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**Written Statement  
for the  
House Education and Workforce Committee  
Subcommittee on Employer-Employee Relations**

**Hearing on  
“Enron and Beyond: Enhancing Worker Retirement Security”  
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**The Role of Company Stock in 401(k) Plans<sup>1</sup>**

**by**

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A complete version of this testimony in .pdf format, with all tables and charts, is available at [www.ebri.org](http://www.ebri.org)

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# 1 Introduction

Chairman Johnson, members of the subcommittee. I am Jack VanDerhei, a faculty member in the Risk, Insurance and Healthcare Management Department, Fox School of Business and Management, Temple University, and research director of the Employee Benefit Research Institute Fellows Program.

## 1.1 Background

Although the topic of company stock investment in 401(k) plans has recently been the focus of considerable interest, the concept of preferred status for employee ownership has been part of the U.S. tax code for more than 80 years.<sup>2</sup> When the Employee Retirement Income Security Act (ERISA) was passed in 1974, it required fiduciaries to diversify plan investments for defined benefit plans and some types of defined contribution plans. However, ERISA includes an exception for "eligible individual account plans" that invest in "qualifying employer securities."<sup>3</sup> An Employee Stock Ownership Plan (ESOP) normally qualifies for this exception, as do profit-sharing plans.<sup>4</sup>

Profit-sharing plans with cash or deferred arrangements (more commonly referred to as 401(k) plans) grew in number from virtually no plans in 1983<sup>5</sup> to a point where by 1997 (the most recent year for which government data are currently available) they accounted for 37% of qualified private retirement plans, 48% of active employees, and 65% of new contributions.<sup>6</sup>

The concept of legislating diversification for qualified retirement plan investments in company stock was first applied to ESOPs via a provision enacted as part of the Tax Reform Act of 1986.<sup>7</sup> Employees who are at least age 55 and who have completed at least 10 years of participation must be given the opportunity to diversify their investments by transferring from the employer stock fund to one or more of three other investment funds.<sup>8</sup> The right to diversify need be granted only for a 90-day window period following the close of the plan year in which the employee first becomes eligible to diversify and following the close of each of the next five plan years. This right is limited to shares acquired after 1986<sup>9</sup> and is further limited to 25% of such shares until the last window period, when up to 50% of such shares may be eligible for diversification.

The Taxpayer Relief Act of 1997 applied a limit on mandatory investment of 401(k) contributions in employer stock. This was a more modest version of a proposal by Sen. Barbara Boxer (D-CA) to impose a separate limitation of 10% of plan assets on the mandatory investment of 401(k) contributions in qualifying employer stock and real property.<sup>10</sup>

The Economic Growth and Tax Relief Reconciliation Act of 2001 (EGTRRA) expanded the dividend deduction for ESOPs to include dividends paid on qualifying employer securities held by an ESOP that, at the election of participants or beneficiaries, are: 1) payable directly in cash; 2) paid to the plan and distributed in cash no later than 90 days after the close of the plan year in which the dividends are paid to the plan; or 3) paid to the plan and reinvested in qualifying employer securities.<sup>11</sup> A 401(k) plan with a company stock fund that regularly pays dividends may consider designating a portion of the plan that includes the company stock fund to be an ESOP in order to take advantage of this deduction.<sup>12</sup>

At Enron, 57.73% of 401(k) plan assets were invested in company stock, which fell in value by 98.8% during 2001.<sup>13</sup> The decrease in share price and eventual bankruptcy filing of Enron resulted in huge financial losses for many of its 401(k) participants. This has prompted several lawsuits as well as congressional and agency investigations into the relative benefits and limitations of the current practice. In addition, the practice of imposing "blackout" periods when the 401(k) sponsor changes administrators has recently been called into question in light of the Enron situation.<sup>14</sup>

Certainly, the Enron situation has caused the retirement income policy community to focus increased attention to the desirability of current law and practices regarding company stock in 401(k) plans, resulting in much debate. Presumably, any recommendations to modify current pension law would attempt to strike a balance between protecting employees and not deterring employers from offering employer matches to 401(k) plans. Some have argued that if Congress were to regulate 401(k) plans too heavily, plan sponsors might choose to decrease employer contributions or not offer them at all. Previous research<sup>15</sup> has shown

that the availability and level of a company match is a primary impetus for at least some employees to make contributions to their 401(k) account. Others have argued that individuals should have the right to invest their money as they see fit.

## **1.2 Objectives Of The Testimony**

My testimony today will focus on “The Role of Company Stock in 401(k) Plans,” drawing on the extensive research conducted by the Employee Benefit Research Institute and on the EBRI/ICI 401(k) database. Portions of this testimony borrow heavily from a recent publication I co-authored with Sarah Holden of the Investment Company Institute, “401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 2000,” *EBRI Issue Brief*, November 2001.

## **1.3 Sources Used In This Testimony**

In an attempt to put together the most complete picture possible for this testimony, three different sources were utilized:

- Administrative data from the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project were used to assess the relative frequency of 401(k) plans offering company stock and the percentage of company stock held in participant portfolios.
- A survey of more than 3,000 members of the International Society of Certified Employee Benefit Specialists was used to collect data on the age restrictions for being able to cash in company stock, the prevalence of lockdowns, and the reaction of benefit professionals to various proposals for modifying the current system.
- Enhancements to the EBRI/ERF Retirement Income Projection Model were programmed to allow simulation of the potential financial impact of eliminating company stock from the investment menu of 401(k) plans.

The first two sources are detailed below and the simulation model is described in Section 7.2.

### **1.3.1 EBRI/ICI Participant-Directed Retirement Plan Data Collection Project**

Several EBRI and Investment Company Institute (ICI) members have provided records on active participants in 401(k) plans they administered from year-end 1996 through year-end 2000. These plan administrators include mutual fund companies, insurance companies, and consulting firms. The universe of plan administrators varies from year to year; thus, aggregate figures in this report generally should not be used to estimate time trends, unless this report indicates otherwise. Records were encrypted to conceal the identity of employers and employees but were coded so that both could be tracked over multiple years.

The 2000 EBRI/ICI database contains 35,367 401(k) plans with \$579.8 billion in assets and 11,827,256 participants. Most of the plans in the database are small, whether measured by the number of plan participants or by total plan assets. Indeed, 44% of the plans in the database have 25 or fewer participants, and 32% have 26–100 participants. In contrast, only 5% of the plans have more than 1,000 participants. Because most of the plans have a small number of participants, the asset size for many plans is modest. About 32% of the plans have assets of less than \$250,000, and another 33% have plan assets between \$250,001 and \$1,250,000. However, participants and assets are concentrated in large plans. For example, 76% of participants are in plans with more than 1,000 participants, and these same plans account for 84% of all plan assets.

### **1.3.2 ISCEBS Survey**

This survey was conducted in an attempt to provide a context to the current debate on company stock in a timely fashion, and it is not a statistically representative survey of the 401(k) industry; rather, this survey is a nonrandom polling of benefits professionals who are knowledgeable about the subject matter and able to respond to the survey quickly.

On January 15, 2002, a fax-back survey was sent to 3,346 members of the International Society of Certified Employee Benefit Specialists (ISCEBS).<sup>16</sup> Respondents were asked to respond by January 23rd and to answer the questions for the largest (in terms of participants) client they worked for (if they were a

consultant or service provider for 401(k) plans); otherwise, they were asked to answer for their employer's firm.

The survey instrument was divided into six parts. Part I asked for personal information relating to respondents' type of benefits expertise, age, and number of years in the benefits industry. Part II asked for information on the client/employer—including industry, number of employees, and whether it offered a defined benefit plan and/or a 401(k) plan. For those that did offer a 401(k) plan, additional information was collected about company stock investment options, whether employer contributions are required to be invested in company stock, average percentage of company stock in the employees' accounts, restrictions on selling the company stock, and blackout periods. Part III examined the employees' perceptions of the Enron situation. Part IV examined the respondents' views on the appropriate limits for investment in company stock and the government's role. Part V requested information on the respondents' perceptions on public policy issues related to company stock in 401(k) plans, and Part VI asked the respondents to speculate on likely reactions to various legal/legislative developments.

For purposes of this report, all respondents whose client/employer did not sponsor a 401(k) plan have been screened out, providing 375 usable responses after excluding surveys with missing information.

## **2 Size Of The 401(k) Universe**

As of 1997, the most recent year for which published government data is currently available, there were 265,251 401(k) type plans with 34 million active participants holding \$1.26 trillion in assets. Contributions for that year amounted to \$115 billion and \$93 billion in benefits were distributed.<sup>17</sup> By year-end 2000, it was estimated that approximately 42 million American workers held 401(k) plan accounts with a total of \$1.8 trillion in assets.<sup>18</sup>

## **3 Investment Options And The Manner In Which They Influence Employee Behavior**

Preliminary research analyzing 1.4 million participants drawn from the 2000 EBRI/ICI database suggests that participants are not influenced by the sheer number of investment options presented. On average, participants face 10.4 distinct options, but, on average, choose only 2.5.<sup>19</sup> In addition, the preliminary analysis found that 401(k) participants are not naïve—that is, when faced with “n” options they do not divide their assets among all “n.” Indeed, less than 1% of participants followed a “1/n” asset allocation strategy.

## **4 The Concentration Of Company Stock In 401(K) Plans**

### **4.1 Percentage Of 401(K) Plans And Participants With Company Stock**

Figure 1 shows that for the 1996 version<sup>20</sup> of the EBRI/ICI database, only 2.9% of the 401(k) plans included company stock (1.4% of the plans had company stock but no guaranteed investment contracts (GICs)<sup>21</sup> while 1.5% of the plans had both company stock and GICs). However, the plans that do have company stock are generally quite large and represented 42% (17% of the participants had company stock but no GICS while 25% had both options) of the 401(k) participants in the database that year (see Figure 2). In terms of account balances, plans with company stock account for 59% of the universe (23% of the assets were held in plans that had company stock but no GICS while 36% of the assets were held in plans that had both options, see Figure 3). The fact that plans with company stock had higher average account balances was no doubt partially due to the bull market preceding this time period but may also be a function of the plan's generosity parameters and average tenure of the employees.

### **4.2 Company Stock As A Percentage Of Total 401(K) Balances**

The overall percentage of 401(k) account balances in company stock has remained consistently in the 18–19% range from 1996–2000 (Figure 4). The age distribution for year-end 2000 is somewhat of an inverted “U” shape with younger and older participants holding slightly less than participants in their 40s (where the value peaks at 19.7%, see Figure 5)

Although often quoted, this figure is somewhat misleading given that a sizeable percentage of the 401(k) participants are in small plans that do not generally include company stock in the investment menu. The top panel in Figure 6 shows similar asset allocations as figure 5; however, the results are reported by plan size. The average asset allocation in company stock is:

- Less than 1% for plans with fewer than 500 participants,
- 3.8% for plans with 501–1,000 participants,
- 8.7% for plans with 1,001–5000 participants, and
- 25.6% for plans with more than 5,000 participants.

The bottom two panels in Figure 6 provide a similar analysis; however, only plans that include company stock are analyzed. In this case, plans that offer company stock but not GICs have an average of 31.8% of the account balances invested in company stock while the figure decreases to 27.7% for plans that also include GICs. Once the influence of the investment menu is controlled for, the impact of plan size is less significant.

The bottom two panels in Figure 7 illustrate the impact of salary on company stock allocation for the subset of the EBRI/ICI database for which we have the requisite information. For both plans with and without GICs, there appears to be an inverse relationship between the level of salary and the percentage of 401(k) balance invested in company stock, although the relationship is much less significant in the former case. The extent to which this is due to non-participant-directed matching contributions making up a larger percentage of annual contributions for lower-paid individuals awaits further investigation.<sup>22</sup>

#### **4.3 Distribution Of Company Stock Allocations**

Several legislative proposals have called for an absolute upper limit on the percentage of company stock that an employee will be allowed to hold in his or her 401(k) account. Figure 8 provides the year-end 2000 company stock allocation for the EBRI/ICI universe of plans offering company stock. A total of 48% of the 401(k) participants under age 40 in these plans have more than 20% of their account balances invested in company stock. The percentage decreases to 47% for participants in their 40's, 45% for those in their 50's and drops to 41% for participants in their 60's.

## **5 Employee Reaction When Employers Mandate That Matching Contributions Be Invested In Company Stock**

Typically, in a 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, choosing among investment options made available by the plan sponsor (employer). In many plans, the employer also makes a contribution to the participant's account, generally matching a portion of the employee's contribution. Some employers require that the employer contribution be invested in company stock rather than as directed by the participant.<sup>23</sup> Participants in these plans tend to invest a higher percentage of their self-directed balances in company stock than participants in plans without an employer-directed contribution. Company stock represents 33% of the participant-directed account balances in plans with employer-directed contributions (Figure 9, middle panel),<sup>24</sup> compared with 22% of account balances in plans offering company stock as an investment option but not requiring that employer contributions be invested in company stock (Figure 9, lower panel).

When total account balances are considered, the overall exposure to equity securities through company stock and pooled investments is significantly higher for participants in plans with employer-directed contributions. For example, investments in company stock, equity funds, and the equity portion of balanced funds represent 82% of the total account balances for participants in plans with employer-directed contributions, compared with 74% of the total account balances for participants in plans without employer-directed contributions. This higher allocation to equity securities holds across all age groups.

## **6 Evidence From The ISCEBS Survey Results**

Although the survey collected information on several aspects of company stock in 401(k) plans,<sup>25</sup> the items that appeared to be most pertinent to this hearing dealt with restrictions on sale of company stock

from employer contributions, blackout periods, and the ability of independent financial advice to mitigate the perceived problems resulting from employees investing voluntarily in company stock.

### **6.1 Employer Contributions: Investment in Company Stock and Restrictions on Sale**

- 43% of those having a company stock investment option in a 401(k) plan reported that employer contributions were required to be invested in company stock.
- Among those plans that have a company stock option, large plans are more likely to require employer contributions to be invested in company stock: 49% of large plans vs. 38% of small plans.
- Of the 401(k) plans where employer contributions were required to be invested in company stock:
  - 13% reported no restrictions existed for selling the company stock.
  - 27% reported that they were restricted throughout a participant's investment in the plan.
  - 60% reported that they were restricted until a specified age and/or service requirement is met.

### **6.2 Blackout Periods**

- 74% of the respondents' plans have undergone a blackout.
- Of those that have undergone a blackout, the distribution of the blackout period follows:
  - No delay/overnight/over weekend, 3%.
  - Between one day and two weeks, 27%.
  - Between two weeks and one month, 39%.
  - Between one month and two months, 26%.
  - More than two months, 5%.
- Blackout periods appear to be somewhat shorter for large plans than for small plans.
- The duration of the blackout period appears to be invariant to whether or not there is a company stock option; however, the duration does appear to be slightly longer when employer contributions are required to be invested in company stock.

When asked if they thought it was fair to impose a blackout period on participants in cases when there was *no* company stock:

- 10% said yes.
- 9% said no.
- 79% thought it was a necessary by-product of the conversion.
- 2% had no opinion.

When asked the same question but when there *was* company stock:

- 7% said yes.
- 16% said no.
- 72% thought it was a necessary by-product of the conversion.
- 1% had no opinion.

### **6.3 Would Independent Financial Advice Solve The Perceived Problems Resulting From Employees Investing In Company Stock?**

The majority of respondents (58%) agreed that problems resulting from employees investing their own contributions in company stock would be mitigated if employers were allowed to provide independent financial advice to their employees. Only 27% of the respondents disagreed with this statement (15% were neutral).

## **7 What Would Happen To Employees If Company Stock Were Not Permitted In 401(K) Plans?**

Well before the plight of Enron 401(k) participants had made the headlines, personal finance and investment advisors had long touted the benefits of diversification.<sup>26</sup> While the trade-off of a diversified portfolio of equities for an individual stock may be of limited advantage for employees, what many of the commentators in this field have disregarded is the potentially beneficial attendant shift in asset allocation

resulting from the inclusion and/or mandate of company stock, especially for young employees that otherwise exhibit extremely risk-averse behavior in the determination of equity concentration for their 401(k) portfolio.

Figure 10 illustrates a distribution of expected annual returns for a diversified equity portfolio (the S&P 500 index is used in this example) vs. what would be expected from an individual stock. The computations assume a long-term average return of 11% for both a diversified portfolio and an individual stock but a standard deviation of 19.6% for the former compared to 65% for the latter.<sup>27</sup> The lines intersect at the 50<sup>th</sup> percentile and, as expected, both have an average (mean and median) return of 11%. However, the potential outcomes – both good and bad – are much more extreme for the individual stock at the ends of the distribution. For example the inter-quartile range representing the “middle” one-half of the expected outcomes ranges from a loss of –2.2% to a gain of 24.2% for the S&P 500, while the same statistic ranges from a loss of –32.8% to a gain of 54.8% for an individual stock.

In essence, Figure 10 demonstrates the trade-offs when one looks only at diversified equity vs. company stock. Both investment alternatives provide the employee with the same average (in the long run), but it is obviously much more risky to have the latter. However, it may be argued that this focus is too narrow from a public policy perspective, even if limited solely to employee behavior.<sup>28</sup> Perhaps a more accurate way to analyze potential constraints on the use of company stock (at least the employer matching contributions) in 401(k) plans is to perform a financial cost/benefit analysis of the first order effects. Standard finance theory can solve for whether the additional return is worth the additional risk (based on individual-specific risk parameters) but that is not the point here. What I am attempting to determine is whether this trade-off **does** exist, and it is not simply a matter—as some have suggested—of more risk for no additional return.

What I will attempt to demonstrate in the following section is that although forcing the employer match into company stock obviously increases the standard deviation of expected results relative to a diversified equity portfolio, for each of the last five years the EBRI/ICI data base has demonstrated that, left to their own choices, the employee’s asset allocation would have lower concentrations in equity (defined as diversified equity plus company stock plus 60% of balanced funds) and therefore have a lower expected rate of return.

I start with some stylized examples of how the inclusion of company stock may work to the benefit of employees in general and expand the analysis by simulating the expected change in 401(k) account balances if company stock were prospectively eliminated from 401(k) plans for birth cohorts from 1936–1970. These results may be useful in analyzing previous charges that company stock should not be used in tax subsidized accounts.

### **7.1 Stylized Examples**

Figure 11 analyzes the expected returns for the average 401(k) portfolios (not just the equity portion) held by participants in their 20s. It uses the same mean and standard deviation assumptions as Figure 10,<sup>29</sup> however, it incorporates the asset allocation differentials for plans with and without company stock. As expected, plans with company stock have a wider distribution of results at any probability level than those without company stock. The differential asset allocation has resulted in a 36 basis point advantage to these plans even though the same rate of return is assumed for diversified equities and individual stocks. Figure 12 provides a similar stylized example for 401(k) participants in their 60s. In this case, the expected annual advantage of participating in a 401(k) plan with company stock decreases to 34 basis points.

While these stylized examples may be useful pedagogical devices, they prove to be virtually worthless in attempting to assess the financial impact of eliminating company stock from 401(k) plans. Although a participant may currently be in a 401(k) plan that includes company stock, it is highly likely (particularly for a young employee) that he or she will leave that employer prior to retirement. Assuming this individual has one or more subsequent employers, the overall financial impact of a modification to the existing laws will depend on whether the future employers offer a 401(k) plan and, if so, whether the employee chooses to participate, the contribution rate for both the employer and employee, and the investment menu offered the employee. Moreover, a critical assessment of the employee’s future retirement income must determine

whether or not the 401(k) balances stay with the current employer on job change, are rolled over to a new employer and/or IRA,<sup>30</sup> or are consumed prematurely.

## **7.2 Description Of Simulation Methodology**

In an attempt to assess the first-order impact of eliminating company stock in 401(k) plans, I programmed a new subroutine to the EBRI/ERF RIPM to simulate the financial impact on 401(k) account balance.

The EBRI-ERF model is based on a four-year time series of administrative data from more than 10 million 401(k) participants and more than 30,000 plans, as well as a time series of several hundred plan descriptions used to provide a sample of the various defined benefit and defined contribution plan provisions applicable to plan participants. In addition, several public surveys based on participants' self-reported answers (the Survey of Consumer Finances [SCF], the Current Population Survey [CPS], and the Survey of Income and Program Participation [SIPP]) were used to model participation, wages, and initial account balance information. This information is combined with U.S. Department of Labor Form 5500 data to model participation and initial account balance information for all defined contribution participants, as well as contribution behavior for non-401(k) defined contribution plans. Asset allocation information is based on previously published results of the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project and employee contribution behavior to 401(k) plans is provided by an expansion of a method based on both employee demographic information and plan matching provisions. A combination of Form 5500 data and self-reported results was also used to estimate defined benefit participation models; however, it appears information in the latter is rather unreliable with respect to estimating current and/or future accrued benefits. Therefore, a database of defined benefit plan provisions for salary-related plans was constructed to estimate benefit accruals. Combinations of self-reported results were used to initialize IRA accounts. Future IRA contributions were modeled from SIPP data, while future rollover activity was assumed to flow from future separation from employment in those cases in which the employee was participating in a defined contribution plan sponsored by the previous employer. Industry data are used to estimate the relative likelihood that the balances are rolled over to an IRA, left with the previous employer, transferred to a new employer, or used for other purposes.

A stochastic job duration algorithm was estimated and applied to each individual in the EBRI-ERF model to predict the number of jobs held and age at each job change. Each time the individual starts a new job, the EBRI-ERF model simulates whether or not it will result in coverage in a defined benefit plan, a defined contribution plan, both, or neither. If coverage in a defined benefit plan is predicted, time series information from the Bureau of Labor Statistics (BLS) is used to predict what type of plan it will be.<sup>31</sup> While the BLS information provides significant detail on the generosity parameters for defined benefit plans, preliminary analysis indicated that several of these provisions were likely to be highly correlated (especially for integrated plans). Therefore, a time series of several hundred defined benefit plans per year was coded to allow for assignment to the individuals in the EBRI-ERF model.<sup>32</sup> Although the Tax Reform Act of 1986 at least partially modified the constraints on integrated pension plans by adding Sec. 401(l) to the Internal Revenue Code, it would appear that a significant percentage of defined benefit sponsors have retained Primary Insurance Amount (PIA)-offset plans. In order to estimate the offset provided under the plan formulae, the EBRI-ERF model computes the employee's Average Indexed Monthly Earnings, Primary Insurance Amount, and covered compensation values for the birth cohort.

Previous studies on the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project have analyzed the average account balances for 401(k) participants by age and tenure. Unfortunately, the EBRI/ICI database does not currently provide detailed information on other types of defined contribution plans nor does it allow analysis of defined contribution balances that may have been left with previous employers. The EBRI-ERF model uses self-reported responses for whether an individual has a defined contribution balance to estimate a participation model, and the reported value is modeled as a function of age and tenure.

Previous research on employee contribution behavior to 401(k) plans has often been limited by lack of adequate data. This is primarily due to the types of matching formulae utilized by sponsors. While these formulae are often complicated due to the desire of sponsors to provide sufficient incentives to non-

highly compensated employees to contribute in order to comply with technical nondiscrimination testing, this complexity makes it virtually impossible to appropriately analyze the employee's behavior if one is forced to observe either aggregate plan data or use information on the plan contribution formulae provided by the participant. With the exception of studies based on administrative data, employee contribution behavior is typically assumed to be a function of employee demographic data and perhaps an employee's estimate of the employer matching rate or a proxy based on Form 5500 data. However, a significant percentage of the employee contribution behavior appears to be determined by plan-specific provisions. For example, the percentage of employees contributing up to either the maximum amount of compensation matched, the 402(g) limit, or the plan maximum was studied by EBRI in 1996. It would appear that a significant portion of the employee contribution is explained by these "corner points," which would not be picked up in the data described above. Recently EBRI provided preliminary findings<sup>33</sup> introducing new methodology to expand the usefulness of modeling these data, as well as a better understanding of contribution behavior by 401(k) plan participants. We utilize a sequential response regression model to allow for the differing incentives faced by the employees at various levels of contributions. Based on findings from 137 distinct matching formulae, we have estimated a behavioral model that is able to control for the tendency of employers to substitute between the amount they match per dollar of employee contribution and the maximum percentage of compensation they are willing to match. We decompose employee contribution behavior into a series of 1% of compensation intervals and therefore are able to model not only the marginal incentives to contribute at that interval but also the "option value" that making the contribution at that interval provides for the employee. Contribution behavior for defined contribution plans other than 401(k) plans is estimated from self-reported responses to public survey data.

Thus, the model already incorporates all the requisite assumptions to perform this analysis with one critical exception. There appears to be no information available with respect to the probability that an employee leaving a job offering a 401(k) plan with company stock will take a job in which the new employer also offers a 401(k) plan with company stock, etc. Therefore, I have run the model assuming first that there is complete correlation with respect to this phenomenon (e.g., once an employee is in a 401(k) plan with company stock, any subsequent 401(k) participation will also be in a plan with company stock). This is probably not a realistic assumption and will provide the largest estimate of lost 401(k) wealth. The second set of runs assumes complete independence with respect to the probability of temporally contiguous 401(k) plans having company stock. It is likely that this assumption understates the true magnitude of the losses and therefore should be used as a minimum estimate.

### **7.3 Simulation Results**

The simulation was performed for birth cohorts between 1936 and 1970 and the results indicate the overall gain or loss from (prospective) retention of company stock in 401(k) plans (as opposed to company stock being entirely eliminated immediately). The estimated gain of retaining company stock is 4.0% of 401(k) balances assuming complete independence with respect to the probability of company stock in a subsequent plan and 7.8% assuming perfect correlation.

Figure 13 provides the results of the simulation by gender and pre-retirement income, assuming complete independence. Pre-retirement income was categorized as either high or low by simulating the income in the year prior to retirement and comparing it with the median income for participants in the same birth cohort. Males would gain more than females from retention of company stock for both levels of relative salary. Participants in the lower relative salary levels would stand to gain more than their higher paid counterparts for both genders.

Figure 13  
**Average Gain From Retention Of Company Stock As A Percentage Of 401(k) Balance,  
 By Gender And Relative Pre-Retirement Salary (Assuming Complete Independence)**

Pre-retirement salary relative to median for age cohort	Gender	
	Male	Female
Low	5.2%	3.5%
High	5.0%	1.6%

The distributional results for this population are shown in Figure 14. For example, at least 25 pct of the sample is expected to gain 5.1% or more if they were allowed to have company stock going forward, while at least 25% of the sample is expected to lose 10.8% or more if company stock continues to be permitted.

Figure 14  
**Distribution Of Gain From Retention Of Company Stock In 401(K) Plans As A Percentage Of Simulated 401(K) Balances Without Company Stock, Assuming Complete Independence**

Percentile	Percentage gain
99%	75.8%
95%	32.6%
90%	18.7%
75%	5.1%
50%	-0.5%
25%	-10.8%
10%	-26.0%
5%	-35.7%
1%	-56.5%

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## Endnotes

<sup>1</sup> Portions of this testimony borrow heavily from Sarah Holden and Jack VanDerhei, "401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 2000," *EBRI Issue Brief* n. 239, November 2001.

<sup>2</sup> The first stock bonus plans were granted tax-exempt status under the Revenue Act of 1921. See Robert W. Smiley, Jr. and Gregory K. Brown, "Employee Stock Ownership Plans (ESOPs)," *Handbook of Employee Benefits*, 5th Ed., Jerry S. Rosenbloom, ed. (Homewood, Illinois: Dow Jones-Irwin, 2001).

<sup>3</sup> ERISA Sec. 407(b)(1).

<sup>4</sup> This is important because an ESOP is to be "primarily invested" in qualifying employer securities. See "Employee Stock Ownership Plans (Part II)," *Journal of Pension Planning and Compliance* (Winter 2000); John L. Utz; pages 1–34.

<sup>5</sup> Although cash or deferred arrangements have existed since the 1950's, the Revenue Act of 1978 enacted permanent provisions governing them by adding Sec. 401(k) to the Internal Revenue Code. While this was effective for plan years beginning after 1979, the proposed regulations were not released until November 1981. See Jack VanDerhei and Kelly Olsen, "Section 401(k) Plans (Cash or Deferred Arrangements) and Thrift Plans," *Handbook of Employee Benefits*, 5th Ed., Jerry S. Rosenbloom, ed. (Homewood, Illinois: Dow Jones-Irwin, 2001).

<sup>6</sup> U.S. Department of Labor, Pension and Welfare Benefits Administration. "Abstract of 1997 Form 5500 Annual Reports," *Private Pension Plan Bulletin No. 10* (Winter 2001). For a review of the academic literature analyzing these trends, see William Gale, Leslie Papke, and Jack VanDerhei, "Understanding the Shift Toward Defined Contribution Plans," in *A Framework For Evaluating Pension Reform* (Brookings Institution/TIAA-CREF/Stanford University), forthcoming. ([www.brook.edu/es/erisa/99papers/erisa2.pdf](http://www.brook.edu/es/erisa/99papers/erisa2.pdf))

<sup>7</sup> It should be noted that less than 5% of all ESOPs are in public companies. For an explanation of the challenges that stricter diversification rules may present to private company ESOPs, see Corey Rosen, "Should ESOPs Be Subject to Stricter Diversification Rules?" ([www.nceo.org/library/boxer\\_corzine\\_bill.html](http://www.nceo.org/library/boxer_corzine_bill.html))

<sup>8</sup> Alternatively, amounts subject to the right of diversification may be distributed from the plan. See Everett T. Allen, Jr., Joseph J. Melone, Jerry S. Rosenbloom and Jack L. VanDerhei, *Pension Planning: Pensions, Profit Sharing, and Other Deferred Compensation Plans* (8th ed), Homewood, Illinois: Richard D. Irwin, Inc., 1997.

<sup>9</sup> As a result, the impact of this change was *de minimis* during the significant market decline in the fall of 1997. See Jack VanDerhei, "The Impact of the October 1987 Stock Market Decline on Pension Plans," written testimony for U.S. House of Representatives, Committee on Ways and Means, Subcommittee on Oversight, July 1988.

<sup>10</sup> The final version exempts from the 10% limits: (1) *de minimis* (i.e., as much as 1% of pay) mandatory investment provisions, (2) plan designs under which the Sec. 401(k) deferrals (regardless of amount) are part of an ESOP, and (3) plans in which the total assets of all defined contribution plans of the employer are not more than 10% of the total defined benefit and defined contribution plan assets of the employer. The limit applies prospectively with respect to acquisitions of employer stock. The investment of matching or other employer contributions continues to be exempt from any limits. See Louis T. Mazawey, "1997 Tax Law Changes Affecting Retirement Plans," *Journal of Pension Planning and Compliance* (Winter 1998): 72–86. For more detail on the original proposal, see Ann L Combs, "Taking Stock of the Boxer Bill," *Financial Executive* (Jan./Feb. 1997): 18–20.

<sup>11</sup> Hewitt, *Special Report to Clients*, July 2001, "Impact of EGTRRA on Employer Plans." (<http://www.hewitt.com/hewitt/resource/wsr/2001/egttra.pdf>)

<sup>12</sup> Watson Wyatt Worldwide, "Retirement Plan Provisions: What, When and How Much?" (Washington, DC: Watson Wyatt Worldwide, 2001).

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<sup>13</sup> “Enron Debacle Will Force Clean Up of Company Stock Use in DC Plans,” *IOMA’s DC Plan Investing*, Dec. 11, 2001, p. 1.

<sup>14</sup> Currently, there is no statutory or regulatory limit on the length of time during which participants can be blocked from reallocating assets or conducting other transactions in a 401(k) plan. See Patrick J. Purcell, “The Enron Bankruptcy and Employer Stock in Retirement Plans,” *CRS Report for Congress* (Jan. 22, 2002): 5.

<sup>15</sup> Jack VanDerhei and Craig Copeland, “A Behavioral Model for Predicting Employee Contributions to 401(k) Plans,” *North American Actuarial Journal* (First Quarter, 2001).

<sup>16</sup> To earn the professional CEBS designation, an individual must have passed 10 rigorous national examinations, including one course devoted entirely to defined contribution plans and another on investments. More information is available at [www.iscebs.org](http://www.iscebs.org)

<sup>17</sup> U.S. Department of Labor, Pension and Welfare Benefits Administration, “Abstract of 1997 Form 5500 Annual Reports,” *Private Pension Plan Bulletin No. 10* (Winter 2001).

<sup>18</sup> Holden and VanDerhei (November, 2001), p. 3.

<sup>19</sup> Sarah Holden and Jack VanDerhei, “The Impact of Employer-Selected Investment Options on 401(k) Plan Participants’ Asset Allocations: Preliminary Findings,” May 2001, working paper.

<sup>20</sup> Readers should be cautioned that while the EBRI/ICI database appears to be very representative of the estimated universe of 401(k) plans, there has currently been no attempt to develop extrapolation weights to match up these plans with those reported on the Form 5500. See Holden and VanDerhei (November 2001), p. 6 for more detail.

<sup>21</sup> Guaranteed investment contracts (GICs) are insurance company products that guarantee a specific rate of return on the invested capital over the life of the contract.

<sup>22</sup> For recent EBRI/ICI research on the contribution activity of 401(k) plan participants, see Holden and VanDerhei, “Contribution Behavior of 401(k) Plan Participants,” *EBRI Issue Brief* n. 238, October 2001.

<sup>23</sup> Source of contribution (employer versus employee) can be matched to fund information for a subset of the data providers in our sample. Of those plans in the 2000 EBRI/ICI database for which the appropriate data are available, less than 0.5% require employer contributions to be invested in company stock. However, most of the plans with this feature are large, covering 6% of participants and 10% of plan assets in the subset.

<sup>24</sup> For this group, the participant-directed portion of the account balances represents 65% of the total account balances.

<sup>25</sup> See Jack L. VanDerhei, “Company Stock in 401(k) Plans: Results of a Survey of ISCEBS Members,” January 2002, for the full survey results ([www.ebri.org](http://www.ebri.org)).

<sup>26</sup> See Scott Burns, “Examining Your Gift Horse,” *Dallas Morning News*, April 17, 2001, for an excellent example of the tradeoff of risk between the S&P 500 Index and an individual stock.

<sup>27</sup> *Ibid.* These values were taken from Feb. 28, 2001, data of Morningstar Principia and reported in Burns’ article.

<sup>28</sup> For example, some have suggested that if company stock is prohibited or limited, some employers may reduce (or even eliminate) employer matching contributions.

<sup>29</sup> I have arbitrarily assumed all nonequity investments earn an annual rate of return of 6%. The results are not particularly sensitive to this assumption as long as the equity premium remains positive.

<sup>30</sup> This will decrease the likelihood of the previous employer’s company stock being retained until retirement age.

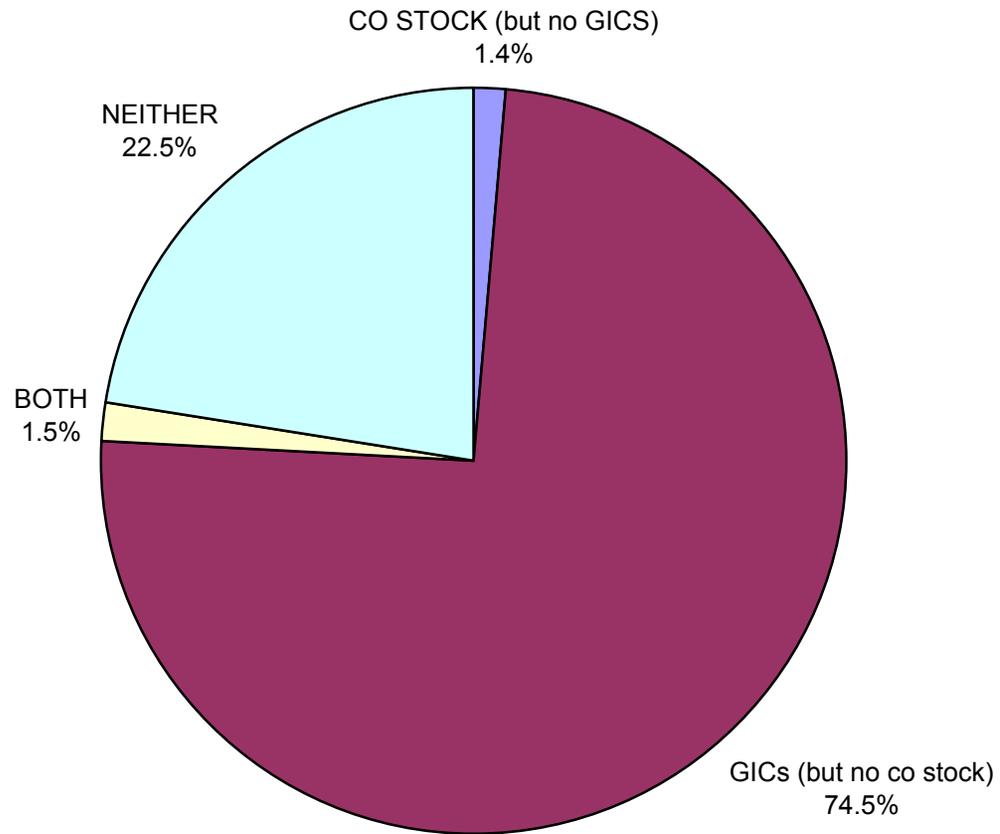
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<sup>31</sup> The model is currently programmed to allow the employee to participate in a nonintegrated career average plan; an integrated career average plan; a 5-year final average plan without integration; a 3-year final average plan without integration; a 5-year final average plan with covered compensation as the integration level; a 3 year final average plan with covered compensation as the integration level; a 5-year final average plan with a PIA offset; a 3-year final average plan with a PIA offset; a cash balance plan; or a flat benefit plan

<sup>32</sup> BLS information was utilized to code the distribution of generosity parameters for flat benefit plans.

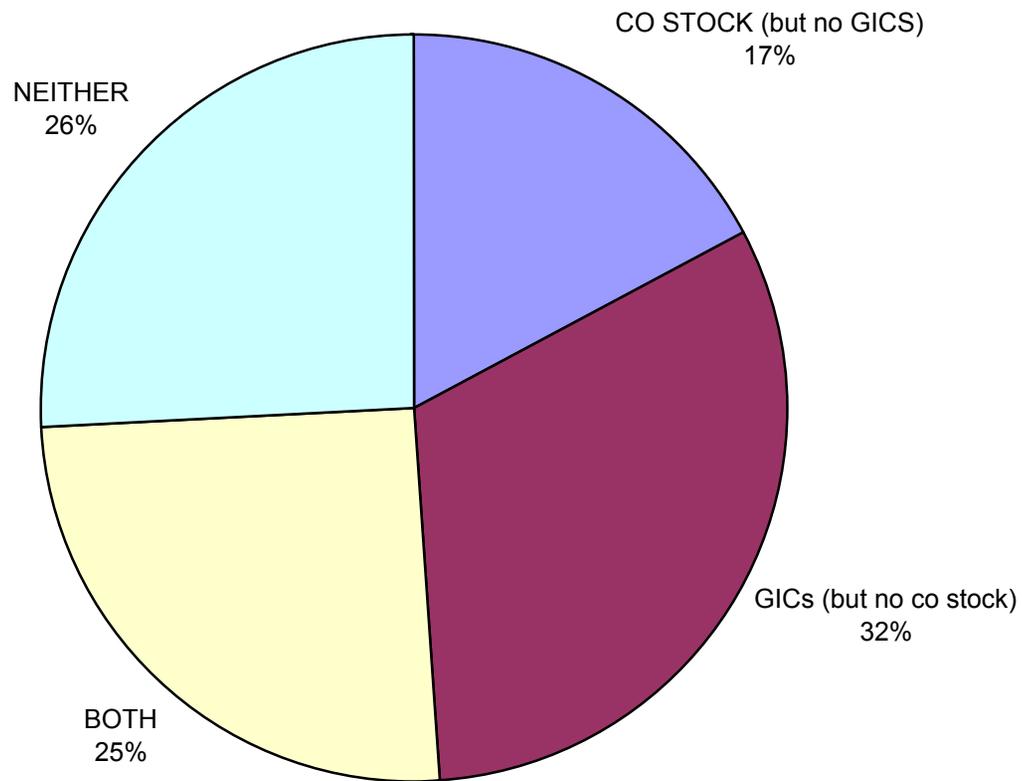
<sup>33</sup> Jack VanDerhei and Craig Copeland, "A behavioral model for predicting employee contributions to 401(k) plans," *North American Actuarial Journal* (First Quarter, 2001).

**Figure 1: Percentage of plans by investment menu in the EBRI/ICI data base, 1996**



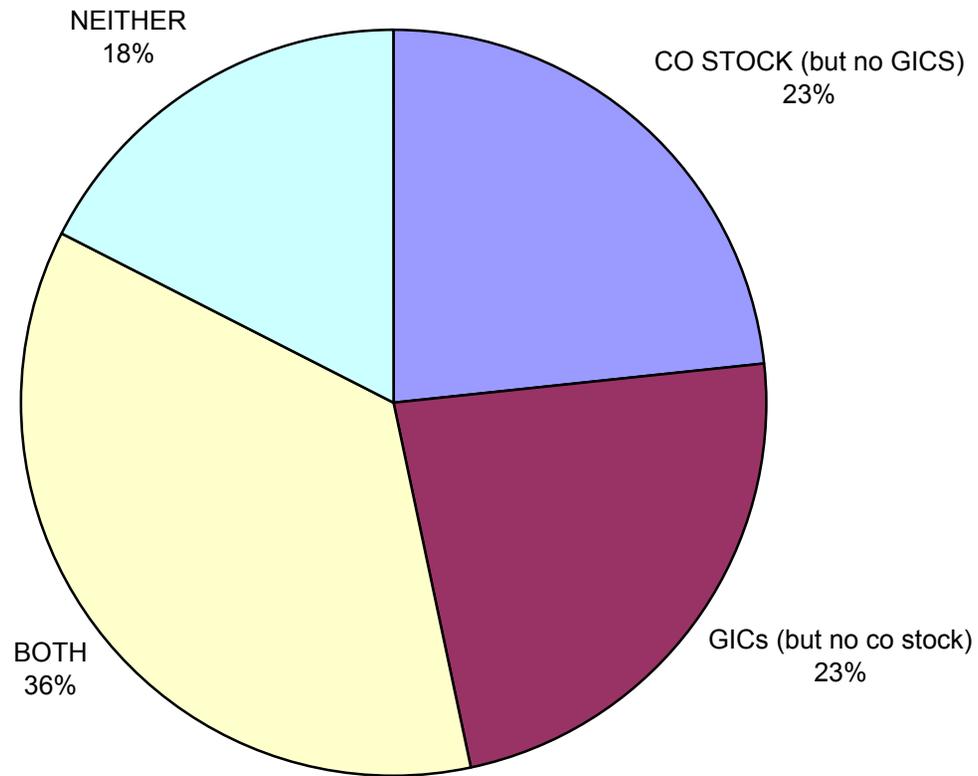
Source: Jack L. VanDerhei, "Participant Allocation Behavior in 401(k) Plans," 1999 ICI Retirement Plans Conference

**Figure 2: Percentage of participants by investment menu in the EBRI/ICI data base, 1996**



Source: Jack L. VanDerhei, "Participant Allocation Behavior in 401(k) Plans," 1999 ICI Retirement Plans Conference

**Figure 3: Percentage of plan assets by investment menu in the EBRI/ICI data base, 1996**

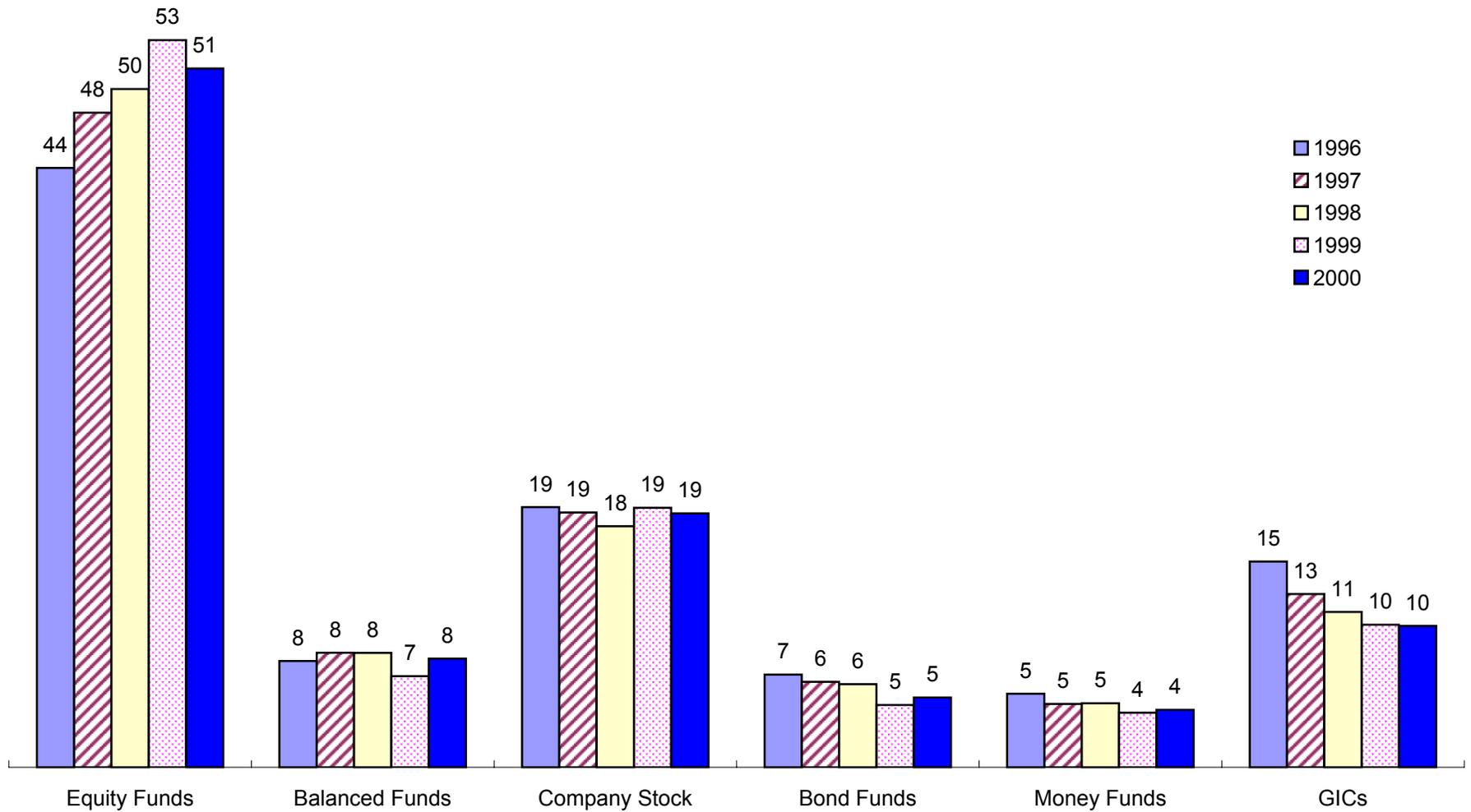


Source: Jack L. VanDerhei, "Participant Allocation Behavior in 401(k) Plans," 1999 ICI Retirement Plans Conference

Figure 4

**Average Asset Allocation, 1996-2000**

(percent of total assets)



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

[Figure 5](#)

**Average Asset Allocation by Age, 2000**

(percent of account balances)

<b>Age Cohort</b>	<b>Equity Funds</b>	<b>Balanced Funds</b>	<b>Bond Funds</b>	<b>Money Funds</b>	<b>Guaranteed Investment Contracts</b>	<b>Company Stock</b>	<b>Other Stable Value Funds</b>	<b>Other</b>	<b>Unknown</b>	<b>Total</b>
20s	61.4	8.6	4.3	4.3	4.0	15.4	0.5	0.7	0.5	100
30s	60.2	8.0	3.8	3.3	4.6	18.4	0.4	0.8	0.4	100
40s	54.8	8.0	4.2	3.8	7.5	19.7	0.6	1.0	0.4	100
50s	49.2	8.0	5.3	4.4	11.5	19.1	1.1	1.0	0.4	100
60s	39.8	8.0	7.7	5.4	19.3	16.3	2.2	0.9	0.4	100
All	51.3	8.0	5.1	4.2	10.4	18.6	1.0	0.9	0.4	100

*Note: Components may not sum to 100 because of rounding.*

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

Figure 6

**Average Asset Allocation by Plan Size and Investment Options, 2000**

(percent of account balances)

Plan size by number of participants	Equity Funds	Balanced Funds	Bond Funds	Money Funds	Guaranteed Investment Contracts	Company Stock
<b>ALL PLANS</b>						
1 to 100	56.7	20.0	6.7	6.2	7.6	0.1
101 to 500	63.5	13.1	7.5	6.2	6.2	0.8
501 to 1,000	62.1	11.1	7.6	6.2	6.0	3.8
1,001 to 5,000	57.4	9.9	5.7	5.8	10.0	8.7
> 5,000	47.0	6.0	4.4	3.3	11.4	25.6
All	51.3	8.0	5.1	4.2	10.4	18.6
<b>PLANS WITHOUT COMPANY STOCK OR GUARANTEED INVESTMENT CONTRACTS</b>						
1 to 100	72.4	9.0	8.9	7.9		
101 to 500	71.5	9.7	9.2	6.9		
501 to 1,000	69.7	9.2	10.3	7.1		
1,001 to 5,000	68.9	10.7	9.0	8.5		
> 5,000	71.2	10.6	7.2	6.8		
All	70.4	10.1	8.8	7.5		
<b>PLANS WITH GUARANTEED INVESTMENT CONTRACTS</b>						
1 to 100	44.4	28.8	5.1	4.9	13.6	
101 to 500	49.1	20.6	4.1	4.7	18.4	
501 to 1,000	54.4	17.4	3.4	3.8	18.3	
1,001 to 5,000	57.3	11.3	3.0	3.0	22.9	
> 5,000	63.2	9.1	3.1	3.0	19.2	
All	56.7	14.3	3.5	3.5	19.4	
<b>PLANS WITH COMPANY STOCK</b>						
1 to 100	47.1	7.6	6.0	11.7		27.4
101 to 500	59.2	8.6	8.5	8.7		14.5
501 to 1,000	52.6	6.5	6.6	9.2		22.5
1,001 to 5,000	50.8	7.5	6.8	7.6		24.9
> 5,000	42.9	5.4	8.2	5.4		33.6
All	44.6	5.8	7.9	5.8		31.8
<b>PLANS WITH COMPANY STOCK AND GUARANTEED INVESTMENT CONTRACTS</b>						
1 to 100	48.2	15.8	3.3	5.5	12.1	13.0
101 to 500	48.1	12.4	3.3	3.0	17.7	11.5
501 to 1,000	39.9	8.8	2.1	3.7	18.4	25.2
1,001 to 5,000	45.1	9.2	1.9	2.3	22.8	16.6
> 5,000	43.2	5.1	2.0	1.6	18.4	29.0
All	43.4	5.6	2.0	1.7	18.9	27.7

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

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

Figure 7

**Average Asset Allocation by Salary and Investment Options, 2000**

(percent of account balances)

	Equity Funds	Balanced Funds	Bond Funds	Money Funds	Guaranteed Investment Contracts	Company Stock
<b>SALARY</b>						
<b>PLANS WITHOUT COMPANY STOCK OR GUARANTEED INVESTMENT CONTRACTS</b>						
\$20,000 to \$40,000	64.5	9.8	11.7	7.1		
>\$40,000 to \$60,000	71.0	9.5	11.3	5.2		
>\$60,000 to \$80,000	74.6	8.5	10.2	4.7		
>\$80,000 to \$100,000	75.3	8.7	9.6	4.3		
>\$100,000	73.3	8.3	9.3	4.6		
All	70.4	10.1	8.8	7.5		
<b>PLANS WITH GUARANTEED INVESTMENT CONTRACTS</b>						
\$20,000 to \$40,000	47.7	21.7	3.7	4.6	20.2	
>\$40,000 to \$60,000	51.1	21.6	3.8	4.5	16.8	
>\$60,000 to \$80,000	55.0	19.4	3.4	4.1	15.7	
>\$80,000 to \$100,000	58.1	18.8	3.5	3.7	13.8	
>\$100,000	57.7	20.5	3.2	4.0	11.7	
All	56.7	14.3	3.5	3.5	19.4	
<b>PLANS WITH COMPANY STOCK</b>						
\$20,000 to \$40,000	38.0	7.0	5.5	6.4		41.3
>\$40,000 to \$60,000	37.8	11.2	4.0	6.9		33.7
>\$60,000 to \$80,000	39.9	12.3	3.1	5.3		29.3
>\$80,000 to \$100,000	42.6	12.9	3.5	4.7		25.9
>\$100,000	46.5	9.5	6.3	4.8		26.4
All	44.6	5.8	7.9	5.8		31.8
<b>PLANS WITH COMPANY STOCK AND GUARANTEED INVESTMENT CONTRACTS</b>						
\$20,000 to \$40,000	41.2	7.4	1.8	1.1	18.1	29.3
>\$40,000 to \$60,000	43.6	6.7	1.6	1.0	19.0	27.5
>\$60,000 to \$80,000	46.5	6.7	1.6	0.6	18.3	25.8
>\$80,000 to \$100,000	49.9	6.0	1.8	0.6	18.0	23.2
>\$100,000	47.1	5.5	1.8	0.6	17.8	26.5
All	43.4	5.6	2.0	1.7	18.9	27.7

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

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

**Figure 8: Asset Allocation Distribution of Participant Account Balances to Company Stock Among Participants in Plans Offering Company Stock by Age, 2000**  
 (percent of participants in plans offering company stock)

	Zero	> 0% to 10%	> 10% to 20%	> 20% to 30%	> 30% to 40%	> 40% to 50%	> 50% to 60%	> 60% to 70%	> 70% to 80%	> 80% to 90%	> 90%
<b>Total</b>	34.5	11.2	8.1	7.4	6.1	5.2	4.5	3.2	2.5	2.0	15.3
<b>AGE COHORT</b>											
20s	39.2	6.1	6.7	7.9	6.9	5.7	4.9	3.2	2.4	1.7	15.2
30s	34.3	9.7	8.2	7.8	6.5	5.6	4.8	3.4	2.7	2.1	14.8
40s	33.0	11.8	8.4	7.4	6.2	5.4	4.6	3.4	2.7	2.1	15.0
50s	32.4	13.8	8.5	7.1	5.7	5.0	4.2	3.1	2.4	2.0	15.8
60s	37.5	14.1	7.6	5.9	4.6	3.9	3.3	2.6	2.1	1.8	16.6

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

[Figure 9](#)

**Impact of Company Stock on Asset Allocation by Age, 2000**

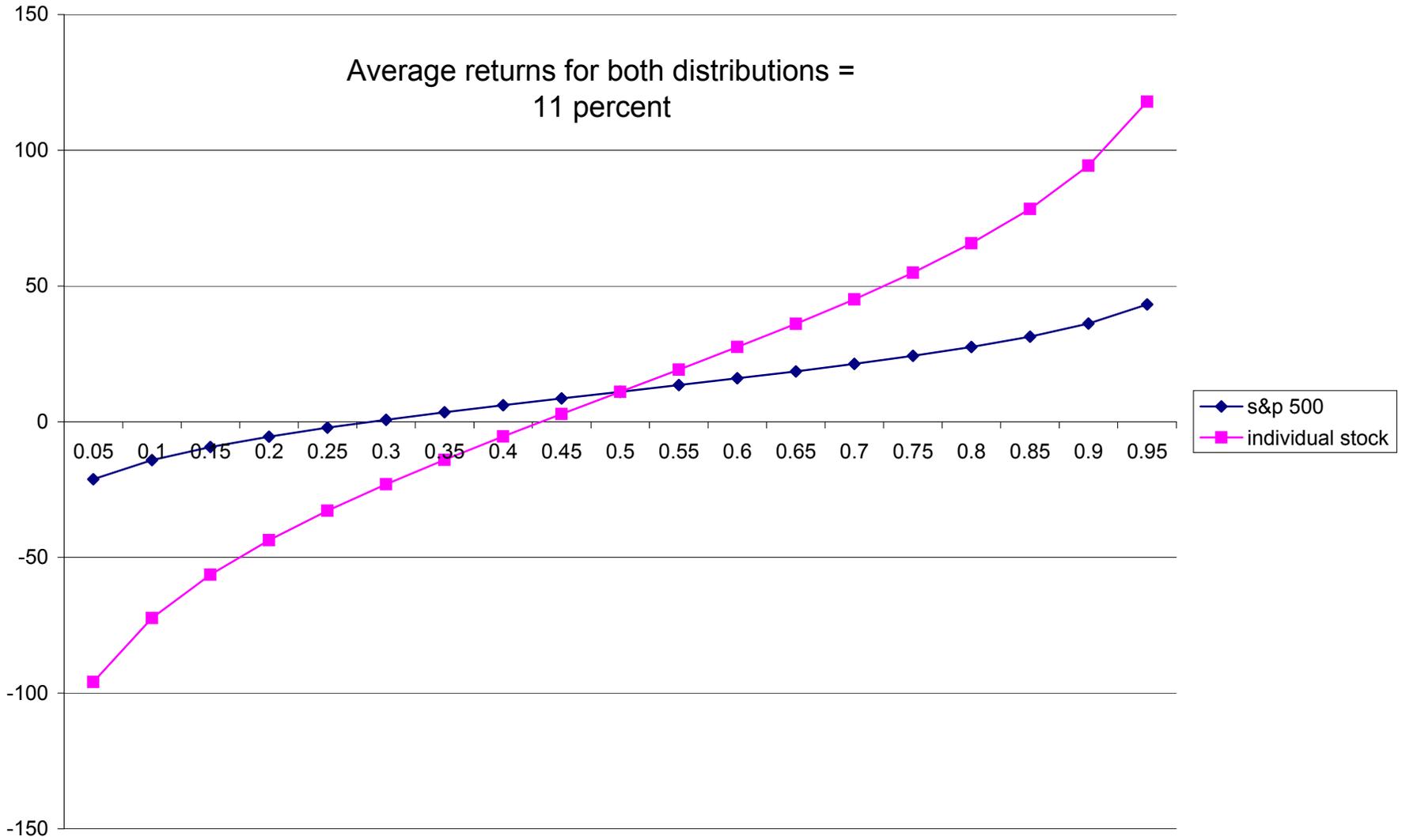
(percent of account balances)

<b>Age Cohort</b>	<b>Equity Funds</b>	<b>Balanced Funds</b>	<b>Bond Funds</b>	<b>Money Funds</b>	<b>Guaranteed Investment Contracts</b>	<b>Company Stock</b>
<b>PLANS WITH EMPLOYER-DIRECTED AND PARTICIPANT-DIRECTED BALANCES</b>						
Total Balances (Employer-Directed and Participant-Directed)						
20s	31.8	5.0	0.6	3.1	3.6	53.7
30s	27.9	4.7	0.6	1.8	4.9	58.4
40s	26.0	4.7	0.9	2.8	6.4	56.9
50s	26.2	5.5	1.4	3.6	10.1	50.9
60s	25.0	6.3	2.3	7.2	15.3	41.4
All	26.2	5.2	1.2	3.5	8.8	52.9
Participant-Directed Balances Only						
20s	40.8	6.4	0.8	3.6	4.3	41.3
30s	42.0	7.0	0.8	2.4	6.6	39.0
40s	40.7	7.1	1.5	4.0	9.0	34.9
50s	37.7	7.5	2.0	5.1	12.6	32.0
60s	32.4	7.9	3.1	9.2	18.7	26.0
All	38.5	7.4	1.8	4.9	11.5	33.2
<b>PLANS WITH COMPANY STOCK INVESTMENT OPTION BUT NO EMPLOYER-DIRECTED CONTRIBUTIONS</b>						
Total Balances						
20s	53.9	9.1	2.6	6.6	6.6	18.4
30s	54.5	8.8	2.2	4.7	6.8	20.4
40s	49.4	9.4	2.4	4.8	9.6	22.2
50s	43.5	10.1	3.0	5.5	13.1	22.8
60s	34.2	10.5	3.6	7.3	20.0	22.8
All	46.1	9.7	2.8	5.4	11.8	22.2

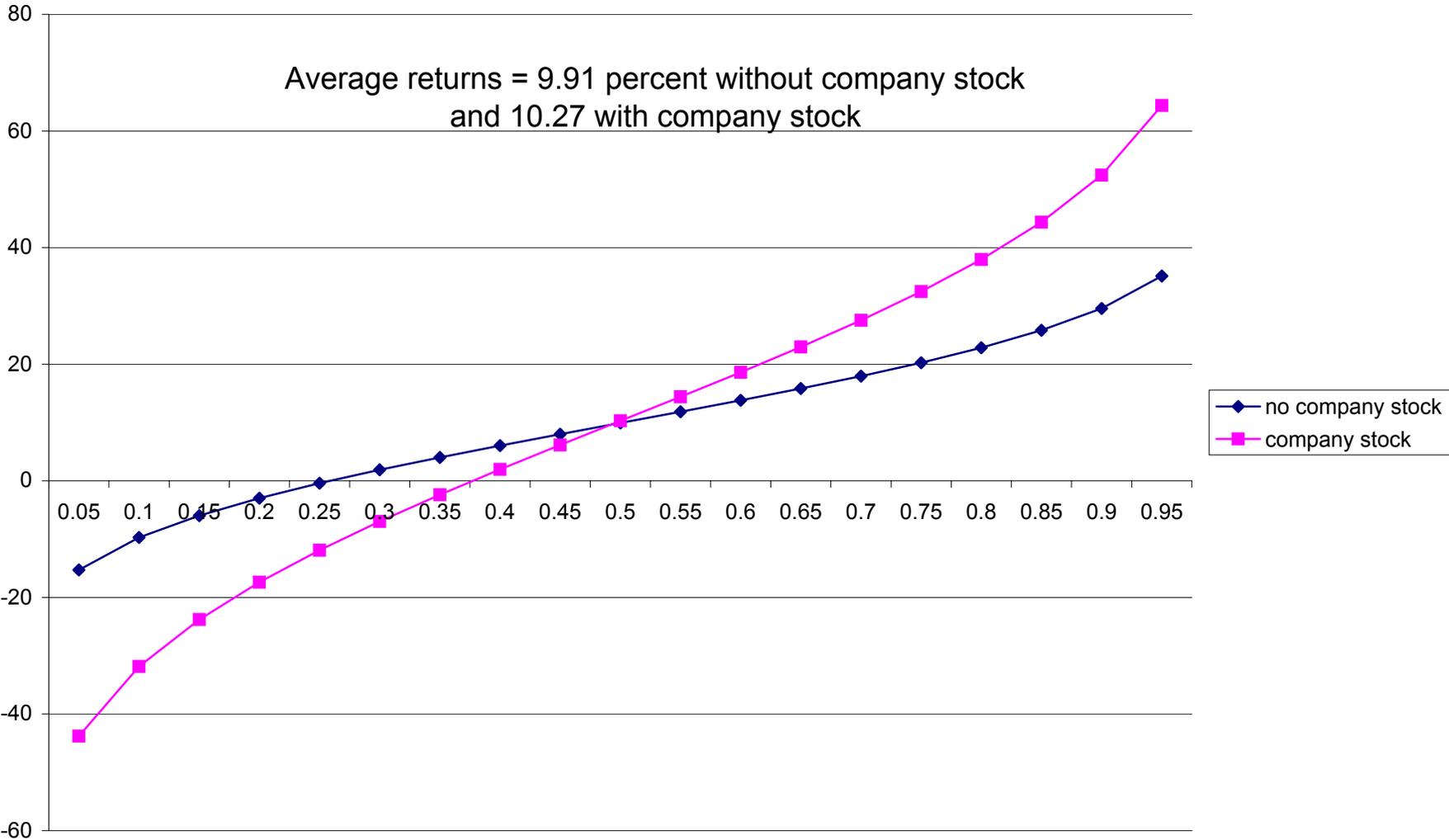
*Note: Minor investment in other stable value funds and "other" are not shown; therefore, row percentages will not add to 100 percent. Employer-directed balances are invested in the plan sponsor's company stock.*

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

Figure 10: CDF of expected returns: diversified equity vs individual stock



**Figure 11: CDF of expected returns for 401(k) participants in their twenties: company stock vs no company stock**



**Figure 12: CDF of expected returns for 401(k) participants in their sixties: company stock vs no company stock**

