

# PERSPECTIVE

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

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### INTRODUCTION

During the past two decades, 401(k) retirement plans have become a significant part of the private pension system and an important component of the retirement security of many American workers. In these plans, participants are typically responsible for investing contributions made to their 401(k) accounts. As a consequence, future retirement incomes of a large and growing number of workers now depend upon their investment decisions.

This aspect of 401(k) plans, along with their rapid growth, has raised interest in the investment decisions made by plan participants. Information on these decisions, as well as other aspects of participant activity in 401(k) plans, is limited and, to date, has not been sufficient to study participant asset allocation. The lack of data reflects the relatively recent origin of 401(k) plans and the

difficulty of collecting comprehensive information on 401(k) plan participants.

To fill this void and to enhance understanding of the contribution of 401(k) plans to retirement security, the Employee Benefit Research Institute (EBRI)<sup>1</sup> and the Investment Company Institute (ICI)<sup>2</sup> have collaborated over the past two years in the collection of data on participants in 401(k) plans. In this collaborative effort, known as the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project, EBRI and ICI have obtained data for 401(k) plan participants from certain of their sponsors and members serving as plan record keepers and administrators. The data include demographic information, annual contributions, plan balances, asset allocation, and loans. In 1996, the first year for which data are ready for analysis, the EBRI/ICI database appears to be broadly representative of the universe of 401(k) plans. Furthermore, it is by far the most comprehensive source of information on individual plan participants.

The purpose of this paper is to report the initial findings from the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project. The report includes 1996 information on 6.6 million active participants in 27,762 plans holding nearly \$246 billion in assets. Updates for subsequent years will be provided as data become available.

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

<sup>2</sup> The Investment Company Institute is the national association of the American investment company industry. Its membership includes 7,373 open-end investment companies ("mutual funds"), 450 closed-end investment companies, and nine sponsors of unit investment trusts. Its mutual fund members have assets of about \$5.061 trillion, accounting for approximately 95 percent of total industry assets, and have more than 62 million individual shareholders.

## SUMMARY

The analysis of the 1996 data focuses on asset allocation, plan balances, and loan activity. The principal findings are as follows:

### Asset Allocation

- ▶ For all participants in the database, 44.0 percent of the total plan balance<sup>3</sup> is invested in equity funds, 19.1 percent in employer stock, 15.1 percent in guaranteed investment contracts (GICs), 7.8 percent in balanced funds, 6.8 percent in bond funds, 5.4 percent in money funds, 0.8 percent in other stable value funds, and 1.0 percent in other or unidentified investments. This allocation implies that more than two-thirds of plan balances are invested directly or indirectly in equity securities.<sup>4</sup>
- ▶ Asset allocation varies with age. Younger participants tend to be more concentrated in stock-related investments, whereas older participants are more heavily invested in fixed-income assets. For example, the average share held in stocks through equity funds, company stock, and balanced funds declines from 76.8 percent for participants in their twenties to 53.2 percent for participants in their sixties. In contrast, fixed-income investments rise from 22.1 percent for participants in their twenties to 45.9 percent for participants in their sixties. More specifically, younger participants hold more of their account balances in equity funds than older participants, who tend to invest more heavily in GICs and bond funds. The trend is less true for employer stock.
- ▶ Investment options offered by 401(k) plans appear to influence asset allocation. Plans offering only the options of equity, bond, balanced, and money funds tend to have the highest allocations in equity funds. The addition of company stock to these options substantially reduces the allocation to equity funds. The addition of GICs to the four options lowers allocations to all other investment options, with the greatest effect on bond and money funds.
- ▶ Employer contributions in the form of company stock affect participant allocation behavior. Participants in plans in which employer contributions are made in company stock appear to decrease allocations to equity funds and to increase the allocation of company stock in self-directed balances. In these plans, the average concentration in company

stock from both employer-directed and participant-directed investments combined exceeds 50 percent of total plan balances for all age groups younger than 60.

- ▶ The allocation of plan balances to equity funds varies from participant to participant. For example, 24.5 percent of the participants have more than 80 percent of their plan balances invested in equity funds, whereas 6.9 percent have less than 20 percent allocated to equity funds, and 30.6 percent hold no equity funds at all. However, of those with no investments in equity funds, more than one-half hold either employer stock or balanced funds. As a result, overall equity-related investments of those holding no equity funds are 38.5 percent of plan balances.

### Account Balances

- ▶ The average account balance (net of plan loans) for all participants is \$37,323, and the median balance is \$11,600. Reported account balances do not reflect additional retirement savings held in predecessor plans or rolled over into individual retirement accounts (IRAs).
- ▶ Nearly one-half of the participants have account balances with their current employer of less than \$10,000, while nearly 10 percent have balances in excess of \$100,000. Those individuals with balances less than \$10,000 are primarily young workers or workers with short tenure with their current employer. In contrast, those with balances in excess of \$100,000 are older workers with long tenure. Approximately one out of every four participants in their sixties had an account balance with his or her current employer in excess of \$100,000. Similarly, approximately 31 percent

<sup>3</sup>The plan balance includes assets from both employee and employer contributions.

<sup>4</sup>This figure is computed by combining equity funds, employer stock, and the equity portion of balanced funds. The latter is based upon the portfolio composition of balanced mutual funds, which typically hold 60 percent of assets in equity securities. See Investment Company Institute, Quarterly Supplemental Data.

of workers with 20 or more years of tenure with their current employer had account balances in excess of \$100,000.

### **Plan Loans**

- ▶ Fifty-two percent of the plans, accounting for 70 percent of the participants, offered loans to plan participants. Among participants eligible for loans, only 18 percent had loans outstanding at year-end 1996.
- ▶ The borrowing of plan balances varies by age, tenure, and account balance. Individuals between the ages of 30 and 59 are more likely to have a loan outstanding than younger or older workers. Similarly, participants with short or long periods of tenure tend to borrow with less frequency than other participants. Finally, participants having plan balances less than \$10,000 tend to borrow less frequently.
- ▶ For those with outstanding loans at the end of 1996, the level of the unpaid balance was 16 percent of the net account balance.

The remainder of the paper is organized as follows. The next section discusses the growth and development of 401(k) plans and describes their principal features. The following section provides a detailed description of the EBRI/ICI 401(k) database and compares the 1996 data with the universe of plans. It also contrasts the EBRI/ICI database with other data sources used to examine participant activity in 401(k) plans.

The next three sections provide the initial findings from the database. They begin with a section that examines asset allocation among 401(k) plan participants. Asset allocations are presented by age and investment option, and the effect of employer-

directed contributions on investment patterns also is examined. In addition, the distribution of equity fund allocations across participants is analyzed, with special attention given to those participants holding no equity funds. The following section examines plan balances and considers the extent to which the balance depends upon age and tenure. The final section documents availability of plan loans and average loan balances. Characteristics of participants with outstanding loans also are analyzed.

## **401(K) PLAN DEVELOPMENT**

### **Expansion of 401(k) Plans**

During the past two decades, 401(k) plans have been the primary source of growth in the private pension system. The overall number of private plans increased from 489,000 in 1980 to 690,000 in 1994, the latest year for which data from the Department of Labor are available (U.S. Department of Labor, 1998). During the same period, the number of 401(k) plans, which were authorized in legislation passed by Congress in 1978, increased from virtually zero to 155,000. Thus, 401(k) plans accounted for approximately 77 percent of the net increase in all private pension plans.

Similarly, 401(k) plans accounted principally for the growth in the number of participants and assets in private-sector plans. By 1994, the portion of active participants in 401(k) plans had increased to 39 percent of the total for all plans, while the 401(k) portion of total plan assets had grown to 29 percent. Contributions into 401(k) plans rose sharply, accounting for nearly 53 percent of all new contributions in 1994.

### **Features of 401(k) Plans**

In a typical 401(k) plan, an employee contributes a portion of his or her salary to a plan account and determines how the assets in the account are invested. The employer typically selects the investment options available to the employee.<sup>5</sup> These options may include pooled equity, bond, and money funds, guaranteed investment contracts (GICs), and often the employer's equity. The employer also often either matches a portion of the employee's contribution or makes an annual contribution (as a percentage of salary) to each active participant's account. In many instances, the employer contribution is required to be invested in the employer's stock.

<sup>5</sup>The law permits employees to direct the investment of their own accounts in a defined contribution plan. Under these plans, sponsors and other plan fiduciaries may be protected from potential liability for any losses that result from participant investment decisions, provided that participants are given the opportunity to exercise control over the assets in their individual accounts and can choose from a sufficiently broad range of investment alternatives that have materially different risk and return characteristics. See Sec. 404(c) of the Employee Retirement Income Security Act of 1974, as amended, and regulations issued thereunder.

Technological feasibility and additional regulatory clarification from the U.S. Department of Labor (DOL) in 1992 accelerated the formation of participant-directed plans under ERISA sec. 404(c).

Both the employee's and employer's contributions are made on a pre-tax basis, although some plans also permit the employee to make after-tax contributions. A plan may be designed to permit a participant to withdraw funds from his or her account for hardship or to borrow from the account.<sup>6</sup> Access to the account balance before retirement or separation, however, is restricted by regulation,<sup>7</sup> and loans from the account must typically be repaid within five years.

## THE EBRI/ICI DATABASE

### *Source and Type of Data*

Plan administrators that are either EBRI sponsors or ICI members provided records on active participants in 401(k) plans administered by these organizations in 1996. These administrators included mutual fund companies, insurance companies, and investment management companies. Records were encrypted to conceal the identity of employers and employees but were coded so that both could be followed in subsequent years.

Data provided for each participant included participant date of birth, from which an age cohort was assigned;<sup>8</sup> participant date of hire, from which a tenure range was assigned;<sup>9</sup> outstanding loan balance;<sup>10</sup> funds in participants' investment portfolios; and asset values attributed to those funds.<sup>11</sup> An asset category for each participant was determined by summing the participant's assets in all funds.<sup>12</sup>

Investment options have been grouped into nine broad asset classes. Equity funds consist of pooled investments primarily investing in stocks. These funds include 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 income funds designed to maintain a stable share price. Guaranteed investment contracts (GICs) are insurance company products for which the contribution window is followed by a "holding period," during which interest is credited at a rate guaranteed not to change during the life of the contract and during which withdrawals may be made at book value to provide plan benefits. Other stable value funds are synthetic GICs<sup>13</sup> or similar instruments. The "other fund" category was the residual for other investments such as real estate funds. The final category consists of funds that could not be identified.<sup>14</sup>

<sup>6</sup> Evidence indicates that the availability of loans increases participation rates. Plans that make loans available, as reflected in the findings from a recent U.S. General Accounting Office (1997a) report, have a higher proportion of employees participating in the plan, and participants in such plans contribute an average of 35 percent more to their accounts than participants in plans with no loan availability.

Loans, however, may lower account balances. The effect of borrowing on a participant's retirement income (assuming the loan is paid back) is a function of the rate of return that would have been realized if the plan assets had not been loaned out. If one assumes that (1) funds would have earned rates in excess of the borrowing rates had they not been loaned out, and (2) contribution rates are not affected by the existence of the loan, then the 401(k) account balance would be smaller as a result of the borrowing activity, even after the loan is paid back.

<sup>7</sup> The value of elective contributions in a 401(k) plan may be distributed only upon death, disability, separation from service, the termination of the plan (provided no successor plan other than an employee stock ownership plan (ESOP) or a simplified employee pension (SEP) plan is established), or certain sales of businesses by the employer. Distributions of elective contributions will be permitted after the employee has attained age 59½, or before this age in the case of a hardship. For hardship withdrawals, however, the amount available is limited to the elective contributions themselves; investment income on such contributions can be included only if it is earned before December 31, 1988 (for calendar year plans). If employer contributions have been included in the ADP (actual deferral percentage) test, only these contributions and investment income may be withdrawn if they were made or earned before the end of the last plan year ending before July 1, 1989.

<sup>8</sup> Those who are less than 18 years old have not been included in the analysis. Approximately 1 percent of the participants had a birth date that was missing.

<sup>9</sup> Approximately 17 percent of the total sample had a tenure range that was missing. In addition, one data provider supplied "years of participation" rather than tenure, and this was used as a proxy for tenure.

<sup>10</sup> Two of the data providers did not supply loan information. Data from these providers were excluded from the analysis of participant behavior with respect to loans.

<sup>11</sup> Plans with assets invested exclusively in company stock were excluded from the database under the assumption that they provided no participant direction in the investment of either employee or employer contributions. We assume that all other plans provide participant direction, at least with respect to the employee contributions. This appears to be a safe assumption in general because, according to survey data (KPMG Peat Marwick, 1998), 94 percent of plans (covering 92 percent of employees) intend to comply with ERISA sec. 404(c) regulations.

<sup>12</sup> Some, but not all, of the administrators provided data on incomes, marital status, gender, and withdrawals. The number of administrators with information on these variables in 1996 was not sufficient to allow inclusion of these variables and still maintain the confidentiality of providers. Thus, the current analysis does not consider these variables.

<sup>13</sup> A synthetic GIC consists of a portfolio of fixed-income securities, "wrapped" with a guarantee (typically by the insurance company or bank) to provide benefit payments according to the plan at book value.

<sup>14</sup> Some providers were unable to provide complete asset allocation detail on certain pooled asset classes for one or more of their clients. Any plan in which at least 90 percent of all plan assets could not be identified was excluded from the analysis.

FIGURE 1

**EBRI/ICI Database: 401(k) Plan Characteristics by Number of Plan Participants**

<b>Number of Plan Participants</b>	<b>Total Plans</b>	<b>Total Participants</b>	<b>Total Assets</b>	<b>Average Account Balance</b>
1–10	6,770	43,790	\$789,854,771	\$18,037
11–25	7,643	128,472	2,008,569,886	15,634
26–50	4,594	164,091	2,832,514,218	17,262
51–100	3,261	231,939	4,988,806,516	21,509
101–250	2,592	403,178	8,921,837,003	22,129
251–500	1,162	404,798	10,422,328,074	25,747
501–1,000	697	496,358	13,956,922,190	28,119
1,001–2,500	586	910,378	28,042,850,005	30,804
2,501–5,000	241	845,642	32,126,231,300	37,990
5,001–10,000	125	860,392	32,621,053,291	37,914
>10,000	91	2,112,700	109,687,279,283	51,918
All	27,762	6,601,738	246,398,246,538	37,323

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

The data were received in varying formats from each of the data providers. Raw data from each provider were formatted in a standardized structure. Participant data from all data providers were then combined into one data set for analysis. Plan-specific data were also combined into a second standardized-format data set. Checking each individual record would have been impossible; however, a variety of aggregated statistics for each administrator’s plans was reviewed by the administrators to detect inaccuracies. This resulted in some modifications of plans included in the analysis as well as reclassification of asset categories.

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

The 1996 database contains 27,762 401(k) plans with \$246 billion of assets and 6,601,738 participants (Figure 1). Measured against the universe of

401(k) plans, the 1996 database accounts for 9 percent of all plans, 18 percent of all participants, and 31 percent of all assets.<sup>15</sup>

Most of the plans in the database are small, whether measured by the number of plan participants or plan assets. For example, more than 50 percent of the plans have 25 or fewer participants, and another 28 percent fall within the range of 26 to 100 participants (Figure 1). In contrast, only 4 percent of the plans have more than 1,000 participants. Similarly, nearly one-half the plans have assets less than \$250,000, and another 28 percent have plan assets between \$250,000 and \$1,250,000 (Figure 2).

Participants and assets, however, are concentrated in large plans. For example, 72 percent of the participants in the database are in plans with more than 1,000 participants, and these same plans account for 82 percent of all plan assets (Figure 1).

**Relationship of Database Plans to the Universe of Plans**

The distribution of participants, plans, and assets in the EBRI/ICI database for 1996 is similar to that reported for the universe of plans by Cerulli Associates (1998). For each of five plan size classifications, the

<sup>15</sup> Plans and participants represent 1997 estimates from Cerulli (1998), while assets are for 1996.

FIGURE 2

**EBRI/ICI Database: 401(k) Plan Characteristics by Plan Assets**

Total Plan Assets	Total Plans	Total Participants	Total Assets	Average Account Balance
\$0–\$250,000	13,497	229,821	\$ 1,228,267,360	\$ 5,344
>\$250,000–\$625,000	4,838	180,623	1,947,420,421	10,782
>\$625,000–\$1,250,000	2,805	180,226	2,495,608,783	13,847
>\$1,250,000–\$2,500,000	2,087	234,874	3,711,420,947	15,802
>\$2,500,000–\$6,250,000	1,869	398,075	7,289,773,894	18,313
>\$6,250,000–\$12,500,000	959	417,069	8,376,238,006	20,084
>\$12,500,000–\$25,000,000	608	482,157	10,716,660,204	22,226
>\$25,000,000–\$62,500,000	557	786,662	21,999,382,551	27,965
>\$62,500,000–\$125,000,000	248	727,182	21,839,715,621	30,033
>\$125,000,000–\$250,000,000	141	630,730	23,946,646,100	37,967
>\$250,000,000	153	2,334,319	142,847,112,650	61,194
All	27,762	6,601,738	246,398,246,538	37,323

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

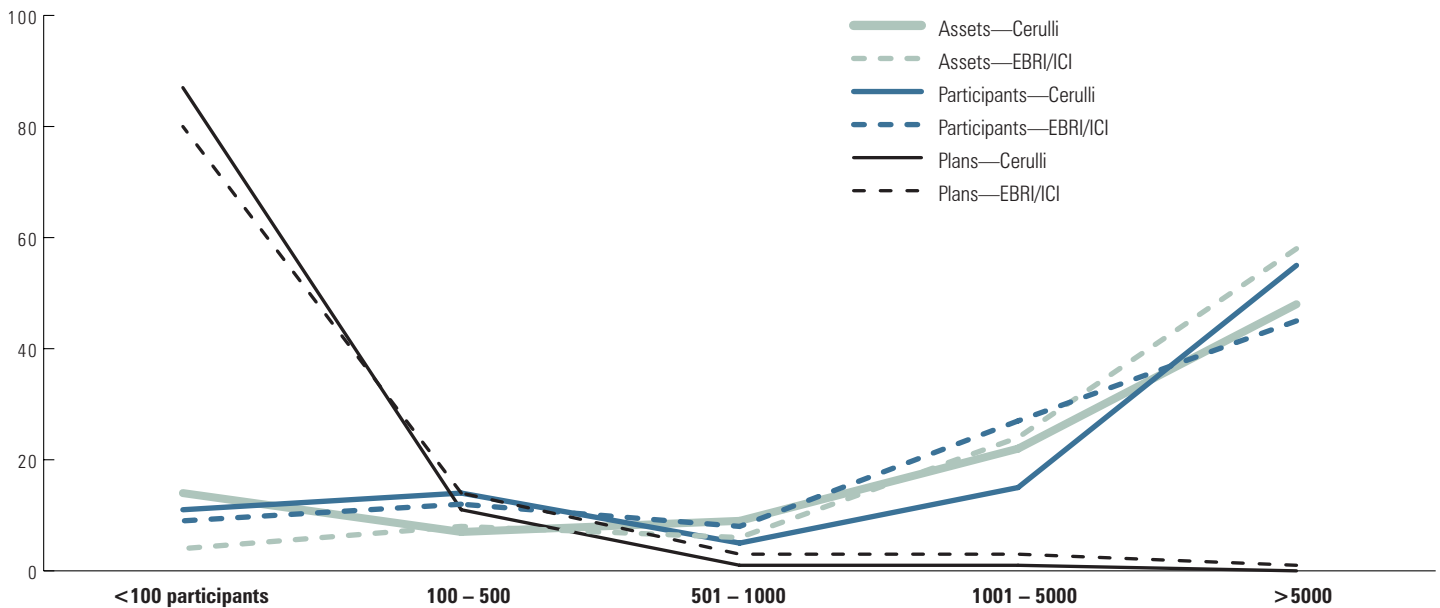
share of the database’s assets falling within those categories is very close to the share found in the universe for that size category (Figure 3). Similarly, the share of the database’s participants and plans within these size categories is approximately the same as that in the universe.<sup>16</sup>

**Comparison With Other Participant-level Databases**

The EBRI/ICI database is the most comprehensive source of participant-level data on 401(k) plans to date. Indeed, only three research projects have used administrative records;<sup>17</sup> much of the research has used aggregate 401(k) plan data.<sup>18</sup> Among those using administrative records, Goodfellow and Schieber (1997) investigated the investment elections of 36,000 participants in 24 401(k) plans. The total number of participants in the plans

FIGURE 3

**401(k) Plan Characteristics by Number of Participants: EBRI/ICI Database vs. Cerulli Estimates for All 401(k) Plans (percent)**



Sources: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project, Cerulli Associates 1997 estimates for all 401(k) plans

<sup>16</sup> Conventional correlation statistics for the three pairs of data series are 99, 92, and 99 percent, respectively.

<sup>17</sup> Two other micro-level defined contribution databases have been analyzed but constitute different types of plans. Hinz, McCarthy, and Turner (1997) investigate asset allocations among Federal Thrift Savings Plan participants, and Ameriks, King, and Warshawsky (1997) perform a similar analysis on the TIAA-CREF population.

<sup>18</sup> A partial list of this research includes Buck Consultants (1997), Hewitt Associates (1997), Profit Sharing/401(k) Council of America (1997), KPMG Peat Marwick (1998), William M. Mercer (1997), Cerulli Associates, Inc. (1998).

analyzed in their study ranged from around 150 to 6,000.<sup>19</sup> In addition, Yakoboski and VanDerhei (1996) analyzed the asset allocation decisions of 401(k) plan participants working for three large employers (AT&T, IBM Corporation, and New York Life Insurance Company) with a total of 180,000 employees. Finally, Hewitt Associates has developed an index to track the investment activity of 401(k) participants. This index is based upon 1.4 million 401(k) participants with approximately \$62 billion in collective assets. Currently, this index reflects the experience of large corporations and does not provide any analysis of employee demographics.

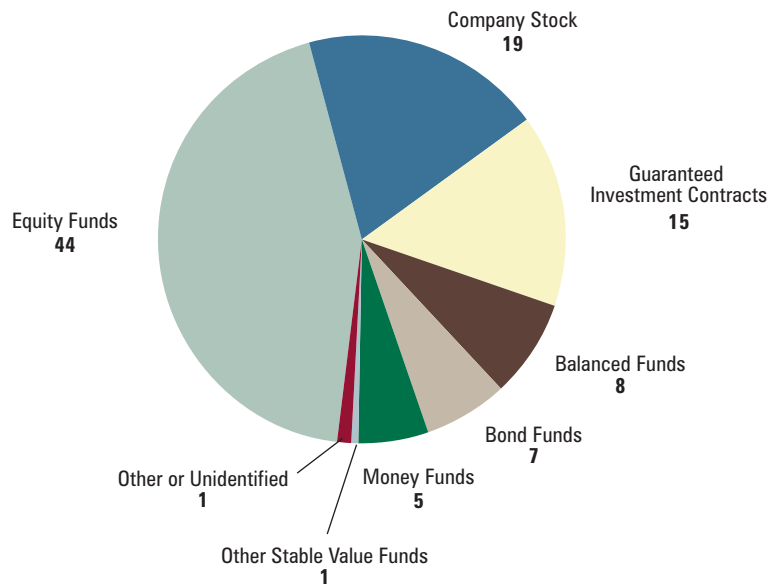
Surveys of 401(k) participants have also been used to analyze participant activity and decision-making in 401(k) plans. One of the more frequently used is the Survey of Consumer Finances (SCF). The SCF is a stratified random sample of U.S. households and is administered by the Federal Reserve Board. Although the survey has the advantage of providing information on asset holdings outside the participant's 401(k) plan, it only asks the respondents to indicate plan asset allocations as "mostly in stock," "mostly in bonds," or "split between." Any analysis of this data therefore must either restrict itself to these three categories or utilize ad-hoc assumptions with respect to the actual distributions.<sup>20</sup>

In contrast to participant survey data, the EBRI/ICI database does not contain information about participant assets and income outside of the 401(k) plan. Nor does it contain information about defined benefit plans with the current employer or previous employers or information about spouses' income, assets, and retirement plans. Nonetheless, the broad scope of the EBRI/ICI database means that it offers the single best source of data for analyzing participant activity within 401(k) plans.

**FIGURE 4**

**Average Asset Allocation for All Plan Balances**

(percent)



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

Combined with the information from participant surveys, the EBRI/ICI database represents a significant step forward in understanding the role and contribution of 401(k) plans to retirement security.

**ASSET ALLOCATION**

**Average Asset Allocation by Age and Investment Options**

Participants in the 401(k) plans in the 1996 EBRI/ICI database had, on average, 44.0 percent of their plan balance invested in equity funds, 19.1 percent invested in company stock, 15.1 percent in GICs, 7.8 percent in balanced funds, 6.8 percent in bond funds, 5.4 percent in money funds, and 0.8 percent in other stable value funds (Figure 4). A total of 0.4 percent was in other investments and 0.6 percent was in unidentified investments.<sup>21</sup> On the whole, approximately two-thirds of the plan balances were invested in equity securities, which represent the sum of the asset shares of equity funds, company stock, and the equity portion of balanced funds.

<sup>19</sup> Some larger plan data were excluded because there were "strong financial incentives to invest in company stock." The year in which the data were collected was not identified; however, a subsequent publication (Clark, Goodfellow, Schieber, and Warsick, 1998) used data collected from 87 401(k) plans at the end of 1994.

<sup>20</sup> Papke (1998) uses the National Longitudinal Survey of Mature Women to analyze 232 participants in defined contribution plans. The reported investment choices, however, suffer the same constraints as the SCF.

<sup>21</sup> All asset allocation averages are expressed as a dollar-weighted average unless otherwise indicated.

FIGURE 5

**Average Asset Allocation by Age**

(percent of account balances)

Age Cohort	Equity Funds	Bond Funds	Company Stock	Money Funds	Balanced Funds	Guaranteed Investment Contracts	Other Stable Value Funds	Other	Unknown	Total
20s	55.1	5.8	16.7	5.2	8.3	7.8	0.1	0.8	0.3	100
30s	51.2	5.6	19.6	4.8	8.1	9.0	0.4	0.6	0.6	100
40s	46.2	6.0	21.1	5.2	8.0	12.0	0.6	0.5	0.6	100
50s	42.5	7.0	19.5	5.3	7.8	16.1	0.9	0.4	0.6	100
60s	33.9	9.2	15.0	6.1	7.2	26.1	1.6	0.3	0.6	100
All	44.0	6.8	19.1	5.4	7.8	15.1	0.8	0.4	0.6	100

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

Participant asset allocation varies considerably with age (Figure 5). Younger participants tend to invest a greater percentage of account balances in equity funds; older participants are more disposed to invest in GICs. On average, participants in their twenties have 55.1 percent of their account balances in equity funds in contrast to 33.9 percent for those in their sixties. Participants in their twenties invest 7.8 percent of their account balance in GICs, and those in their sixties invest 26.1 percent. Company stock represents an average of 16.7 percent of the total account balance of participants in their twenties, rises to 21.1 percent for participants in their forties, and falls to 15.0 percent for those in their sixties.

The mix of investment options offered by a plan significantly affects asset allocation. Figure 6 shows four combinations of investment offerings, starting with a base group consisting of equity funds, bond funds, money funds, and balanced funds. Plans having just these four options have 61.6 percent invested in equity funds, 13.8 percent in balanced funds, 11.7 percent in bond funds, and 11.9 percent in money funds.<sup>22</sup> Adding GICs to the base group lowers the allocation in all four funds, but the greatest decrease is in bond and money funds. Thus, GICs appear to be a substitute for other types of fixed-income investments. In contrast, adding company stock to the base group produces the greatest reduction in the equity fund share. Finally, adding both GICs and company stock produces a combination of the two effects, with company stock likely displacing equity funds and GICs displacing other fixed-income investments.<sup>23</sup>

<sup>22</sup> For convenience, minor investment options are not shown.

<sup>23</sup> A comparison of the four combinations of investment offerings by age yields similar findings about the effect of investment options on asset allocation.

<sup>24</sup> We were able to match the source of contributions with the fund information for a subset of the data providers in our sample.

**Asset Allocation of Employee and Employer Contributions**

A participant’s 401(k) plan balance reflects both the participant’s and the employer’s contributions to the account. Although most plans give the participant complete control over the allocation of assets from both sources, some do require that the employer’s contribution be invested in employer stock. In such plans, the employee has discretion only over assets from his or her own contribution.

The existence of plans with employer-directed contributions suggests examining separately the allocation of participant-directed balances in these plans. Of particular interest is the extent to which participants in these plans adjust their holdings of self-directed investments in response to mandatory investments in employer stock.

Of those plans in the EBRI/ICI database for which the appropriate information is available,<sup>24</sup> less than 1 percent require employer contributions to be invested in company stock. This percentage is consistent with evidence found in surveys of plan sponsors. Most of the plans with this feature in the EBRI/ICI database, however, are large and thus a significantly higher 15 percent of employees and



FIGURE 6

**Average Asset Allocation by Age and Investment Options**

(percent of account balances)

	Equity Funds	Balanced Funds	Bond Funds	Money Funds	Guaranteed Investment Contracts	Company Stock
<b>ALL AGES COMBINED</b>						
<b>Investment Options</b>						
Equity, Bond, Money, & Balanced Funds	61.6	13.8	11.7	11.9		
Equity, Bond, Money, & Balanced Funds, & GICs	54.9	7.6	4.0	3.7	28.8	
Equity, Bond, Money, & Balanced Funds, & Company Stock	38.8	5.1	8.1	7.9		35.3
Equity, Bond, Money, & Balanced Funds, GICs, & Company Stock	31.6	6.9	5.4	1.7	23.5	30.3
<b>PLANS WITH NO COMPANY STOCK OR GUARANTEED INVESTMENT CONTRACTS</b>						
<b>Age</b>						
20s	68.7	12.0	8.7	9.5		
30s	67.6	12.9	9.3	9.1		
40s	63.9	14.0	10.7	10.4		
50s	59.7	14.3	12.5	12.4		
60s	49.7	14.6	17.6	17.3		
<b>PLANS WITH GUARANTEED INVESTMENT CONTRACTS</b>						
20s	65.2	7.1	4.3	3.2	18.4	
30s	62.5	7.6	4.3	3.3	20.7	
40s	58.0	8.0	4.1	3.6	25.1	
50s	54.3	7.8	3.7	3.6	29.6	
60s	43.1	6.5	3.7	4.3	41.7	
<b>PLANS WITH COMPANY STOCK</b>						
20s	43.1	5.7	7.6	6.6		36.0
30s	42.9	5.5	6.4	6.6		35.5
40s	39.5	5.2	7.0	7.4		37.5
50s	37.6	5.0	8.3	8.3		35.5
60s	34.6	4.8	11.6	9.7		29.5
<b>PLANS WITH COMPANY STOCK AND GUARANTEED INVESTMENT CONTRACTS</b>						
20s	40.3	7.6	2.7	1.8	11.4	35.2
30s	38.8	7.4	3.2	1.7	13.9	34.2
40s	34.0	7.0	4.1	1.7	18.5	33.9
50s	31.3	6.9	6.0	1.7	23.6	29.9
60s	22.5	6.3	8.4	1.6	38.5	22.1

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

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

25 percent of assets are in plans with employer-directed contributions.

The asset allocation of *participant-directed* balances in plans with employer contributions required to be invested in company stock differs markedly from that of participants in other plans (Figure 7). In particular, company stock represents 32.7 percent of the assets of participant-directed

accounts in plans with such employer-directed contributions, compared with 19.9 percent in plans offering company stock as an investment option but not having employer-directed investments in company stock. The tendency for these participants to elect to invest a higher share of the assets that they control in company stock holds not only for all participants but also for participants in different age groups.

Offsetting the higher allocation to company stock are lower shares of assets in all other types of plan investments. The share of assets held in

FIGURE 7

**Impact of Employer-contributed Company Stock on Asset Allocations by Age**

(percent of account balances)

Age Cohort	Equity Funds	Bond Funds	Company Stock	Money Funds	Balanced Funds	Guaranteed Investment Contracts	Other Stable Value Funds	Other
<b>PARTICIPANT-DIRECTED BALANCES ONLY</b>								
20s	47.3	1.0	35.3	2.0	6.1	8.1	0	0.1
30s	44.7	1.5	34.0	3.1	7.1	9.4	0	0.2
40s	37.2	2.5	35.2	6.4	7.3	11.1	0	0.3
50s	33.1	3.2	33.2	7.2	7.5	15.4	0	0.4
60s	31.7	3.0	26.1	8.2	6.6	23.7	0	0.7
All	36.0	2.6	32.7	6.5	7.2	14.6	0	0.4
<b>TOTAL BALANCES</b>								
20s	30.4	0.7	58.3	1.3	3.9	5.4	0	0.1
30s	27.5	1.0	59.4	1.9	4.3	5.8	0	0.1
40s	23.6	1.6	58.9	4.0	4.6	7.1	0	0.2
50s	23.1	2.2	53.5	4.9	5.2	10.9	0	0.3
60s	25.1	2.3	41.4	6.4	5.2	19.0	0	0.6
All	24.3	1.8	54.6	4.3	4.8	9.9	0	0.3
<b>PLANS WITH A COMPANY STOCK INVESTMENT OPTION BUT NO EMPLOYER-DIRECTED CONTRIBUTIONS</b>								
20s	48.5	3.9	20.6	5.3	12.1	8.0	0.2	1.4
30s	46.7	3.2	19.9	4.9	13.0	11.3	0.1	1.0
40s	41.8	3.5	21.2	6.3	11.7	14.2	0.3	0.9
50s	39.2	3.8	20.2	7.7	11.5	16.6	0.3	0.8
60s	33.3	4.5	16.1	8.5	11.9	24.8	0.4	0.4
All	40.6	3.7	19.9	6.8	11.9	16.1	0.3	0.8

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

FIGURE 8

**Asset Allocation Distribution of Participant Account Balances to Equity Funds by Age and Tenure**

(percent)

	Zero	<20%	20%–80%	>80%	Total
<b>TOTAL</b>	30.6	6.9	38.0	24.5	100.0
<b>AGE COHORT</b>					
20s	28.3	4.4	37.4	29.9	100.0
30s	26.6	6.4	39.9	27.1	100.0
40s	29.5	7.6	39.4	23.6	100.0
50s	32.9	8.3	37.5	21.3	100.0
60s	46.2	8.3	29.7	15.7	100.0
<b>TENURE (years)</b>					
0–2	24.5	3.5	39.8	32.3	100.0
>2–5	28.2	4.9	40.3	26.7	100.0
>5–10	30.4	7.4	39.9	22.3	100.0
>10–20	33.6	9.1	38.5	18.9	100.0
>20–30	37.7	9.8	35.7	16.9	100.0
> 30	45.0	9.3	30.5	15.2	100.0

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

equity funds and balanced funds differs the most from the shares in plans without employer-directed, matching contributions, but the asset shares of GICs, bond funds, and money funds are smaller as well.

As a result, the overall exposure to equity through company stock and pooled investments is considerably higher for participants in plans with employer-directed contributions. For example, equity funds and company stock represent 68.7 percent of the self-directed assets of participants in plans with employer-directed contributions in company stock. For total balances in these plans, the share is 78.9 percent. By comparison, the combined share of equity funds and company stock is 60.5 percent in plans without employer-directed contributions. The higher allocation to equity also holds across all age groups.

FIGURE 9

**Percentage of Participants with Equity Exposure but No Equity Fund Balances by Age and Tenure**

	Percentage with Company Stock and/or Balanced Funds
<b>AGE COHORT</b>	
20s	44.7
30s	53.1
40s	55.6
50s	56.1
60s	45.3
All	52.1
<b>TENURE (years)</b>	
0–2	40.0
>2–5	42.8
>5–10	45.9
>10–20	55.6
>20–30	58.9
>30	55.2
All	52.1

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

**Distribution of Equity Fund Allocations and Participant Exposure to Equities**

Among individual participants, the share of assets allocated to equity funds varies widely around the average of 44.0 percent for all participants. A total of 30.6 percent of the participants held no equity funds at all, while 6.9 percent had less than 20 percent allocated to equity funds (Figure 8). At the other extreme, 24.5 percent of the participants had more than 80 percent of the plan balances invested in equity funds. The remaining 38.0 percent had allocations in equity funds ranging between 20 percent and 80 percent.

The percentage of those holding no equity funds varies positively with age and tenure. Of those participants in their twenties, for example, 28.3 percent held no equity funds, compared with 46.2 percent of those in their sixties. Similarly, 24.5 percent of those with less than two years of tenure hold no equities, compared with 45.0 percent of those with more than 30 years of tenure.

The absence of equity fund holdings does not necessarily mean that a plan participant has no exposure to the stock market. Indeed, more than one-half of the individuals with no equity funds holdings had investments in either employer stock or balanced funds (Figure 9).<sup>25</sup> For all participants with no equity funds, 33.5 percent of assets was in company stock and 8.3 percent was in balanced funds (Figure 10).

FIGURE 10

**Asset Allocation Distribution for Participants with No Equity Fund Balances by Age and Tenure**  
(percent of account balances)

	Bond Funds	Company Stock	Money Funds	Balanced Funds	Guaranteed Investment Contracts	Other Stable Value Funds	Other	Unknown	Total
<b>AGE COHORT</b>									
20s	9.5	36.3	16.8	11.8	22.4	0.2	2.4	0.6	100.0
30s	8.8	40.2	13.5	10.2	23.1	1.0	2.0	1.1	100.0
40s	9.0	40.1	11.7	9.2	26.6	1.2	1.2	0.9	100.0
50s	10.5	34.9	11.2	8.1	32.0	1.6	0.8	0.9	100.0
60s	12.3	22.8	9.9	6.7	44.3	2.8	0.5	0.8	100.0
All	10.3	33.5	11.8	8.3	32.5	1.7	1.0	0.9	100.0
<b>TENURE (years)</b>									
0–2	10.1	21.6	21.3	17.8	25.5	0.6	2.2	0.8	100.0
>2–5	10.0	22.4	17.6	15.8	30.9	0.7	2.2	0.5	100.0
>5–10	9.4	28.5	16.6	11.0	31.4	0.6	1.7	0.8	100.0
>10–20	10.0	33.1	13.5	9.0	31.5	1.4	0.5	1.1	100.0
>20–30	10.4	34.5	10.3	6.8	35.1	1.8	0.2	1.0	100.0
>30	14.9	27.0	6.9	5.4	40.9	3.7	0.0	1.1	100.0
All	10.3	33.5	11.8	8.3	32.5	1.7	1.0	0.9	100.0

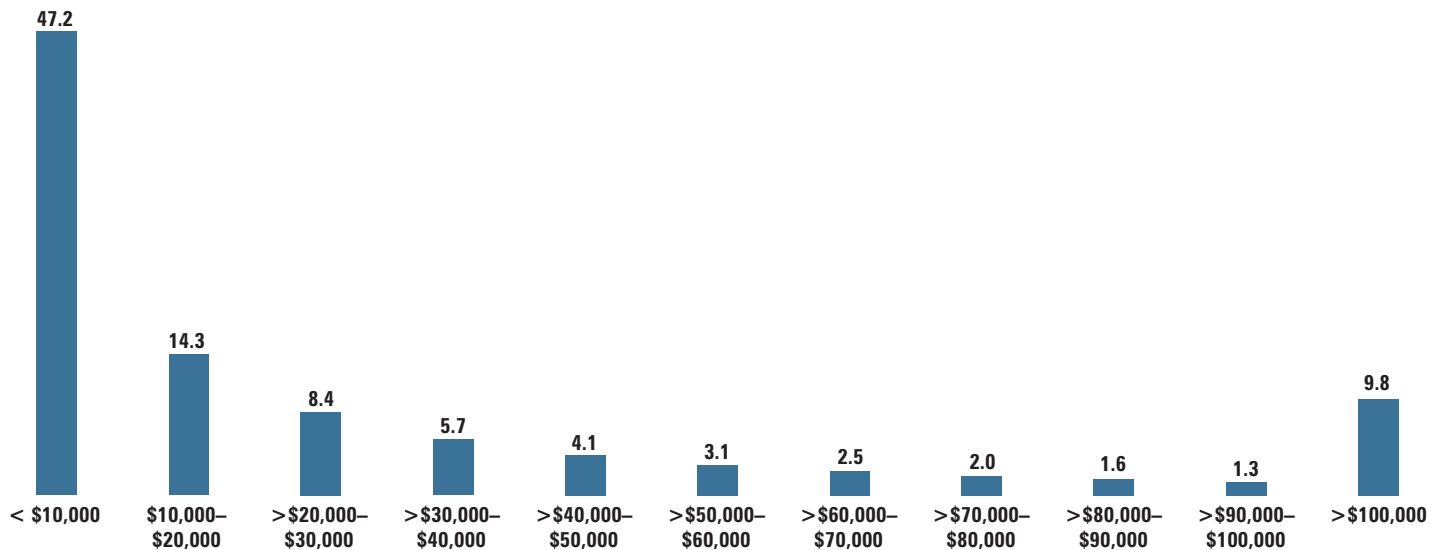
Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

<sup>25</sup> Age does not appear to be a significant variable, but the percentage investing in employer stock or balanced funds appears to be positively related to tenure.

FIGURE 11

## Distribution of Account Balances

(percent of participants with account balances in specified ranges)



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

## Other Research on Asset Allocation

Form 5500, filed annually with the Internal Revenue Service by private pension plans, is a source of aggregate information on asset allocation in 401(k)-type plans. The accounts listed on the form, however, do not match those in the EBRI/ICI database and thus do not provide for a direct comparison. In addition, 1993 is the most recent year for which aggregate Form 5500 information is available on a basis in which pooled fund assets reported by plans have been redistributed to the underlying asset categories. In that year, plans with 100 or more participants showed the following asset allocation: 21 percent in insurance company general accounts, 19 percent in corporate stock other than that of the sponsor, 19 percent in registered investment companies, 16 percent in employer securities, 11 percent in government and corporate debt securities, 8 percent in cash, and 6 percent in miscellaneous investments.<sup>26</sup>

Two studies have examined administrative records for individual participants in 401(k) plans. Yakoboski and VanDerhei (1996) studied asset allocation among participants in plans of three large corporations, and Goodfellow and Schieber (1997) analyzed asset allocation of participants in 24 plans administered by Watson Wyatt. Although encompassing a

considerably smaller number of participants and plans, the findings from these studies are consistent with those reported above from the 1996 EBRI/ICI database.

Several researchers have examined asset allocation from surveys of participants in 401(k) plans and 403(b) plans. Poterba and Wise (1998) used the 1992 Survey of Consumer Finances to study asset allocations in both types of plans, whereas Ameriks, King, and Warshawsky (1997) analyzed asset allocation for a sample of 403(b) plan participants. Finally, Sunden and Surette (1998) analyzed gender differences in asset allocations in retirement plans using the 1995 Survey of Consumer Finances.

## ACCOUNT BALANCES

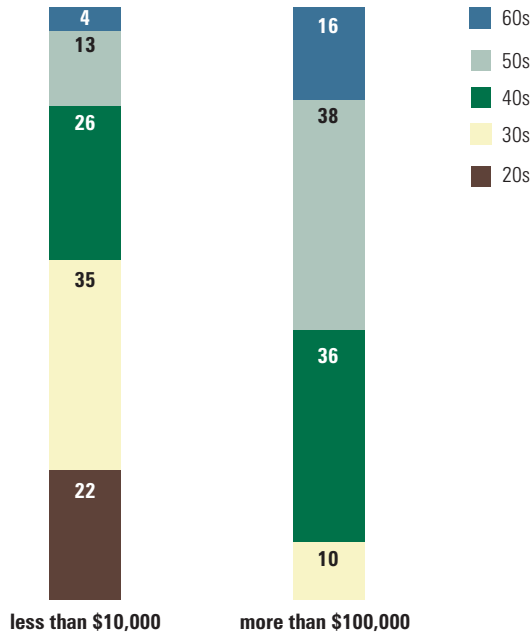
The average account balance for all participants in the EBRI/ICI database is \$37,323.<sup>27</sup> There is, however, wide variation around the average. For

<sup>26</sup> Insurance company general accounts are probably primarily GICs. Corporate stock other than sponsor securities, government and corporate debt securities, and cash reflect holdings of pooled investments other than registered investment companies. Registered investment companies are mutual funds and variable annuities registered with the Securities and Exchange Commission. These investments would include stock, bond, money, and balanced funds.

<sup>27</sup> Reported balances are net of plan loans. There is an extremely wide range of estimates of average account balances in 401(k) plans. The Department of Labor (DOL, p. 85) provides an average account balance per *active* participant for 1994 of \$26,766. However, the Goodfellow and Schieber (1997) study of 24 plans found an average balance of \$38,234, and a recent study by the Profit Sharing/401(k) Council of America indicated that the average balance for participants in their survey was \$75,000 in 1996 (Bureau of National Affairs, 1998). The latter number could be considered as an upper bound since it includes profit-sharing and combination plans as well as 401(k) plans.

FIGURE 12

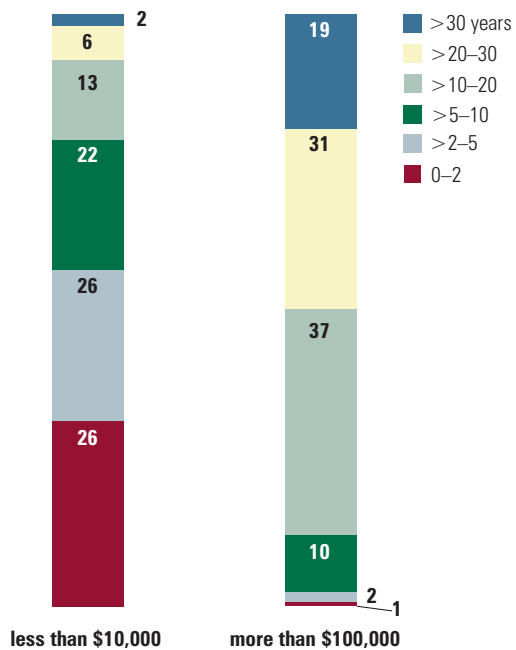
**Age Composition of Selected Account Balance Categories**  
(percent)



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

FIGURE 13

**Tenure Composition of Selected Account Balance Categories**  
(percent)



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

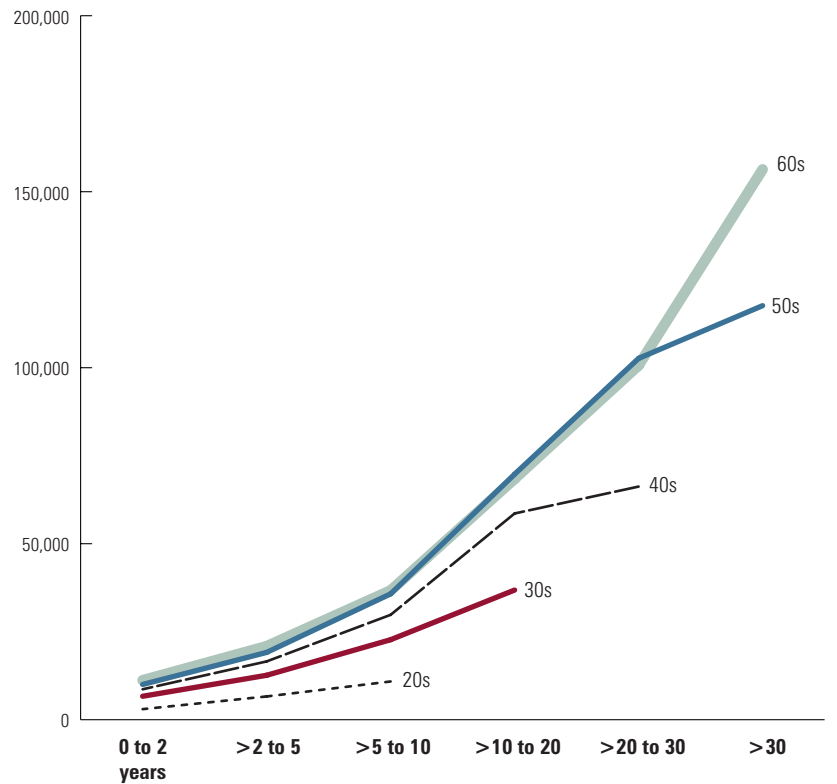
example, 47.2 percent of participants have an account balance of less than \$10,000, while 9.8 percent have an account balance in excess of \$100,000 (Figure 11).

A participant’s account balance—and thus the variability across participants—depends upon a number of factors. Some of these are specific to the individual and others reflect features of the plan. At the participant level are income, contribution rate, age, length of plan participation, asset allocation, rollovers from other plans, withdrawals, and borrowings. Plan features include age of the plan and employer contributions. These determinants of account balances complicate the interpretation of average balances.

The relationship between account balances and two of the determinants can be examined using information in the EBRI/ICI database. One of these is participant age and the other is tenure of the participant with employer, which serves as a proxy for length of participation in the plan. Age and account balance should generally be positively related, as younger workers are likely to have either lower incomes or shorter periods of plan participation than older workers. In line with this observation, nearly 60

FIGURE 14

**Average Account Balance by Age and Tenure**  
(dollars)

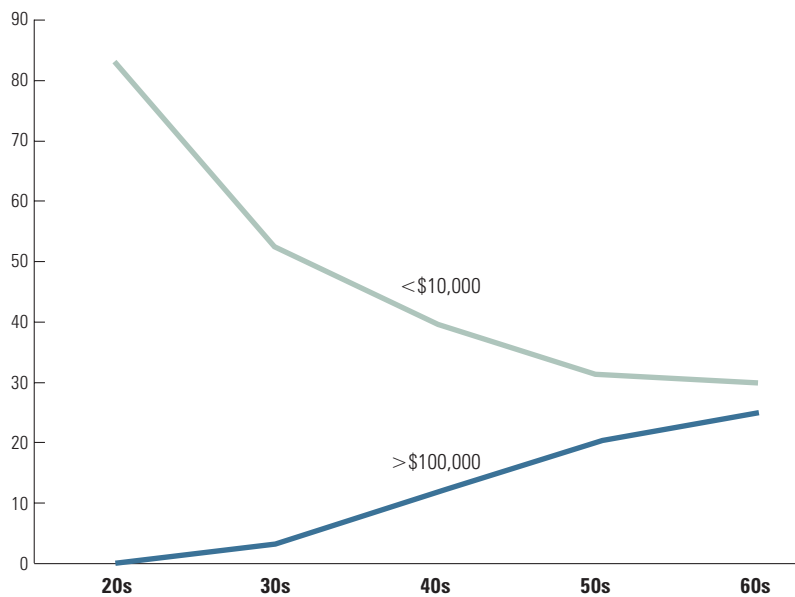


Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

FIGURE 15

### Impact of Age on Account Balance

(percent of participants with account balances in specified range)

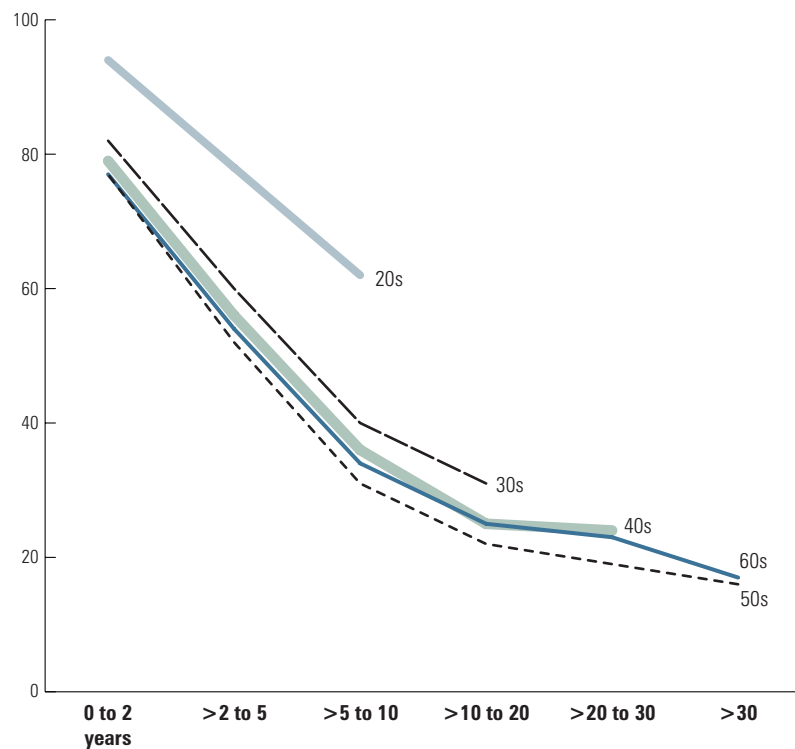


Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

FIGURE 16

### Impact of Age and Tenure on Account Balance

(percent of participants with account balances less than \$10,000)



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

percent of those participants with account balances less than \$10,000 are in their twenties and thirties, while less than one-fifth are in their fifties or sixties (Figure 12). Similarly, of those with account balances greater than \$100,000, more than one-half are in their fifties or sixties, while one-tenth are in their thirties and virtually none are in their twenties.

Tenure and plan balances also have a positive association, as long-term employees likely have had a longer period in which to accumulate assets. In fact, nearly 60 percent of those with balances less than \$10,000 have five or less years of tenure, and almost 90 percent of those with balances of more than \$100,000 have at least 10 years of tenure (Figure 13).

The effect of participant age and tenure is revealed more clearly by examining the effect of the interaction of the two variables on account balances. For a given age group, the average balance should increase as tenure increases: A 30-year-old participant, for example, with 10 years of tenure should, on average, have accumulated a larger plan balance than a 30-year-old with two years of tenure. This positive relationship is shown in Figure 14, which plots the average account balance by tenure for each age group. The average account balance for each age group increases, almost without exception, as tenure increases. The increase is present for all age groups but is especially large for those in their fifties and sixties. In addition, for each tenure group, the average balance rises with age.

An examination of the distribution of account balances underscores the effects of age and tenure. For example, overall, approximately 85 percent of all participants in their twenties have account balances of less than \$10,000 (Figure 15). However, only 62 percent of those in their twenties with five to 10 years of tenure have account balances less than \$10,000; the remaining balances exceed this figure (Figure 16).

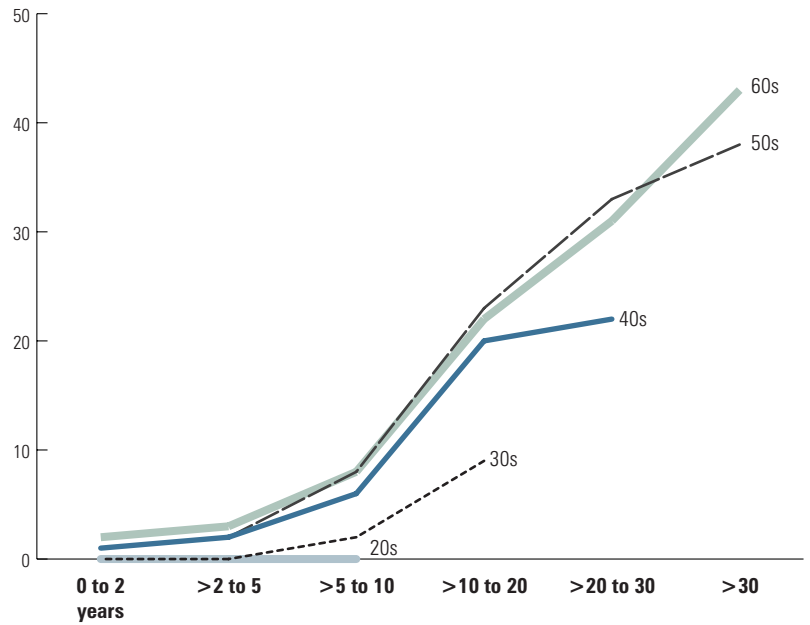
The effect of tenure and age is even more pronounced for older workers. For example, 30 percent of those participants in their sixties have account balances less than \$10,000 (Figure 15). However, among those with short tenure (zero to two years), 77 percent of these older participants have account balances less than \$10,000, while less than 20 percent of those with long-tenure (more than 20 years) are in this range (Figure 16). One explanation for the low account balances among this 20 percent may be that their employer's 401(k) plan has only recently been established.

Figure 17 shows the effect of age and tenure on account balances for those participants with balances more than \$100,000. Although approximately 25 percent of participants in their sixties have account balances in excess of \$100,000 (Figure 15), less than 10 percent of those with 10 or fewer years of tenure have account balances of this magnitude. However, more than 30 percent of participants in their sixties with 20 to 30 years of tenure with their current

FIGURE 17

**Impact of Age and Tenure on Account Balance**

(percent of participants with account balances more than \$100,000)

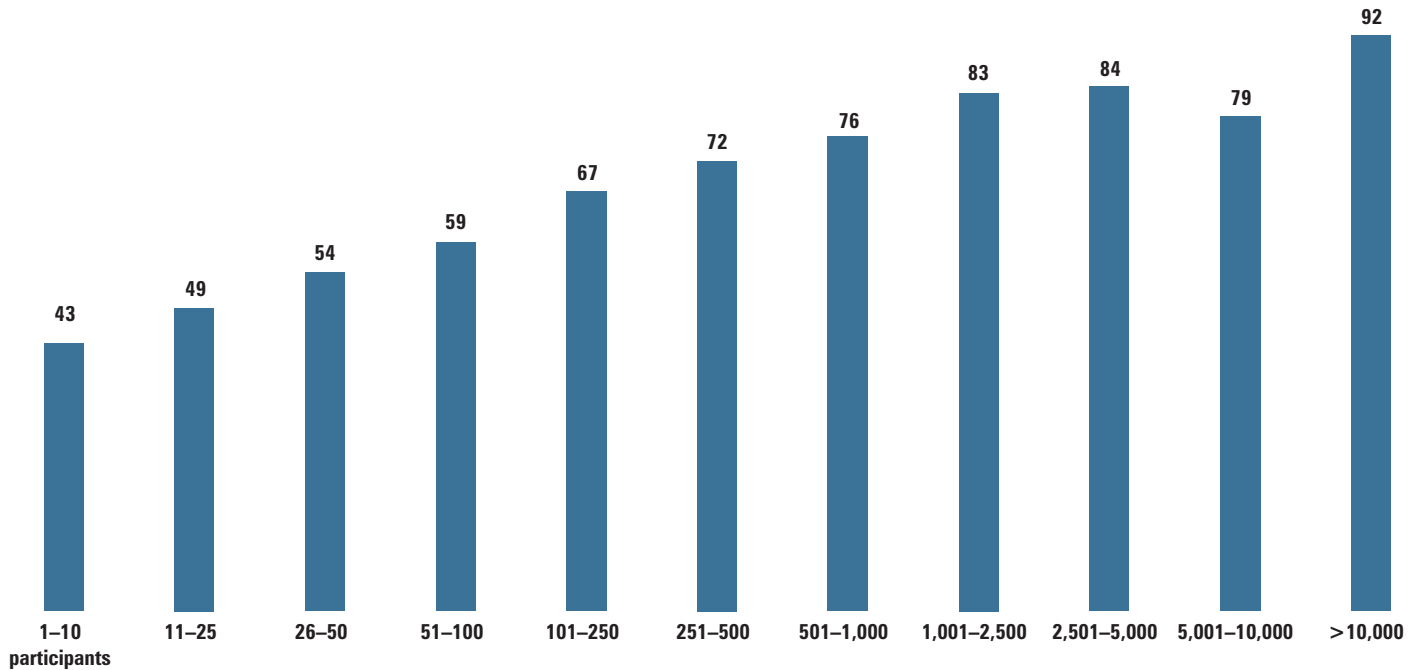


Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

FIGURE 18

**Availability of Plan Loans by Number of Participants**

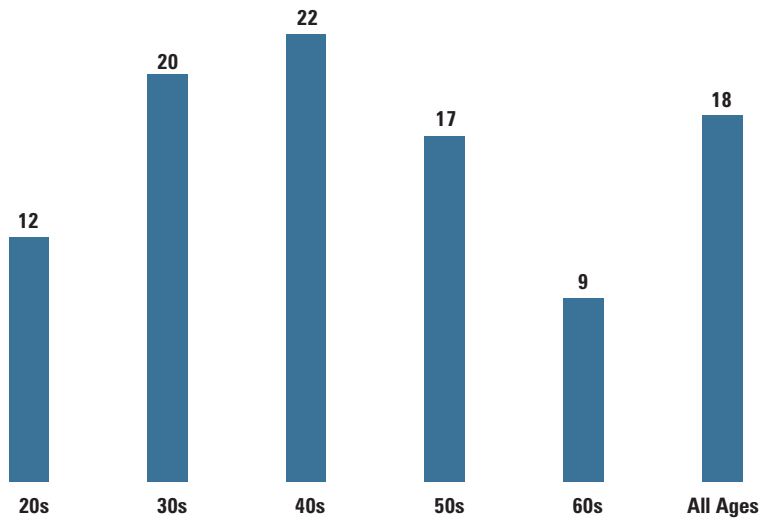
(percent of plans offering loans)



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

FIGURE 19

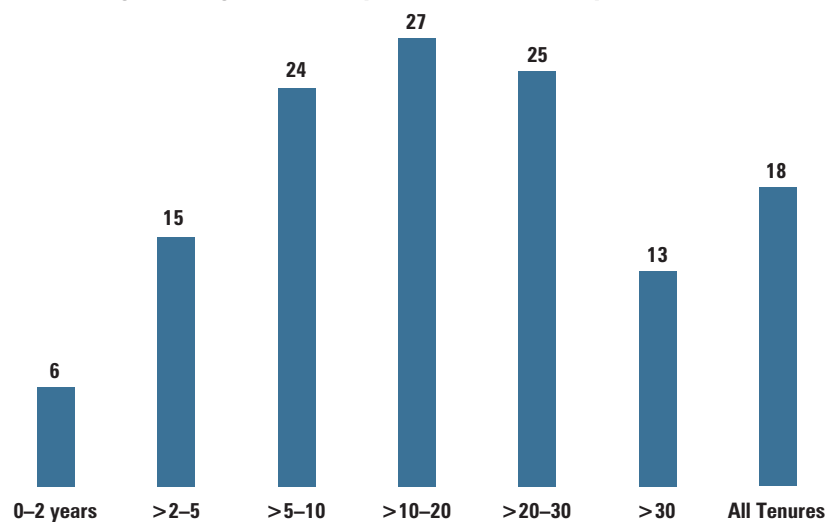
**Percentage of Eligible Participants with Loans by Age**



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

FIGURE 20

**Percentage of Eligible Participants with Loans by Tenure**



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

employer have account balances of this size, and the percentage increases to 43 percent for those with more than 30 years of tenure.<sup>28</sup>

**PLAN LOANS**

*Availability of Plan Loans*

Of the 27,762 401(k) plans in the EBRI/ICI database, 52 percent offered a plan loan to participants.<sup>29</sup> The loan feature is primarily associated with large plans. In the database, more than 90 percent of the plans with more than 10,000 participants offered borrowing privileges to employees (Figure 18). In contrast, only 43 percent of the plans with 10 or fewer employees had the loan feature.<sup>30</sup> Indeed, less than 60 percent of the plans with 51 to 100 participants offered loans to employees.

*Characteristics of Participants with Outstanding Loans*

The concentration of loans in large plans means that most participants in 401(k) plans have borrowing privileges. In the database, 70 percent of participants were in plans offering loans. However, only 18 percent of those eligible for loans had loans outstanding at the end of 1996.

Loan activity varies by age, tenure, and account balance. Of those individuals in plans with loan provisions, the highest percentages with outstanding loans were among participants in their thirties, forties, or fifties (Figure 19). In addition,

<sup>28</sup> In one important respect, however, the average balance of the sixties age group with over 30 years of tenure may understate the potential balance because participants in this group could actually have been in a true 401(k) plan for no more than a fraction of that time given legislative and regulatory chronologies. However, some of these balances are undoubtedly conversions from pre-existing profit-sharing plans.

A more appropriate way to examine this issue is to project account balances over participants' working lifetimes under a variety of assumptions. Poterba, Venti and Wise (1997) have investigated the magnitude of 401(k) account balances at retirement age. To judge the relative importance of potential 401(k) contributions, they compare projected 401(k) assets of future generations with the 1992 assets of the Health and Retirement Survey (HRS) sample. The mean of 401(k) assets for the entire sample was only \$10,808, but this was significantly affected by the majority of the respondents' having had no 401(k) accounts. Using historical experience to project future contributions, the authors find that, on average, a 37-year-old in 1996 would have a 401(k) balance upon retirement at age 65 of \$91,600 and a 27-year-old in 1996, retiring at age 65, would have \$125,500 (measured in 1992 dollars). The calculations assume that one-half of the 401(k) money was invested in stocks and one-half in bonds, and that average returns experienced since 1926 would be realized.

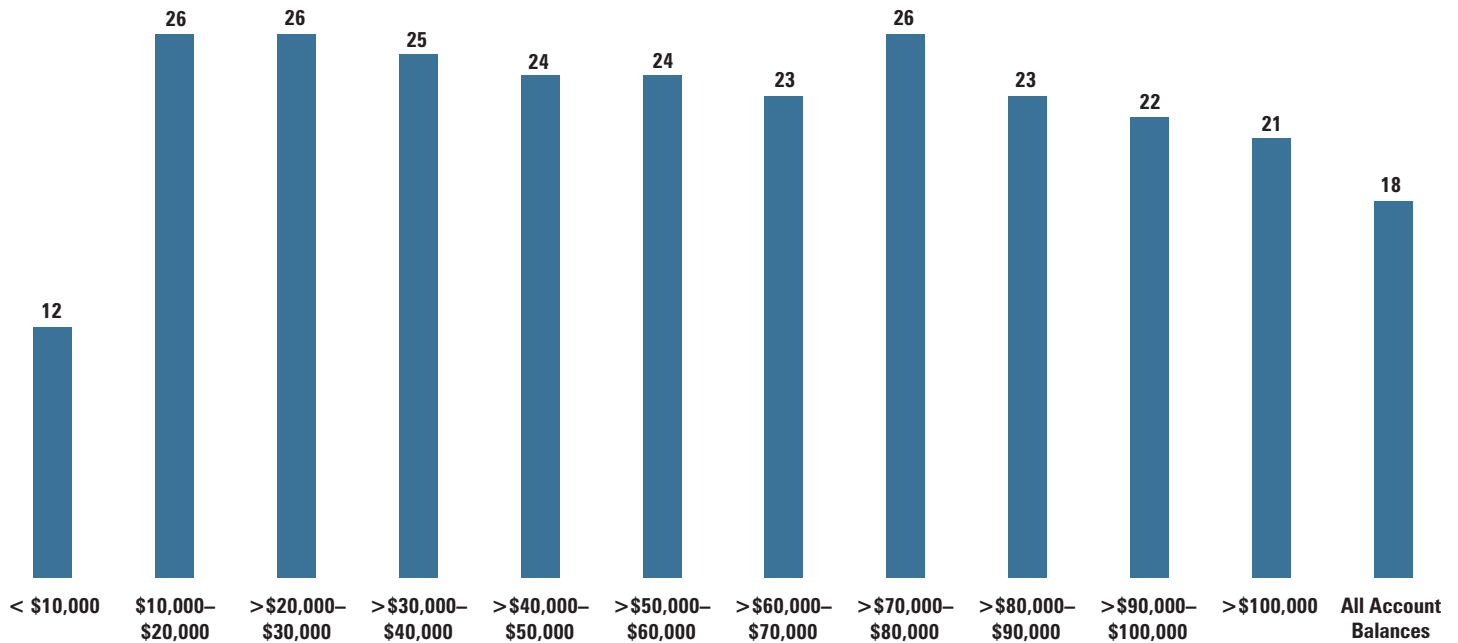
<sup>29</sup> This is considerably smaller than the numbers reported in employee benefit consulting firms' reports. Both Hewitt (1997) and William M. Mercer (1997) report in excess of 80 percent of their sampled plans offer loans. However, both of these surveys appear to be heavily influenced by large plan sponsors. The results in the EBRI/ICI database for plans with more than 1,000 participants appear very similar to Hewitt and Mercer.

<sup>30</sup> We were able to obtain plan-specific information on loan availability for the vast majority of the plans in the sample (including virtually all the small plans). A plan without this information was classified as having a loan if any participant in the plan had an outstanding loan balance. This may understate the number of plans offering loans (or participants eligible for loans) because some plans may have offered, but had no participants take out, a plan loan. However, the U.S. General Accounting Office (1997a, p. 4) found that over 95 percent of 401(k) plans that offer loans had at least one plan participant with an outstanding loan.



FIGURE 21

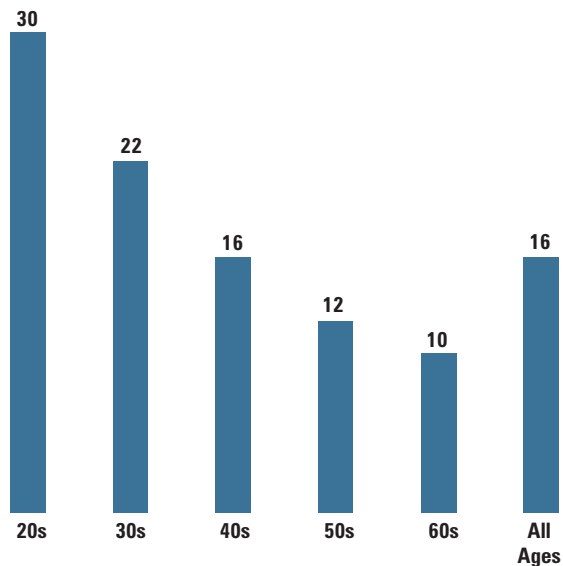
Percentage of Eligible Participants with Loans by Account Balance



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

FIGURE 22

Loan Ratios for Participants with Loans by Age



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

participants with short tenure (0-5 years) and long tenure (more than 30 years) tended to utilize loan provisions less than other participants (Figure 20). Finally, only 11.7 percent of participants with account balances under \$10,000 had outstanding loans (Figure 21). This figure is well below the 18.2 percent rate for all participants. This finding is notable, because loan availability is often thought to induce employees with the least amount of disposable income to contribute to the 401(k) plan.<sup>31</sup> The frequency of outstanding loans more than doubles for those in the \$10,000 to \$20,000 account balance category and then declines gradually as balances increase.

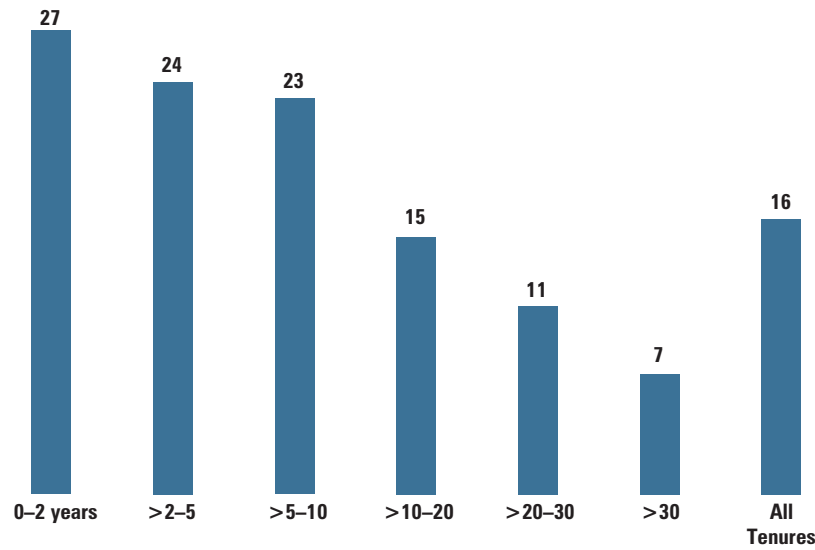
**Average Loan Balance**

For those with outstanding loans at the end of 1996, the average level of the unpaid balance as a percentage of account balances was 16 percent. This loan ratio, however, varied with age, tenure, and account balances.

<sup>31</sup> An alternative method of obtaining emergency funds is through a hardship distribution. Because we are not yet able to control for these distributions, the results may be biased for participants with lower account balances.

FIGURE 23

### Loan Ratios for Participants with Loans by Tenure

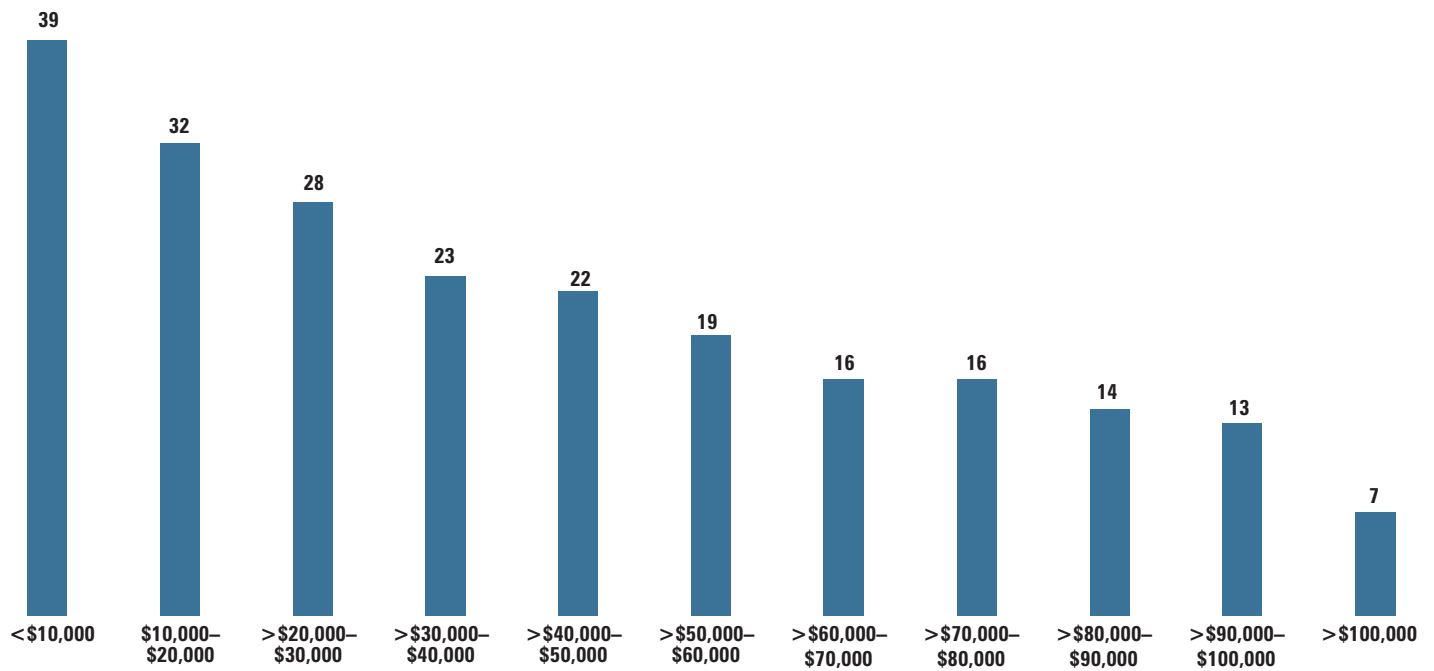


Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

Loan ratios tend to decrease with age, dropping from 30.0 percent for participants in their twenties to 9.8 percent for those in their sixties (Figure 22). Similarly, loan ratios decrease with tenure; participants with less than two years of tenure had an average of 27.3 percent of their account balances loaned out while those with more than 30 years only had 7.4 percent (Figure 23). Loan ratios tend to decrease as account balances increase. Figure 24 shows that outstanding plan loans constitute approximately 38 percent of the account balance for those with less than \$10,000 in account balances who have an outstanding loan. This ratio decreases to approximately 7 percent for those with account balances in excess of \$100,000.

FIGURE 24

### Loan Ratios for Participants with Loans by Account Balance



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

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