

HOW DO CASH BALANCE PLANS AFFECT THE PENSION LANDSCAPE?

BY KEVIN E. CAHILL AND MAURICIO SOTO*

Introduction

Over the past decade, a notable shift has occurred within defined benefit pensions — away from traditional plans and towards hybrids, such as cash balance plans. Along the way, the movement to cash balance plans has been met with substantial resistance. Critics argue that cash balance plans discriminate against older workers and that employers have implemented these plans as a cost-cutting measure. Proponents say that cash balance plans are an effective way to provide a secure retirement income for a highly mobile workforce and that measures can be adopted to protect older workers. Critics have been bolstered by recent events, including two high-profile court rulings that have raised questions about the legality of the plans. Proponents are awaiting draft Treasury regulations expected to support cash balance plans. As background to all the commotion, this *brief* provides an overview of cash balance plans: how they work, why firms might want to offer them, and what their impact will be on employees and employers.

What Are Cash Balance Plans?

Cash balance plans are the most common form of hybrid pension plan. Hybrids are defined benefit plans with defined contribution characteristics. In many traditional defined benefit plans, employee benefits are based on final average salary and years of service with the firm and are typically paid at retirement in the form of an annuity (i.e., a lifelong stream of income). Employers make contributions to the plan and manage and invest plan assets. By contrast, in 401(k) plans, the most common type of defined contribution plan, most decisions are made by the employee: whether to participate, how much to contribute, how to invest plan assets, and how and when to receive funds. The employee also bears the risk of owning and investing plan assets. Hybrid plans look like defined contribution plans to the employee in that the employee typically has an account and receives the balance as a lump sum at separation. However, hybrid plans operate much like traditional defined benefit plans in that the employer invests plan assets as a whole and bears the risk of investment gains and losses.

* Kevin E. Cahill is the associate director for research at the Center for Retirement Research at Boston College (CRR). Mauricio Soto is a CRR dissertation fellow in economics.

AN ISSUE IN BRIEF CENTER FOR RETIREMENT RESEARCH AT BOSTON COLLEGE

DECEMBER 2003, NUMBER 14

INSIDE

INTRODUCTION	I
WHAT ARE HYBRID PENSION PLANS?	I
HOW PREVALENT ARE CASH BALANCE PLANS? ...	2
WHY HAVE FIRMS ADOPTED CASH BALANCE PLANS?	3
WHAT IMPACT WILL CASH BALANCE PLANS HAVE ON EMPLOYEES AND EMPLOYERS?	4
SO WHY WERE IBM EMPLOYEES SO UPSET?	5
WHAT ARE THE MAJOR REGULATORY ISSUES? ...	5
CONCLUSION	7
REFERENCES	8
TABLE 1. CHARACTERISTICS OF TYPICAL PENSION PLANS, BY PLAN TYPE	2
TABLE 2. PERCENT OF EMPLOYEES IN DEFINED BENEFIT PLANS WITH ACCESS TO LUMP SUMS AT RETIREMENT, 1997 AND 2000	2
TABLE 3. RATIO OF PENSION WEALTH AT AGE 62 TO FINAL PAY, BY PLAN AND NUMBER OF JOBS	4
FIGURE 1. VALUE OF ACCRUED BENEFIT AS A MULTIPLE OF ANNUAL WAGE	3
FIGURE 2. VALUE OF ACCRUED BENEFIT AS A MULTIPLE OF ANNUAL WAGE UNDER ALTERNATIVE PLANS	6
FIGURE 3. THE WHIPSAW EFFECT: HYPOTHETICAL BALANCE VERSUS LUMP-SUM BENEFIT	7

Table 1. Characteristics of Typical Pension Plans, by Plan Type

Characteristic	Defined Benefit Plans		401(K) Plans
	Traditional	Cash Balance	
Participation	automatic	automatic	voluntary
Contribution	employer	employer	employer and employee
Investments	determined by employer	determined by employer	determined by employee
Withdrawals	annuity	lump sum	lump sum
Rollovers before age 65*	not permitted	permitted	permitted
Benefit Guarantee	PBGC	PBGC	no guarantee

Source: Clark and Schieber (2002).

*Note: A rollover occurs when a worker who is leaving a job is allowed to keep the benefits accrued under the employer's plan and roll them over into another pre-tax plan or retirement account.

In cash balance plans, employees are automatically enrolled in the plan with some percentage of salary, typically 4-5 percent, deposited annually into a separate “notional” account for each worker.¹ Unlike 401(k) accounts, notional accounts are used for recordkeeping purposes only; the pension funds are not invested through these separate accounts but are instead invested as a whole. The notional funds are credited with interest at a rate determined by the employer; this interest credit is like the “return” for the assets in the account. The interest credit is oftentimes benchmarked to a specified rate, such as that on long-term Treasury bonds, although alternative forms of cash balance plans allow individuals to select how assets are invested.² Cash balance plans are legally defined benefit plans and are insured by the Pension Benefit Guaranty Corporation (PBGC).³ By law, participants in cash balance plans must be given an annuity option when receiving benefits, but the experience with defined contribution plans suggests that most employees in hybrid plans are likely to take benefits in the form of a lump sum.⁴

An overview of traditional defined benefit, cash balance, and defined contribution plans is provided in Table 1.

How Prevalent Are Cash Balance Plans?

By and large, cash balance plans have been established through conversions of traditional defined benefit plans.⁵ Bank of America created the first cash balance plan in 1985, although the bulk of conversions appear to have taken place in the late 1990s.⁶ Today, nearly one third of Fortune 100 companies have adopted some form of cash balance plan, and a 2002 survey of firms with pension plans containing more than 1,000 participants revealed that 19 percent of plans were cash balance plans.⁷

The prevalence of cash balance plans has created a defined benefit world in which lump-sum payments are becoming more common. While lump-sum payments were available to just under one quarter of participants in 1997, they were available to more than 40 percent of participants in 2000 — only three years later (Table 2).

Table 2. Percent of Employees in Defined Benefit Plans with Access to Lump Sums at Retirement, 1997 and 2000

Type of Payment Available	1997	2000
Lump sum available	23	43
Lump sum not available	76	53
Not determinable	1	4

Source: U.S. Department of Labor (1999; 2003) as reported in Munnell and Sundén (2004).

¹ Pension equity plans are another form of hybrid. Here, employees receive a lump-sum retirement benefit based on some percentage of final average salary multiplied by the number of years of service.

² Halperin and Schnall (2000); Clark and Schieber (2002).

³ The PBGC maximum guarantee on monthly benefits at age 65 was \$3,665 in 2003 (Munnell and Sundén 2004 forthcoming).

⁴ Brown (1999) shows that even though some defined contribution plans allow for annuitization of benefits, retirees frequently do not take the option.

⁵ GAO (2000a); Ippolito (2001).

⁶ A survey of Fortune 1000 firms in 1999 conducted by the GAO found that 60 percent of cash balance plans were established between 1996 and 2000 (GAO 2000b).

⁷ Munnell and Sundén (2004) quoting Watson Wyatt Worldwide (2003). These results are consistent with a GAO study that found 19 percent of Fortune 1000 companies sponsored cash balance plans (GAO 2000b).

Why Have Firms Adopted Cash Balance Plans?

Surveys suggest a variety of reasons why cash balance plans have taken the place of traditional defined benefit plans. Employers believe that cash balance plans simplify plan administration and are more attractive to today's workforce. Indeed, unlike 401(k) plans, cash balance plans offer employees benefits that are guaranteed and returns on assets that are stable. Cash balance plans also offer employees the appearance of an account balance and the portability of a defined contribution plan.

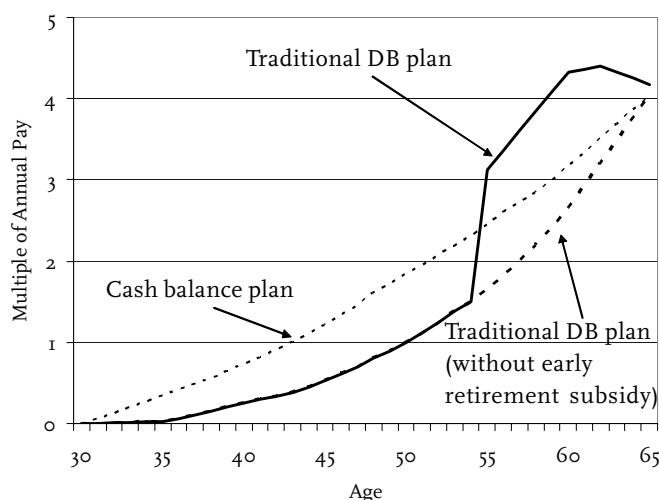
In addition, cash balance plans allow plan sponsors to take advantage of leveraging, or the difference between the promised rate of return on plan assets and the long-run market return. For example, the average historical return on a balanced portfolio (7.6 percent) exceeds the average promised rate of return for cash balance plans (5.6 percent) by 2 percentage points.⁸ If firms are willing to assume the investment risk associated with short-run fluctuations in equities, they may be able to profit from the returns on plan assets.

But the movement towards cash balance plans is only one side of the story; the other is a movement away from traditional defined benefit plans. Surveys suggest that firms may be abandoning traditional defined benefit plans in order to eliminate early retirement subsidies.⁹ At the early retirement age, typically age 55, an employee is eligible for benefits that are discounted from those at the normal retirement age using a rate that is less than the actuarially equivalent reduction. Since the full adjustment is used just prior to the early retirement age, expected retirement wealth increases dramatically at the early retirement age and remains higher than benefits without the early retirement subsidy until the normal retirement age. This discrepancy in benefit accruals provides a strong incentive to leave the employer before the normal retirement age. In contrast, benefit accruals are smooth under cash balance plans (Figure 1).

Finally, funding and financial considerations may be the “dog that didn't bark,” since evidence suggests they are not the driving force behind the change to cash balance plans. Studies have shown that no clear pattern of pension cost reductions are associated with plan conversions and that the distribution of the funding status for plans that converted appears similar to those that did not convert.¹⁰ A Watson Wyatt study of 78 hybrid plans showed that some plans experienced cost increases while others experienced decreases when converting to cash balance plans.¹¹ And a recent study found that among a sample of 32 S&P 500 firms, the projected benefit obligation actually increased in the year after plan conversions in 78 percent of cases.¹² Both studies conclude that firms appear to be switching to hybrid pension plans to remain competitive in attracting workers from a mobile workforce, rather than to reduce cost.

Firms chose to amend their existing defined benefit plan and switch to hybrid plans rather than terminate the plan and launch a new 401(k) plan, in part, because it is costly to terminate an existing defined benefit plan, unless the plan is at the “break even” point. If a defined benefit plan is overfunded, surpluses are subject to extremely high reversion taxes at termination. If the plan is underfunded, deficits need to be covered at termination.

Figure 1. Value of Accrued Benefit as a Multiple of Annual Wage



Source: Clark and Schieber (2002).

Note: Calculated at various ages for a new hire at age 30 with a starting wage of \$40,000 per year.

⁸ Percentages are in nominal terms. The balanced portfolio used in this example is one in which assets are invested 50 percent in large equities and 50 percent in long-term government bonds.

⁹ Clark and Schieber (2002) find that the majority of hybrid plans they examined reduced benefits by less than the amount that would have occurred had the employer kept the existing traditional defined benefit plan and eliminated the early retirement subsidy.

¹⁰ Clark and Schieber (2002).

¹¹ Watson Wyatt Worldwide (2002).

¹² Copeland and Coronado (2002). The projected benefit obligation is the present discounted value of promised benefits at the current point in time, based on assumptions about future salary increases.

What Impact Will Cash Balance Plans Have on Employees and Employers?

Cash balance plans eliminate the voluntary aspects and investment risks of 401(k)s, but retain the uncertainty surrounding lump-sum payments (i.e., what to do with the money when you retire or switch jobs).¹³ Participation in 401(k) plans is voluntary and a substantial minority, about one quarter of employees, choose not to participate. Among those who do, only 8.4 percent contribute the maximum.¹⁴ Furthermore, 401(k) participants bear the investment risk on pension assets, leaving participants susceptible to market variations. These risks are avoided in cash balance plans.

Still, workers with cash balance plans, like those with 401(k)s, need to decide how to spend down their lump-sum benefit, and the choice can have a profound impact on retirement income and bequests.¹⁵ If funds are withdrawn too quickly, individuals run the risk of having an inadequate level of income later in retirement. If funds are withdrawn too slowly, individuals might not have consumed enough. Individuals can escape the risks associated with receiving a lump sum by converting into an annuity. But people tend not to do so.¹⁶

Cash balance plans also differ from traditional defined benefit and 401(k) plans in the level of retirement wealth accumulated at any given age. A key distinguishing feature of cash balance plans is that wealth is spread more broadly across plan participants by allowing more mobile workers to accumulate retirement wealth.¹⁷ In traditional defined benefit plans about 80 percent of benefits

go to less than 20 percent of covered workers, because many workers leave a plan before they have accumulated substantial benefits.¹⁸ Indeed, the median level of tenure among older male workers is only about 10 years, and fewer than one in five wage-and-salary workers aged 60-64 in 2002 had tenure of more than 25 years.¹⁹

To illustrate, we examine expected retirement wealth at age 62 for a worker with an average wage profile, by plan type and by the number of jobs held since age 30 (Table 3).²⁰ Since traditional defined benefit plans reward longer spells of tenure, it comes as no surprise that traditional defined benefit wealth is higher than that of cash balance plans when there is no job mobility.

Table 3. Ratio of Pension Wealth at Age 62 to Final Pay, by Plan and Number of Jobs

Number of job changes	Traditional DB	Cash Balance
0	3.7	2.6
1	3.9	2.6
2	2.6	2.6
3	2.5	2.6
4	2.4	2.6

Source: Authors' calculations.

Note: Estimates are based on an average wage profile, with job changes occurring at age 45; 40 and 50; 35, 45, and 55; and 35, 40, 45, and 55.²¹

¹³ It is tempting to label one pension plan type as “riskier” than another. In reality, a host of risks are associated with pension plans, ranging from risks associated with how pension assets are managed to risks associated with mobility, and different risks are borne by the employer and employee under each plan. For the sake of this discussion, we focus on two key risk components: investment risk and cash-out issues.

¹⁴ Munnell and Sundén (2004).

¹⁵ Bequests are likely to rise for a variety of reasons as a result of this reduction in annuitization of retirement wealth. Assets will exist because retirees are more likely to die with precautionary balances remaining from their retirement assets. Individuals are also less likely to spend down wealth once they have it. Increases in lump sum payments may also increase interest in leaving a bequest (Munnell and Sundén 2004; Munnell, Sundén, Soto, and Taylor 2003).

¹⁶ ACLI (2002); Clark and Schieber (2002); Brown (1999).

¹⁷ Johnson and Uccello (2002).

¹⁸ Lofgren and Schieber (2003).

¹⁹ Copeland (2003). While the workforce in the United States is and has been highly mobile, there is some dispute over whether the mobility of the U.S. workforce has increased in recent decades (Munnell and Sundén 2004).

²⁰ Cash balance wealth is based on a 5.0 percent contribution in each year beginning at age 30, with a 2.6 percent real return on assets. Defined benefit plan amounts are based on 1.0 percent of final average salary for each year of service.

²¹ The wage profile has a starting salary of \$24,330 at age 22 and an ending salary of \$52,850 at age 62. These values are benchmarked to an annual salary at age 50 of \$44,000 (nominal terms), the median value of wages for a 50-year old individual covered by a pension plan according to the 2001 Survey of Consumer Finances. Wages at each age are based on the economy-wide average and the composite fraction of average wages for the given age. The economy-wide average wage is assumed to increase 4.1 percent per year (nominal terms). The composite fraction of average wages is based on the career earnings profiles for males and females born between 1926 and 1965. Cash balance plans assume 5.0 percent of salary credit per year and a nominal return of 5.6 percent. Defined benefit plans use a factor of 1.0 percent of final pay per year of service.

When we allow for mobility, traditional defined benefit wealth is substantially lower than the non-mobility scenario. This is because pension benefits from the first half of the career are based on final earnings *from the first employer*, not final earnings at retirement. Returns for cash balance plans remain unchanged since assets are assumed to be rolled over into the new employer's plan.²² With two job changes equally spaced throughout a worker's employment history, traditional defined benefit wealth and cash balance wealth appear similar, but with three or more job changes an employee is better off under a cash balance plan.²³

So Why Were IBM Employees So Upset?

The process of converting to cash balance plans has received considerable attention in recent years because employees at IBM and elsewhere felt that they would not receive the benefits they planned on. In 1999, IBM decided to convert their pension plan to a cash balance plan and, in doing so, initially only allowed individuals within five years of retirement to remain in the old plan. Employees with high levels of tenure but not within five years of retirement objected because the conversion would result in substantially reduced prospective retirement benefits.²⁴ After a barrage of negative media coverage, IBM eventually relaxed the constraint and allowed employees with 10 years of tenure and 40 or more years of age to remain in the old plan. Since then, other firms have grandfathered their older workers under the existing defined benefit plan rules. Eastman Kodak took this one step further by allowing *all* employees to choose between the traditional defined benefit plan and the firm's new cash balance plan.

Beyond the transitional issues, IBM employees have challenged the legality of their cash balance pension plan more broadly, arguing that its method for paying benefits violates ERISA's prohibition against age discrimination. In fact, a host of

regulatory issues surround cash balance plans, mainly because the rules governing them were initially written for traditional defined benefit plans.

What Are the Major Regulatory Issues?

The Internal Revenue Code establishes two key requirements associated with private pension plans: the limits set on employer-sponsored savings plans and the non-discriminatory nature of these plans with respect to higher- versus lower-paid workers. Defined contribution plans have limits based on *contributions* and defined benefit plans have limits on overall *benefits*. Similarly, the absence of discrimination is typically demonstrated by the size of contributions as a percentage of pay for defined contribution plans and by the size of benefits as a percentage of pay for defined benefit plans, although non-discrimination for each type of plan can be tested using either benefits or contributions. The nature of hybrid plans calls for a clarification of the rules regarding limits and non-discrimination provisions. One issue is whether limits in cash balance plans should continue to be based on benefits.²⁵

The age discrimination issue stems from the fact that benefits accumulated at retirement under cash balance formulas are often directly related to the age of the worker. Given an older and a younger worker who are otherwise equivalent, the younger worker's accrued benefit at retirement under a cash balance plan will be higher than the older worker's accrued benefit because the interest credit applies for more years. While this is true, the age discrimination issue appears to be a product of a mismatch between cash balance formulas and the current guidelines for defined benefit plans. Cash balance plans would not be considered age discriminatory if they were tested using the rules governing defined contribution plans, such as 401(k)s.²⁶

A key regulatory issue associated with calculating lump-sum values and plan conversions is "wear-away," a period where participants earn no

²² Individuals could choose to invest these assets outside of the new firm's cash balance plan in the hopes of receiving higher returns, but this strategy entails investment risk.

²³ For simplicity, job changes are assumed to be spaced equally throughout a worker's employment history. Of course, the timing of a job change can substantially influence pension accruals. For example, traditional defined benefit pension wealth will be much higher for a person with two employers in the first five years of work and one employer for the next 25 years, compared to a worker who changes jobs once every 10 years.

²⁴ Longtime employees estimated that the conversion would result in benefit reductions of 20 to 40 percent, or more (Schultz and Bulkeley 2003).

²⁵ Halperin and Schnall (2000).

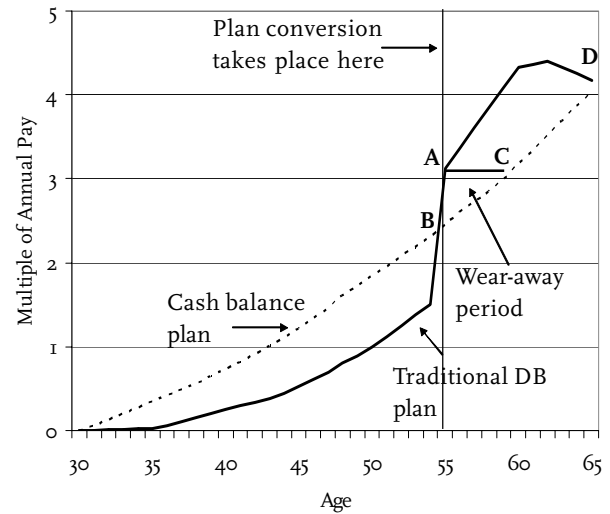
²⁶ Purcell (2003). Two recent federal court rulings against IBM and Xerox found that their cash balance plans violate ERISA's prohibition against age discrimination. The rulings do not appear to condemn cash balance plans *per se*; rather, they indicate that typical cash balance formulas are not legal under current age discrimination law. According to Chief Judge G. Patrick Murphy, "There may be policy reasons why Congress should specifically authorize [cash balance formulas] in the context of defined benefit plans. But the narrow question here is whether the 1999 Plan comports with the literal and unambiguous provisions of ERISA § 204(b)(1)(h), and it does not" (Cooper 2003).

additional pension benefits for a period of time following a plan conversion. There are two primary causes for the wear-away of benefits: wear-away due to the elimination of early retirement subsidies and wear-away due to the use of an alternative interest rate when calculating initial account balances in cash balance plans.²⁷ The first type of wear-away, illustrated in Figure 2, occurs when the value of an employee's benefit at conversion under the traditional plan (point A) is higher than the value of the employee's benefit under the newly-converted cash balance plan (point B). In this situation, ERISA entitles the employee to benefits accrued under the old plan but the employee's account balance then remains frozen until benefits under the cash balance plan exceed those of the traditional plan at conversion (point C). The span of time between A and C is the wear-away period. (In contrast, under a traditional defined benefit plan, benefits would have grown substantially during the same time period). Eventually, benefits under the new hybrid plan may equal benefits under the old plan (point D). For long-tenured workers who face this type of wear-away at plan conversion, firms can eliminate the wear-away by allowing benefits to accrue independently under both plans, and by paying the higher of the two balances upon termination.

Wear-away of benefits can also occur if firms use a higher interest rate when determining the account value under the cash balance plan than the one used under the traditional pension plan. Of course, firms can avoid this type of wear-away by choosing the same interest rate assumptions when calculating present-day benefits under each type of plan. In fact, a Watson Wyatt survey of plan conversions since 1995 showed that 92 percent of sponsors calculated initial lump-sum values for the hybrid plan that were equal to the present discounted value of benefits under the old defined benefit formula.²⁸

Another transitional component, "whipsaw," refers to an awkward accounting procedure that may lead to a mismatch between notional and actual account values. The Internal Revenue Code requires that defined benefit lump sums be the actuarial equivalent of an annuity starting at the normal retirement age. Therefore, to determine the actual account value at a given point in time, notional account values need to be projected forward to the normal retirement age, converted to an annuity, and then discounted back to the present.

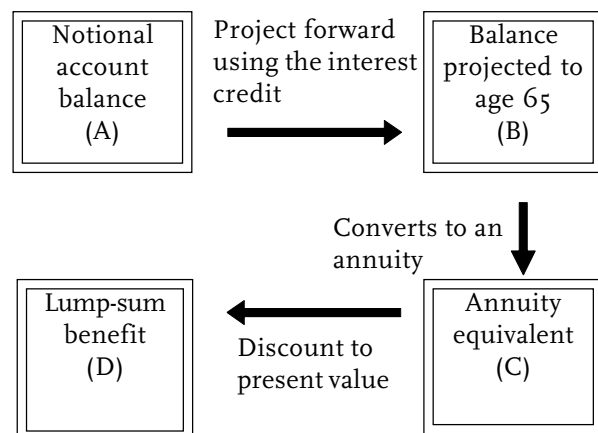
Figure 2. Value of Accrued Benefit as a Multiple of Annual Wage Under Alternative Plans



Source: Clark and Schieber (2002).

The process is illustrated in Figure 3. The notional account value (point A) is projected to the normal retirement age using the interest credit (point B); the lump sum is converted to an annuity equivalent (point C); and then the annuity is discounted back using a rate that may or may not be the same as the interest credit (point D). If the interest credit matches the discount rate, the notional account value and the actual value are equivalent. But if the interest rate credit exceeds the discount rate, the notional account balance will be greater than the actual lump sum received, and vice versa.

Figure 3. The Whipsaw Effect: Hypothetical Balance versus Lump-Sum Benefit



Source: GAO (2000b)

²⁷ Wear-away can also be caused by interest rate volatility, if the date at which the amount in the cash balance plan is determined differs from the date at which the present value in the prior plan is calculated. Wear-away can also occur in traditional defined benefit plans due to changes in the benefit formula, the

definition of compensation, the limit on compensation or benefits, or other factors that determine benefits (Watson Wyatt 2000).

²⁸ Watson Wyatt (2002).

Employers can minimize the potential negative impact of whipsaw by paying the higher of the hypothetical balance or the required lump-sum distribution, and plan sponsors have said they will do so.²⁹ Another option is to eliminate whipsaw by linking the interest credit to a Treasury security.³⁰ Regulators could also eliminate whipsaw by allowing cash balance plans to define the actual benefit as the notional account balance.³¹

Conclusion

Cash balance plans have a lot to offer: employees are automatically enrolled, benefits are guaranteed, returns are secure, account balances are transparent, and assets are portable. Evidence shows that the appeal of cash balance plans, especially among highly mobile workers, has fueled plan conversions, and that these conversions will redistribute defined benefit pension wealth and increase wealth for the median defined benefit participant. The tradeoff is that cash balance plans yield lower benefits for long-tenure employees. In addition, they have lower expected returns on assets than 401(k)s and they pay benefits in the form of a lump sum, which forces retirees to make difficult choices about drawing down assets.

In short, the appeal of cash balance plans is dependent upon the individual preferences of workers. While these plans offer a competitive alternative to 401(k)s for highly-mobile workers, the movement away from traditional defined benefit plans to cash balance plans will likely mean a reduction in benefits for many long-tenured, older workers. These conflicting interests point to an uncertain future for cash balance plans. What's clear, however, is that the role of these plans depends on how Congress, the Treasury Department, and the Courts resolve key differences with respect to age discrimination, and on how employers conduct the transition from existing traditional defined benefit plans to cash balance plans.

References

- American Academy of Actuaries. 2003. "What's Whipsaw? Why Is It a Problem?" *Issue Brief* (February). Washington, DC: American Academy of Actuaries.
- American Council of Life Insurers (ACLI). 2002. "Promoting Annuitization: Ensuring the Financial Security of Today's Workers for a Lifetime." Washington, DC: ACLI.
- Brown, Jeffrey R. 1999. "Private Pensions, Mortality Risk, and the Decision to Annuitize." Working Paper 7191. Cambridge, MA: National Bureau of Economic Research.
- Clark, Robert and Sylvester Schieber. 2002. "The Emergence of Hybrid Pensions and Their Implications for Retirement Security in the 21st Century." For the Cash Balance Pension Plan Symposium, Society of Actuaries Spring Meeting, Dallas (May 31).
- Cooper, Kathi, et al. v. The IBM Personal Pension Plan and IBM Corporation. 2003. No. 99-829-GPM, S.D. Ill.
- Copeland, Craig. 2003. "Employee Tenure." *EBRI Notes* 24, no. 3 (March).
- Copeland, Phillip C. and Julia L. Coronado. 2002. "Cash Balance Pension Plan Conversions and the New Economy." Unpublished paper. Federal Reserve Board of Governors.
- Halperin, Daniel and Marla Schnall. 2000. "Regulating Tax-Qualified Pension Plans in a Hybrid World." In *New York University — Proceedings of the Fifty-Eighth Institute on Federal Taxation: Employee Benefits and Executive Compensation*. Matthew Bender & Company.
- Ippolito, Richard. 2001. "Issues Surrounding Cash Balance Plans." *Benefits Quarterly*, third quarter: 30-45.
- Johnson, Richard and Cori Uccello. 2002. "Can Cash Balance Plans Improve Retirement Security for Today's Worker?" *The Retirement Project*, no. 14 (November). Washington, DC: Urban Institute.

²⁹ GAO (2000a).

³⁰ According to IRS Notice 96-8, if interest credits are tied to the return on 30-year Treasuries then the nominal account value can equal the lump sum amount once an employee is vested (GAO 2000a).

³¹ American Academy of Actuaries (2003).

- Lofgren, Erik and Sylvester Schieber. 2003. "IRS Hearing on Proposed Regulations on Age Discrimination in Retirement Plans." Written Testimony for the IRS Hearing on Proposed Regulations on Age Discrimination in Retirement Plans (April 9).
- Munnell, Alicia H. and Annika Sundén. 2004 forthcoming. *Coming Up Short: The Challenge of 401(k) Plans*. The Brookings Institution Press.
- Munnell, Alicia H., Annika Sundén, Mauricio Soto, and Catherine Taylor. 2003. "The Impact of the Growth of Defined Contribution Plans on Bequests." In *Death and Dollars: The Role of Gifts and Bequests in America*, edited by Alicia H. Munnell and Annika Sundén. The Brookings Institution Press.
- Purcell, Patrick J. 2003. "Pension Issues: Cash Balance Plans." *CRS Report for Congress* RL30196 (August).
- Schultz, Ellen E. and William M. Mulkeley. 2003. "IBM Pension-Plan Changes Are Ruled Discriminatory." *The Wall Street Journal* (August 1).
- U.S. Department of Labor. 1999. "Employee Benefits in Medium and Large Establishments, 1997." *Bureau of Labor Statistics Bulletin* 2517.
- U.S. Department of Labor. 2003. "National Compensation Survey: Employee Benefits in the Private Industry in the United States, 2000." *Bureau of Labor Statistics Bulletin* 2555.
- U.S. General Accounting Office. 2000a. "Cash Balance Plans: Implications for Retirement Income." GAO/HEHS-00-207.
- U.S. General Accounting Office. 2000b. "Private Pensions: Implications of Conversions to Cash Balance Plans." GAO/HEHS-00-185.
- Watson Wyatt Worldwide. 2000. "Whither Wear-Away?" *Watson Wyatt Insider* (February).
- Watson Wyatt Worldwide. 2002. "The Unfolding of a Predictable Surprise: A Comprehensive Analysis of the Shift from Traditional Pensions to Hybrid Plans."
- Watson Wyatt Worldwide. 2003. "2002 Survey of Actuarial Assumptions and Funding: Pension Plans with 1,000 or More Active Participants."

About the Center

The Center for Retirement Research at Boston College, part of a consortium that includes a parallel center at the University of Michigan, was established in 1998 through a grant from the Social Security Administration. The goals of the Center are to promote research on retirement issues, to transmit new findings to the policy community and the public, to help train new scholars, and to broaden access to valuable data sources. Through these initiatives, the Center hopes to forge a strong link between the academic and policy communities around an issue of critical importance to the nation's future.

Affiliated Institutions

American Enterprise Institute
Massachusetts Institute of Technology
Syracuse University
The Brookings Institution
Urban Institute

Contact Information

Center for Retirement Research
Boston College
Fulton Hall 550
Chestnut Hill, MA 02467-3808
Phone: (617) 552-1762
Fax: (617) 552-1750
E-mail: crr@bc.edu
Website: <http://www.bc.edu/crr>