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401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 2003

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- This *Issue Brief* provides an update on 401(k) plan participants' asset allocations, account balances, and loan activity as of year-end 2003, as measured by the collaborative EBRI/ICI Participant-Directed Retirement Plan database—the world's largest repository of information about individual 401(k) plan participant accounts.
- This update tracks the account balances of a large and representative sample of 401(k) plan participants through the severe bear market that caused broad stock market indexes to decline about 40 percent between year-end 1999 and early 2003, and the rebound that increased broad equity index values by 34 percent over the last 10 months of 2003.
- By year-end 2003, 401(k) plan assets had grown to \$1.9 trillion and an estimated 42 million workers in the United States participated in these plans. The portion of 401(k) balances invested in equities increased in 2003, reflecting the strength of equity prices. Beyond the market-driven changes, 401(k) plan participants do not appear to have made significant asset reallocations or to have made changes in their loan activity. Participants' allocations to company stock remained in line with previous years.
- The average account balance among participants who consistently held accounts since 1999 increased 29.1 percent in 2003 and 17.1 percent altogether since 1999. While average account balances increased in 2003 across all participant age and tenure groups, balances for some older participants had not yet recovered from the impact of the three-year bear market in equities. For example, for participants in their 50s with more than 30 years of job tenure (who had an account since 1999), the average account balance was still down 9.3 percent at year-end 2003 compared with year-end 1999.
- On average, at year-end 2003, 45 percent of 401(k) plan participants' assets were invested in equity funds, 16 percent in company stock, 9 percent in balanced funds, 10 percent in bond funds, 13 percent in guaranteed investment contracts (GICs) and other stable value funds, and 5 percent in money funds.
- Loan activity among 401(k) plan participants in 2003 was essentially unchanged from earlier years. Eighteen percent of eligible participants had loans outstanding at the end of 2003 and only 12 percent of participants with account balances of less than \$10,000 had loans outstanding. Among participants with loans outstanding at the end of 2003, the level of the unpaid balance represented 13 percent of the account balance, net of the unpaid loan balance, down slightly from recent years.

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About the EBRI/ICI Database

The EBRI/ICI Participant-Directed Retirement Plan Data Collection Project is the world's largest repository of information about individual 401(k) plan participant accounts. As of December 31, 2003, the EBRI/ICI database includes statistical information about:

- **15.0 million 401(k) plan participants**, in
- **45,152 employer-sponsored 401(k) plans**, holding
- **\$776.0 billion** in assets.

The 2003 EBRI/ICI database covers approximately 35 percent of the universe of 401(k) plan participants, 10 percent of plans, and 41 percent of 401(k) plan assets.

The EBRI/ICI data are unique because they cover a wide variety of plan record keepers and, therefore, a wide range of plan sizes offering a variety of investment alternatives. In addition, the database covers a broad range of 401(k) plans, from very large corporations to small businesses.

Introduction

By year-end 2003, 401(k) plan assets had grown to \$1.9 trillion and an estimated 42 million workers in the United States participated in these plans. In an ongoing effort to track 401(k) plan participants, the Employee Benefit Research Institute (EBRI)¹ and the Investment Company Institute (ICI),² in a collaborative effort, have gathered annual data on 401(k) plan participants since 1996 from a wide variety of 401(k) plan record keepers.³ This *Issue Brief* provides an update on 401(k) plan participants' asset allocations, account balances, and loan activity as of year-end 2003.⁴ In addition, this update tracks the account balances of a large and representative sample of 401(k) plan participants through the severe bear market that caused broad stock market indexes to decline about 40 percent between year-end 1999 and early 2003, and the rebound that increased broad equity index values by 34 percent over the last 10 months of 2003.⁵

The portion of 401(k) balances invested in equities increased in 2003, reflecting the strength of equity prices. Beyond the market-driven changes, 401(k) plan participants do not appear to have made significant asset reallocations or to have made changes in their loan activity. Buoyed by strong equity market returns and ongoing contributions, 401(k) account balances increased in 2003. Among participants with accounts since year-end 1999, the average account balance increased 29.1 percent in 2003.

The principal findings as of year-end 2003 are as follows:

Asset Allocation

- On average, at year-end 2003, 45 percent of 401(k) plan participants' assets were invested in equity funds,⁶ 16 percent in company stock, 9 percent in balanced funds, 10 percent in bond funds, 13 percent in guaranteed investment contracts (GICs) and other stable value funds, and 5 percent in money funds.
- Equity securities—equity funds, the equity portion of balanced funds, and company stock—represented 67 percent of 401(k) plan assets at year-end 2003, up from 62 percent in 2002, generally reflecting the strong performance of the equity markets relative to fixed-income securities.
- Other asset allocation patterns do not seem to have been affected by the strong stock market performance.
 - ▶ Younger participants still tended to hold a higher portion of their accounts in equity assets and older participants tended to invest more in fixed-income assets.
 - ▶ The mix of investment options offered by a plan, particularly the inclusion of company stock or GICs and other stable value products, significantly affects the asset allocation of participants in a plan.
- Participants' allocations to company stock remained in line with previous years.
 - ▶ About half of the participants in the 2003 EBRI/ICI database are in plans that offer company stock as an investment option.
 - ▶ More than half of the participants in these plans held 20 percent or less of their account balances in company stock.
 - ▶ About 35 percent of the participants in these plans held no company stock.
 - ▶ About 13 percent of the participants in these plans held more than 80 percent of their account balances in company stock.

Account Balances

- The average account balance⁷ among participants who consistently held accounts since 1999 increased 29.1 percent in 2003 and 17.1 percent altogether since 1999. The change in a participant's account balance is a result of contributions, investment returns, withdrawals, borrowing, and loan repayments.
- Average account balances increased in 2003 across all participant age and tenure groups. However, balances for some older participants had not yet recovered from the impact of the three-year bear market in equities. For example, for participants in their 50s with more than 30 years of job tenure (who had an account since 1999), the average account balance was still down 9.3 percent at year-end 2003 compared with year-end 1999.

Plan Loans

- Loan activity among 401(k) plan participants in 2003 was essentially unchanged from earlier years. As in our earlier studies, loan activity varies with age, tenure, salary, and account balance.
- Eighteen percent of eligible participants had loans outstanding at the end of 2003 and only 12 percent of participants with account balances of less than \$10,000 had loans outstanding.
- Among participants with loans outstanding at the end of 2003, the level of the unpaid balance represented 13 percent of the account balance, net of the unpaid loan balance, down slightly from recent years.

Recent Research on 401(k) Plans

The trend of recent defined contribution retirement plan research appears to focus on four emerging questions and issues: (1) analyzing whether defined contribution plans will be able to provide individual participants with an adequate retirement, (2) exploring the role of company stock in 401(k) plans, (3) examining the importance of the plan's design and participants' levels of financial education on participants' decisions, and (4) measuring defined contribution plan participants' account balances, asset allocations, and current results.

It is important that everyone who considers these and other emerging issues understand that 401(k) plan participants retiring today have not had a full career's exposure to 401(k) plans. Therefore, accurately analyzing what these accounts will provide in retirement income requires reliance on models that predict possible outcomes for workers at future projected retirement dates.^{8,9} Most of these studies find generally favorable results for 401(k) plan participants.¹⁰ Some also warn, however, that many workers need to be educated about the importance of participating in the plan, making contributions early in one's career (to take advantage of compounding), contributing consistently over time, understanding risk and return associated with different investment strategies, and engaging in responsible loan and withdrawal activity.¹¹ Some studies have examined retirement preparedness more generally, including not only income from individual account balances but also from defined benefit pension plans and social insurance programs.¹²

Perhaps because of the continued fallout from the collapse of Enron and troubles at other high-profile public companies, analyzing the desirability and impact of company stock as part of 401(k) plan participants' accounts continues to be a focus of recent research.¹³ In addition, recent research has also focused on the importance of plan design¹⁴—particularly the role of default or “autopilot” options,¹⁵ the number of investment options,¹⁶ and employer matching contributions¹⁷—and participant financial education and learning.¹⁸ Other recent studies have reported on defined contribution plan participants' account balances, asset allocations, and current results.¹⁹

The EBRI/ICI Database

Source and Type of Data

Several EBRI and ICI members provided records on active participants in 401(k) plans they administered for year-end 2003. These plan record keepers include mutual fund companies, insurance companies, and consulting firms. Although the EBRI/ICI project has collected data from 1996 through 2003, the universe of data providers varies from year to year. Thus, aggregate figures in this report generally should not be used to estimate time trends, unless otherwise indicated. Records were encrypted to conceal the identity of employers and employees but were coded so that both could be tracked over multiple years.

Data provided for each participant include participant date of birth, from which an age cohort is assigned; participant date of hire, from which a tenure range is assigned; outstanding loan balance; funds in the participant's investment portfolios; and asset values attributed to those funds. An account balance for each participant is the sum of the participant's assets in all funds.²⁰ Plan balances are constructed as the sum of all participant balances in the plan. Plan size is estimated as the sum of active participants in the plan and, as such, does not necessarily represent the total number of employees at the sponsoring firm.

Investment options are grouped into eight categories.²¹ Equity funds consist of pooled investments primarily invested in stocks. These funds include equity mutual funds, bank collective trusts, life insurance separate accounts, and other pooled investments. Similarly, bond funds are any pooled account primarily invested in bonds, and balanced funds are pooled accounts invested in both stocks and bonds. Company stock is equity in the plan's sponsor (the employer). Money funds consist of those funds designed to maintain a stable share price. Stable value products such as guaranteed investment contracts (GICs)²² and other stable value funds²³ are reported as one category. The "other" category is the residual for other investments such as real estate funds. The final category, "unknown," consists of funds that could not be identified.²⁴

Distribution of Plans, Participants, and Assets, by Plan Size

The 2003 EBRI/ICI database contains 45,152 401(k) plans (about 10 percent of the 401(k) universe of plans) with \$776.0 billion in assets (about 41 percent of the \$1.9 trillion invested in 401(k) plans) and 15,047,358 participants (about 35 percent of 401(k) plan participants; Figure 1).²⁵ Most of the plans in the database are small, measured by the number of plan participants or by total plan assets.²⁶ Forty-four percent of the plans in the database have 25 or fewer participants, and 33 percent have 26 to 100 participants. In contrast, only 4 percent of the plans have more than 1,000 participants. However, participants and assets are concentrated in large plans. For example, 77 percent of participants are in plans with more than 1,000 participants, and these same plans account for 85 percent of all plan assets.

Asset Allocation

On average, participants in the 2003 EBRI/ICI database had 67 percent of their plan balances invested directly or indirectly in equity securities—the sum of equity funds, company stock, and the equity portion of balanced funds.²⁷ The bulk of equity holdings by 401(k) plan participants was in equity funds, which accounted for 45 percent of their account balances at year-end 2003, up from 40 percent in 2002 (Figure 2).²⁸ At year-end 2003, 16 percent of 401(k) plan account balances were invested in company stock and 9 percent were in balanced funds. Investment performance likely explains the bulk of the changes in 401(k) plan participants' asset allocations over time. Much of the movement in the largest component, equity funds, tends to reflect overall equity market prices, which generally rose from 1996 through 1999, declined from the beginning of 2000 through early 2003, and then rose again over the remainder of 2003 (Figure 3).

Asset Allocation, by Age

As in previous years, the EBRI/ICI database for year-end 2003 finds that participant asset allocations vary considerably with age (Figure 4).²⁹ Younger participants tend to favor equity funds, while older participants are more likely to invest in fixed-income securities such as bond funds, GICs and other stable value funds, or money funds. On average, participants in their 20s had 51 percent of their account balances invested in equity funds, compared with about 35 percent of account balances for participants in their 60s. Participants in their 20s held only about 21 percent of their accounts in fixed-income securities (bond funds, GICs and other stable value funds, and money funds combined), while those in their 60s invested 40 percent of their accounts in these assets. The tendency of younger participants to favor equity funds and older participants to favor fixed-income securities holds up even when accounting for investment options offered by the 401(k) plan sponsor.

Allocations to company stock continued to show a more mixed pattern by age. Participants in their 20s had about 14 percent of their 401(k) plan account balances in company stock, while participants in their 40s had about 18 percent, and participants in their 60s had 14 percent (Figure 4).

Asset Allocation, by Investment Options

The mix of investment options offered by a plan sponsor significantly affects the asset allocation of the participants in a plan. Figure 5 divides all of the plans in the 2003 EBRI/ICI database into four combinations of investment offerings,³⁰ starting with a base group consisting of plans that do not offer company stock, GICs, or other stable value funds.³¹ Participants in these plans—which generally offer equity funds, bond funds, money funds, and balanced funds as investment options—had the highest allocation to equity funds. Participants in plans that offer GICs and/or other stable value funds (but no company stock) as an investment option allocated a smaller share of their assets to bond and money market funds than the base group, and had lower allocations to equity funds as well. Alternatively, participants in plans that offer company stock (but no stable value products) as an investment option had dramatically lower allocations to equity funds and balanced funds than the base group. Finally, in those plans that offer both company stock and stable value products, company stock appears to have displaced equity and balanced fund holdings, and GICs and other stable value funds appear to have displaced other fixed-income investments. These effects tend to occur across all age groups of participants.³²

Distribution of Participants' Company Stock Allocations, by Age

Participants' allocations to company stock remained in line with previous years. About half (or 7.3 million) of the 401(k) plan participants in the 2003 EBRI/ICI database are in plans that offer company stock as an investment option. Among these participants, about 57 percent held 20 percent or less of their account balances in company stock, including about 35 percent who held none (Figure 6). On the other hand, about 13 percent had more than 80 percent of their account balances invested in company stock.

Distribution of Participants' Equity Fund Allocations, by Age

Among individual participants, the allocation of account balances to equity funds varies widely around the average of 45 percent for all participants in the 2003 EBRI/ICI database. Indeed, about 21 percent of participants had more than 80 percent of their account balances invested in equity funds, while 32 percent held no equity funds at all (Figure 7). The percentage of participants holding no equity funds tends to increase with age.³³ For example, about 28 percent of participants in their 30s had no equity fund investments, compared with 41 percent of participants in their 60s. However, in aggregate, about 53 percent of participants with no equity fund balances had exposure to the stock market through company stock or balanced funds.³⁴

Account Balances

Using administrative records, the EBRI/ICI database reports the account balance held in the 401(k) plan at the participant's current employer.³⁵ Retirement savings held in plans at previous employers or rolled over into individual retirement accounts (IRAs) are not included in this analysis. Furthermore, account balances are net of unpaid loan balances. In addition, the EBRI/ICI database for any given year captures a snapshot of the account balances at year-end and thus reflects the entrance of new plans and new participants and the exit of participants who retire or change jobs. When analyzing account balances, it is important to recognize the combined effects of actions of participants present in consecutive years in the database as compared with the effects of entry and exit of plans and participants from the database.

Relationship of Age and Tenure to Account Balances

There tends to be a positive correlation between age and account balance in each of the eight years covered by the EBRI/ICI database, and among the participants with account balances at the end of each year from 1999 through 2003. There is also a positive correlation between tenure and account balance (Figure 8).^{36,37} The accumulation that a participant's account balance represents reflects the sum of three factors over time: contributions; investment returns; and withdrawals, borrowing, and loan repayments. The magnitude of each of these factors relative to the size of the account balance influences the change in account balance experienced by the participant.

Changes in Account Balances

This section examines the change in account balances of a group of participants who held accounts at the end of each year from 1999 through 2003. Analyzing a consistent group of participants removes the effect of participants and plans entering and leaving the database (and/or 401(k) universe) on the overall average. A little less than half, or 4.5 million, of the participants with accounts at the end of 1999 had accounts at the end of each year from 1999 through 2003.

The average 401(k) account balance of this consistent group of participants edged down less than 1 percent from 1999 to 2000, declined another 1.3 percent in 2001, fell 7.7 percent in 2002, and then increased 29.1 percent in 2003 (Figure 9). From year-end 1999 (near the peak of the stock market) to year-end 2003, the S&P 500 total return index fell about 20 percent, while the Russell 3000 total return index was down about 16 percent. However, the change in a participant's account balance is the sum of three factors: new contributions by the participant and/or the employer; total investment return on account balances, which depends on the performance of financial markets and on the allocation of assets in the individual's account; and withdrawals, borrowing, and loan repayments. For many participants, diversification of assets and ongoing contributions helped to temper the impact of the equity markets on their 401(k) account balances. All told, from year-end 1999 to year-end 2003, the average account balance among the consistent group of participants increased 17.1 percent, rising from \$65,572 at year-end 1999 to \$76,809 at year-end 2003 (Figure 10).

A sense of the relationship among the three factors can be seen in the change in average account balances among participants grouped by age and tenure. In our consistent group of 4.5 million participants, participants who were younger or had fewer years of tenure experienced the largest increases in average account balances between year-end 1999 and year-end 2003. For example, the average account balance of participants in their 20s rose about 138.7 percent between the end of 1999 and the end of 2003 (Figure 9). This reflects the greater relative importance of contributions than other factors because the account balances of participants in their 20s tend to be small compared with typical contributions.

In contrast, the average account balance of older participants with longer tenures had not yet recovered from the impact of the bear market. For example, the average account balance of

participants in their 60s with more than 30 years of tenure was still down 15.5 percent between year-end 1999 and year-end 2003 (Figure 9). The decline in assets reflects the greater importance of investment returns because their account balances tend to be large relative to their annual contributions. In addition, participants in their 60s have a higher propensity to make withdrawals.³⁸

Plan Loans

Characteristics of Participants with Outstanding Loans

Most participants in 401(k) plans are in plans that offer borrowing privileges.³⁹ In the 2003 EBRI/ICI database, 86 percent of participants were in plans offering loans. However, as has been the case for the eight years that the EBRI/ICI data collection project has tracked 401(k) plan participants' loan activity, relatively few participants made use of this borrowing privilege. At year-end 2003, only 18 percent of those eligible for loans had loans outstanding (Figure 11).

As in previous years, loan activity varies with age, tenure, salary, account balance, and plan size. Of those participants in plans offering loans, the highest percentages of participants with outstanding loan balances were among participants in their 30s, 40s, or 50s (Figures 11 and 12). In addition, participants with five or fewer years of tenure or with more than 30 years of tenure were less likely to use the loan provision than other participants (Figure 12). Furthermore, only 12 percent of participants with account balances of less than \$10,000 had loans outstanding.⁴⁰

Average Loan Balances

Among participants with outstanding loans at the end of 2003, the average unpaid balance was \$6,839.⁴¹ Again, similar to other years of analysis, loan balances as a percentage of account balances (net of the unpaid loan balance) for participants with loans was 13 percent at year-end 2003 (Figure 13). In addition, the same as in other years, there is variation around this average, with age (lower the older the participant), tenure (lower the higher the tenure of the participant), and account balance (lower the higher the account balance).

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Endnotes

¹ The Employee Benefit Research Institute is a nonprofit, nonpartisan, public policy research organization that does not lobby or take positions on legislative proposals.

² The Investment Company Institute is the national association of the U.S. investment company industry. Its membership includes 8,643 open-end investment companies ("mutual funds"), 629 closed-end investment companies, 126 exchange-traded funds, and five sponsors of unit investment trusts. Its mutual fund members manage assets of approximately \$7.4 trillion, accounting for approximately 95 percent of total industry assets, and represent more than 86 million individual shareholders.

³ In this effort, known as the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project, EBRI and ICI have collected data from some of their members that serve as plan record keepers and administrators. The data include demographic information, annual contributions, plan balances, asset allocations, and loan balances.

⁴ This update extends previous findings from the project for 1996 through 2002. For year-end 2002 results, see Holden and VanDerhei (September 2003). Results for earlier years are available in earlier issues of both *EBRI Issue Brief* and *ICI Perspective*. An appendix of additional information for year-end 2003 is available through ICI's Web site at www.ici.org/perspective/index.html

⁵ For example, the S&P 500 total return index was up 28.7 percent in 2003, after falling 22.1 percent in 2002, 11.9 percent in 2001, and 9.1 percent in 2000 (see Ibbotson Associates, 2004). The Russell 3000 total return index increased about 31.1 percent in 2003, after declining about 21.5 percent in 2002, 11.5 percent in 2001, and 7.5 percent in 2000.

⁶ "Funds" include mutual funds, bank collective trusts, life insurance separate accounts, and any pooled investment product primarily invested in the security indicated (see page 6 for definitions of the investment categories used in this paper). Unless otherwise indicated, all asset allocation averages are expressed as a dollar-weighted average.

⁷ The reported account balance represents retirement assets in the 401(k) plan at the participant's current employer. Retirement savings held in plans at previous employers or rolled over into individual retirement accounts (IRAs) are not included in this analysis.

⁸ For a projection of 401(k) accumulations based on 401(k) participant behaviors observed in the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project, see Holden and VanDerhei (November 2002).

⁹ Munnell, Cahill, and Jivan (September 2003) and Friedberg and Webb (September 2003) explore how the shift in pension coverage toward defined contribution plans may be a factor affecting the timing of retirement. Chan and Stevens (December 2003) examine the influence of financial factors on the timing of retirement.

¹⁰ For example, Poterba (May 2004) finds that, although retirement wealth in 401(k) accounts is reduced by the deferred tax liabilities, a 401(k) with an employer match consistently has a higher rate of return than any other type of account considered. Samwick and Skinner (March 2004) conclude that 401(k) plans are as good as or better than defined benefit pension plans in providing for retirement. In addition, Chernozhukov and Hansen (n.d.) find that 401(k) plan participation has a positive effect on wealth.

¹¹ Munnell and Sundén (2004) emphasize the practical changes in workers' participation, contribution, asset allocation, loan, and withdrawal decisions that must be made to ensure the potential of 401(k) plans is realized. Helman and Paladino (April 2004) summarize results from EBRI's annual Retirement Confidence Survey. Hurst (November 2003) concludes that households that entered retirement with lower-than-predicted wealth generally engaged in near-sighted consumption during their working years.

¹² Butrica and Uccello (May 2004) find that, while baby boomers will be better off than earlier generations in absolute terms (e.g., real household incomes and poverty rates), they will be no better off (and in some cases worse off) than current retirees on a relative basis (e.g., retirement income relative to preretirement income). VanDerhei and Copeland (May 2004) develop a national model that encompasses all sources of retirement income and assesses financial security implications for future retirees. Engen, Gale, and Uccello (May 2004 and April 2004) find that many households appear to be saving adequate amounts for retirement. Scholz, Seshadri, and Khitatrakun (January 2004) conclude that fewer than 20 percent of households have less retirement wealth accumulated than their optimal targets. Shackleton (November 2003) reviews numerous studies since 1993 on the preparedness of the baby boom generation for retirement. Fore (September 2003) summarizes findings on the current state of retirement security in the United States and discusses expected future trends in social insurance programs. Poterba, Rauh, Venti, and Wise (August 2003) simulate the potential distributions of wealth depending on the asset allocation of the 401(k) portfolio, while also highlighting the importance of other sources of retirement income (Social Security, defined benefit pensions, and individual savings).

¹³ For example, Even and Macpherson (June 2004), while discussing the benefits and costs of investing in company stock, report some statistics on defined contribution plans with company stock holdings and the performance of those holdings. Iwry (September 2003) discusses company stock and diversification considerations in a legislative context. Utkus and Waggoner (October 2003) study the role of company stock in 401(k) plans from both the plan sponsors' and participants' perspectives, as do Brown, Liang, and Weisbenner (March 2004 or April 2004). Even and Macpherson (November 2003) find that relative to other stock holdings, company stock increases both risk and return in defined contribution retirement plans. Choi, Laibson, Madrian, and Metrick (January 2004) find that participants allocated more of their contributions to company stock in light of recent high past returns, but that high past returns led to shifts of their account balances away from company stock and into other equity investments. Brown, Liang, and Weisbenner (March 2004 or April 2004) find that firms matching employee contributions with company stock tend to be lower risk firms (as measured by bankruptcy risk and stock price volatility). They also find that, given the historic tendency of equities to outperform fixed-income securities, a company stock matching policy generally contributes positively to employee retirement wealth.

¹⁴ Choi, Laibson, and Madrian (May 2004 or June 2004) show that a 401(k) plan's design has an important effect on participation and contribution rates, asset allocation of account balances, and cash distributions at retirement or following a job change.

¹⁵ Agnew and Szykman (May 2004) find that plan design, especially the selection of default options, is important, as it influences participants' choices. Utkus and Young (April 2004) outline a new approach of an "automatic" or "autopilot" 401(k) plan that can be used to improve participation and investment decisions of individuals who are reluctant to make all of the decisions required to participate in a 401(k) plan. Thaler and

Benartzi (February 2004) structure a default option that increases participants' contributions over time to coincide with pay increases. Mitchell and Utkus (2003) use the lessons of behavioral finance to frame a discussion of plan design choices that could better educate and improve the investing experience of imperfect investors and savers. Choi, Laibson, Madrian, and Metrick (August 2003) find that default options have an enormous impact on 401(k) participants' choices.

¹⁶ Iyengar, Jiang, and Huberman (2003) conclude that participation in 401(k) plans is higher in plans offering a handful of investment options compared with plans offering 10 or more investment options.

¹⁷ For example, Even and Macpherson (December 2003) examine the positive impact of offering an employer match on participation in the 401(k) plan. Engelhardt and Kumar (May 2004) find that the existence of an employer matching program raises 401(k) saving.

¹⁸ Choi, Laibson, Madrian, and Metrick (April 2004) find that 401(k) participants appear to experience a learning heuristic and respond to a positive feedback effect, whereby higher recent market returns encourage higher short-term saving (while a wealth effect would produce the opposite result). Clark and d'Ambrosio (December 2003) find that educational seminars can produce significant changes in how people think about and plan for retirement. Chan and Stevens (December 2003) find heterogeneity in how individuals consider financial factors in choosing a retirement date and that the heterogeneity is directly related to their knowledge about the financial factors.

¹⁹ Rugh (June 2004; analyzing TIAA-CREF's data), Hewitt Associates (2004), Utkus and Young (February 2004; analyzing The Vanguard Group's data), and Fidelity Investments (2003) present recent updates on defined contribution plan participants in their respective record-keeping systems. In addition, Agnew and Balduzzi (May 2004) examine equity portfolio choices of 401(k) plan participants, focusing on allocation choices among large-cap, small-cap, and international equity fund holdings.

²⁰ Account balances are net of unpaid loan balances. Thus, unpaid loan balances are not included in any of the eight asset categories described.

²¹ This system of classification does not consider the number of distinct investment options presented to a given participant, but rather the types of options presented. Preliminary research analyzing 1.4 million participants drawn from the 2000 EBRI/ICI database suggests that the sheer number of investment options presented does not influence participants. On average, participants have 10.4 distinct options but, on average, choose only 2.5 (Holden and VanDerhei, May 2001). In addition, the preliminary analysis found that 401(k) participants are not naïve—that is, when given “n” options they do not divide their assets among all “n.” Indeed, less than 1 percent of participants followed a “1/n” asset allocation strategy.

²² GICs are insurance company products that guarantee a specific rate of return on the invested capital over the life of the contract.

²³ Other stable value funds include synthetic GICs, which consist of a portfolio of fixed-income securities “wrapped” with a guarantee (typically by an insurance company or a bank) to provide benefit payments according to the plan at book value.

²⁴ Some record keepers supplying data were unable to provide complete asset allocation detail on certain pooled asset classes for one or more of their clients. Only plans in which at least 90 percent of all plan assets could be identified were included in the final EBRI/ICI database.

²⁵ For a comparison of the distribution of plans, participants, and assets in the EBRI/ICI database with the universe of 401(k) plans, see the Appendix (Figure A1) available through ICI's Web site at www.ici.org/perspective/index.html.

²⁶ For the distribution of plans, participants, and assets by plan assets, see the Appendix (Figure A2) available through ICI's Web site.

²⁷ At the end of 2003, approximately 63.5 percent of balanced mutual fund assets were invested in equities (see Investment Company Institute, *Quarterly Supplemental Data*).

²⁸ Unless otherwise indicated, all asset allocation averages are expressed as a dollar-weighted average.

²⁹ Participants in their 20s hold approximately 2 percent of the total assets in the 2003 EBRI/ICI database; participants in their 30s hold 13 percent; participants in their 40s hold 34 percent; participants in their 50s hold 37 percent; and participants in their 60s hold the remaining 14 percent of the total assets. For the distribution of participants by age or tenure, see the Appendix (Figure A3) available through ICI's Web site.

³⁰ For convenience, minor investment options are not shown.

³¹ See the Appendix (Figure A4) for the distribution of plans, participants, and assets by investment options, available through ICI's Web site.

³² See the Appendix (Figure A5) available through ICI's Web site. In addition, Figure A6 presents asset allocation by salary and investment options and Figure A7 presents asset allocation by plan size and investment options.

³³ The percentage of participants holding no equity funds also tends to increase with tenure (see the Appendix (Figure A8), available through ICI's Web site).

³⁴ See the Appendix (Figures A9 and A10) available through ICI's Web site.

³⁵ For an updated analysis of year-end 2003 account balances, see the Appendix available through ICI's Web site. Figure A11 compares the median and average account balances in the EBRI/ICI databases from 1996 to 2003. Figure A12 presents the distribution of 401(k) account balances by size at year-end 2003.

³⁶ See discussion of these observed correlations in the Appendix (Figures A13, A14, A15, A16, and A17) available through ICI's Web site. Figure A15 is similar to Figure 8 except it covers all 15.0 million participants in the year-end 2003 EBRI/ICI database rather than the consistent subset of 4.5 million participants in Figure 8.

³⁷ The analysis of the relationship between account balances and salary is included in the Appendix (Figures A18, A19, and A20) available through ICI's Web site. Results for year-end 2003 are essentially similar to earlier years' results.

³⁸ For statistics indicating the higher propensity of withdrawals among participants in their 60s, see Holden and VanDerhei (November 2002—Appendix).

³⁹ See "Availability and Use of Plan Loans by Plan Size" in the Appendix for explanation of EBRI/ICI data on plan loans (Figure A21). In addition, for the analysis of loan activity by plan size, see the Appendix (Figures A22 and A23), available through ICI's Web site.

⁴⁰ See the Appendix (Figures A24 and A25, available through ICI's Web site) for loan activity by salary.

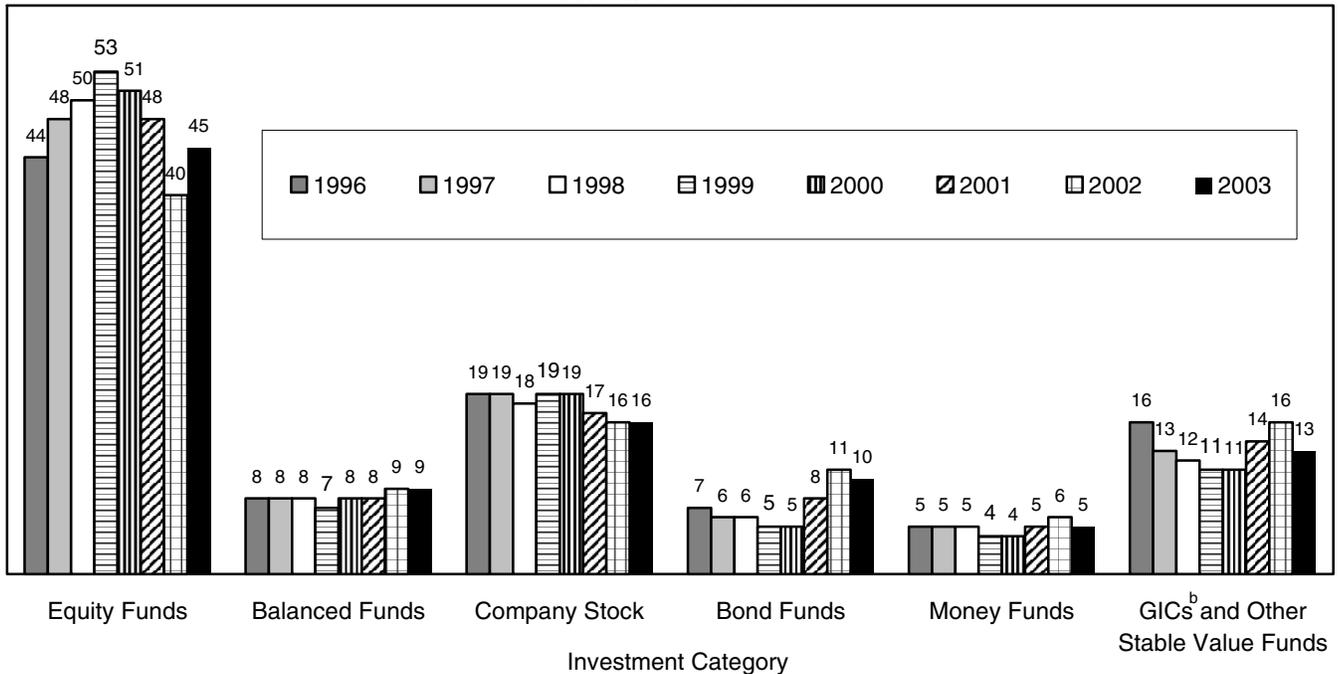
⁴¹ The median loan balance outstanding was \$3,832 at year-end 2003.

Figure 1
EBRI/ICI Database: 401(k) Plan Characteristics, by Number of Plan Participants, 2003

Number of Plan Participants	Total Plans	Total Participants	Total Assets	Average Account Balance
1-10	8,008	50,896	\$1,749,595,391	\$34,376
11-25	11,738	202,235	5,974,784,299	29,544
26-50	8,715	313,919	9,519,335,021	30,324
51-100	6,241	442,031	13,907,692,666	31,463
101-250	5,041	789,544	26,371,215,384	33,401
251-500	2,185	769,985	26,116,061,641	33,918
501-1,000	1,293	904,097	34,951,373,899	38,659
1,001-2,500	989	1,534,268	65,580,394,313	42,744
2,501-5,000	434	1,527,572	72,721,619,145	47,606
5,001-10,000	238	1,642,959	85,708,888,113	52,167
>10,000	270	6,869,852	433,383,348,580	63,085
All	45,152	15,047,358	775,984,308,452	51,569

Source: Tabulations from the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project.

Figure 2
401(k) Plan Average Asset Allocation, 1996-2003
 (percent of total assets)^a

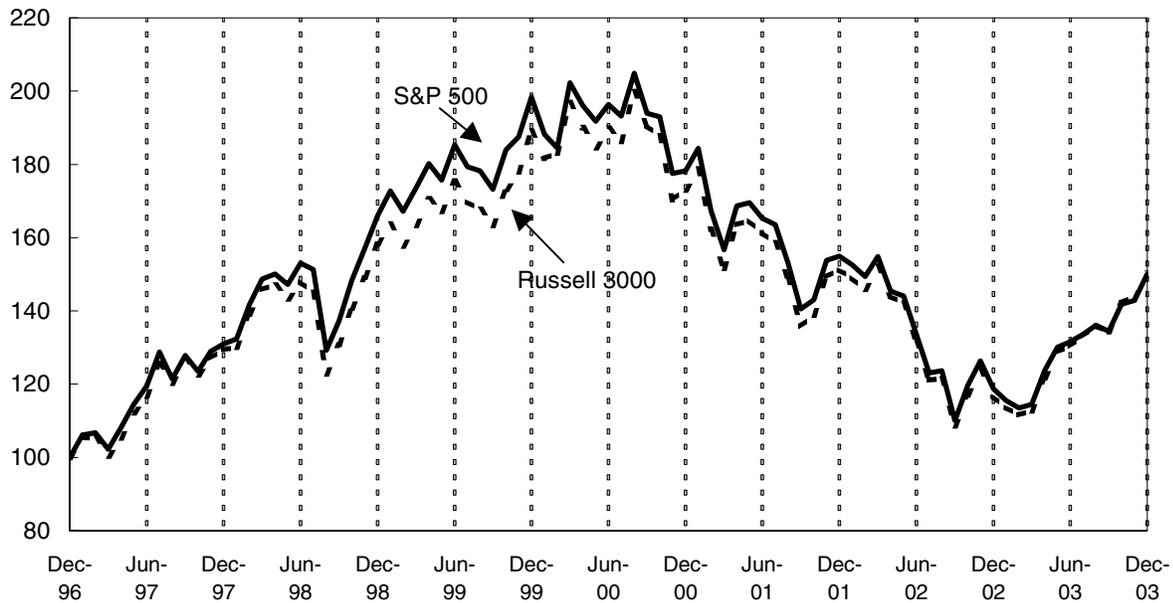


Source: Tabulations from the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project.

^a Minor investment options are not shown.

^b Guaranteed investment contracts.

Figure 3
Domestic Stock Market Indexes, December 1996–December 2003^a
 (month-end level)



Sources: Bloomberg, Frank Russell Company, and Standard & Poor's.

^a The S&P 500 Index consists of 500 stocks chosen for market size, liquidity, and industry group representation. The Russell 3000 Index measures the performance of the 3,000 largest U.S. companies based on total market capitalization.

Note: All indexes are set to 100 in December 1996.

Figure 4
Average Asset Allocation of 401(k) Accounts, by Participant Age, 2003
 (percent of account balances)

Age Cohort	Equity Funds	Balanced Funds	Bond Funds	Money Funds	GICs ^a and		Company Stock	Other	Unknown	Total ^b
					Other Stable Value Funds	Stock				
20s	51.3%	11.8%	9.0%	5.8%	6.1%	14.4%	0.8%	0.8%	100%	
30s	54.2	9.8	8.1	4.2	5.9	16.0	1.1	0.8	100	
40s	48.6	9.8	8.6	4.3	9.3	17.5	1.3	0.7	100	
50s	42.0	9.6	10.2	4.8	14.3	16.9	1.5	0.6	100	
60s	35.1	8.5	12.5	5.6	22.1	14.0	1.7	0.6	100	
All	44.6	9.5	9.8	4.7	12.9	16.4	1.5	0.6	100	

Source: Tabulations from the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project.

^a Guaranteed investment contracts.

^b Row percentages may not add to 100 percent because of rounding.

Figure 5
Average Asset Allocation of 401(k) Accounts, by Investment Options, 2003
 (percent of account balances)^a

Investment Options Offered by Plan	Equity Funds	Balanced Funds	Bond Funds	Money Funds	GICs ^b and Other Stable Value Funds	Company Stock
Equity, Bond, Money, and/or Balanced Funds	58.7%	12.4%	17.7%	8.3%		
Equity, Bond, Money, and/or Balanced Funds, and GICs ^b and/or Other Stable Value Funds	51.7	12.1	7.1	4.2	23.3%	
Equity, Bond, Money, and/or Balanced Funds, and Company Stock	41.7	6.6	14.5	6.9		28.7%
Equity, Bond, Money, and/or Balanced Funds, and Company Stock, and GICs ^b and/or Other Stable Value Funds	36.0	8.4	4.7	2.2	21.3	25.3

Source: Tabulations from the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project.

^a Minor investment options are not shown; therefore, row percentages will not add to 100 percent.

^b Guaranteed investment contracts.

Figure 6
**Asset Allocation Distribution of Participant Account Balance to
 Company Stock in 401(k) Plans With Company Stock,^a by Age, 2003**
 (percent of participants)^b

Age Cohort	Percentage of Account Balance Invested in Company Stock										
	Zero	1–10%	>10–20%	>20–30%	>30–40%	>40–50%	>50–60%	>60–70%	>70–80%	>80–90%	>90–100%
20s	42.1%	7.8%	7.9%	7.9%	6.5%	6.3%	5.2%	3.2%	2.2%	1.4%	9.4%
30s	35.2	10.8	9.5	8.7	7.1	6.2	5.0	3.4	2.5	1.9	9.7
40s	32.8	13.2	9.7	8.4	7.0	6.0	4.9	3.4	2.5	2.0	10.0
50s	32.3	14.8	9.4	7.8	6.4	5.6	4.5	3.3	2.5	2.0	11.4
60s	35.4	15.7	8.1	6.5	5.1	4.5	3.7	2.9	2.2	1.9	14.0
All	34.7	12.6	9.2	8.1	6.6	5.9	4.7	3.3	2.4	1.9	10.6

Source: Tabulations from the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project.

^a Includes the 7.3 million participants in plans with company stock.

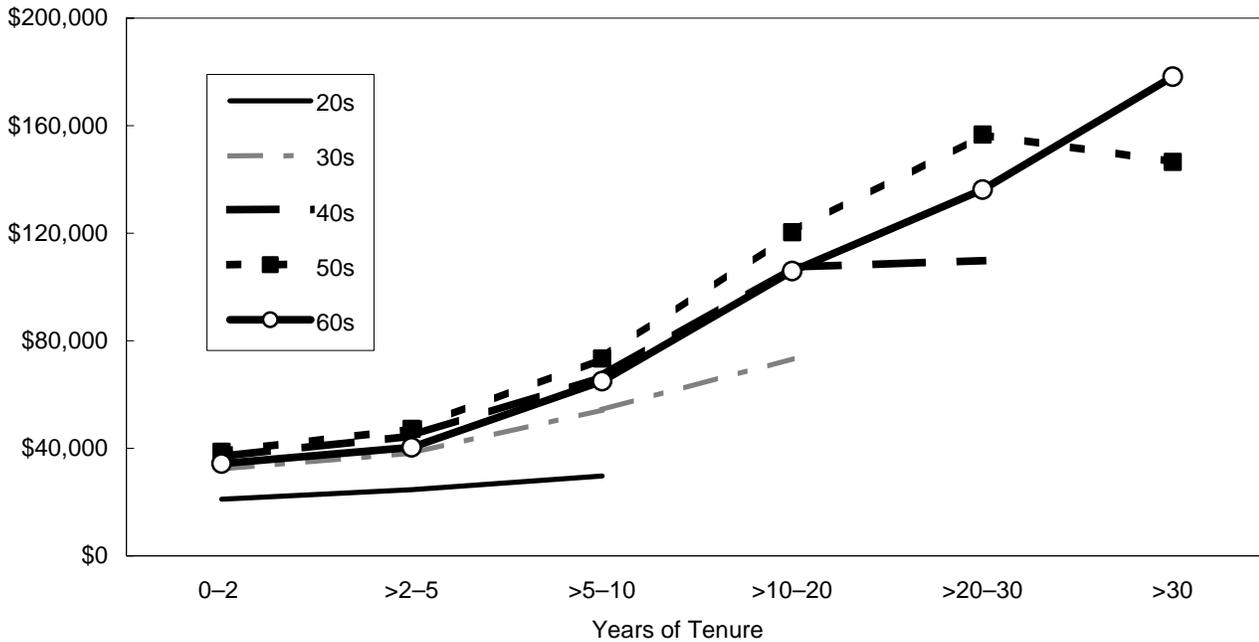
^b Row percentages may not add to 100 percent because of rounding.

Figure 7
Asset Allocation Distribution of 401(k) Participant Account Balance to Equity Funds, by Age, 2003
 (percent of participants)

Age Cohort	Percentage of Account Balance Invested in Equity Funds										
	Zero	1-10%	>10-20%	>20-30%	>30-40%	>40-50%	>50-60%	>60-70%	>70-80%	>80-90%	>90-100%
20s	38.3%	2.7%	3.3%	4.8%	4.9%	6.4%	7.0%	6.1%	6.8%	4.6%	15.2%
30s	27.6	3.4	3.6	5.1	5.5	7.4	7.6	7.2	7.9	5.7	19.0
40s	28.4	4.3	4.2	5.6	5.9	7.6	7.7	6.9	7.2	5.1	17.1
50s	32.5	5.1	4.6	5.9	5.9	7.3	7.2	6.2	6.1	4.2	15.0
60s	41.4	5.6	4.6	5.5	5.3	6.2	5.9	4.7	4.5	3.0	13.4
All	31.6	4.2	4.1	5.4	5.6	7.2	7.3	6.5	6.8	4.8	16.6

Source: Tabulations from the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project.
 Note: Row percentages may not add to 100 percent because of rounding.

Figure 8
Average 401(k) Account Balance at Year-End 2003 Among Participants Present From Year-End 1999 Through Year-End 2003,^{a,b} by Age and Tenure^c
 (dollars)



Source: Tabulations from the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project.
^a Sample of 4.5 million participants with account balances at the end of each year from 1999 through 2003.
^b Data are from Figure 10.
^c Age and tenure cohorts are based on participant age and tenure at year-end 1999.

Figure 9
Change in Average Account Balances Among 401(k) Participants Present
From Year-End 1999 Through Year-End 2003,^a by Age and Tenure^b
 (percent)

Age Cohort ^b	Tenure (Years) ^b	1999–2000	2000–2001	2001–2002	2002–2003	1999–2003
20s	All	26.4%	19.5%	4.7%	51.0%	138.7%
	0–2	54.0	33.5	11.7	57.5	261.6
	>2–5	18.9	14.9	2.0	49.3	108.0
	>5–10	9.0	6.9	-3.1	42.1	60.3
30s	All	4.8	2.8	-6.0	38.6	40.3
	0–2	32.2	20.8	5.4	51.6	155.1
	>2–5	10.6	7.8	-2.3	44.3	68.2
	>5–10	1.9	0.9	-7.8	37.3	30.2
40s	All	0.01	-1.6	-9.3	33.4	19.0
	0–2	0.9	-0.9	-7.8	31.6	21.3
	>2–5	28.3	18.2	5.1	46.8	134.2
	>5–10	10.7	7.2	-1.7	40.1	63.3
50s	All	2.7	0.8	-7.0	33.9	28.9
	0–2	-0.9	-2.5	-9.6	29.9	13.4
	>2–5	-1.4	-3.3	-8.7	28.8	12.1
	>5–10	-0.9	-3.3	-8.6	24.5	7.0
60s	All	28.9	18.1	6.0	43.5	131.6
	0–2	12.5	7.7	-0.6	37.0	65.0
	>2–5	4.4	1.1	-5.8	30.2	29.5
	>5–10	-0.3	-2.4	-8.3	25.5	12.0
All ^d	All	-3.7	-4.8	-9.5	23.0	2.0
	0–2	-9.2	-6.3	-11.0	19.7	-9.3
	>2–5	-6.8	-5.7	-9.6	14.9	-8.7
	>5–10	21.0	14.5	5.1	34.2	95.3
All ^d	All	11.7	5.8	-1.2	28.8	50.4
	0–2	3.2	-0.6	-6.2	21.7	17.2
	>2–5	-1.4	-3.4	-8.2	17.0	2.2
	>5–10	-1.4	-3.4	-8.2	17.0	2.2
All ^d	All	-5.7	-6.2	-9.9	14.4	-8.8
	0–2	-9.8	-7.2	-10.6	12.9	-15.5
	>2–5	-0.4	-1.3	-7.7	29.1	17.1
	>5–10	-0.4	-1.3	-7.7	29.1	17.1

Source: Tabulations from the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project.

^a Sample of 4.5 million participants with account balances at the end of each year from 1999 through 2003.

^b Age and tenure cohorts are based on participant age and tenure at year-end 1999.

Figure 10
Average Account Balances Among 401(k) Participants Present From
Year-End 1999 Through Year-End 2003,^a by Age and Tenure^b

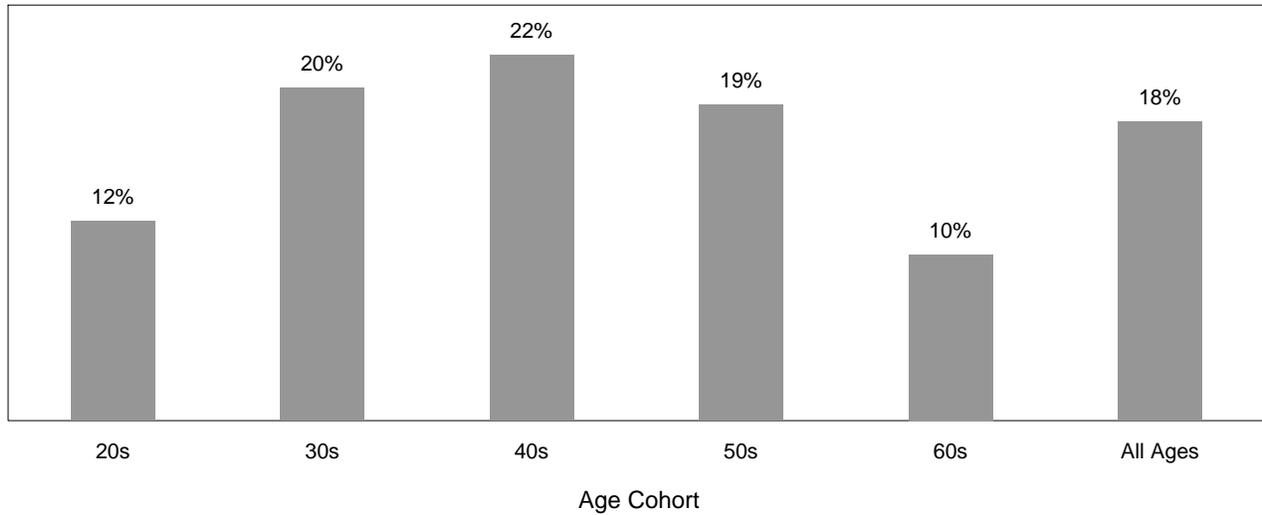
Age Cohort ^b	Tenure (Years) ^b	1999	2000	2001	2002	2003
20s	All	\$10,007	\$12,645	\$15,108	\$15,818	\$23,888
	0–2	5,841	8,995	12,009	13,410	21,121
	>2–5	11,836	14,071	16,161	16,492	24,621
	>5–10	18,519	20,184	21,572	20,895	29,689
30s	All	36,295	38,021	39,083	36,740	50,937
	0–2	12,657	16,727	20,211	21,305	32,291
	>2–5	22,738	25,158	27,121	26,504	38,237
	>5–10	41,687	42,496	42,874	39,522	54,277
40s	All	61,701	61,707	60,692	55,040	73,424
	0–2	68,422	69,024	68,369	63,052	82,999
	>2–5	15,765	20,231	23,922	25,146	36,922
	>5–10	27,329	30,245	32,419	31,856	44,636
50s	All	51,782	53,183	53,582	49,849	66,743
	0–2	94,765	93,892	91,511	82,733	107,481
	>2–5	97,916	96,500	93,362	85,249	109,787
	>5–10	105,485	102,468	99,125	90,640	112,854
60s	All	16,728	21,569	25,463	26,993	38,743
	0–2	28,626	32,216	34,690	34,478	47,245
	>2–5	56,686	59,182	59,844	56,373	73,405
	>5–10	107,497	107,187	104,649	95,934	120,389
All ^d	All	153,567	147,817	140,716	127,415	156,684
	0–2	161,537	146,699	137,512	122,438	146,509
	>2–5	139,317	129,788	122,377	110,679	127,130
	>5–10	17,553	21,240	24,314	25,543	34,281
All ^d	All	26,808	29,956	31,690	31,301	40,306
	0–2	55,405	57,202	56,858	53,352	64,952
	>2–5	103,567	102,090	98,609	90,483	105,863
	>5–10	149,335	140,873	132,108	118,996	136,164
All ^d	All	210,886	190,179	176,568	157,846	178,181
	0–2	65,572	65,306	64,440	59,510	76,809
	>2–5	65,572	65,306	64,440	59,510	76,809
	>5–10	65,572	65,306	64,440	59,510	76,809

Source: Tabulations from the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project.

^a Sample of 4.5 million participants with account balances at the end of each year from 1999 through 2003.

^b Age and tenure cohorts are based on participant age and tenure at year-end 1999.

Figure 11
Percentage of Eligible 401(k) Participants With Loans, by Age, 2003



Source: Tabulations from the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project.

Figure 12
Percentage of Eligible 401(k) Participants With Loans From the Plan, by Age, Tenure, or Account Size, 1996, 1999, and 2003

	1996	1999	2003
All	18%	18%	18%
Age Cohort			
20s	12	11	12
30s	20	20	20
40s	22	22	22
50s	17	18	19
60s	9	9	10
Tenure (years)			
0-2	6	5	3
>2-5	15	13	13
>5-10	24	23	22
>10-20	27	28	27
>20-30	25	27	25
>30	13	17	17
Account Size			
<\$10,000	12	11	12
\$10,000-\$20,000	26	24	24
>\$20,000-\$30,000	26	26	25
>\$30,000-\$40,000	25	26	24
>\$40,000-\$50,000	24	26	23
>\$50,000-\$60,000	24	25	23
>\$60,000-\$70,000	23	25	22
>\$70,000-\$80,000	26	24	22
>\$80,000-\$90,000	23	24	22
>\$90,000-\$100,000	22	23	21
>\$100,000	21	19	17

Source: Tabulations from the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project.

Figure 13 Loan Balances as a Percentage of 401(k) Account Balances for Participants With Loans, by Age, Tenure, or Account Size, 1996, 1999, and 2003			
	1996	1999	2003
All	16%	14%	13%
Age Cohort			
20s	30	25	25
30s	22	18	19
40s	16	14	14
50s	12	11	11
60s	10	9	9
Tenure (years)			
0–2	27	24	25
>2–5	24	22	22
>5–10	23	18	19
>10–20	15	13	14
>20–30	11	10	10
>30	7	9	8
Account Size			
<\$10,000	39	37	35
\$10,000–\$20,000	32	30	29
>\$20,000–\$30,000	28	26	25
>\$30,000–\$40,000	23	23	23
>\$40,000–\$50,000	22	20	20
>\$50,000–\$60,000	19	18	18
>\$60,000–\$70,000	16	16	17
>\$70,000–\$80,000	16	14	15
>\$80,000–\$90,000	14	13	14
>\$90,000 to \$100,000	13	12	13
>\$100,000	7	7	7
Source: Tabulations from the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project.			

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