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Introduction

WILLIAM G. GALE, JOHN B. SHOVEN,
AND MARK J. WARSHAWSKY

The private pension system is an intriguing combination of successes and failures. In conjunction with Social Security, private pensions have helped provide millions of Americans with adequate and secure retirement income. Pensions help employers manage their work force and provide incentives to employees. Pensions also help employees plan and save for retirement.

Yet pension coverage has stagnated over the last thirty years, and certain groups appear to have fallen between the cracks of the pension system. Pension regulations are notoriously complex. Shifts toward defined contribution plans in recent years have exposed workers to more investment risk and required them generally to be better-informed managers of their own retirement funds. Shifts toward cash balance and other hybrid plans have raised concerns about the effects on older workers caught in the transition.

This panoply of strengths and weaknesses can prove bewildering to policy analyst and policymaker alike. This volume is the second of two that address pension issues and reform. The contributions in the first volume, *The Evolving Pension System: Trends, Effects, and Proposals for Reform*, provide a bird's-eye view of the features, trends, strengths, and weaknesses of the pension system, as well as three alternative paradigms for reform. The original versions of the contributions in this volume were presented at a conference at the Brookings Institution in September 2000. The papers are intended to supplement the broader contributions of the first volume by focusing on a series of specific issues and facts

that provide needed input into any reform effort. These analyses can be used, in conjunction with the broader analyses in the earlier volume, to inform particular issues within the broader context and framework of pension reform.

The Transition to Hybrid Plans

The proportion of the labor force covered by an employer-provided pension plan has remained stable since the 1970s; however, the shape of the pension universe is being rapidly transformed. Since the passage of the Employee Retirement Income Security Act (ERISA) in 1974, there has been a strong and continued movement away from the use of defined benefit plans as more and more firms have chosen to offer defined contribution plans, especially 401(k) plans. The movement toward greater use of defined contribution plans has occurred primarily among smaller employers. However, in the most recent *Fortune* magazine list of the largest 100 publicly traded corporations in the United States, sixteen now have a defined contribution plan as their retirement plan.

During the 1990s another significant change to pension plan structure emerged: the conversion of traditional benefit plans defined by final levels of pay to hybrid plans, either cash balance or pension equity plans. Cash balance plans define a worker's "account" based on an annual contribution rate for each year of work plus a contractual rate of return on accumulated balances. A pension equity plan defines the benefit as a percentage of final average earnings for each year of service under the plan. Both types of plans specify and communicate the benefit in lump-sum terms payable at termination rather than as an annuity payable at retirement, which is typical for defined benefit plans. While these plans take on some characteristics of defined contribution plans from workers' perspectives, they continue to be funded, administered, and regulated as defined benefit plans. The recent shift toward hybrid pension plans is occurring primarily among larger employers. In a number of cases where corporate giants of America have switched to hybrid plans, there has been considerable publicity.

The paper by Robert Clark and Sylvester Schieber provides new evidence on the impact of plan conversions on workers and examines the full extent of the conversion process, including changes in supplementary defined contribution plans. The authors also analyze the use of transition benefits to moderate the effect of the conversion on senior workers and the ending of early retirement subsidies. The paper finds that younger workers with limited job experience gain from plan conversions because of the steadier accrual of benefits at all service levels and the high probability that they will change jobs before reaching retirement age. Senior workers with considerable job tenure at the time of conversion are more likely to receive lower benefits unless special transition rules are applied. The authors find that most plan sponsors provided at least some

transition protection to workers with advanced tenure. An interesting new finding presented in the paper is that most of the reduction in benefits that these workers expect is not attributable to the plan conversion itself but is instead the result of eliminating subsidized early retirement. Recent court rulings, however, have raised questions about the viability of cash-balance plans.

Regulatory Issues

The regulation of pensions has attracted significant attention. Supporters view the regulations as necessary for ensuring that the revenue losses from pensions are limited and that the benefits are distributed fairly. Opponents view the rules as unduly complex and ultimately self-defeating.

Nondiscrimination Rules

The paper by Robert Clark, Janemarie Mulvey, and Sylvester Schieber examines the effects of nondiscrimination rules on private pension participation rates. In their empirical analysis, the authors account for the changes in pension participation caused by the three legislative acts that implemented more restrictive nondiscrimination rules: the Tax Equity and Fiscal Responsibility Act of 1982, the Tax Reform Act of 1986, and the Omnibus Budget Reconciliation Act of 1993. The authors employ regression and logit analysis to test whether the enactment of new regulatory provisions altered the ratio of high-income worker participation to low-income worker participation, and whether the legislation increased the probability that a worker will participate in a pension.

To answer the first question, the authors use time series regression analysis with the aggregate ratio of high-income worker participation rates to lower-income participation rates as the dependent variable and the legislative actions included in the model as explanatory variables. The authors find that all three legislative actions decreased the pension participation of lower-income workers relative to higher-income workers. To answer the second question, the authors test whether the legislative actions, and other variables including age, employment sector, and marginal tax rate, affect the probability that a worker will participate in a private pension. The results indicate that the first two legislative actions decreased lower-income worker pension participation rates, while the Omnibus Budget Reconciliation Act increased the rate of lower-income worker pension participation. The combined effect of the legislation, however, is negative on lower-income worker participation. The results also indicate that the sector in which the worker is employed is significant at all income levels and that marginal tax rates have a small effect on pension participation. The authors conclude that there is no evidence to suggest that the more restrictive nondiscrimination rules have forced or enticed employers to provide pensions to low-paid workers.

Contribution Limits

A key element of ERISA's defined contribution provisions is the setting of limits on the size of tax-deductible contributions. In both nominal and, especially, inflation-adjusted terms, these limits have been tightened over the years. As more and more workers are saving for retirement primarily through defined contribution and individual retirement account (IRA) plans, Congress is considering legislation to increase the various limits on tax-deductible contributions to retirement accounts.

The paper by Jagadeesh Gokhale, Laurence Kotlikoff, and Mark Warshawsky addresses several questions related to limits on defined contribution plans. The first is whether statutory limits on tax-deductible contributions to defined contribution plans are likely to be constraining, focusing on households in various economic situations. The second is how large is the tax benefit from participating in defined contribution plans. The third is how does the defined contribution tax benefit depend on the level of lifetime income. The paper finds that the statutory limits bind those older middle-income households who started their pension savings programs late in life, those households who plan to retire early, single-earner households, those households who are not borrowing-constrained, and those with rapid rates of real wage growth. Most households with high levels of earnings, regardless of age or situation, are also constrained by the contribution limits. By contrast, lower- or middle-income two-earner households that can look forward to modest real earnings growth are likely to be borrowing-constrained for most of their preretirement years because of the costs related to paying a mortgage and to having children who will go to college. These households are not in a position to save the 25 percent of earnings allowed as a contribution to defined contribution plans. Some of these middle-income households, however, are constrained by the \$10,500 limit on elective employee contributions to 401(k) plans if the households have access to only these plans and their employers make no pension contributions for them. The borrowing constraints faced by many lower- and middle-income Americans mean that contributions to defined contribution plans must come at the price of lower consumption when young and the benefit of higher consumption when old. For a stylized household earning \$50,000, consistently contributing 10 percent of salary to a defined contribution plan that earns a 4 percent real return means consuming almost two times more when old than when young.

The tax benefit from participating in a defined contribution plan can be significant. Assuming annual contribution rates at the average of the maximum levels allowed by employers in 401(k) plans and assuming a 4 percent real return on defined contribution and other assets, the benefit is 2 percent of lifetime consumption for two-earner households earning \$25,000 a year, 3.4 percent for those earning \$100,000 a year, and 9.8 percent for those earning \$300,000 a year. Contribution limits effectively limit the benefit at the highest regions of

the household earnings distribution. The extent of the benefit is also quite sensitive to the assumed rate of return on defined contribution and other assets.

Improving Participants' Information

The advent of self-directed, defined contribution plans places much heavier burdens on workers to understand and manage their accounts. A natural question, in this environment, is the extent to which workers understand the features and rules of their own pension plans.

What Do Pension Participants Know?

Alan Gustman and Thomas Steinmeier present a comprehensive analysis of the degree to which workers understand their retirement plans. In the research literature, the almost universal assumption is that workers are perfectly informed about the rules and regulations governing their employer- and government-provided pensions. However, to the limited extent that researchers have been able to test this assumption, results suggest that workers are less than fully informed and that providing information can affect their behavior. This analysis uses data from the Health and Retirement Study to compare individuals' responses concerning their pension plans with the actual characteristics of those plans as reported by employers.

The findings suggest that workers approaching retirement possess a great deal of misinformation about their pensions. Fewer than half of respondents could identify their eligibility for early and normal retirement benefits, and only about half could identify their plan type. Eighty percent of respondents with a defined benefit plan were unaware they were eligible for early retirement or did not know their plan's benefit reduction rate. Of the respondents who were willing to estimate the value of their expected Social Security benefits, only half were able to estimate their annual benefits within \$1,500.

The authors find similar disparities for private pensions. In addition, the authors complete a preliminary analysis of the relation between knowledge of retirement plan benefits and the fulfillment of retirement expectations, including wealth accumulation. Their findings indicate that lack of knowledge about retirement plan benefits has some systematic, but modest, effects on retirement plans, the realization of those plans, and saving, and highlight these issues as productive areas for future research.

Financial Education

One mechanism for improving workers' knowledge of their pension plans in particular and saving and portfolio issues in general is financial education. The Department of Labor recently made increased financial education a significant priority.

Dean Maki examines the impact of financial education on households' financial knowledge. He notes that rather than changing the fundamental parameters in households' utility function or discount rate, financial education can affect saving behavior by increasing a household's knowledge of investment options. Defining financial education as exposure to financial topics in high school or to employer-provided educational programs and seminars, the paper tests for the effect of financial education on households' knowledge of their pension plan characteristics and understanding of the relative rate of return on major financial assets.

The paper finds that education at both the high school and workplace level can affect financial knowledge. Creating a dummy variable based on a survey response regarding relative asset returns to represent knowledge of personal finance, the paper finds that respondents with high school exposure to personal finance are more likely to understand personal finance and that employees of firms that offer workplace education are more likely to understand personal finance. In addition, the study finds that high school and workplace education reduces the probability that households will not understand their pension plans.

Worker Choices in Self-Directed Defined Contribution Plans

Another way to gauge how well workers are managing their defined contribution plans is to examine different aspects of employee behavior. In defined contribution plans, workers must choose not only whether to participate, but how much to contribute, how to allocate the assets across various investment vehicles, and when and in what form to withdraw the funds.

Asset Allocation

Asset allocation, the decision about how much of a portfolio to allocate to different types of securities, is one of the fundamental issues in financial economics. For taxable individual investors, the proliferation of tax-deferred opportunities for retirement saving, such as IRAs, 401(k) plans, Keogh plans, and 403(b) plans, has added a new dimension to the traditional asset allocation problem. A taxable investor needs to make choices not just about the amount to hold in various types of assets, but also where to hold these assets. Assuming assets are broadly defined as risky and riskless, a taxable investor with a tax-deferred retirement saving account faces the complex problem of deciding how much of the risky asset to hold in his tax-deferred account and how much to hold in his taxable account. These choices are likely to be most salient for upper- and middle-income households for whom tax-deferred assets represent a substantial fraction, but not all, of their financial wealth.

The paper by James Poterba, John Shoven, and Clemens Sialm uses data on actual returns on taxable bonds, tax-exempt bonds, and a sample of equity mutual funds over a thirty-seven-year period to compare two asset location strategies for retirement savers who invest in equities through equity mutual funds. The first strategy gives priority to holding equity mutual funds in a saver's tax-deferred account, while the second strategy gives priority to holding fixed-income investments in the tax-deferred account.

The study finds that asset location decisions can significantly affect the wealth accumulation of retirement savers who hold assets in both tax-preferred pension accounts and nonpension accounts. Savers would have accumulated a larger stock of wealth if they had held their actively managed equity mutual fund in their tax-deferred account than if they had held their fund in a conventional taxable form. The explanation for this apparent contradiction with conventional wisdom has two parts. First, many equity mutual funds impose substantial tax burdens on their investors, raising the effective tax rate on investing in equities through mutual funds rather than in a buy-and-hold personal portfolio. Second, taxable investors who wish to hold fixed-income assets can do so by holding either tax-exempt or taxable bonds. The interest rate differential between these two types of bonds suggests that the effective tax rate on fixed-income investments may be higher than the statutory rate for high-income investors.

Back-Loaded versus Front-Loaded Saving Choices

Another investment choice retirement savers need to make is between front-loaded and back-loaded structures. Back-loaded plans are becoming increasingly popular. In back-loaded saving plans, the contribution is not deductible, but earnings and withdrawals are not taxed at all. Back-loaded Roth IRAs have existed since 1997. The 2001 tax cut introduced the notion of a Roth 401(k). Since then, there have been proposals to expand back-loaded saving vehicles.

In contrast to back-loaded plans, most tax-preferred saving vehicles in the United States generally include an up-front tax deduction, tax deferral over the investment horizon, and taxation upon withdrawal—401(k) plans are an example. The tax benefit conferred under this structure is composed of two different parts: a trade-off of present for future tax rates and the inside buildup over the investment horizon. Both of these features are thought to convey significant benefits. The benefit of inside buildup is readily apparent in that asset values can grow at their pre-tax rate of return, offering significant deferral value. The trade-off between present and future tax rates benefits the investor to the extent that future retirement income is lower than income received during working years, when the contributions are made. However, the value of this benefit is uncertain because tax structures may vary considerably over an investor's life cycle.

Joel Dickson provides analysis showing how the uncertainty of future tax rates can affect individuals' savings and investment decisions between front- and back-loaded plans. These vehicles provide an alternative method of allowing investors to hedge against the uncertainty of future tax rates, which greatly affect the retirement income stream of a traditional pension investment vehicle. Depending on an investor's risk tolerance and expected future tax rate, back-loaded investment vehicles could represent part or all of an investor's retirement savings allocations.

Annuity versus Lump-Sum Choices

While defined benefit and defined contribution plans differ on several dimensions, one of the most important differences is the method of distributing retirement income. Traditional defined benefit plans typically pay benefits in the form of a life annuity and thus provide retirees with a form of insurance against outliving their resources. Defined contribution plans, in contrast, are much less likely to offer life annuities to retirees. Instead, most defined contribution plans offer some sort of lump-sum payment or "phased withdrawal" options (or both) upon retirement. While these alternative distribution methods offer retirees a high degree of flexibility and liquidity, they fail to provide a formal mechanism by which individuals can insure against the risk of outliving their resources.

The paper by Jeffrey Brown and Mark Warshawsky explores the extent to which retirees can and do insure themselves against longevity risk in private pension plans. The authors first review the theoretical and empirical results on the value of annuities, and discuss reasons why households may choose not to insure themselves further against longevity risk. Brown and Warshawsky then analyze current trends in the private pension market and find that the shift from defined benefit plans to defined contribution plans is likely to reduce annuitization rates among future retirees. This conclusion is driven primarily by the fact that the majority of defined contribution plans, such as 401(k) plans, do not even offer participants a life annuity option at retirement. Thus, individuals who wish to annuitize generally must do so in the individual market where payouts are lower because the life expectancy for annuitants is longer than for the population at large. Hence, the authors can forecast that in the coming decades, absent institutional and regulatory changes, overall annuitization rates may fall and households may be increasingly exposed to the risk of outliving their financial resources, while the currently small private individual annuity market may witness significant growth. Finally, the authors discuss several policy options designed to increase annuitization of retirement resources.

Interactions with Social Security Reform

Because Social Security provides retirement income to almost all elderly households, it is difficult to consider pension reform issues in isolation from the current

status and potential reform of the Social Security program. Two papers address these issues.

Effects of Social Security Reform on the Pension System

Since the release of the report of the 1994–96 Advisory Council on Social Security, there have been many studies of Social Security reform. These studies have focused primarily on the reform experiences of other countries, the feasibility of various transition paths, the administrative aspects of a system of individual accounts, and the impact on workers and beneficiaries as participants in the system. To date, there has been no comprehensive discussion of the likely effect that Social Security reform would have on employer-provided pensions. This is a critical omission. Secure retirements are often depicted as a stool with three legs—Social Security, employer-provided pensions, and personal saving. Changing any one of the legs may necessitate changes in the other legs if the stool is to remain stable.

There are several possible changes through which firms and workers might modify the system of employer-provided pensions in response to Social Security reform. First, because the Social Security system operates through the workplace, closing the financial gap in Social Security will raise the cost of employing workers. Second, because pensions are primarily used as a means of accumulating wealth for retirement, the effect of Social Security reform on pension plans depends on the way reform affects workers' demand for retirement saving. Third, there is considerable heterogeneity in the reasons why people save and how well their pensions help them achieve their goals.

The primary objective of the paper by Andrew Samwick is to identify the important channels through which firms and workers might modify the system of employer-provided pensions in response to Social Security reform. The paper develops a model of pension plan design that incorporates heterogeneity in tastes for saving and sorting of workers in the labor market. The model is used to analyze the likely effects of a range of Social Security reform proposals on the design of employer-provided pensions. Several reform options are shown to change the relative benefits received by high- and low-income workers and to affect the ability of pension plan sponsors to comply with nondiscrimination rules for the distribution of pension contributions and benefits across workers of different wage levels.

Assessing Risk in Pension Guarantees

Many observers now believe that future retirement benefits provided by many public pension systems around the world, including the U.S. Social Security system, should be backed by more assets. Disagreement, however, exists about whether those new assets should be held in private accounts or by the public pension plan itself. The economics literature has traditionally focused on deterministic models and has concluded that the choice between the two is basically

immaterial. However, sharp differences between the two approaches emerge when risks are explicitly taken into account.

The paper by Kent Smetters considers the design and cost of guaranteeing retirement benefits in the presence of political and market-based risks. The analysis focuses on two potential reforms to the Social Security system: the introduction of private pension accounts, and an increase in the asset holdings within Social Security while maintaining the existing structure. Smetters demonstrates that although the two approaches can be equivalent under certain circumstances, they generate very different risks. Each approach poses a different set of political risks, and each approach would typically differ in how market-based risk is shared between generations. Both sets of risks can dramatically affect the liabilities that future generations could inherit in the form of either increased taxes or reduced benefits. The author concludes that private accounts are typically superior in handling the most important political-economy risks, but that increasing the prefunding of public pension plans can be more effective at reducing market-based risks.