

October 2005

PRIVATE PENSIONS

Information on Cash Balance Pension Plans





Highlights of [GAO-06-42](#), a report to congressional requesters

Why GAO Did This Study

The nation's private defined benefit (DB) pension system, a key contributor to the financial security of millions of Americans, is in long-term decline. Since 1980, the number of active participants in Pension Benefit Guaranty Corporation (PBGC) insured single employer DB plans has dropped from 27.3 percent of all national private wage and salary workers in 1980, to about 15 percent in 2002, and more recently the PBGC has assumed billions of dollars in unfunded benefit obligations from bankrupt plan sponsors. Some analysts have identified hybrid DB plans like cash balance (CB) plans as a possible means to revitalize this declining system. However, conversions from traditional DB plans to CB plans have sometimes been controversial because of the effect conversions may have on the benefits of workers of different ages.

As House and Senate committees consider comprehensive pension reform legislation that includes efforts to resolve uncertainties about CB plans, GAO was asked to (1) review current research about the implications of CB conversions for employee benefits, (2) describe the prevalence and type of transition provisions used to protect workers' benefits in past CB conversions, and (3) estimate the effects of CB conversions on the benefits of individual participants under a hypothetical conversion to a typical CB plan from a typical traditional DB plan.

www.gao.gov/cgi-bin/getrpt?GAO-06-42.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Barbara Bovbjerg at (202) 512-7215 or bovbjergb@gao.gov.

PRIVATE PENSIONS

Information on Cash Balance Pension Plans

What GAO Found

Current pension and economic literature provides little conclusive evidence about the effects of CB plan conversions on benefits. In many cases, data and other methodological issues (e.g., sampling methods) limit the generalization of results. Nonetheless, cash balance research indicates that the effects of a conversion depend on many factors, including the generosity of the CB plan, transition provisions that might limit any adverse effects on current employees, and firm-specific employee demographics. CB plan conversions are posited to have distributional effects on expected pension wealth: younger, more mobile workers usually benefit while older workers with long job tenure are likelier to experience a loss, particularly if they are nearly eligible for early retirement.

GAO's analysis of a representative sample of plan conversions determined that most conversions occurred between 1990 and 1999 and primarily in the manufacturing, health care, finance and insurance industries. Most conversions set participants' opening account balances equal to the present value of benefits accrued under the previous plan, although the interest rate used to calculate the balance varied around the 30-year Treasury bond rate. Most plans provided some form of transition provisions to mitigate the potential adverse effects of a conversion on workers' expected benefits for at least some employees. About 47 percent of all conversions grandfathered at least some of the employees into the former traditional DB plan. In most cases, grandfathering eligibility was limited to employees meeting a specified minimum age and/or years of service.

GAO's simulations of the effects of conversions on pension benefits show the following:

- In conversions from a traditional DB plan to a typical CB plan, most workers, regardless of age, would have received greater benefits under the DB plan. Unless grandfathered into the former plan, older workers experience a greater loss of expected benefits than younger workers.
- In comparing a typical CB plan to a terminated FAP plan, all vested workers would do better under the CB plan.
- In conversions from a traditional DB plan to a CB plan of equal cost to the sponsor and more generous than the typical CB plan, while more workers at age 30 have benefit increases under the CB plan, this was not true for those at age 40 and 50.
- In comparing an equal cost CB plan to a terminated FAP plan, again all vested workers would do better under the CB plan.
- GAO's comparisons focusing on the lifetime present value of benefits did not change the basic findings of GAO's analysis of monthly benefits.

Contents

Letter		1
	Concluding Observations	8
	Agency Comments	9
Appendix I	Information on Cash Balance Pension Plans	11
Appendix II	Review of Literature on Cash Balance Plans	50
Appendix III	Analysis of Form 5500 Data on Cash Balance Plans	55
Appendix IV	Analysis of Simulated Cash Balance Plans and Traditional Final Average Pay Plans	59
Appendix V	GAO Contacts and Staff Acknowledgments	68
Tables		
	Table 1: Cash Balance Plan Sample Disposition	57
	Table 2: Conversions Costs of Typical Cash Balance Plan by Conversion Age	66

Abbreviations

APS	age plus service
BLS	Bureau of Labor Statistics
CB	cash balance
CBOLT	Congressional Budget Office's long-term social security model
DB	defined benefit
DC	defined contribution
LABOR	Department of Labor
GAM	Group Annuitant Mortality
FAP	final average pay
PBGC	Pension Benefit Guaranty Corporation
PENSIM	pension policy microsimulation model
PSG	Policy Simulation Group
PSID	Panel Study of Income Dynamics
SIPP	Survey of Income and Program Participation
SPD	summary plan description

This is a work of the U.S. government and is not subject to copyright protection in the United States. It may be reproduced and distributed in its entirety without further permission from GAO. However, because this work may contain copyrighted images or other material, permission from the copyright holder may be necessary if you wish to reproduce this material separately.



United States Government Accountability Office
Washington, DC 20548

October 27, 2005

The Honorable George Miller
Ranking Minority Member
Committee on Education and the Workforce
United States House of Representatives

The Honorable Bernard Sanders
Ranking Minority Member
Subcommittee on Financial Institutions
and Consumer Credit
Committee on Financial Services
United States House of Representatives

The Honorable Tom Harkin
United States Senate

The nation's private defined benefit (DB) pension system,¹ a key contributor to the financial security of millions of American workers and their families, is in long-term decline. The number of single employer DB plans has declined dramatically over the past several decades,² from over 95,000 in 1980 to less than 35,000 in 2002, with the number of active participants in such plans dropping from 27.3 percent of all national private wage and salary workers in 1980, to about 15 percent in 2002.³ Structural problems in industries like airlines, steel, and auto parts have led to large bankrupt firms terminating their DB plans, with thousands of workers losing some of their benefits and saddling the Pension Benefit

¹ In DB plans, formulas set by the employer determine employee benefits. DB plan formulas vary widely, but benefits are frequently based on participant pay and years of service.

² Single employer plans provide benefits to employees of one employer or, if under common control, employees of several related employers. Multiemployer plans are DB plans created by collective bargaining agreements covering more than one employer and generally operate under the joint trusteeship of labor and management. These plans cover over 9.7 million participants or about 22 percent of all workers and retirees insured by the Pension Benefit Guaranty Corporation (PBGC). See GAO, *Private Pensions: Multiemployer Plans Face Short and Long-Term Challenges*, [GAO 04-423](#) (Washington, D.C.: Mar. 26, 2004).

³ Pension Benefit Guaranty Corporation, *Pension Insurance Data Book*, (Washington, D.C., 2004).

Guaranty Corporation (PBGC) with billions of dollars in unfunded benefit guarantees.⁴ In response, several congressional committees have proposed comprehensive pension reform legislation that, among other issues, would address the underfunding of single employer defined benefit plans.⁵

Some analysts have identified hybrid DB plans like cash balance (CB) plans as a possible means to revitalize this declining system. CB plans are referred to as hybrid plans because legally they are DB plans but contain certain features that resemble defined contribution plans. Similar to traditional DB plans, CB plans use a formula to determine pension benefits. However, unlike traditional final average pay (FAP) plans that pay retirement benefits on the basis of an annuity amount calculated using years of service and earnings, CB plans express benefits as a hypothetical individual account balance that is based on pay credits (percentage of salary or compensation) and interest credits, rather than an annuity.

In the late 1990s, many pension plan sponsors converted their traditional final average pay plans to CB plans. Conversions to CB plans have been controversial because of the effect they may have on pension benefits of workers of different ages and years of service.⁶ In particular, CB plan conversions can sometimes result in so-called “wearaway” situations where some workers do not earn additional pension benefits while other workers continue to do so.⁷ The legality of CB plans has recently been questioned in a court ruling regarding whether a CB plan is age

⁴ The PBGC is the federal corporation that insures certain benefits of vested participants in DB plans. PBGC insures both single employer and multiemployer defined benefit plans. As of the end of fiscal year 2004, PBGC reported an accumulated deficit in its single employer program of \$23.3 billion. See GAO, *Private Pensions: Recent Experiences of Large Defined Benefit Plans Illustrate Weaknesses in Funding Rules*, [GAO-05-294](#) (Washington, D.C.: May 31, 2005).

⁵ For example, see H.R. 2830 and S. 1783.

⁶ As we noted in past GAO work, plan participants could benefit from receiving clearer information regarding the conversions they face. See GAO, *Private Pensions: Implications of Conversions to Cash Balance Plans*, [GAO/HEHS-00-185](#) (Washington, D.C.: Sept. 29, 2000) and *Cash Balance Plans: Implications for Retirement Income*, [GAO/HEHS-00-207](#) (Washington, D.C.: Sept. 29, 2000).

⁷ See GAO, *Private Pensions: Implications of Conversions to Cash Balance Plans*, [GAO/HEHS-00-185](#) (Washington, D.C.: Sept. 29, 2000).

discriminatory.⁸ Employers report this legal uncertainty has made CB plan conversions less popular than in the past. In 2000, we reported on the implications of conversions to CB plans and recommended legislative and executive agency actions to address the regulatory uncertainty concerning CB plans and to improve disclosure to affected participants.⁹

In response to the problems facing the DB system, committees in both the House and the Senate have recently proposed legislation that would address many issues facing defined benefit plans, including the legal uncertainty regarding the formation of new CB plans or the conversion of traditional DB plans to CB plans.¹⁰ To help in your deliberations, you asked us to provide information on the incidence, features, and effects of CB plan conversions. More specifically, you asked: (1) What does the current research say about the implications of CB plan conversions for workers' benefits? (2) What is the prevalence and types of transition provisions provided to protect workers' benefits in past conversions to CB plans? (3) How do individual participants fare under a hypothetical conversion to a typical CB plan compared to the typical FAP plan? On September 1, 2005, and again on October 12, 2005, we briefed your staff on the results of our analysis. This report formally conveys the information provided during those briefings. (See app. I).

To determine the results of current research, we conducted a review of academic and business literature regarding CB plans and the conversion of traditional DB plans to CB plans. To identify the prevalence and types of transition provisions in CB plans, we worked with the 2001 Form 5500 to

⁸ See *Cooper v. IBM Pers. Pension Plan*, 274 F.Supp.2d 1010 (S.D. Ill. 2003). Compounding this uncertainty, in September 1999, the Internal Revenue Service announced that it would begin requiring that applications for the approval of cash balance formula designs be forwarded to its headquarters for technical review, resulting in an effective moratorium on approving conversions to cash balance plans.

⁹ For more information, see [GAO/HEHS-00-185](#) and GAO, *Cash Balance Plans: Implications for Retirement Income*, [GAO/HEHS-00-207](#) (Washington, D.C.: Sept. 29, 2000).

¹⁰ See for example, H.R. 2830 and S.1783.

identify and examine CB plan conversions for their design features.¹¹ We first identified all 843 plans with 100 or more participants that indicated a CB or hybrid plan component on Form 5500. We then selected a random sample of 205 of these plans. Our sample was comprised of the 45 largest plans (the smallest of which has about 17,500 participants) and a random sample of 160 other plans.¹² Of these 205 plans, we identified 31 large plans and 102 smaller plans as conversions from traditional DB plans to CB plans. (For our methodology, see apps. II, III and IV.)

To analyze the effects of a CB plan conversion on individual workers, we used a pension policy microsimulation model (PENSIM). PENSIM simulates lifetime retirement benefits for over 100,000 participants in the 1955 birth cohort. We calculated and compared monthly retirement income for workers from the 1955 birth cohort who are projected to be alive at age 68, and vested in a job covered by a typical FAP plan that is converted to a CB plan. The model allows comparison of benefits received from CB plans and ongoing traditional FAP plans, as well as terminated FAP plans.

We conducted four simulations:

- typical CB plan versus typical FAP plan,
- typical CB plan versus terminated FAP plan,
- equal cost CB plan versus typical FAP plan, and
- equal cost CB plan versus terminated FAP plan.

Plan characteristics for the traditional FAP plan and typical CB plan were based on Bureau of Labor Statistics' (BLS) employee compensation and benefit data, our analysis of CB conversions as designated in the 2001

¹¹ The Form 5500 contains considerable information on plan assets, liabilities, contributions, design features, including whether a plan is a cash balance plan. Although the Form 5500 provides the most comprehensive data, its problems are well documented. Our analysis focused on the features of the CB plan at the time of conversion and thus would not include information on how these plans might have been amended since that date. It is possible that some sponsors have amended their plans since the initial conversion, in light of employee reactions and recent court decisions. Also, it is possible that some sponsors have changed other employee benefit plans to help mitigate the potential reduction in some workers' future benefits resulting from a CB plan conversion, but determining the nature and extent of such changes was outside the scope of our work.

¹² Estimates based on our random sample of plans are subject to sampling error. We are 95 percent confident that the true population values are within +/- 9 percentage points of the estimated percentages.

Form 5500 data base and discussions with industry actuaries and consultants knowledgeable about CB plans and DB plans generally. We developed the features of our equal cost CB plan by starting with the design features of the typical CB plan and then increasing both the base pay credit and the weighted pay credits (a percentage of pay that increases as an employee's age and/or years of service increase) until the cost was equivalent with a traditional FAP plan with a workforce of identical actuarial, demographic, and labor market characteristics. (See slides 19 to 25 in app. I.) We conducted our work between September 2004 and September 2005 in accordance with generally accepted government auditing standards.

In summary, we found the following:

- The pension and economic literature provides little conclusive evidence about the effects on benefits and other aspects of CB plan conversions, particularly with regard to why sponsors convert to CB plans in the first place. (See slides 9 and 10.) In many cases, data and other methodological issues (e.g., sampling methods) limit the generalization of results. The effects of a conversion depend on a variety of factors including the generosity of the CB plan itself, transition provisions that might limit any adverse effects on current employees,¹³ and firm-specific employee demographics. CB plan conversions are posited to have distributional effects on expected pension wealth: younger, more mobile workers usually benefit while older workers with long job tenure are more likely to experience a loss, particularly if they are near the age and service requirements for early retirement. Less research is available on the actual benefit distributional effects of such conversions, e.g., how participants are likely to fare under a CB plan compared to the traditional DB plan that is being replaced.
- Our analysis of plan conversions determined that most conversions occurred between 1990 and 1999, and primarily in the manufacturing, health care, finance and insurance industries. Most conversions set participants' opening account balances equal to the present value of their accrued benefits under the previous plan, although the interest

¹³ Some firms protected workers against a potential reduction in future benefits by grandfathering, at the time of conversion, all or some plan participants. Grandfathering allows eligible participants to continue to accrue benefits under the prior formula or entails operating both formulas and providing eligible participants with the greater benefit. Grandfathering can be implemented in various ways, affecting different groups of workers.

rate used to calculate the balance varied plus or minus 1 percent of the 30-year Treasury bond rate. (See slides 11 to 18.)¹⁴ The use of interest rates above the 30-year Treasury rate is more likely to result in a wearaway situation, unless otherwise mitigated. Most plans provided some form of transition provisions to mitigate the potential adverse effects of a conversion on workers' expected benefits for at least some employees. About 47 percent of all conversions used some form of grandfathering that was applied to at least some of the employees in the former traditional DB plan.¹⁵ In most cases, grandfathering eligibility was limited to employees meeting a specified minimum age or years of service or both. Most conversions also used some form of ongoing weighted pay credit.

- Our comparison of a typical FAP plan that is converted to a typical CB plan finds that, regardless of a worker's age, more workers would have received greater benefits under the FAP than under the typical CB plan.¹⁶ (See slides 26 to 28.) For workers who receive less under the CB conversion, median benefit decreases range from \$59 per month at age 30 to \$238 per month at age 50. For the workers who receive more under the conversion, median benefit increases range from \$15 per month at age 30 to \$27 per month at age 50.¹⁷ Those who experience either benefit increases or decreases are more likely to be men, except for those at the age 50 conversion, where they are more likely to be women.

¹⁴ IRC section 417(e)(3) stipulates that DB sponsors that permit lump sum distributions must, among other conditions, calculate distributions to departing participants using an interest rate no greater than 30-year Treasury rate. Using a higher interest rate would result in a lower lump sum distribution.

¹⁵ There is a range of types of grandfathering that can be used by plan sponsors. They can include provisions such as giving employees a choice of whether to stay in the old FAP plan or join the new CB plan, providing a minimum benefit where the employee is guaranteed to at least earn the benefit of their former plan until a future specified date, or making grandfathering available to only some or all employees in the former plan.

¹⁶ These comparisons are based on amounts of annuity benefits and do not take into account death benefit coverage before an annuity begins. For the purpose of this report, it is recognized that participants do not have an entitlement to future or expected benefits.

¹⁷ We also conducted a comparison of lifetime benefits for workers under a traditional FAP and those converted to a typical CB plan as well as to an equal cost CB plan. In these cases, while the number of workers faring better under the CB plans is greater at each age compared to the numbers in the monthly benefits calculation, the basic results found under the monthly benefit comparison are not changed in either case. (See slides 31-32, 38-39.)

-
- In comparing a conversion to a typical CB plan with a terminated FAP, all vested workers would do better under the CB plan. Median monthly benefits increase at conversion ages 30, 40, and 50, with increases ranging from \$150 per month for conversions at age 30 to \$305 per month for conversions at age 50. (See slides 29 to 30.) The increase in benefits for older workers is because grandfathered benefits are included in these results. Although the analysis focuses on vested workers at the time of conversion, under a terminated FAP plan, by law all previously unvested workers (those with less than 5 years service) are immediately vested.¹⁸
 - Under a traditional FAP plan conversion to an equal cost CB plan, larger numbers of workers at all ages have benefit increases than under the typical CB plan/FAP plan scenario.¹⁹ (See slides 33 to 35.) Grandfathering again protects the benefits of those older workers who were covered. However, while more workers who are converted at age 30 fare better under the CB plan, this was not true at other ages. A key factor is the greater generosity of the equal cost CB plan compared to the typical CB plan we also simulated.²⁰ Under the equal cost scenario, median reductions range from \$75 per month for conversions at age 30 to \$128 per month for conversions at age 50, while median increases range from \$90 per month for conversions at age 30 to \$29 per month for conversions at age 50. For all conversion ages, those with longer job tenure and who are not covered by grandfathering protections are more likely to lose than those workers with shorter tenure. At each conversion age, a greater percentage of those who are more likely to experience benefit increases are men rather than women.
 - In comparing a conversion to an equal cost CB plan with a terminated FAP plan, again all vested workers do better under the CB plan. Median increases range from \$283 per month for conversions at age 30 to \$396 per month for conversions at age 50. (See slides 36 to 37.) The increase in benefits for older workers comes about because grandfathered benefits are included in these results.

¹⁸ In our simulations, about 36 percent of our sampled individuals (57,049) who participated in at least one private sector FAP or CB plan never vested in such plans.

¹⁹ Again, these comparisons are based on amounts of annuity benefits and do not take into account death benefit coverage before an annuity begins.

²⁰ This plan's pay credits were more generous than virtually all of the 136 plan conversions we analyzed.

Concluding Observations

Our analysis illustrates one of the difficult choices facing the Congress in crafting comprehensive DB pension reform legislation, including the controversial issues surrounding the legal status of CB plans, and particularly CB conversions. The current confusion concerning CB plans is largely a consequence of the present mismatch between the ongoing developments in pension plan design and a regulatory framework that has failed to adapt to these designs. Although CB plans legally are DB plans, they do not fit neatly within the existing regulatory structure governing DB plans. This mismatch has resulted in considerable regulatory uncertainty for employers as well as litigation with potentially significant financial liabilities. For many workers, this mismatch has raised questions about the confidence they may have in the level of income they expect at retirement, confidence that has already been shaken by the termination of large pension plans by some bankrupt employers.²¹

CB plans may provide more understandable benefits and larger accruals to workers earlier in their careers, advantages that may be appealing to a mobile workforce. However, conversions of traditional FAP plans to CB plans redistribute benefits among groups of workers and can result in benefits for workers, particularly those who are longer tenured, that fall short of those anticipated under the prior FAP plan. Our simulations suggest that grandfathering plan participants who are being converted can protect those workers' expected benefits, and, in fact, such protections, in some form, are fairly common in conversions. Our simulations also show that without such mitigation, many workers can receive less than their expected benefits when converted from a traditional FAP plan, even in cases where the CB plan is of equal cost to the FAP plan it is replacing. As a result, as we noted in our 2000 report,²² additional protections are needed to address the potential adverse outcomes stemming from the conversion to CB plans. For example, requirements for setting opening account balances could protect plan participants, especially older workers, from experiencing periods of no new pension accruals after conversion while other workers continue to earn benefits.

Our simulated comparison of CB plans with the termination of a FAP plan leads to several important observations. First, the immediate vesting of all unvested workers requirement in a plan termination actually leads to a greater number of workers getting some retirement benefits and highlights

²¹ See [GAO-05-294](#).

²² See [GAO/HEHS-00-185](#).

the portability limitation of DB plans. Workers in an ongoing DB plan only receive benefits if they are vested. Appealing to a mobile workforce would seem to place an even greater significance on pension portability. Yet even CB plans, which often feature lump sum provisions in their design, do not address this issue because they typically have similar vesting requirements as traditional FAPs.

In our simulations, vested workers under either a typical or equal cost CB plan still fare better than if the FAP plan is terminated. We note further that some sponsors of CB plans have already exited the DB system, a system that has been declining in sponsorship and participation for several decades now. There is a crucial balance between protecting workers' benefit expectations with unduly burdensome requirements that could exacerbate the exodus of plan sponsors from the DB system. Congress, as it grapples with the broader components of pension reform, has the opportunity not only to protect the benefits promised to millions of workers and eliminate the legal uncertainty surrounding CB plans that employers face, but also to craft balanced reforms that could stabilize and possibly permit the long-term revival of the DB system.

Agency Comments

We provided a draft of this report to the departments of Labor, Treasury, and the PBGC. No written comments were provided by these agencies. They did, however, provide technical comments, which we incorporated as appropriate.

We plan to provide copies of this report to the Secretaries of the Department of Labor and the Department of Treasury and to the Pension Benefit Guaranty Corporation and interested congressional offices. We will make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

If you have any questions concerning this request please contact me at (202) 512-5932. Other major contributors to the report are listed in appendix VI.

A handwritten signature in black ink that reads "Barbara D. Bovbjerg". The signature is written in a cursive style with a large, stylized 'B' and 'D'.

Barbara D. Bovbjerg
Director, Education, Workforce
and Income Security Issues

Appendix I: Information on Cash Balance Pension Plans



Objectives

- I. Literature Review: Evaluate current research on the implications of cash balance (CB) plan conversions
 - II. Plan Analysis: Review CB plans for the prevalence and types of transition provisions provided to protect workers' benefits when converting to CB plans
 - III. Simulations: Analyze how participants may fare under hypothetical CB plan conversions compared to the typical final average pay (FAP) plan and to a terminated FAP plan.
-



Background

- CB pension plans:
 - Are a type of hybrid defined benefit (DB) plan that expresses benefits as a hypothetical account balance based on pay, service, and interest credits.
 - Are classified as DB plans because participants' benefits are determined by a benefit formula.
- FAP plans are a type of DB plan where participants' benefits are derived from a formula that is based, in part, on the employee's final average pay.



Background, cont.

- Some conversions to CB plans have been controversial because of the effect they may have on pension benefits of workers with different ages and years of service. At the same time, CB plans have been noted for providing lump sum benefits that can be rolled over upon separation and providing benefit accruals based on pay and length of service.
- Wearaway periods: CB plan conversions can sometimes result in situations where some workers do not earn additional pension benefits while other workers continue to do so.
- Wearaway can occur for a variety of reasons. Examples of when wearaway can occur are:
 - At conversion when a participant's hypothetical opening account balance is set at less than the present value of the prior accrued benefits (the level of benefits received if paid out as a lump sum).
 - After conversion because of a fall in the federally mandated discount rate used to determine a lump sum amount.
 - In relation to annuity benefits earned as of conversion. It is dependent on the the form of annuity selected by the participant and the design of early retirement benefits in the prior plan's formula.



Background, cont.

- During wearaway, pay and interest credits do not represent new benefit accruals until the CB account exceeds the value of benefits that could be paid under the old plan.
 - Wear-away periods tend to be longer for older workers.
 - Status of CB plans has been questioned after a court's ruling that at least one CB plan is age discriminatory. In late 1999, the Treasury Department stopped issuing IRS determination letters approving CB plan conversions.
 - Proposed pension reform legislation includes provisions that could clarify some legal issues concerning CB plans.
 - Some analysts believe that CB plans represent a potential opportunity to stem the decline or even revitalize the declining DB system.
-



Methodology

- I. Conducted review of academic and business literature.
- II. Analyzed Form 5500¹ information and attachments from 2003 and earlier years capturing design features of CB plan conversions at the point of the initial conversion. Initial conversions from a traditional DB plan to a CB plan with most covering the period from early 1990s to 2003 with a few plan conversions in the mid 1980s. Subsequent changes to CB plans' design were not part of the analysis nor were changes made to other plan benefits.
 - Identified 843 plans with 100+ participants that indicated CB on Form 5500
 - Selected the 45 largest plans (1.8 million participants) and a random sample of 160 other plans
 - Of these 205 plans, 31 large plans and 102 smaller plans met criteria as conversions

¹The Form 5500 Report, which is completed and filed by the Plan sponsor, is the primary source of information for both the federal government and the private sector regarding the operation, funding, assets, and investments of private pension plans and other employee benefit plans. The Form 5500 does not provide enough detail to determine the number of participants affected by a conversion.



Methodology, cont.

- Estimates are based on a random sample of plans, so slightly different estimates could result from a different random sample. We are 95% confident that the true population values are within +/- 9 percentage points of the estimate percentages based on our sample.
- III. Simulate effects of a conversion to a CB plan and other scenarios – Used a pension policy micro-simulation model (PENSIM).
- Model simulates lifetime retirement benefits for over 100,000 participants in the 1955 birth cohort. Lifetime and monthly retirement income is analyzed for those who are:
 - projected to be alive at age 68, and
 - vested in a job covered by a typical FAP plan that is converted to a CB plan (typical or equal cost).
 - Model allows comparison of benefits received from CB plans, ongoing traditional final average pay plans, and terminated FAPs.
 - See appendixes II, III, and IV for a discussion of our methodology.
-



Summary of Findings

- I. Literature provides few generalizable conclusions, particularly with regard to:
 - why sponsors convert to CB plans
 - the benefit distributional effects of such conversions.

 - II. Analyzed plan conversions show most, but not all:
 - converted accrued benefits into an opening account balance and offered some form of transition provisions.
 - had age and service eligibility restrictions on transition provisions.
-



Summary of Findings, cont.

- III. Regardless of age, workers who were converted from an FAP plan to a typical CB plan generally had reductions from expected FAP benefits. A majority of younger workers received larger benefits under a conversion to an equal cost CB plan.
- Analysis of lifetime benefits under a conversion to an equal cost CB plan does not change basic findings.
 - Vested workers receive larger benefits under a CB conversion of either type compared to benefits received under termination of an FAP.



I. Literature Review

Research Provides Limited Evidence to Generalize About CB Conversions

- Data and other methodological issues (e.g., sampling methods) limit generalization of results.
- Conversion impact depends on a variety of factors including plan generosity, transition provisions, and firm specific employee demographics.
- Also, because of the different accrual patterns in a CB plan compared to a FAP plan, for a variety of workers, the impact of a conversion varies.



I. Literature Review

Research Provides Limited Evidence to Generalize About CB Conversions, cont.

- Current research provides limited evidence as to:
 - Why sponsors convert to CB plans.
 - How participants are likely to fare under a CB plan relative to the traditional DB plan that is being replaced.
- CB plan conversions have distributional effects on pension wealth:
 - Younger, more mobile workers who vest usually benefit.
 - Older workers with long job tenure likely to experience a loss, particularly if they are near age and service requirements for early retirement.

Note: About 36 percent of our sampled individuals (57,049) who participated in at least one private sector FAP or CB plan never vested in such plans.

10



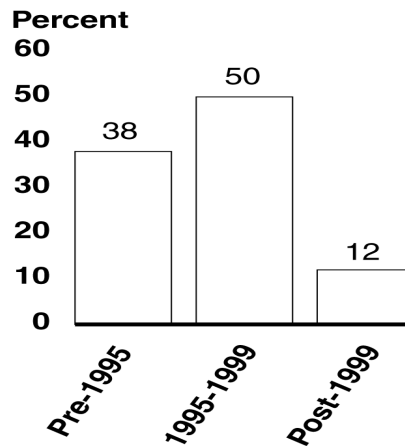
II. Plan Analysis

Figure 1: Characteristics of Conversions

Lead Industries

1. Manufacturing
2. Finance & insurance
3. Health care

Most plans converted prior to 2000



Source: GAO Form 5500 data analysis.

Note: IRS froze determination letter issuance in 1999.



II. Plan Analysis

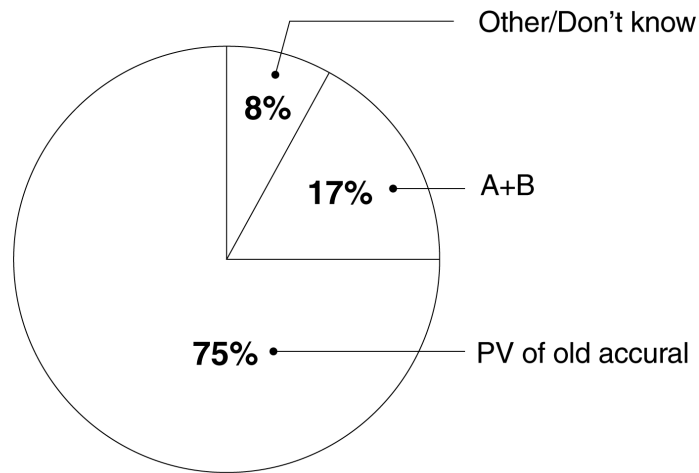
Methods for Determining Opening Account Balances at Conversion

- There were 2 primary methods for setting the opening account balance:
 1. Present Value (PV) of old accrual: account balance is based on accrued benefit at conversion; or
 2. A+B: (A) preserves prior benefits as annuities + (B) CB opening balance is \$0.
- Opening account balance depends on a formula that may include factors such as interest rates, employer-added incentives, early retirement benefits, & other assumptions.



II. Plan Analysis

Figure 2: Most Conversions Set Opening Account Balance at Present Value of Old Accrual



Source: GAO Form 5500 data analysis.



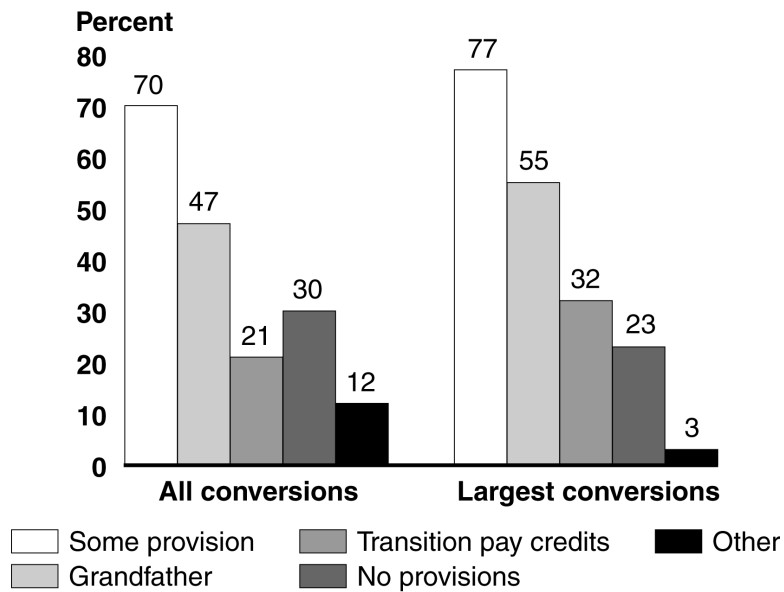
II. Plan Analysis

Conversion Interest Rates and Transition Provisions Are Key Factors in Wearaway

- 23 of 39 plans with data available used conversion interest rates within 1% of the prior month's 30-year Treasury rate
- Wearaway may occur when a participant's hypothetical opening account balance is set at less than the present value of its accrued benefits using 30-year Treasury rate, as specified under the Internal Revenue Code.
- Transition provisions (e.g., grandfathering, transition pay credits) are important factors in mitigating wearaway.
 - Grandfathering prevents wearaway for participants who continue to accrue benefits under the prior plan formula.



Figure 3: Most Sponsors Included Some Form of Transition Provisions



Source: GAO Form 5500 data analysis.



II. Plan Analysis

About Half of Plans Offered Some Form of Grandfathering

- Grandfathering was offered in 47% of all conversions and in 55% of the largest converted plans, although most of these provisions had some form of age or service restrictions.
 - Eligibility requirements in plans offering grandfathering included:
 - age plus service
 - all employees
 - age or service
 - Age plus service was the method most often used.



II. Plan Analysis

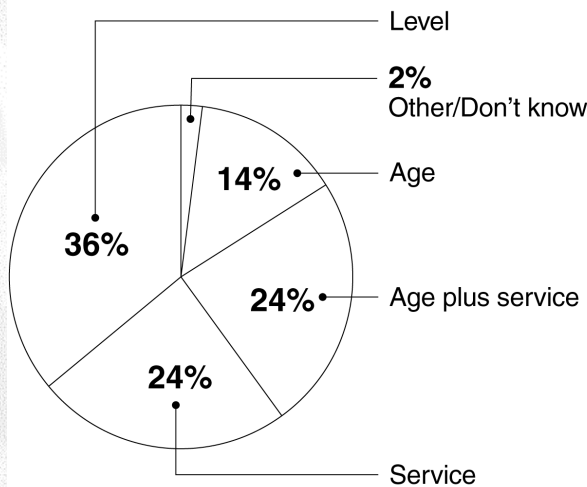
Most Conversions Used Weighted Ongoing Pay Credits

- 62% of all conversions used some form of weighted pay credits (those that increase based on the participant's age and/or service).
- 36% of all conversions used level pay credits (those that are a level function of salary).
- About 42% of large conversions used an age plus service method for providing ongoing pay credits.
- Weighted pay credits tend to benefit older and longer-tenured workers relatively more than level pay credits.

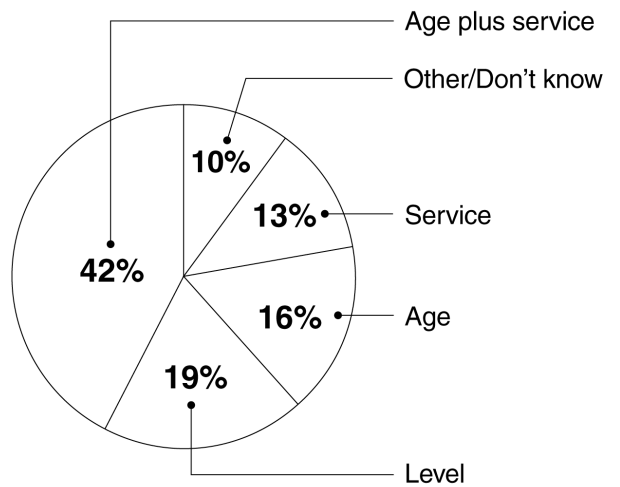
II. Plan Analysis

Figure 4: 36 Percent of All Conversions Used Level Pay Credits

All conversions



Largest conversions



Source: GAO Form 5500 data analysis.

III. Simulations



Simulations of Plan Conversions

- Compare monthly and lifetime retirement income for workers from the 1955 birth cohort who were converted at different ages to a CB plan and were either:
 - Not vested in a typical, traditional FAP plan at the time of conversion but stay on the job and later vest; or
 - vested at the time of conversion in a typical, traditional FAP plan;

- 4 Simulations:
 - Typical CB plan vs. typical FAP plan
 - Typical CB plan vs. terminated FAP plan
 - Equal cost CB plan vs. typical FAP plan
 - Equal cost CB plan vs. terminated FAP plan



III. Simulations

Plan Characteristics: Typical Final Average Pay Plan

- Immediate eligibility and 5-year cliff vesting and normal retirement age 65, early retirement age 55 with 10 years of service with early retirement benefit reduction of 5 percent per year.
- Immediate disability retirement benefits for those vested, no survivors benefits or joint-and-survivor annuities.
- Benefits paid as a nominal annuity (i.e., no benefit COLA).
- Terminal earnings (final pay) is final five-year average.
- Benefits formula is excess integrated with base rate of 1.5 percent of final pay per year of service and has a rate of 0.45 percent of final pay per year of service for those amounts in excess of the social security maximum.
- Typical FAP plan design based on prior GAO reports, literature reviews, and discussions with pension actuaries, consultants knowledgeable about DB plans.



III. Simulations

Plan Characteristics: Typical Cash-Balance Plan

- Immediate eligibility and five-year cliff vesting; base pay credit of 3.0 percent of salary for employee with age-plus-service (APS) \leq 35.
- Pay credit rises gradually until it is 6.0 percentage points above the base pay credit for employee with APS \geq 70.
- Cash-balance account crediting rate is the Treasury rate.
- Employee rolls over account balance at separation and earns Treasury rate. Balances converted to nominal single-life annuity at retirement using the Treasury rate and the GAM 83 mortality table adjusted to the pertinent year.
- Typical CB plan design is based on plans analyzed in GAO's Form 5500 data, and confirmed by pension actuaries, consultants knowledgeable about CB plans.
- Some typical CB plan design features may have changed in light of recent court decisions and congressional interest



III. Simulations

Plan Characteristics: Equal Cost Cash Balance Plan

- Same assumptions as the typical CB plan except:
 - Base pay credit of 7.35 percent of salary for employee with age-plus-service (APS) ≤ 35 .
 - Pay credit rises gradually until it is 6.0 percentage points above the base pay credit for employee with APS ≥ 70 .
- Equal cost CB plan used for our simulations is:
 - More generous pay credits than virtually all plans in our Form 5500 analysis
 - More generous than those specified in pension research
 - Though not explicitly modeled, to some extent, our equal cost cash balance plan could be considered to implicitly include other enhancements made by employers to other benefits, such as those provided by a DC plan, for example.



III. Simulations

Plan Characteristics: Cash-Balance Plan Conversions

- Opening cash balance equal to the present value of accrued final-pay benefit at plan conversion date. Discount rate is the 30-year Treasury rate. Mortality table is GAM 83 projected for mortality improvements to the pertinent year.
- Employees who meet an age-plus-service (APS) \geq 60 eligibility requirement at plan conversion date are grandfathered under the FAP plan and receive benefits according to that plan's provisions.
- Treatment of early retirement benefits:
 - The FAP plan considered in this report has a modest early retirement subsidy: benefits are reduced by 5 percent for each year benefits are claimed before age 65.
 - Federal anti-cutback rules are simulated correctly in that when a FAP plan is converted or terminated, employees who remain with the firm until early retirement age are eligible for early retirement benefits under the old plan.



III. Simulations

Plan Characteristics: Terminated FAP Plan

- Same assumptions as the typical FAP plan and:
 - Terminated FAP plan has immediate cessation of additional benefit accrual.
 - Current law on plan terminations requires “immediate vesting” for “non-vested” workers regardless of years of service. This results in previously ineligible workers now receiving a small benefit.
- Analysis focuses on “vested” workers only -- those with at least five years service.
- FAP plan and termination scenarios provide benchmark range of possible comparisons, including plan freezes

III. Simulations



Monthly Retirement Income Results vs. Lifetime Benefits Results

- Results are shown in terms of present value of lifetime benefits for those alive at age 68 and monthly retirement income for those alive at age 68. Age 68 is the age when the largest number of individuals are retired and alive in our sample.
- Monthly benefit and lifetime benefit comparisons for those alive at age 68 will have slightly different results:
 - For example, vested workers under CB plans who typically separate earlier in their careers may start benefits at a different age compared to similar workers who separate from an FAP plan.
 - Thus, the present value of lifetime benefits paid to these workers under CB plans may be distributed over a different time period than for similar workers under FAP plans. So monthly benefits may be slightly different.



III. Simulations

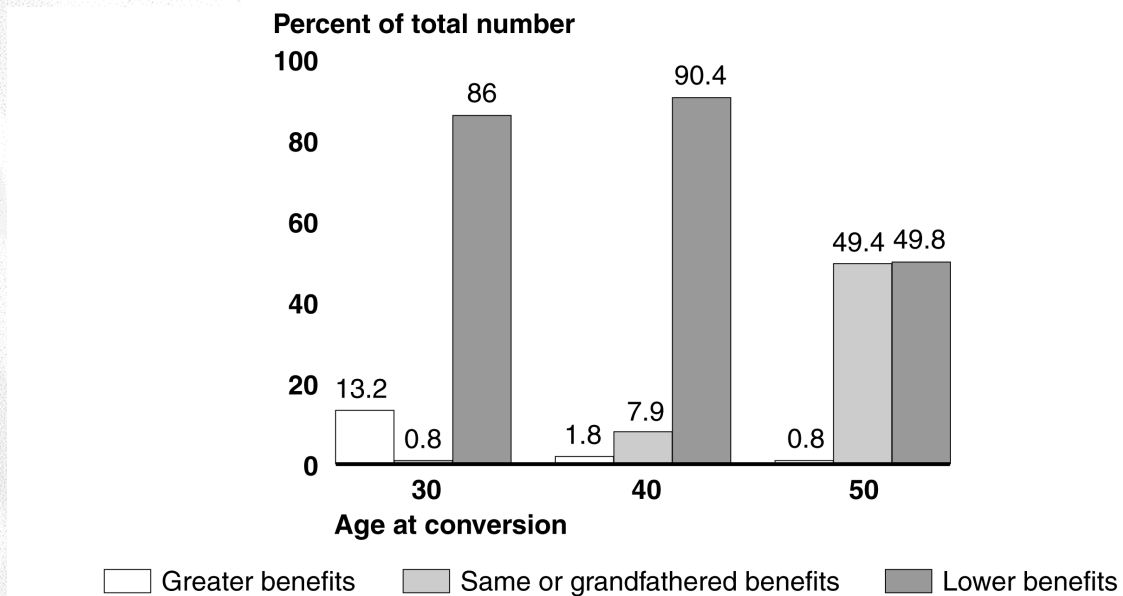
Comparisons of Median Monthly Retirement Income: Typical CB Plan vs. Typical FAP Plan

- Regardless of age at conversion, more workers who are converted from a FAP plan to the typical CB plan experience benefit reductions. (See figure 5).
 - Key factor is lack of generosity of the typical CB plan.
 - Grandfathering protects those workers who meet eligibility requirements.
- For those not grandfathered, at conversion ages 30, 40, and 50: (See figure 6)
 - Reductions in median monthly income range from \$59 for conversions at age 30 to \$238 for conversions at age 50.
 - Increases range from \$15 per month for conversions at age 30 to \$27 per month for conversions at age 50.
- Those who benefit as well as those who lose from conversion at ages 30 and 40 are more likely to be men and at age 50 are more likely to be women.
- At all conversion ages, those experiencing greater benefits from conversion are generally more highly educated and have higher incomes.



III. Simulations

Figure 5: All Conversion Ages in Typical CB Plan More Likely to Have Lower Monthly Benefits Compared to Typical FAP

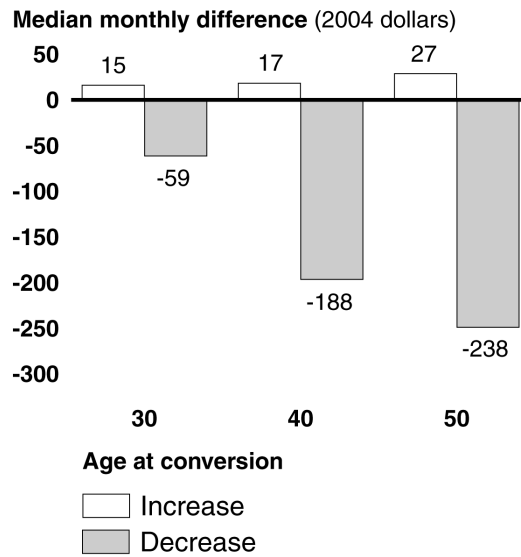


Source: GAO's analysis using the PENSIM model.



III. Simulations

Figure 6: Median Monthly Difference in Retirement Income For Those Not Covered By Grandfathering Under Selected Conversion Ages



Source: GAO's analysis using the PENSIM model.

Median benefits before conversion at age 30 is \$809, at age 40 is \$1083, and at age 50 is \$1323.



III. Simulations

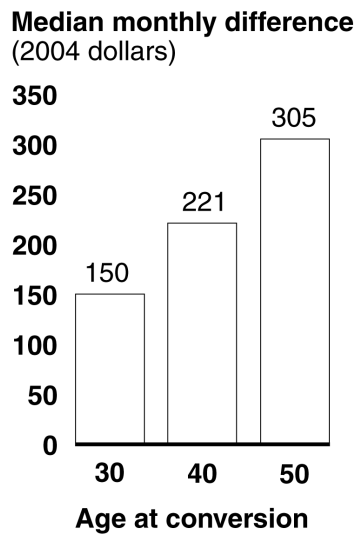
Comparisons of Median Monthly Retirement Income: Typical CB Plan Conversion vs. Terminated Typical FAP Plan

- Regardless of age, all vested workers who converted to a typical CB plan experienced monthly benefit increases compared to a terminated FAP plan.
- At conversion ages 30, 40, and 50, increases range from \$150 per month for conversions at age 30 to \$305 per month at age 50. Grandfathered benefits for those eligible under the CB plan greatly impact results shown for older workers.(See figure 7.)
 - Terminated plan benefits are shown for only those participants who were vested in the typical CB plan.



III. Simulations

Figure 7: Median Monthly Benefits Greater for Typical CB Plan Conversion Than Terminated FAP Plan



Source: GAO's analysis using the PENSIM model.

Median benefits before conversion at age 30 is \$390, at age 40 is \$454, and at age 50 is \$742. These results include grandfathered benefits for those with APS \geq 60. 30



III. Simulations

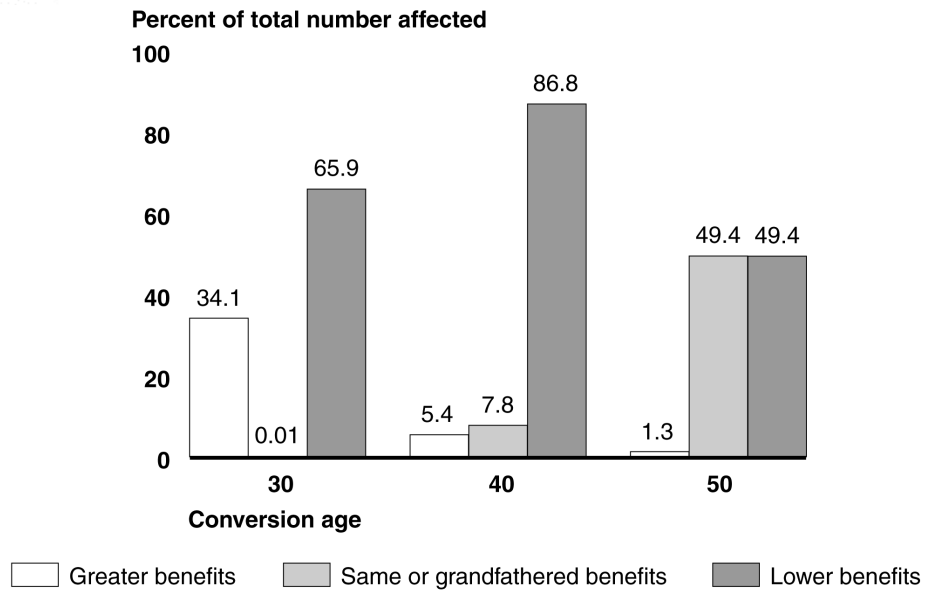
Workers Converted to Typical CB Plan from Typical FAP at Earlier Ages Generally Receive Reduced Lifetime Benefits

- Comparison of lifetime benefits for typical CB plan and typical FAP plan does not change basic findings from monthly benefit comparisons.
 - Regardless of age at conversion, more workers who are converted from a FAP plan to the typical CB plan have lower present value of lifetime benefits. (See figure 8.)
 - Nearly half of workers experiencing a conversion at age 50 are grandfathered in their FAP benefit.



III. Simulations

Figure 8: Present Value of Lifetime Benefits Comparison of Typical FAP vs. Typical CB



Source: GAO's analysis using the PENSIM model.



III. Simulations

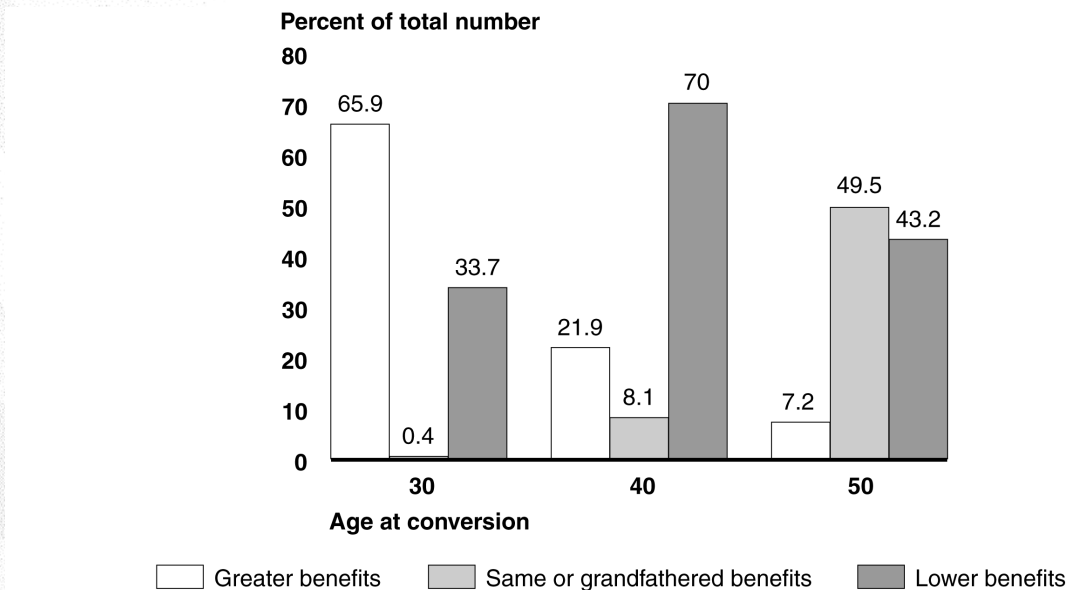
Grandfathering Protects Eligible Older Workers' Monthly Benefits When Converted to an Equal Cost CB Plan from a Typical FAP Plan

- Grandfathering protects eligible older workers' benefits converted to an equal cost CB Plan from a FAP Plan (See figure 9.)
- More workers who converted from a FAP plan to an equal cost CB at age 30 generally experience monthly benefit increases
 - Increases range from \$90 per month for conversions at age 30 to \$29 per month for conversions at age 50. (See figure 10.)
 - Reductions range from \$75 per month for conversions at age 30 to \$128 per month for conversions at age 50.
- For all conversion ages, those with a longer job tenure and who are not covered by grandfathering protections are more likely to experience lower benefits than those with shorter tenure



III. Simulations

Figure 9: Workers Who Convert at Age 30 More Likely to Have Higher Monthly Benefits under Conversion to Equal Cost CB Plan from Typical FAP

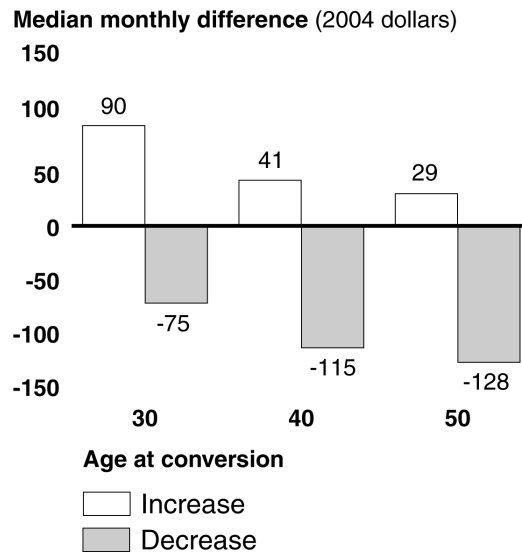


Source: GAO's analysis using the PENSIM model.



III. Simulations

Figure 10: Median Monthly Difference in Retirement Income for Those with No Grandfathering Protection under Various Conversion Ages (2004 \$)



Source: GAO's analysis using the PENSIM model.

Median benefits before conversion at age 30 is \$809, at age 40 is \$1083, and at age 50 is \$1323.



III. Simulations

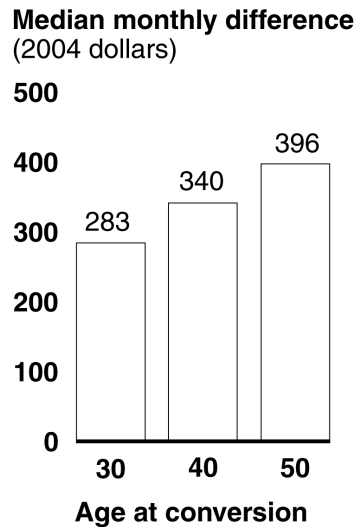
Comparisons of Median Monthly Retirement Income: Equal Cost CB Plan vs. Terminated Typical FAP Plan

- Regardless of age, all vested workers who converted to an equal cost CB plan experience benefit gains compared to a terminated FAP.
- Median increases range from \$283 per month for conversions at age 30 to \$396 per month for conversions at age 50. Grandfathered benefits for older workers under the CB greatly impact results. (See figure 11.)
 - Terminated plan benefits are shown for only those participants who were vested in the equal cost CB plan.



III. Simulations

Figure 11: Median Monthly Retirement Income Greater under Equal Cost CB Plan Conversion Than Terminated FAP Plan



Source: GAO's analysis using the PENSIM model.

Median benefits before conversion at age 30 is \$390, at age 40 is \$454, and at age 50 is \$742. These results include grandfathered benefits for those with APS \geq 60.



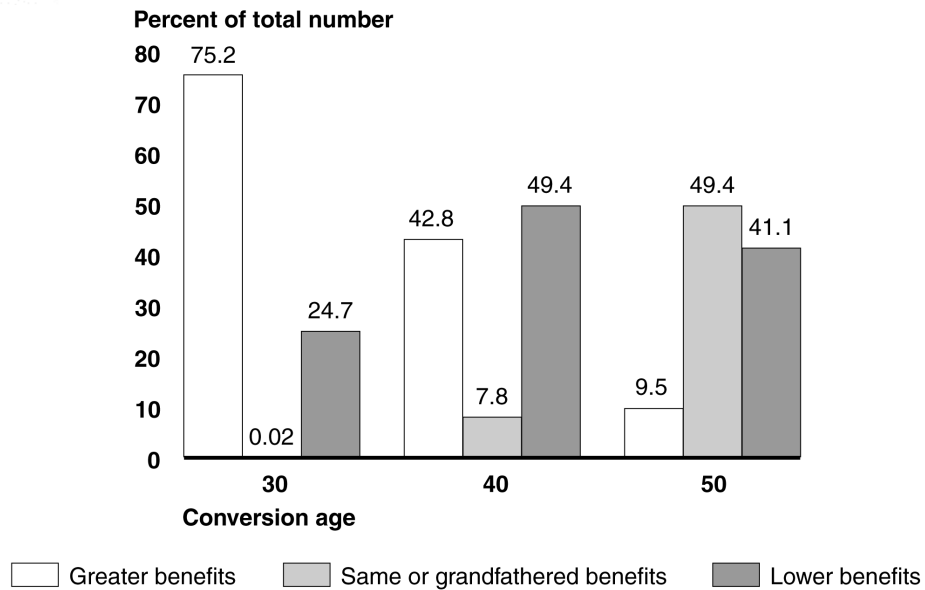
III. Simulations

Workers Converted to Equal Cost CB Plan from Typical FAP at Age 30 Receive Greater Lifetime Benefits

- Comparison of lifetime benefits for equal cost CB plan and typical FAP plan consistent with basic findings from monthly benefit comparisons (See figure 12).
 - More workers converted to an equal cost CB plan from a typical FAP at age 30 receive greater present value of lifetime benefits through conversion than would at later conversion ages.
 - Nearly half of workers experiencing a conversion at age 50 are grandfathered in their FAP benefit, while a significant number (41%) of unprotected workers converted at age 50 experience a lower present value of lifetime benefits.
 - Outside of grandfather protections, results show a redistribution of benefits from older workers to younger workers.

III. Simulations

Figure 12: Present Value of Lifetime Benefits Comparison of Equal Cost CB vs. Typical FAP



Source: GAO's analysis using the PENSIM model.

Appendix II: Review of Literature on Cash Balance Plans

GAO compiled a comprehensive list of the academic literature on CB pension plans since our last reports on the subject issued in 2000,¹ focusing on those studies that contained original and material empirical work on the issue. After constructing a list of the relevant literature, we eliminated partial or incomplete studies, those that did not contain material empirical work and those that exhibited serious methodological concerns. We then conducted a more detailed review of the remaining studies, including several surveys of CB plans. The review concentrated on the studies' findings and on the methodological issues that may limit conclusions that can be reached. There is a list of the studies and surveys reviewed for this report at the end of this appendix.²

Although there are academic studies that attempt to go beyond anecdotal information, the literature remains in its infancy. Data and other methodological issues often limit the conclusions that the empirical studies examining the impact of plan conversions can reach and, the ability to generalize their results. In general, the results of all studies are sensitive to assumptions regarding earnings growth, interest rates, investment returns, and turnover rates. Because some specifics of the simulations presented in some studies do not include sufficient detail, it is difficult to evaluate the quality of the estimates in some cases.³

¹ See GAO, *Cash Balance Plans: Implications for Retirement Income*, [GAO/HEHS-00-207](#) (Washington, D.C.: Sept. 29, 2000) and GAO, *Private Pensions: Implications of Conversions to Cash Balance Plans*, [GAO/HEHS-00-185](#) (Washington, D.C.: Sept. 29, 2000).

² Since we focused on empirical literature produced since 2000, we did not include one older study that is cited in the literature in our detailed review (Kopp and Sher, "A Benefit Value Comparison of a Cash Balance Plan with a Traditional Average Pay Defined Benefit Plan," *The Pension Forum* [Society of Actuaries, October 1998]). The study contains data and other methodological limitations, as well as making similar conclusions. For example, because the study examines hypothetical rather than actual plan conversions, it is not clear that the results extend to the broader workforce. Additional limitations include that fact that the authors had limited wage information and therefore relied on simple wage assumptions rather than actual wage histories and did not test the sensitivity of the results to the assumptions made regarding key variables.

³ See for example, Watson Wyatt Worldwide, *The Unfolding of a Predictable Surprise: A Comprehensive Analysis of the Shift from Traditional to Hybrid Plans* (2000) and Robert Clark, and Sylvester Schieber, "The Transition to Hybrid Pension Plans in the United States: An Empirical Analysis," *Private Pensions and Public Policies*, eds. W. Gale et al. (Washington, D.C.: Brookings Institution, 2004).

Lack of Available Data Limits Empirical Studies

Because of the limited availability of data on actual conversions and on the workforce associated with a particular conversion, few empirical studies have the ability to examine actual conversions.⁴ Because a range of factors that are unique to each conversion influence the final impact on workers—including demographic characteristics, the transition benefits offered during the conversion and the generosity of the new CB plan relative to the old plan it is replacing—it is difficult to extend the results of the literature to the actual experience of workers. For example, in the conversion to a new plan, a sponsor may eliminate early retirement subsidies—a significant reason why older workers may receive lower benefits. Similarly, some employers may offer transition benefits that can help to ameliorate the adverse effects of plan changes on the more senior segment of the workforce, while others do not. Other studies focus on “hypothetical” or “prototypical” workers instead of actual employees and therefore cannot make definitive statements about many segments of the population or actual workers in the plans analyzed.⁵

In addition, the majority of the research simulates the effects of plan conversions on the workforce assuming that the conversion is cost neutral (the cost of the new CB plan is equal to the cost of the old DB plan so that overall pension benefits remain constant). However, some research suggests that the retirement benefit implications due to a shift to a less generous CB plan differ materially from the effects of a cost-neutral conversion.⁶ Moreover, several studies were limited to plans that include transition benefits that often ensure that existing workers do not suffer significant losses in pension wealth during plan conversions and exclude

⁴ Virtually all researchers studying this issue, including GAO, have suffered these data limitations.

⁵ The use of hypothetical workers is also a limitation of prior GAO reports on cash balance plans. See [GAO-02-207](#) and [GAO-00-185](#).

⁶ See, for example, Watson Wyatt Worldwide (2000). In simulating the effects of one conversion to a cost-reducing cash balance plan, the authors find that the majority of workers receive lower benefits. However, another simulation of a shift to a cost neutral plan finds that the majority of the workers receive higher benefits and, although the losses are disproportionately borne by the older workers, they are lower than the losses experienced in the cost-reducing case.

pension wealth on previous jobs.⁷ Thus, their inclusion/omission may lead to a bias in the empirical findings either in favor or against CB plan designs.

Small Sample Size Limits Survey Reports

Some studies examine only a few plan conversions or rely on assumptions based upon information extracted from the limited surveys discussed below. Since the plans analyzed may not be representative, the outcomes may not generalize to the typical CB conversion or related to the broader workforce.⁸

A few widely cited studies which use survey data in an attempt to determine the reasons why employers initiate CB plan conversions contain methodological limitations and base their conclusions on employers' self perceptions along with additional biases, and cannot be extended beyond the small samples of firms studied.⁹ For example, one study is limited by a low response rate (20 percent) and insufficient information about the population and sampling method, survey instrument and its development, while the others raise concerns over the potential for sample bias and/or the additional bias due to the fact that over half of the plans evaluated were those for which the researchers were the primary design

⁷ This pertains to the majority of the literature we reviewed. Although Johnson and Uccello (R.W. Johnson, and C. Uccello, "Cash Balance Plans and the Distribution of Pension Wealth," *Industrial Relations*, 42(4) [2003], 745-773) include pension wealth on previous jobs, analyze actual workers and capture a greater diversity of outcomes, the results do not generalize to cost-reducing plan conversions or conversions where the defined benefit plan incorporated early retirement incentives (see below for more on the cost neutral assumption). Moreover, the pension wealth in cash balance plans may be exaggerated because of issues with the data and the assumptions regarding turnover rates.

⁸ For example, see several studies conducted by Schieber (including Clark and Schieber [2004]) which are derived from data on 77 plans collected and analyzed initially by Watson Wyatt Worldwide in their 2000 study. Given estimates of the number of actual cash balance conversions and their growth since 2000, it is not clear that this work can be used as a reliable guide to gauging the impact of a typical cash balance conversion on workers. Moreover, GAO found other research studies that were based on significantly fewer cash balance conversions, e.g., Clark and F.W. Munzenmaier (R. Clark, and F.W. Munzenmaier. "Impact of Replacing a Defined Benefit Pension with a Defined Contribution Plan or a Cash Balance Plan." *North American Actuarial Journal*, 5 (1). (2003-4): 32-56. (2001).

⁹ See, for example, Watson Wyatt Worldwide (2000); PriceWaterhouseCoopers, *Survey of Conversions from Traditional Pension Plans to Cash Balance Plans* (2000); and Mellon Financial Corporation, *2004 Survey of Cash Balance Plans* (Secaucus, N.J.: 2004).

consultants.¹⁰ In general, we determined that the results from these surveys may not be representative of the population of CB plan conversions and methodological limitations suggest that the results should be interpreted with caution.

Studies and Surveys
Reviewed

Clark, Robert. "Pension Plan Options: Preferences, Choices and the Distribution of Benefits." *Pension Research Council Working Paper*, PRC WP. 2003-24.

Clark, Robert, and Fred W. Munzenmaier. "Impact of Replacing a Defined Benefit Pension with a Defined Contribution Plan or a Cash Balance Plan." *North American Actuarial Journal*, 5 (1). (2003-4): 32-56.

Clark, Robert, and Sylvester Schieber. "The Transition to Hybrid Pension Plans in the United States: An Empirical Analysis." *Private Pensions and Public Policies*, eds. W. Gale et al. Washington, D.C.: Brookings Institution. 2004.

Coronado, Julia, and Philip Copeland. "Cash Balance Pension Plan Conversions and the New Economy." *Federal Reserve Board Working Paper*. November 2003.

D'Souza, Julia, John Jacob, and Barbara Lougee. *Why Do Firms Convert to Cash Balance Pension Plans? An Empirical Investigation*. Cornell University, December 2004.

Johnson, R.W., and C. Uccello. "Cash Balance Plans and the Distribution of Pension Wealth." *Industrial Relations*, 42(4) (2003): 745-773.

Mellon Financial Corporation. *2004 Survey of Cash Balance Plans*. Secaucus, N.J.: 2004.

Niehaus, Greg, and Tong Yu. "Cash-Balance Plan Conversions: Evidence on Excise Taxes and Implicit Contracts." *The Journal of Risk and Insurance*, 72(2). 2005.

PriceWaterhouseCoopers. *Survey of Conversions from Traditional Pension Plans to Cash Balance Plans*. July 2000.

¹⁰ PriceWaterhouseCoopers (2000).

Purcell, Patrick. *Pension Issues: Cash Balance Plans*. Washington, D.C.: Congressional Research Service, August 2003.

Rao, A., L. Higgins, and S. Taylor. "Cash Balance Pension Plans: Good News or Bad News." *Journal of Applied Business Research*, 18 (3). 2002.

Samwick, Andrew, and Jonathan Skinner. "How will 401(k) Plans Affect Retirement Income?." *American Economic Review*, Vol. 94, No.1. March 2004.¹¹

Schieber, Sylvester. "The Shift to Hybrid Pensions by U.S. Employers: An Empirical Analysis of Actual Plan Conversions." *Pension Research Council Working Paper*, PRC WP. 2003-23.

Watson Wyatt Worldwide. *The Unfolding of a Predictable Surprise: A Comprehensive Analysis of the Shift from Traditional to Hybrid Plans*. 2000.¹²

¹¹ Findings of this paper are not directly discussed in this appendix as it involves an assessment of plan conversions from traditional defined benefit plans to defined contribution plans.

¹² Looking at 78 plan conversions, Watson Wyatt Worldwide (2000) found that 56.4 percent of the plans were cost-reducing, 20.5 percent were cost-neutral and 23.1 were cost-increasing. However, when the authors assumed workers took full advantage of the enhancements to the defined contribution plan that occurred contemporaneously with the transition, 44.9 percent of the plans were cost reducing, 17.9 percent were cost neutral and 37.2 percent were cost increasing. This work has led some researchers to deduce that the average cash balance conversion is cost neutral, since the majority of the plans (55.1 percent) were cost-neutral or increasing. However, as we indicated earlier, it is not clear that this small sample of conversions is representative. Also, some recent statistics do not support the assumption of full participation used by Watson Wyatt to incorporate these enhancements. For example, some estimates suggest that a significant percentage of employees do not participate in their 401(k) program at all, and the majority of those that do participate do not maximize the value of the plan. See Congressional Research Service, *Automatic Enrollment in Section 401(k) Plans* (Washington, D.C., Oct. 14, 2004). The CRS found that because enrollment in most §401(k) plans is voluntary, not all workers whose employers offer a plan choose to participate. "The Bureau of Labor Statistics reports that in 2003, 51 percent of workers in the private sector were employed at establishments that offered a defined contribution plan, but just 40 percent of employees at private establishments participated in a plan. Consequently, the participation rate among employees whose employer offered a DC plan was 78 percent." Also see Alicia H. Munnell and Annika Sundén, *Coming Up Short: The Challenge of 401(k) Plans* (Washington, D.C.: Brookings Institution Press, 2004).

The authors conclude that one in four employees do not participate in a 401(k) plan, and less than 10 percent contribute the maximum.

Appendix III: Analysis of Form 5500 Data on Cash Balance Plans

Sample of Cash Balance Plans

To obtain information about CB plan conversions, we reviewed 2001 Form 5500 data for a random sample of CB plans. We drew this sample from the population of plan sponsors that indicated on their Form 5500 that they sponsored a CB plan.¹ The study population consisted of all CB plans as of 2001 having at least 100 active participants, supplemented with an additional 96 CB plans that were identified by PBGC based on 2002 and 2003 data not yet available to the GAO. For the purpose of this report, we excluded plans having fewer than 100 participants in order to focus on the plans with the greatest number of participants.² This resulted in a total of 843 plans in our study population.

We used the Form 5500 as our primary source of information for analyzing the prevalence of transition provisions used by plan sponsors when they converted to a CB plan because it was a cost effective way of obtaining conversion information for a large number of plans. It would have been optimal to obtain summary plan descriptions (SPD) from plan sponsors. However, since plan sponsors are no longer required to file SPDs, direct contact with such a large number of plan sponsors would have been cost prohibitive.³

Although it is the most comprehensive pension data available, using Form 5500 data also presented limitations and weaknesses. We had limited ability to determine the full scope of conversions beyond tax year 2001 since this was the most current and complete 5500 data publicly available from the Department of Labor (Labor) when we began our analysis. In addition, we also had difficulty obtaining Form 5500 filings for some years, particularly from the early 1990s and before. As previously reported by GAO,⁴ statutory reporting requirements, processing issues, and current

¹ The Form 5500 is a disclosure form that private sector employers with qualified pension plans are required to file with the Internal Revenue Service (IRS), Labor's Employee Benefit Security Administration (EBSA), and Pension Benefit Guaranty Corporation (PBGC). This dataset contains all private sector single employer DB plans that are insured by the PBGC.

² There were 1590 plans of any participant size that indicated they were cash balance plans in the Form 5500.

³ Effective August 5, 1997, with the passage of the Taxpayer Relief Act of 1997, plan sponsors were no longer required to file summary plan descriptions or related documents with the Department of Labor. Instead, plans are required to furnish this information only upon request.

⁴ See GAO, *Private Pensions: Government Actions Could Improve the Timeliness and Content of Form 5500 Pension Information*, [GAO-05-491](#) (Washington, D.C.: June 2005).

Labor practices affect the timeliness of the release of available Form 5500 information, in some cases, resulting in a 3-year lag between data reporting and its release. In addition, information provided on the form and attachments proved, in some instances, to be inconsistent from one plan sponsor to another. This inconsistency hampered our data collection efforts, and subsequently, we were unable to provide meaningful results on all of the information our data collection instrument was designed to capture. For example, we found that not all plans reported having a lump sum feature for those who separate before retirement although we believed some of those plans did so. In addition, some plans provided extensive details on discount rates and formulas used in their opening account balance calculations while others provided no information. In situations where we could not find information on the form or its attachments, we recorded this as “information not found.” Finally, although the Form 5500 provides information on the number of active participants in the entire plan, it was often impossible to determine how many of those participants were converted to the CB plan in instances where only certain employee groups were converted. Nevertheless, our estimates are based on plan-level data.

Sample Design

The sample design for this study was a stratified random sample of CB plans, with the 45 largest plans comprising the first stratum, and an additional 160 plans selected from the remaining plans, producing a total sample of 205 plans. Of these sampled plans, we obtained sufficient plan information for 165, we found 21 plans to be out-of-scope for our study (not CB plans), and for 19 plans we could not obtain sufficient information on the plans. Also, of these 205 sampled plans, 7 plans started a new CB plan only for the new employees, while keeping their existing employees in the traditional DB plan. We did not include these plans in our analysis since they were start-up CB plans and not converted CB plans.

This sample disposition information is summarized in table 1.

Table 1: Cash Balance Plan Sample Disposition

Stratum	Population	Sample	Not CB plan ^a	Sufficient information	Converted plan	Insufficient information	Completion rate
1. Largest 45 plans	45	45	2	40	31	3	93%
2. Rest of plans	798	160	19	125	102	16	90%
Total	843	205	21	165	133	19	

Source: GAO analysis of sampled Form 5500 data.

^aSampled plans that were determined to be hybrid plans other than CB plans were outside the scope of this study.

Description of the Review

After obtaining Form 5500s, attachments, and summary plan descriptions where available⁵ for sampled plans, we recorded plan features on a standardized instrument containing 51 questions designed to capture information about

- characteristics of the traditional DB plan, such as the conversion date and the type of DB plan in place before the conversion;
- the conversion such as when it took place, which employees were affected, and the type of transition provisions used; and
- the ongoing features of the CB plan, such as pay credits and interest credits provided at the time of conversion.

Estimates

Estimates of converted CB plans were based on our sample of CB plans. Estimates for this target population were formed by weighting the survey data to account for both the sample design and the completion rate.

Sampling Error

Because we surveyed a sample of CB plans, our estimates are subject to sampling errors that are associated with samples of this size and type. A

⁵ We had some summary plan descriptions available to us as a result of past GAO work on cash balance issues. See GAO, *Private Pensions: Implications of Conversions to Cash Balance Plans*, GAO/HEHS-00-185 (Washington D.C.: September 2000) and GAO, *Cash Balance Plans: Implications for Retirement Income*, GAO/HEHS-00-207 (Washington D.C.: September 2000). We determined that some plans that had supplied summary plan descriptions reviewed in those studies were also included in the sample of this study. In addition, for this study a few plan sponsors provided plan documents upon our request for additional information and information on a few other plans was available via the Internet.

different random sample could produce slightly different estimates. Our confidence in the precision of the results from this sample is expressed in 95 percent confidence intervals. The 95 percent confidence intervals are expected to include the actual results for 95 percent of the samples of this type. We calculated confidence intervals for our study results using methods that are appropriate for a stratified, probability sample. For the percentages presented in this report, we are 95 percent confident that the results we would have obtained if we had studied the entire study population are within ± 9 or fewer percentage points of our results. For example, we estimate that 47 percent of the CB plan conversions offered some form of grandfathering. The 95 percent confidence interval for this estimate would be no wider than ± 9 percent, or from 38 percent to 56 percent.

Nonsampling Error

In addition to sampling error, the practical difficulties in conducting sample file reviews of this type may introduce other types of errors, commonly referred to as nonsampling errors. For example, questions may be misinterpreted, or errors could be made in keying questionnaire data. We took several steps to reduce these errors.

To minimize some of these errors, each completed data collection instrument was verified for accuracy, and a process of content analysis was undertaken to resolve interpretation differences. We performed 100 percent verification of all keypunched questionnaire data. We also traced and verified the data collection instrument to descriptive statistics and output generated by GAO data analyst staff. In the event of changes, the entire verification process was again performed which included 100 percent verification of the new keypunched data, additional content analysis to verify the change being made, and reverifying the output generated by the data analyst staff.

In addition, we were only to record a plan as having a characteristic if evidence of that characteristic was found in the file review. For example, it is possible that some CB plans had transition provisions at conversion that were not clearly indicated in the 5500 files and attachments. We can only conclude that evidence of transition provisions being offered was not found in the 5500 data for this plan.

Appendix IV: Analysis of Simulated Cash Balance Plans and Traditional Final Average Pay Plans

To analyze the effects of a CB plan conversion on individual workers, we used a pension policy simulation model PENSIM.¹ PENSIM is a dynamic microsimulation model for analysis of the retirement income implication of government policies affecting employer-sponsored pensions. The model has been developed by the Policy Simulation Group (PSG) since 1997 with funding by the Office of Policy and Research at the EBSA of the U.S. Department of Labor. To meet GAO's needs for this project the model includes several enhancements that permit the analysis of CB plan conversions.

PENSIM uses discrete event simulation methods to generate a sample of life histories that reflect the effects of individual risks (mortality, disability, earnings, etc.). The likelihood and timing of simulated life events are represented by a variety of probability models, including hazard functions and multinomial logit models that have been estimated using various survey data sets. The timing of job history events and employer pension sponsorship are estimated using longitudinal SIPP data and longer-term longitudinal PSID data. Simulated life histories contain information on educational attainment, disability, mortality, and a complete job history that includes details on earnings and pension accumulation for each job. Details of pension plan(s) covering a worker on a job are assigned using a pension characteristics imputation model, which has been estimated with late-1990s BLS Employee Benefit Survey data.² Life histories simulated by PENSIM generate social security benefit and payroll tax results similar to those generated by the Congressional Budget Office's long-term social security model (CBOLT).

PENSIM simulates the pension accruals of employees as they move from job to job over their lifetime and estimates their retirement income from a lifetime of pension coverage. With its CB plan analysis capability, PENSIM can also simulate changes in retirement income caused by conversions from traditional defined benefit pension plans to CB pension plans. PENSIM produces a large random sample of simulated life histories for people born in a given year and for their spouses who may have been born in a different year. For our report, we do not include spousal benefits in the analysis. The members of the birth cohort sample experience demographic and economic events, the incidence and timing of which vary

¹ For more information on PENSIM, go to <http://www.polsim.com/PENSIM.html>.

² For more information on the pension characteristics imputation model, go to <http://www.polsim.com/penchar.pdf>.

by age, gender, education, disability, and employment status. The types of life events that are simulated in PENSIM include

- demographic events (birth, death);
- schooling events (leaving school at a certain age, receiving a certain educational credential);
- family events (marriage, divorce, childbirth);
- disability events;
- initial job placement;
- job mobility events (earnings increases while on a job, duration of a job, movement to a new job, or out of the labor force);
- pension events (becoming eligible for plan participation, choosing to participate, becoming vested, etc.); and
- retirement events.

This broad scope of simulated life events is necessary in order to simulate lifetime pension accruals with any realism.

Simulated Pension Plans

Three pension plans are used in this study to simulate several kinds of private-sector plan conversions and terminations. The baseline from which the conversion/termination analysis starts is a typical final-pay defined benefit pension plan (“typical FAP”). This typical FAP plan has common private-sector characteristics and a benefit formula that produce an employer cost of providing the pension equal to the average cost of the full variety of final-pay plans observed in BLS Employee Benefit Survey data.³ The second plan considered in the analysis is a typical CB pension plan (“typical CB”) that has been specified to have characteristics found to be typical of the plans we analyzed in the GAO Form 5500 data collection

³ We chose to evaluate the effects of converting or terminating a typical FAP to determine the changes in benefits that would be experienced by those currently participating in a FAP plan. An alternate approach would be to base the typical plan on characteristics of FAP plans that elected to convert or terminate. However, this would have required additional information and analysis related to the individual circumstances of such FAP plans that were outside of the scope of our study. While such an alternative could be used to evaluate the effect of past conversions and terminations on affected participants, the results would be limited in predicting the effect of future conversions or terminations on those currently covered by a FAP pension plan.

conducted as part of this study.⁴ The third plan is a more generous version of the typical CB pension plan (“equal-cost CB”) that has been constructed to have the same employer cost as the typical FP plan.

The typical FAP plan has the following characteristics

- immediate eligibility;
- 5-year cliff vesting;
- normal retirement age of 65;
- early retirement age of 55 with 10 years of service with benefits reduced by five percent for each year of early retirement (i.e., fifty percent reduction at age 55);
- immediate unreduced disability retirement benefit for those who are vested;
- no survivors’ benefit for those who die on the job;
- selection of single-life annuity at retirement (no selection of joint and survivor annuity because study ignores survivors’ benefits);
- benefit paid as a nominal annuity (i.e., no benefit COLA);
- FAP is the highest consecutive five-year average; and
- benefit formula is excess integrated with a base rate of 1.5 percent of final pay per year of service and has a rate of 0.45 percent of final pay per year of service for those amounts over the social security maximum.

The typical CB plan has the following characteristics

- immediate eligibility;
- 5-year cliff vesting;
- base pay credit of 3.0 percent of salary for employee with age plus service of less than or equal to 35;
- pay credit rises gradually until it is 6.0 percentage points above the base pay credit for employee with age plus service greater than or equal to 70 (this results in a maximum pay credit of 9.0 percent of salary);
- interest credit is calculated using current 30-year Treasury rate;

⁴ The typical CB plan features derived from GAO’s Form 5500 data were, in part, established by employee and sample selection weighting. As stated previously in this report, it is not known how many participants of the plan were actually affected by the conversion to a CB plan. However, for the purposes of construction, we applied the employee weights assuming 100 percent of participants were affected. Results for how participants will fare under our typical CB plan, when taken in conjunction with our equal cost CB plan, provide two polar views of how a distribution of individuals may be affected when converted.

- employee always rolls over full account balance into an IRA at job termination;⁵
- rollover account earns current 30 year Treasury rate each year;
- account balances are converted to a nominal single-life annuity at retirement using the treasury rate, current projected mortality rates, and projections of future reductions in mortality. An annuity loading fee was used such that it ensures the provider is solvent (i.e., 1.5 percent for women and 3.0 percent for men);
- at conversion, opening account balance is equal to the statutory present value of accrued benefit under old plan;
- at conversion, employee with age plus service greater than or equal to 60 is grandfathered in old plan so that benefit at job end can never be lower than it would have been if the old plan had continued operating

The equal-cost CB plan has the following characteristics

- same characteristics as the typical CB plan except the base pay credit is 7.35 percent of salary for employee with age-plus-service (APS) ≤ 35 , rather than the 3.0 percent of salary in the typical CB plan, and
- pay credit rises gradually until it reaches a maximum of 6 percentage points above the base pay credit for employee with age plus service greater than or equal to 70.

These three plans are used to simulate the following conversion and termination situations

- typical CB plan versus typical FAP plan;
- typical CB plan versus FAP plan that is terminated with no replacement of any kind;
- equal cost CB plan versus typical FAP plan; and
- equal cost CB plan versus FAP plan that is terminated with no replacement of any kind.

Simulation Assumptions

All PENSIM runs conducted for this study simulate a 3 percent sample of the 1955 birth cohort using historical information through the present and 2004 OASDI Trustees Report intermediate-cost assumptions for the future

⁵ One claimed benefit for CB plans is the ability to rollover account balances upon separation. Our simulation model fully captures this feature. This contrasts with a traditional FAP plan where a participant who leaves before early retirement loses both future final pay increases and the early retirement subsidy.

projection. The resulting cohort sample consists of 151,263 individuals born in 1955 either in the U.S. or elsewhere (and immigrated to the U.S. in a subsequent year).

The PENSIM runs differ only in their assumptions concerning private-sector sponsorship of the typical FAP plan (which is assumed to be offered by all private-sector employers who are simulated to offer a FAP DB plan) and the typical or equal-cost CB plan (which is assumed to be offered by all private-sector employers who are simulated to offer a CB DB plan). The employment history of each individual and coverage/participation in employer-sponsored DB and DC plans are a key component to determining the lifetime benefits for each individual. Pension benefits accumulated as a result of movement to different employers during a person's entire work history is included in reported results. Pension coverage across a lifetime may include participation in a variety of DB and DC plans or no coverage at all. Workers who are not covered under either a private sector FAP or a CB pension plan are excluded from the study analysis. Most of the study analysis focuses on those who have vested in at least one private-sector FAP or CB plan. Public-sector FAP plans are assumed to be unchanged across all runs, and all other types of DB plans (i.e., other than FAP or CB) and all types of DC pension plans in all sectors are assumed to be unchanged across all the runs. Additionally, all the PENSIM runs used in this study contain the exact same life histories and job careers for the cohort sample. That is, the only change that takes place in all PENSIM runs is whether the private sector DB plan is a FAP or a CB plan.⁶ The simulation analysis provides the following general results about the cohort sample

- sample individuals who had at least one private-sector FAP or CB pension plan: 57,049 (100.0 percent);
- sample individuals who never vest in such a plan: 20,274 (35.5 percent);
- sample individuals who vest in such a plan but die before age 68: 6882 (12.1 percent);
- sample individuals who vest in such a plan and live to age 68: 29,893 (52.4 percent);
- of the 29,893, 87.0 percent vest in just one FAP or CB pension plan over their lifetime, while 12.3 percent vest in two plans, and all but three of the rest vest in three such plans; and

⁶ We did not attempt to model any changes in employee behavior that may affect job tenure as a result of a conversion to a CB plan.

- of the 26,018 who vest in just one FAP or CB pension plan, only 10.2 percent accumulate thirty years or more of service on that job.

The study makes four pair-wise comparisons between PENSIM runs: (1) typical CB plan versus ongoing typical FAP plan, (2) equal-cost CB plan versus ongoing typical FAP plan, (3) typical CB plan versus terminated typical FAP plan, and (4) equal-cost CB plan versus terminated typical FAP plan. In each comparison, the difference in lifetime pension income between the two runs is calculated for each sample individual. Lifetime pension income includes all pension benefits earned during a person's career even if they are unaffected by the assumed change in employer pension sponsorship between the two runs. Lifetime pension income is expressed in one of two ways: the present value of all pension income received over the individual's lifetime or the monthly pension income received at age 68. In both cases, the monetary amounts are expressed in 2004 dollars.

The conversion/termination of the typical FAP plan is assumed to occur at one of eight ages: 25, 30, 35, 40, 45, 50, 55, and 60. The entire cohort sample was put through eight separate simulation runs – one simulation run for each age. Results are shown for those who were vested in a job that was caught in a conversion. The conversion provisions (opening balance and grandfathering) described above for the typical and equal-cost CB plans were found to be typical in our analysis of the Form 5500 sample drawn for this study. Based on our Form 5500 sample plan analysis and meetings with consultants who are experts on CB plans, there was concurrence that the opening CB would be equal to the present value of accrued benefit under the old plan at the conversion date. The expected present value of the accrued benefit is calculated using a GAM83 mortality table adjusted to the proper year and the current Treasury rate as the discount rate.⁷ If eligible for grandfathering, an individual receives the higher of two amounts at job termination: the accumulated CB under the new plan and the expected present value of the benefit the individual would have received if the typical FAP plan had not been converted. The expected present value is calculated using the same mortality and discount assumptions as used in the opening balance calculation. All individuals affected by a conversion or termination are covered under the federal

⁷ We have no wearaway—neither initial nor inadvertent wearaway, or any other form—in our modeling.

anticutback rules. The PENSIM runs use these same mortality and discount assumptions for the anticutback calculations.

Employer Cost Estimates

The employer cost of sponsoring a pension plan is defined as the percentage ratio of the present value of benefits paid to all individuals who worked on a job where that pension plan was sponsored and the present value of earnings paid to all individuals who worked on a job where that pension plan was sponsored. The present value calculations use Treasury rates to discount both the benefit and earnings cash flows. For a FAP plan, the benefit cash flow is the annuity payment stream. For a CB plan, the benefit cash flow is the CB amount paid at job termination.

All employer cost estimates are for the 1955 birth cohort. Using a younger birth cohort would produce a higher employer cost rate for the typical FAP plan because of rising life expectancy and about the same employer cost rate for the typical CB plan because of its earnings-based benefit formula. The estimated employer cost rates are as follows

- full variety of private-sector final-pay plans in BLS data: 7.547 percent;
- typical FAP plan: 7.545 percent (by construction equal to cost of full variety)

Note: the employer cost of providing disability retirement benefits in the typical FAP plan to the 1955 birth cohort is 0.487 percent out of 7.545 percent.

Note: in order to simplify the study presentation, the typical FAP plan is assumed to have no survivor benefits, which are actually a typical benefit under FAP plans, and thus the 7.545 percent is an underestimate of a typical FAP plan's cost;

- typical CB plan with no conversion costs: 5.006 percent (i.e., conversion age 15);⁸
- typical CB plan with conversion costs by conversion age (see table 2); and
- equal-cost CB plan with averaged conversion costs: 7.547 percent.⁹

⁸ This is an estimate of the ongoing cost of the typical CB plan after all conversion costs have been paid.

⁹ The base pay credit rate of the equal-cost CB plan has been adjusted so that the plan's employer cost equals that of the typical FAP plan.

Table 2: Conversions Costs of Typical Cash Balance Plan by Conversion Age

Conversion age	Percent
25	4.843
30	4.645
35	4.464
40	4.680
45	5.602
50	6.937
55	7.925
60	7.866
Cost averaged over 8 conversions ages ^{a,b}	5.870

Source: GAO analysis using the PENSIM Model.

^aNote that calculating a simple average of the eight cost rates assumes a uniform conversion-age distribution, which is analogous to assuming a uniform employee age distribution at the plan conversion date. While this assumption may not be exactly true for individual plans, there is no publicly available data that provide information that would support an assumption of a nonuniform employee age distribution for all plan conversions.

^bThis 5.870 percent is an estimate of employer cost immediately after the conversion from the typical FAP plan to the typical CB plan when conversion costs are being paid. Given the widespread belief that typical cash balance conversions have not produced substantial immediate pension cost savings for employers, the reasons for the difference between the 7.545 percent and 5.870 percent are discussed below.

Comparison of Estimated Employer Cost of the Typical CB Plan Immediately After the Conversion with the Estimated Employer Cost of the Typical FAP Plan

There are several reasons why the estimated employer cost of the typical CB plan immediately after the conversion of 5.870 percent is below the estimated employer cost of the typical FAP plan of 7.545 percent by about 22 percent. First, the typical FAP plan has been constructed to reflect the full variety of private-sector FAP plans contained in the BLS Employee Benefits Survey data used to impute plan characteristics in PENSIM. The characteristics of the typical CB plan are drawn from the Form 5500 sample used for this study and from discussions with pension experts and actuaries who confirmed that the characteristics were in the range of what they believe was typical for CB plans. This sample of CB plans is the largest available sample, and the only sample to be drawn using statistical sampling methods.

The difference in the estimated employer cost rates for these two plans is consistent with prior research. Specifically, the cost difference reported here is somewhat smaller than the cost difference for typical plan

conversions reported in a widely cited study by Watson Wyatt Worldwide.¹⁰ In the Watson Wyatt study, the employers who convert typical (i.e., middle of the cost distribution) FAP plans to CB plans—the 20 percent in deciles 5 and 6 in table 9—experience an immediate defined-benefit pension employer cost reduction of about 19 percent (18.72 percent in fifth decile and 19.76 percent in sixth decile). However, the 22 percent cost reduction estimated in this study and the 19 percent cost reduction estimated in the Watson Wyatt study are not comparable because of differences in the Watson Wyatt life history simulations, which ignore disability events, and therefore, underestimate the cost of the FAP plans. To make our estimates comparable to the Watson Wyatt estimates, we subtracted the 0.487 percent disability costs from 7.545 percent yielding a without-disability employer cost estimate for the typical FAP plan of 7.058 percent. Our estimate of the immediate cost of the typical CB plan is 5.870 percent, which is about 17 percent below the 7.058 percent without-disability estimate. This 17 percent immediate employer defined-benefit cost reduction is about the same as the 19 percent reduction found in the Watson Wyatt study.

¹⁰ See Watson Wyatt Worldwide, *The Unfolding of a Predictable Surprise: A Comprehensive Analysis of the Shift from Traditional Pensions to Hybrid Plans* (2000), 18-19.

Appendix V: GAO Contacts and Staff Acknowledgments

GAO Contacts

Barbara D. Bovbjerg, Director (202) 512-7215

Staff Acknowledgments

The following staff members made major contributions to this report: Charles A. Jeszeck, Assistant Director, Kimberley M. Granger, Analyst-in-Charge, Joseph Applebaum, Kevin Averyt, Richard Burkard, Virginia Chanley, Tamara Cross, David Eisenstadt, Lawrence Evans Jr., Benjamin Federlein, Nila Garces-Osorio, Sharon Hermes, Jason Holsclaw, Gene Kuehneman Jr., Michael Maslowski, Amanda Miller, Michael Morris, Luann Moy, Macdonald Phillips, Mark Ramage, Tovah Rom, Nyree Ryder, George Scott, and Roger Thomas.

GAO's Mission

The Government Accountability Office, the audit, evaluation and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

Obtaining Copies of GAO Reports and Testimony

The fastest and easiest way to obtain copies of GAO documents at no cost is through GAO's Web site (www.gao.gov). Each weekday, GAO posts newly released reports, testimony, and correspondence on its Web site. To have GAO e-mail you a list of newly posted products every afternoon, go to www.gao.gov and select "Subscribe to Updates."

Order by Mail or Phone

The first copy of each printed report is free. Additional copies are \$2 each. A check or money order should be made out to the Superintendent of Documents. GAO also accepts VISA and Mastercard. Orders for 100 or more copies mailed to a single address are discounted 25 percent. Orders should be sent to:

U.S. Government Accountability Office
441 G Street NW, Room LM
Washington, D.C. 20548

To order by Phone: Voice: (202) 512-6000
TDD: (202) 512-2537
Fax: (202) 512-6061

To Report Fraud, Waste, and Abuse in Federal Programs

Contact:

Web site: www.gao.gov/fraudnet/fraudnet.htm

E-mail: fraudnet@gao.gov

Automated answering system: (800) 424-5454 or (202) 512-7470

Congressional Relations

Gloria Jarmon, Managing Director, JarmonG@gao.gov (202) 512-4400
U.S. Government Accountability Office, 441 G Street NW, Room 7125
Washington, D.C. 20548

Public Affairs

Paul Anderson, Managing Director, AndersonP1@gao.gov (202) 512-4800
U.S. Government Accountability Office, 441 G Street NW, Room 7149
Washington, D.C. 20548