

GOVERNMENT POLICY AND PRIVATE RETIREMENT SAVING

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Many developed nations are currently re-evaluating the scope of the social welfare state, particularly with respect to the provision of pensions for retired workers. This is the case both in nations where the social welfare state accounts for well over a third of GDP, as well as in those where it accounts for a more modest share of output. While the trend through most of the 20th century was toward expansion of the government's role in providing retirement income and health care, projected demographic changes and long-term fiscal constraints point toward a stable or shrinking role of government. Rather than searching for new ways to expand the set of services provided by government, and the set of risks that are insured, there is now pressure to find ways to shift responsibility for retirement income provision from the government to households and to firms. Germany is in the vanguard of this revolution.

The share of retirement income that elderly households in Germany receive from state-provided pensions is higher than the comparable share in most other developed nations. In countries where the elderly are more reliant on private saving, this saving may derive from employer-sponsored pension plans, or it may result from household saving over the course of a working career. As governments seek to reduce their outlays on retirement income provision, stimulating private retirement saving, through pensions and other forms of lifecycle accumulation, is likely to emerge as an increasingly important public policy goal. Achieving this objective will help to reduce the adverse effects on retirement consumption that might otherwise be associated with retrenchments in public support for the elderly.

The goal of promoting household retirement saving represents a shift from the historical focus of public policy, and particularly tax policy, with regard to saving and capital accumulation. Economists and policy-makers have long recognized that saving and the capital investment associated with it are key contributors to long-term economic growth. When the policy goal is simply to raise national saving, private saving and public saving are perfect substitutes. Tax incentives to encourage household saving must therefore be compared with fiscal policies that might change the government surplus or deficit and thereby influence national saving. Policies

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that encourage personal saving emerge as the focus, however, when the objective is to raise the amount of private saving available to finance retirement.

Recent policy reforms in Germany have introduced two programs that are designed to encourage private retirement saving. These are “Riester schemes” that permit individuals to voluntarily save up to four percent of their earnings through private financial institutions, and “Eichel schemes” that permit individuals to save for retirement through employer-sponsored plans. The introduction of these schemes, and the apparent dissatisfaction with the limited number of individuals who have chosen to participate in them so far, raises important questions about the design of government policy to encourage retirement saving.

The United States has more than two decades of experience with voluntary retirement saving programs that use the carrot of tax-free asset accumulation to induce households to save for retirement. This paper distills some of the lessons from this experience, and offers suggestions for the design of saving incentives in Germany. My discussion of voluntary retirement saving accounts (VRSA) will have five parts. I will begin with a brief summary of the demographic trends that are likely to make private retirement saving a more important source of retiree support in future decades. I will then describe the structure of VRSA in the United States. In the next section, I report several stylized facts about participation in these accounts and briefly address the extent to which these accounts have succeeded in raising private saving, rather than simply re-channeling existing saving into a new set of accounts. Next, I will discuss several recent studies that have explored “what works” in encouraging voluntary retirement saving. This research is directed at an economic issue far broader than the operation of retirement saving accounts, since it involves the question of how households make saving decisions. The recent U.S. experience with VRSA suggests that insights from psychology and even neurobiology may have much to contribute to the explanation of saving behavior. Finally, I will conclude with suggestions for policy design.

1. Demographic Change and the Role of Private and Government Provision of Retirement Saving

Demographic changes are the most important source of pressure on the government’s role in delivering retirement income support. As birth rates have fallen in most developed nations, and mortality rates at older ages have declined, the size of the younger population has declined relative to the older population. In Germany today, there are 38 retired workers for every 100 persons of working age. By 2050, there will be 77. In the United States, by comparison, where the current birth rate is higher, there are currently 26 retirees per 100 workers. The number of retirees will rise to 49 per 100 workers by 2050. In the 1950s, Germany averaged 2.2 births per

woman. The birth rate fell to 1.5 by the mid-1970s, and it is roughly 1.3 today. This shift in birth rates, if sustained, will result in substantial and predictable changes in the age composition of the German population. The drop in birth rates has taken place at a time when mortality rates have also fallen. In the mid-1950s, life expectancy for a 60-year-old German man was 15.4 years, compared with 19.4 years today. For women at age 60, the mortality improvement is even more dramatic: 17.7 years to 23.6 years. At least some of the increase in longevity has been associated with a delay in the onset of debilitating diseases and other health problems.

The impact of demographic change on the provision of retirement income has been exacerbated by shifting patterns of labor market activity. In Germany, data compiled by Borsch-Supan and Schnabel (1999) suggest that in the early 1970s, the average retirement age for men was nearly 62. It has dropped by nearly two years over the last three decades. Thus longer lifespan has been accompanied by a decline in the length of the working life.

The increasing length of the retirement period requires some re-thinking of the standard application of the lifecycle model developed by the late Franco Modigliani. In many numerical applications, such as Auerbach and Kotlikoff (1987) and Summers (1981), individuals are assumed to work for 45 years, and to retire for 10 or 15 years after their work life finished. These stylized patterns were approximately accurate in the 1950s, when lifecycle models were developed. In this setting the “retirement period” lasts between one quarter and one third as long as the period of employment. Yet current patterns of labor market activity in Germany suggest a rather different parameterization, with retirement accounting for nearly 25 years for a typical couple, and the working life roughly 40 years. In this setting, the retirement period is more than half as long as the work interval.

Lengthening retirement intervals imply that if households are going to sustain their consumption level through their retirement years, and if government retirement income support is going to remain stable or decline, then households must increase their wealth holdings at retirement. This wealth can be provided in the form of an employer-provided pension annuity, or household wealth accumulation. Private wealth accumulation might be drawn down with an annuity, but need not be. The German policy reforms of the last three years represent initial steps toward greater reliance on private wealth accumulation.

The heavy reliance of elderly German households on state-provided income sources is somewhat surprising in light of the high household saving rate in Germany. In 2002, when the household saving rate in Germany was 10.1 percent, only six countries – Belgium, the Czech Republic, France, Italy, Portugal, and Spain – reported higher household saving rates. The

household saving rate in many OECD countries is much lower than that in Germany. In the United States, for example, household saving is only 3.7 percent of disposable household income. Only three countries – Australia, Finland, and New Zealand – report lower household saving rates than the U.S. The measured saving rates may not provide a complete picture of household preparation for retirement, because, as Bradford (2000) notes, they do not consider capital gains and losses. Because many households in the United States have benefited from substantial capital gains on both housing and stock market assets during the last decade, the wealth position of many households, primarily those in the upper half of the wealth distribution, compares favorably with that of similar households in past cohorts. Yet the unequal distribution of wealth, and the very limited wealth holdings in the bottom of the wealth distribution, imply that this phenomenon has not affected all households.

Elderly households in the United States receive public retirement benefits equal to roughly one third of their after-tax income. German households on average derive closer to two-thirds of their after-tax income from public programs. Thus in spite of the lower measured U.S. household saving rates, elderly households in the United States rely to a substantially greater extent than their German counterparts on private retirement saving. Private pension arrangements are much more common in the United States, and in the last two decades, the amount of wealth held in voluntary retirement saving accounts has increased sharply. One set of projections, developed in Poterba, Venti, and Wise (2000), suggest that if current contribution patterns to these accounts persist, then new retirees in 2030 will have balances in these accounts that are roughly equal to the present discounted value of their future Social Security benefits.

The question of the optimal mix of state support and voluntary private saving in providing for retirement income security has been debated for nearly two centuries. This debate has a particularly rich history in Germany, which is universally known as the birthplace of government-sponsored social insurance. It is well known that Chancellor Bismarck advocated state provision of retirement income support and that he introduced legislation in 1881 to provide accident insurance, sickness insurance, and government support for the elderly. These developments are chronicled in Dawson (1890). The policy proposals with regard to retirement income support, however, were the outcome of a decades-long policy debate. The policy debate surrounding *altersrentenversicherung*, or retirement insurance, had been joined early in the 19th century, when it became clear that a substantial group of workers would not provide adequately for their retirement years. Sinn (2002) argues that as industrialization changed the nature of families, it became more difficult for the elderly to rely on their children for support in old age. This in turn

stimulated a desire for public policies that would ensure that elderly households did not experience sharp declines in their standards of living.

The first policy response to the problem of elderly poverty was a system of pleas for workers to save more (*sparappellen*), but these failed. Exhortation was not sufficient to induce at least some workers to make adequate provision for their retirement years. This program was followed by an initiative to encourage the creation of pension funds along with worker participation in these funds. But workers were reluctant to join these funds. Ultimately, many political leaders concluded that voluntary saving could not be relied upon to provide adequate retirement income support. The failure of private initiatives to encourage saving encouraged proposals by the “Socialists of the Chair” to expand the role of the state in providing old-age pensions.

Bismarck introduced his proposal for a state-provided pension in 1881, and the ensuing policy focused on many issues that would seem familiar to current participants in the policy reform process. Two particularly central issues were whether it was appropriate for the state to compel individuals to save, and whether the state should use general revenues to provide some support for retirees. Bismarck answered both questions in the affirmative, but his proposals faced stiff opposition in the Reichstag. Bismarck’s final address to the Reichstag in 1889 was a plea to allow the government to provide some part of the retirement pension. The alternative was a compulsory saving program funded with contributions from workers and firms. Fisch and Haerendel (2000) provide an interesting summary of this debate. Bismarck’s efforts on behalf of a state-supported program were successful, and the retirement pension program that was enacted combined some state support with mandatory contributions by workers and firms. This program was, however, a fully-funded system until after the middle of the 20th century, when it was transformed into a pay-as-you-go program. This transformation of a fully-funded retirement income system, based largely on a compulsory saving model, into a pay-as-you-go transfer system, also took place with the U.S. Social Security system.

Debate on the trade-offs between government provision of retirement income and private saving for retirement, possibly with substantial government subsidy, is taking place in many nations today. There are currently a broad range of different policies in place that offer individuals tax relief on their retirement saving. The United States has Individual Retirement Accounts and a range of other programs, most importantly the 401(k) program, which will be the focus of my analysis. Canada offers Registered Retirement Saving Programs (RRSPs) as well as Registered Homeownership Saving Programs (RHOSPs). The United Kingdom offers Personal

Pensions and other opportunities to opt-out of state-supported social insurance. Germany's Reister and Eichel schemes therefore represent part of a broad trend in developing nations. In the balance of this paper, I will focus on the U.S. experience with retirement saving accounts, and in particular with the so-called 401(k) program.

2. The Structure of Voluntary Retirement Saving Accounts in the United States

Voluntary retirement saving accounts (VRSAs) can be described by several of their key characteristics. These are the rules governing account contributions, particularly whether the contributions are mandatory or voluntary and the limits on contributions, the rules governing asset allocation for the funds held within the account, and the rules that apply to distributions from these accounts. There is a wide spectrum of options on each of these dimensions, ranging from required contributions, fixed portfolios during the accumulation phase, and required annuitization or other compulsory payout schedules, to voluntary contributions, full discretion for the account holder with respect to investment choices, and opportunities for voluntary withdrawals without restriction at retirement.

The U.S. has a wide range of tax-deferred retirement saving programs. The two largest are Individual Retirement Accounts (IRAs) and 401(k) plans, which are named after a section of the Internal Revenue Code. IRAs, which were introduced in 1981 as part of the Economic Recovery Tax Act, expanded rapidly until 1986. The Tax Reform Act of 1986 reduced the tax benefits of contributing to IRAs for high-income taxpayers, but the resulting confusion about the tax status of contributions seems to have discouraged many households who were still eligible for favorable tax treatment from contributing. Today, individuals can make voluntary contributions to IRAs of up to \$3000 per year. IRAs can be established with virtually any financial institution and they are not related to the individual's employer, so they are fully controlled by individuals. There are minimal restrictions on the set of assets that can be held within an IRA. Complex derivative securities, for example, may not be part of the IRA portfolio.

In contrast to IRAs, 401(k) plans are employer-based. An individual can decide to participate in a 401(k) plan if his employer offers such a plan, but not otherwise. Also in contrast to IRAs, 401(k) plans have experienced rapid and continual growth in the period since the early 1980s. The most recent official information on 401(k) participants, provided by the U.S. Department of Labor (2001), shows 37 million "active" (non-retired) participants in 1998. Projecting past trends in the number of participants, however, suggests that the number of current participants exceeds 40 million. Because the variation across individuals in access to 401(k) plans

and the structure of 401(k) plans has facilitated research on the determinants of retirement saving, I will focus on these plans.

Contributions to 401(k) plans are tax-deductible. The contribution limits for 401(k) plans are also substantially higher than those for IRAs. In 2003, each eligible individual can contribute the maximum of his or her earned income, or \$12,000, to a 401(k) plan. This limit will rise to \$15,000 per year by 2008. The higher contribution limit for 401(k) plans accounts than for IRAs is a key factor in their more rapid growth over the last decade. In addition to the up-front tax deduction associated with 401(k) contributions, many contributors also benefit from employer matching contributions to their 401(k). Bassett, Fleming, and Rodrigues (1998) report that nearly three quarters of 401(k)-eligible workers are covered by a plan that offers an employer match. More than one quarter of the workers in plans that offer an employer match report a match rate of 100% or more, while another quarter report match rates between 50 and 100 percent. Many employers who match employee contributions do so only up to a fixed dollar amount or a fixed percentage of salary. The limit on matching contributions is often lower than the IRS limit on total employee contributions. In some plans with an employer match, there are restrictions on the way the matching contributions can be invested. Required investments in company stock were common at many firms in the late 1990s, although they have become less common in the aftermath of the collapse of Enron and several other high-profile firms.

The portfolio income on assets held within 401(k) plans, whether from interest, dividends, or capital gains, is not taxed until these assets are withdrawn. This allows the assets in such plans to benefit from “inside build up” as the assets grow at the pretax return, rather than at the post-tax return that investors earn on traditional taxable investments. This is sometimes known as “consumption tax treatment” for the assets held in these retirement accounts. If an individual faces a lower marginal tax rates when retired than when working, the tax benefits of contributing to the 401(k) are further enhanced. Withdrawals from 401(k) plans are taxed as ordinary income, with a top marginal tax rate that is currently 35 percent. When assets are withdrawn before the account holder turns 59 ½, there is an additional 10 percent excise tax. Until 2003, dividends and interest income on assets held outside 401(k)s or IRAs were also taxed as ordinary income; capital gains have long received somewhat reduced tax burdens. The reduction of both dividend and capital gains taxes in the 2003 U.S. tax reform has reduced the benefits of “inside build up” for high-income taxpayers.

401(k) participants have substantial discretion in investing their plan assets. Most employers choose a large financial institution, often a mutual fund, to administer their 401(k)

plan. A perennial concern of employers who offer these plans is whether they can be held liable if the assets that 401(k) participants choose to purchase perform poorly. If the employer unduly restricts the investment options of the plan participants, and if the investments generate returns that are lower than those that the participants might plausibly have earned elsewhere, then they may face legal challenge. The Employee Retirement Income Security Act (ERISA) which regulates many aspects of retirement saving specifies that if an employer offers employees at least three investment options, including a money market account, a bond fund, and a common stock fund, and if the employer provided basic participant education regarding financial choices, then the employer cannot be held liable for the plan's investment performance. Virtually all 401(k) plans therefore offer investors at least this level of investment choice, and many plans offer many more choices. Many 401(k) plans that are administered by mutual funds offer plan participants several dozen investment options. One of the emerging questions in the 401(k) area is the effect of the number of investment options on asset allocation decisions and on the level of saving through the 401(k) system.

In aggregate, the allocation of 401(k) assets across stocks and bonds is not very different from the allocation found in professionally-managed defined benefit pension plans. The one notable difference is that 401(k) participants hold more of their assets in company stock, which represents a poorly diversified portfolio choice given the link between the firm's prospects and the value of the worker's human capital.

Participants in 401(k) plans also have substantial discretion in withdrawing assets from their plan accounts. Withdrawals before the age of 59 ½ incur a tax penalty, as noted above. Plan participants may choose to withdraw assets in a lump sum equal to all or part of their account balance, or they could choose to purchase an annuity that would make payouts over their remaining lifespan. In practice, very few participants choose to annuitize their payouts. The restrictions on 401(k) payouts are designed to avoid participants keeping assets in these accounts until death, and thereby deferring tax on their potential withdrawals. A set of minimum distribution requirements specify a pattern of required minimum distributions at each age after 70½. Because most of the experience to date with 401(k) plans has been with plans in the accumulation phase, information on distribution patterns is still not well developed and it has not been systematically analyzed.

3. Patterns of Participation and Contribution in U.S. 401(k) Plans

401(k) plans have grown rapidly in the last two decades. In 1984, Department of Labor (2001) data show that there were 7.5 million active participants in these plans. That number

doubled to 15.2 million by 1988, and it has more than doubled again, to 37.1 million, in 1998. This is the last year for which data are reported. These plans also account for a substantial share of household net worth. IOMA (2003) estimates that there are currently close to \$2.5 trillion in 401(k)s, with a similar amount held in IRAs. The principal source of IRA inflows for the last decade has been “rollovers” from 401(k)s and other defined contribution plans, rather than new contributions of the form that were common prior to 1986.

Several features of current participation and contribution behavior are apparent from employee records on 401(k) plan activity. First, the percentage of workers who participate in 401(k) plans is strongly positively correlated with household income. The Congressional Budget Office (2003) reports that in 1997, more than 65 percent of workers in households with income (measured as Adjusted Gross Income on tax returns) of more than \$80,000 participated in 401(k) plans, compared with only 52 percent of those with household income between \$20,000 and \$40,000, and 20 percent of those with incomes below \$20,000.

The steep gradient linking income and participation arises from two factors. First, 401(k) plan eligibility is determined by the employer, and lower-income workers are less likely to work for a firm that offers one of these plans. Second, even conditional on eligibility for a 401(k) plan, participation is lower at low income levels than at higher levels.

Two explanations can be advanced for the lower rate of participation conditional on eligibility at lower income levels. First, because the value of tax-deferred accumulation is worth less to a household with a lower marginal tax rate than to one with a higher marginal tax rate, the incentive to take advantage of these accounts is lower for low-income workers. Second, low-income workers may face liquidity constraints that make it difficult for them to reduce current outlays and fund their 401(k) plan. This might be true particularly for households that expect sharp increases in their future income relative to their current income. For employees at firms that offer matching contributions in the 401(k) plan, however, the shadow value of current cash income must be very high to explain the decision not to contribute. A key challenge is designing 401(k) plans that will encourage participation by these groups. In the last decade, there have been proposals in the United States to augment private pension contributions with government contributions on behalf of low-income workers. Such proposals have been promoted as a mechanism for encouraging retirement income security for low-income households.

A second broad pattern with regard to 401(k) contributions is that many 401(k) contributors make contributions that place them at corners or kinks of the nonlinear budget set created by the limits on matched contributions to 401(k) accounts and the overall contribution

limits. The Congressional Budget Office (2003) reports that in 1997, six percent of all 401(k) contributors contributed the maximum allowable amount. For higher income households, the fraction at the upper limit was much higher. For households with incomes between \$120,000 and \$160,000, 21 percent made limit contributions, while for those with incomes above \$160,000, 40 percent made limit contributions. By comparison, the fraction of all IRA contributors making limit contributions is much greater: 62 percent overall, and 87 percent for households with income above \$160,000. Many contributors who do not make the maximum permissible contribution choose to contribute the maximum contribution that is eligible for employer matching. Kusko, Poterba, and Wilcox (1998) provide evidence on the saving choices for workers in one 401(k) plan. More recent studies have confirmed the findings in that investigation. Participants in 401(k) plans also exhibit a great deal of inertia, rarely making changes in their investment allocation or their contribution choices.

A third stylized fact is that contribution rates are higher, and participation rates are higher, in 401(k) plans that offer employer matching for employee contributions. While there have been a number of studies of this issue and they are not unanimous in their findings, the balance of evidence points toward a positive effect of match rates on voluntary saving. Interestingly, it seems to be the presence of the match, rather than the level of the match, that has the most important effect on contributor behavior. Munnell, Sunden, and Taylor (2000) present evidence from one survey – the Survey of Consumer Finances – confirming this pattern. The sensitivity of tax-deferred account contributions to the presence of an immediate tax benefit also emerges in the context of IRAs. A substantial fraction of IRA contributions are made in the last few weeks before the deadline for filing income tax returns. This has been explained as a result of taxpayers recognizing the opportunity to immediately reduce their taxes by making an IRA contribution.

A fourth aspect of current 401(k) contributions, and one that has attracted substantial academic debate, is that a substantial fraction of these contributions represent incremental household saving. When IRAs and 401(k)s were first established, many analysts argued that because these plans imposed limits on the amount of saving that would qualify for favorable tax treatment of returns, contributors would simply move assets from taxable accounts into these tax-deferred vehicles. The result, on this view, would be a reduction in income tax revenue with no marginal incentive for increased saving. A substantial body of research, summarized in Bernheim (2003), Engen, Gale, and Scholz (1996) and Poterba, Venti, and Wise (1998), has tested the hypothesis that contributions to these accounts have simply replaced other flows of taxable saving. It is more difficult to test this hypothesis with respect to IRAs than with respect to

401(k)s, because all households are subject to the same income-specific IRA rules. This makes finding exogenous differences in the saving opportunity set virtually impossible.

For 401(k)s, however, variation across households in their access to 401(k) plans, and in the characteristics of these plans, facilitates investigation of how the availability of tax-favored saving accounts affects household saving. Comparisons of the mean and median wealth holdings of households who are eligible for 401(k) plans, with the analogous summary statistics for those who are not eligible, suggests substantially higher wealth for 401(k) eligible households than for those who are not eligible. This effect is most pronounced at low and middle income levels. Moreover, given the low level of financial asset holdings for many households in the lower strata of the income distribution, it would be difficult for households to contribute to 401(k)s for many years without drawing down their assets outside the account. CBO (2003) reports that 401(k) plan contributions in 1997 averaged \$2772 per participant, with levels more than twice this high at high income strata. Many households would not be able to contribute at this level for more than a few years before they would effectively be making marginal contributions of new saving to their 401(k) plan.

The analysis of substitution between 401(k) plan accumulation and other types of saving has focused on several possible modes of substitution. One is direct financial asset substitution, drawing down assets in money market funds, mutual funds, bank saving accounts, or other saving vehicles to finance 401(k) contributions. There is little evidence of substitution on this margin. A second is using housing equity to finance retirement plan contributions by borrowing against accumulated equity with larger mortgages. There is some evidence of substitution on this margin in the late 1980s, but this finding does not appear to be robust across other time periods. Finally, there is the possibility that 401(k) saving may be offsetting saving through other forms of pension plans. This may be the most likely form of substitution, since the broad trends in the U.S. suggest that defined benefit plans have declined at the same time that 401(k)s have become popular. Firm-level data on the structure of pension plans offers only weak evidence of such substitution, and suggests that the shift from defined benefit to defined contribution plans takes place over horizons of many years, not in a short period. While relatively few firms have closed defined benefit pension plans and replaced them with 401(k) plans, it is possible that new firms that would have introduced defined benefit plans if 401(k)s were not available have chosen to establish only 401(k) plans. This hypothesis is difficult to evaluate.

Critics of the current structure of 401(k) plans raise three primary concerns about the efficacy of this system in providing for retirement income support. The first is that workers are

exposed to the risks associated with asset price fluctuations, so that their level of retirement income support cannot be predicted. The recent decline in stock market values has thrown this concern into sharp relief, and the collapse of several firms in which employees held substantial amounts of company stock in their 401(k) plans has caused particular concern. The comparative risk analysis of defined contribution, 401(k) style plans, and the alternative defined benefit plans that are implicitly the standard in many discussions, is complex. While 401(k)s do expose savers to more asset market risk, defined benefit plan participants are subject to the risk of losing a substantial share of their benefits' value if they terminate employment at their firm prior to the early or normal retirement age. Poterba (2004) and Poterba, Rauh, Venti, and Wise (2003) present evidence on the asset market risks that workers face as a result of saving through 401(k) plans, and embed the analysis in a lifetime portfolio choice context.

A second criticism of the 401(k) system is that because workers are allowed to claim "lump sum distributions" when they change jobs, there will be substantial asset leakage from the pension system. The rapid growth of assets in 401(k) plans belies this concern at an immediate level. It is nevertheless worth explaining the source of this concern. If a worker has accumulated a retirement account balance at a firm, and then moves to another firm, the worker has four options with regard to the accumulated account balance. First, the balance can be left as part of the prior firm's pension plan. Second, the balance can be moved to the new firm's 401(k) plan, if one exists. Third, the accumulated balance can be "rolled over" into an Individual Retirement Account, which will allow the individual discretion in managing the assets. This is the source of the growth in IRA balances noted above. Finally, the value of the account can be withdrawn as a taxable lump-sum distribution.

Poterba, Venti, and Wise (2001) present empirical evidence on the disposition of 401(k) balances when employees change jobs that shows that a substantial fraction of transfers take the form of lump-sum distributions. However, there is an important difference between the fraction of transfers that are withdrawals and the fraction of assets that are withdrawn as a result of these transfers. Most of the transfers that result in withdrawals are small transfers, while the vast majority of large transfers remain within the retirement system. Only a small share of 401(k) assets leaves the pension system through lump-sum distributions.

A third concern is that when 401(k) participants reach retirement, they will draw down their accumulated resources too quickly and fail to provide adequately for the possibility of reaching very old age. Defined-benefit pension plans and government-provided retirement income programs offer the elderly annuitized income streams. While private pensions often fail

to keep pace with inflation, most government programs are indexed and therefore offer long-term retirement income support. The U.S. experience to date suggests that relatively few 401(k) participants have chosen to annuitize their accumulated balances at retirement. This may be explained by the availability of other retirement income annuities for these households. A high fraction of the currently-retired 401(k) participants are also covered by employer-provided defined benefit pension plans. Another potential explanation for the low rate of annuitization focuses on market imperfections in the private annuity market, and the possibility that for many potential annuitants the price of annuitization is simply too high. While there is evidence of adverse selection in annuity markets, the degree of such selection is likely to be sensitive to the size of the annuitant population. As the number of retired households with 401(k) accounts and a potential demand for annuitization rises, the degree of selection in the annuity market may decline.

4. Designing 401(k) Plans to Encourage Private Saving

The U.S. experience with 401(k)-type programs offers a number of important lessons about how to design of voluntary retirement saving programs to most successfully increase private saving. Some of these lessons call into question the standard economic analysis of household saving behavior. They nevertheless provide useful insights that may be copied as other nations attempt to increase the share of retirement resources provided by household saving.

First, programs that rely on payroll deduction appear to attract a higher contribution flow than programs that are based on voluntary individual contributions. Age- and income-specific rates of participation in 401(k) plans are higher than the participation rates for IRAs, which are individual-based saving programs. This may be due to the more attractive nature of many 401(k)s, due to employer matching and the higher contribution limits associated with these plans. There also appear to be important externalities within the workplace associated with participation in voluntary retirement saving programs.

Duflo and Saez (2002) compare the behavior of ex ante identical workers who are hired as librarians at a large research university. They study how participation in and contributions to retirement saving programs vary as a function of which library these new employees are assigned to. While library assignments are apparently almost random, the saving rates of the new librarians evolve differently depending on the saving patterns of the existing employees in the library to which the individual is assigned. Those who are assigned to libraries with high 401(k) participation rates tend to participate; those who are assigned to low-participation libraries are unlikely to participate. This could be explained by on-the-job discussions about saving that

translate into individual action. Because IRA decisions must be made in isolation, individuals do not receive the same positive feedback that they do with a 401(k) plan contribution.

Second, households appear to be heavily influenced by “default options” in retirement saving plans. This is an example of the importance of framing, an issue that has attracted great attention in the literature on psychology and economics. Madrian and Shea (2001) offer powerful evidence on this point. They analyze participation in a 401(k) saving plan at a firm before and after the adoption of an “automatic enrollment” default. Before “automatic enrollment,” employees could choose to enroll in the firm’s 401(k) plan when they joined the firm, or at a subsequent date. Enrollment required employees to take action, however, by signing up for the program. When the firm adopted automatic enrollment, new hires were informed that they would be enrolled in the 401(k) plan, and that several percent of their salary would be contributed to a fixed-income fund, unless they chose to opt out of the saving program. Participation in the 401(k) plan by workers who were hired after the automatic enrollment program took effect was much higher than the participation rate among workers who were hired earlier. The disparity between the enrollment rates declined as the worker’s tenure at the firm increased, suggesting that as workers realized that they were likely to make a career at the firm, they became more likely to decide to participate in the plan.

There is related evidence that individuals are not able to discipline themselves to save, but that they are prepared to accept pre-commitments that lock them in to future saving. Bernheim (1995) reports that when households are asked what their target saving rate for the next quarter is, they offer responses that typically exceed the actual saving rate that they accomplish. This may partly explain the demand for pre-commitment devices that encourage household saving by removing discretion. Thaler and Bernartzi (2004) describe the “Save More Tomorrow” (SMT) program that has been adopted at several firms, and that is currently being promoted by Vanguard, a large U.S. mutual fund company. This program has been very successful in raising workplace saving. Workers who sign up for SMT agree to contribute a rising fraction of their salary to the firm’s 401(k) plan. This fraction might rise from two percent per year at the start of the SMT program, to six percent after four years. When SMT programs are offered as the default in 401(k) plans, workers are observed to contribute a growing share of their earnings to the retirement saving plan.

Third, workplace education about the financial benefits of saving through tax-deferred retirement accounts, and about the risks and returns of different assets, can affect the behavior of plan participants. Bernheim and Garrett (2004) provide evidence on the links between access to

financial education as part of the 401(k) program and participant behavior. At the moment, there is great heterogeneity across firms in the nature of information and education provided to workers.

One of the great current challenges facing U.S. firms that offer 401(k) plans involves identifying the line of demarcation between “financial education” and “financial advice.” If a firm offers investment advice to its workers, it could face potential legal liability if that advice leads workers to make investments that perform poorly. The empirical evidence on worker education suggests that firms that provide such education experience higher rates of participation in their 401(k) plans. There is also some evidence suggesting that in the aftermath of education about the relative risks and returns on stocks and bonds, workers shift their portfolio allocation toward stocks. It is difficult to separate the effect of worker demand for financial education from the impact of this education on behavior, however.

The U.S. is currently witnessing the rise of fee-for-service financial service providers that provide advice to 401(k) participants about how best to achieve their long-run saving goals. By contracting with such an outside firm to provide financial advice, the employer avoids some of the legal liability associated with the provision of investment information. Such auxiliary firms that specialize in educating workers about risks, returns, and investment options could arise under either voluntary or compulsory systems of retirement saving. A key policy challenge for the United States, as the number of 401(k) participants continues to grow and as 401(k) assets become increasingly important in providing retirement income, will be regulating the provision of information by these investment advisors.

5. Economics, Psychology, and Saving Incentives

The U.S. experience with household saving through 401(k)s suggests that understanding saving behavior, and designing policies that can effectively encourage retirement saving, may require a more expansive framework than that offered by neoclassical economics. Insights from psychology may prove especially helpful in this regard. The evidence on the impact of “automatic enrollment” programs suggests that issues of framing, developed in the psychology literature by Tversky and Kahnemann (1981) and subsequently applied in many contexts, may be of substantial importance.

The empirical findings of the sensitivity of 401(k) saving decisions to the way various options are presented to potential savers is widely cited by behavioral economists as strong support for the importance of framing effects. The results of studies such as Madrian and Shea (2001) represent a challenge to neoclassical economics. The opportunity sets facing households who enroll under automatic enrollment plans are the same as those facing those who have to

voluntarily sign up for a 401(k) plan, yet the outcomes of their choice processes are different. Similarly, the households who sign up for the Save More Tomorrow plan face the same budget sets as their co-workers who do not, yet they save a higher fraction of their income. These findings suggest that devoting some attention to how choice problems are posed can be helpful in designing retirement saving programs that actually increase household saving.

Studies of 401(k) participant behavior do not just suggest that framing effects are important. They also indicate that households are myopic, procrastinate, and exhibit other pathologies in intertemporal decision making. When workers are exposed to financial education, the fraction that report at the end of a seminar that they intend to increase their saving rate is much higher than the fraction that actually do so. Saving thus exhibits some similarity to giving up smoking or to dieting.

New models of intertemporal choice seek to explain these patterns; they can also provide important insights for policy design. Laibson (1997), building on Strotz (1956), has developed models of quasi-hyperbolic discounting, in which households apply a higher discount rate per unit of time in the near term than at more distant times. In such models, the relative rate of discount between 2010 and 2011 today will differ from the rate of discount when time has advanced to 2010. One way for households to overcome the problem of revising their consumption plans as time advances is by choosing commitment strategies, such as retirement saving programs that commit them to a given profile of future consumption. Policy-makers should recognize the power of such programs in considering the design of retirement saving incentives. The challenge to proponents of quasi-hyperbolic discounting is explaining why, if discount rate revisions are ubiquitous, there is not more demand for commitment strategies.

Another class of newly-developed models that could account for some of the observed patterns of household saving behavior are the “lapse of control” models explored by Bernheim and Rangel (2003). In this setting, the challenge for the household is to avoid a consumption binge that will draw down accumulated retirement resources. This modeling framework also suggests that households will value commitment strategies that make it difficult for them to draw down their accumulated resources, and it suggests that public policy should make it difficult for households to undo prior saving decisions.

The research challenge suggested by these results is designing creative policies that exploit household behavioral traits, both those that are consistent with traditional neoclassical economic models of life-cycle saving and those that are not, to fashion an effective means of promoting retirement saving. Choi, Laibson, Madrian, and Metrick_ (2003) take initial steps in

this direction. Using estimates of the way savers respond to different types of default, they try to design an optimal default to promote retirement saving. Future work at the intersection between behavioral economics and public finance has the promise of yielding new insights on the best way to configure retirement saving programs. Building on these insights to design actual saving promotion policies requires clear analysis of the existing saving institutions, provided for example by Börsch-Supan and Essig (2003), as well as the interplay between saving policies and other factors that affect household behavior.

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