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T-162

An Evaluation of the Adequacy and Structure of Current U.S. Voluntary Retirement Plans, With Special Emphasis on 401(k) Plans

For presentation at:

"Approaches for Retirement Security in the U.S."

U.S. Department of Labor

Advisory Council on Employee Welfare and Pension Benefit Plans

September 17, 2009

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An Evaluation of the Adequacy and Structure of Current U.S. Voluntary Retirement Plans, With Special Emphasis on 401(k) Plans

Introduction

The Employee Benefit Research Institute (EBRI) is pleased to assist the ERISA Advisory Council in its evaluation of the adequacy and structure of the current U.S. voluntary retirement plans. My testimony will review the results of many empirical and simulation studies EBRI has undertaken to determine whether future cohorts of retirees in the US are likely to have retirement income adequacy and the extent to which the voluntary retirement system is contributing to this objective in its current form as well as possible modifications that may increase its efficiency.

The testimony begins with a review of a national retirement income adequacy model EBRI constructed in 2003 to identify which groups of current workers are likely to have sufficient financial resources to meet basic expenses for their entire retirement and, for those that do not, how much additional savings would be required to meet this objective either 75 or 90 percent of the time. This is followed by the results of another retirement income adequacy analysis assuming that all current workers save an additional five percent of compensation each year until retirement. The results of an additional simulation model are presented from the standpoint of individual financial planning to demonstrate how post-retirement investment risk, longevity risk and the possibility of potentially catastrophic nursing home and other retiree medical costs can be quantified in an attempt to provide a dollar target depending on the level of confidence that is desired in retirement.

The second section of the testimony focuses on defined contribution plans, specifically 401(k) plans. A brief snapshot of average account balances as of year-end 2007 is provided for the entire universe as well as for various age and tenure breakouts. The results of a so-called "consistent sample" of 401(k) participants is then tracked to show how account balances have matured over time without the biases introduced by simply looking at year-to-year averages.

Although some individuals attempt to gauge the overall success of the 401(k) plan by looking at these averages, it is important to note that very few (if any) individuals on the verge of retirement have had the opportunity to participate in a 401(k) plan for their entire working careers. The results of two simulation studies conducted by EBRI and the Investment Company Institute are reviewed to show the potential for retirement wealth accumulation of these plans under continuous coverage as well as several alternatives. In particular, the results of a 2005 simulation study to explore the likely advantages of automatic enrollment (AE) features in a 401(k) plan are discussed. This is followed by a review of the results from a 2007 enhancement of the model to analyze the likely impact of automatic escalation of contributions in 401(k) plans with AE features.

These simulation results suggest that a significant percentage of 401(k) participants are likely to be able to replace at least 70-80 percent of their preretirement income from a combination of 401(k) plans and Social Security as long as they are continuously covered by a

401(k) plan. However, the studies were all performed prior to the 2008 market crisis and the third section of the testimony focuses on how this has impacted 401(k) participants by looking at the change in average 401(k) balances as well as the expected time to recover from 2008 losses as a function of future investment returns.

The next section of the testimony reviews two potential changes to the current system that could optimize benefits and mitigate risk. The first focuses on the impact of switching 401(k) plans from voluntary to automatic enrollment for all US workers (not just 401(k) participants and eligible non-participants). The second summarizes the likely impact of a move from participant-directed investments to target date funds.

Finally, two appendices are included to summarize results from studies on (1) the impact of freezes on future private defined benefit plan accruals and (2) transferring part or all of the investment risk inherent in defined contribution plans from the employee to another entity.

1. Retirement income adequacy

1.1 Adequacy for all U.S. families

Retirement income adequacy can be defined in a number of ways. Some have focused on whether retirees will have sufficient financial resources to be able to generate a standard of living or consumption stream similar to that available immediately prior to retirement after adjusting for the differential impact of items such as taxes, savings, work-related expenses, and age-specific expenditures. EBRI has taken a somewhat different approach, focusing instead on the probability of whether retirees will be able to meet certain minimum expenditures, including medical expenditures that are not covered under Medicare and/or Medigap policies.[1]

Beginning with a series of state-specific retirement income adequacy studies funded by the Milbank Memorial Fund in the early part of this decade, EBRI expanded the simulation model to provide a national retirement income adequacy assessment (EBRI/ERF Retirement Security Projection Model™) in 2003 (VanDerhei and Copeland, 2003). This model simulates assumed retirement wealth from defined benefit pensions, defined contribution plans, and IRAs as well as Social Security[2] and net housing equity.[3] Figure 1 provides the cohort-specific medians of the additional percentage of compensation that would need to be saved (beyond that already contributed to defined contribution plans and/or IRAs) by current workers each year until their assumed retirement age to provide a 75 percent probability that they will be able to meet the basic retirement expenses for their entire retirement. For those close to retirement at the time of the study, very few groups (defined by income quartile, gender and/or family status) would have sufficient retirement wealth to achieve this status unless they contributed in excess of 25 percent of compensation per year.[4] Younger cohorts would obviously have the benefit of contributing

[1] This will also include the potentially catastrophic costs of nursing home care (at least until the point where the entity is assumed to be eligible for Medicaid).

[2] The figures presented in this report assume that Social Security benefits are not modified. For additional analysis showing the impact of various Social Security reform proposals, see VanDerhei and Copeland (2003).

[3] The figures presented in this report assume that housing equity is never liquidated. For additional analysis showing alternative assumptions, see VanDerhei and Copeland (2003).

[4] The maximum percentage of compensation is capped at 25 percent, as it is unlikely workers would be able to provide additional savings in excess of this amount.

the additional savings for a longer period and many of them would be able to achieve this status with as little as an additional 5 percent of compensation per year. Unfortunately, the median values for single females in the lowest income quartile would require in excess of 25 percent of compensation in additional savings regardless of the age cohort.

Figure 2 provides a similar analysis; however, this time the retirement wealth goal requires a sufficient amount to achieve a 90 percent probability that the basic retirement expenses will be met for the entire retirement period. As expected, the median additional savings requirements increase for all groups not previously capped at the 25 percent limit.

The first two figures only show the additional savings required for the median worker in each cohort. Figure 3 uses the same model and assumptions[5] but assumes each worker will save an additional 5 percent of compensation from the time of the simulation (2003) until retirement age. This illustrates the overall percentage of times that individuals in each cohort are assumed to have a sufficient amount of income to cover basic expenses for the entirety of their retirement. The percentages vary from 30–35 percent for the cohort on the verge of retirement in the lowest income quartile to more than 95 percent for those in the youngest cohort in the highest income quartile.

1. 2 Alternative assessments of adequacy

Although the EBRI/ERF Retirement Security Projection Model™ allows a variety of public policy scenarios to be modeled, it has only limited ability to assist individuals in terms of setting targets for what multiples of final earnings they will need to save to have specific probabilities of having sufficient income to cover basic expenses for their entire retirement.[6] Figure 4 show the type of projected multiples that are produced from the Employee Benefit Research Institute Ballpark E$timate® Monte Carlo for high income males retiring at age 65 assuming 100 percent equity allocation in retirement and no annuitization.[7] This figure shows that for this individual, only 3.3 times final earnings is needed in addition to Social Security to provide a 50 percent chance of covering basic expenses for the full retirement period. However, as one moves to the 75 and 90 percent levels, investment and longevity risk as well as the possibility of extended stays in a nursing home begin to move the multiple to higher ranges: a 75 percent probability would require a multiple of 5.0 and a 90 percent probability would require a multiple of 11.6.[8]

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[5] Additional assumptions are modeled in VanDerhei (2004).

[6] This assumes no defined benefit payments are available in the form of an annuity. The full model adjusts for these accordingly.

[7] Results for females as well as alternative retirement ages, equity allocations and annuitization percentages can be found in VanDerhei (2006).

[8] EBRI has also performed simulations that focus specifically on the amount of money that would be required to cover retiree health costs (excluding nursing home expenses); see Fronstin, Salisbury and VanDerhei (2009) for more detail.

2. Adequacy from 401(k) Plans: Pre-September 2008

2.1 Average account balances

2.1.1 Averages by age and tenure

At year-end 2007, the average account balance among all 21.8 million 401(k) participants in the EBRI/ICI 401(k) database was $65,454 (VanDerhei, Holden, Alonso and Copeland, 2008).[9] However this average varies substantially with the participant's age and tenure. Figure 5 shows that for participants in their 60s the average account balance for an individual who has been with the current employer at least 30 years (and hence the likelihood of substantial portions of 401(k) generated wealth being rolled over to an IRA or cashed out are de minimis) is slightly more than $210,000.

Even though the annuitized version of this later amount would provide a significant retirement income when compared with Social Security benefits, it is important to note that the proposed regulations for 401(k) plans were not released until November 1981, and it took several years before many employers implemented them. Therefore, even the oldest 401(k) participants are unlikely to have spent an entire working career in the 401(k) environment. A later portion of this paper describes the various simulation models that have been constructed to provide more information on the true wealth accumulation potential for 401(k) plans.

2.1.2 Consistent participation numbers

Although the EBRI/ICI 401(k) database has been publishing average 401(k) balances since its inception in 1996 (VanDerhei, Galer, Quick and Rea, 1999), it is important to note that year to year differences in cross-sectional averages do not provide a true measure of the changes due to cash flows and investment returns.[10] Figure 6 shows the average (and median values) of those participants who have been with the same employer in the EBRI/ICI universe since 1999.[11] This "consistent sample" of participants had a year-end 1999 average balance of $66,660 – this had grown to $137,430 by year-end 2007.

2.2 How much will 401(k) participants accumulate under alternative scenarios?

As mentioned above, simply tabulating average account balances provides an inadequate measure of the wealth accumulation potential of 401(k) plans, even if one focuses on the oldest participants with the longest tenure. The EBRI/ICI 401(k) Accumulation Projection Model was created in an attempt to project the "401(k) accumulations"[12] that would be generated under alternative scenarios (Holden and VanDerhei, 2002).

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[9] The year-end 2008 figures will be available in a joint EBRI/ICI publication in early October.

[10] For example, a 40-year-old with a $100,000 account balance who changed jobs and rolled the balance to an IRA would show up as a 41-year-old with a much smaller balance the following year.

[11] The addition of several data providers in 1999 makes it difficult to start the consistent sample in previous years without loss of substantial numbers of participants.

[12] This term includes 401(k) balances with the current and former employers as well as any IRA rollovers from 401(k) plans.

The bottom line of Figure 7 shows the median replacement rates for a typical 401(k) participant by income quartile at age 65 for those retiring between 2030 and 2039 (thus guaranteeing the potential availability of 401(k) plans during their entire working career).[13] The replacement rates vary from slightly more than ½ for the lowest income quartile to slightly more than 2/3 for the highest income quartile under the baselines assumptions.

It is important to note that under the baseline assumptions, a worker who is currently a 401(k) participant is assumed to continue to work for 401(k) plan sponsors each time they change jobs. If a much less optimistic assumption is made (i.e., each time there is a job change, the employee has only a random chance of working for an employer sponsoring a 401(k) plan), the replacement rates drop to 23.2 percent for the lowest income quartile and 27.8 percent for the highest income quartile.[14] Where a participant's simulated replacement rate will actually fall within this range is a function of the percentage of their working career they are employed by a 401(k) plan sponsor.

2.3 How much will automatic enrollment help 401(k) participants?

Although the 2002 simulation study allowed one to project the 401(k) accumulations of participants under various scenarios, it was not able to do a proper analysis of the potential benefits of automatic enrollment for 401(k) plans due to its inability to model those workers who were eligible but chose not to participate under a voluntary enrollment situation. The EBRI/ICI 401(k) Accumulation Projection model was modified to allow for the inclusion of synthetic eligible nonparticipants (Holden and VanDerhei, 2005). The first set of columns in Figure 8 shows that the median replacement rates drop substantially for the first income quartile when the eligible nonparticipants are included (cf 50.7 percent in Figure 7 with 23 percent in Figure 8); however, the impact is much more muted for the high income quartile (56 percent vs. 67.2 percent).

The 2005 study was performed a year prior to the passage of the Pension Protection Act of 2006 (PPA) and therefore automatic escalation of contributions was not accounted for. Moreover, the future predominance of life-cycle funds as part of the QDIA option was not known and scenarios were modeled with both money market funds and life-cycle funds as the default investment.

The third set of columns in Figure 8 illustrates that, with a 3 percent default contribution and a life-cycle fund default investment, the lowest income quartile would expect a median increase of 82 percent in their replacement rates while the highest income quartile would basically have the same median replacement rate.[15]

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[13] The replacement rates are derived by dividing the projected 401(k) accumulations by the age-specific (nominal) annuity purchase price and dividing by the simulated salary at retirement age.

[14] See row 4 in Figure 7.

[15] The reason for this finding with respect to the highest income quartile is that they have little to gain from the automatic enrollment features per se, given that their participation rates are so high in the voluntary enrollment situation. However, unlike the lowest income quartile, their contribution rates under a voluntary enrollment plan were considerably higher than the default rate of 3 percent. If the inertia impact proposed by Choi, et al., 2005 and 2006. actually prevails among the highly compensated in a broad cross-section of plans, the relative reduction in contribution rates would reduce (virtually to zero) any increase in replacement rates resulting from increased participation for this group.

2.4 How much will automatic escalation help 401(k) participants?

After the passage of PPA provided design specifications for (safe harbor) automatic enrollment plans, further behavioral evidence was required to parameterize the simulation model with respect to how long 401(k) participants were likely to allow annual increases in contributions to continue before opting out. As part of the 2007 Retirement Confidence Survey (RCS) information was collected that allowed behavioral estimates to be made (Helman, Copeland and VanDerhei, 2007). However, information on two other actions was not available:

- When 401(k) participants changed jobs and began participation in a new 401(k) plan, would they remember what contribution rate they had in the old plan, or would they start over?
- Would plans sponsors tend to choose the minimum or maximum limit for contribution rates?

Figure 9 compares the median replacement rates against the baseline in each of the six combinations of *maintain contribution rate*/*start over* scenarios by whether the contribution is constrained by the safe harbor minimum or maximum, or whether the full RCS distribution can be used. Not surprisingly, the maximum impact is seen when the full RCS distribution is used (without constraints) and the *maintain contribution rate* scenario is assumed. In that case, the median replacement rate for the lowest-income quartile increases by 28 percent, while the rate for the highest-income quartile increases by 12 percent. Even for the scenario with the smallest expected impact (*start over* and limited by the safe harbor minimum), the lowest-income quartile still experiences an income replacement rate increase of 11 percent and the highest-income quartile increases by 5 percent.[16]

3. What Happened to 401(k) Participants After Last Year's Market Decline?

3.1 Balances

Most of the policy concerns with respect to 401(k) participants in the last few months of 2008 have focused on those close to retirement age. Figure 10 shows estimated changes in average 401(k) account balances from Jan. 1, 2008–September 1, 2009, broken down by age and tenure. Focusing on those on the verge of retirement (ages 56–65) makes it clear that the changes, to a large extent, depend on the participant's tenure with the plan sponsor. Within this group, average account balance changes varied between a positive 29.8 percent for the short-tenure individuals (less than five years) to more than a 11 percent loss for those with tenure of more than 20 years.

3.1 Recovery times

There has been considerable discussion as to what the current market downturn might do to retirement ages. The decision-making process undertaken by individuals or households to determine their retirement age(s) is extremely complicated and the actual impact of a sudden drop in equity prices on retirement behavior will take years to analyze. However, as a convenient proxy for participants with a vast majority of their non-Social Security retirement wealth in

[16] See VanDerhei (2007) for additional detail on the results.

401(k) plans, Figures 11 and 12 show how long it might take for various 401(k) participants to recover the losses experienced in 2008, as a function of tenure with the current plan sponsor.[17]

Obviously, recovery times will be a function of what future market returns are assumed. Figures 11 and 12 differ in their assumptions for the non-equity components (bonds, money market, and stable-value investments) of future market returns. Figure 11 assumes a nominal annual rate of return on the non-equity portion of the portfolio of 6.3 percent, while Figure 12 cuts that assumption in half, to a nominal return of 3.15 percent. Five different panels showing a range of returns are presented in both figures, one for each of the following equity return assumptions: –10 percent, –5 percent, 0, +5 percent, and +10 percent.[18] In addition to showing the estimated recovery time for the median individual in each tenure and equity return combination, a distributional analysis is included to show the 10th, 20th, 30th, 40th, 60th, 70th, 80th, and 90th percentiles as well. For example, the value for the 70th percentile represents a time period long enough to include the recovery times of 70 percent of those in the tenure and equity return combination cohort (in other words, at that value only 30 percent of that cohort would have recovery times greater than that amount). This additional detail is important, due to the large degree of diversity within each equity return/job tenure combination.

For example, in panel D of Figure 11 (+5 percent equity return assumption), the *median* time to recovery for an individual in the highest job tenure category is 1.8 years. However, the 10th percentile is zero (no recovery time), due to the fact that at least 10 percent of the 401(k) participants in this category were estimated to have no losses in 2008[19] and the 90th percentile is estimated to take 4.9 years before their 401(k) balances are expected to be equal to their January 1, 2008, level (in nominal terms).

The choice between the two non-equity return assumptions (namely, Figure 11 or Figure 12) appears to be of relatively minor consequence as long as the equity rate of return assumption is non-negative (i.e., either 0, +5 or +10 percent). However, under a negative equity rate of return assumption, some interesting differences take place in the right hand tail of the recovery time distributions. For example, in Panel A (–10 percent equity rate of return) of Figure 11 (6.3 percent non-equity rate of return), the median participant with 20–29 years of tenure is assumed to need 6.0 years to recover their 2008 losses,[20] whereas the same individual in Figure 12 (3.15 percent rate of return) would need 7.8 years. Moving to the 60th percentile in the same panel for

[17] These losses are defined as the difference between actual year-end 2007 and estimated 2008 account balances. It should be noted that this includes estimated contribution activity (as well as other cash flows) for 2008 and is not limited to investment losses.

[18] Some may question why any 401(k) participant would choose to continue to invest in equities if the assumed rate of return were negative. While this would certainly seem unlikely if the long-term assumptions were negative, this analysis is attempting to conduct sensitivity analysis on the possible short-term consequences of various equity return assumptions.

[19] This may be due to a number of factors, but in most cases it was either a function of a large contribution-to-account-balance ratios or a very conservative asset allocation.

[20] Even though they are assumed to be suffering relatively heavy losses on their equity investments, their non-equity investments are assumed to be earning 6.3 percent per year. This, coupled with estimated contribution activity of the employee and the employer, is sufficient to recoup the decrease in the estimated 2008 account balance by the end of the estimated recovery period.

the highest-tenure category increases the differential substantially (13.1 years in Figure 11 vs. 20.7 years in Figure 12). Results for the 70th percentile in each case show what is likely to result for those with either very large equity allocations at the end of 2007 or those with low contribution-to-account-balance ratios. In both cases, under these assumptions, the recovery times are so large as to effectively eliminate the possibility that the participant will ever recover their 2008 losses.[21] In fact, using the lower rate of return in Figure 12 results in a situation in which, mathematically, the participant would never recover (infinite recovery time).

A policy question that has repeatedly surfaced since the financial market crisis began is whether the impact will be disproportionately borne by the lower-paid employees. VanDerhei (2009b) presents results for each job tenure group for six different salary groupings: $20,000–$30,000, $30,000–$40,000, $40,000–$50,000, $50,000–$60,000, $60,000–$90,000, and greater than $90,000.[22] These findings show that, at least for the median results, lower-paid employees will have shorter recovery times than their higher-paid counterparts, and in many cases there is a *significantly* shorter recovery time for the lowest-paid category of participants than the highest-paid.[23]

4. Potential Changes to the Current System That Could Optimize Benefits and Mitigate Risk

4.1 The shift from voluntary enrollment to automatic enrollment and the impact on 401(k) accumulations for all workers (including those not currently eligible)

As it is far too soon to analyze what percentage of 401(k) sponsors with voluntary enrollment (VE) will adopt an automatic enrollment (AE) approach, similar to VanDerhei and Copeland (2004), this analysis models the scenario in which *all* VE sponsors switch to AE. The results allow the users to determine the likely impact of these changes by applying whatever relative growth in the percentage of AE participants they think is most likely to occur.

The analysis in this section focuses on employees currently ages 25–29. This serves two purposes: (1) it indicates what the maximum impact of a change from VE to AE is likely to be in the future, and (2) it allows refinement of the results with respect to additional percentiles in the distributional analysis as well as the impact of salary and number of years participating in a 401(k) plan on the final balances.

Figures 14 and 15 provide a detailed distribution analysis of the difference between VE plans and AE plans with automatic escalation by salary quartile. (Figure 13 provides the same analysis for AE plans without automatic escalation of contributions). Figure 14 provides results under the assumption of serial correlation, whereas the values in Figure 15 assume future eligibility is

[21] It should be noted that the participant and/or the employer may increase contributions to a higher percentage of compensation in the future. This contingency is not included in this analysis.

[22] Participants with salaries less than $20,000 were excluded in an attempt to deal with part-time employees.

[23] There are several potential explanations for this result, but the most likely is that higher-paid individuals have a higher ratio of account balances to annual contributions than do their lower-paid counterparts. This may be the result of constraints imposed by IRC Sec. 402(g), plan-sponsor reactions to potential ADP/ACP nondiscrimination testing, or plan constraints for highly compensated employees.

independent of current eligibility. In both figures, the top panel of figures pertains to the VE plans and the next five panels focus on the auto-escalation feature for AE plans under five different sets of assumptions:

1. Assuming 401(k) opt-outs, limit of safe harbor minimum, start over;
2. Assuming no opt-outs, limit of safe harbor minimum, maintain contribution rates;
3. Assuming no opt-outs, limit of safe harbor maximum, maintain contribution rates;
4. Assuming 401(k) opt-outs, limit of safe harbor maximum, maintain contribution rates;
5. Assuming 401(k) opt-outs, limit of safe harbor minimum, maintain contribution rates,

where:

- *401(k) opt-outs* denote that individuals will opt out of future increases as described in the empirical findings presented in VanDerhei (2007);
- *No opt-outs* denotes that individuals will not opt out of future increases until they reach an employer-induced constraint;
- *Safe harbor minimum* denotes that employers will limit the automatic increases to 6 percent of compensation;
- *Safe harbor maximum* denotes that employers will limit the automatic increases to 10 percent of compensation;
- *Start over* denotes that workers will start over from the default contribution when they change jobs; and
- *Maintain contribution rate* denotes that workers will retain the deferral level rate from the previous job.

Even for the most conservative set of assumptions for auto-escalation (second panel of Figures 14 and 15), the AE plans result in 401(k) accumulations at least as large as the VE plans for all four salary quartiles through and including the medians. At the 75th percentile, the AE plans have higher balances than the VE plans for all but the highest salary quartile (again reflecting the often-demonstrated empirical observation that high-salary individuals do not benefit as much from a higher participation rate under AE plans, and at least some of them end up with a lower contribution rate for a time due to the inertia of keeping the default contribution rate—even though in this case it is assumed to be increasing annually to a 6 percent contribution rate). At the 90th percentile, the two lowest-salary quartiles have larger 401(k) accumulations under AE plans, but the two highest-salary quartiles do better under VE plans. At the 95th percentile, the VE plans have larger 401(k) accumulations for all but the lowest-salary quartile. For the most generous set of assumptions for auto-escalation (fourth panel of Figures 14 and 15), the AE plans result in 401(k) accumulations at least as large as the VE plans for all four salary quartiles in every case, with the exception of the highest-salary quartiles for the 90th and 95th percentiles.

Other combinations of assumptions for auto-escalation result in intermediate values between these two extremes. Again, it will be years before researchers have enough empirical evidence to determine the relative likelihood that any of the five AE panels would be appropriate.

However, the evidence presented in Figures 14 and 15 suggests that the lowest-salary quartile will always be at least as well off under AE (at least up to the 95th percentile) regardless of which set of auto-escalation assumptions proves to be correct. The same can be said of the second-lowest salary quartile through the 90th percentile and the third quartile through the 75th percentile. Even the highest-salary quartile does at least as well under AE through the median regardless of the set of auto-escalation assumptions chosen.[24]

4.2 Target-Date Funds

Another concern is the vulnerability of 401(k) participants to volatility in the equity markets, and this deals with extreme equity concentrations—especially for older employees. Figure 16 shows, for the year-end 2007 EBRI/ICI 401(k) database universe, the asset allocation distribution of 401(k) participant account balances to "equity" by age, as of year-end 2007 and with an estimate for 2008. Equity in this figure is defined as the percentage of the participant's 401(k) funds held in equity funds, company stock, and the equity portion of balanced and/or target-date funds.[25] The figure shows that 27 percent of young 401(k) participants (those 35 or younger in 2007) have 90 percent or more of their 401(k) assets in equities (broadly defined). Another 13 percent of this cohort have 80–90 percent of their assets allocated in this fashion, and another 11 percent have 70–80 percent allocated to equities.

Although many asset allocation models and/or financial advisors may suggest that extreme concentrations in equities for the young cohorts would be acceptable, few would recommend it for those approaching retirement. Nevertheless, the 2007 asset allocation information in Figure 16 shows that almost a quarter (22 percent) of the oldest 401(k) participants (ages 56–65 in 2007) had 90 percent or more of their 401(k) assets in equities. Another 10 percent had 80–90 percent in equities, and 11 percent had 70–80 percent in equities.

Target-date funds with automatic rebalancing and a "glide path" ensuring "age-appropriate" asset allocation are likely to become much more common after full implementation of the Pension Protection Act of 2006 (PPA), with an expected increase in automatic enrollment for 401(k) plans and the attendant interest in qualified default investment alternatives (QDIAs).[26]

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[24] One public policy concern often raised, especially as the private-sector retirement system continues to evolve from defined benefit (pension) to defined contribution (401(k)-type) plans is the probability that a worker will end up with no 401(k) accumulations at retirement age. While many would argue that the 401(k) accumulations presented in Figures 14 and 15 provide more substantive evidence of the likely overall impact of PPA on retirement income from 401(k) plans, VanDerhei and Copeland (2008) demonstrate the likely reduction of workers with no 401(k) accumulations as a result of switching from voluntary to automatic enrollment plans. Whether one assumes serial correlation in eligibility or not, the reduction in this probability is striking, especially for the lowest-salary quartile. If future eligibility is assumed to be a function of current eligibility as parameterized in this section, the probability of having no 401(k) balance for this group drops from 41 percent to 24 percent by switching from VE to AE. If serial correlation is ignored, the difference is even greater, dropping from 40 percent to 16 percent.

[25] It should be noted that the results in this figure are not directly comparable with Figure 4 in VanDerhei (2008). In the earlier publication, equity concentrations were measured for the consistent sample of participants defined earlier. By definition, participants would need to be in the plan at least seven years to be in the consistent sample. This will provide significant bias in the equity concentrations for the youngest cohorts.

[26] The Department of Labor issued final regulations for qualified default investment alternatives (QDIAs) on October 24, 2007, to provide, inter alia, employers who adopt automatic enrollment plans a safe harbor from fiduciary risk when selecting an investment for participants who fail to elect their own investment. Sec. 404(c)(5)(A) of ERISA provides that, for purposes of Sec. 404(c)(1) of ERISA, a participant in an individual account plan shall

Based on unpublished EBRI research,[27] the average equity allocation for target-date funds designed for individuals in the 56–65 age range was 51.2 percent at year-end 2007. That would imply that approximately 43 percent of the consistent sample participants in the age 56–65 age category would have had at least a 20 percentage point reduction in equities at year-end 2007 *if they were allocated 100 percent to target-date funds.*[28] It would appear that this situation changed markedly by year-end 2008; however, it is likely that most of the change is due to market fluctuations, as opposed to participant transfer activity. The 2008 asset allocation estimates in Figure 16 suggest that only 15 percent of the oldest 401(k) participants (ages 56–65 in 2007) had 90 percent or more of their 401(k) assets in equities. Another 5 percent had 80–90 percent in equities, and 9 percent had 70–80 percent in equities. Aggregating these three categories together, the percentage of 401(k) participants ages 56–65 in 2007 with more than 70 percent of their 401(k) portfolio in equities had decreased from 43 percent at year-end 2007 to 29 percent at year-end 2008.

This section reports on the results obtained using the EBRI simulation model to determine how target-date funds would likely impact 401(k) participants who are assumed to be automatically enrolled.[29] It is important to note that target-date funds use in 401(k) plans is not limited to those automatically enrolled;[30] however, based on unpublished simulation results, it appears that 401(k) auto-enrollment will represent the majority of target-date fund use in the future.

The simulation model starts with all workers, whether or not they are currently enrolled in a 401(k) plans, and tracks them through age 65 by stochastically assigning job change, whether the new employer sponsors a 401(k) plan, cash out behavior, and financial market performance. In addition, the EBRI/ICI 401(k) database is used to statistically impute asset allocation under participant-directed baseline scenarios.

Although the model produces several output metrics, the one of most interest for this discussion is the ratio of "401(k) accumulations"[31] divided by wage at the time of retirement—or, for purposes of cash-out behavior discussed later, the time of job change. The ratio of 401(k) accumulations divided by wage can be a convenient proxy for retirement security by dividing the ratio by an immediate (real) annuity purchase price at retirement age and then adding it to the

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be treated as exercising control over the assets in the account with respect to the amount of contributions and earnings which, in the absence of an investment election by the participant, are invested by the plan in accordance with regulations prescribed by the secretary of labor. The three types of funds specifically enumerated for safe harbor treatment in the regulations are: lifecycle (target-date) funds, balanced funds, and managed accounts.

[27] This is explained in more detail in Copeland (2009a).

[28] It is possible that some of these participants were invested in company stock via employer matching contributions that were not able to be diversified.

[29] See VanDerhei (2009a) for counterfactual evidence on how 401(k) account balances would have grown from 1999–2006, inclusive, had these balances been invested in three different types of TDFs (average, aggressive, and conservative) instead.

[30] Copeland (2009a) provides significant detail on the differences.

[31] This denotes both the 401(k) balances with either the current employer or previous employers that have been retained as well as any IRA balances that are attributable to 401(k) rollovers.

percentage of preretirement income assumed to be replaced by Social Security.[32] The resulting replacement ratio can then be compared with any one of a set of previously computed thresholds to provide insight as to whether the individual has adequate resources for retirement security.[33]

The following analysis in this section focuses on the percentage increase or decrease of those balances moving from participant-directed investments to a type of investment strategy that makes use of target-date funds.[34] Target-date funds are often chosen as the default investment strategy for employees who are automatically enrolled in 401(k) plans given that these individuals often do not exercise the effective control required for employers to benefit from ERISA Sec. 404(c) protection with respect to potential liability exposure resulting from investment losses. They put employees into asset allocations that are considered age appropriate and then gradually decrease the equity exposure as the employees approach their target-date (typically their expected retirement date). If one assumes a positive equity premium going forward, it is likely that employees (especially young employees) who otherwise would have chosen a relatively low equity allocation would end up with larger 401(k) accumulations at retirement with a target-date fund as opposed to participant-directed investments. However, older employees who would exhibit relatively risk-averse tendencies if they invested the assets themselves may find the higher volatility of the target-date fund results in a smaller account balance a significant percentage of the time (but less than 50 percent).[35]

Given the incredible range of asset allocations because of individual participant investment direction, it should not be surprising that the adoption of target-date funds has a large range of different outcomes. Figures 17 (for participants younger than age 45) and 18 (for participants age 45 and older) show the medians and interquartile range for the percentage increase in balances moving from participant direction to target-date funds, with the relative gains displayed as a function of the participant's initial equity allocation. Obviously, the primary advantage of target-date funds when viewed in this context is the expected gains for those with an initial low equity allocation (of less than 30 percent). While some financial advisors may argue that less than a 30 percent equity allocation may be optimal for those very close to retirement age, it is likely that this will not be the case for younger participants. As can be seen in Figure 17, the positive results of target-date funds in the lower equity allocation range are much more pronounced with the 75th percentiles for those with less than a 30 percent allocation in the

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[32] If the individual is assumed to have defined benefit accruals at retirement, this may be added to the previous total after multiplying by the ratio of an immediate (nominal) annuity purchase price at retirement age divided by immediate (real) annuity purchase price at retirement age.

[33] VanDerhei (2004) reviews how replacement rates have traditionally been used to establish minimum targets for future retirees by calculating the amount needed to provide the same amount of after-tax income in retirement as that received prior to retirement after adjusting for differences in savings, age, and work-related expenses. However, a key weakness of many retirement income models is that they use average estimates for life expectancy, and, consequently, provide workers with only a 50 percent chance of having adequate income in retirement.

[34] Due to space constraints, analysis in this section is limited to the comparison of "average" target-date fund in terms of equity allocation; however, VanDerhei (2009c) includes sensitivity analysis for both the most aggressive and most conservative target-date funds as well. Although the results in this paper all assume baseline rate of return assumptions (see Park, 2009, for details), results for alternative return assumptions are provided in VanDerhei (2009c).

[35] A similar situation (described below) would be expected if employees changed jobs and cashed out the 401(k) account balances within a few years of their entry date.

positive 25–37 percent range, while the losses associated with the 25th percentile is always less than 6 percent. Moreover, even the median gains in this range are in excess of 5 percent for all groups.

While the previous figures illustrated that target-date funds can indeed make a substantial difference in balances at retirement for some participants, another concern that was often expressed (after QDIA regulations were proposed) dealt with the potential impact on participants who were likely to cash out their 401(k) balances at job change rather than roll them over to an IRA or retain them in a 401(k) plan. Figure 19 shows the expected impact on these individuals of moving from participant-directed investments to target-date funds, as a function of the employee's tenure on the job. The median impact is extremely small (1 percent or less); however, the interquartile range increases with duration, as expected, and the 75th percentile for those with 11 or more years with the employer exceeds 6 percent.

5. Appendices

5. 1 The impact of pension freezes on future private defined benefit plan accruals

The dawn of the new year in 2006 began with a flood of news reports about the supposedly "new" trend among private defined benefit plan sponsors of "freezing" their pension plans for current or new workers. In reality, these decisions have been quite prevalent in recent years, and are part of the well-documented and long-term decline of "traditional" pension plans; what's unusual is the large size of some of the employers that have recently announced pension freezes and the frequency of the announcements.

While it is obvious that pension plan freezes affect some workers negatively, it is *not* obvious *which* workers are affected, nor *to what degree* they are affected by a pension freeze. There are many reasons for this, most importantly the unique characteristics and terms of each pension plan and each freeze, and the age and characteristics of the workers. VanDerhei (2006) provides a detailed analysis of how pension freezes are likely to impact existing employees as a function of plan type and employee demographics.

The literature documenting the evolution from defined benefit (pension) to defined contribution (primarily 401(k)-type) retirement plans in the last 20 years is replete with studies analyzing the change in the relative composition of plans and participants;[36] however, very few have focused on the sizeable number of large plan sponsors that have had *both* defined benefit and defined contribution plans in place, at least since the advent of the 401(k) plan in the early 1980s.[37] For these sponsors, the primary decision in many cases is not whether to retain *both* forms of retirement plan, but the liabilities of each in terms of future accruals or contributions. While this may not be considered to be an optimal choice for some sponsors, after recognizing certain legal and/or financial constraints, such as the inability to terminate an underfunded pension plan (with the exception of certain sponsors satisfying the bankruptcy conditions necessary to trigger pension insurance coverage by the Pension Benefit Guaranty Corporation, or PBGC) and the imposition of a 20 percent or 50 percent excise tax on the recoupment of excess

[36] For a review of this literature, see Gale, Papke and VanDerhei (2005).

[37] For an analysis that did look at the cash flow implications instead, see VanDerhei and Olsen (1997).

assets in the case of a reversion (VanDerhei, 1989), the best available choice may be to gradually reduce the relative value of the defined benefit plan in the future by the imposition of a pension freeze.

5.1.1 EBRI/Mercer survey of retirement program changes after PPA

In April 2007, EBRI and Mercer fielded a survey designed to elicit information from Mercer's retirement business contact list on retirement program changes after the adoption of the Pension Protection Act of 2006 (PPA) and the new FASB accounting rules (VanDerhei, 2007). Employers that sponsored defined benefit pension plans in the United States were asked to complete the survey. Although similar types of surveys had been conducted earlier, this survey had the advantages of being distributed at a much later date and the greater likelihood that the plan sponsor would have sufficient information for a detailed cost/benefit analysis of what types of plan modifications and/or investment changes were being considered.

The EBRI/Mercer survey provides several useful statistics with respect to the overall type and frequency of defined benefit changes and the association between whether a plan sponsor closes its pension plan to new workers or freezes the accrual of pension benefits for current workers, and several employer and plan-specific characteristics.

Survey respondents were asked to indicate what changes they have made, or expect to make, to their defined contribution plans. One-third of the defined benefit sponsors expect to make an increase in employer matching contributions, and 20.9 percent expect to make an increase in non-matching employer contributions. A total of 42.5 percent of the defined benefit sponsors indicated that they would increase employer contributions.

The most important association tracked for those defined benefit sponsors increasing their employer contributions to a defined contribution plan is whether they recently closed their defined benefit plan to new hires in the last two years (78 percent of these sponsors indicated that they would increase employer contributions to the defined contribution plan) or plan to do so in the next two years (80.9 percent). Similar but slightly smaller percentages were associated with defined benefit sponsors freezing their plans to all members: Of those that had frozen in the last (next) two years, 61.9 percent (76.4 percent) indicated they would increase employer contributions.

VanDerhei (2007) found that at least among the defined benefit pension sponsors that have closed their plan to new hires in the last two years or are planning to do so in the next two years, a relatively large percentage have already adopted automatic enrollment in their 401(k) plan, and a considerable percentage of those who have not are currently considering it. Of those that have already closed the plan to new hires, 59 percent have already adopted automatic enrollment features in the 401(k) plan as opposed to 42 percent of those that have not. Plan sponsors indicating that they will close the plan to new hires in the next two years have adopted automatic enrollment features 61 percent of the time, in contrast to only 39 percent for those that do not plan to close the plan in the next two years.[38]

[38] Sponsors that already closed the plan in the last two years are excluded from the analysis of those in the "next two years" group.

The analysis for defined benefit sponsors freezing the plan for all members is not as straightforward. While 57 percent of those that have frozen the plan in the last two years indicated they have already adopted 401(k) automatic enrollment features, compared with 45 percent of those who have not, the phenomenon is reversed for those planning to freeze the plan in the next two years. In that case, only 33 percent of those that plan to freeze their pension have adopted 401(k) automatic enrollment, as opposed to 46 percent of those that do not plan to freeze the plan in the next two years. However, 42 percent of those planning to freeze their pension in the next two years are currently considering 401(k) automatic enrollment features.

5.1.2 Impact of freezing defined benefit plan accruals for new employees

As is typically true in the private retirement universe, plan sponsors' reaction to influences such as PPA likely will be quite varied. Copeland and VanDerhei (2009) use the results published in VanDerhei (2007) to modify the EBRI/ERF Retirement Security Projection Model[39] and provide additional analysis[40] to inform public policy on the likely impact of continued trends with respect to defined benefit plan freezes. The variations to the basic model used in this analysis are similar to EBRI's recent analysis of the potential impact of the PPA's safe harbor for automatic enrollment and automatic escalation on the likely account balances for 401(k) participants (VanDerhei and Copeland, 2008); however, there is one major change with respect to cash-out/rollover behavior at job change that is explained below.

For purposes of this analysis, the model assumes that no CURRENT employees will be impacted by a defined benefit plan freeze (in essence, all freezes will impact NEW employees only). Each time an employee is simulated to have a job change, the probability that they would be covered by a defined benefit plan is computed based on the assumption that defined benefit plans have not been frozen. The cumulative value of all defined benefit accruals for NEW jobs is determined for each employee under the assumption that no terminated vested benefits are commuted to lump-sum distributions prior to retirement age (which is currently assumed to be age 65 for all employees).

Under the (highly stylized) assumption that all private defined benefit plans will be immediately amended in such a manner that any new employees will not be able to accrue pension benefits, any employee selected by the model to otherwise have been eligible for a defined benefit plan (in the absence of a freeze) is assigned a non-elective ENHANCED[41]

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[39] See VanDerhei and Copeland (2003) for a detailed description of the EBRI/ERF Retirement Security Projection Model

[40] Butrica, Iams, Smith, and Toder (2009) uses the Model of Income in the Near Term to simulate the impact of an accelerated transition from DB to DC pensions on the distribution of retirement income among boomers in a scenario in which employers freeze all remaining private-sector DB plans and a third of all state and local plans over the next five years.

[41] The term "enhanced" includes those with no additional employer contributions to the defined contribution plan (approximately 21 percent of the defined benefit plan sponsors in the survey were in this category – in other words, approximately 4 out of 5 plans sponsors in the survey who had frozen or were planning to freeze their defined benefit plans had either increased employer contributions to an existing defined contribution plan or initiated a new one).

employer contribution to a defined contribution plan based on the EBRI/Mercer survey described previously.

The enhanced employer contributions are accumulated based on the age-specific asset allocations derived from year-end 2006 EBRI/ICI data (VanDerhei, Holden, Alonso and Copeland, 2008). All simulation results were based on annual returns data from Ibbotson and Associates (2009). Time series data for the years 1926 through 2008 were used for Large Cap Stocks and Long-Term Corporate Bonds to simulate the portfolios of all 401(k) participants. At age 65, all accumulated account balances attributed to the enhanced contributions are converted to nominal annuities (for consistency with the defined benefit accruals) using gender-specific annuity purchase prices.

Unlike previous applications of the EBRI/ERF model, in this case the module used to simulate cash-out vs. rollover behavior for defined contribution balances at job change was effectively turned off for any new jobs. While this is likely to overstate the eventual balances attributed to the enhanced contributions, it does allow a consistent comparison to the defined benefit accruals that would have resulted but for the new pension freeze scenario.

Two additional assumptions were used for this analysis: (1) all defined benefit plans are currently treated as though they were final average plans, and (2) only private-sector workers were modeled (and if a worker is currently in the private sector, it was assumed they would remain there until age 65). The first assumption reflects an upper bound on the expected reductions in future retirement wealth for most cohorts of defined benefit participants (see VanDerhei (2006) for a detailed analysis of the various defined benefit plan types). The second assumption was required as a result of the survey population used to collect the enhanced contribution information in the EBRI/Mercer survey.

Copeland and VanDerhei (2009) show the expected reduction in nominal replacement rates if all private defined benefit plans were to freeze accruals for NEW employees immediately, by gender and age. The averages are less than one percent for employees who are currently young (under 25) and old (over 55 or 60, depending on gender). They peak at slightly over 2 percent for males between 30 and 34, and 1.75 percent for females between 30 and 34.

These numbers may seem relatively small but they are diffused over a large segment of the population that is not expected to have a defined benefit accrual from future jobs (this is particularly true of the older employees). Therefore, Figure 20 shows the expected conditional reduction in nominal replacement rates if all private defined benefit plans were to freeze accruals for NEW employees immediately. In essence, this filters out anyone without a new defined benefit plan from the results in the previous figure. Now the mean reduction in replacement rates are monotonically increasing with age: starting at approximately 1.5 percent for employees currently ages 20–24, and increasing to 8.3 percent for those ages 60–64. The medians are significantly lower than the means, as expected, and increase until they reach 4 percent at ages 55–59 and then drop slightly.

Figure 21 shows the percentage of those with "lost" DB wealth due to a pension freeze who are expected to have a larger total nominal replacement rate from the DC-enhanced contributions (if any). As expected, young employees have the highest percentage, with nearly 40 percent of those between ages 20 and 24 ending up with more retirement wealth from the annuitized

account balances from the enhanced contributions (if any) than they would have had under the additional defined benefit accruals. This percentage drops to 6 percent for those between ages 55 and 59.

Finally, Figure 22 shows the median percentage of compensation required as an ENHANCED employer contribution for future years covered by a defined contribution plan in lieu of a frozen defined benefit plan for financial indemnification. The majority of the employees under age 30 can be financially indemnified with an employer contribution of only 6 percent of compensation; however, the number increases to nearly 16 percent for those over age 60.

5.2 Should DC plans be amended to permit sponsors to invest funds contributed by participants to better ensure financial security and can such sponsors receive fiduciary protection?

Proposals have been suggested since the Enron debacle that would attempt to transfer part or all of the investment risk inherent in defined contribution plans from the employee to another entity. Although the party initially exposed to said risk varies among the proposals, the likely targets would be the employer, a government agency (perhaps the Pension Benefit Guaranty Corporation), and/or a private insurance company. While the cost of the guarantees and/or financial uncertainty inherent in such an arrangement may be borne by the employer at least initially, it is unlikely that, in the long-term, such a shift in risk-bearing would not somehow alter the provisions of the existing defined contribution plans.

It is obviously impossible to model the financial consequences of such proposals until additional detail is provided; however, a highly stylized example of one method of achieving this objective can be readily simulated. Assume a proposal that would require the employer to ensure that participants receive an account balance no less than what would have been obtained under a minimum rate of return. While some employers may choose to voluntarily assume the additional cost of this arrangement, others may wish to re-think the investment options provided to the employees and provide little or no participant direction. In fact, an easy way of mitigating the new risk imposed by the minimum guarantee would be to force all contributions (whether contributed by the employee or the employer) into a relatively risk-free investment. While this is unlikely to be popular with young employees and other participants desiring high long-term expected returns, it would minimize the new risks shifted to the employer.

Figure 23 shows the expected results of running one such proposal through the EBRI/ERF Retirement Income Projection Model. Instead of allowing employees to direct their own contributions and perhaps those of the employer, assume employers are forced to guarantee a minimum rate of return of 5 percent nominal and they are able to find a GIC (or its synthetic equivalent) that will provide that return in perpetuity.[42] If all existing balances and future 401(k) contributions were required to be invested in this single investment option, the average expected

[42] The computations assume a long-term average return of 11 percent for both a diversified portfolio and an individual stock but a standard deviation of 19.6 percent for the former compared with 65 percent for the latter. I have arbitrarily assumed all nonequity investments earn an annual rate of return of 6 percent. See VanDerhei (2002) for more detail.

reduction in 401(k) account balances at retirement would decrease between 25 and 35 percent for participants born between 1956 and 1970.

While the results in Figure 23 are specific to the assumptions mentioned above, similar results are obtained (albeit with different percentage losses) under various combinations of minimum guarantees and assumed asset allocations and rates of return.

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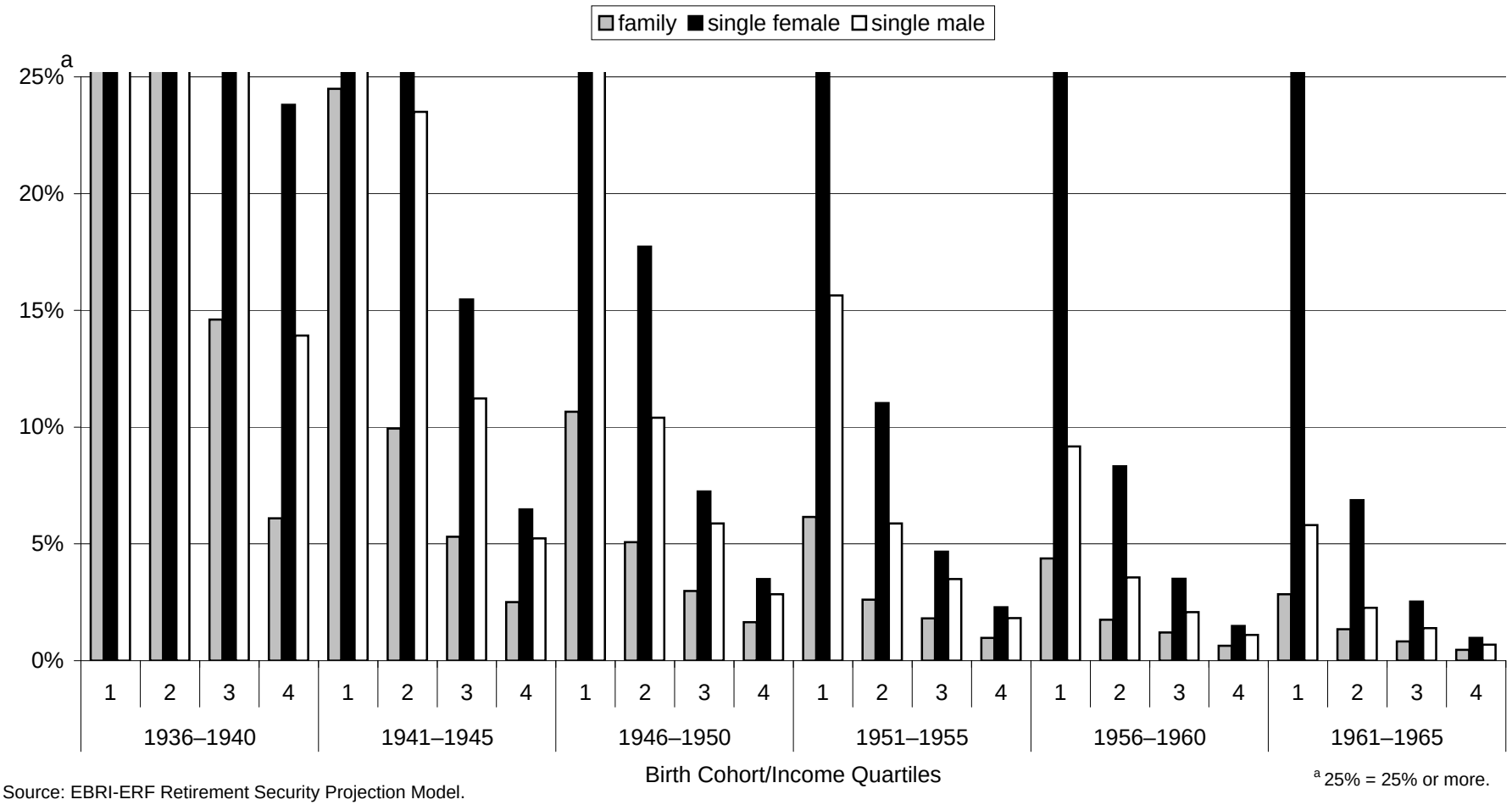
Figure 1

Percentage of Added Compensation That Must Be Saved Annually Until Retirement For a 75% Chance of Covering Basic Retirement Expenses

(assumes current Social Security and housing equity is never liquidated)



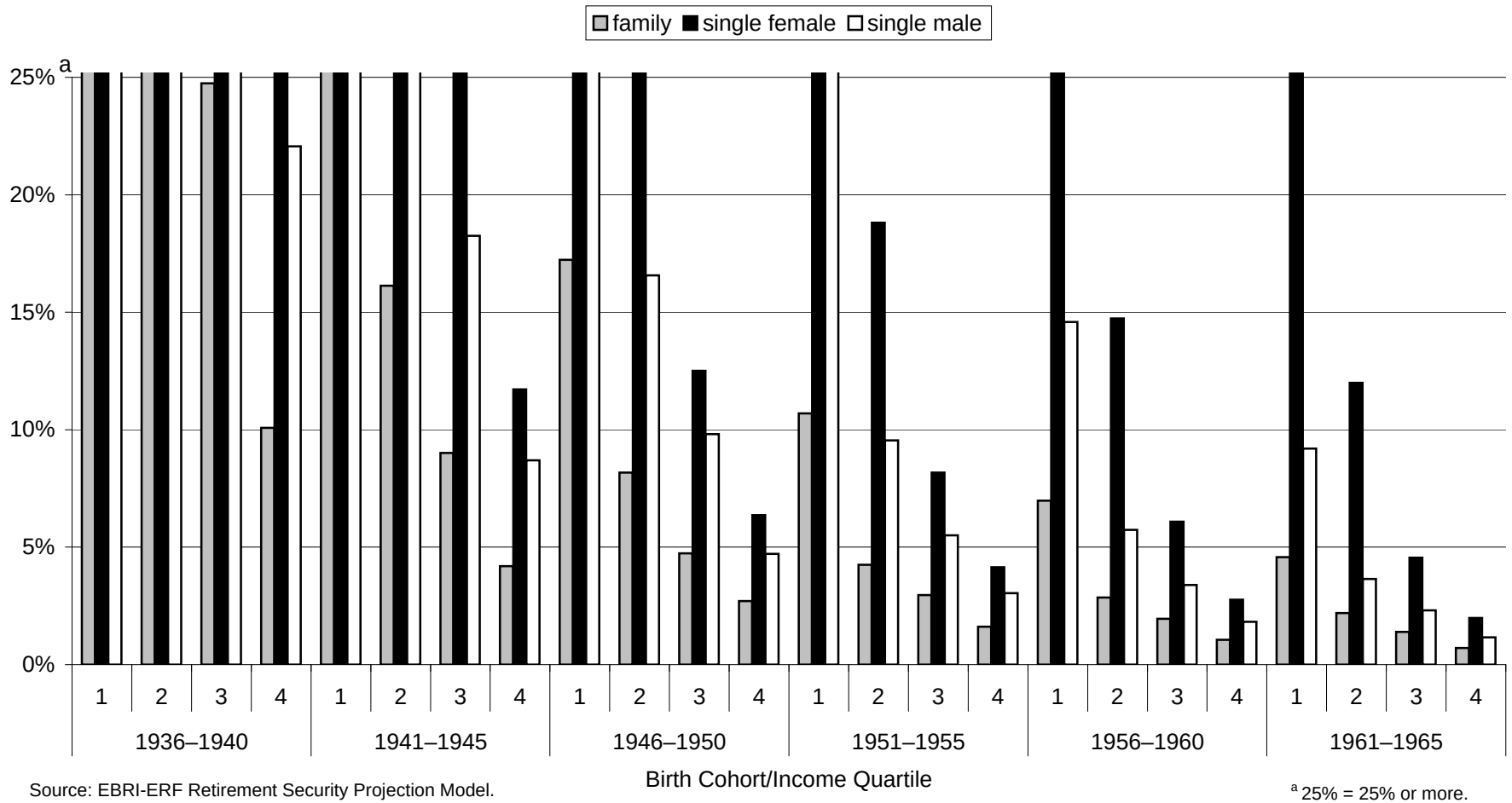
Source: EBRI-ERF Retirement Security Projection Model.

[a] 25% = 25% or more.

Figure 2

Percentage of Added Compensation That Must Be Saved Annually Until Retirement For a 90% Chance of Covering Basic Retirement Expenses

(assumes current Social Security and housing equity is never liquidated)



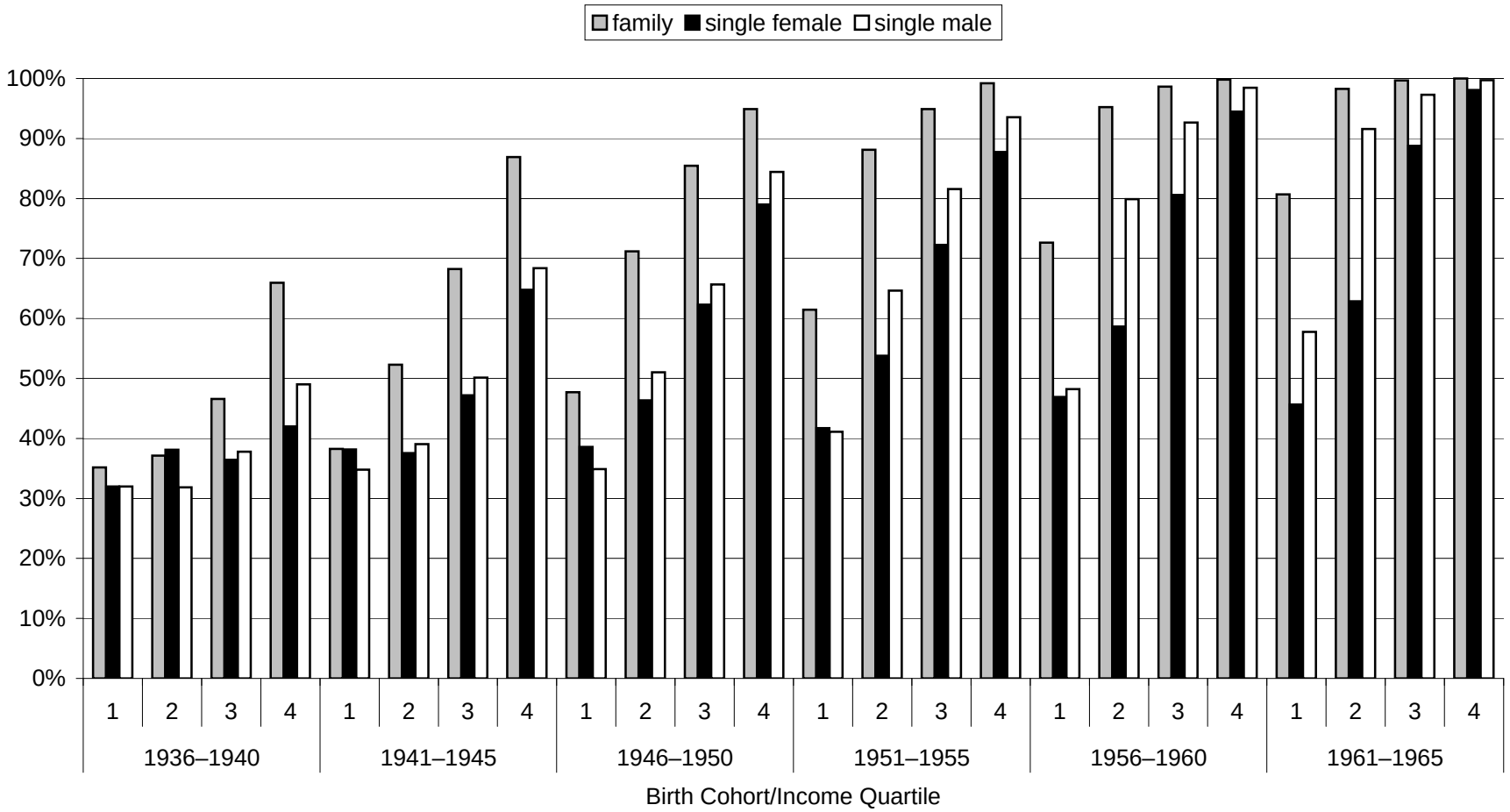
Source: EBRI-ERF Retirement Security Projection Model.

[a] 25% = 25% or more.

Figure 3

Percentage of Retirees Estimated to Have Sufficient Retirement Income/Wealth[a] by Saving 5% of Compensation Each Year From 2003 Until Retirement

(assumes current Social Security benefits)



Source: EBRI-ERF Retirement Security Projection Model. Assumes current Social Security, and that housing equity is never liquidated. The model includes the possibility of chronic long-term home health care and nursing home expenses.

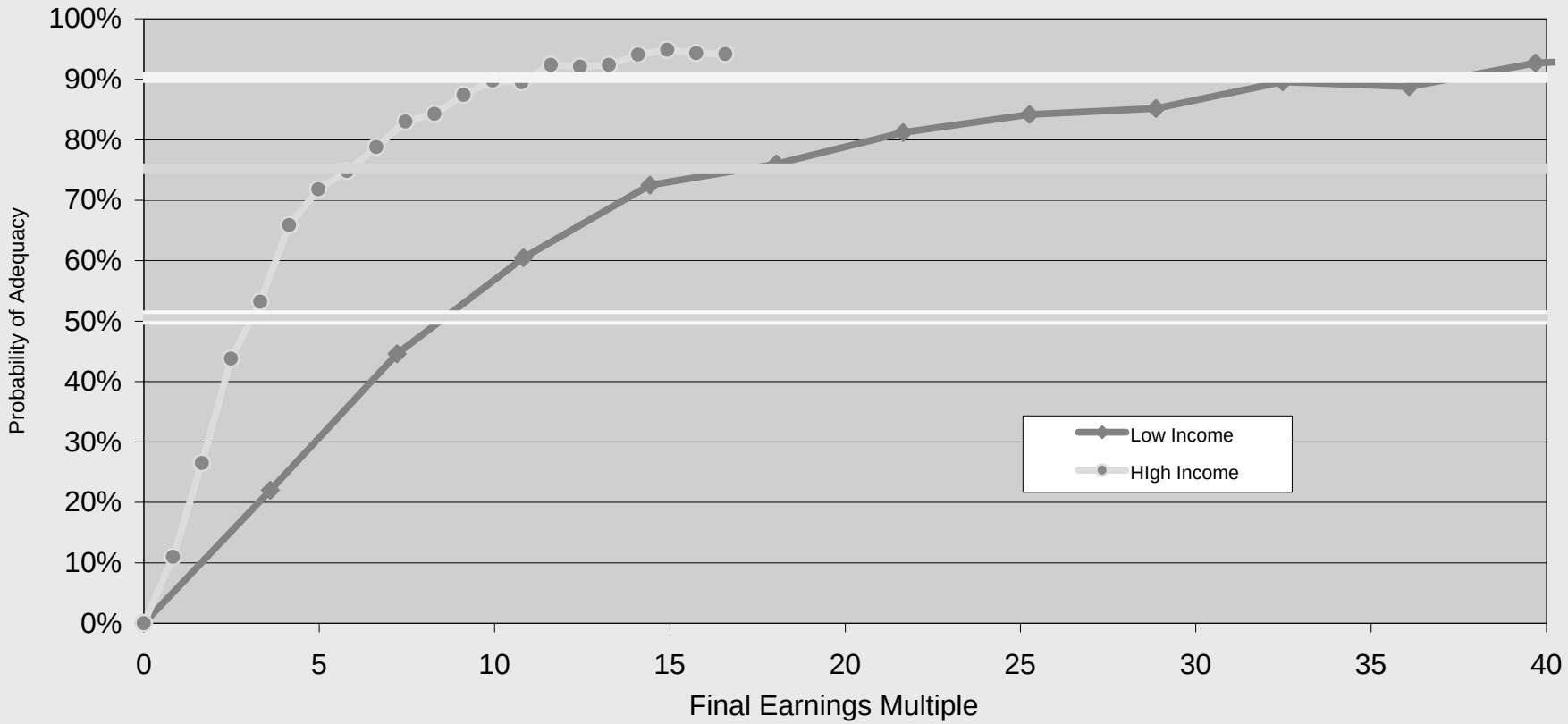
Figure 4

Impact of Final Earnings Multiple on the Probability of Retirement Income "Adequacy," by Retirement Income Category

(Assumes 100% Equity Allocation and No Annuitization)

For: Males Retiring at Age 65

Option: Building Block 3 (investment income, longevity, and health care expenses stochastic)



Source: Employee Benefit Research Institute, Ballpark E$timate® Monte Carlo, August 2006 version.

Figure 5

Account Balances Increase With Age and Tenure

Average 401(k) account balance, by age and tenure, 2007

	Tenure (years)					
Age Group	0–2	>2–5	>5–10	>10–20	>20–30	>30
20s	$4,491	$10,748	$18,564			
30s	$11,502	$23,024	$42,861	$62,207		
40s	$16,672	$31,055	$58,262	$100,856	$151,193	
50s	$20,603	$34,882	$63,783	$111,840	$194,385	$191,225
60s	$24,544	$35,399	$60,525	$105,504	$172,584	$210,457

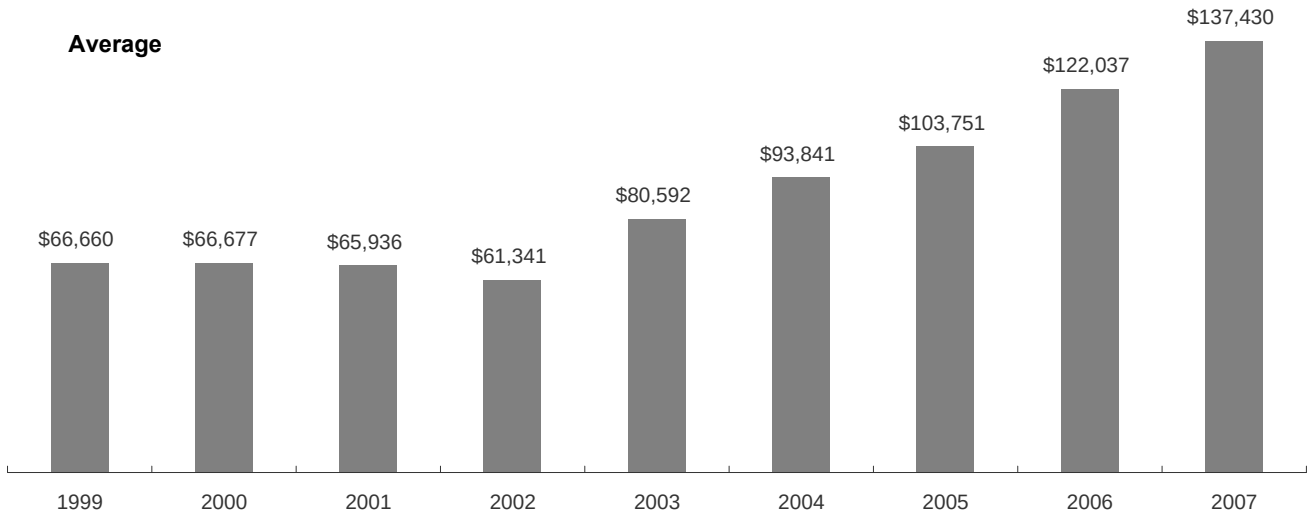
Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project.

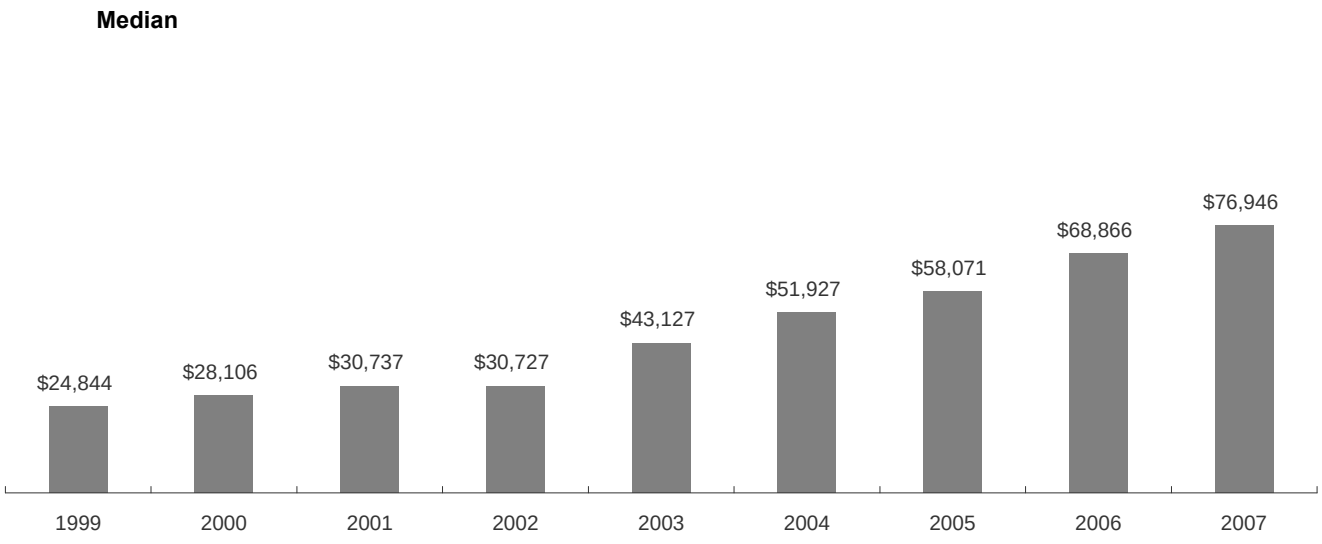
Note: At year-end 2007, the average account balance among all 21.8 million 401(k) particiants was $65,454; the median account balance was $18,942.

Figure 6

401(k) Account Balances

401(k) Account Balances [a] Among 401(k) Participants Present From Year-End 1999 Through Year-End 2007 [b]





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

[a] Account balances are participant account balances held in 401(k) plans at the participants' current employers and are net of plan loans. Retirement savings held in plans at previous employers or rolled over into IRAs are not included.

[b] The analysis is based on a sample of 2.4 million participants with account balances at the end of each year from 1999 through 2007.

Figure 7

Change in Median Replacement Rates from 401(k) Accumulations[a] Relative to Baseline Model Assumptions for Participants Reaching Age 65 Between 2030 and 2039, by Income Quartile at Age 65

(percentage points)

	Income Quartile			
	1	2	3	4
Assuming Always Have Contributions to 401(k) Plan	9.1	8.9	6.5	4.6
Assuming Loans Are Never Taken Ffrom 401(k) Plan Aaccount	0.4	0.3	0.4	0.3
Assuming Preretirement Withdrawals Are Never Taken From 401(k) Plan Account	6.7	6.0	6.0	3.8
Assuming Do Not Always Have 401(k) Plan Coverage	-27.5	-30.8	-34.7	-39.4
Assuming Never Cash Out Balance at Job Change	13.3	9.1	6.8	4.7
Assuming Preretirement Withdrawals Are Never Taken From IRA Balances	11.1	12.8	14.8	18.4
Memo:				
Median Replacement Rates for Typical 401(k) Participant[b]	50.7	54.0	59.5	67.2

Source: Tabulations from EBRI/ICI 401(k) Accumulation Projection Model.

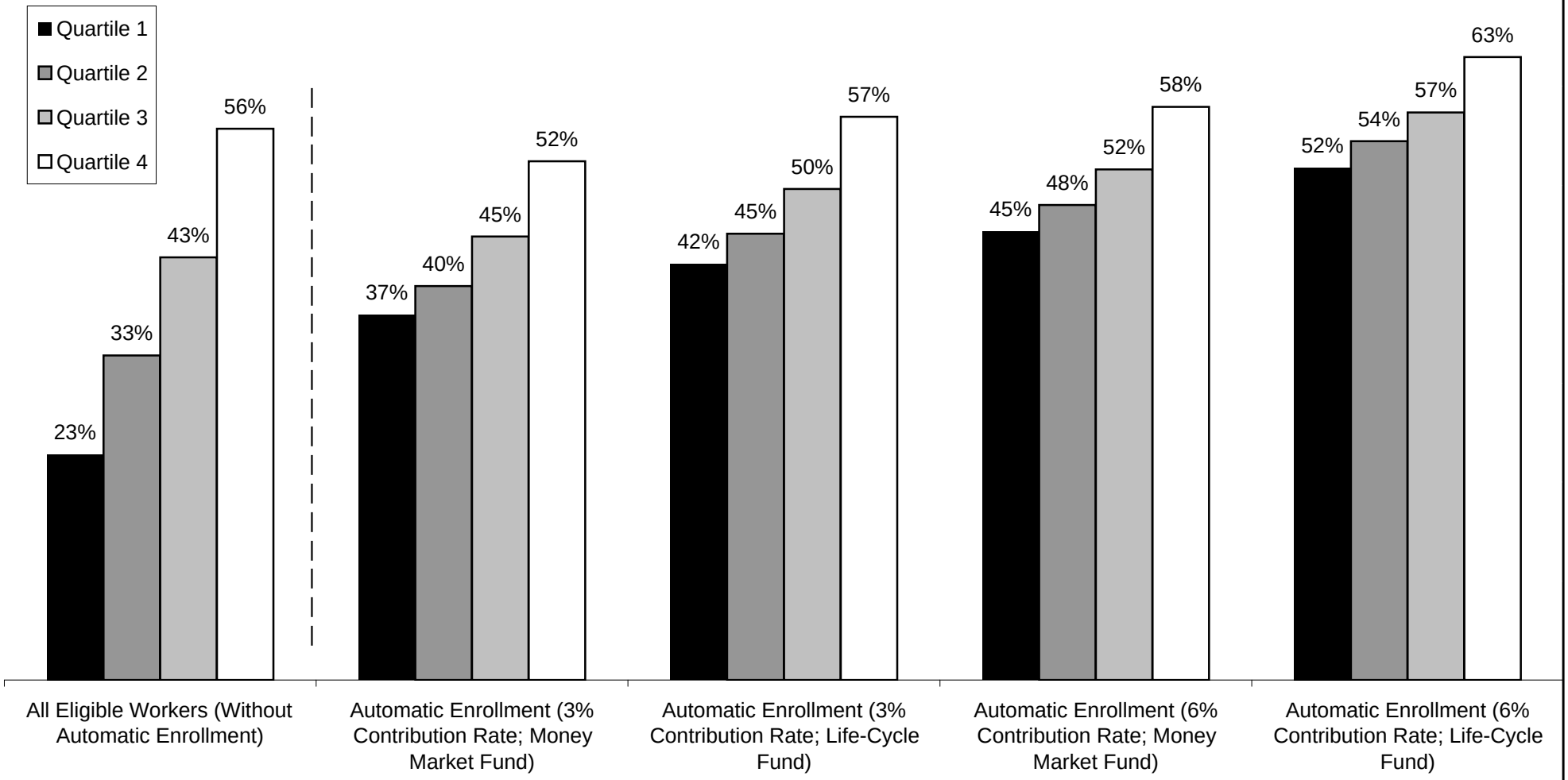
[a] Change in median replacement rate for 401(k) accumulations relative to final five-year average salary. This is the first-order difference and does not take into account changes in participant behavior that might occur as a result of changing the activity in question.

[b] The ratio of the income generated in the first year of retirement from 401(k) accumlations to final five-year average salary (percentage) for the baseline model.

Figure 8

Median Replacement Rates From 401(k) Accumulations[1] for All Eligible Workers[2] Turning 65 Between 2030 and 2039, by Income Quartile at Age 65

(percentage of final five-year average salary)



Source: EBRI/ICI 401(k) Accumulation Projection Model.

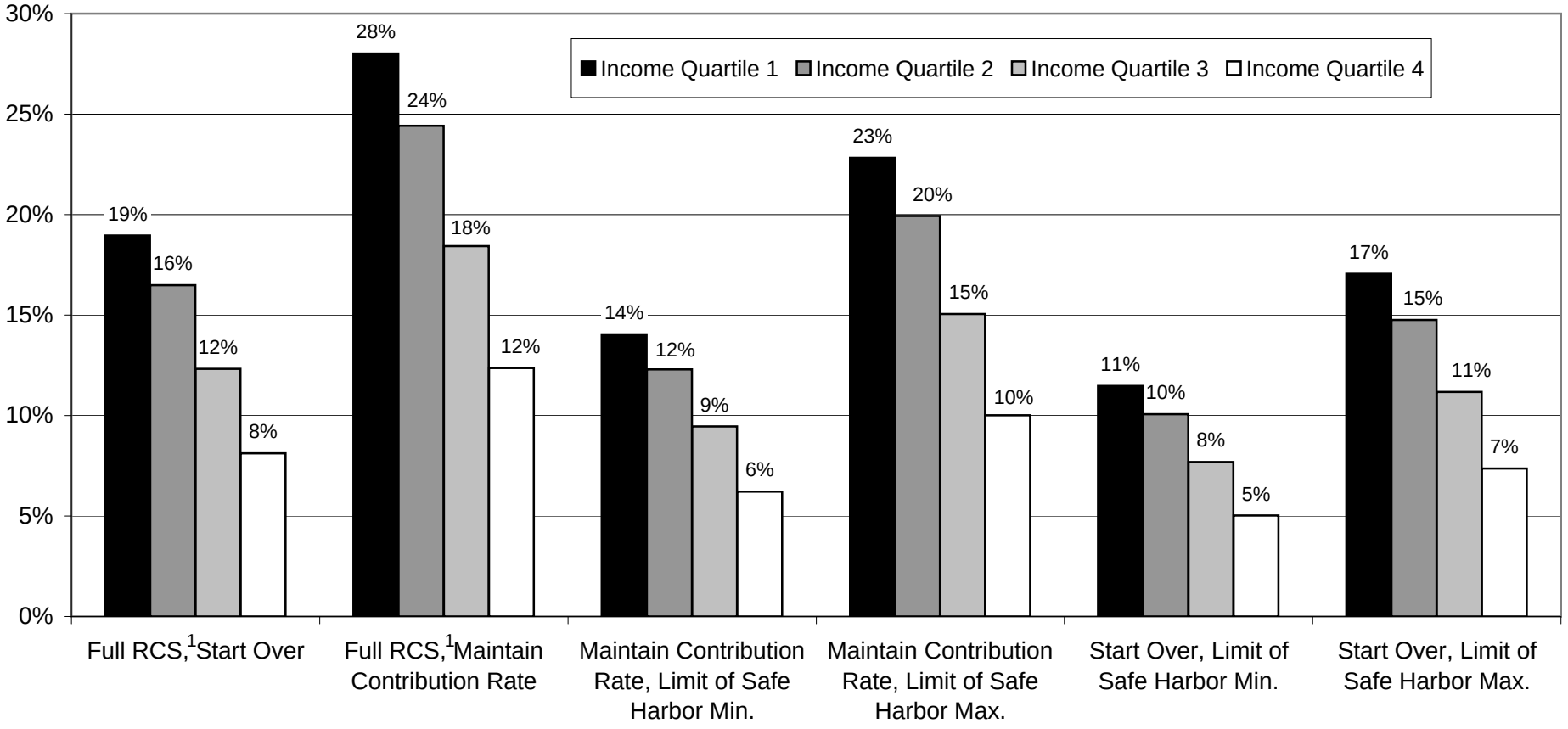
[1] The 401(k) accumulation includes 401(k) balances at employer(s) and rollover IRA balances.

[2] All eligible workers includes 401(k) plan participants with account balances at year-end 2000 and eligible nonparticipants.

Figure 9

Impact of Automatic Escalation: Percentage Increase in Median Replacement Rates From 401(k) Accumulations for Workers Turning 65 Between 2030–2039, by Income Quartile at Age 65

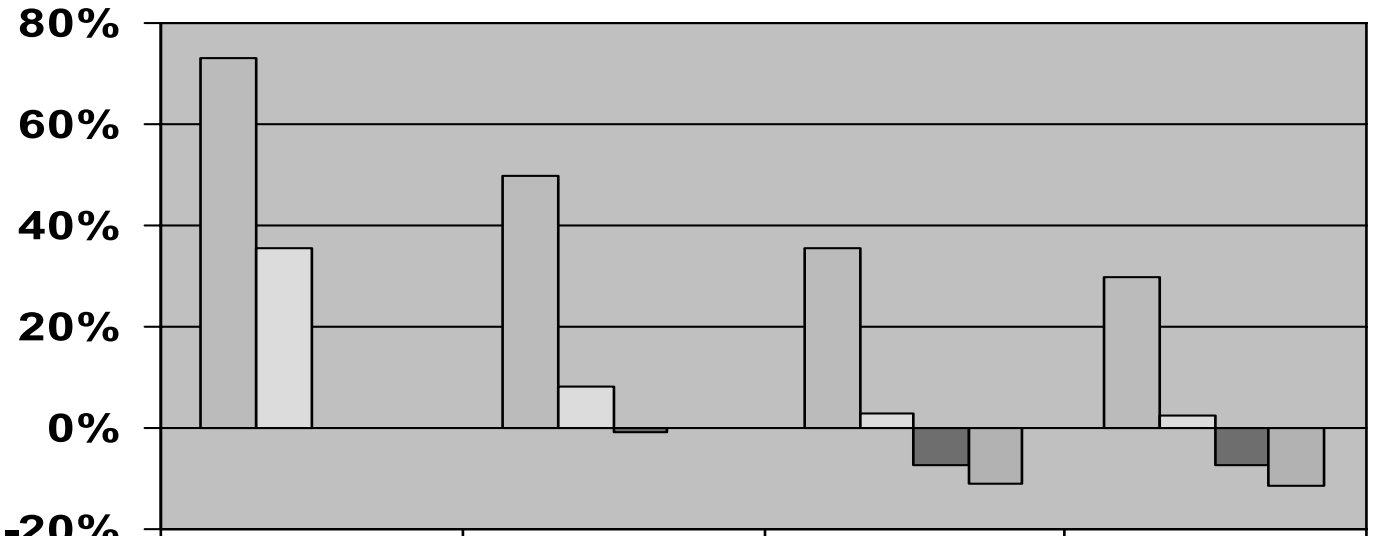
(compared to baseline of PPA matching without automatic escalation)



Source: Author's simulations from the EBRI/ICI 401(k) Accumulation Projection Model.

[1] Retirement Confidence Survey.

Figure 10:
Change In Average Account Balances (by Age and Tenure) From January 1, 2008 – September 1, 2009 Among 401(k) Participants with Account Balances as of Dec. 31, 2007



	25-34	35-44	45-54	55-64
1-4	73.2%	49.9%	35.7%	29.8%
5-9	35.7%	8.3%	2.8%	2.4%
10-19		-0.9%	-7.2%	-7.2%
20-29			-10.9%	-11.3%

Sources: 2007 Account Balances: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project; 2008 and 2009 Account Balances: EBRI estimates. The analysis is based on all participants with account balances at the end of 2007 and contribution information for that year.

Figure 11

Time Needed to Recover From 2008 401(k) Losses,[a] Using Various Equity Return Assumptions and a 6.3 Percent Non-equity Return Assumption[b]

Panel A: Equity Rate of Return: –10 percent

	Percentile of 401(k) Participants								
Job Tenure	10th	20th	30th	40th	Median	60th	70th	80th	90th
(years)	(years needed to recover)								
1–4	—	—	—	—	—	—	—	0.1	0.9
5–9	—	—	—	0.3	0.8	1.5	2.4	4.1	9.5
10–19	—	—	0.7	1.7	3.0	5.1	9.1	24.4	infinity
20–29	—	0.1	1.2	3.0	6.0	13.1	72.3	infinity	infinity

Panel B: Equity Rate of Return: –5 percent

	Percentile of 401(k) Participants								
Job Tenure	10th	20th	30th	40th	Median	60th	70th	80th	90th
(years)	(years needed to recover)								
1–4	—	—	—	—	—	—	—	0.1	0.8
5–9	—	—	—	0.3	0.7	1.1	1.7	2.6	4.5
10–19	—	—	0.6	1.3	2.1	3.0	4.3	6.6	13.5
20–29	—	0.1	1.0	2.1	3.3	5.1	8.0	14.7	63.2

Panel C: Equity Rate of Return: 0 percent

	Percentile of 401(k) Participants								
Job Tenure	10th	20th	30th	40th	Median	60th	70th	80th	90th
(years)	(years needed to recover)								
1–4	—	—	—	—	—	—	—	0.10	0.64
5–9	—	—	—	0.23	0.56	0.92	1.36	1.92	2.93
10–19	—	—	0.49	1.03	1.57	2.15	2.84	3.80	5.70
20–29	—	0.06	0.82	1.56	2.32	3.18	4.26	5.85	9.01

Panel D: Equity Rate of Return: +5 percent

	Percentile of 401(k) Participants								
Job Tenure	10th	20th	30th	40th	Median	60th	70th	80th	90th
(years)	(years needed to recover)								
1–4	—	—	—	—	—	—	—	0.1	0.6
5–9	—	—	—	0.2	0.5	0.8	1.1	1.5	2.2
10–19	—	—	0.4	0.9	1.3	1.7	2.1	2.7	3.6
20–29	—	0.1	0.7	1.3	1.8	2.3	2.9	3.7	4.9

Panel E: Equity Rate of Return: +10 percent[c]

	Percentile of 401(k) Participants								
Job Tenure	10th	20th	30th	40th	Median	60th	70th	80th	90th
(years)	(years needed to recover)								
1–4	—	—	—	—	—	—	—	0.1	0.5
5–9	—	—	—	0.2	0.4	0.7	0.9	1.3	1.7
10–19	—	—	0.4	0.7	1.1	1.4	1.7	2.1	2.6
20–29	—	0.0	0.6	1.1	1.4	1.8	2.2	2.7	3.3

Source: Employee Benefit Research Institute.

[a] Losses are defined as the difference between year-end 2007 and 2008 account balances. This is NOT limited to investment loss.

[b] "Non-equity" meaning a bond or other stable-value investment.

[c] The historic equity rate of return on equities is about 10 percent per year.

Figure 12

Time Needed to Recover From 2008 401(k) Losses,[a] Using Various Equity Return Assumptions and a 3.15 Percent Non-equity Return Assumption[b]

Panel A: Equity Rate of Return: –10 percent

	Percentile of 401(k) Participants								
Job Tenure	10th	20th	30th	40th	Median	60th	70th	80th	90th
(years)	(years needed to recover)								
1–4	—	—	—	—	—	—	—	0.1	1.0
5–9	—	—	—	0.3	0.9	1.6	2.6	4.3	10.9
10–19	—	—	0.8	1.9	3.5	5.9	11.1	38.4	infinity
20–29	—	0.1	1.5	3.7	7.8	20.7	infinity	infinity	infinity

Panel B: Equity Rate of Return: –5 percent

	Percentile of 401(k) Participants								
Job Tenure	10th	20th	30th	40th	Median	60th	70th	80th	90th
(years)	(years needed to recover)								
1–4	—	—	—	—	—	—	—	0.1	0.8
5–9	—	—	—	0.3	0.7	1.2	1.8	2.7	4.8
10–19	—	—	0.6	1.4	2.3	3.3	4.7	7.3	15.8
20–29	—	0.1	1.1	2.4	3.9	6.0	9.7	18.7	214.6

Panel C: Equity Rate of Return: 0 percent

	Percentile of 401(k) Participants								
Job Tenure	10th	20th	30th	40th	Median	60th	70th	80th	90th
(years)	(years needed to recover)								
1–4	—	—	—	—	—	—	—	0.1	0.7
5–9	—	—	—	0.2	0.6	1.0	1.4	2.0	3.0
10–19	—	—	0.5	1.1	1.7	2.3	3.0	4.0	6.1
20–29	—	0.1	0.9	1.7	2.6	3.5	4.7	6.4	9.9

Panel D: Equity Rate of Return: +5 percent

	Percentile of 401(k) Participants								
Job Tenure	10th	20th	30th	40th	Median	60th	70th	80th	90th
(years)	(years needed to recover)								
1–4	—	—	—	—	—	—	—	0.1	0.6
5–9	—	—	—	0.2	0.5	0.8	1.1	1.6	2.2
10–19	—	—	0.5	0.9	1.3	1.8	2.2	2.8	3.7
20–29	—	0.1	0.8	1.4	1.9	2.5	3.1	3.9	5.1

Panel E: Equity Rate of Return: +10 percent[c]

	Percentile of 401(k) Participants								
Job Tenure	10th	20th	30th	40th	Median	60th	70th	80th	90th
(years)	(years needed to recover)								
1–4	—	—	—	—	—	—	—	0.1	0.5
5–9	—	—	—	0.2	0.4	0.7	1.0	1.3	1.8
10–19	—	—	0.4	0.8	1.1	1.4	1.7	2.1	2.7
20–29	—	0.1	0.7	1.1	1.5	1.9	2.3	2.8	3.4

Source: Employee Benefit Research Institute.

[a] Losses are defined as the difference between year-end 2007 and 2008 account balances. This is NOT limited to investment loss.

[b] "Non-equity" meaning a bond or other stable-value investment.

[c] The historic equity rate of return on equities is about 10 percent per year.

Figure 13

Auto-Enrollment Without Auto-Escalation vs. Voluntary Enrollment:
Post-PPA 401(k) "Accumulations" as a Multiple of Final Earnings for Those Currently Age 25–29

Voluntary Enrollment (assuming future eligibility IS a function of current eligibility)

Salary Quartile	5th Percentile	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	95th Percentile
1	0.0	0.0	0.0	0.1	1.8	5.9	9.2
2	0.0	0.0	0.1	1.4	4.9	10.5	16.0
3	0.0	0.0	0.2	2.2	7.1	14.2	18.9
4	0.0	0.0	1.3	5.7	12.0	19.8	26.0

Automatic Enrollment (assuming future eligibility IS a function of current eligibility)

Salary Quartile	5th Percentile	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	95th Percentile
1	0.0	0.0	0.1	1.2	3.3	5.7	6.8
2	0.0	0.0	0.7	2.3	4.6	7.1	7.6
3	0.0	0.0	1.1	2.8	5.1	7.1	8.0
4	0.0	0.0	1.5	3.7	6.2	7.6	8.2

Voluntary Erollment (assuming future eligibility is NOT a function of current eligibility)

Salary Quartile	5th Percentile	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	95th Percentile
1	0.0	0.0	0.0	0.1	1.8	5.9	9.3
2	0.0	0.0	0.1	1.5	4.6	9.9	13.5
3	0.0	0.0	0.3	2.5	7.0	13.7	17.9
4	0.0	0.0	1.8	6.0	12.0	19.8	25.7

Automatic Enrollment (assuming future eligibility is NOT a function of current eligibility)

Salary Quartile	5th Percentile	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	95th Percentile
1	0.0	0.0	0.3	1.2	2.9	5.5	6.5
2	0.0	0.1	0.8	2.0	4.4	6.7	7.6
3	0.0	0.2	1.2	2.5	5.0	7.0	8.0
4	0.2	0.8	1.9	3.8	6.1	7.6	8.2

Source: Author's simulations.

Note: Post-PPA 401(k) accumulations denote retirement money at age 65 in either a 401(k) plan or IRA rollover that originated with contributions made on or after January 1, 2008

The percentile columns represent the levels below which a certain percentage of observations fall. For example, the 75th percentile indicates the 401(k) accumulation multiple value below which fall 75 percent of all the values for an individual in that age and cohort

Figure 14

Auto-Enrollment With Auto-Escalation vs. Voluntary Enrollment: Post-PPA 401(k) "Accumulations" as a Multiple of Final Earnings for Those Currently Age 25–29

(assuming future eligibility is a function of current eligibility)

Voluntary Enrollment

Salary Quartile	5th Percentile	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	95th Percentile
1	0	0.0	0.0	0.1	1.8	5.9	9.2
2	0	0.0	0.1	1.4	4.9	10.5	16.0
3	0	0.0	0.2	2.2	7.1	14.2	18.9
4	0	0.0	1.3	5.7	12.0	19.8	26.0

Automatic Enrollment (assuming 401(k) opt-outs, limit of safe harbor minimum, start over)*

Salary Quartile	5th Percentile	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	95th Percentile
1	0	0.0	0.2	2.5	6.5	10.3	12.9
2	0	0.0	1.0	4.0	7.6	10.9	12.5
3	0	0.0	1.7	4.7	9.0	12.4	13.9
4	0	0.5	3.0	6.2	9.5	12.6	13.9

Automatic Enrollment (assuming no 401(k) opt-outs, limit of safe harbor minimum, maintain contribution rates)*

Salary Quartile	5th Percentile	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	95th Percentile
1	0	0.0	0.3	2.8	7.1	11.2	13.2
2	0	0.1	1.8	4.8	9.1	13.0	14.2
3	0	0.4	2.6	5.9	10.2	13.2	14.6
4	0	0.3	3.3	7.3	11.3	13.8	15.1

Automatic Enrollment (assuming no 401(k) opt-outs, limit of safe harbor maximum, maintain contribution rates)*

Salary Quartile	5th Percentile	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	95th Percentile
1	0	0.0	0.4	4.5	10.4	15.5	18.4
2	0	0.0	2.4	6.6	12.1	16.6	18.2
3	0	0.0	3.1	8.0	14.0	17.7	20.5
4	0	0.9	4.9	10.0	14.7	18.1	19.8

Automatic Enrollment (assuming 401(k) opt-outs, limit of safe harbor maximum, maintain contribution rates)*

Salary Quartile	5th Percentile	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	95th Percentile
1	0	0.0	0.3	3.4	8.4	13.5	17.0
2	0	0.0	1.5	5.2	10.0	14.0	16.6
3	0	0.0	2.3	6.0	12.2	16.6	18.5
4	0	0.6	3.8	7.9	12.6	16.4	18.5

Automatic Enrollment (assuming 401(k) opt-outs, limit of safe harbor minimum, maintain contribution rates)*

Salary Quartile	5th Percentile	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	95th Percentile
1	0	0.0	0.3	2.7	7.1	11.0	13.6
2	0	0.0	1.2	4.4	8.2	11.7	13.2
3	0	0.0	1.9	5.2	9.7	13.3	15.6
4	0	0.6	3.2	6.6	10.3	13.2	14.6

Source: Author's simulations.

* Terms: *401(k) opt-outs* denotes that individuals will opt out of future increases as described in the empirical findings presented in VanDerhei (2007a). *No opt-outs* denotes that individuals will not opt out of future increases until they reach an employer-induced constraint. *Safe harbor minimum* denotes that employers will limit the automatic increases to 6 percent of compensation. *Safe harbor maximum* denotes that employers will limit the automatic increases to 10 percent of compensation. *Start over* denotes that workers will start over from the default contribution when they change jobs. *Maintain contribution rate* denotes that workers will retain the deferral level rate from the previous job. Note: Post-PPA 401(k) accumulations denote retirement money at age 65 in either a 401(k) plan or IRA rollover that originated with contributions made on or after January 1, 2008.

Figure 15

Auto-Enrollment With Auto-Escalation vs. Voluntary Enrollment: Post-PPA 401(k) "Accumulations" as a Multiple of Final Earnings for Those Currently Age 25–29

(assuming future eligibility is NOT a function of current eligibility)

Voluntary Enrollment

Salary Quartile	5th Percentile	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	95th Percentile
1	0.0	0.0	0.0	0.1	1.8	5.9	9.3
2	0.0	0.0	0.1	1.5	4.6	9.9	13.5
3	0.0	0.0	0.3	2.5	7.0	13.7	17.9
4	0.0	0.0	1.8	6.0	12.0	19.8	25.7

Automatic Enrollment (assuming 401(k) opt-outs, limit of safe harbor minimum, start over)*

Salary Quartile	5th Percentile	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	95th Percentile
1	0.0	0.0	0.6	2.5	5.9	9.8	12.4
2	0.0	0.0	1.5	3.9	7.6	10.6	12.3
3	0.0	0.3	2.1	4.6	8.2	11.7	13.3
4	0.3	1.0	3.3	6.1	9.2	12.0	13.3

Automatic Enrollment (assuming no opt-outs, limit of safe harbor minimum, maintain contribution rates)*

Salary Quartile	5th Percentile	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	95th Percentile
1	0.0	0.0	0.9	2.8	6.8	10.4	12.5
2	0.0	0.5	1.9	5.0	8.6	12.6	13.8
3	0.1	0.5	2.6	5.5	9.9	12.6	14.6
4	0.3	1.5	4.1	7.6	11.0	13.5	14.6

Automatic Enrollment (assuming no opt-outs, limit of safe harbor maximum, maintain contribution rates)*

Salary Quartile	5th Percentile	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	95th Percentile
1	0.0	0.0	1.7	4.5	9.4	14.7	17.0
2	0.0	0.3	3.1	6.6	12.0	16.4	17.6
3	0.1	0.8	3.6	7.7	12.8	17.2	19.9
4	0.7	2.1	5.3	9.8	13.9	17.5	19.1

Automatic Enrollment (assuming 401(k) opt-outs, limit of safe harbor maximum, maintain contribution rates)*

Salary Quartile	5th Percentile	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	95th Percentile
1	0.0	0.0	1.1	3.5	7.8	12.7	16.4
2	0.0	0.0	2.0	5.1	10.0	14.5	16.4
3	0.0	0.4	2.9	6.1	11.0	15.7	17.9
4	0.5	1.4	4.1	7.6	12.1	15.5	18.3

Automatic Enrollment (assuming 401(k) opt-outs, limit of safe harbor minimum, maintain contribution rates)*

Salary Quartile	5th Percentile	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	95th Percentile
1	0.0	0.0	0.7	2.8	6.3	10.1	12.7
2	0.0	0.0	1.7	4.2	8.1	11.3	12.7
3	0.0	0.4	2.3	5.2	8.8	12.5	14.2
4	0.5	1.1	3.5	6.5	9.8	12.6	14.5

Source: Author's simulations.

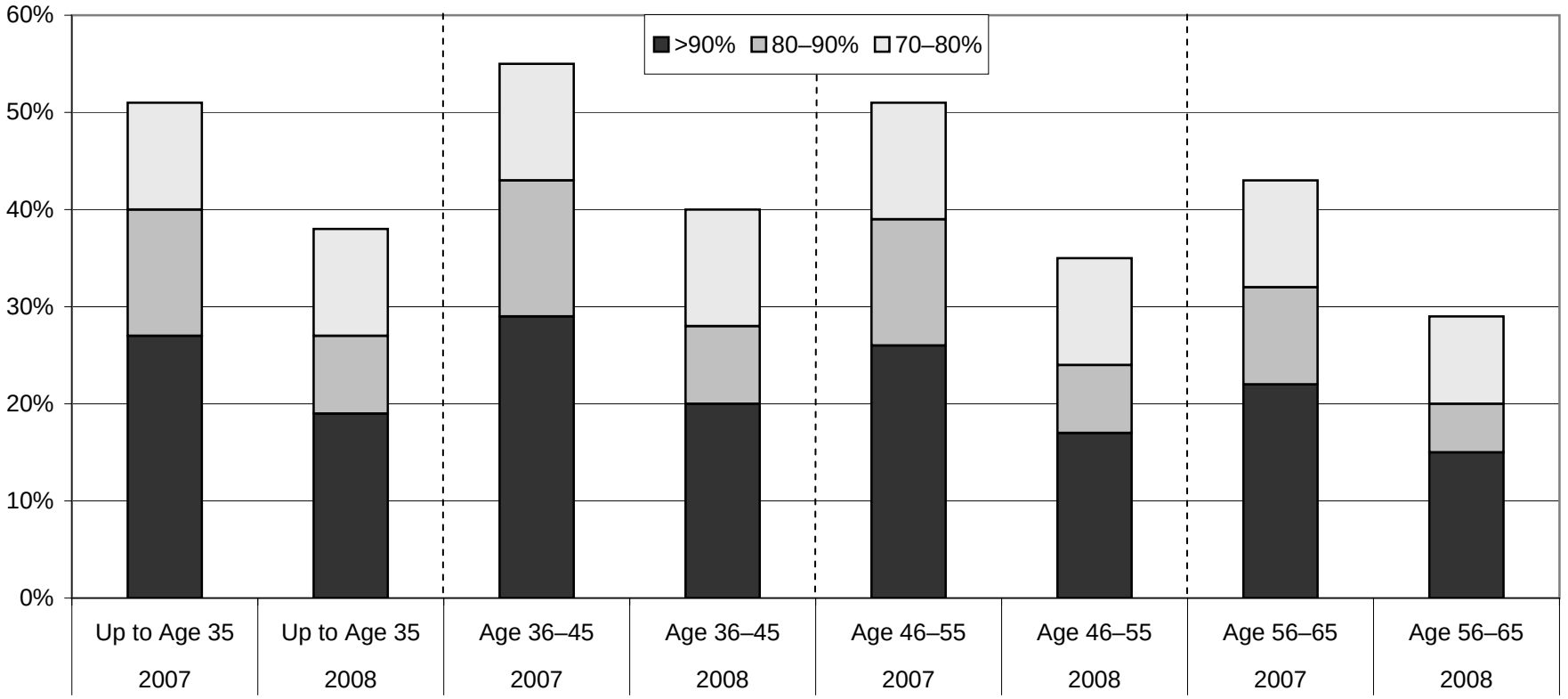
* Terms: *401(k) opt-outs* denotes that individuals will opt out of future increases as described in the empirical findings presented in VanDerhei (2007a). *No opt-outs* denotes that individuals will not opt out of future increases until they reach an employer-induced constraint. *Safe harbor minimum* denotes that employers will limit the automatic increases to 6 percent of compensation. *Safe harbor maximum* denotes that employers will limit the automatic increases to 10 percent of compensation. *Start over* denotes that workers will start over from the default contribution when they change jobs. *Maintain contribution rate* denotes that workers will retain the deferral level rate from the previous job.

Note: Post-PPA 401(k) accumulations denote retirement money at age 65 in either a 401(k) plan or IRA rollover that originated with contributions made on or after January 1, 2008.

Figure 16

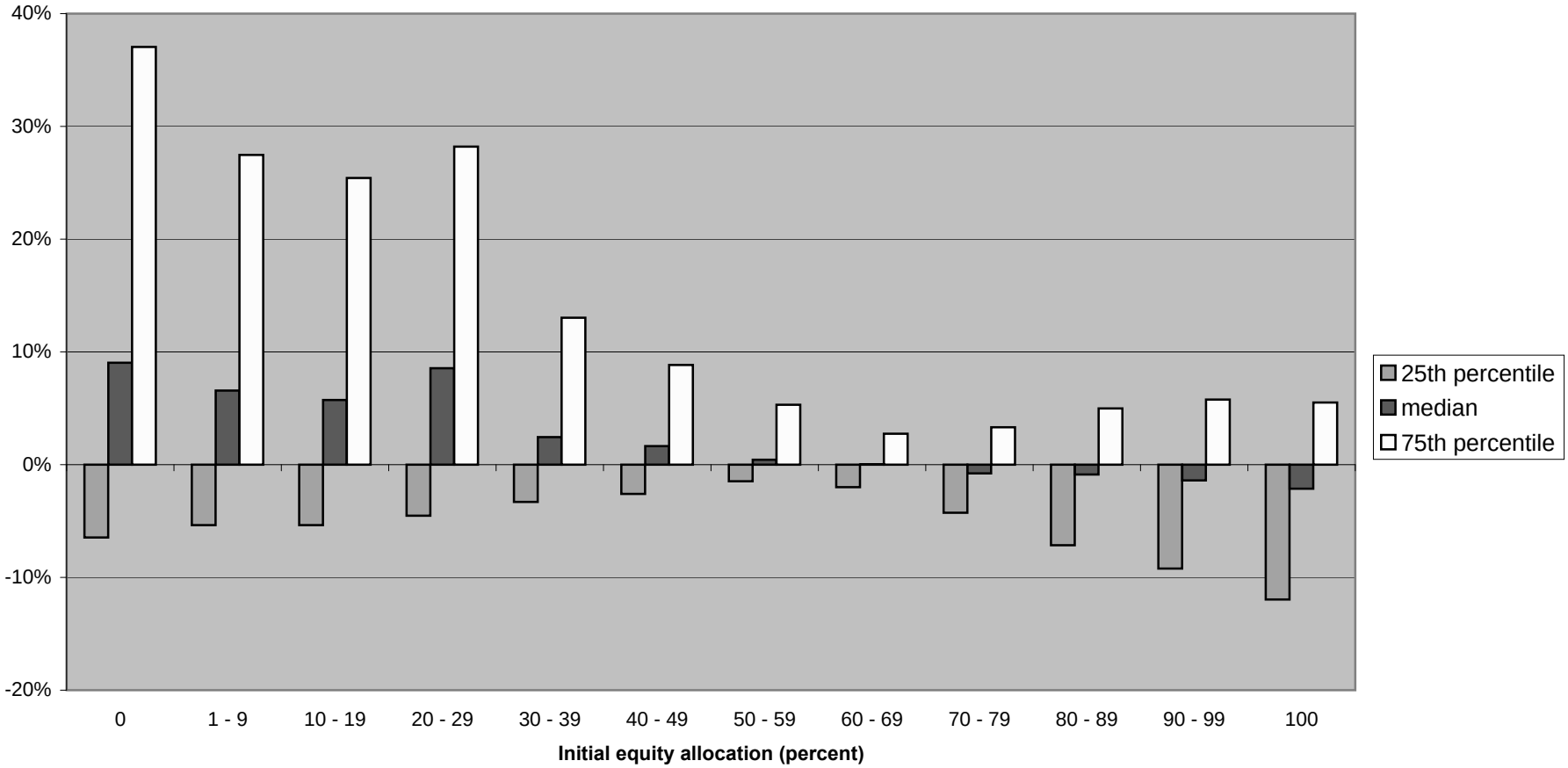
Asset Allocation Distribution of 401(k) Participant Account Balances to "Equity," by Age: Year-end 2007 and 2008

("Equity" is defined as equity funds + company stock + the relevant portion of balanced and target date funds)



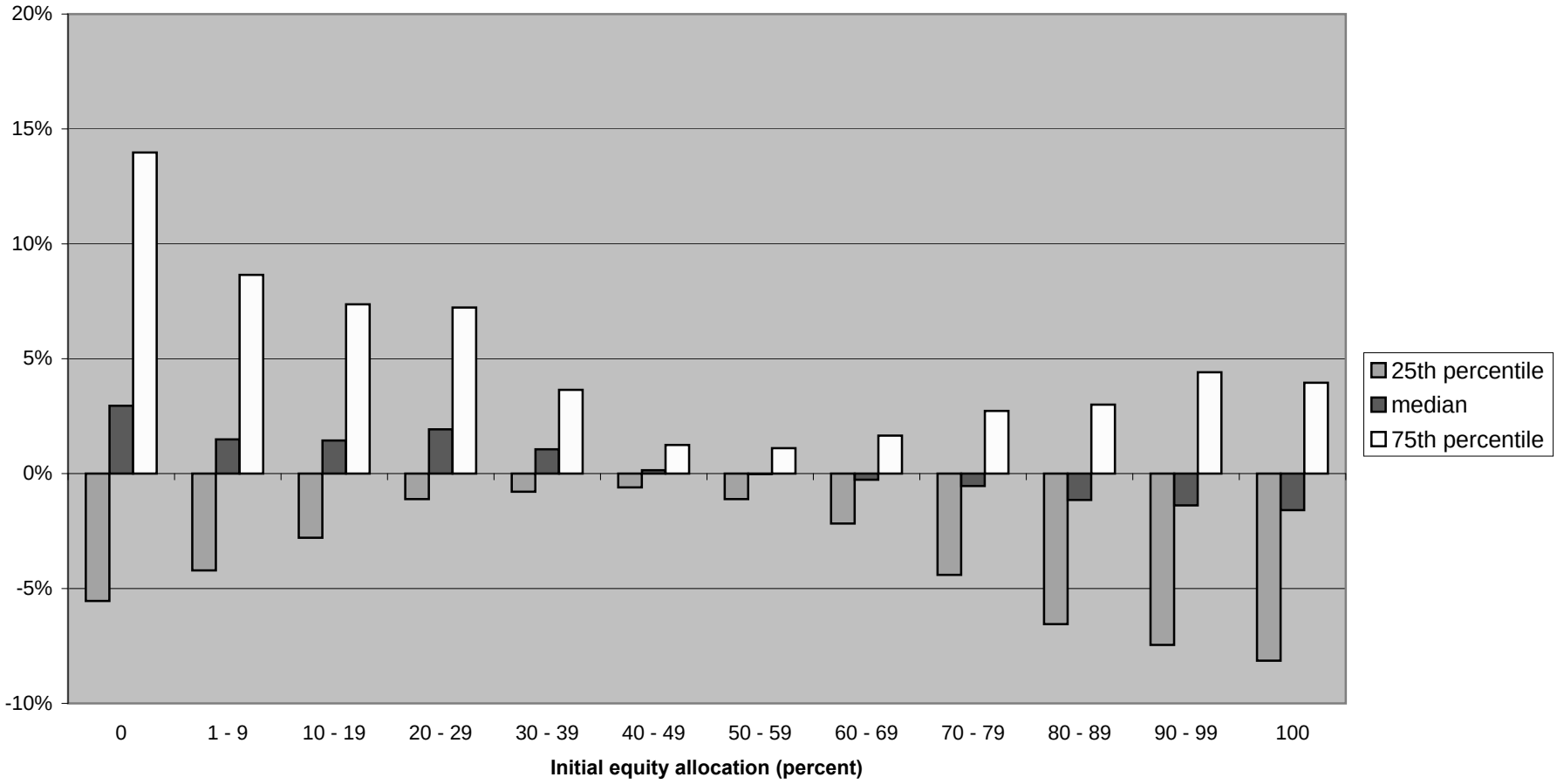
Sources:
2007: Tabulations from year-end 2007 data from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project. The analysis is based on active participants with account balances at the end of 2007.
2008: Author's projections based on year-end 2007 data from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project.

Figure 17: Increase in balances (401(k) + rollover IRA) at retirement age as a function of initial equity allocation in average target date vs participant direction: Participants younger than 45



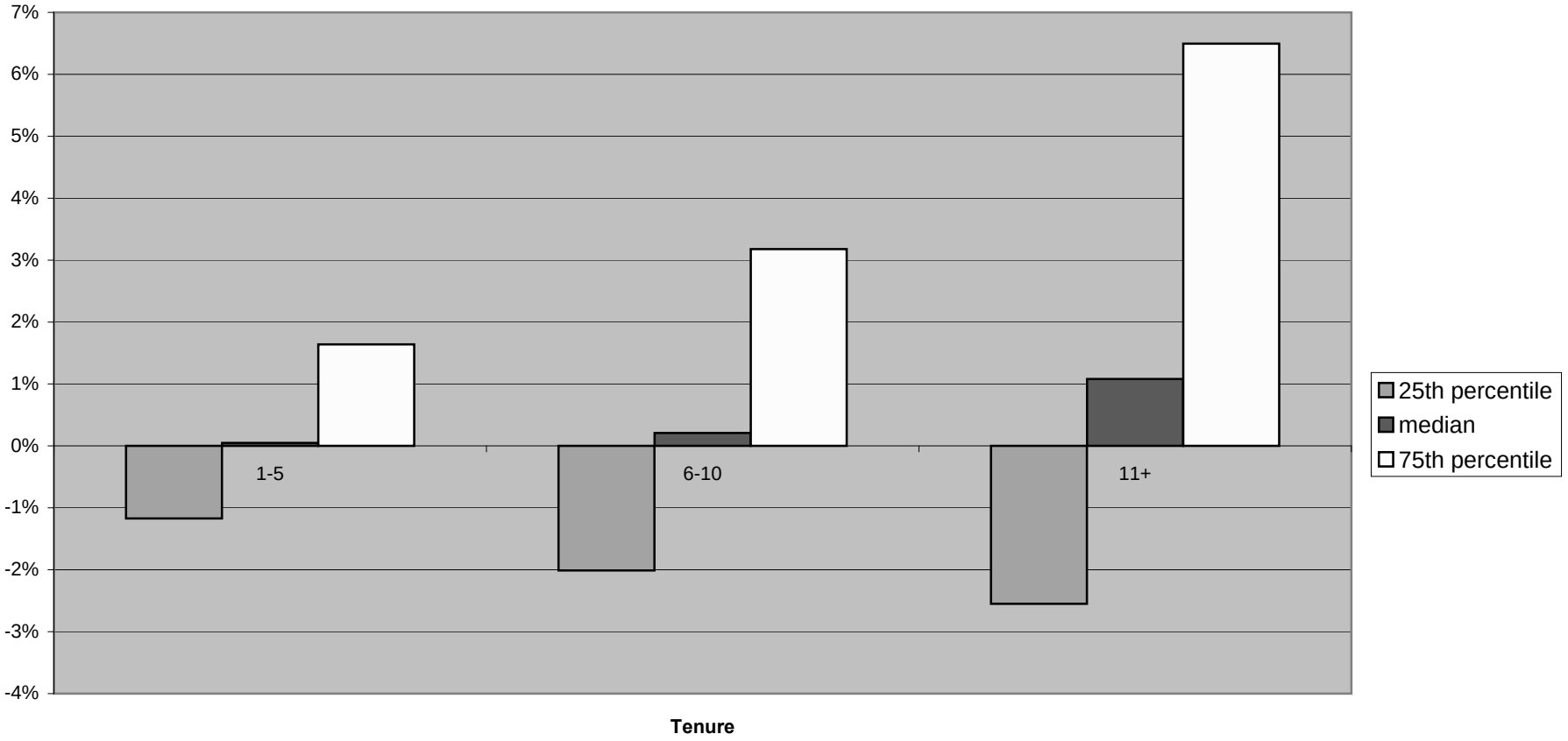
Source: Author's simulations based on June 16, 2009 modifications to the EBRI/ERF Retirement Security Projection Model. For additional detail on the model, see VanDerhei and Copeland, "The Impact of PPA on Retirements Savings for 401(k) Participants," EBRI Issue Brief, June 2008

Figure 18: Increase in balances (401(k) + rollover IRA) at retirement age as a function of initial equity allocation in average target date vs participant direction: Participants ages 45 and older



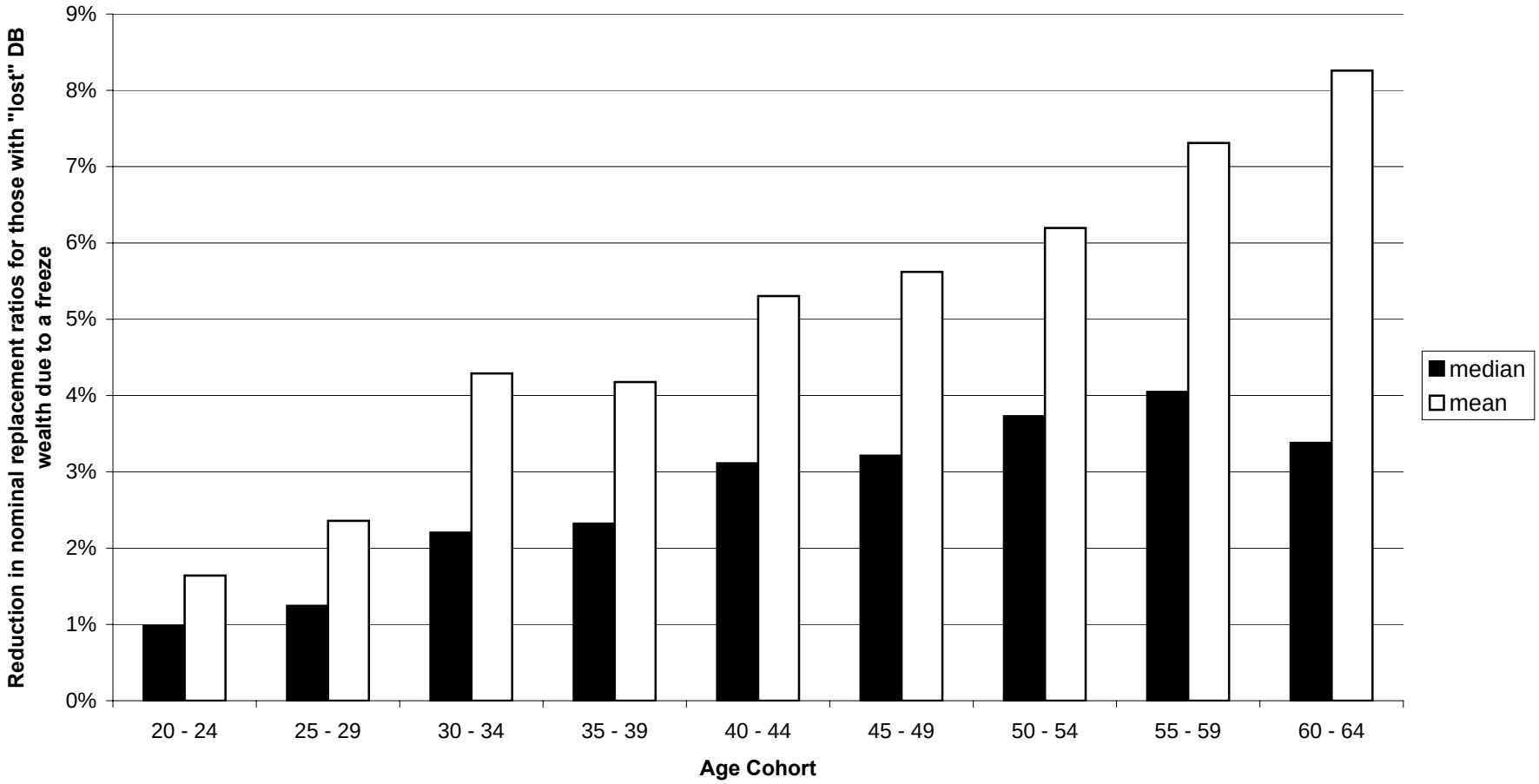
Source: Author's simulations based on June 16, 2009 modifications to the EBRI/ERF Retirement Security Projection Model. For additional detail on the model, see VanDerhei and Copeland, "The Impact of PPA on Retirements Savings for 401(k) Participants," EBRI Issue Brief, June 2008

Figure 19: Increase in balances for those assumed to cash out when they change jobs as a function of tenure in average target date vs participant directed



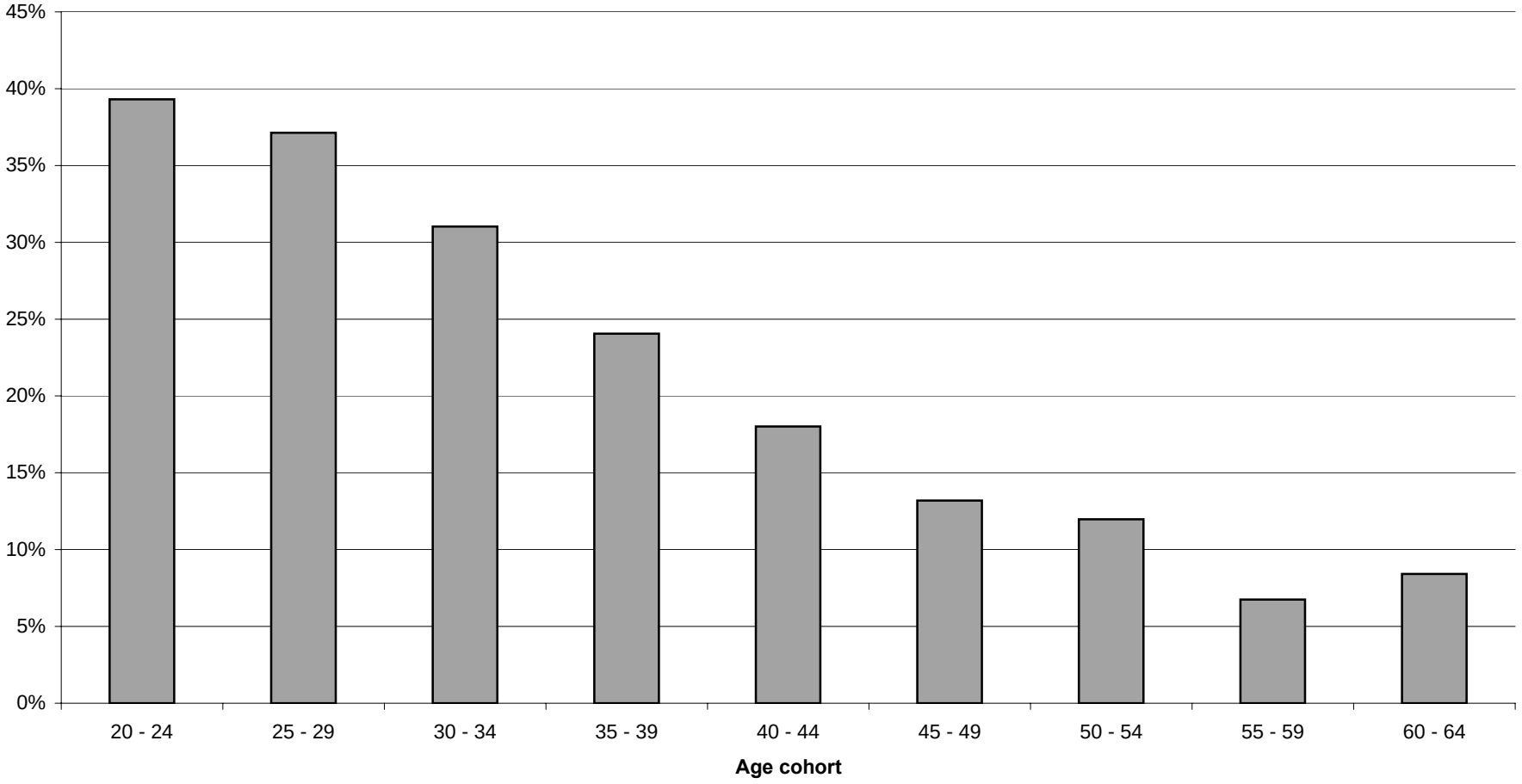
Source: Author's simulations based on June 16, 2009 modifications to the EBRI/ERF Retirement Security Projection Model. For additional detail on the model, see VanDerhei and Copeland, "The Impact of PPA on Retirements Savings for 401(k) Participants," EBRI Issue Brief, June 2008

Figure 20: Expected CONDITIONAL percentage point reduction in nominal replacement ratios if all private defined benefit plans were to freeze accruals for NEW employees immediately, by gender and age



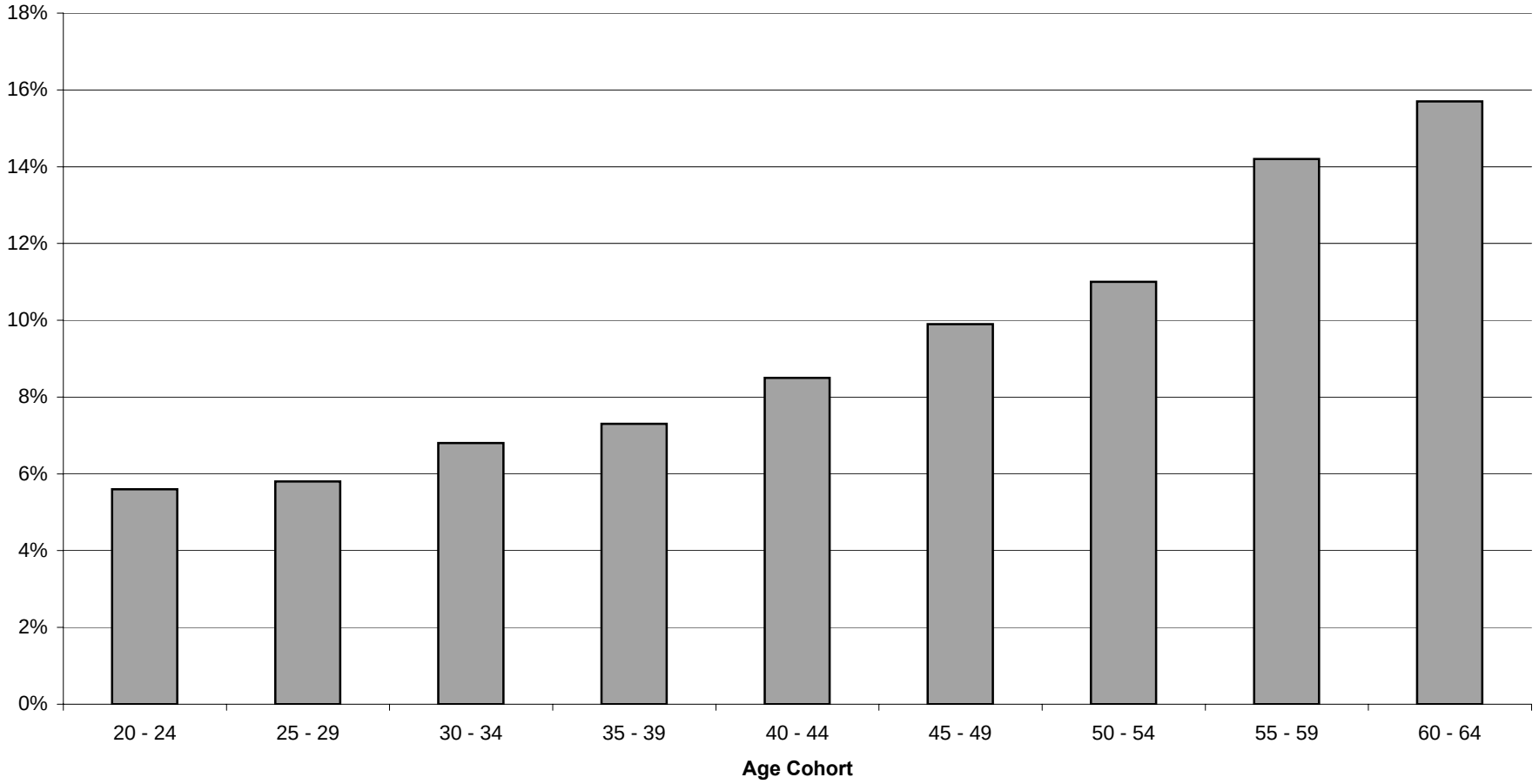
Source: Author's simulations based on April 2009 version of EBRI/ERF Retirement Security Projection Model™

Figure 21: Percentage of those with "lost" DB wealth due to a pension freeze who are expected to have a larger total nominal replacement rate from the DC enhanced contributions (if any)



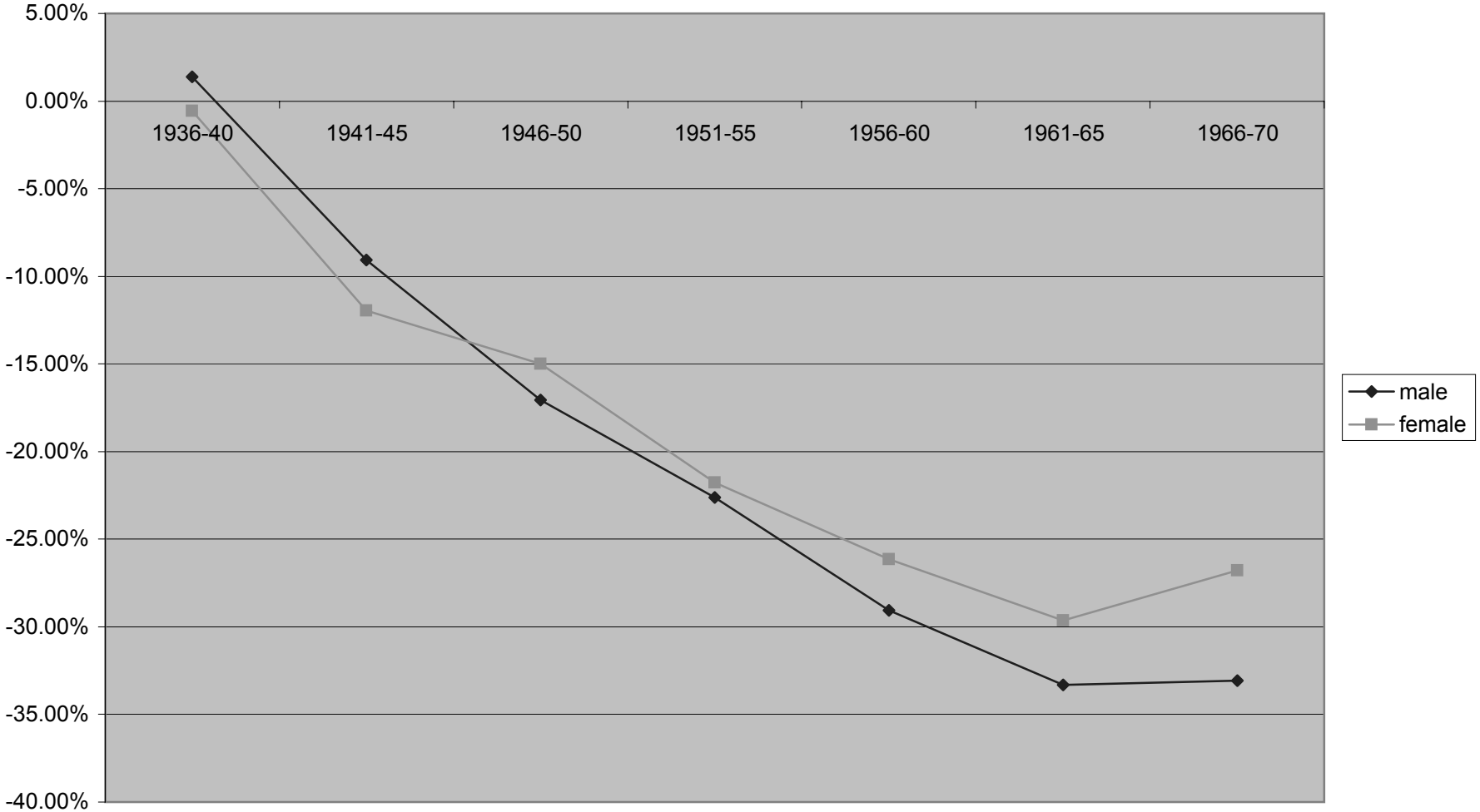
Source: Author's simulations based on April 2009 version of EBRI/ERF Retirement Security Projection Model™

Figure 22: Median percentage of compensation required as an ENHANCED employer contribution for future years covered by a defined contribution plan in lieu of a frozen defined benefit plan for financial indemnification



Source: Author's simulations based on April 2009 version of EBRI/ERF Retirement Security Projection Model™

Figure 23: Expected change in average 401(k) account balances if all participants were to prospectively change to a guaranteed investment yielding 5 percent nominal, by gender and year of birth (see text for assumptions of asset allocation under status quo)



Source: Simulations using the EBRI/ERF Retirement Income Projection Model with modifications as described in author's February 13, 2002 written testimony to the House Education and Workforce Committee's Subcommittee on Employer-Employee Relations.