

# Investment Management for Cash Balance Plans

Part II of II: Cash Balance  
Investment Strategies

By

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## Summary

- The total return investment strategies common in the defined benefit (DB) environment often are not the ones best-suited for cash balance (CB) plan objectives, but such strategies are still prevalent in a number of CB plans.
- The minimum objective for a “pure” CB plan is to match the *interest crediting rate* (ICR) that determines the return on the short cash balance account liabilities.
- In practice, most CB plans also have some degree of exposure to longer-duration deferred liabilities similar to those of traditional DB plans. Sponsors should consider investments to hedge the interest-rate risk based on the unique characteristics of the plan.
- A portfolio that is well-suited to a CB plan can be constructed with a bottom-up approach, starting with cash strategies and adding “tiers” of riskier investments as needed to pursue the plan’s return objectives.

## Introduction

Historically, plan sponsors have tended to treat investment strategies for their cash balance (CB) plans as afterthoughts. Often this meant continuing, or adopting, the same total return strategies prevalent in the traditional defined benefit (DB) world. This is unfortunate, because in many instances, corporate objectives could be better served through investment strategies that are more closely aligned to the specific liability and design characteristics of their CB plans.

In its pure form, a CB plan offers a stark contrast to the DB plan. The latter requires the sponsor to assume the investment risk associated with funding *annuities* for plan participants, whose payout is usually defined as a percentage of final pay. Cash balance plans are also fully funded by the sponsor, but the investment risk assumed can be much smaller, as we will detail in this paper. (For more information, on cash balance plan structure and design, see Part I of this series, *Cash Balance Plan Basics* at [www.bnymellonassetmanagement.com](http://www.bnymellonassetmanagement.com).)

As with DB plans, CB plans vary in complexity — not in their core design, which is relatively straightforward, but from legacy benefits that are retained after conversion from a traditional DB plan. In these hybrid plans, many of the annuitization features remain, including optional forms of payment such as joint and survivor annuity, certain-period annuity, income leveling option, etc. In addition, CB plans must allow participants to elect deferred payout options upon retirement, though this is typically a small component of the plan. To the extent a CB plan has deferred liabilities — whether legacy or ongoing — its exposure is partially comparable to that of a DB plan.

Thus, the sponsor's goal is to set an investment strategy tailored to the cash balance plan's characteristics, taking into account any residual and ongoing traditional DB features. In this paper (Part II of our series on cash balance plans), we suggest an investment approach for cash balance plans, explain some of the risks associated with that approach, and discuss potential strategies that seek to hedge the relevant risks.

In practice, the popular IRS-approved interest crediting rates fall on a spectrum from "more investable" to "less investable." The ICR investability factor is one component that the manager must consider even in the most straightforward CB plans.

### The Role of the Interest Crediting Rate

To understand how the investment strategy for a CB plan represents a fundamental departure from the DB world, it is helpful to consider the motivations of the sponsors. Historically, DB investment strategies have been designed with the expectation that investment returns would cover the annual benefit accrual (known in the pension world as "normal" costs), as well as the growth in liabilities due to interest. But the total return strategies that offer the potential growth needed to meet this objective also entail volatility as well as asset/liability mismatches.

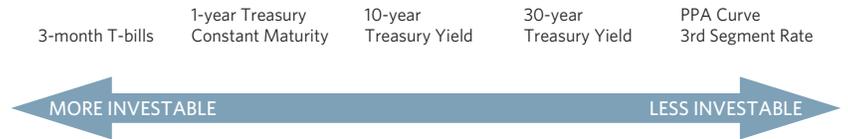
In contrast, sponsors who create *de novo* cash balance plans are typically motivated by the tax breaks generated by the cash contributions made to cover normal annual benefit accrual costs. Unlike the DB scenario, these liability values fluctuate only minimally with interest rates, so the costs, which typically are based on salary, are more predictable. In this kind of pure CB plan, the *interest crediting rate* (ICR) helps determine the participant's investment return on the cash balance account. The sponsor can seek to minimize plan volatility by structuring a portfolio with a return that matches the ICR as closely as possible. (As we have noted, most CB plans have some deferred liabilities as well, so the ICR alone cannot serve as the complete investment target, as we will discuss later.)

The most straightforward approach to matching the ICR is with a passive portfolio that seeks to duplicate the ICR's return. Unfortunately, this is possible only when the ICR itself is "investable" — meaning that assets exist with the right attributes to achieve this match. A good example of an investable ICR is the yield on the 3-month Treasury bill, reset quarterly. The rate is investable because the manager could buy 3-month Treasury bills at the beginning of the quarter and very closely match the ICR over the period, with little or no exposure to volatility.

In contrast, the yield on 30-year Treasury bonds — a very popular ICR — is considered "uninvestable," because the total return on a 30-year bond can dramatically differ from its yield. Consider a hypothetical passive investment in 30-year Treasuries. The interest income would indeed match the level required by the ICR (assuming there is no reset), but the portfolio, with its long-duration securities, would be susceptible to significant interest-rate risk.

In practice, the popular IRS-approved interest crediting rates fall on a spectrum from "more investable" to "less investable" (Exhibit 1). The ICR investability factor is one component that the manager must consider even in the most straightforward CB plans. We will now consider more typical CB plans (those with legacy traditional DB benefits), which are a bit more complicated.

## Exhibit 1: Investability of IRS-approved Interest Crediting Rates



Source: BNY Mellon Asset Management, June 2009

CB plans may also contain deferred liabilities, as a result of conversions from prior DB plans and/or ongoing options that are available to retiring participants. These features suggest that a part of the portfolio should be managed in a DB framework.

## Understanding Plan Liabilities

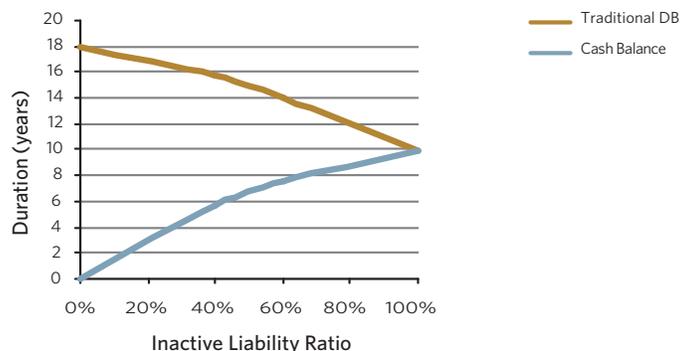
As noted, CB plans may also contain deferred liabilities, as a result of conversions from prior DB plans and/or ongoing options that are available to retiring participants. These features suggest that a part of the portfolio should be managed in a DB framework. The key to distinguishing the DB component of cash balance plan liabilities is the *inactive liability ratio*, which is the proportion of retiree and deferred vested liabilities compared to the total liabilities.

A high inactive liability ratio (> 20%) suggests that the participants are *not* taking advantage of the cash balance plan's lump sum feature, and instead are choosing annuities. Or, the plan may have a significant amount of legacy annuity benefits from a traditional DB conversion. The higher the inactive liability ratio, the more the investment strategy will need to incorporate some level of duration matching in order to mitigate the interest-rate risk associated with the annuity-like liabilities.

On the flip side, a low inactive liability ratio (< 20%) implies that employees are taking lump sums as expected, and anything more than a token hedge for interest-rate risk could result in more volatility than desirable for the plan's investment portfolio.

Exhibit 2 compares the differing impact of the inactive liability ratio on CB plans versus DB plans. In a CB plan, the cash balance accounts are near-term liabilities that contribute very little to the plan's overall liability duration. Thus, the longer-duration inactive liability component drives the overall duration. For DB plans, the impact of the inactive liability ratio is inverted. That is because the active employees represent future obligations with even longer duration than the liabilities for the retired workers. Thus, a higher level of inactive liabilities will tend to reduce the plan's overall duration. As a plan's duration level increases, more emphasis on hedging interest-rate risk is generally appropriate, with a reduced focus on the ICR.

## Exhibit 2: Inactive Liability Ratio vs Duration



Source: BNY Mellon Asset Management, June 2009

For most cash balance plans, the bottom investment tier is “cash” — investments like short-term T-bills with zero credit risk and almost zero duration. Cash offers principal protection, and acts as a building block to achieve the ICR.

## Setting the Portfolio Return Target

As with any liability-based investment strategy, the primary goal is to meet or exceed the *liability return*. And, like the return on portfolio assets, pension plan liability returns can be estimated for any given period, ranging from days to years. (For more on liability returns, please see our white paper *Improving Pension Liability Management with Liability Benchmarks* at [www.bnymellonassetmanagement.com](http://www.bnymellonassetmanagement.com).)

For a cash balance plan with a low inactive liability ratio, the minimum liability return is the ICR. Since the ICR is set in advance, the cash balance plan’s liability return is known in advance. Traditional DB plan liability returns are based on interest rate movements during the measurement period, so these liability returns can only be calculated after the period ends. To set the cash balance portfolio return target, a building block approach can be employed:

- Earn the ICR, after expenses
- Earn the ICR plus a portion of normal cost, after expenses
- Earn the ICR plus the normal cost, after expenses

Any decision to add layers of more aggressive investments depends not only on the inactive liability ratio, but also on the sponsor’s risk tolerance. A lower risk tolerance would lead sponsors to try to achieve the ICR, while a higher risk tolerance would lead to a strategy that strives to outperform it.

## A Bottom-Up Approach to Cash Balance Investments

To this point, we have discussed the ICR and inactive liability ratio as the factors with the greatest impact on the investment strategy for a cash balance plan. Next we tie the two together into a cogent liability-driven investment framework by using a tiered “bottom-up” approach to the portfolio.

We begin with the inactive liability ratio. If you have determined that your plan has a high inactive liability ratio, then you should consider devoting a portion of the portfolio to a duration hedging strategy for the retiree and deferred vested liabilities. This approach —commonly known as liability-driven investing (LDI) — is designed to minimize pension cost volatility for the sponsor. Such a strategy typically consists of a portfolio of corporates and Treasury bonds, whose duration is specifically matched with that of the liabilities. (Please see *Plan Sponsor Guide to Liability-Driven Investing* at [www.bnymellonassetmanagement.com](http://www.bnymellonassetmanagement.com) for more information.)

Once interest-rate risk is addressed, the focus can be turned to investments designed to hedge the ICR. As noted, the instability of the ICR will dictate how much portfolio risk may be minimally required to seek to match the ICR return. Unlike traditional DB liabilities, which can both rise and fall with interest rate movements, all of the currently available IRS-approved interest crediting rates are always expected to be positive. Therefore, the “bottom tier” of the cash balance investment strategy should first and foremost seek to provide principal protection.

For most cash balance plans, the bottom investment tier is “cash” — investments like short-term T-bills with zero credit risk and almost zero duration. Cash offers principal protection, and acts as a building block to achieve the ICR.

Once a portfolio of cash and short duration fixed income is established, the next tiers might include a Libor+50 strategy and/or Libor+100 strategy. These tiers seek higher levels of income typically by assuming more credit risk and/or moving farther out on the yield curve, while trying to minimize interest-rate sensitivity.

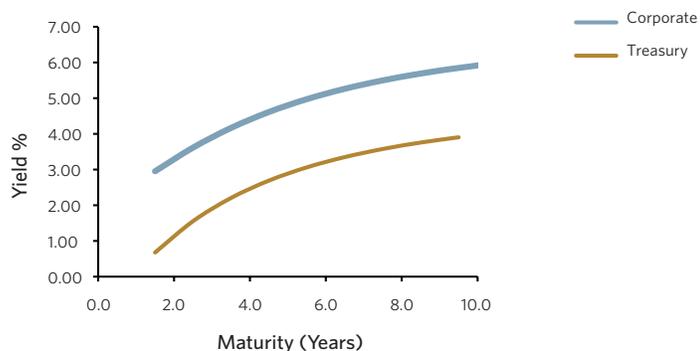
As noted earlier, if the ICR itself is the T-bill rate and its reset period matches the security's maturity, the bottom investment tier can be the Treasury security itself. If the security can be purchased on the day the ICR resets, the sponsor can virtually lock in the return and meet the crediting rate at the same time.

For other ICRs, in a typical market environment with an upward-sloping yield curve, additional tiered risk exposures will likely be necessary. (In less common periods with flat or inverted yield curves, a 100% cash investment would be appropriate to meet the ICR objective.)

### Building Up From Cash

Beyond the first tier cash investment, the next logical step would be short-duration fixed income strategies, to further hedge the low duration account-based liabilities. Typical investments in this tier comprise short duration corporate bonds (which entail credit risk as well as interest-rate risk). As of June 2009, short-duration corporate yield spreads were relatively wide, providing an excellent opportunity to potentially earn a yield much higher than the ICR, with minimal interest-rate risk exposure (See Exhibit 3).

**Exhibit 3: June 2009 Bond Yields**



Source: BNY Mellon Asset Management, Barclays Capital, June 2009

Moving up the risk tiers from short-duration fixed income, the most common choices include risk-controlled absolute return or “Libor plus” strategies. “Absolute return” refers to the fact that they are benchmarked to cash and aim to provide the target income in varying market environments. Absolute return strategies can be structured with various risk levels, which is important in the CB investment structure. Once a portfolio of cash and short-duration fixed income is established, the next tiers might include a Libor+50 strategy and/or Libor+100 strategy. These tiers seek higher levels of income typically by assuming more credit risk and/or moving farther out on the yield curve, while trying to minimize interest-rate sensitivity.

In a tiered portfolio construction like this, the emphasis is on the addition of incremental gradations of risk as necessary to meet plan objectives. While this can be pursued in many ways, such as adding Libor+50 and Libor+100 strategies, some approaches are less likely to be a suitable “fit” for the plan. For instance, a cash and short-duration portfolio combined with a Libor+1000 absolute return strategy may not be an ideal combination, because it may introduce hedge-fund levels of risk and volatility that are not compatible with the plan.

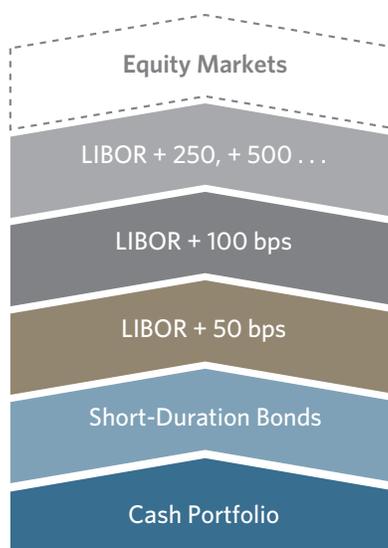
## The New Perspective on “Cash”

The financial crisis has driven home the point that the asset class broadly known as “cash” deserves careful scrutiny by investors who are chiefly concerned with liquidity and safety of principal. The commercial paper issued by Lehman Brothers and bank structured investment vehicles are just two reminders that credit risk is a fact of life, even for short-term debt. CB plan sponsors need to be highly aware of all sources of extra return in their portfolio, and how vulnerable they could be the next time a “black swan” pays a visit to the financial markets.

By structuring a portfolio that is specifically focused on the particular liabilities of the plan, the sponsor can seek to minimize pension cost volatility and maximize the likelihood of achieving corporate return objectives.

The last decision for the plan sponsor will be at what point, if at all, a traditional equity strategy will be used (i.e., 50% equity allocation, 30% equity allocation, etc.). As with traditional DB strategies, sponsors must carefully weigh the potential return and risk tradeoff in the context of plan objectives and risk tolerance. As of June 2009, despite the strong run-up since March, equities were still well off historic highs, offering a potentially advantageous entry point for sponsors interested in total return approaches. However, sponsors going the equity route should be capable of accepting levels of portfolio volatility that are elevated, and should expect increased tracking error to their interest crediting rates, compared with more conservative approaches.

### Exhibit 4: A Bottom-Up Approach



Source: BNY Mellon Asset Management, June 2009

## Conclusion

Corporate sponsors are increasingly turning to cash balance plans as a means of providing attractive retirement benefits to employees while avoiding the drawbacks of traditional DB plans. A pure CB plan has the straightforward goal of achieving a target return based on the plan’s ICR. In practice, however, most CB plans also have some degree of deferred liability exposures that are comparable to DB plans. By structuring a portfolio that is specifically focused on the particular liabilities of the plan, the sponsor can seek to minimize pension cost volatility and maximize the likelihood of achieving corporate return objectives.

**For more information on structuring cash balance plan portfolios, please contact Peter Austin at 617 248 6085.**



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## Note on “regulatory duration.”

For the sake of clarity, in this paper the author uses the simplifying assumption that cash balance plan sponsors value the liabilities as equivalent to the account balances. In practice, actuaries value cash balance plans by projecting the balances forward using the interest crediting rate, and then discounting that balance back by a different rate. In most cases, this methodology undervalues the account balances, since the discount rate is higher than the interest crediting rate used for the projection. As discount rates change, liability values fluctuate to a small degree, introducing interest-rate risk known as “regulatory duration.”

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