single Female				One-Earner Couple				Two-Earner Couple			
	Low	Avg	High	Tax Max	Low	Avg	High	Tax Max	Low	Avg	High	Tax Max	Low-Low	Avg-Avg	High-High	Max-Max
1945	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2025	5.4	5.4	5.4	5.4	4.9	4.9	4.9	4.9	5.4	5.4	5.4	5.4	5.2	5.2	5.2	5.2
2045	13.1	13.1	13.1	13.1	11.9	11.9	11.9	11.9	13.1	13.1	13.1	13.1	12.5	12.5	12.5	12.5
2065	14.5	14.5	14.5	14.5	13.3	13.3	13.3	13.3	14.5	14.5	14.5	14.5	13.9	13.9	13.9	13.9

Individual accounts assumed to earn a 3% real rate of return.

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[44] We expect that there would be political pressure to equalize annuity benefits for men and women. This equalization could be accomplished, for example, by mandating unisex annuitization or, alternatively, by permitting gender differentiation and affirmatively subsidizing the annual annuities paid to women; however, this paper does not offer any estimates of these possibilities.

TABLE 7

Total (OASI + IA) Replacement Rates: (PIA + IA as a Percent of Final Wage)

Year Cohort	Single Male				Single Female				One-Earner Couple				Two-Earner Couple			
Turns 65	Low	Avg	High	Tax Max	Low	Avg	High	Tax Max	Low	Avg	High	Tax Max	Low-Low	Avg-Avg	High-High	Max-Max
1945	28.7	16.9	13.3	11.9	28.7	16.9	13.3	11.9	43.0	25.4	19.9	17.8	28.7	16.9	13.3	11.9
1965	44.9	31.0	21.2	20.7	45.9	32.0	21.8	21.3	67.4	46.6	31.8	31.0	45.4	31.5	21.5	21.0
1985	52.1	38.7	30.4	23.3	52.1	38.7	30.4	23.3	78.1	58.1	45.5	35.0	52.1	38.7	30.4	23.3
2005	53.9	40.0	32.9	23.7	53.9	40.0	32.9	23.7	80.9	60.0	49.4	35.6	55.8	41.4	34.0	24.5
2025	52.6	40.4	34.4	28.3	52.0	39.9	33.9	27.8	76.1	57.9	48.9	39.8	59.5	45.5	38.6	31.6
2045	59.7	47.6	41.8	35.9	58.5	46.4	40.6	34.7	83.0	64.8	56.1	47.3	66.3	52.3	45.6	38.8
2065	61.3	49.1	43.3	37.3	60.1	47.9	42.1	36.1	84.7	66.5	57.7	48.7	67.9	53.9	47.1	40.2
(Shortfall)																
2045	48.2	39.0	34.7	30.2	47.0	37.9	33.5	29.1	65.8	52.0	45.5	38.8	59.6	47.4	41.5	35.5
2065	48.2	39.5	35.2	30.9	47.0	38.2	34.0	29.7	65.1	51.9	45.6	39.2	60.4	48.3	42.5	36.5

Unlike the current Social Security system, however, the MUPS option described so far would not progressively tilt those added benefits in favor of workers with low lifetime wages. Hence, we discuss possible subsidies to a MUPS system in Section 5.2.

5.1.2 Tax Consequences

First, however, we report on the tax consequences of a 3 percent MUPS. This section provides estimates of the changes in federal income and payroll tax liabilities resulting from the adoption of this system.

We estimate the tax savings that result when individual workers divert 3 percent of their covered earnings into mandatory individual accounts. As we assume these contributions would be deductible from income taxes *and* from payroll taxes (like most employment-based pension contributions), virtually all workers would owe less taxes. The distribution of those tax savings would vary depending upon the taxpayer's marginal tax rate, and tax savings would generally increase disproportionately with income as tax rates increase between $0 in earnings and the Social Security earnings cap (e.g., $94,200 in 2006).

If allowing the deduction for contributions were all that we did, however, many low-wage workers would see a significant increase in their tax liabilities (or at least a decrease in their refunds). This is because reducing taxpayer adjusted gross incomes may also adversely alter receipt of various refundable and non-refundable tax credits like the child credit or earned income credit. Therefore, for the purposes of calculating tax credits, we add MUPS contributions back into AGI (or whatever is used as the income base for a particular credit's computation) so as to *hold harmless* to the extent possible the tax benefits received by working families under current law.

5.1.2.1 Distributional Consequences

Table 8 gives the distributional implications of a 3 percent MUPS by quintile of cash income. As mentioned earlier, our methodology for estimating the tax benefits associated with retirement savings provisions utilizes present-value measures and assumes implicitly that workers and retirees face the same marginal tax rates (see Appendix B). Note that the bottom panel of Table 8 gives the baseline (current law) conditions for sake of comparison—intuitively, this bottom panel is the same for *all* the distributional tables presented in this paper.

TABLE 8
Option #1: Base Option – A Mandatory Universal Pension System (MUPS)
Distribution of Federal Tax Benefits by Cash Income Percentile, 2006[1]

	1	2	3	4	5	6	7	8	9	10
	Percent of Tax Units[3]		Percent Change in After-Tax Income[4]	Share of Total Federal Tax Change	Average Federal Tax Change		Share of Federal Taxes		Average Federal Tax Rate[5]	
Cash Income Percentile[2]	With Tax Cut	With Tax Increase			Dollars	Percent	Change (% Points)	Under the Proposal	Change (% Points)	Under the Proposal
Lowest Quintile	53.41	0.95	0.30	1.4	-23	-8.7	0.0	0.4	-0.3	3.1
Second Quintile	64.31	4.05	0.46	5.2	-85	-5.6	-0.1	2.2	-0.4	7.1
Middle Quintile	77.24	2.96	0.75	14.1	-230	-4.5	-0.2	7.7	-0.6	13.8
Fourth Quintile	79.70	1.80	0.89	27.5	-450	-3.9	-0.3	17.2	-0.7	17.9
Top Quintile	83.38	0.17	0.60	51.8	-847	-1.8	0.5	72.4	-0.5	24.6
All	71.55	1.98	0.66	100.0	-327	-2.5	0.0	100.0	-0.5	20.5
Addendum										
Top 10 Percent	83.2	0.2	0.5	28.6	-934	-1.3	0.7	56.9	-0.3	26.1
Top 5 Percent	82.1	0.3	0.3	15.0	-981	-0.8	0.7	44.6	-0.2	27.3
Top 1 Percent	79.6	0.3	0.1	2.6	-849	-0.3	0.6	26.2	-0.1	29.2
Top 0.5 Percent	78.3	0.4	0.1	1.3	-862	-0.2	0.5	21.1	-0.1	29.9
Top 0.1 Percent	80.8	0.3	0.0	0.3	-940	-0.1	0.3	12.8	0.0	31.4

Baseline Distribution Income and Federal Taxes
by Cash Income Percentile, 2006[1]

	1	2	3	4	5	6	7	8	9
	Tax Units[3]		Average Income (Dollars)	Average Federal Tax Burden (Dollars)	Average After-Tax Income[3] (Dollars)	Average Federal Tax Rate[4]	Share of Pre-Tax Income	Share of Post-Tax Income	Share of Federal Taxes
Cash Income Percentile[2]	Number (thousands)	Percent of Total					Percent of Total	Percent of Total	Percent of Total
Lowest Quintile	28,703	19.6	7,923	265	7,659	3.3	2.5	3.0	0.4
Second Quintile	29,289	20.0	20,116	1,510	18,606	7.5	6.4	7.5	2.3
Middle Quintile	29,279	20.0	35,940	5,171	30,769	14.4	11.4	12.4	7.8
Fourth Quintile	29,283	20.0	62,270	11,578	50,693	18.6	19.8	20.4	17.5
Top Quintile	29,282	20.0	189,863	47,585	142,278	25.1	60.3	57.2	71.9
All	146,417	100.0	62,970	13,245	49,725	21.0	100.0	100.0	100.0
Addendum									
Top 10 Percent	14,642	10.0	281,205	74,447	206,758	26.5	44.7	41.6	56.2
Top 5 Percent	7,323	5.0	421,832	116,204	305,628	27.6	33.5	30.7	43.9
Top 1 Percent	1,464	1.0	1,159,675	339,599	820,076	29.3	18.4	16.5	25.6
Top 0.5 Percent	732	0.5	1,825,082	547,032	1,278,051	30.0	14.5	12.9	20.7
Top 0.1 Percent	146	0.1	5,274,153	1,656,702	3,617,451	31.4	8.4	7.3	12.5

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0305-3a).
(1) Baseline is current law.
(2) Tax units with negative cash income are excluded from the lowest quintile but are included in the totals. For a description of cash income, see
http://www.taxpolicycenter.org/TaxModel/income.cfm
(3) Includes both filing and non-filing units. Tax units that are dependents of other taxpayers are excluded from the analysis.
(4) After-tax income is cash income less: individual income tax net of refundable credits; corporate income tax; payroll taxes (Social Security and Medicare); and estate tax.
(5) Average federal tax (includes individual and corporate income tax, payroll taxes for Social Security and Medicare, and the estate tax) as a percentage of average cash income.

At the outset, Table 8 shows the tax consequences for 2006. Not surprisingly, Table 8 shows modest tax cuts across the range of income levels. As expected, however, the percentage change in after-tax income (column 3) grows from an average of 0.30 percent for those in the lowest quintile up to a maximum cut of 0.89 percent for those in the fourth quintile, and then declines in the top quintile as incomes rise above the Social Security earnings cap, finally falling to zero for those in the top 0.1 percent of cash income (those with more than $1.8 million in income).

All in all, column 4 shows that 79.3 percent of the tax benefits would go to those in the top two quintiles (those with cash incomes above $45,000), with 28.6 percent of the tax benefits going just to those taxpayers with incomes in the top 10 percent (above $118,000). In short, Table 8 indicates that most of the tax benefits from a MUPS would go to workers in the upper middle-class and above.

5.1.2.2 Revenue Consequences

Table 9 estimates the revenue loss created by a 3 percent MUPS, as well as for two MUPS variations that would target subsidies to low-income workers. The baseline for comparison is current tax law and does not include the tax proposals included in the President's 2007 Budget or assume the tax cuts enacted between 2001 and 2004 will be extended after December 31, 2010.

TABLE 9
Revenue Effects of Three Options for a Mandatory Universal Pension System (MUPS) by Calendar Year, 2006-15[1]

Option[3]		Current Law										Totals	
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2006-10	2006-15
1	MUPS Contributions Equal to 3% of Employee Earnings	-24.8	-28.8	-31.0	-33.3	-35.6	-44.8	-47.1	-49.6	-52.1	-54.7	-153.6	-402.0
2	#1 with Match (in addition to low-income contributions)	-33.3	-35.6	-37.9	-40.3	-42.8	-55.6	-58.2	-60.6	-63.3	-66.2	-189.9	-493.8
3	#1 with Grant (in lieu of low-income contributions)	-30.9	-33.6	-35.9	-38.3	-40.8	-53.3	-55.1	-57.5	-60.1	-62.8	-179.5	-468.2

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0305-3a).
(1) Calendar years. Figures are in billions of nominal dollars.
(2) Extended baseline is current law plus the Administration's FY2006 Budget Proposal to extend provisions in the Economic Growth and Tax Relief Reconciliation Act of 2001 (EGTRRA) and the Jobs and Growth Tax Relief Reconciliation Act of 2003 (JGTRRA) affecting the following: marginal tax rates; the 10-percent bracket; the child tax credit; the child and dependent care credit; the limitation on itemized deductions (Pease); the personal exemption phaseout (PEP); the standard deduction, 15-percent bracket, and EITC for married couples; pension and IRA provisions; estate tax repeal; 15 percent tax rate on qualified dividends and capital gains (0 percent for lower-income taxpayers); student loan interest deduction.
(3) All options are assumed to take effect starting in 2006 and extend through the 10-year window to 2015. All dollar figures specified in option descriptions assumed to be in 2005 levels. A fully-refundable Saver's Credit is used for the subsidy and grant options.

The basic MUPS option would cost about $150 billion over the next five years and $400 billion over 10 years, reaching about $50 billion a year in 2013. Meanwhile, a MUPS that provides a match to contributing low-income workers would cost the Treasury about $190 billion over five years and $490 billion over ten years. Finally, a MUPS that offers a grant to low-income workers *in lieu* of compelling them to contribute to the system would cost $180 billion and $470 billion, respectively. The match and grant, as will be described more fully below, are refundable versions of the current Saver's Tax Credit.

5.1.2.3 A Behavioral Caveat

The actual tax benefits of a mandatory pension system are unlikely to favor the upper middle-class by quite as much as is suggested in Table 8, nor is a MUPS likely to cost as much as suggested in Table 9. First, behavioral economics research suggests that savings behavior varies meaningfully with income levels. More specifically, low-wage workers are less likely (and less able) to save while those at high incomes are able to save a significant percentage of their annual incomes.[45] Second, various forms of retirement savings can substitute for each other.[46] In that regard, if mandatory contributions to individual accounts are a perfect substitute for voluntary savings, then a mandatory universal pension system will offset voluntary IRA and 401(k) savings to some extent—perhaps even as high as dollar for dollar—at least for those higher-income individuals who are already meeting their savings targets.[47] All in all, we expect that a mandatory savings system could increase the overall saving rates of low-wage workers and generate modest tax benefits for them.

5.2 Options to Provide Additional Subsidies to Low-Wage Workers

We considered two, separate options that would make a MUPS more progressive for low-income workers. Along with tables that show the distribution of resulting tax benefits from these two options, we also provide tables (13-16) that compare the individual account benefits that can be accrued for "low"-wage workers for the basic option and these two options, side-by-side (but do not take into account the shortfall in Social Security).

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[45] See, for example, Karen Dynan, Jonathan Skinner and Stephen Zeldes, "Do the Rich Save More? *Journal of Political Economy* 112 (No. 2, 2004): 397-444.

[46] See, for example, Gary Engelhardt and Anil Kumar, "Employer Matching and 401(k) Saving: Evidence from the Health and Retirement Study," CRR WP 2004-18, Chestnut Hill, MA: Center for Retirement Research at Boston College, May 2004; and Richard Disney, "Household Saving Rates and the Design of Social Security Programmes: Evidence from a Country Panel" (Munich: Center for Economic Studies Working Paper No. 1541, 2005) (discussing how Social Security contributions can reduce household saving).

[47] While we do not attempt it in this working paper version, we will attempt to estimate the effect of an offset on the distribution of tax benefits.

5.2.1 MUPS with Match

First, we consider matching the contributions of low-income workers to the MUPS. Our proposed subsidy would use the current Saver's Tax Credit (which is scheduled to sunset in 2007), but would make it refundable, extend it indefinitely and index its income parameters for inflation in years after 2006.[48] Following the current Saver's Tax Credit formula, our MUPS plus match option would match contributions to virtually all low- and moderate-income workers at a 50, 20 or 10 percent rate, with the higher match rates going to those with lower incomes. For example, a worker with $10,000 of earnings would be required to contribute $300 (3 percent times $10,000) to her MUPS account and would receive a $150 match (50 percent times $300). Table 10a gives the level of match based on household income and tax filing status while Table 10b gives the Saver's Credit rate and bracket schedule. Eligibility for the credit ends for earnings above $25,000 for singles and $50,000 for couples. Table 11 shows the distributional consequences of this option and the revenue consequences are included in Table 9. In general, those tables show that a MUPS plus match will cost more than the basic MUPS, but we estimate that it would have much more favorable distributional consequences for low-income tax filers. Tax cuts, both in dollar terms and as a share of after-tax income, would double for workers in the bottom two quintiles, and would improve significantly for workers in the third and even fourth quintiles.

TABLE 10A
Value of a Refundable Saver's Credit (Match or Grant) Based on a 3%-of-Wages Contribution for Different Workers, 2006

Wages	Credit Value by Filer Type		
	Single	**Head of Household**	**Joint**
$5,000	$75	$75	$75
$10,000	$150	$150	$150
$15,000	$225	$225	$225
$16,000	$96	$240	$240
$20,000	$60	$300	$300
$23,000	$69	$138	$345
$25,000	$75	$75	$375
$30,000	$0	$90	$450
$32,000	$0	$96	$192
$35,000	$0	$105	$105
$40,000	$0	$0	$120
$50,000	$0	$0	$150
$55,000	$0	$0	$0

Source: Author's calculations.

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[48] Since 2002, certain low- and moderate-income individuals have been able to claim a non-refundable tax credit of up to $1,000 for certain qualified retirement savings contributions. I.R.C. § 25B. The credit is equal to a percentage (50, 20 or 10 percent) of up to $2,000 of contributions. In effect, the credit acts like an employer match: the government matches a portion of the employee's contributions. To learn more about how the Saver's Tax Credit works and the ramifications of making it refundable, see William Gale, Mark Iwry and Peter Orszag, "Improving the Saver's Credit," Policy Brief No. 135, Washington, DC: The Brookings Institution, July 2004.

TABLE 10B
Saver's Credit Schedule, 2006

Credit Rate	AGI Range by Filer Type			Tax Credit for $1,000 contribution
	Single	Head of Household	Joint	
50%	0 - $15,000	0 - $22,500	0 - $30,000	$500
20%	$15,001 - $16,250	$22,501 - $24,275	$30,001 - $32,500	$200
10%	$16,251 - $25,000	$24,376 - $37,500	$32,501 - $50,000	$100

Note: While the Saver's Credit is scheduled to expire after tax year 2006, the authors would make it permanent, fully refundable, and index its parameters for inflation in 2007 and after. Source: William Gale, Mark Iwry, and Peter Orszag, "Improving the Saver's Credit," Policy Brief No. 135, Washington, DC: The Brookings Institution, July 2004.

TABLE 11
Option 2: With Match – A Mandatory Universal Pension System (MUPS)
Distribution of Federal Tax Benefits by Cash Income Percentile, 2006[1]

	1	2	3	4	5	6	7	8	9	10
	Percent of Tax Units[3]		Percent Change in After-Tax Income[4]	Share of Total Federal Tax Change	Average Federal Tax Change		Share of Federal Taxes		Average Federal Tax Rate[5]	
Cash Income Percentile[2]	With Tax Cut	With Tax Increase			Dollars	Percent	Change (% Points)	Under the Proposal	Change (% Points)	Under the Proposal
Lowest Quintile	54.32	0.07	0.55	2.2	-42	-16.0	-0.1	0.3	-0.5	2.8
Second Quintile	69.38	0.36	1.06	10.4	-197	-13.0	-0.2	2.0	-1.0	6.5
Middle Quintile	80.90	0.31	1.01	16.4	-310	-6.0	-0.3	7.6	-0.9	13.5
Fourth Quintile	82.21	0.37	0.98	26.2	-495	-4.3	-0.3	17.2	-0.8	17.8
Top Quintile	83.51	0.08	0.59	44.8	-846	-1.8	0.8	72.7	-0.5	24.6
All	74.01	0.24	0.76	100.0	-378	-2.9	0.0	100.0	-0.6	20.4
Addendum										
Top 10 Percent	83.4	0.1	0.5	24.7	-932	-1.3	0.9	57.1	-0.3	26.1
Top 5 Percent	82.2	0.2	0.3	12.9	-978	-0.8	0.9	44.8	-0.2	27.3
Top 1 Percent	79.7	0.2	0.1	2.2	-842	-0.3	0.7	26.3	-0.1	29.2
Top 0.5 Percent	78.4	0.3	0.1	1.1	-855	-0.2	0.6	21.2	-0.1	29.9
Top 0.1 Percent	80.9	0.3	0.0	0.3	-934	-0.1	0.4	12.9	0.0	31.4

Baseline Distribution of Income and Federal Taxes
by Cash Income Percentile, 2006[1]

	1	2	3	4	5	6	7	8	9
	Tax Units[3]		Average Income (Dollars)	Average Federal Tax Burden (Dollars)	Average After-Tax Income[3] (Dollars)	Average Federal Tax Rate[4]	Share of Pre-Tax Income	Share of Post-Tax Income	Share of Federal Taxes
Cash Income Percentile[2]	Number (thousands)	Percent of Total					Percent of Total	Percent of Total	Percent of Total
Lowest Quintile	28,703	19.6	7,923	265	7,659	3.3	2.5	3.0	0.4
Second Quintile	29,289	20.0	20,116	1,510	18,606	7.5	6.4	7.5	2.3
Middle Quintile	29,279	20.0	35,940	5,171	30,769	14.4	11.4	12.4	7.8
Fourth Quintile	29,283	20.0	62,270	11,578	50,693	18.6	19.8	20.4	17.5
Top Quintile	29,282	20.0	189,863	47,585	142,278	25.1	60.3	57.2	71.9
All	146,417	100.0	62,970	13,245	49,725	21.0	100.0	100.0	100.0
Addendum									
Top 10 Percent	14,642	10.0	281,205	74,447	206,758	26.5	44.7	41.6	56.2
Top 5 Percent	7,323	5.0	421,832	116,204	305,628	27.6	33.5	30.7	43.9
Top 1 Percent	1,464	1.0	1,159,675	339,599	820,076	29.3	18.4	16.5	25.6
Top 0.5 Percent	732	0.5	1,825,082	547,032	1,278,051	30.0	14.5	12.9	20.7
Top 0.1 Percent	146	0.1	5,274,153	1,656,702	3,617,451	31.4	8.4	7.3	12.5

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0305-3a).
(1) Baseline is current law.
(2) Tax units with negative cash income are excluded from the lowest quintile but are included in the totals. For a description of cash income, see
http://www.taxpolicycenter.org/TaxModel/income.cfm
(3) Includes both filing and non-filing units. Tax units that are dependents of other taxpayers are excluded from the analysis.
(4) After-tax income is cash income less: individual income tax net of refundable credits; corporate income tax; payroll taxes (Social Security and Medicare); and estate tax.
(5) Average federal tax (includes individual and corporate income tax, payroll taxes for Social Security and Medicare, and the estate tax) as a percentage of average cash income.

Over time, some low-income workers may lose eligibility for the match (or grant, described below) as their faster-growing wages come to exceed the income limits of the subsidy, which only grow with inflation.

5.2.2 MUPS with Grant

Second, we consider providing a grant to all low-income workers *in lieu* of 3 percent contributions. Just as with the match, the grant would work as a refundable Saver's Tax Credit. For example, a worker with $10,000 of earnings would have $150 contributed to her MUPS account, but would not make her own 3-percent-of-earnings contribution.

Table 12 shows the distributional consequences of this option, and the revenue consequences are included in Table 9. In general, those tables show that a MUPS plus a grant would cost somewhat more than the base option, but, again, it would have more favorable distributional consequences for workers in the first two quintiles. The relative cost to the Treasury of a direct outlay to low-income workers is somewhat more than foregoing the income and Social Security taxes on the 3-percent-of-earnings contributions for which the grant substitutes.

TABLE 12

Option 3: With Grant – A Mandatory Universal Pension System (MUPS)
Distribution of Federal Tax Benefits by Cash Income Percentile, 2006[1]

	1	2	3	4	5	6	7	8	9	10
	Percent of Tax Units[3]		Percent Change in After-Tax Income[4]	Share of Total Federal Tax Change	Average Federal Tax Change		Share of Federal Taxes		Average Federal Tax Rate[5]	
Cash Income Percentile[2]	With Tax Cut	With Tax Increase			Dollars	Percent	Change (% Points)	Under the Proposal	Change (% Points)	Under the Proposal
Lowest Quintile	50.65	0.16	0.47	2.1	-36	-13.6	0.0	0.4	-0.5	2.9
Second Quintile	66.67	0.86	0.79	8.7	-147	-9.8	-0.2	2.1	-0.7	6.8
Middle Quintile	75.61	0.92	0.83	15.1	-255	-4.9	-0.2	7.6	-0.7	13.7
Fourth Quintile	77.58	0.76	0.87	26.2	-443	-3.8	-0.2	17.3	-0.7	17.9
Top Quintile	79.94	0.09	0.57	47.9	-810	-1.7	0.6	72.5	-0.4	24.6
All	70.04	0.56	0.68	100.0	-338	-2.6	0.0	100.0	-0.5	20.5
Addendum										
Top 10 Percent	79.4	0.1	0.4	26.3	-888	-1.2	0.8	57.0	-0.3	26.2
Top 5 Percent	77.9	0.2	0.3	13.7	-926	-0.8	0.8	44.7	-0.2	27.3
Top 1 Percent	76.5	0.2	0.1	2.4	-809	-0.2	0.6	26.3	-0.1	29.2
Top 0.5 Percent	75.5	0.3	0.1	1.2	-824	-0.2	0.5	21.2	-0.1	29.9
Top 0.1 Percent	78.6	0.3	0.0	0.3	-909	-0.1	0.3	12.8	0.0	31.4

Baseline Distribution of Income and Federal Taxes
by Cash Income Percentile, 2006[1]

	1	2	3	4	5	6	7	8	9
Cash Income Percentile[2]	**Tax Units[3]**		**Average Income (Dollars)**	**Average Federal Tax Burden (Dollars)**	**Average After-Tax Income[3] (Dollars)**	**Average Federal Tax Rate[4]**	**Share of Pre-Tax Income**	**Share of Post-Tax Income**	**Share of Federal Taxes**
	Number (thousands)	**Percent of Total**					**Percent of Total**	**Percent of Total**	**Percent of Total**
Lowest Quintile	28,703	19.6	7,923	265	7,659	3.3	2.5	3.0	0.4
Second Quintile	29,289	20.0	20,116	1,510	18,606	7.5	6.4	7.5	2.3
Middle Quintile	29,279	20.0	35,940	5,171	30,769	14.4	11.4	12.4	7.8
Fourth Quintile	29,283	20.0	62,270	11,578	50,693	18.6	19.8	20.4	17.5
Top Quintile	29,282	20.0	189,863	47,585	142,278	25.1	60.3	57.2	71.9
All	146,417	100.0	62,970	13,245	49,725	21.0	100.0	100.0	100.0
Addendum									
Top 10 Percent	14,642	10.0	281,205	74,447	206,758	26.5	44.7	41.6	56.2
Top 5 Percent	7,323	5.0	421,832	116,204	305,628	27.6	33.5	30.7	43.9
Top 1 Percent	1,464	1.0	1,159,675	339,599	820,076	29.3	18.4	16.5	25.6
Top 0.5 Percent	732	0.5	1,825,082	547,032	1,278,051	30.0	14.5	12.9	20.7
Top 0.1 Percent	146	0.1	5,274,153	1,656,702	3,617,451	31.4	8.4	7.3	12.5

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0305-3a).
(1) Baseline is current law.
(2) Tax units with negative cash income are excluded from the lowest quintile but are included in the totals. For a description of cash income, see
http://www.taxpolicycenter.org/TaxModel/income.cfm
(3) Includes both filing and non-filing units. Tax units that are dependents of other taxpayers are excluded from the analysis.
(4) After-tax income is cash income less: individual income tax net of refundable credits; corporate income tax; payroll taxes (Social Security and Medicare); and estate tax.
(5) Average federal tax (includes individual and corporate income tax, payroll taxes for Social Security and Medicare, and the estate tax) as a percentage of average cash income.

5.2.3 Comparison of the Base Option, Match and Grant

Our hypothetical "low"-wage earner earns 45 percent of the average wage (45 percent of $38,670, or $17,402, in 2006) and is the only one of the three wage profiles to receive a match or grant. Tables 13-16 compare benefit and replacement rate outcomes for these low-wage workers under the base, match and grant options. When the system reaches maturity in 2065, Table 13 shows a single male worker receiving about 12 percent more ($552) per year under the match option than the base option and a replacement rate from just the individual account of 16.2 percent (from Table 15), compared to 14.5 percent under the base option. Under the grant option, where he receives a grant in lieu of making any contributions, the worker would still receive $2,487 in benefits or a 7.7 replacement rate, a little more than half of what he would receive if he contributed himself. For women workers, the effect is similar: a $4,811 benefit (Table 13) and 14.8 replacement rate (Table 15) under the match and a $2,279 benefit and 7.0 percent replacement rate under the grant. Tables 14 and 16 tabulate total benefits and replacement rates and show that low-wage workers do not come out very far apart, in any case, across the three options.

TABLE 13
Individual Account Benefit in First Year of Retirement

Year Cohort Turns 65	Single Male (Low)			Single Female (Low)			One-Earner Couple (Low)			Two-Earner Couple (Low-Low)		
	Base	Match	Grant	Base	Match	Grant	Base	Match	Grant	Base	Match	Grant
1945	-	-	-	-	-	-	-	-	-	-	-	-
1965	-	-	-	-	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-	-	-	-	-
2005	-	-	-	-	-	-	-	-	-	-	-	-
2025	1,150	1,380	230	1,037	1,245	207	1,150	1,380	230	2,187	2,625	437
2045	3,427	4,088	782	3,118	3,720	712	3,427	4,088	782	6,545	7,807	1,494
2065	4,696	5,249	2,487	4,304	4,811	2,279	4,696	5,249	2,487	9,001	10,059	4,766

Assumes survival to age 65. Individual accounts assumed to earn a 3% real rate of return.

TABLE 14
Total (OASI + IA) Benefit in First Year of Retirement

Year Cohort Turns 65	Single Male (Low)			Single Female (Low)			One-Earner Couple (Low)			Two-Earner Couple (Low-Low)		
	Base	Match	Grant	Base	Match	Grant	Base	Match	Grant	Base	Match	Grant
1945	2,681	2,681	2,681	2,681	2,681	2,681	4,021	4,021	4,021	5,362	5,362	5,362
1965	5,531	5,531	5,531	5,649	5,649	5,649	8,296	8,296	8,296	11,180	11,180	11,180
1985	7,395	7,395	7,395	7,395	7,395	7,395	11,093	11,093	11,093	14,791	14,791	14,791
2005	9,007	9,007	9,007	9,007	9,007	9,007	13,511	13,511	13,511	18,636	18,636	18,636
2025	11,098	11,328	10,210	11,098	11,186	10,188	16,072	16,302	15,201	25,136	25,574	23,469
2045	15,649	16,310	13,156	15,649	15,938	13,086	21,760	22,421	19,343	34,746	36,008	30,049
2065	19,893	20,445	17,805	19,893	20,005	17,598	27,491	28,044	25,464	44,067	45,126	40,116

In 2005 dollars. Assumes survival to age 65. Assumes that full OASI benefits as scheduled in law will be paid. Individual accounts assumed to earn a 3% real rate of return.

TABLE 15
Individual Account Replacement Rates Only: (IA as a Percent of Final Wage)

Year Cohort Turns 65	Single Male (Low)			Single Female (Low)			One-Earner Couple (Low)			Two-Earner Couple (Low-Low)		
	Base	Match	Grant	Base	Match	Grant	Base	Match	Grant	Base	Match	Grant
1945	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2025	5.4	6.5	1.1	4.9	5.9	1.0	5.4	6.5	1.1	5.2	6.2	1.0
2045	13.1	15.6	3.0	11.9	14.2	2.7	13.1	15.6	3.0	12.5	14.9	2.9
2065	14.5	16.2	7.7	13.3	14.8	7.0	14.5	16.2	7.7	13.9	15.5	7.3

Assumes survival to age 65. Individual accounts assumed to earn a 3% real rate of return.

TABLE 16
Total (OASI + IA) Replacement Rates: (PIA + IA as a Percent of Final Wage)

Year Cohort Turns 65	Single Male (Low)			Single Female (Low)			One-Earner Couple (Low)			Two-Earner Couple (Low-Low)		
	Base	Match	Grant	Base	Match	Grant	Base	Match	Grant	Base	Match	Grant
1945	28.7	28.7	28.7	28.7	28.7	28.7	43.0	43.0	43.0	28.7	28.7	28.7
1965	44.9	44.9	44.9	45.9	45.9	45.9	67.4	67.4	67.4	45.4	45.4	45.4
1985	52.1	52.1	52.1	52.1	52.1	52.1	78.1	78.1	78.1	52.1	52.1	52.1
2005	53.9	53.9	53.9	53.9	53.9	53.9	80.9	80.9	80.9	55.8	55.8	55.8
2025	52.6	53.7	48.4	52.0	53.0	48.3	76.1	77.2	72.0	59.5	60.6	55.6
2045	59.7	62.2	50.2	58.5	60.8	49.9	83.0	85.6	73.8	66.3	68.7	57.3
2065	61.3	63.0	54.9	60.1	61.7	54.2	84.7	86.4	78.5	67.9	69.5	61.8

Assumes survival to age 65. Assumes that full OASI benefits as scheduled in law will be paid. Individual accounts assumed to earn a 3% real rate of return.

6. Discussion

To reiterate, the current pension system does not adequately serve low-income workers. Only a small fraction of those workers are currently participating in an employment-based pension plan or IRA. It should come as little surprise that Social Security supplied 100 percent of the income in retirement for 22 percent of all elderly households (in 2002).[49]

Unfortunately, Social Security is itself in financial trouble. Benefit cuts may well be a part of any systemic reform. Even without benefit cuts, Table 5 shows that in the long-run, Social Security will only replace 34.7 percent of the final wages of average single workers, 52 percent of the final wages of one-earner couples and 40 percent of the final wages of two-earner couples (in 2065). Our paper shows that a system of mandatory, 3-percent-of-earnings individual accounts could provide significant additional retirement income, especially for low- and average-wage earners. For example, Table 6 shows that our basic MUPS would provide an additional 14.5 percent of final wages for men, 13.3 percent of final wages for women, 14.5 percent for one-earner couples, and 13.9 percent for two-earner couples. Finally, this paper shows that with targeted matches or grants, even greater retirement income benefits could be provided to most low- and moderate-income workers.

While a 3 percent MUPS can be linked to past proposals for a similar type of system, the choice depends on what lawmakers want in a MUPS. A larger MUPS that also helped shore up increasingly uncertain retiree health care benefits might be financed with 6 percent contributions (and a commensurately larger subsidy for low-income workers). Additionally, provisions that allowed for continued contributions to a MUPS when workers are on unemployment or taking time out of the labor force to raise children could be considered along with any reform of this nature.

We do not tout a system of individual accounts as a panacea for poverty. While it can certainly help those at the margins, accumulations for workers with low earnings and short or incomplete work histories will be meager at best in absolute terms—particularly for those who started working late in life and so miss out on compounding—even though their effective replacement rates may be high. Alarms

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[49] Social Security Administration, *Income of the Aged Chartbook, 2002* (Social Security Administration, 2004), 4. See also Debra Whitman and Patrick Purcell, "Topics in Aging: Income and Poverty Among Older Americans in 2004," Washington, DC: Congressional Research Service, U.S. Congress, November 2005, 10 (showing that Social Security provide 100 percent of income for 23.9 percent of *recipients* age 65 and older). Whitman and Purcell also show that Social Security provided 20.8 percent of the aggregate income of people age 65 and over in the highest quartile of income in 2004, 57.5 percent for those in the second quartile, 81.7 percent for those in the third quartile, and 85.6 percent for those in the lowest quartile. Ibid., 5-6.

sounded over the economic well-being of the most vulnerable in old age should continue to sound.[50] However, unmarried heads of household in retirement—who will not enjoy Social Security survivors benefits or windfall spousal benefits and whose numbers are projected to rise—are prime candidates to benefit from a MUPS, provided that they have enough years of contributions.

A fair question is: Why not just raise contributions to the current Social Security system rather than creating a whole new retirement pillar? The response is that a MUPS has the potential to raise national and private savings since contributions would get invested in private markets whereas Social Security payroll contributions go directly from current workers to current retirees, without any contribution to national investment. From a social value standpoint, moreover, a successful MUPS could raise household savings broadly across the population and finally serve the "un-banked,"[51] and turn a whole generation of lower- and middle-income workers into more financially literate investors.

The annual revenue cost of our proposed system of mandatory individual accounts, between $25 and $35 billion depending on the option we specified, is formidable. Still, it involves smaller sums of money compared to those at stake in the 2001-2004 tax cuts that may or may not be extended[52] or the annual costs of fixing Social Security. Moreover, since the problem, as we have identified it, is contributions to the system that appear too low to support the retirement promised in current benefit formulas, structuring a MUPS as a *carve-out* from Social Security may not solve the basic financing gap, particularly when transition costs are considered.[53]

Mandated contributions, while really deferred savings, may have the unintended consequence of discouraging work (or encouraging evasion of reporting earnings in covered employment) for some workers as their disposable income decreases while their effective tax rates go up. At the very least, additional mandated savings would have the effect of distorting incentives for work versus leisure,[54] particularly in the

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[50] See, for example, Lawrence Thompson, "Social Security Reform and Benefit Adequacy," *The Retirement Project*, Brief No. 17, Washington, DC: The Urban Institute, March 2004.

[51] According to the 2004 Survey of Consumer Finances fielded by the Federal Reserve Board, nearly 20 percent of families in the bottom income quintile and nearly 9 percent of families in the second quintile lack any financial assets (even checking accounts).

[52] To browse estimates of the costs and distributional implications of recent and proposed tax cuts, please visit the Urban-Brookings Tax Policy Center, www.taxpolicycenter.org.

[53] See Lawrence Thompson and John Wilkin, "Can Individual Accounts Really Rescue Social Security?" *The Retirement Project*, Brief No. 12, Washington, DC: The Urban Institute, January 2002.

[54] See, for example, Daniel Shaviro, "Effective Marginal Tax Rates on Low-income Households," *Tax Notes*, 1191-1201, August 23, 1999; Harvey Rosen, *Public Finance*, Boston, MA: McGraw-Hill Irwin, 6th ed, 2002, pp. 20-23, 374-376; Nada Eissa, "Tax Reforms and Labor Supply," in James Poterba, ed., *Tax Policy and the Economy 10*, Cambridge, MA: MIT Press, 1996, pp. 119-151.

absence of a subsidy for low-income workers. The key concern, of course, is the additional burden this will place on the poor and to what extent a MUPS (that *did not* provide a subsidy to low-income workers) would add to household debt, financial hardship, and reduced work among this population. Finally, a new mandatory savings scheme may hasten the curtailment of current employer DB (and perhaps even DC) pension offerings.

A MUPS would also place significant start-up and ongoing new filing burdens on employers and government agencies to register workers and employers and record and reconcile worker account contributions. Furthermore, the more choices (and frequency of making these choices) those workers have regarding the nature of their investments, the greater the administrative cost of the system to workers, funds, and administering agencies.[55] However, the implementation of a MUPS would be facilitated to the extent that it could be built upon the existing Social Security filing and reporting system.

7. Conclusion

A mandatory system of 3-percent-of-earnings individual accounts would provide significant, additional retirement income for American workers—particularly low-income workers who either do not participate in a pension plan or who work for employers that do not offer one. In the long run, we estimate that such accounts would provide an additional 14.5 percent of final wages for men, 13.3 percent of final wages for women, 14.5 percent for one-earner couples, and 13.9 percent for two-earner couples over and above the benefits that are promised by the current Social Security system. (In the case of a match where the subsidy is a refundable version of the Saver's Tax Credit, replacement rates would be even higher for low-income workers). Social Security replacement rates are projected to fall in the coming decades and will fall even further if future benefits are cut to come into line with projected future revenues. The fate of Medicare, meanwhile, is far more uncertain, but many believe that both premiums and out-of-pocket spending will rise substantially in the future. Our paper outlines how a system of mandatory add-on individual accounts can help bridge the coming divide between the retirement Americans expect and the retirement our increasingly beleaguered programs can hope to finance.

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[55] See Lawrence Thompson, "Administrative Aspects of Individual Accounts or the Devil is in the Details and He Could Spear You," Testimony Before the House Budget Committee, U.S. House of Representatives, May 25, 1999.

Appendix A. The Urban-Brookings Tax Policy Center Microsimulation Model

The Urban-Brookings microsimulation tax model is a powerful tool for federal tax policy analysis.[56] The model calculates tax liability for a representative sample of households (an approximately 200,000-observation sample produced each year by the Statistics on Income division of the Internal Revenue Service), both under the rules that currently exist and under alternative scenarios. Based on these calculations, the model produces estimates of the revenue consequences of different tax policy choices, as well as their effects on the distribution of tax liabilities and marginal effective tax rates.

The model is a large-scale microsimulation model of the U.S. federal tax system. The model is similar to those used by the Congressional Budget Office (CBO), the Joint Committee on Taxation (JCT) and the Treasury's Office of Tax Analysis (OTA). As its name suggests, a microsimulation model uses microdata—or data on individual units—rather than aggregate information. In general, input data are comprised of detailed information at the individual or household level that may be used to calculate tax liability. The sample includes weights that represent how many units are represented by the individual record.

Estimates for the entire population may then be derived by multiplying the individual estimates by the sample weights and summing them. In the case of the tax model, the population is the universe of individuals who file income tax returns as well as those individuals whose incomes are too low to require them to file a return ("nonfilers"). The data are a stratified sample of individual income tax returns augmented by information about nonfilers (see discussion below). The tax-calculator portion of the model then applies applicable tax law to each of the individual records in the microdata file and calculates values for variables such as adjusted gross income (AGI), nonrefundable credits, individual income tax liability, and so on. The values of the variables calculated for each individual record are then multiplied by the weight associated with that record to tabulate aggregate results such as total income tax liability for the entire population.

The tax model is not only able to calculate tax liability under current tax law but is also able to simulate alternative policy proposals. It is therefore straightforward to calculate the change in aggregate tax liability from a tax policy proposal and also to

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[56] See Jeffrey Rohaly, Adam Carasso and Mohammed Adeel Saleem, "The Urban-Brookings Tax Policy Center Microsimulation Model: Documentation and Methodology for Version 0304," Washington, DC: Urban Institute, 2005.

determine which class of individuals would benefit from or bear the burden of the tax change.

The tax model also has the ability to produce estimates for years beyond the year of the input data file. This is made possible by "aging" the individual records in the microdata file. In the aging process, the information on each record—such as the amount of wages and salaries and other forms of income—as well as the weights associated with each record are adjusted based on forecasts from several sources including CBO and the Bureau of the Census.

Appendix B. Estimating the Tax Savings Associated with the Current Retirement System

There are various approaches for taxing private pensions based on the tax treatment of workers.[57] From the worker's perspective, a private pension could be taxed on any of three occasions: 1) when contributions are made to the pension plan; 2) when income is earned on investment of those contributions; and/or 3) when pension benefits are distributed. On each of these occasions the policy is to either impose a tax (T) or provide an exemption from tax (E).

Theoretically, there are eight possible regimes for taxing pensions, ranging from extremes of complete exemption on all three occasions (EEE) to taxation on all three occasions (TTT) and running through various partial tax combinations (EET, ETE, TEE, ETT, TET, and TTE). A little analysis shows that the EET and TEE regimes are basically consumption tax approaches, while the TTE and ETT regimes are basically income tax approaches. This same analytical approach has been applied in evaluating different designs of private savings account reforms within Social Security.[58]

Exempt contributions and fund income, tax benefits (EET). The EET regime illustrates the usual consumption tax approach to pensions. At the outset, contributions are exempt from taxation. In the United States, for example, employer contributions to qualified pension plans are excluded from the incomes of the employees covered by the plan. Next, no tax is collected on the investment income of the pension fund. In the United States, for example, pension funds are exempt from taxation. Finally, distributions are fully taxable. An equivalent way to achieve the EET regime typically utilizes individual retirement savings accounts. Rather than having a worker receive an exclusion for employer contributions, the worker could be allowed to deduct her own contributions out of otherwise taxable earnings. For example, many workers in the United States may deduct their own contributions to IRAs; the IRAs are tax-exempt; but distributions are fully taxable.

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[57] See Andrew Dilnot, "The Taxation of Private Pensions," in Zvi Bodie et al., eds., *Securing Employer-Based Pensions: An International Perspective* (Pension Research Council, Philadelphia, PA: University of Pennsylvania Press, 1996): 213-231. See also Jonathan Barry Forman, "The Tax Treatment of Public and Private Pensions Around the World," *American Journal of Tax Policy* 14 (1997): 299-333.

[58] See "Individual Account Taxation," chapter 10 in *Uncharted Waters: Paying Benefits From Individual Accounts in Federal Retirement Policy* (Washington, DC: The National Academy of Social Insurance, 2005).

Tax contributions, exempt fund income and benefits (TEE). Under the TEE regime, no exclusion is allowed for employer contributions, but investment earnings and distributions are exempt from tax. For example, Roth IRAs take this form.

Tax contributions, tax fund income, and exempt benefits (TTE). The TTE regime is basically the way an income tax works for an individual who saves a portion of her after-tax earnings in a taxable savings account or similar investment. Contributions and earnings are taxed, but distributions are exempt.

Exempt contributions, tax fund income, and tax benefits (ETT). The ETT regime is also an income tax approach. Under the ETT regime, contributions would be exempt, but fund income and distributions would be taxed.

Looking simply at changes in annual tax liability is not a very helpful way of measuring the tax benefits from retirement savings because it can make economically equivalent tax breaks appear very different.[59] For example, traditional IRAs provide an up-front deduction and tax-free earnings during the accumulation phase, but withdrawals are taxable. On the other hand, Roth IRAs provide no up-front deduction, but earnings and withdrawals are tax-free. Unfortunately, even though the expected present value of lifetime taxes paid on these two types of accounts is equivalent (for an equal after-tax contribution for taxpayers whose tax rates do not change), the standard approach for estimating tax expenditures approach would show a much larger tax expenditure for the traditional IRA than the Roth IRA.

Our methodology for estimating the tax benefits associated with retirement savings provisions also utilizes the present-value method. Following earlier Tax Policy Center work,[60] we define the benefit received by a tax filing unit in a given year as the present value of the tax benefits associated with their own contributions in that year to IRAs plus their own and their employer's contributions in that year to defined contribution pensions. Thus, a taxpayer with a positive balance in a 401(k) in 2006 but no employer or employee contributions in 2004 would be attributed no benefit from the 401(k) in 2006. The benefit from the 401(k) balances would be attributed to the years when contributions were made.

To undertake these calculations, we assume that the taxpayer's marginal tax rate does not change over time, and that amounts contributed will be left in the tax-free account until age 65, when they will be withdrawn in equal installments over the remaining life expectancy (17 years for men and 20 years for women).

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[59] This explanation follows Burman et al., "Distributional Effects of Defined Contribution Plans and Individual Retirement Accounts," 6-8.

[60] Ibid., 7-8.

We measure the value of tax subsidies in terms of the discounted present value of tax savings compared with an equivalent contribution made to a taxable account. For example, for a $2,000 contribution made to a traditional IRA by a taxpayer in the 25-percent tax bracket, the actual net-of-tax cost of the contribution is $1,500 ($2,000 minus the $500 in tax savings). Assuming a 6 percent rate of return (and discount rate) on both accounts, that the tax bracket does not change, and that the taxpayer holds the account for 20 years and then withdraws it in equal installments over the next 10, he or she would pay taxes over a lifetime equal to $435.74 in present value. Put differently, the IRA would finance an after-tax benefit that is worth $435.74 more in present value than a taxable account (that is, one where the returns are taxable at the 25 percent tax rate for this example) financed with the same initial after-tax investment. Thus, in this case, the tax subsidy would be worth about 22 percent of the initial contribution.

Appendix C. A Lifetime Social Security Benefits Calculator: Assumptions and Methods

C. Eugene Steuerle, Jon M. Bakija and Adam Carasso of the Urban Institute designed a lifetime Social Security benefit and tax calculator.[61] The calculator estimates the lifetime value of Social Security benefits and compares them against the lifetime value of taxes for this program, as follows:

Our approach calculates the *annuity value* (also known as the "actuarial present value") of all Social Security contributions made by a worker plus his or her employer over a lifetime, given certain assumptions about wage level, family type, probability of death, and year of birth. The employer's portion of the payroll tax is included here, since they are made on a worker's behalf. These contributions are then compared with the full annuity value of the Social Security benefits that a worker and his or her dependents or survivors may receive over a lifetime. If the system were to meet the "individual equity" standard perfectly, these two amounts would be identical: an "actuarially fair" annuity would have been purchased through one's contributions. To the extent that the system is progressive on a lifetime basis—and the system was designed in its benefit formula to provide higher rates of return for those with lower earnings—one would expect the value of benefits to exceed that of contributions for low-wage workers and to fall short of contributions for higher-wage workers.

We assume workers start at age 22 and work full-time every year until retiring on their 65th birthday. We further assume that both spouses in a couple are the same age and that, if they have had any children, they are fully grown by the time their parents retire and therefore not counted in the benefit stream. As the statute does, we further define couples as having been married a minimum of 10 years. The calculator uses the Social Security Trustees April 2005 intermediate economic and demographic assumptions for all of its long-term projections.

This annuity calculation adjusts all possible payments for the effects of inflation, interest, and probability of occurrence. We compensate for inflation by converting all amounts into their real value in constant 2005 dollars, using the consumer price index. Next, we account for interest. While workers' payroll taxes paid into Social Security and Medicare do not actually accrue any interest for workers, of course, we are providing a money's worth analysis that effectively asks "What if workers could have instead invested these payroll taxes every year?" Thus, all payroll tax payments plus

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[61] A web version of the calculator was featured on USA TODAY's website around November 2004. See C. Eugene Steuerle and Adam Carasso, "The USA TODAY Lifetime Social Security and Medicare Benefits Calculator: Assumptions and Methods," Urban Institute, 2004.

accrued interest are summed to age 65. Likewise, all benefit payments after age 65 are converted to the amount that would have to be invested at age 65 at the 3 percent real rate to yield the benefit stream realized. Both taxes and benefits, converted to their equivalent present value at age 65, can be properly compared. Our analysis calculates present values at the same age for every cohort, so that comparisons may be made among different generations. We use a real (after-inflation) discount rate of 3 percent for all past and future years, which is consistent with the real rate of return we assume on individual accounts (discussed below) and which also seems reasonable when compared with average real interest rates over time. (Social Security itself is an extremely safe investment uniquely resistant to economic fluctuations and inflation and receives favorable tax treatment.

Finally, an annuity calculation must adjust values according to their probability of occurrence, which in this case depends on the likelihood of survival. This calculation examines the actuarial present value of lifetime benefits and taxes assuming survival to age 65. The tax number becomes the total value of lifetime Social Security and Medicare tax contributions, plus interest, for someone in this group who exhibits a particular pattern of lifetime earnings. The benefit number is determined by multiplying the present value of each possible benefit payment by the probability that someone will be alive to receive that payment, given that he or she has already survived to age 65. For example, a woman who was alive at age 65 in 1970 had about an 80 percent change of surviving to age 75, so the value of a benefit at age 75 is multiplied by 0.8. Survivors benefits are similarly weighted according to probability of occurrence. All possible benefits payment through age 119 are adjusted in this manner and then summed together. The procedure expresses the value of Social Security benefits in terms of a "lump sum" of money that someone would have to pay to purchase a similar annuity from a private insurance company at age 65. Calculations of this sort are very useful for examining the obligations that Social Security incurs and its responsiveness to the needs of those who do survive to retirement.

Our model also performs the elaborate calculations necessary to determine the benefit that would be paid to a worker's survivors if the worker died in any year after age 65, and weights each possible benefit stream according to the probability of occurrence. Thus, our calculations include the full actuarial value of Social Security benefits.

Survival probabilities for each sex and cohort, based on mortality tables published by the Office of the Actuary at the Social Security Administration, take into account the longer life expectancies of women relative to men, as well as improvements in life expectancy for each new generation. Since women have higher survival probabilities at each age relative to men, women workers will pay higher expected taxes

than men and receive larger expected benefits than men. But the larger benefits more than make up for the higher tax payments, so women can expect higher returns from Social Security than men in all generations.

Lifetime individual account contributions, total balances, and paid benefits are computed in the same overall manner: we find the actuarial present value at age 65, adjusting for mortality and inflation and discounting both contributions and benefits by a 3 percent real rate. Similarly, individual account balances grow at a 3 percent annual real rate, which is a conservative assumption. Workers' accumulated individual account balances are assessed a one-time 0.3 percent annuity conversion fee at age 65. Benefit payments to couples assume the widow(er) receives two-thirds of the worker's total benefit.