INDIVIDUAL DECISION MAKING AND RISK IN DEFINED CONTRIBUTION PLANS

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Defined contribution retirement plans expose retirement savers to financial market risks. The amount of risk and the link between financial market fluctuations and retirement income security depends on several choices that plan participants make. This paper describes the behavior of retirement savers who participate in the most common type of defined contribution plan, the 401(k) plan, and the risks that they face. It considers decisions about whether to participate in an available plan, how much to contribute to the plan, how to allocate assets within the plan, and when to draw down assets from the plan. Empirical evidence suggests that a substantial minority of the participants in self-directed defined contribution plans make decisions that expose them to unnecessary risks of inadequate retirement accumulation. The paper discusses a number of policy options that may assist 401(k) participants in assessing and managing the risks associated with retirement saving plans.

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I. Introduction

Defined benefit (DB) pension plans expanded rapidly in the United States in the decades following World War II.[1] They became the predominant form of private retirement income provision for American workers.[2] Most DB pensions pay retirees nominal annuities that begin at retirement. They often provide protection for a surviving spouse as well. The retirement annuity is typically a function of a retiree's wage history, job tenure at the firm, and age at retirement.[3] The postretirement annuities are a liability of the employer, and any financial risks associated with paying them are borne by the shareholders in the firm, or, in case the sponsoring firm goes bankrupt, by the Pension Benefit Guaranty Corporation (PBGC).[4] The PBGC was created in response to several highly visible corporate bankruptcies in the late 1960s and early 1970s, in which retirees did not receive their promised pension.[5] The PBGC indemnifies low-wage workers completely, but offers only partial insurance for those with higher wages and higher promised benefits.[6]

In the early 1980s, the number of DB pension plans and the number of participants in these plans stagnated and then began to decline.[7] In contrast, defined contribution (DC) plans have grown rapidly in the last two decades.[8] In these plans, accounts are funded through a combination of employee and employer contributions. Employees usually control investment decisions and withdrawals from these accounts. The most common DC plan is now the 401(k) plan,[9] which is named after the section of the Internal Revenue Code that created this retirement saving institution. Self-directed retirement accounts that are not connected to employers, such as Individual Retirement Accounts (IRAs) and Keogh plans, have also grown rapidly during this time pe-

1. *See*, *e.g.*, PETER J. WIEDENBECK & RUSSELL K. OSGOOD, CASES AND MATERIALS ON EMPLOYEE BENEFITS § 3.C (1996).
2. *Id.*
3. *See*, *e.g.*, LAWRENCE A. FROLIK & RICHARD L. KAPLAN, ELDER LAW IN A NUTSHELL § 14.2 (3d ed. 2003).
4. *Id.*
5. *See*, *e.g.*, WIEDENBECK & OSGOOD, *supra* note 1, § 9.E.
6. *See*, *e.g.*, FROLIK & KAPLAN, *supra* note 3.
7. James M. Poterba & David A. Wise, *Personal Retirement Accounts and Personal Choice*, *in* PERSONAL SAVING, PERSONAL CHOICE 11, 12 (David A. Wise ed., 1999).
8. *Id.*
9. *Id.*

riod.[10] This has resulted in a very large pool of retirement assets that are directly managed by current and future retirees, and not by professional money managers. The total value of private DC pension plans was $2.6 trillion at the end of 2004; IRA assets totaled $3.0 trillion at the end of 2003.[11] In contrast, total assets in private DB pension plans were $1.8 trillion at year-end 2004, and state and local government retirement plan assets, most of which support DB plans, were $2.1 trillion.[12] Total household financial assets at year-end 2004 were $36.8 trillion;[13] plan assets therefore account for roughly one-sixth of household financial wealth.

The collapse of several highly visible U.S. corporations whose workers had invested many of their 401(k) plan assets in company stock has prompted proposals to restrict individual decision making in DC plans.[14] Current proposals for individual account alternatives to, or modifications to, the current defined benefit Social Security system have also drawn attention to the risks associated with DC plans. This paper discusses these risks and the role of individual decisions in attenuating or accentuating those risks. The paper focuses on employer-provided DC plans, such as 401(k) and 403(b) plans, and excludes tax-deferred accounts such as IRAs that are established outside the employment relationship. It describes the choices that workers covered by DC plans face, and the evidence on how they make decisions with regard to retirement saving.

This paper does not attempt to compare the retirement benefits provided by, or the risks associated with, DB and DC pension plans.[15] It assumes that DC plans will remain the dominant form of private retirement plan for the foreseeable future, and that 401(k) participants, particularly those who reach retirement a decade or more into the future, will accumulate substantial resources in these plans. The analy-

10. 26 I.R.C. § 401(k) (2004); Poterba & Wise, *supra* note 7, at 12; *see also* FROLIK & KAPLAN, *supra* note 3, § 14.5.

11. BD. OF GOVERNORS OF THE FED. RESERVE SYS., FLOW OF FUNDS ACCOUNTS OF THE UNITED STATES: FLOWS AND OUTSTANDINGS FOURTH QUARTER 2004 113 (2005), *available at* http://www.federalreserve.gov/releases/Z1/current/Z1.pdf.

12. *Id.* at 76, 113.

13. *Id.* at 102.

14. Richard L. Kaplan, *Enron, Pension Policy, and Social Security Privatization*, 46 ARIZ. L. REV. 53, 53 (2004).

15. ALICIA H. MUNNELL & ANNIKA SUNDÉN, COMING UP SHORT: THE CHALLENGE OF 401(K) PLANS 172–82 (2004); Andrew A. Samwick & Jonathan Skinner, *How Will 401(k) Pension Plans Affect Retirement Income?*, 94 AM. ECON. REV. 329 (2004).

sis focuses on ways to improve the success of DC plans in delivering retirement income security.[16]

The paper is divided into four sections. Each of the first three considers one of the major decisions that confronts potential 401(k) participants.[17] The first section focuses on the participation decision. It presents information on contribution behavior in 401(k) plans and discusses strategies for encouraging participation and contributions, particularly among low-income and younger workers. Section two explores investment patterns in 401(k) plans and describes how asset allocation decisions affect the risk of reaching retirement with limited resources. This section also considers policy options for encouraging diversified 401(k) holdings and reducing the chance of very low returns. Section three discusses the withdrawal of assets that have been accumulated in 401(k) plans, a topic that has received much less attention than either the participation or investment decision. It explores ways to reduce the likelihood that 401(k) participants will draw down their resources too early in their retirement years, thereby risking running out of resources late in life. The conclusion suggests the importance of using insights from law and psychology, as well as economics, in designing policies to improve the performance of 401(k) plans.

II. Contributions to 401(k) Retirement Plans

Individuals make three decisions that affect their contributions to employer-provided DC plans. First, they choose whether or not to work for a firm that offers such a plan. Second, if they work for a firm that offers a plan, they decide whether or not to participate. Third, if they participate, they decide how much to contribute. For workers who are employed at firms that offer voluntary DC plans, the participation and contribution decisions have a critical effect on their retirement income security.

A. Empirical Evidence on Participation and Contribution Behavior

The aggregate participation rate in voluntary DC plans is the product of the eligibility rate and the participation rate conditional on

16. MUNNELL & SUNDÉN, *supra* note 15, at 53–94; WILLIAM G. GALE ET AL., THE RET. SEC. PROJECT, THE AUTOMATIC 401(k): A SIMPLE WAY TO STRENGTHEN RETIREMENT SAVINGS 1–4 (2005), *available at* http://www.brookings.edu/dybdocroot/views/papers/20050228_401k.pdf.

17. MUNNELL & SUNDÉN, *supra* note 15, at 55–56; Poterba & Wise, *supra* note 7.

eligibility. Two surveys, a decade apart, reveal stable patterns in both rates. Data from the 1991 Survey of Income and Program Participation suggest a participation rate conditional on eligibility of 70.8%.[18] There is a gradient across income groups in this participation rate, with the rate for high-income workers twenty percentage points higher than that for workers in the lowest earnings classes.[19] There is an even more pronounced difference across groups in eligibility for 401(k)-type plans. Tabulations from the 2001 Survey of Consumers Finance suggest that while 27.5% of workers with earnings below $20,000 per year are eligible for a 401(k) plan, 75.4% of those earning more than $100,000 are eligible.[20] Combined with a significant gradient in participation conditional on eligibility, from 49.9% for those below $20,000 to 88.7% for those above $100,000,[21] this translates into sharp differences in participation rates for workers in different earnings groups. While the participation rate is greater than two-thirds for workers with earnings of more than $80,000, it is only 40.1% for those with $20,000–$39,999 in earnings, and it is below 15% for workers with lower earnings.[22] The lowest rates of participation tend to be among young workers with low earnings.[23] These broad patterns are consistent with data from other surveys.[24] Information in the 2001 Survey of Income and Program Participation[25] and from individual 401(k) plan administrative records[26] confirms the pattern of increasing participation at higher incomes.

18. James M. Poterba et al., *Do 401(k) Contributions Crowd Out Other Private Saving?*, 58 J. PUB. ECON. 1, 4 (1995).
19. *Id.* at 6 tbl.2.
20. MUNNELL & SUNDÉN, *supra* note 15, at 56.
21. *Id.*
22. *Id.*
23. *See id.* at 57.
24. *See* Craig Copeland, *401(k)-Type Plan and IRA Ownership*, 26 EBRI NOTES (EBRI Educ. & Research Fund, Washington, D.C.), Jan. 2005, at 2–6; Gur Huberman et al., Defined Contribution Pension Plans: Determinants of Participation and Contribution Rates 5–7 (May 2004), *available at* http://www0.gsb.columbia.edu/faculty/ghuberman/PDFpapers/Vanguard.pdf.
25. Copeland, *supra* note 24, at 3.
26. Robert L. Clark & Sylvester J. Schieber, *Factors Affecting Participation Rates and Contribution Levels in 401(k) Plans*, *in* LIVING WITH DEFINED CONTRIBUTION PENSIONS: REMAKING RESPONSIBILITY FOR RETIREMENT 69 (Olivia S. Mitchell & Sylvester J. Schieber eds., 1998) [hereinafter LIVING WITH DEFINED CONTRIBUTION PENSIONS]; Huberman et al., *supra* note 24, at 4. Studies using administrative records from individual 401(k) plans, or samples of such plans, include Robert Clark and Sylvestor Schieber.

Contribution rates to 401(k) plans, conditional on participation, also vary by earnings level. The median employee contribution rate in the 2001 Survey of Consumer Finances is 6.0%, with a median employer contribution rate of 3.0%.[27] Contribution rates vary across worker categories, with those in lower earnings categories contributing less than those in higher categories.[28] Contribution rates are sensitive to plan structure. When employers match employee contributions up to a fixed share of salary, many workers appear to contribute the maximum amount that the employer will match, but no more.[29] Although contribution rates rise with the employer match rate,[30] evidence shows that some workers who are eligible for a matching contribution, and who could immediately withdraw the funds from their 401(k) after receiving the match, choose not to contribute.[31]

Several constraints limit the amount that participants can contribute to 401(k) plans. Some firms restrict the percentage of salary that an employee can contribute to the plan.[32] The tax law caps the total employee contribution to a 401(k) plan.[33] In 2005, this limit is $14,000.[34] In most 401(k) plans only a small fraction of participants are constrained by the IRS limit, although these contributors account for a larger share of contributions than of participants.[35]

B. Policies to Expand Participation and Contributions

When 401(k)s were introduced in the early 1980s, they represented secondary retirement plans for many of the eligible workers. Most of the employers offering such plans also offered a defined benefit pension plan.[36] Growing numbers of workers, however, are cov-

27. MUNNELL & SUNDÉN, *supra* note 15, at 60.
28. *Id.*
29. Andrea L. Kusko et al., *Employee Decisions with Respect to 401(k) Plans*, *in* LIVING WITH DEFINED CONTRIBUTION PENSIONS, *supra* note 26, at 98.
30. *See*, *e.g.*, GARY V. ENGELHARDT & ANIL KUMAR, EMPLOYER MATCHING AND 401(k) SAVING: EVIDENCE FROM THE HEALTH AND RETIREMENT STUDY 26 (Ctr. for Retirement Research at B.C., Working Paper No. 2004-18, 2004).
31. James J. Choi et al., $100 Bills on the Sidewalk: Violations of No-Arbitrage in 401(k) Accounts 3–4 (2004), *available at* http://kuznets.fas.harvard.edu/˜jchoi/arbitrage.pdf.
32. ENGELHARDT & KUMAR, *supra* note 30, at 37, 39.
33. Liz P. Weston, *Savers Who Reach 401(k) Cap Have Other Investing Options*, L.A. TIMES, Feb. 20, 2005, at C3.
34. *Id.*
35. *Id.*
36. *Id.*

ered only by a 401(k) plan. For these workers, deciding not to participate in the plan can be very costly in terms of foregone retirement income. Promoting 401(k) participation therefore is important for enhancing the retirement well-being of current workers. Plan sponsors may take actions to increase participation, such as increasing their match rate or educating eligible employees about the benefits of tax-deferred saving. Government regulators and legislators can also take action by altering the policy environment in which 401(k) plans operate.

Default plans, or "opt-out" programs, are one very promising strategy for promoting 401(k) participation. A number of scholars have documented their favorable effect on participation rates.[37] The simplest version of these plans replaces the usual "opt-in" decision that an employee faces when she begins to work for the firm with an alternative "opt-out" decision.[38] A new employee is enrolled in the 401(k) plan *unless* she makes a decision not to enroll. The effects of switching from "opt-in" to "opt-out" are substantial. In some cases, this switch raises 401(k) participation rates by as much as forty percentage points for newly hired workers.[39] The impact of these plans declines as the tenure of the affected workers increases, but there is still a noticeable effect of default plans even for workers with five years of experience at the firm.[40] The Save More Tomorrow program is a variant of the default plan which allows 401(k) participants the opportunity to precommit to a rising stream of plan contributions over time.[41] Workers can choose to save a higher fraction of any raises than of their base pay, or they can commit to increase their contribution rate in future years without any further action on their part. Comparisons of workers who are exposed to the Save More Tomorrow program to those who are not suggest that this plan increases the share of salary contributed to the 401(k) plan.[42]

37. Brigitte C. Madrian & Dennis F. Shea, *The Power of Suggestion: Inertia in 401(k) Participation and Savings Behavior*, 116 Q. J. ECON. 1149 (2001).
38. *Id.*
39. *Id.*
40. *See* James J. Choi et al., *For Better or For Worse: Default Effects and 401(k) Savings Behavior*, *in* PERSPECTIVES ON THE ECONOMICS OF AGING 81, 100 (David A. Wise ed., 2004).
41. *See* Richard H. Thaler & Shlomo Benartzi, *Save More Tomorrow: Using Behavioral Economics to Increase Employee Saving*, 112 J. POL. ECON. S164, S170 (2004).
42. *See id.* at S173–74.

Default plans and the Save More Tomorrow program overcome inertia, thereby increasing contributions to DC plans. But, inertia also raises challenges for their long-run operation. When a firm offers a default option, it must select an investment category to which the contributions of default participants will be directed. There is a general tendency for the option that is designated as the default, when a firm adopts a default plan, to exhibit an increase in contribution inflows.[43] The tradeoff facing a firm that is designing a default plan is between a relatively low-risk default investment option, such as a money market fund, which will expose participants to very little risk of losing money and a very low expected return, and a higher risk investment option that offers a higher expected return along with a greater chance of an unfavorable outcome. Human resources managers and executives, who are concerned about the prospect that workers who lose money in their retirement account as a result of adverse market performance or other factors may sue the firm for selecting a risky default option, may select virtually riskless default options.[44] As a result of such default elections, workers may earn low but riskless returns for many years. Many years after joining a plan that offers a riskless default investment option, participants may still have a very low-risk portfolio, and they may have missed the opportunity to earn higher returns throughout their working career. Participants rarely change the allocation of their contributions, and they rebalance their accounts infrequently.[45] The absence of rebalancing is particularly puzzling because fluctuations in the relative returns on bonds and stocks can lead to substantial swings in the fraction of a 401(k) account that is invested in these broad asset classes.

If plan sponsors are going to play an important role in educating workers about the risk of different investment options, and if they are going to work with 401(k) plan administrators to develop default options that provide higher expected returns at the cost of higher risk, having clear legislative rules on what constitutes investment education and what constitutes advice is essential. Moreover, plan sponsors need guidance on the potential liabilities associated with different de-

43. *See* Choi et al., *supra* note 40, at 81–82.
44. *See* William Samuelson & Richard Zeckhauser, *Status Quo Bias in Decision Making*, 1 J. OF RISK & UNCERTAINTY 7 (1988).
45. Julie Agnew et al., *Portfolio Choice and Trading in a Large 401(k) Plan*, 93 AM. ECON. REV. 193, 200–01 (2003) (documenting the low rate of portfolio adjustments for 401(k) participants); Samuelson & Zeckhauser, *supra* note 44.

fault investment choices, and with the provision of education that may enable participants to make their own investment decisions. One potentially attractive avenue for reform is a modified default option, in which the participant is required to take some action to review her asset allocation several years after joining the plan.

Default plans can only encourage 401(k) participation by employees who work at firms that offer 401(k) plans. A separate set of policy issues therefore concerns expanding the set of firms that offer DC plans. The availability of such plans is positively correlated with the firm's size and wage level.[46] Any campaign to expand the reach of 401(k) plans must focus on small firms and firms with low-wage workers. The administrative costs of establishing a 401(k) plan include an element of fixed costs, which may be large relative to the benefits of such a plan at a small firm. One way to alter the balance between the costs and benefits of establishing plans at such firms is to provide a refundable tax credit for qualifying firms that offer 401(k) plans or similar retirement saving programs for their workers. Unfortunately, there is little empirical evidence on the sensitivity of employers' decisions about which benefits to offer with respect to the after-tax administrative costs of benefit programs. It is also possible that advertising about the benefits of tax-deferred saving could increase the demand for 401(k) plans among the employees at small firms. Such demand could lead small firms to respond by offering such plans. More extreme options could require firms with more than a fixed number of workers or with payroll above a threshold to provide a defined contribution saving option for their employees. The alternative strategies for continuing the expansion of 401(k) coverage are likely to remain a subject of active debate.

III. Investment Allocation by 401(k) Participants

Once an individual has elected to contribute to a 401(k) plan, he faces the *asset allocation* decision. Plans differ in the number of investment options they offer, and the financial institutions that offer these options. The Employee Retirement Income Security Act (ERISA), section 404(c), provides a safe harbor for employers who face

46. *See generally* William E. Even & David A. Macpherson, Determinants and Effects of Employer Matching Contributions in 401(k) Plans 15–16 (2004), *available at* http://econwpa.wustl.edu/eps/lab/papers/0405/0405001.pdf.

employee suits concerning the set of investment options in a 401(k) plan.[47] The safe harbor requires the plan to offer at least three investment options, including a money market fund, a diversified bond fund, and a broad-based common stock fund.[48] Most 401(k) plans now offer at least this set of options, and many offer a much wider array of choices.[49] The trend in the last decade, particularly with 401(k) plans that are administered by mutual fund complexes, has been to significantly increase the number of investment options available to plan participants.[50] This expansion has been so pronounced that some analysts now ask whether 401(k) participants can be exposed to *too much* choice.[51] Participant decisions about how to invest the funds that accumulate in a 401(k) plan are an important determinant of the amount of wealth that will be available to support retirement consumption.

A. Asset Choices of 401(k) Participants

Some critics of 401(k) plans worry that some participants will select very safe investments that offer expected returns too low to generate sufficient wealth at retirement, while other participants will choose very risky and poorly diversified investments that offer a nontrivial probability of inadequate retirement resources.[52] The presence of substantial holdings of company stock in 401(k) accounts is usually cited as support for the latter possibility.[53]

Among respondents in the 2001 Survey of Consumer Finances with 401(k) plan accounts, just over 50% reported that they held only stock, while 29% reported a 50-50 stock-bond split and 5% reported

47. Employee Retirement Income Security Act of 1974 (ERISA), 29 U.S.C. § 1001 (2005).

48. *Id.*

49. *See*, *e.g.*, OLIVIA S. MITCHELL & STEVEN P. UTKUS, COMPANY STOCK AND RETIREMENT PLAN DIVERSIFICATION 5–6 (Pension Research Council, Working Paper No. 2002-4, 2002).

50. Clifton Linton, *Looking Ahead: Trends in 401(k) Plans for the Next Millennium*, 401 KAFÉ, *at* www.infoplease.com/finance/commentary/feature/feature_010400.html (last visited Apr. 23, 2005).

51. *See generally* THE VANGUARD CTR. FOR RET. RESEARCH, *Can There Be Too Much Choice in a Retirement Savings Plan?*, June 2003, *at* http://www.403bwise.com/pdf/vcrr_choice.pdf.

52. *See generally* William G. Gale et al., *Improving 401(k) Investment Performance*, 26 AN ISSUE IN BRIEF (Ctr. for Ret. Research at B.C., Boston, Mass.), Dec. 2004, at 3–4, *available at* www.bc.edu/centers/crr/public_iss.html.

53. *Id.*

holding no stock.[54] In each case, these statistics are weighted by the amount of assets held by each participant.[55] This implies that more than 70% of the assets in 401(k) plans are held in corporate stock. This fraction is somewhat higher than the share of equity held in DB pension accounts.[56] Older workers tend to hold less equity in their 401(k) plans, and participants with higher income and education levels tend to hold a higher fraction of equities in their tax-deferred accounts.[57] Features of 401(k) plan design, such as the presence of matching contributions that are made in company stock and the number of investment options beside company stock, affect the allocation of assets in 401(k) plans.[58]

The Survey of Consumer Finances does not distinguish employer stock from other corporate stock investments, yet the overconcentration of equity investments in company stock is a common concern with 401(k) asset allocation patterns.[59] Data from Form 5500, which pension plan administrators file with the Internal Revenue Service, can identify company stock. In 1999, 14% of the assets in 401(k) plans with at least 100 participants were invested in company securities, most of which are company stock.[60] In plans that allow participants to fully control the allocation of their assets, the share was only 8.6%,[61] which suggests that a substantial part of the company stock held through 401(k) plans is the result of company match policies that in some way constrain investor choice. It is also important to recognize that many 401(k) plans are descended from Employee Stock Ownership Plans (ESOPs). These plans were designed as vehicles to facilitate purchases of company stock by employees, and not as de-

54. FED. RESERVE BD., 2001 SURVEY OF CONSUMER FINANCES, *at* www.federalreserve.gov/pubs/oss/0554/2001/scf2001home.html.

55. *Id.*

56. *Id.*

57. *Id.*; James M. Poterba & David A. Wise, *Individual Financial Decisions in Retirement Saving Plans and the Provision of Resources for Retirement*, *in* PRIVATIZING SOCIAL SECURITY 363 (Martin Feldstein ed., 1998).

58. NELLIE LIANG & SCOTT WEISBENNER, INVESTOR BEHAVIOR AND THE PURCHASE OF COMPANY STOCK IN 401(k) PLANS—THE IMPORTANCE OF PLAN DESIGN (Nat'l Bureau of Econ. Research, Working Paper No. 9131, 2002); Poterba & Wise, *supra* note 57.

59. LIANG & WEISBENNER, *supra* note 58; Poterba & Wise, *supra* note 57.

60. *See* EMPLOYEE BENEFITS SEC. ADMIN., U.S. DEP'T OF LABOR, PRIVATE PENSION PLAN BULLETIN: ABSTRACT OF 1999 FORM SSOO ANNUAL REPORTS, NUMBER 12 SUMMER 2004, at 63 tbl.D9 (2004), *available at* http://www.dol.gov/ebsa/PDF/1999pensionplanbulletin.pdf.

61. *See id.*

vices to promote diversified saving programs for retirement.[62] These plans retain a high share of company stock.

More recent information on the amount of employer stock in 401(k) plans is useful because such allocations may have shifted in the aftermath of Enron and similar corporate collapses. Such data can be obtained only from private surveys. One 2004 survey of large 401(k) providers found that 57% of 401(k) assets were held in equity,[63] with roughly 9% of all assets held in company stock.[64] Company stock holding is concentrated among large 401(k) plans, those with at least $50 million in assets.[65] Such stock accounts for approximately 9% of total assets of 401(k) plans.[66]

Company stock investments in 401(k) plans only occur at firms with traded stock. About 5.3 million workers, or about one 401(k) participant in eight, hold more than 60% of their 401(k) account balance in company stock.[67] Another 2.3 million hold between 41 and 60% of their account in such stock, while three million hold between 21 and 40%.[68] Roughly one quarter of 401(k) participants hold at least 20% of their retirement account assets, but no more than 40% in company stock.[69] The share of the assets in a given 401(k) that are held in company stock varies from year to year, with volatility both in the company stock price and in the prices of the other assets in the plan account. At a substantial number of large firms, however, more than half of 401(k) plan assets are invested in company stock.[70] A number of studies have tried to evaluate the cost to a participant, from an expected utility framework, of holding a poorly diversified retirement account.[71]

62. Olivia S. Mitchell & Stephen P. Utkus, *The Role of Company Stock in Defined Contribution Plans*, *in* THE PENSION CHALLENGE: RISK TRANSFERS AND RETIREMENT INCOME SECURITY 33, 35 (Olivia S. Mitchell & Kent Smetters eds., 2003).

63. INST. OF MGMT. & ADMIN., PLANS IN TRANSITION: IOMA'S ANNUAL DEFINED CONTRIBUTION SURVEY 85 fig.11-1 (2004) [hereinafter IOMA].

64. *Id.* at 86 fig.11-3.

65. *Id.*

66. *Id.* at 87 fig.11-3.

67. Mitchell & Utkus, *supra* note 62, at 42.

68. *Id.*

69. *Id.*

70. Kaplan, *supra* note 14, at 73; James M. Poterba, *Employer Stock and 401(k) Plans*, 93 AM. ECON. REV. 398, 400–02 (2003).

71. *See generally* James M. Poterba et al., *Utility Evaluation of Risk in Retirement Saving Accounts*, *in* ANALYSES IN THE ECONOMICS OF AGING 13 (David A. Wise ed., 2005); Krishna Ramaswamy, *Corporate Stock and Pension Plan Diversification*, *in* THE PENSION CHALLENGE: RISK TRANSFERS AND RETIREMENT INCOME SECURITY 71 (Olivia S. Mitchell & Kent Smetters eds., 2003); LISA MEULBROEK, COMPANY STOCK

While significant holdings of company stock in 401(k) plans are often criticized, the risk that plan participants who hold such stock will be impoverished in retirement is probably overstated. All else equal, the risk of a very small account balance at retirement is greater when a plan participant holds a poorly diversified portfolio than when he holds a more diversified one. Yet for many households who have recently reached retirement with substantial 401(k) holdings, 401(k) assets represent part of a broader portfolio. Even if the risk of substantial losses in the value of the 401(k) portfolio is significant, the risk that the account holders will only be able to afford a very low consumption stream in retirement is small.[72] This argument may not apply to future retirees for whom balances in 401(k) plans are likely to represent a more substantial share of total retirement resources. The risk of holding a poorly diversified 401(k) plan is substantially attenuated if the participant has a guaranteed consumption floor, such as that provided by Social Security, or if she has other financial assets that can be tapped in retirement.[73]

This analysis suggests that the share of 401(k) assets held in company stock may not be a sufficient statistic for evaluating the risk of low levels of retirement consumption. A small 401(k) account, 80% of which is invested in company stock, that is held by an individual with substantial non-401(k) wealth may not place the employee's retirement security at substantial risk, while a larger 401(k) account, held 40% in company stock by a worker with few non-401(k) assets, may pose a much greater danger. The cost of holding a poorly diversified portfolio also depends on the 401(k) participant's alternative to this investment. If he has access to a broadly diversified portfolio that includes international exposure in stocks, bonds, and real estate, for example, then the cost of limiting the investment options to a single employer stock will be greater than if the alternative is simply an equity index fund.

Even if the risk associated with poorly diversified 401(k) plan holdings is exaggerated, the presence of such investment patterns may indicate the presence of substantial groups of 401(k) participants

IN PENSION PLANS: HOW COSTLY IS IT? (Harvard Bus. Sch., Working Paper No. 02-058, 2002).

72. Poterba et al., *supra* note 71.

73. *Id.* (developing estimates of the expected utility consequences of different 401(k) asset allocation strategies with and without other assets in the household portfolio).

who lack the financial planning expertise that is needed to evaluate different investment options. This concern motivates various initiatives to improve participant decision making with respect to asset allocation.

B. Policies to Improve Asset Allocation

Several policy options warrant consideration for altering the investment composition of 401(k) portfolios. Some of these options are available to firms that sponsor 401(k) plans; others would naturally be considered by government officials with legislative or regulatory authority over 401(k) plans. Many of these policy options have been discussed in the broad policy debate about 401(k) asset allocation that has been catalyzed by Enron's financial failure.[74] The choice among these options depends on many factors, including preferences for restricting the choices of many households simply to avoid inappropriate choices on the part of a subset of 401(k) participants. Some reform options emphasize education and voluntary participation, while others focus on limiting choice or using the logic of plan defaults. The tension in designing interventions is between the benefits of a paternalistic policy for plan participants who would make errors in the absence of such a policy and the costs that restricting choice imposes on rational and well-informed participants.[75]

One reform option that would enhance rather than limit choice would be to eliminate any restrictions that plan sponsors place on asset allocation. Some 401(k) plan sponsors, although a declining number in recent years, restrict participants' asset allocation so as to raise the share of employer-provided stock in 401(k) accounts.[76] This may involve matching employee contributions with employer stock or making it difficult for participants to sell company stock and to reallocate the proceeds. Removing restrictions on how participants can allocate employer contributions would promote choice, and it might en-

74. Gale et al., *supra* note 52, at 26; Alicia H. Munnell & Annika Sundén, *401(k)s and Company Stock: How Can We Encourage Diversification?*, 9 AN ISSUE IN BRIEF (Ctr. for Ret. Research at B.C., Boston, Mass.), July 2002, at 8, *available at* http://www.bc.edu/centers/crr/issues/ib_9/pdf.

75. Colin Camerer et al., *Regulation for Conservatives: Behavioral Economics and the Case for "Asymmetric Paternalism,"* 151 U. PA. L. REV. 1211, 1254 (2003) (exploring this tension).

76. Susan J. Stabile, *Enron, Global Crossing, and Beyond: Implications for Workers*, 76 ST. JOHN'S L. REV. 815, 821 (2002).

courage participants to learn more about their investment options. Plan sponsors might respond to such restrictions by reducing their matching contributions or by eliminating their 401(k) plans altogether. Little empirical evidence exists to guide an assessment of this potential response, but it needs to be considered. The retirement welfare of plan participants depends both on the level of plan contributions during their working life and the riskiness of the assets held in the plan. Reducing risk while also reducing contributions could lead to a reduction in participant welfare. Available evidence suggests that changes in the set of investment options available to plan participants, and changes in constraints on investment, such as restrictions on the form of employer matching contributions, may have larger behavioral effects than standard portfolio models would suggest.[77] One unresolved question is whether participants have difficulty processing a long list of potential investment options, and, if they do, how to restrict choice to improve welfare.

A second reform that could improve asset allocation within 401(k) plans involves participant education. One study suggests that 401(k) participants view investments in company stock as less risky than investments in a diversified common stock portfolio.[78] This belief is inconsistent with the standard analysis of risk-return tradeoffs in financial economics, and it is possible that this belief could be modified through a program of financial education. Some research finds that financial education in the workplace affects a variety of dimensions of employee behavior, including their contribution rate and their asset allocation.[79] Although many firms already provide their employees with basic information on investing, such educational programs could be enhanced to provide workers with more decision-making tools related to risk-return tradeoffs and, in particular, related

77. For evidence on investment allocation and the structure of investment options, see Shlomo Benartzi & Richard H. Thaler, *Naïve Diversification Strategies in Defined Contribution Saving Plans*, 91 AM. ECON. REV. 79, 89–90, 95–96 (2001); JEFFREY R. BROWN & SCOTT WEISBENNER, INDIVIDUAL ACCOUNT INVESTMENT OPTIONS AND PORTFOLIO CHOICE: BEHAVIORAL LESSONS FROM 401(k) PLANS (2004) working paper, University of Illinois at Urbana-Champaign; Gur Huberman & Wei Jiang, The 1/N Heuristic in 401(k) Plans 9–16 (2004), *available at* http://ssrn.com/abstract=556177 (providing evidence on investment allocation and the structure of investment options).

78. MUNNELL & SUNDÉN, *supra* note 15, at 104.

79. B. Douglas Bernheim & Daniel M. Garrett, *The Effects of Financial Education in the Workplace: Evidence from a Survey of Households*, 87 J. PUB. ECON. 1487, 1492–99 (2003).

to the risks of company stock.[80] Plan sponsors might require 401(k) participants to attend an information session about investment basics, or to complete an on-line tutorial, before they could replace a default asset allocation with one of their own design.

A third option for reform, which could be combined with financial education, involves requiring participants to display a minimum level of financial sophistication before taking discretionary control of their asset allocation. For example, rules could require that a worker who wishes to hold all of his account in a single stock pass a written test. This would be equivalent to an "informed consent" requirement in other settings in which individuals engage in risky activity. The participant might be required to demonstrate that he is aware of the risks of holding poorly diversified 401(k) assets, and that he understands that account values fluctuate as a result of asset market movements. The default if a participant did not pass the required quiz might be a "lifecycle fund" that varied the participant's exposure to stocks and bonds as a function of his age and years to retirement. Such funds, which are rapidly growing in popularity in 401(k) plans, avoid the difficulties of "low risk, low return" defaults such as money market funds.

A final regulatory option, and the most extreme in terms of its impact on participant discretion, would be a set of explicit limits on the fraction of such accounts that could be held in employer stock. More generally, this option could take the form of a set of asset allocation guidelines. DB plans already face such limits.[81] The welfare economics of such restrictions on DC plan accounts are complicated by the possibility that some participants who choose to hold highly concentrated positions in their 401(k) accounts may not understand the implications of such actions. Restrictions on participant control of their asset allocation might benefit these participants, while imposing costs on more informed and educated participants who might wish to hold concentrated portfolios.

80. *See*, *e.g.*, JOSHUA RAUH, UNIV OF CHI. GRADUATE SCH. OF BUS., OWN COMPANY STOCK IN DEFINED CONTRIBUTION PENSION PLANS: A TAKEOVER DEFENSE? 6–11 (2004), *available at* http://gsbunn.uchicago.edu/fac/joshua.rauh/research/Rauh%20company%20stock%20sep2004.pdf (discussing a number of considerations that may lead firms to provide matching contributions in company stock).

81. *Id.*

There may be alternatives to strict limits on 401(k) investments in company stock, such as a participant-specific threshold that conditions the amount of company stock in an account on the level of other retirement benefits provided by the firm or on the value of the participant's non-401(k) assets. One possible requirement would restrict the participant's holding of company stock until the participant had an account balance that provided enough wealth to promise a minimally adequate retirement annuity even if the value of the company stock declined to zero. This policy would in effect stipulate a maximum allowable company stock percentage for 401(k) assets up to a threshold, and no restriction above the threshold. The threshold approach could avoid placing workers who rely on their 401(k) assets for a primary component of their retirement income at risk of substantial account erosion while still allowing workers with very large retirement balances more discretion in their portfolio allocation.

IV. Withdrawing Assets from Defined Contribution Plans

The last important choice that 401(k) participants face involves withdrawing assets. Withdrawals can occur before a participant reaches retirement age, most often in connection with a job change, as well as after retirement. Most 401(k) plans permit "hardship withdrawals" for personal financial emergencies as well as other major financial needs, often including home purchase and children's college expenses.[82] Plans also allow participants to borrow against their accumulated 401(k) balances.[83] Such loans are usually available at well below standard lending rates, and the time profile of repayment varies substantially.[84] Whether participants make preretirement withdrawals can be a key determinant of the amount that they have available for retirement income support.

82. PROFIT SHARING/401(K) COUNCIL OF AM., 401(K) FREQUENTLY ASKED QUESTIONS #14, *at* http://www.401k.org/401kFaq.html#14 (last visited May 31, 2005).
83. *Id.*
84. Sarah Holden & Jack VanDerhei, *401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 2000*, 239 ISSUE BRIEF (Employee Benefit Research Inst.), Nov. 2001, at 19–23 (providing recent information on the use of loans and other related provisions in 401(k) plans).

A. Withdrawal Behavior of 401(k) Participants

When a 401(k) plan participant leaves the firm that sponsors the plan he has participated in, he has three options with respect to his accumulated balance. He can leave his accumulated 401(k) balance in the existing 401(k) plan, he can "roll over" the balance into an IRA or into a 401(k) plan at a new employer, or he can take a lump-sum distribution.[85] The lump-sum distribution option provides current taxable income equal to the account balance, and it may also trigger the 10% excise tax on preretirement distributions if the recipient is not yet fifty-nine and a half.[86] Not all 401(k) assets that are distributed as lump-sum distributions are lost to the retirement system, because a participant can redeposit these assets in an IRA or another 401(k) plan within ninety days of the distribution.[87] Participant surveys suggest, however, that most lump-sum distributions are not reinvested in a tax-deferred setting.[88] Some of these distributions may be saved in taxable accounts.

Lump-sum distributions are common when DC participants change jobs, particularly when the participants are young and have only small accumulated balances.[89] When account balances are large and participants are near retirement age, however, lump-sum distributions are rare.[90] Hardship withdrawals also account for some distributions from 401(k) plans.[91] Such withdrawals, for workers who are not yet fifty-nine and a half, trigger the excise tax on early distributions.[92] One estimate suggests that 401(k) wealth at retirement is reduced by less than 10% as a result of lump-sum distributions in the

85. CNN MONEY, *Money 101: 401(k)'s: Things to Know*, *at* http://money.cnn.com/pf/101/lessons/23/ (last visited Apr. 5, 2005).

86. *Id.*; *see also* Sandria M. Calio, *Talk Today: Personal Finance*, USA TODAY.COM, Sept. 16, 2004, *at* http://money.cnn.com/pf/101/lessons/23/.

87. *See* CNN MONEY, *supra* note 85.

88. *See* Gary V. Engelhardt, *Pre-Retirement Lump-Sum Pension Distributions and Retirement Income Security: Evidence from the Health and Retirement Study*, 55 NAT'L TAX J. 665, 668 tbl.1 (2002).

89. Gene Amromin & Paul Smith, *What Explains Early Withdrawals from Retirement Accounts? Evidence from a Panel of Taxpayers*, 56 NAT'L TAX J. 595, 595 (2003).

90. James M. Poterba et al., *Preretirement Cashouts and Foregone Retirement Saving: Implications for 401(k) Asset Accumulation*, *in* THEMES IN THE ECONOMICS OF AGING 23, 24 (David A. Wise ed., 2001).

91. *See generally* Amromin & Smith, *supra* note 89, at 595 (analyzing the effect of financial shocks on the rate of early withdrawals from retirement accounts).

92. *Id.* at 598 (investigating the characteristics of taxpayers who report early distributions).

present system.[93] Because assets held within a 401(k) plan grow at the pretax rate of return,[94] whenever the same investment options are available inside and outside the DC plan, drawing down assets outside the 401(k) before withdrawing assets from the plan will provide participants with the highest level of retirement income for participants.

Lump-sum distributions and hardship withdrawals can reduce the value of 401(k) assets that a participant has available at the date of retirement. Even for those who have accumulated substantial balances by their retirement dates, however, there are two remaining decisions that may have an important effect on retirement security. The first is the age at which to begin withdrawing assets from the plan, and the other is the form of the distributions. A DC plan participant can begin to make withdrawals without tax penalty once he reaches the age of fifty-nine and a half.[95] For participants who seek to continue growing their tax-deferred account balances for as long as possible, minimum distribution requirements become relevant. These requirements specify that distributions must begin by the year in which the participant turns seventy and a half.

The decision of when to begin withdrawals has a critical bearing on the total value of assets available to support remaining years of life. Consider a participant who does not make any contributions to her 401(k) plan between the ages of fifty-nine and a half and seventy and a half, and who earns a 4% real return, which means a 4% return net of inflation, on her assets during this eleven-year period. Her assets will increase 54% in real value over this time period. In addition, because she will be using the assets to finance a shorter remaining lifespan if she draws the assets down at age seventy and a half, she will be able to afford a much higher annual payout when she begins distributions. This example indicates the importance of long-term compounding in building 401(k) wealth, but it should not distract from the fact that the goal of retirement saving is to deliver the stream of retirement consumption that the plan participant finds most valuable. For some participants with high discount rates, large initial withdrawals and a declining consumption profile as they age may be more

93. Poterba et al., *supra* note 90, at 54 (presenting information on the impact of preretirement distributions on accumulated wealth at retirement).
94. *See* Amromin & Smith, *supra* note 89.
95. *Id.* at 595.

attractive than deferring consumption, even with a substantial rate of return on tax-deferred assets.

The second key decision at retirement is whether to annuitize the 401(k) account balance or to draw it down in a sequence of lump-sum withdrawals. DB pension plans provide participants with nominal life annuities.[96] While such annuities expose their beneficiaries to inflation risk, they provide some insurance against the risk of living longer than expected. A 401(k) participant who does not annuitize her account balance has no such protection. Because 401(k) plan assets have only become an important component of household financial wealth in the last decade, little systematic evidence exists on annuitization patterns for retirees. Data from the Health and Retirement Survey provide some information on the annuitization expectations of those who are approaching retirement.[97] While a small share of 401(k) plan participants are expected to annuitize, those for whom annuitization is most valuable are more likely to plan to annuitize.[98] The value of an annuity stream that insures against longevity risk varies substantially across individuals, and is particularly sensitive to the presence of other financial assets, or other life-contingent income streams such as Social Security.[99] Whether it is optimal for a retiree to annuitize a DC plan account balance depends on many factors, including the retiree's mortality prospects, the future distribution of medical care outlays, other sources of support available to the prospective retiree, and the price at which an annuity can be purchased.[100] If the retiree has access to other income streams that provide a floor for retirement consumption, and if the stream of income from these sources is substantial when compared with the annuity that could be purchased with the 401(k) plan balance, then the expected utility cost of choosing not to annuitize may be modest.

96. Edward A. Zelinsky, *The Defined Contribution Paradigm*, 114 YALE L.J. 451, 454 (2004).

97. *Id.*

98. *See generally* Jeffrey R. Brown, *Private Pensions, Mortality Risk, and the Decision to Annuitize*, 82 J. PUB. ECON. 29 (2001).

99. Olivia S. Mitchell et al., *New Evidence on the Money's Worth of Individual Annuities*, 89 AM. ECON. REV. 1299 (1999).

100. *See* MUNNELL & SUNDÉN, *supra* note 15.

B. Policies to Affect Withdrawals from Tax-Deferred Accounts

There are two aspects of withdrawal behavior that public policy might seek to change: the frequency with which job-changers choose lump-sum distributions instead of rolling their assets to a new 401(k) or leaving them with their old employer and the likelihood of choosing an annuity conditional on accumulated balances at retirement. Participant education may affect the fraction of distribution-eligible participants who choose to withdraw their account balances when they change jobs. A 401(k) participant who contributes $1000 each year between age thirty-five and sixty-five to his account, and who earns a 6% rate of return, will have an account balance of $84,160 at age sixty-five. This is the same balance that someone who had $13,911 in a 401(k) at age thirty-five would have if he *never* contributed to the account after age thirty-five. Greater recognition of the power of compound interest that this example illustrates might reduce the rate of lump-sum distributions among younger workers.

Another policy that would increase the fraction of 401(k) contributions that remain in tax-deferred accounts until retirement would be restricting the nonretirement uses for which assets can be drawn down, without penalty, prior to age fifty-nine and a half. The expansion of hardship withdrawal options weakens the focus on retirement in tax-deferred account accumulation.[101] The challenge to such proposals, however, is the possibility that participants might decide to contribute less to 401(k)-type plans if they faced tighter constraints on the use of these funds in the event of financial emergencies. Even if the actual withdrawal patterns from 401(k) plans suggest that financial emergencies rarely arise, potential participants may value the flexibility that a withdrawal option provides.

One way to increase the fraction of participants who choose life annuities is to educate participants about annuities and about the risks of outliving one's resources. Many of those who reach traditional retirement ages probably underestimate their remaining life expectancy. For example, in a married couple in which both the husband and the wife are sixty-five years old, the husband's life expectancy is 16.8 years, while the wife's is 20.0 years.[102] Planning for retirement with a

101. *See* Richard L. Kaplan, *Retirement Funding and the Curious Evolution of Individual Retirement Accounts*, 7 ELDER L.J. 283 (1999).

102. FELICITIE BELL & MICHAEL MILLER, U.S. SOC. SEC. ADMIN., OFFICE OF THE ACTUARY, LIFE TABLES FOR THE U.S. SOCIAL SECURITY AREA 1900–2100, ACTUARIAL

horizon of twenty years would leave the couple exposed to substantial risk. There is a 46% chance that at least one member of the couple will still be alive at ninety, and a 20% chance that at least one will be alive at ninety-five. These longevity prospects may not be well understood by retirees, and providing more information about them may encourage greater focus on long-run retirement prospects.

Another policy that would increase annuitization would rely on participant inertia and institute a default option for the use of 401(k) balances at retirement. This default could be annuitization.[103] While there is every reason to suspect that such a default would increase the fraction of retirees choosing this option, there are some complexities from the standpoint of a firm offering such a default option. Imposing this default on plan sponsors would require them to choose an annuity provider for their participants. Sponsors might not want the fiduciary burden of selecting a least-cost annuity provider, particularly given the complexity of some annuity products. This suggests, just as in the case of financial education, the need for legislation that clarifies the liability exposure of the plan provider.

V. Conclusion

DB pension plans present participants with relatively few choices. There are substantial risks associated with these plans, tied primarily to the risk that a worker changes jobs before completing a full career at the sponsoring firm. Recent events also highlight the possibility that firms sponsoring defined benefit plans may experience financial distress, thereby making the DB pension promise uncertain and exposing highly compensated DB plan participants to the risk of receiving only the pension payout guaranteed by the PBGC. These risks have not received widespread attention in the recent public policy discussion surrounding the risks of alternative retirement plans.

DC plans, in contrast, require eligible workers to make several decisions that have potentially important effects on the resources that they will have available for retirement. These include decisions about whether to participate in the plan and how much to contribute, which assets to invest contributions in, whether to rebalance the asset mix in

STUDY 116 tbl.7 (Aug. 2002), *available at* http:www.ssa.gov/OACT/Notes/95116/as116LOT.html.

103. GALE ET AL., *supra* note 16.

the plan, and when and in what form to draw down assets at retirement. Each of these decision options raises a risk for DC participants, a risk that could lead to inadequate accumulation of retirement resources. Participants may save too little during their working years, or they may invest in assets that offer poor risk-return tradeoffs. Plan participants may also draw down their assets too quickly when they reach retirement and thereby risk reaching extreme old age with little accumulated wealth from their 401(k) plan.

The greater flexibility of DC plans, the portability of these plans when workers move from one firm to another, and the reduced administrative and regulatory burdens that these plans impose on sponsoring firms are important strengths. They are likely to contribute to the continued expansion and popularity of these plans. It is nevertheless important to recognize the risks associated with these plans. While some of these risks are inherent to the DC structure, in many cases they are accentuated by the behavior of some participants. While a number of studies suggest that 401(k) plans and other DC plans will make an important contribution to the retirement income security of future generations of retirees, the impact of these plans can be enhanced by encouraging, educating, and possibly requiring participants to manage the risks associated with these plans.

One careful study of the risks facing a typical worker who confronts either a typical DB plan or a typical DC plan suggests that there is greater risk in the defined benefit structure.[104] Yet these calculations are based on a limited range of plan types and on a limited degree of variation in the earnings history of hypothetical plan participants.[105] Further research is likely to yield new insights on the relative risk levels in different plans. These concerns notwithstanding, it does appear that some 401(k) plan participants make decisions that increase their risk exposure and that fail to take full advantage of the opportunities for 401(k) plans to contribute to their retirement income security.[106] Both plan sponsors and public policy makers are justifiably interested in whether there are simple and efficacious ways to alter this situation.

104. MUNNELL & SUNDÉN, *supra* note 15, at 47–51; Samwick & Skinner, *supra* note 15, at 336–37.
105. *See*, *e.g.*, MUNNELL & SUNDÉN, *supra* note 15, at 48–49.
106. Mitchell & Utkus, *supra* note 62, at 49.

The challenge of finding the mix of policy interventions that will improve the performance of 401(k) plans in delivering retirement income is likely to require insights not just from economics, but from legal scholarship, psychology, and other fields as well. The broad legal setting of pension regulation is intimately connected to the decisions the plan sponsors and plan participants make. Moreover, a substantial body of research suggests that in many contexts, household decisions fail to conform to the predictions of neoclassical economics. Insights from psychological research on choices under uncertainty, on time discounting, and many other fields may be extremely helpful in designing better 401(k) structures.