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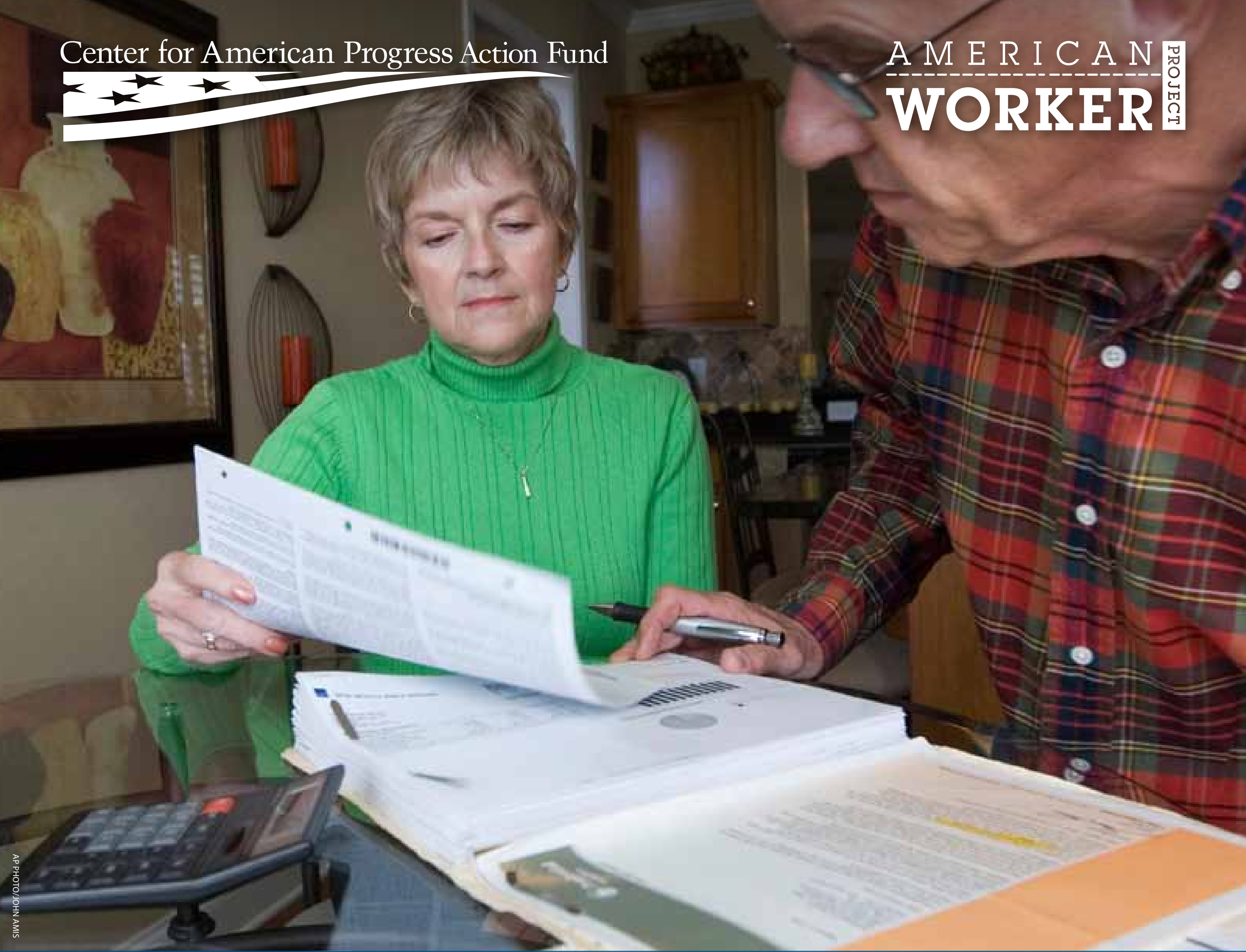

The Promise and Peril of a Model 401(k) Plan

Measuring the Effectiveness of Retirement Savings Plans Offered by Private Companies and the Federal Government

By Rowland Davis, Nayla Kazzi, and David Madland April 2010

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Introduction and summary

Boosting private retirement savings, especially among the half of all U.S. workers who are not enrolled in any employer-based retirement savings plan, is an exceedingly important public policy goal. Social Security, which was always designed to be a supplemental retirement savings program, simply cannot provide the levels of savings required by Americans retiring at 65 years of age and living for another 18 years on average. But today's existing employer-based savings plans are not structured well to ensure adequate retirement savings for most Americans who do boast access to these plans.

Elected officials and retirement savings experts alike recommend a number of reforms to give workers greater access to existing private financial products through their workplace, such as 401(k) savings plans and Individual Retirement Accounts. 401(k)s are the most common kind of defined-contribution plan, a type of retirement plan where retirement income is dependent upon how much money a worker accumulates in the account—based on among other things, contributions from the worker and from the employer (if any), the performance of the account's investments, and plan fees. IRAs operate in a similar fashion, though they are often set up by individuals rather than an employer. These defined-contribution plans are increasingly taking the place of traditional defined-benefit plans, which are pension plans where the amount of benefit a person receives is ordinarily based only on salary and years of service.

When 401(k) plans were created under a provision in the Revenue Act of 1978,[1] they were intended to provide workers with a means of supplementing retirement income from traditional defined-benefit pension plans, the most common form of pension plans at the time.[2] In defined-benefit plans, employers assume the investment and other risks associated with managing retirement accounts, but in defined-contribution plans like 401(k)s, risks are borne entirely by the worker. Since then, however, 401(k)s have become the primary employment-based retirement savings vehicle for many Americans. Many employers over the past three decades first offered 401(k)s as Congress intended them, as supplements to traditional pension plans, but then phased out these traditional plans in favor of 401(k)s. In the past decade, some employers began freezing their contributions to their employees' 401(k) plans, leaving workers truly on their own to save for retirement.

401(k)s have worked very well for some people, but they have proven inadequate for most Americans for two primary reasons. First, nearly half of Americans do not have access to a retirement plan at work. Some policymakers hoped that 401(k) plans would increase the number of workers covered by a retirement plan. Yet, as the number of employers offering their workers a defined-benefit pension plan has fallen dramatically in recent years, the number of employers offering defined-contribution plans has increased only enough to keep overall participation rates even. As a result, the share of Americans saving in an employer-based retirement plan has held steady over the past three decades at around half.

Second, most people who have 401(k)s don't accumulate enough retirement savings in their accounts. Experts think that in order to have a secure retirement and maintain their standard of living, retirees need to be able to depend on an annual income that is about 75 percent to 80 percent of their pre-retirement salary. Social Security replaces slightly less than 40 percent of the typical worker's income, meaning that retirees need their 401(k)s, pensions and other private savings to make up the difference.[3]

Yet most people are not accumulating anywhere near enough money in their 401(k)s to produce a stream of income equal to 35 percent of their salary. For people nearing retirement age, the median 401(k) account balance—meaning that half are larger and half are smaller—is less than $80,000.[4] Such an amount would provide the typical 65-year-old a monthly payment of around $500.[5] And these figures are based on account balances before the Great Recession decimated defined-contribution plan balances, wiping out an inflation-adjusted $2.8 trillion dollars in accumulated wealth between September 2007 and December 2008.[6]

While there are numerous policy proposals to address these issues, this report is most relevant for two categories of recommendations.[7] One set of proposals attempts to promote savings for those who don't have a retirement plan at work through expanded use of existing private retirement plans, either 401(k)s or IRAs. For example, the Aspen Institute's "America's IRA" would provide a government match for low- and moderate-income Americans who do not have access to retirement plans where they work if they contribute to a privately run retirement account.[8] Similarly, Gene Sperling, formerly a Senior Fellow at the Center for American Progress and now an official at the Department of the Treasury, has advocated for a Universal 401(k) with progressive matches and tax benefits, available to all Americans.[9]

A second set of proposals similarly attempts to promote savings for those who don't have a retirement plan at work, but directs savings into a defined-contribution plan similar to the Thrift Savings Plan, which is the defined-contribution plan for federal employees. The TSP is a 25-year-old plan that is one leg of a three-legged support system for federal employees, termed the Federal Employee Retirement System, which includes, of course, Social Security but also a defined-benefit pension plan. Proponents for this type of nationwide defined-contribution TSP include Michael Calabrese of the New America Foundation and Dean Baker of the Center for Economic and Policy Research.[10]

Though not all details have been released, the Automatic IRA proposal included in President Obama's budget appears to direct workers without retirement plans into private retirement plans, and thus belongs in the first category. However, the proposal could be adapted to fit in the second category.

The likely impact of these two different types of reforms—expanded private-sector use of 401(k)s and IRAs or alternatively a TSP-like retirement savings plan available to all Americans—is not adequately understood. This report helps fill this gap by analyzing the likelihood that workers would have a secure retirement income under both types of proposals. The report develops a model of the likely outcome of a worker saving in each type of plan,[11] highlighting the impact of certain advantages of the TSP, such as its lower financial management fees, more sensible investment options, and higher employer contributions than the typical private sector 401(k). Our model shows that:

- A typical worker is nearly two times more likely to have sufficient retirement income—an income that is 75 percent of pre-retirement levels—making identical contribution and investment decisions in the Thrift Savings Plan compared to a standard 401(k) plan because of the TSP's much lower fees and slightly higher employer contributions.

- The TSP's superiority over the typical 401(k) plan is likely to be even greater because the TSP also appears to encourage workers to engage in savings behaviors that promote retirement security, such as participating at higher rates and contributing a greater percentage of their salary toward retirement than most 401(k) plan participants.

- All told, accounting for the impact of fees and employer contributions as well as making reasonable assumptions about employee contributions and participation, a worker saving through the TSP is more than four times more likely to have sufficient retirement income compared to one saving through a standard 401(k) plan.

Yet despite the clear advantages of being able to save through the TSP, a worker doing so would still face the substantial risk of having an inadequate income in retirement if this retirement savings plan were offered to all workers. Federal employees today are generally on track to a secure retirement because they also have a supplemental defined-benefit pension plan, but few policymakers today are considering adding a defined-benefit plan to the retirement savings reforms described in this report.

That's why the second set of findings contained in this report is so alarming. Specifically, our model finds that:

- A middle-income worker earning around $30,000 a year at age 30 and making median-level annual contributions of about $2,400 (or 8 percent of pay) alongside his or her employer in a TSP has a roughly one in five chance of having inadequate income in retirement to maintain his preretirement standard of living, though the shortfall is likely to be relatively modest.

- But if a worker were able to contribute to the TSP but not receive any employer contributions—as proposed by many retirement savings plan reformers—then that worker would very likely face a shortfall in retirement. Even making the generous assumption that worker contributions in the TSP would remain the same even without an employer match, a middle-income worker making the current median-level contributions in the TSP would have only an 18 percent chance of having a secure retirement. Further, this worker would have nearly a one in five chance of facing a severe shortfall, defined as a retirement income of less than 60 percent of preretirement levels.

- Workers who contribute less than the median worker detailed above—and half of all workers today that contribute to a 401(k) plan do contribute less—have an even higher likelihood of facing an insecure retirement, with a retirement income well below 60 percent of preretirement income.

The results of our study lead us to three primary policy recommendations:

- All workers should be able to save through a national Thrift Savings Plan.

- Existing 401(k) and IRA plans require fundamental reforms to boost the level of retirement savings.

- Social Security needs to be strengthened to provide a baseline retirement savings threshold.

All workers should have access to save in the TSP, which would significantly improve retirement security compared to both the status quo and reforms that would place workers in private retirement accounts. What's more, expanding access to the TSP could be politically feasible in the relatively near term because the TSP is highly regarded by both conservatives and progressives, suggesting the potential for bipartisan appeal.

Donald Luskin, editor and columnist for the conservative National Review Online, calls the Thrift Savings Plan "a model for efficiency,"[12] and David C. John, senior research fellow at the conservative think tank the Heritage Foundation says it is "one of the most successful retirement investment vehicles ever created."[13] The TSP is also the basis for several progressive proposals for a universal retirement plan, including CAP's proposed universal 401(k) plan as well as a proposal developed by the Conversation on Coverage, a collaboration of business, labor, the financial industry, and academia.[14]

But a national TSP doesn't immediately address the longer-term and perhaps more fundamental reforms required in our nation's existing 401(k) system—reforms that may be needed to ensure Americans are able to enjoy a secure retirement. Among those reforms that should be considered, and which could be adapted to fit on top of the TSP model include:

- Setting higher default contribution levels
- Requiring contributions from employers and employees
- Encouraging retirees to annuitize assets into a secure stream of income that cannot be outlived
- Making the tax benefits for retirement savings more progressive.

Finally, Social Security needs to be strengthened and modernized so that it can continue providing all Americans with a baseline of retirement security that these reforms can build upon. Together, these three sets of recommendations would put all U.S. workers on the path toward a secure financial retirement.

This report helps shed light on the likely impact of reforms to existing 401(k) and IRA or alternatively to a national TSP plan and indicates that simply increasing access to retirement plans is not enough. Plan design matters greatly for retirement security and the TSP is considerably better at helping workers achieve a secure retirement than most private sector 401(k)s or IRAs.

The report also significantly improves our understanding of the existing TSP. Despite the praise that the TSP often receives, few have looked closely at how much retirement security would improve if all workers could save in a similar plan.[15] In the pages that follow we will detail the results of our study to demonstrate why our proposed reforms are so important to the more than 100 million working Americans today who need to save for their retirement and for the next generations who will need to save even more due to rising life expectancies in the 21st century. More than 37 million new workers are expected to enter the workforce by 2016 as more of the Millennial Generation—the largest generation ever—joins the workforce. [16] How they save for their retirement will be critical to long-term economic health and well being of our nation.

Comparing 401(k)s to the Thrift Savings Plan

Based on the model we developed to compare private-sector 401(k) retirement savings plans to federal employees' Thrift Savings Plan (see sidebox) we describe TSP plan features and participant behaviors, such as fees and contribution levels, compare them to the typical 401(k) plan, and estimate the impact these differences make on retirement security. We do not show the effect of every difference between the two plans, but rather highlight some of the most important ones.

Model description

To understand the likely impact of the two types of retirement policy reforms examined in this paper—private-sector 401(k) retirement savings plans and federal employees' Thrift Savings Plans—the authors of this report developed a model to examine the likelihood that an individual saving in the TSP and a typical 401(k) secures sufficient retirement income to maintain their preretirement standard of living.

The retirement income provided by defined-contribution plans is affected by plan features and participant behavior, but also by a number of other factors, among them investment returns, inflation, and wage growth whose values cannot be predicted with certainty. To reflect this uncertainty, our model uses so-called Monte Carlo simulations to create a range of scenarios for the input variables and then calculates the range of possible outcomes for account balances and the resulting level of retirement income. The simulations require that each input variable, such as investment returns, be assigned a probability distribution—defined primarily by a mean expected value and a standard deviation, or volatility—to reflect the uncertainty of the outcome.

Our model includes income from Social Security benefits, but does not include additional private savings, since such savings are negligible for most workers with middle to lower incomes. Unless otherwise specified, we assume a 30-year-old worker earning the median income—currently $30,000 per year—with typical career wage gains who retires at age 65 after contributing to a defined-contribution plan for 35 straight years.[17] We assume total annual contributions equal to 13 percent of income—the median TSP participant's contribution—8 percent of pay—plus the TSP employer contribution—1 percent of pay guaranteed contribution, plus 4 percent of pay in matching contributions. We also assume all assets are invested in a lifecycle fund, a model investment portfolio that adjusts the proportion of stocks and bonds held according to risks appropriate to the investor's age and expected retirement date.

Finally, we assume that all assets are converted into an annuity upon retirement. Annuities are a financial contract that provides payments for a person's lifetime. This enables us to present model results as an income-replacement ratio, or retirement income as a percentage of a worker's total pay immediately before retirement.[18] Replacement ratios are commonly used by retirement analysts and present a more easily interpretable picture of retirement security. For each manipulation, we record the likelihood that total retirement income will be above the target level of 75 percent of the worker's final pay.

Data about TSP participants[19] is based on a 2008 participant survey conducted by the consulting firm of Watson Wyatt Worldwide,[20] actual TSP account information from 2007 that has never been previously analyzed,[21] and a 2005 study of actual participant behavior conducted by the board overseeing the TSP.[22]

Similarly, data on 401(k)s includes actual account information and participant behaviors from government and private surveys. These data sources are the best available information about TSP and 401(k) participants, though they are limited and do not allow every type of comparison that policymakers would find valuable. Better data should be made available to researchers, so the findings in this and other reports could be further refined. Additional details on the model are provided in the appendix.

We find that not only are the features of the TSP, such as its lower fees, better than most 401(k) plans, but TSP participants tend to engage in behaviors such as participating at higher rates and making greater contributions which lead to greater retirement security. While the reasons for these behavioral differences are due in some part to differences between the type of people working for the federal government and the private sector, the research presented below also suggests that the features of the TSP help people make decisions that contribute to their retirement security, such deciding to make retirement contributions and contributing at higher levels.[23]

Comparison of Thrift Savings Plan and 401(k) plan features and participant behaviors

	Why it matters	Thrift Savings Plan	401(k) plan
Plan oversight	Plan administrators determine features like fees, employer matches, and investment options, which affect account balances and participant savings behavior.	The Federal Retirement Thrift Investment Board manages the TSP solely in the interest of its participants and their beneficiaries.[24] A TSP advisory board includes worker representatives.[25]	401(k)s features are chosen solely by the employer and the private plan provider. Worker representatives are not usually included in plan management decisions. Though plans are legally required to be managed in the interests of plan participants, the law gives relatively wide room to employers and plan providers to set fees, investment options, and other plan features.[26]
Participation	Participation in a retirement plan is the first critical to step to ensuring that a worker has a chance at achieving a secure retirement.	The TSP has a 90 percent take-up rate, achieved without automatic enrollment.[27]	401(k)s have an average take-up rate of 70 percent to 80 percent.[28] In plans with automatic enrollment, take up rates can approach 90 percent, while in plans without automatic enrollment, the take-up rate is generally between 40 and 60 percent.[29]
Employer contributions	Employer contributions to workers' retirement plans are a critical supplement to employee savings. They provide workers with an incentive to contribute to their own accounts, and boost the potential of workers' investments.	Median employer contribution in the TSP equals 5.0 percent of pay,[30] which include a 1 percent automatic contribution[31] and matching contributions up to 4 percent—dollar for dollar match on the first 3 percent of pay, plus 50 cents to the dollar match on the next 2 percent of pay.[32]	Median employer contribution in 401(k)s equal 3.8 percent of pay.[33] The most common 401(k) match is 3 percent—50 cents to the dollar on the first 6 percent of pay [34]
Employee Contributions	Income adequacy in retirement depends largely on whether or not a worker makes continuous, generous contributions to his or her retirement account throughout his or her working life.	Median employee contributions in the TSP equals 8 percent of pay.[35]	Median employee contributions in 401(k)s equal 6.0 percent of pay.[36]
Fees	Account fees eat away at workers' retirement savings by reducing the amount of money that can be invested.	TSP fee is 0.0185 percent of assets.[37]	Typical 401(k)s fees are about 1 percent of assets.[38]
Investment options	Investment options can dramatically influence an investor's behavior. Too many choices often times confuse and mislead workers; while poor choices lead them to make unsound investment decisions.	The TSP has 10 total investment options: five core funds and five lifecycle funds.[39]	401(k)s have 15-20 investment options on average.[40] One in four 401(k)s have more than 20 options.[41]
Annuities	Annuities can promote retirement security by giving workers the opportunity to convert their retirement assets into a predictable stream of income.[42] This can help minimize longevity risk, inflation risk, and rate of return risk, all of which are of concern to retirees. Annuities have also been shown to improve individual welfare, minimizing stress and uncertainty about retirement security.[43]	An option to purchase an annuity is given to all TSP participants with at least $3,500 in their accounts.[44]	One in five 401(k) plans offer an annuity option.[45]

Thrift Savings Plan and 401(k)s: Oversight

The TSP is governed by the Federal Retirement Thrift Investment Board, made up of an executive director and four board members, who are required by law to manage the TSP prudently and solely in the interest of the participants and their beneficiaries.[46] FRTIB contracts with various private-sector companies to provide record keeping and investment services. The board is advised on matters relating to investment policies and other administrative issues by the Employee Thrift Advisory Council, composed of 15 members including worker representatives.[47]

In contrast, in most 401(k)s, plan features are chosen by the employer and plan provider.[48] Employers and plan providers do not always choose the best plan features for participants. While the law requires that 401(k) plans be managed for the benefit of participants, the law is generally interpreted as giving companies and plan providers relatively wide room to set fees, investment options, and other plan features.[49]

The difference in governance between the TSP and most 401(k) plans probably contributes to many of the differences between the two plans, such as fees, that directly influence retirement security. For example, while plan providers in the private sector are required by law to ensure that the fees they charge participants are reasonable, "the concern is that employers do not have a direct vested interest in selecting the lowest available fees" since they, most likely, are not paying these fees directly. Rather, they are passing costs on to plan participants.[50] This, in addition to the fact that employers may not be aware of the full costs associated with the investment options they select, and that the standard of "reasonable fees" is subject to interpretation,[51] all raise concern that 401(k) participants are forfeiting more of their earnings than they need to in order to build a retirement nest egg.

In fact, a study by the Organisation for Economic Co-operation and Development, an international organization comprised of the world's developed nations, found that "conflicting interests" between participants and plan providers in U.S. savings plans "are at the heart of many of the complaints often heard about defined-contribution plans, from high fees to unsuitable investments and poor performance".[52] Among the OECD's proposals to address what they call the "governance vacuum" in the administration of defined-contribution plans is the establishment of an independent management committee to monitor investments, oversee private plan providers, and advise employers on their choices of defaults and investment options. The OECD also proposes the creation of a legal environment that would induce employers to monitor plans more closely and play a more active role in guiding plan members.[53]

Defined-contribution plan administration in several European countries closely resembles the administration of the TSP. And according to a recent Government Accountability Office report, European-style retirement plans that resemble the TSP better serve workers by enhancing plan portability and minimizing their financial exposure to contractions in their own employers' businesses.[54] In the Netherlands, Switzerland, and the United Kingdom, defined-contribution plans are managed by independent entities, usually nonprofit organizations with no legal or financial connection to the sponsoring employers. Most have governing boards comprised of both employer and employee representatives who participate in administrative decisions. This is in sharp contrast to most defined-contribution plans in the United States, which are governed by the sponsoring employers and do not allow workers any input in decisions affecting plan features, such as asset management.[55]

While employers and plan providers can theoretically design and administer 401(k) plans in the best interest of workers and retirees, an independent, nonprofit agency or organization being advised by management and workers alike, with the sole mission to advance the interests of participants and their beneficiaries would seem more likely to do so.

Fees

The Thrift Savings Plan has significantly lower fees than the typical 401(k) plan, which means that TSP participants keep a greater share of their investment returns than employees in the private sector.[56] For 2008, the TSP's average annual fees were 0.018 percent or 0.019 percent of assets, depending on the investment option,[57] while the typical fees for 401(k) plans average about 1.0 percent of assets. Some 401(k) plans have fees as low as 0.5 percent of assets or as high as 2.0 percent, but most are about 1.0 percent. Investors in IRAs typically pay even higher fees.[58] According to Lipper Inc., the average fund expenses were 1.19% as of December 31, 2008.

The TSP's lower fees are largely due to the sheer size of the plan, as measured by the number of its participants. The TSP is the largest defined-contribution plan in the country, serving close to 3.9 million members at the end of 2008.[59] Because many of the costs to set up and administer a defined-contribution plan are fixed, the larger the plan, the more it benefits from economies of scale, dispersing costs among its members.

Recent studies confirm that plan size is in fact the strongest indicator of plan fees;[60] however, 90 percent of 401(k) plans have fewer than 100 participants and two-thirds have less than $1 million in plan assets.[61]

The relatively large account balances of TSP participants, compared to 401(k) participants, also helps keep fees, as a percentage of assets, low. And, the TSP's oversight, its investment options, and its centralized processes are several additional factors contributing to the plan's lower costs. The TSP is overseen by the federal government, which is not seeking to profit from its administration. The TSP's investment options are limited and consist of cost-efficient "passively managed" index funds. And participant services in the TSP are fewer than in many private-sector plans and are all centrally coordinated.[62]

To be sure, some of the TSP's features cannot feasibly be replicated in the private sector. Federal agencies, for example, subsidize some of the plan's administrative work, and the U.S. Treasury performs certain services without charge.[63] Also, there are costs in the TSP which are not reflected in the plan's expense ratio. One case in point: nonvested agency contributions and participant loan-processing fees are redirected toward funding record-keeping services.[64] Yet these features unique to the TSP explain only a portion of the fee discrepancies between it and 401(k)s. Private-sector plan providers can and should reevaluate those features that are unnecessarily driving up costs and *can* be restructured.

The impact of fees on wealth accumulation is considerable.[65] With higher account fees, workers must dedicate a greater share of their savings to servicing their accounts, leaving less money available for investment growth. Over time, even relatively small differences in fees can make a big difference.

As we demonstrate in Figure 1, the lower fees in the TSP compared to those in most 401(k) plans can significantly increase retirement security. The table depicts the likelihood that a median-income worker will have sufficient income in retirement—above the 75 percent replacement ratio target—under several different fee scenarios, ranging from the TSP's low fees of .0185 percent, up to 2 percent. All other plan features are those of the TSP. Behaviors, such as contribution rates, investment options and retirement age are as provided in the model description on page 6.

Figure 1 shows that the typical worker is more than 2.5 times as likely to retire with sufficient income when participating in a plan with low fees like the TSP compared to a plan where fees are 2 percent of assets. In 79 percent of our simulations, the typical worker was able to retire in the TSP with an income above 75 percent of their preretirement salary. This level of retirement security was reached 69 percent of the time when fees were 0.5 percent, 57 percent of the time when fees were 1 percent, 45 percent of the time when fees were 1.5 percent, and just 29 percent of the time when fees were 2 percent.

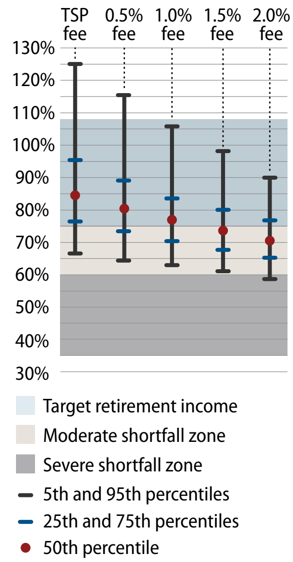
Another way of thinking about the impact of fees is to consider how much more money a worker would need to save to make up for higher fees. If a typical worker with account fees of 1 percent of assets increases her contribution rate to 11 percent from 8 percent, and employer contributions remain constant, that worker will be as likely, under our assumptions, as a worker in the TSP to achieve a secure retirement. A worker facing account fees of 2 percent would need to increase his contribution rate to 13.5 percent from 8 percent to experience similar odds.

Because plan fees are one of more easily controlled design features in defined-contribution plans and can significantly affect retirement security, any defined-contribution retirement savings plan reforms should include very low fees.

FIGURE 1

The TSP's low fees significantly boost retirement security

Retirement income as a percent of final salary



Source: Authors' calculations for a typical worker based on a Monte Carlo simulation model described in the text and Appendix of the report.

Investment options

Making the right or wrong investment choices is another area that can have significant impact on retirement security. While individuals can make good investment decisions in most any type of plan, the likelihood that they will do so is higher in plans like the TSP, which have limited investment options and include lifecycle funds that make it easy for individuals to tailor their investment choices according to risks appropriate to their ages and expected retirement dates.

The TSP provides fewer investment options than most 401(k)s, a difference that can increase account balances by minimizing participant confusion, promoting more sensible investment choices, and encouraging greater financial awareness.[66] Studies show that plan participants are often overwhelmed by too many choices, leading them to make a variety of potentially poor decisions, among them:

- Making them delay or avoid participation, because they are reluctant to make elections that they find confusing
- Investing in risky assets[67]
- Failing to properly diversify[68]

In fact, "by offering more and more options, a point is reached at which paralysis rather than 'freedom' is the result," says Barry Schwartz, professor of social theory and social action at Swarthmore College and author of *The Paradox of Choice*.[69] This is why lifecycle funds automatically adjust asset allocations as workers age to ensure proper diversification and provide an easy way for workers to make responsible investment decisions.[70]

There are ten investment options in the Thrift Savings Plan: five core investment funds that allow individuals to achieve a diversified portfolio and five lifecycle funds, each with a different timeframe, that offer an age-appropriate combination of the core funds. The core funds, which are combined in different proportions to create the lifecycle funds, are comprised of a:

- Government securities—U.S. Treasury Bonds—investment (G) fund
- Fixed income index investment (F) fund
- Common stock index investment (C) fund
- Small capitalization stock index investment (S) fund
- International stock index investment (I) fund[71]

401(k) plans on average have between 15 and 20 investment options,[72] or nearly twice as many as the Thrift Savings Plan. Roughly one-quarter of 401(k) participants have more than 20 options.[73]

Though the TSP offers lifecycle funds, workers are automatically defaulted into the G fund unless they make an affirmative selection otherwise. The TSP's governing board, however, is considering whether to change the default to the lifecycle fund. In the private sector, about two-thirds of defined-contribution plans offer lifecycle funds,[74] and roughly 6 in 10 use lifecycle funds as their default investment option.[75]

The difference in retirement security for one type of investment choice—a typical person who invests 100 percent of their assets in a lifecycle fund compared to Treasury bonds—can be seen in Figure 2. All other plan features are those of the TSP and behaviors are as provided in the model description above.

As is evident, only one out of every three workers that invests all contributions in Treasury bonds will achieve an income equal to 75 percent of pre-retirement income. Under most scenarios such a person will have a moderate shortfall and make do with around 65 percent to 70 percent of preretirement income.

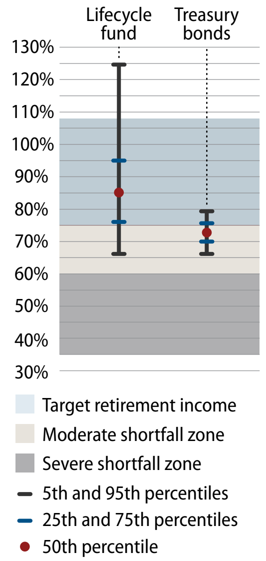
In contrast, a typical worker in the TSP that invests in a lifecycle fund is relatively likely to achieve retirement security. Nearly 80 percent of the time they will be able to retire with retirement income sufficient to meet the 75 percent replacement ratio target.

As a result, defined-contribution plan reforms should ensure these plans default workers into lifecycle funds and maintain a limited selection of funds that allow for proper diversification. But these reforms, while important, may not be sufficient. Even properly diversified investments are subject to devastating losses in a market crash such as in 1929 and 2008. As a result, ways to minimize investment risks and maximize gains need to be explored further, but those considerations are beyond the scope of this paper.

FIGURE 2

Investment decisions can make or break a secure retirement

Retirement income as a percent of final salary



Source: Authors' calculations for a typical worker based on a Monte Carlo simulation model described in the text and Appendix of the report.

Participation rates

The TSP boasts much higher levels of participation than the typical 401(k) plan. The take-up rate in the Federal Employees Retirement System, or the share of eligible federal employees making voluntary contributions to their TSP, is 90 percent.[76] In contrast, the take-up rate for private-sector employees in 401(k) plans offered by their employers—defined as the share of workers with access to a plan that agree to participate by electing to defer at least part of their salary—is usually somewhere between 70 percent and 80 percent.[77]

While it may be true that the type of person drawn to a job with the government, the nature of the work, and the salary all affect the participation rate in the TSP, evidence suggests that participation is high is not just because of these factors but also because of the design of the TSP. For instance, TSP take-up rates are also higher for groups that might be less likely to participate, such as younger, newly employed, and lower income workers. In the TSP, employees under 30 had an 83.0 percent take up rate in 2007, while in the private sector workers under 35 had a take-up rate of 69.7 percent, roughly 13 percentage points lower than those participating in the Federal Employee Retirement System.[78]

Similarly, the TSP take-up rate for newly hired workers—those with zero to two years on the job—was 76.0 percent in 2007, compared to a take-up rate closer to 52 percent for private-sector workers with zero to three years on the job. And federal employees with job tenure of 10 years or less in 2007 had a take-up rate of 83.8 percent, compared to a take-up rate of 60.5 percent among 401(k) participants with zero to nine years on the job.[79]

Furthermore, the lowest-paid quintile of federal employees had a TSP take-up rate of 78.8 percent in 2005, while the second-lowest-paid quintile participated in the TSP at a rate closer to 84 percent. In contrast, the lowest earners in the private sector had a participation rate of roughly 65 percent, more than 12 percentage points lower than federal employees.[80]

TSP participants have a lot of confidence in their retirement plan, due most likely to the plan's simplicity, low fees, limited investment options, and relatively generous matching contributions.[81] A survey conducted by Watson Wyatt Worldwide in 2006 and 2007 found that TSP participants are generally more satisfied with their retirement plans than private sector employees. Among the reasons they cite for their satisfaction with the TSP is the quality of the available plan services, the level of customer service and the plan's automatic and matching employer contributions, which typically equal 5 percent of a person's salary.[82] Several studies confirm that generous matching contributions can significantly boost participation rates.[83]

Effective communication between the plan provider and employees is another asset of TSP, which most likely contributes to the plan's popularity. Gary Amelio, a former director of the plan, cited the TSP's educational outreach efforts as one reason for why the TSP achieves such high rates of participation. "If the plan sponsor manages education correctly, the participants will pick up on it and act accordingly," he notes.[84] By facilitating savings and investment efforts through communication with employees, the TSP builds confidence in the plan and most likely attracts members.

In addition, employees become members of the TSP regardless of whether or not they decide to make voluntary contributions, since they are immediately eligible to receive the automatic 1 percent employer contribution once they become employed.[85] This removes any psychological barrier that may exist about "joining" something new and may perhaps encourage workers to make their own contributions since they already have an account.

Finally, the TSP makes workers eligible to contribute and matches contributions more quickly than most 401(k) plans. Federal employees are permitted to contribute immediately to the Thrift Savings Plan,[86] while nearly three-quarters of private-sector plans require employees to wait at least three months before being allowed to contribute.[87] Nearly 15 percent of companies require employees to wait one year or longer.[88] Furthermore, in the TSP, employee contributions are matched immediately,[89] while over one-third of private-sector plans require employees to wait longer than a year before receiving company contributions.[90]

While it may seem obvious that workers must contribute to defined-contribution plans in order to achieve retirement security, even relatively small gaps in participation during a worker's career can have significant effects. The difference that failing to make contributions for even a few years can make on retirement security can be seen in the chart below. The table depicts the likelihood that a median-income worker investing solely in a lifecycle fund will have sufficient income in retirement, under several different participation scenarios—starting contributions at age 30, 31, 32, 33, and 34. All other plan features are those of the TSP. Total contribution rates are set at the level of 13 percent of pay (8 percent employee contributions, plus 1 percent guaranteed employer, plus 4 percent employer match).

As can be seen in Figure 3, each year that a worker delays making contributions reduces the likelihood that they will have sufficient income in retirement. Investment earnings tend to compound over time, so every year that passes is one less year that a worker can earn interest or reap returns on their investments. A four-year delay in making contributions reduces to 56 percent the likelihood that a worker will have sufficient retirement income from 79 percent if the worker had invested over those four years. The upshot: a four-year delay reduces by nearly one-fourth the likelihood that a typical worker will achieve retirement security.

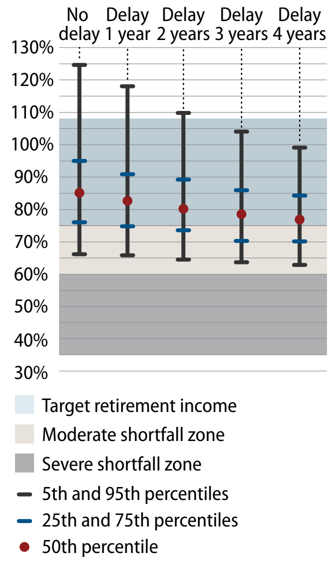
Just a two-year delay in making contributions reduces the likelihood that a worker will have sufficient retirement income to 70 percent. Delays of six years or eight years (not shown) make it even less likely that sufficient savings will be generated, with probabilities of only 43 percent and 29 percent, respectively.

To encourage the highest levels of participation, any retirement savings plans reforms should immediately permit employee contributions, provide a short (or no) waiting period for employer matches, and automatically enroll workers—a feature proven to boost participation rates and discussed in further detail on page 20.

FIGURE 3

Failing to participate for even a few years can undermine retirement security

Retirement income as a percent of final salary



Source: Authors' calculations for a typical worker based on a Monte Carlo simulation model described in the text and Appendix of the report.

Contribution rates

Annual contributions toward retirement are higher in the TSP than under most 401(k) plans, leading workers to accumulate much greater assets in the TSP. Total contributions in the TSP as a percentage of salary are high because both employer and employee contributions are greater than in most 401(k)s.

On the employer side, the TSP provides both a guaranteed, automatic contribution of one percent of an employee's salary and a relatively generous matching formula—leading to potential employer contributions of five percent of an employee's income. In the TSP, employers match up to four percent of employees' contributions, receiving dollar-for-dollar matching contributions on the first 3 percent of pay, plus 50 cents to the dollar on the next 2 percent of pay.[91]

In contrast, relatively few private employers provide an automatic contribution.[92] In addition, in the typical 401(k) employers match 50 cents to the dollar on the first 6 percent of pay contributed by the employee, generating employer contributions equal to 3 percent of pay.[93] Smaller companies are, in general, less likely to offer a matching benefit. Further, hundreds of companies have changed or suspended their 401(k) matching benefits since June 2008 due primarily to deteriorating economic conditions. Employers including Starbucks Corp., Coca-Cola Bottling Co., AARP, and J.P. Morgan Chase & Co. are among a long list of businesses that have temporarily suspended matching, though some employers have resumed their matches.[94] All told, the median for private employer contributions was 3.8 percent of earnings in 2007, while the median employer contribution for TSP participants is 5 percent.[95]

What's more, Thrift Savings Plan participants tend to contribute a higher percentage of their salary to retirement than do workers in the private sector 401(k)s. Survey results from a 2008 study conducted by Watson Wyatt Worldwide of TSP participants reveal that the reported median contribution rate of survey respondents was 8.0 percent while the reported average contribution rate was 9.2 percent.[96] In contrast, in the private sector, employee contributions are nearly 2 percentage points lower.

Mutual fund giant The Vanguard Group Inc. reported that the median contribution rate for 401(k) participants in its plans was 6.0 percent of earnings, while the average rate that year was 7.0 percent.[97] Data from the 2007 Survey of Consumer Finances produced similar results, reporting that the median contribution rate for household heads in 2007 was 6.0 percent of earnings.[98] The Watson Wyatt Worldwide survey found that even after controlling for age and pay levels, TSP participants contribute more to their retirement than their counterparts in the private sector.[99]

The effect of contribution rates on retirement security can be seen in the figure below. The table depicts the likelihood that a typical worker contributing from age 30 through age 65 and investing solely in a lifecycle fund will have sufficient income in retirement, under several different contribution scenarios:

1. Total contributions of 3 percent of pay, a common default setting in many reform proposals.

2. Total contributions of 6 percent of pay, which would reflect the median worker in a 401(k) plan that has no matching contributions.

3. Contributions that increase over time, reflecting higher savings rates over the course of a worker's career. Contributions start at a total of 3 percent of pay, increase to 5 percent at age 35, increase to 7 percent at age 40 and are at 9 percent from age 45 and after.

4. Total contributions of 9.8 percent of pay, which would reflect the median employee and employer contributions in a 401(k).

5. Total contributions of 13 percent of pay—8 percent employee, plus 5 percent employer—which reflects the median level of contributions in the TSP.

Figure 4 shows that the total median contribution in the TSP plan produces retirement security nearly 8 out of 10 times. In contrast, the total median contribution in 401(k)s leads to a secure income in retirement only 4 out of 10 times. All of the other contribution scenarios failed to produce a secure retirement in nearly every case.

These results also suggest that total contributions of 6 percent or below, which are less than half the total median contributions in the TSP, are unlikely to produce sufficient retirement income for a median worker under any scenario. As a result, policy makers should seek ways to increase total contributions to levels that are likely to lead to retirement security. This could be achieved by:

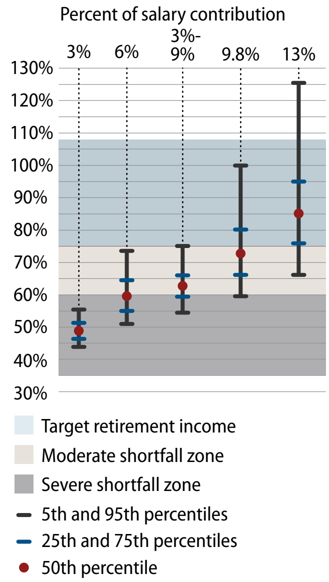
- Requiring higher default contributions
- Mandating employer contributions
- Expanding government contributions
- A combination of the above

The details of each approach are reviewed in concluding sections below beginning on page 22.

FIGURE 4

Contributions levels in most 401(k) plans are too low

Retirement income as a percent of final salary



Source: Authors' calculations for a typical worker based on a Monte Carlo simulation model described in the text and Appendix of the report.

Maintaining retirement savings

When people leave jobs, especially if they were only there for a short time, they sometimes fail to keep their 401(k) savings devoted to retirement. Similarly, sometimes people make withdrawals or take loans from their defined-contribution plans to meet current spending needs. While we do not have good data on these activities in the TSP, studies of 401(k)s indicate that they are relatively common.

Analysis from the Center for Retirement Research at Boston College found that when workers change jobs, about one-third of 401(k) participants keep their retirement assets in their former employer's plan, while two thirds take a lump-sum distribution. Of those who take a lump-sum distribution when switching jobs, 40 percent fail to roll the money over into another tax-deferred savings vehicle.[100]

Hewitt Associates found that in 2005, 45 percent of private-sector employees participating in a 401(k) plan through their employer elected to take a cash distribution upon leaving their jobs rather than keep their savings in their current employer's plan or rolling the money over into another tax-qualified retirement account.[101] A January 2009 study by the Employee Benefit Research Institute found that among those 401(k) participants who reported in 2006 ever having received a lump-sum distribution after switching jobs, 54.5 percent said they had spent at least some portion of their distribution, either on consumer items, education expenses, or paying down debt or business and home expenses.[102]

Withdrawals and even relatively small loans can significantly reduce retirement savings. Christian Weller and Virginia Graves in a 2008 report published by the Center for American Progress calculate that a $5,000 loan for a typical middle-income worker can reduce retirement saving by between 13 percent and 20 percent over a 35-year career.[103]

To see the impact of a withdrawal, consider a typical worker who starts with a company when they are 30 years old and contributes to a 401(k) plan for five years before changing jobs. If this typical worker fails to roll over the funds into a new plan (or maintain them in his previous employer's plan, if able to do so) then the likelihood is more than cut in half that he will accumulate sufficient assets to replace 75 percent of his preretirement income, as can be seen in the figure below.

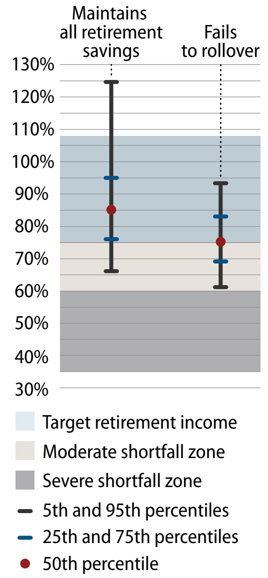
Figure 5 depicts the likelihood that a typical worker, continuously making contributions at the median TSP rate of 8 percent and investing solely in a lifecycle fund, will have sufficient income in retirement, depending on whether or not they maintain their assets in a retirement account when they change jobs. All other plan features are those of the TSP.

Because of the significant impact of leakage on retirement security, retirement savings plan reforms should encourage participants to keep their funds in them regardless of their employer. Policymakers should also consider other ways to maintain retirement savings, including limiting the uses of 401(k) assets solely to retirement.

FIGURE 5

Failing to rollover 401(k) assets undermines retirement security

Retirement income as a percent of final salary



Source: Authors' calculations for a typical worker based on a Monte Carlo simulation model described in the text and Appendix of the report.

Annuities

The ability for workers to convert their assets into a predictable stream of income in retirement—called an annuity—is generally seen as promoting retirement security.[104] When an individual retires with a lump sum of money, such as the assets in a 401(k) plan, they face a number of risks including longevity risk, the chance they may outlive their retirement savings; inflation risk, the possibility inflation will eat away at their savings; and investment risk, the chance that the rate of return on their investments will be low or even negative. Annuities can help minimize these risks by providing retirees with a guaranteed stream of income.

In addition, studies also show that having an annuity can enhance an individual's welfare.[105] Most likely this is a result of the fact that a guaranteed income stream can reduce psychological stress and uncertainty about retirement security. Also, individuals with an annuity do not need to worry about how to allocate their retirement savings over the span of their lives, since this is done through the annuity, which provides a specific amount of income monthly for life.[106]

Despite the benefits of annuities, very few workers or retirees purchase them. There are a number of explanations for this, including the complexity of annuities, the public's lack of knowledge about them, their high costs, and their limited availability in 401(k) plans.[107]

Annuities often cost about 1 percent to 2 percent of assets, but the true cost of the product is more difficult to calculate, and potentially expensive, because of, for example, changes in the rate of inflation.[108] In addition, there is always the potential, though rare, that the financial services company offering the annuities could go out of business and the backup system for this possibility isn't completely secure. Only one in five 401(k)s provide an annuity option as part of the plan. And though individuals can purchase annuities on their own, this is typically much more costly and may provide less security for the retiree.[109]

TSP participants are given the option of purchasing an annuity so long as they have $3,500 or more in their account.[110] But only a small minority of federal employees take advantage of the option. Reforming the defined-contribution retirement savings system in our country should include an annuity option and employees should be actively informed about the advantages of this feature. Policymakers however should also consider ways to make annuities less costly and more secure, as well as the default for a percentage of assets.

Combined impact of TSP features and behaviors

Individual plan features can have a significant impact on retirement security and mean the difference between a secure retirement and an insecure one, but the combined impact of several features is particularly noteworthy. When the impact of several plan features are combined with likely behavioral impacts, the difference in performance between the TSP and most private sector 401(k)s is profound.

Figure 6 illustrates the impact of both plan features and behaviors, and demonstrates how much better prepared for retirement workers with a TSP-type plan would be than those with a 401(k). First, the figure shows the combined impact of just two plan features—fees and employer contribution rates. In the 401(k), fees are assumed to be 1 percent, the most common level, and employer contributions 3.8 percent, the median level, while in the TSP plan fees are 0.00185 percent and employer contributions are 5 percent. For both, all assets are invested in a lifecycle fund and employee contributions are 8 percent of salary, the median level for the TSP.

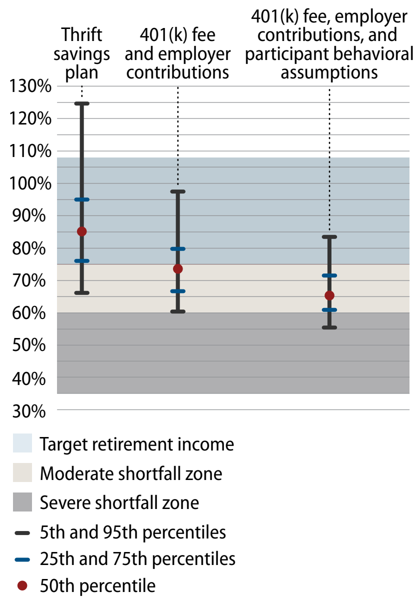
In this way, the figure compares the likely outcome of a typical worker who does the right things—regularly contributes, makes prudent investment decisions, and maintains assets in retirement savings. The only difference is whether the worker is able to save in a plan like the TSP or a typical 401(k).

As is clear, even when a worker takes strong individual initiative, retirement security depends upon the quality of the plan available to them. The typical worker who was able to save in a TSP-like plan has a 79 percent chance of having sufficient retirement income, while the same worker in a 401(k) plan only has

FIGURE 6

TSP is much more likely to promote retirement security than a typical 401(k)

Retirement income as a percent of final salary



Source: Authors' calculations for a typical worker based on a Monte Carlo simulation model described in the text and Appendix of the report.

a 44 percent chance. That means that the worker able to save in the TSP is nearly twice as likely to have a secure retirement as he would with a standard 401(k).

When we incorporate behavioral differences between TSP and 401(k) participants into our assumptions, the resulting discrepancies in income adequacy are even starker. We assume that the worker begins contributing at age 31, rather than age 30, to account for lower participation rates in 401(k) plans. We also assume employee contributions drop to 6 percent of pay down from 8 percent, to account for a lower median contribution rate in 401(k) plans relative to the TSP. Under these additional assumptions, only one in five workers achieve a secure retirement, compared to four out of five TSP participants who do.

In short, the TSP features are much better at promoting retirement security than those of the typical 401(k). Yet it is important to note that even with the ability to save in a TSP-like plan many workers will not achieve retirement security. A middle-income worker who contributes to the TSP at the median level for 35 years has a one in five chance of failing to have sufficient income in retirement. So even someone who has access to a good retirement plan and does "the right thing" may not be able to maintain his or her standard of living in old age. And half of all workers contribute at a lower rate than the median, meaning that many more people would likely fail to have sufficient income in retirement, even if they had access to the TSP.

Steps in the right direction

In recent years, several policy reforms have been aimed at incrementally addressing some of the weaknesses of defined-contribution plans highlighted in this report. The passage of the Pension Protection Act of 2006, for example, created tax and fiduciary incentives for plan providers to adopt automatic features in their defined-contribution plans. Automatic features such as auto-enrollment and auto-increases raise participation and contribution rates in 401(k) plans. Other proposed reforms that have yet to be implemented include mandating employer contributions and providing tax credits to low-income workers making contributions to their retirement.

Before this report concludes with its final recommendations, these incremental reforms should be briefly discussed. Let's begin with automatic features and then examine tax incentives and employer-mandated contributions.

Automatic features

Automatic plan design features greatly simplify participant savings and investment decisions and "help to diminish the effect of employee inertia on plan participation by enrolling employees early in their careers".[111] If designed effectively, they tend to promote higher participation rates and greater savings, both of which are critical to improving workers' chances of a secure retirement.

Automatic enrollment gives employees the opportunity to opt-out of a retirement plan once enrolled rather than requiring them to opt-in to participate. Employees are enrolled at a specified default contribution rate and into a predetermined default investment option, both of which they are free to change. One-third of 401(k) plan providers in 2007 had adopted automatic enrollment.[112] The feature has been shown to boost participation rates particularly among demographic groups least likely to enroll in a plan on their own.

In a study of the effects of 401(k) plan designs at three large companies, four experts—Jame Choi at Yale University, David Laibson and Brigetter Madrian at Harvard University, and Andrew Metrick at the National Bureau of Economic Research—found that prior to the implementation of automatic enrollment, participation rates at the three companies ranged from 26 percent to 69 percent, and depended largely on the tenure of the employee.[113] After auto-enrollment was implemented, participation rates rose above 85 percent at all three companies regardless of the tenure of the employee.

Similarly, the Vanguard Center for Retirement Research found that the participation rate of new employees hired under automatic enrollment between September 2006 and December 2006 was 86 percent, compared to a participation rate of 45 percent for employees hired under voluntary enrollment over that same time period.[114]

Younger workers and those with lower incomes tend to benefit the most from automatic enrollment since these two groups typically have lower rates of participation than others. The participation rate for workers under the age of 30 in plans without automatic enrollment was 30 percent in 2006, according to data released by Fidelity Investments in February 2009. This is compared to a participation rate of 77 percent for workers of this age group in plans with automatic enrollment—a 47 percentage point difference.[115] Nationwide Mutual Insurance Co. found that for workers earning between $20,000 and $30,000 a year, participation increased from 58 percent to 93 percent as a result of automatic enrollment.[116]

As good as these results are, it is important to note that these participation levels are very similar to those the TSP has achieved without automatic enrollment, which suggests that better plan features can help encourage most employees to sign up on their own. As directed by a June 2009 law, the TSP is in fact moving to adopt automatic enrollment, which would further improve its participation rates, encouraging those not making voluntary contributions to their TSP accounts to do so.[117]

Because auto-enrollment has proven to be so effective at raising participation, any retirement savings plan reform effort should require this feature and continue the trend towards automating savings and investment decisions.

Once automatic enrollment is adopted, plan providers face the challenge of selecting an appropriate default contribution rate for plan participants. Defaults can strongly influence participants' savings behavior, so choosing the optimal default is critical to promoting retirement security. Employees often select the default contribution since it exempts them from making an active decision about how much to save, and because many believe that the default rate is a savings target.[118] In fact, several studies have found that contribution levels actually drop when companies set default contribution rates below the median level.[119]

Default contribution levels are set at 3 percent of pay at many companies, as well as in several reform proposals, including President Obama's Automatic IRA proposal.[120] This is 3 percentage points lower than the median savings rate in 401(k) plans. In the June 2009 law signed by President Obama approving modifications to the Thrift Savings Plan, language specified a default contribution percentage between 2 percent and 5 percent of basic pay,[121] which is considerably lower than the median TSP contribution rate of 8 percent of pay.

As clear evidence of the effects of defaults on savings behavior, a recent study conducted by Fidelity investments found that when default contribution rates are set at 5 percent or 6 percent of pay, roughly 6 out of 10 employees accept the default and do not change contributions—the same share of employees that accepts a default rate of 3 percent of pay or below. The same study found that "[m]ore than 90 percent of participants accept or contribute above default deferral rates of 1 percent through 5 percent of pay, and 84 percent of participants accept or contribute above a default deferral rate of 6 percent."[122]

The implications of these results are that plan providers can and should consider higher initial defaults to enhance employee savings, since the vast majority of participants either maintain the company default or opt to increase their contributions. Any defined-contribution plan reform effort also should include such provisions.

Tax incentives and employer-mandated contributions

Another approach to boosting contribution rates is through tax incentives. The Obama administration wants to expand the existing Savers Credit, which is a tax credit for low- and moderate-income workers putting away money for retirement. Currently, eligible workers "may receive a nonrefundable credit on up to $2,000 of their compensation contributed to an employer-sponsored qualified retirement plan and IRAs."[123] The Obama Administration proposes to expand the Savers Credit to match half of families' savings up to $500 per individual each year and deposit the tax credits directly into the individual's 401(k) plan account or IRA, as well as make the credit available to low- and middle-income working families, including those who earn too little to owe income taxes.[124]

Both changes would likely strengthen the efficacy of the credit. The downside, however, is that middle- and upper-income workers will not benefit from the expansions.

Mandating employer-contributions is another potential way to increase retirement savings, and is included in several retirement proposals, including the Economic Policy Institute's Guaranteed Retirement Accounts Plan and in The Urban Institute's Super Savings Plan.[125] By guaranteeing a minimum level of contributions, a mandate could dramatically improve workers chances of achieving a secure retirement, though there are potential costs associated with such a policy.[126]

Conclusion

Even though existing 401(k) plans work well for some people, getting to a secure retirement with one is like threading the eye of a needle—doable but quite difficult. Plan design, poor decisions, and bad luck can undermine 401(k) savings. As a result, it is not surprising that most people with defined-contribution plans have not been able to accumulate sufficient retirement assets.

Reforms to improve the plan features of 401(k)s could significantly improve retirement security. If workers had access to a defined-contribution plan modeled after the TSP, then they would have much better odds of providing a secure retirement for themselves. But even a plan like the TSP can be improved. To that end, policymakers should ensure that all workers have access to a retirement plan that:

- Has the governance to advance the interests of participants and their beneficiaries
- Helps workers keep more of their savings by charging very low fees
- Promotes sound investment decisions by defaulting workers into lifecycle funds and provides a limited selection of funds that allow for proper diversification
- Encourages high levels of participation by automatically enrolling workers and immediately permitting contributions
- Supports stability and well-being in retirement by including an annuity option

Ensuring that all workers can save in a 401(k) plan with such model features is an important first step that policymakers should take right away. But they should also consider a number of additional reforms. Policymakers should also consider approaches to significantly boost contribution rates, limit withdrawals or loans from retirement plans, and make annuities less costly and the default for a certain percentage of assets.

In addition, ways to minimize investment risks, such as those experienced by near-retirees during the recent stock market crash, need to be explored. Finally, better data about the TSP and private 401(k)s should be made available to researchers so that we can better understand the impact of plan features and participant behaviors on retirement security.

Appendix: Model details

Because retirement account balances are influenced by a number of variables whose values we cannot predict with certainty, such as investment returns, inflation, wage growth, and annuity purchase rates, we use a Monte Carlo simulation method to model this uncertainty and ran 500 simulations.

Monte Carlo simulations require that each input variable, such as investment returns, be assigned a probability distribution—defined primarily by a mean expected value assumption and a standard deviation, or volatility, assumption—to reflect the uncertainty of the outcome. These values are based on the following assumptions:[127]

Price inflation

To simulate results for price inflation, we assume a median inflation rate (CPI-U) of 2.4 percent, which is based on the Blue Chip Financial Forecast consensus long-range view from the December 2008 survey of 40+ economists working in the financial sector, the "Blue Chip Survey."[128] Although our inflation simulations produce a distribution that is skewed, or non-normal, the observed standard deviation is 1.4 percent, and has minimum and maximum values of -5.8 percent and 12.8 percent, respectively.

Wage inflation

Wage inflation is simulated to reflect price inflation, plus an average real wage growth of 1 percent per year. The resulting distribution has a mean value of 3.4 percent, with a standard deviation of 1.1 percent, a minimum value of 1.5 percent, and a maximum value of 9.1 percent.

Ten-year Treasury note[129]

Our simulated results for the yield on 10-year Treasury notes were generated using a mean value of 5.2 percent, which is the long-range consensus from the Blue Chip Survey. The observed standard deviation is 1.3 percent, which is consistent with historical experience.

Equity and bond returns

We use three types of inputs to model asset class returns: estimates of expected mean returns, volatility (standard deviation), and correlation among asset classes. The most crucial inputs are the estimates of expected return.

To obtain estimates of expected returns for individual asset classes, we use a Global Capital Asset Pricing Model, or Global CAPM, methodology rather than relying on historical results or arbitrary estimates. The first step in this process is to develop the expected returns for two asset class "anchors:" U.S. equities and U.S. bonds. With these two expected returns, the expected returns for all other asset classes can be derived through the Global CAPM model based on the relative risk, or beta, of each asset class to each of the anchor classes, using historical data on volatility and correlations.[130]

U.S. equities

The historical average of the premium of equities over bonds is a poor predictor of future experience because there is significant variation in this premium depending on the time period used. Consequently, we base our assumption of the long-term expected return for the U.S. equity market on the economic premise that total returns over time for stocks can be divided into three components: dividend income, nominal growth in corporate earnings, and change in valuation level, or price-earnings ratio.

Since we take a neutral view on the current market valuation level—as it will not contribute to the long-range expected return in either a positive or negative direction—our estimate for the long-term expected return from the U.S. equity market is the sum of the dividend yield (2.8 percent as of December 31, 2008) and the expected nominal growth in corporate earnings, to be consistent with the Blue Chip Survey consensus view of real GDP growth.

Based on this, we get an expected return for U.S. stocks in any single year of 9.1 percent. With a standard deviation of 16.8 percent based on historical experience, the expected long-term compound return for U.S. stocks becomes 7.7 percent. (The effects of year-to-year volatility will always produce a lower long-term compound return expectation, as compared with the single-year expectation.)

U.S. bonds

We estimate the expected return for U.S. bonds (represented by Barclays Capital Aggregate Bond Index) based on the current yield (4.0 percent as of 12/31/2008), and the expected future change in yield (increasing to an ultimate yield of 5.6 percent, based on the 5.2 percent Blue Chip estimated yield on the 10-Year Treasury note, plus an average credit spread of 0.4 percent).

Blended equity portfolio[131]

Our simulation for returns on a blended equity portfolio have an observed mean return value of 9.3 percent, a standard deviation of 16.7 percent, a minimum value of -45.5 percent, and maximum value of 65.0 percent. The expected long-term compound return for this blended equity portfolio is 7.9 percent.

Annuitization

To convert the account balance at retirement into a lifetime income requires that the balance be divided by an annuity factor (we assume that the retiree is electing an annuity payout option). We model the annuity factors based on the current TSP annuity payout options, adjusted to reflect the interest yield simulated at the point of retirement.

The TSP has two basic annuity types available: one type includes a feature that increases the payments each year based on the change in the Consumer Price Index (to a maximum of 3 percent for any single year); and the other type provides a fixed payment amount with no future adjustments. Since retirement income goals are based on the premise of maintaining some standard of living throughout the retirement years, inflation protection is an important factor. Because of this, we assume that at least some portion of the account balance will be used to purchase an increasing annuity, with the balance used to purchase a fixed annuity.

The amount of increasing annuity income that is purchased is equal to that amount, which when combined with Social Security, will equal $40,000 (in constant 2009 dollars). The underlying concept is that inflation protection is required for a total amount that should provide for a basic standard of living.

Endnotes

1 The United States Congress passed the Revenue Act of 1978, which "included a provision that became Internal Revenue Code (IRC) Sec. 401(k)—for which the plans are named—under which employees are not taxed on the portion of income they receive as deferred compensation rather than as direct cash payments. The Revenue Act of 1978 added permanent provisions to the IRC, sanctioning the use of salary reductions as a source of plan contributions. The law went into effect on Jan. 1, 1980." Employee Benefits Research Institute, "Facts from EBRI: History of 401(k) Plans–An Update" (2005).

2 See, for example,

- "Still, Social Security was not intended to be a primary source of retirement income for workers; it was meant to supplement workers' pensions and other retirement savings. Here's the rub: 401(k)-style plans were never intended to be a primary source of retirement income, either. They, too, were designed to give workers a way to supplement their retirement income." House Committee on Education and Labor, "Chairman Miller Statement At Hearing On 'Are Hidden 401(k) Fees Undermining Workers' Retirement Security?" Press Release, March 6, 2007.

- "Even before the financial crisis, we have been concerned about the ability of 401(k) plans to provide secure retirement income. They were not designed for that role. When 401(k) plans came on the scene in the early 1980s, they were viewed mainly as supplements to employer-funded pension and profit sharing plans." Alicia H. Munnell, "The Financial Crisis and Restoring Retirement Security," Testimony before the Committee on Education and Labor, U.S. House of Representatives, February 24, 2009.

3 Jack VanDerhei, "Measuring Retirement Income Adequacy: Calculating Realistic Income Replacement Rates" (Washington: Employee Benefit Research Institute, 2006) p. 18.

4 This is the median defined contribution account balance for workers aged 55-64 (including 401(k)s and IRAs) in 2007; Alicia H. Munnell, Francesca Golub-Sass, and Dan Muldoon, "An Update on 401(k) Plans: Insights From the 2007 SCF" (Boston: Center for Retirement Research, 2009); The median account balance for *households* headed by persons between the ages of 55 and 64 is $100,000; Patrick Purcell, "Retirement Savings and Household Wealth in 2007," (Congressional Research Service, 2009).

5 Based on a single-life annuity with level payments, calculated using the annuity calculator provided on Thrift Savings Program website. "Thrift Savings Plan: Annuity Calculator," available at http://www.tsp.gov/calc/annuity/annuity.cfm (last accessed May 5, 2009).

6 Richard W. Johnson, "How is the Recession Affecting Older Workers?" (Washington: Urban Institute, December 2008).

7 A third category of reform proposals is worth noting. Proposals by Professor Teresa Ghilarducci's of the New School for Social Research's Guaranteed Retirement Accounts, and the Retirement USA's principle statement seek to get away from the 401(k) model of individually directed retirement savings. For example, Ghilarducci's proposal requires employee and employer contributions, pools individual accounts for collective management, guarantees a rate of investment return, and automatically converts assets upon retirement into a guaranteed annuity.

8 Lisa Mensah and others, "Savings For Life: A Pathway to Financial Security for All Americans" (Washington: The Aspen Institute, 2007).

9 Gene Sperling, "A Progressive Framework for Social Security Reform" (Washington: Center for American Progress, 2005). Note that this proposal could fit in the second category by defaulting people into the TSP or other model plan, though details have not been fully worked out.

10 Michael Calabrese, "A Universal 401(k) Plan" (Washington: New America Foundation, 2007); and Dean Baker, "Universal Voluntary Accounts: A Step Towards Fixing the Retirement System" (Washington: Center for Economic and Policy Research, 2006).

11 Our analysis of the Thrift Savings Plan focuses only on federal employees covered by the Federal Employees' Retirement System, or FERS, which includes those hired on or after January 1, 1984. It does not consider federal employees covered by the Civil Service Retirement System, or CSRS, which covers workers hired before January 1, 1984, who have not opted to switch to FERS. The TSP features available to FERS employees are different from those available to CSRS employees, for example; only FERS employees are eligible to receive automatic and matching contributions to their retirement plans.

12 Donald Luskin, "The Lesson of Thrift," *National Review Online*, December 27, 2004.

13 David C. John, "Congress Should Add Auto-Enrollment tot the Thrift Savings Plan, But Resist Interfering in Its Investment Choices" (Washington: Heritage Foundation, 2007).

14 See for example, proposals by the Center for American Progress's Gene Sperling, New America Foundation's Michael Calabrese, and the Center for Economic and Policy Research's Dean Baker.

15 The Thrift Savings Plan Enhancement Act of 2009—signed into law on June 22, 2009—requires that the Federal Retirement Thrift Investment Board, or FRTIB, submits annual reports to Congress on the operations of the Thrift Savings Plan. The reports to Congress must include information on the number of participants in the plan, the median balance in participant's accounts, demographic information on participants, the percentage allocation of amounts among investment funds or options, the diversity demographics of any company, investment adviser, or other entity retained to invest and manage the assets of the Thrift Savings Plan, and any other information that the FRTIB deems appropriate or relevant. The law also requires that the Board include detailed information on plan fees (for example, management and investment fees, administrative expenses, etc.) in the periodic statements provided to plan participants. *Thrift Savings Plan Enhancement Act of 2009,* P.L. 111-31, Title 1, 111 Cong. 1 sess. (Government Printing Office, 2009)

16 Mitra Tossi, Bureau of Labor Statistics, "Labor Force Projections to 2016: More Workers in Their Golden Years" (Department of Labor, 2007) available at http://www.bls.gov/opub/mlr/2007/11/art3full.pdf; Peter Leyden and Ruy Teixeira, "The Progressive Politics of the Millennial Generation" (Washington: New Politics Institute, 2007).

17 According to the U.S. Census Bureau, the median income for 25- to 34-year-olds in 2007 was $30,179. "Historical Income Tables¾People," available at http://www.census.gov/hhes/www/income/histinc/p10AR.html (last accessed June 29, 2009). We approximate the median income for a 30-year-old is $30,000.

18 Though most workers do not annuitize, we made this assumption because it enables us to present results in the most easily interpretable manner.

19 We use data about FERS participants in the TSP, as these are most comparable to private sector 401(k) participants, and do not include uniformed service or CSRS participants.

20 Watson Wyatt Worldwide, "2008: TSP Participant Survey Results" (2009).

21 Federal Retirement Thrift Investment Board, "Thrift Savings Plan Actual Account Information by Age and by Tenure" (2008)

22 Federal Retirement Thrift Investment Board, "Thrift Savings Plan: Participant Behavior and Demographics, Analysis for 2000-2005" Undated.

23 To tease out what portion of these behaviors are due to the features of the TSP plan rather than the characteristics of the federal workforce is quite difficult and would require additional data that is unavailable.

24 Government Accountability Office, "Federal Retirement Thrift Investment Board: Many Responsibilities and Investment Policies Set by Congress," GAO-07-611, Report to Congressional Requesters, June 2007.

25 According to the U.S. Code, seven of the members of ETAC must represent the interests of Labor organizations, two of the members must represent managerial organizations, one member must represent the supervisors' organization, one must represent an organization promoting the interests of women, one must represent the organization with largest number of individuals receiving annuities, one must represent the largest number of supervisors and management officials, one must represent the organization representing the largest number of members of the Senior Executive Service, and one member must represent participants who are members of the uniformed services. U.S. Code collection, Title 5, Part III, Subpart G, Chapter 84, Subchapter VII, 8473, available at http://www4.law.cornell.edu/uscode/5/usc_sec_05_00008473----000-.html (last accessed January 28, 2009).

26 James J. Choi, David Laibson, and Brigitte C. Madrian, "Plan Design and 401(k) Savings Outcomes," *National Tax Journal* 57 (2004): 275-298; Internal Revenue Service, "IRC 401(k) Plans–Establishing a 401(k) Plan," (Department of the Treasury, 2009).

27 Federal Retirement Thrift Investment Board, "Thrift Savings Plan Actual Account Information by Age and by Tenure" (2008); and Federal Retirement Thrift Investment Board, "Thrift Savings Plan: Participant Behavior and Demographics, Analysis for 2000-2005."

28 Patrick Purcell, "Retirement Savings and Household Wealth in 2007," (Congressional Research Service, 2009) p. 6; U.S. Bureau of Labor Statistics, "Program Perspectives on Retirement Benefits: Defined-Contribution Plans More Common than Defined-Benefit plans" (Department of Labor, 2009).

29 James J. Choi and others, "For Better or For Worse: Default Effects and 401(k) Savings Behavior." Working Paper 8651 (National Bureau of Economic Research, 2001); Vanguard Center for Retirement Research, "Measuring the Effectiveness of Automatic Enrollment" (2007); Pamela Everhart, "Early Progress with Auto Features in 401(k) Plans" (Fidelity Investments, 2009).

30 Federal Retirement Thrift Investment Board, "Summary of the Thrift Savings Plan" (2008).

31 Ibid.

32 Ibid.

33 Purcell, "Retirement Savings and Household Wealth in 2007."

34 Vanguard, "How America Saves: A Report on Vanguard 2007 Defined Contribution Plan Data" (2008).

35 Watson Wyatt Worldwide, "2008: TSP Participant Survey Results."

36 Vanguard "How America Saves 2009: A Report on Vanguard 2008 Defined Contribution Plan Data," August 2009; Purcell, "Retirement Savings and Household Wealth in 2007."

37 "Thrift Savings Fund Expense Ratio (1988-2007)," available at http://www.tsp.gov/rates/tsp-expense-ratio.pdf (last accessed January 5, 2009).

38 Alicia Munnell and others, "Investment Returns: Defined Benefit vs. 401(k) Plans" (Boston: Center for Retirement Research, 2006); Government Accountability Office, "Private Pensions: Changes Needed to Provide 401(k) Plan Participants and the Department of Labor Better Information on Fees," GAO-07-21, Report to Ranking Minority Member, Committee on Education and the Workforce, House of Representatives, November 2006; Christian E. Weller and Shana Jenkins, "Building 401(k) Wealth One Percent at a Time: Fees Chip Away at People's Retirement Nest Eggs" (Washington: Center for American Progress, 2007) p. 5-6.

39 Federal Retirement Thrift Investment Board, "Summary of the Thrift Savings Plan."

40 International Foundation of Employee Benefit Plans with Deloitte Consulting LLP, "401(k) Benchmarking Survey: 2008 Edition" (2008) available at http://www.deloitte.com/dtt/cda/doc/content/us_consulting_401percent28kpercent29BenchmarkingSurvey2008Edition160708.pdf (last accessed February 24, 2009); Investment Company Institute with Deloitte Consulting LLP, "Defined Contribution/ 401(k) Fee Study: Inside the structure of defined contribution/ 401(k) plan fees" (2009); Profit Sharing/401(k) Council of America, "51st Annual Survey of Profit Sharing and 401(k) Plans Reflecting 2007 Plan Experience." (2008); Walter Updegrave, "The Retirement Plan Uncle Sam Has Right," CNN Money, November 23, 2006.

41 International Foundation of Employee Benefit Plans with Deloitte Consulting LLP, "401(k) Benchmarking Survey."

42 See, for example,

- "According to standard economic models, a risk-averse consumer who faces uncertainty about length of life should place a high value on annuities that provide guaranteed income for life," Jeffrey R. Brown and others, "Why Don't People Choose Annuities? A Framing Explanation" (Washington: Retirement Security Project, 2008).
- "Researchers often refer to the 'annuity puzzle' when considering participants who choose a lump sum over an annuity payout in a defined benefit (DB) or defined contribution (DC) plan. In theory, many older individuals could benefit from annuity payouts. By pooling savings during the payout phase, annuitization can lead to higher retirement incomes and offer protection against longevity risk, the risk that the individual will run out of money," Gary R. Mottola, and Stephen P. Utkus, "Lump Sum or Annuity? An Analysis of Choice in DB Pension Payouts" (Valley Forge, PA: Vanguard Center for Retirement Research, 2007).

43 "According to standard economic models, a risk-averse consumer who faces uncertainty about length of life should place a high value on annuities that provide guaranteed income for life," Jeffrey R. Brown, and others, "Why Don't People Choose Annuities? A Framing Explanation" (Washington: The Retirement Security Project, 2008).

44 Federal Retirement Thrift Investment Board, "Summary of the Thrift Savings Plan."

45 Hewitt Associates, "Hewitt study Shows More Companies Putting 401(k) Plans on Autopilot; Employers Encourage Retirement Savings by Automating and Simplifying 401k Plan Features," Business Wire, June 14, 2005; Updegrave, "The retirement plan Uncle Sam has right."

46 Government Accountability Office, "Federal Retirement Thrift Investment Board: Many Responsibilities and Investment Policies Set by Congress."

47 According to the U.S. Code, seven of the members of ETAC must represent the interests of Labor organizations, two of the members must represent Managerial organizations, one member must represent the supervisors' organization, one must represent an organization promoting the interests of women, one must represent the organization with largest number of individuals receiving annuities, one must represent the largest number of supervisors and management officials, one must represent the organization representing the largest number of members of the Senior Executive Service, and one member must represent participants who are members of the uniformed services. U.S. Code collection, Title 5, Part III, Subpart G, Chapter 84, Subchapter VII, 8473, available at http://www4.law.cornell.edu/uscode/5/usc_sec_05_00008473----000-.html (last accessed January 28, 2009).

48 Choi, Laibson, and Madrian, "Plan Design and 401(k) Savings Outcomes;" Internal Revenue Service, "IRC 401(k) Plans – Establishing a 401(k) Plan."

49 See for example, Pamela Perun, "Storm Clouds Ahead for 401(k) Plans?" (Washington: Urban Institute, 2008).

50 Weller and Jenkins, "Building 401(k) Wealth One Percent at a Time: Fees Chip Away at People's Retirement Nest Eggs," p. 3.

51 Ibid.

52 Organisation for Economic Co-operation and Development, "Pension Fund Governance: Lingering Problems and Potential Solutions" (2007) p. 3-5.

53 Ibid.

54 Government Accountability Office, "Private Pensions: Alternative Approaches Could Address Retirement Risks Faced by Workers but Pose Trade-offs," GAO-09-642, Report to the Chairman, Committee on Education and Labor, House of Representatives, July 2009.

55 Ibid.

56 See, for example,

- "Consider this: The most that any fund in the Thrift Savings Plan charges in annual expenses is 0.05 percent, or $5 for every $10,000 invested. That's about 75 percent less than even what notorious skinflint Vanguard routinely charges for its index mutual funds. Keeping costs at this miserly level can dramatically boost your savings over time." Updegrave, "The retirement plan Uncle Sam has right."
- "Another possible explanation for the lower return in defined contribution plans is investment fees, which typically account for 75 to 90 percent of total expenses associated with managing 401(k) plans… These fees are usually assessed as a percentage of invested assets, and are paid by the employee in that they are deducted directly from investment returns." Alicia H. Munnell and Annika Sunden, Coming Up Short: The Challenge of 401(k) Plans (Washington: Brookings Institution Press, 2004) p. 76.
- "Maybe that's because members of Congress have one of the best 401(k) plans in the nation, the Thrift Savings Plan. No high costs or hyperactively managed funds for this plan. Just very low-cost Exchange Traded Funds and Target Retirement Funds. It is almost impossible to make a bad investment decision with this stellar plan." Dan Solin, "Making a Bad Situation Worse: Investing in 401(k)s without an Employer Match," The Huffington Post, December 9, 2008, available at http://www.huffingtonpost.com/dan-solin/making-a-bad-situation-wo_b_149036.html.

57 For our model we used an average fee of .0185 of assets to represent the TSP fee level.

58 See, for example,

- Weller and Jenkins review a number of studies which found that the typical level of fees on 401(k)s were as follows: GAO concluded that the typical level of fees was 1.0 percent of assets; CBO found that Mutual funds typically charge 1.09 percent of assets and that D.C. plans charge 0.8 percent - 1.0 percent of assets; Center for Retirement Research at Boston College found that the typical fee was around 1.0 percent; Council of Institutional Investors citing data from the DOL found the typical fee to be between 1.0 - 1.4 percent; "Inside the Structure of Defined Contribution / 401(k) Plan Fees: A Study Assessing the Mechanics of What Drives the 'All-In' Fee," conducted by Deloitte for the Investment Company Institute in Spring 2009 found that the mean 401(k) fee was 0.93% and the median 0.73%, though the survey was not intended to be representative of the defined contribution / 401(k) universe. The study also showed 10% of plans in the study had an 'all-in' fee of 0.35% of assets or less, while 10% of plans had an 'all-in' fee of 1.72% of assets or more; and Illinois Municipal Retirement Fund found the typical level of fees to be 2.25 percent. See Christian E. Weller and Shana Jenkins, "Building 401(k) Wealth One Percent at a Time: Fees Chip Away at People's Retirement Nest Eggs," p. 5-6.

- "The typical fees—between 1 percent and 1.5 percent of assets—can result in a 24 percent to 38 percent reduction in overall savings at the end of a 40-year career, assuming steady contributions and adjusting for market fluctuations. To compensate for this loss, employees would have to extend their careers another two-and-a-half to four years." Christian E. Weller and Shana Jenkins, "The 401(k) Fee Effect," Financial Planning, May 1, 2007, available at http://www.financial-planning.com/asset/article/528177/401k-fee-effect.html (last accessed January 22, 2009).

- "According to the Investment Company Institute (ICI), the average asset-weighted expense ratio for stock mutual funds in 401(k) plans in 2006 was 0.76 percent," Patrick Purcell, "Retirement Savings Accounts: Fees Expenses, and Account Balances" (Congressional Research Service, 2007) p. 3.

  A few 401(k) plans have quite low fees, such the plan for Macdonal.

59 Clifton Gunderson LLP, "Financial Statements of the Thrift Savings Fund – 2008 and 2007" (2009).

60 See, for example, David L. Wray, Testimony before the House Committee on Ways and Means, "The Appropriateness of Retirement Plan Fees," October 30, 2007; Investment Company Institute, "The Economics of Providing 401(k) Plans: Services, Fees, and Expenses, 2008" (2009); Deloitte and Investment Company Institute, "Defined Contribution/ 401(k) Fee Study: Inside the Structure of Defined Contribution / 401(k) Plan Fees" (2009).

61 Investment Company Institute, "The Federal Thrift Savings Plan: A Model for the Private Sector?" (2007).

62 Weller and Jenkins, "Building 401(k) Wealth One Percent at a Time: Fees Chip Away at People's Retirement Nest Eggs," p. 3.

63 Investment Company Institute, "The Federal Thrift Savings Plan: A Model for the Private Sector?"

64 See, for example, Investment Company Institute, "The Federal Thrift Savings Plan: A Model for the Private Sector?"; Weller and Jenkins, "Building 401(k) Wealth One Percent at a Time: Fees Chip Away at People's Retirement Nest Eggs."

65 See for example, Alicia Munnell and others, "Investment Returns: Defined Benefit vs. 401(k) Plans, CRR Issue in Brief" (Boston: Center for Retirement Research, 2006); Weller and Jenkins, "Building 401(k) Wealth One Percent at a Time: Fees Chip Away at People's Retirement Nest Eggs," p. 3.

66 See, for example,

- "...there is growing evidence that the complex design of many saving programs may itself hinder planning. Persons facing complex decisions may be unable to make a choice. Indeed, too much choice may just make the problem harder to solve, causing consumers to back away from a difficult problem. A recent study of more than 800,000 employees found that participation is higher in 401(k) plans offering a small number of investment options, compared to plans offering ten or more options (Iyengar, Jiang, and Huberman [2004]). Other studies (Benartzi and Thaler [2001] and Huberman and Jiang [2004]) have noted that savings plan participants are unable to make financially appropriate investment choices when confronted with many investment options – they adopt the so-called "1/n strategy" whereby investors allocate equal proportions of their savings portfolio to each investment option offered. In a more direct test of "information overload," Agnew and Szykman [2004] show that persons with low financial sophistication are more likely to choose defaults—rather than making active decisions—and are more likely to report that they are overwhelmed by the investment decision in general." Steven F. Venti, "Choice, Behavior, and Retirement Saving," in Gordon Clark, Alicia Munnell, and Michael Orszag, eds., Oxford Handbook of Pensions and Retirement Income (New York: Oxford University Press USA, 2004).

- Iyengar, Huberman, and Jiang "document a strong negative relationship between the number of funds offered in a 401(k) plan and average participation rates; increasing the number of funds offered by 10 leads to a 1.5 to 2.0 percentage point decline in the firm-level average 401(k) participation rate." James J. Choi, David Laibson, and Brigitte C. Madrian, "Plan Design and 401(k) Savings Outcomes." Working Paper 10486 (National Bureau of Economic Research, 2004) available at http://www.economics.harvard.edu/faculty/laibson/files/plandesign.pdf (last accessed January 26, 2009).

- "Both sponsors and policymakers may intuitively feel that limiting the number of options to a manageable few is desirable based on considerations such as the demographics of participants/employees, their investment knowledge or experience, and the complexity of investment decision-making generally or from the options themselves. Our research provides a quantitative basis for this intuition." Sheena S. Iyengar, Wei Jiang, and Gur Huberman, "How Much Choice is Too Much? Contributions to 401(k) Retirement Plans." Working Paper 2003-10 (The Wharton School Pension Research Council, 2003) available at http://www.archetype-advisors.com/Images/Archetype/Participation/how%20much%20is%20too%20much.pdf

- One study conducted by Vanguard found that predicted plan participation declines by 2 percent for every 10 options added to a plan. Gary R. Mottola and Stephen P. Utkus, "Can There Be Too Much Choice in a Retirement Savings Plan?" (Valley Forge, PA: The Vanguard Center for Retirement Research, 2003) available at http://www.403bwise.com/oldpdf/vcrr_choice.pdf.

- "By limiting investing options in this way, employees are assured of making intelligent choices. This is precisely what the government does with its wildly successful Thrift Savings Plan, the 401(k) plan available to government employees," Dan Solin, "Real Change: Outlaw 401(k) Plans," The Huffington Post, January 6, 2009, available at http://www.huffingtonpost.com/dan-solin/real-change-outlaw-401k-p_b_154768.html (last accessed January 26, 2009).

- A Deloitte Consulting survey of employers asked respondents to identify the "aspects of the plan your employees found most confusing." An overwhelming 81 percent chose, "Where to invest/which funds to use", while the second most common response was "How much to save for retirement," chosen by 55 percent of respondents. International Foundation of Employee Benefit Plans with Deloitte Consulting LLP, "Annual 401(k) Benchmarking Survey."

- "Studies by researchers at Columbia University and the University of Chicago, for example, found that the more funds a 401(k) plan added to its lineup, the fewer employees signed up and the less money participants invested in stock funds." Updegrave, "The Retirement Plan Uncle Sam Has Right."

67 See, for example,

- "Some workers have not participated in 401(k) plans because of confusion over investment decisions, while other workers who have participated have made what appear to be poor decisions when investing their plan assets" John Turner, "Designing 401(k) Plans That Encourage Retirement Savings: Lessons From Behavioral Finance," Benefits Quarterly 22 (4) (2006): 24-36.

- An article in U.S. News discusses a study by Rutgers, University of Texas Austin and University of Pittsburgh. The study showed that those without investment knowledge invest in riskier stocks with more options. Emily Brandon, "Study: Too Many 401(k) Choices Can Lead to More Risky Investments," U.S. News, November 10, 2008, available at http://www.usnews.com/blogs/planning-to-retire/2008/11/10/study-too-many-401k-choices-can-lead-to-more-risky-investments.html.

68 See, for example,

- "In this paper, we offer an additional explanation for individuals' reluctance to make investment decisions in their D.C. plans. We hypothesize that the participants are experiencing information overload. As a result, these participants are becoming overwhelmed when making their decision and therefore look for an easy way out, the default." Julie Agnew and Lisa R. Szykman, "Asset Allocation and Information Overload: The Influence of Information Display, Asset Choice, and Investor Experience." Working Paper 2004-15 (Center for Retirement Research at Boston College, 2004) available at, http://crr.bc.edu/images/stories/Executive_Summaries/wp_2004-15.pdf?phpMyAdmin=43ac483c4de9t51d9eb41 (last accessed January 21, 2009).

- Study by the Center for Retirement Research at Boston College showed "even the more knowledgeable participants … the group that might be expected to benefit most from more investment choices—are more likely to use default investment options when the number of choices increase." "Too Many Investment Choices May Overwhelm Even Sophisticated 401(k) Plan Participants," available at http://benefitslink.com/articles/washbull040607.html: "To enroll in a 401(k), an eligible employee usually must complete and sign an enrollment form, designate a level of contribution—typically a percentage of pay to be deducted from the employee's paycheck— and specify how those contributions will be allocated among an array of investment options. Often the employee must choose from among 10, 20, or more different investment funds. An employee who is uncomfortable making all of those decisions may well end up without any plan, because the default arrangement—that which applies when the employee fails to complete, sign, and turn in the form—is nonparticipation." William G. Gale, Peter Orszag, and Mark Iwry, "The Automatic 401(k): A Simple Way to Strengthen Retirement Saving" (Washington: Retirement Security Project, 2005) available at http://www.urban.org.libproxy.lib.unc.edu/Uploaded-PDF/1000751_Tax_Break_3-7-05.pdf.

- "An assumption underlying the system of voluntary employee participation in defined contribution plans is that individuals make good financial decisions that they are able to implement. A weakness of this approach is that many individuals make poor choices, resulting in retirement income that is insufficient to maintain their pre retirement living standards. Behavioral finance has documented these choices and how they result in outcomes that are unfavorable to workers in the long-run." March 2006, John Turner, "Designing 401(k) Plans That Encourage Retirement Savings: Lessons From Behavioral Finance" (Washington: AARP Public Policy Institute, 2006) available at http://assets.aarp.org/rgcenter/econ/ib80_pension.pdf (last accessed January 26, 2009).

69 "There is now ample evidence that when you increase choice by offering more and more options, a point is reached at which paralysis rather than "freedom" is the result. This is true of trivial consumer choices, such as which flavor of jam to buy, and of extremely consequential choices, such as which 401(k) funds to put your retirement money in." Barry Schwartz, "Too Many Choices. Why seniors won't sign up for the Medicare prescription drug plans." *Slate*, November 22, 2005, available at http://www.slate.com/id/2130932/; Schwartz is the author of *The Paradox of Choice: Why More Is Less*, (New York: Harper Perennial, 2004).

70 The authors recognize that lifecycle funds involve risk like any other type of investment, and that some are flawed, sub-optimally reallocating investment assets over the course of individuals' careers. This critique is developed by Yale economist Robert Shiller. See, for example, Robert Shiller, "Life-Cycle Portfolios as Government Policy" (New Haven, CT: Cowles Foundation for Research in Economics, 2006). However, if designed well, lifecycle funds can provide workers with an efficient, effective hands-off alternative to investing their own retirement savings.

71 "TSP Features for Civilians: Your Investment Options," available at http://www.tsp.gov/features/chapter07.html (last accessed January 5, 2009).

72 International Foundation of Employee Benefit Plans with Deloitte Consulting LLP, "401(k) Benchmarking Survey," (2008); Deloitte Consulting LLP and Investment Company Institute, "Defined Contribution/401(k) Fee Study: Inside the structure of defined contribution/ 401(k) plan fees;" Profit Sharing/ 401(k) Council of America, "51st Annual Survey of Profit Sharing and 401(k) Plans Reflecting 2007 Plan Experience;" and Updegrave, "The Retirement Plan Uncle Sam Has Right."

73 Deloitte Consulting LLP, "401(k) Benchmarking Survey" (2008).

74 Investment Company Institute, "401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 2007," Research Perspective 14 (3) (2008).

75 Fidelity Investments, "Fidelity Reports on 2008 Trends in 401(k) Plans," Press Release, January 28, 2009.

76 Participation rates were 91 percent in 2007, according to actual TSP account information, and 88.8 percent in 2005, according to the 2005 data comes from Federal Retirement Thrift Investment Board, 2005. Federal Retirement Thrift Investment Board, "Thrift Savings Plan Actual Account Information by Age and by Tenure"; Federal Retirement Thrift Investment Board, "Thrift Savings Plan: Participant Behavior and Demographics, Analysis for 2000-2005," p. 3. The 2005 data from the FRTIB excluded part-time and intermittent workers. Because these workers generally contribute at lower rates than full-time workers, the participation rate might be marginally overestimated.

77 Purcell, "Retirement Savings and Household Wealth in 2007;" U.S. Bureau of Labor and Statistics, "On Retirement Benefits: Defined-contribution plans more common than defined-benefit plans."

78 Federal Retirement Thrift Investment Board, "Thrift Savings Plan Actual Account Information by Age and by Tenure"; and Purcell, "Retirement Savings and Household Wealth in 2007."

79 Federal Retirement Thrift Investment Board, Thrift Savings Plan Actual Account Information by Age and by Tenure; and Vanguard, "How America Saves: A Report on Vanguard 2007 Defined Contribution Plan Data" (2008).

80 Participation rate data for the lowest earning private sector workers was calculated using the participation rates of the third quartile and bottom quartile households. See Purcell, "Retirement Savings and Household Wealth in 2007;" Federal Retirement Thrift Investment Board, "Thrift Savings Plan: Participant Behavior and Demographics, Analysis for 2000-2005."

81 Laura Nemeth, "Inside the world's largest defined contribution plan: How the Federal Thrift Savings Plan manages large-scale success," March 2007. Affiliation?

82 According to the Watson Wyatt Worldwide survey, 85 percent of TSP participants reported a favorable rating of their plan, compared to 68 percent of private-sector participants who viewed their 401(k) plans favorably. The source of the private sector data is a Watson Wyatt Retirement Attitude Survey (2004) which collected responses on overall 401(k) plan satisfaction from 7,911 private sector employees at 982 firms. Watson Wyatt Worldwide, "Thrift Savings Plan: Participant Survey Results 2006-07" (2007) p. 16.

83 Thomas A. Husted and Michael L. Hansen, "Thrift Savings Plans: Effect on Savings and Tax Revenues" (Alexandria, VA: CNA, 2001); ThirdWay, "Middle Class Proposal #4: Boosting Retirement Wealth" (2008); TIAA-CREF Institute, "Research Summary: The Employer Match and Participant Behavior" (2006); Esther Duflo and others, "Savings Incentives for Low- and Middle Income Families" (The Retirement Security Project, 2005); Olivia S. Mitchell, Stephen P. Utkus, and Tongxuan Yang, "Turning Workers into Savers? Incentives, Liquidity, and Choice in 401(k) Plan Design." Working Paper 11726 (National Bureau of Economic Resarch, 2005); Gur Huberman, Sheena Iyengar, and Wei Jiang, "Defined Contribution Pension Plans: Determinants of Participation and Contributions Rates," *Journal of Financial Services Research* 31 (1) (2003): 1-32.

84 Laura Nemeth, "Inside the world's largest defined contribution plan: How the Federal Thrift Savings Plan manages large-scale success," March 2007. Affiliation?

85 The Thrift Savings Plan Enhancement Act of 2009—signed into law on June 22, 2009—included provisions which eliminated the waiting period for Federal Employee Retirement System, or FERS, employees to receive the agency automatic 1 percent contribution and the agency matching contributions. Prior to enactment of this law, Federal employees had to wait between 6 to 12 months to receive automatic and matching contributions. Federal Retirement Thrift Investment Board, "Legislative Changes to the Thrift Savings Plan" (2009).

86 Federal Retirement Thrift Investment Board, "Thrift Savings Plan Actual Account Information by Age and by Tenure."

87 Profit Sharing/401k Council of America, "401(k) and Profit Sharing Plan Eligibility Survey 2008" (2008).

88 Ibid.

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131 The blended equity portfolio consists of assets which closely approximate those used in the TSP L Funds. The portfolio is 51 percent SP500 index (large cap US), 19 percent Wilshire 4500 Index (mid and small cap US), and 30 percent EAFE index (developed non-US equity markets).

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