

2018 - SURVEY & TRENDS

CASH BALANCE PLANS



Cash balance plans are thriving and evolving to reduce employer risks and improve participant outcomes.



**CHANGE THE WAY YOU LOOK AT
DEFINED BENEFIT PLANS.**

**In an industry where confusion and skepticism
run high, we're building a refreshingly
new approach—one based on innovation,
understanding and transparency.**



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INTRODUCTION AND SUMMARY

The purpose of this study is to review the use of cash balance features in defined benefit plans sponsored by U.S. employers with a focus on the evolution of interest crediting bases utilized by those plans. Our emphasis on interest crediting is prompted by current and prospective cash balance plan sponsors seeking interest crediting bases that are more responsive to changing market conditions than the interest crediting bases commonly used. This objective is consistent with the ongoing need of employers to reduce the financial risks associated with sponsoring retirement plans while providing sustainable and secure benefits with better participant outcomes. The ability to adopt market-oriented interest crediting rates in cash balance plans was affirmed by Congress in 2006 legislation and by the IRS in subsequent regulatory guidance.

KEY FINDINGS INCLUDE:

- **Cash balance plans are prevalent among employers across many industries, including manufacturing, health care, finance/insurance, professional services, and utilities.**
- **More than 90% of “pure” cash balance plans – i.e., plans with no legacy traditional annuity benefits – continue to provide ongoing benefit accruals.**
- **Close to 60% of “mixed” cash balance plans – i.e., plans which arose due to the conversion from a traditional annuity plan – continue to provide benefit accruals.**
- **Overall, cash balance plans have been less susceptible than traditional annuity plans to the wave of defined benefit plan freezes in recent years. Among utilities, 90% of cash balance plans provide ongoing accruals.**
- **Unlike many traditional annuity plans, particularly frozen ones, that have adopted a liability driven investment (LDI) de-risking strategy in recent years, cash balance plans have not increased their allocation to fixed income assets, and frozen cash balance plans do not invest a greater share of assets in fixed income assets than plans with ongoing accruals.**
- **More than 35% of cash balance plans provide interest credits based on yields on a long-term index, such as 30-year Treasury bonds. Another 30% of the plans use an index (typically either a short-term or long-term Treasury security) with a minimum crediting rate of at least 3%.**
- **Market interest crediting rates are gaining ground, particularly in the professional services and health care industries where “pure” plans have been adopted at a rapid pace, especially since 2006.**
- **Plans that credit a market interest crediting rate enjoy the best and most stable funded status among cash balance plans, with more than 90% of such plans being fully funded. These plans also enjoy the most stable pattern of funding from year-to-year among cash balance plans.**

Our analysis is based on publicly available information found in IRS Forms 5500 from the Department of Labor and the Pension Benefit Guaranty Corporation (PBGC) historical premium database. Additional details regarding the data and our sources are provided along with a refresher on how cash balance plan benefits accrue in the Appendix.

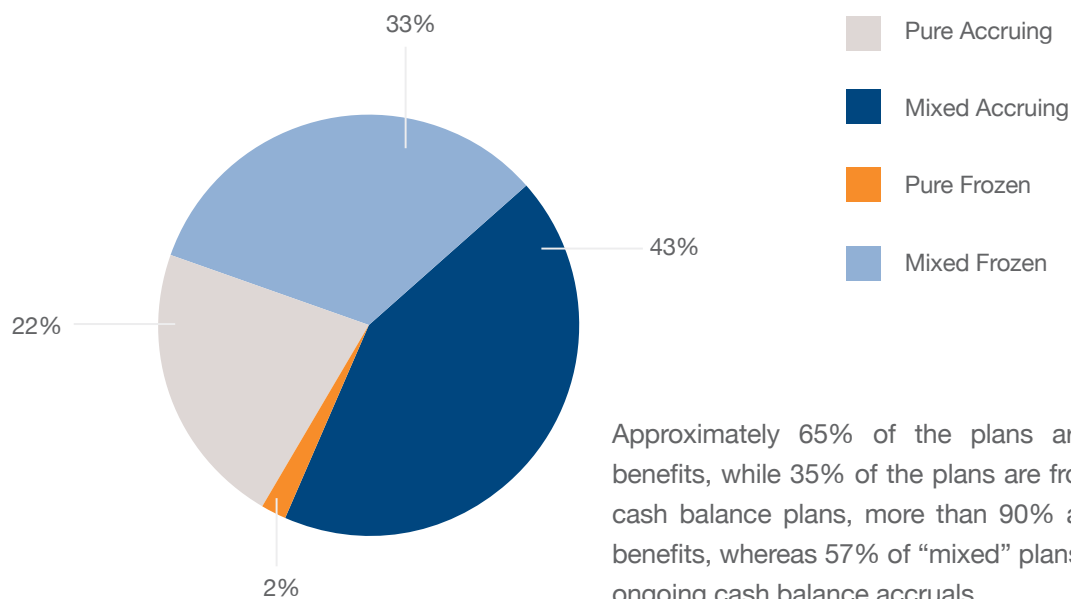
PLANS WITH CASH BALANCE FEATURES

PLANS REVIEWED

Of the roughly 45,000 single-employer defined benefit plans sponsored by U.S. private sector employers, more than 15,000 have cash balance features. The vast majority of these plans are small (less than 100 participants). The focus of our analysis is on 1,069 single-employer plans with cash balance features, each of which cover at least 100 total participants (including participants who have no cash balance benefits). In aggregate these plans cover more than 9.3 million participants. Details on the plans included in, and excluded from, our analysis can be found in the Appendix. Chart 1 breaks down the plans in our analysis, distinguishing “pure” cash balance plans from “mixed” plans (i.e., those that provide both cash balance and traditional annuity benefits or converted traditional annuity benefits to cash balance) and “accruing” plans from those that are “frozen” (i.e., no longer accruing any cash balance benefits):

Chart 1

BREAKDOWN OF SURVEYED PLANS



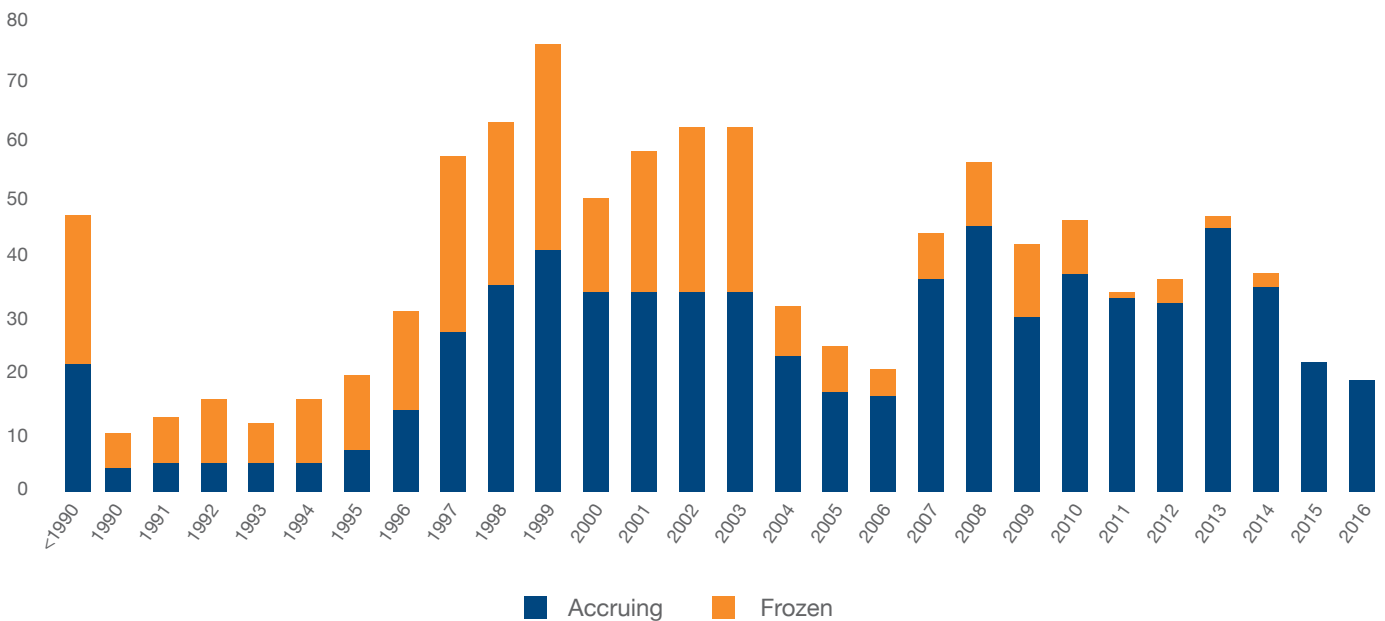
OBSERVATIONS:

These numbers compare favorably to the broader U.S. single-employer defined benefit universe, for which less than one-half of plans provide ongoing benefit accruals. This result is not surprising. Traditional annuity plan liabilities are highly sensitive to changes in interest rates, and the resulting changes in liabilities are often out of sync with the corresponding changes in asset values. The result is significant financial volatility for sponsors of such plans. On the other hand, cash balance liabilities and the resulting financial outcomes are typically more stable, although, as we will see below, the interest crediting basis can have a major impact on the degree of financial stability. That helps to explain why comparatively few pure cash balance plans have been frozen.

HISTORY

Chart 2 shows the number of surveyed plans by the year adopted (for “pure” plans) or when cash balance accruals were introduced (for “mixed” plans). The numbers each year are broken down by the current status (accruing or frozen). Employers first began to adopt cash balance provisions in the mid-1980s. But the large movement to cash balance didn’t happen until the mid-1990s. That movement was ultimately curtailed in the late 1990s when the IRS suspended processing determination letter requests for converted plans. Adoption of cash balance designs increased in the early 2000s and then again beginning in 2007, when the cash balance design was formally blessed and key legal issues resolved with the passage of the Pension Protection Act of 2006 (PPA).

Chart 2
PLANS BY ADOPTION / CONVERSION YEAR



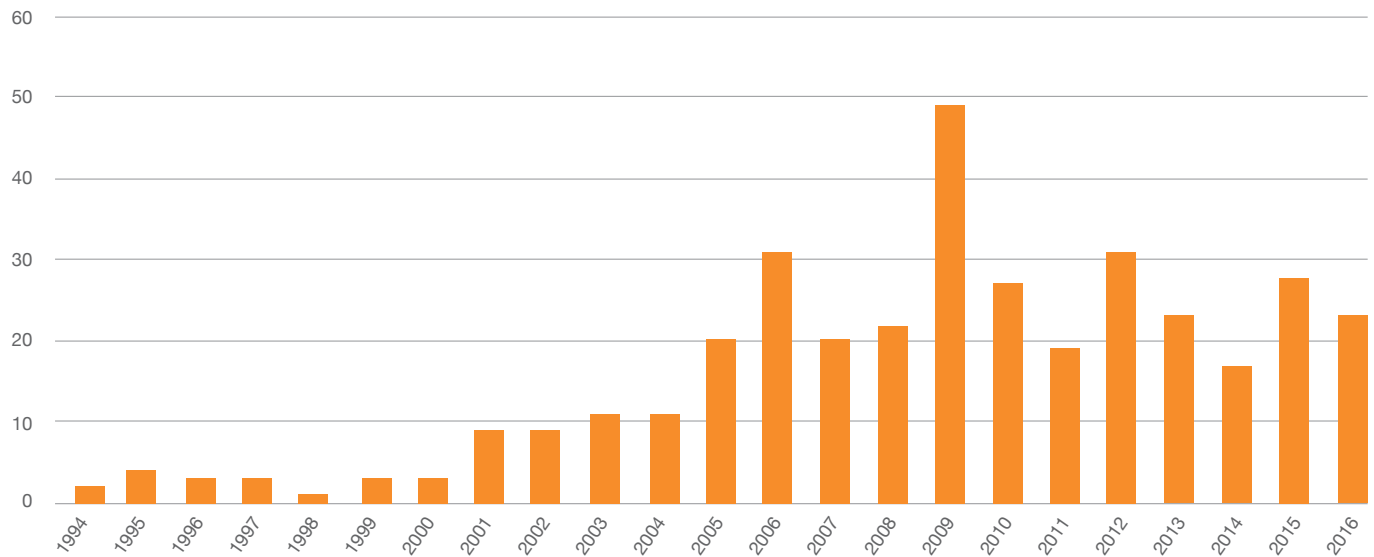
OBSERVATIONS:

The movement to cash balance until the late 1990s primarily involved the conversion of larger plans with traditional annuity benefits to cash balance plans (mixed plans). The suspension of IRS determination letters in the late 1990s was prompted by negative media accounts of the impact of conversions to cash balance on older workers and pressures on the IRS to investigate from certain advocacy groups and members of Congress. The adoption of new (pure) cash balance plans began in the early 2000s, spurred by the elimination of the so-called “combined 415 limit,” which enabled greater tax deferrals to business owners.

Actively accruing plans have been providing benefits under a cash balance formula for an average of 13.2 years; meanwhile, frozen plans provided benefits under a cash balance formula for an average of only 10.3 years.

For plans that have frozen cash balance accruals, Chart 3 shows the year in which the freeze occurred. The greatest activity for plan freezes was 2009, which is not surprising given the extremely poor market performance in 2008.

Chart 3
PLANS BY FREEZE YEAR



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The movement to cash balance until the late 1990s primarily involved the conversion of larger plans, while pure cash balance plans became popular in the early 2000s.

OBSERVATIONS:

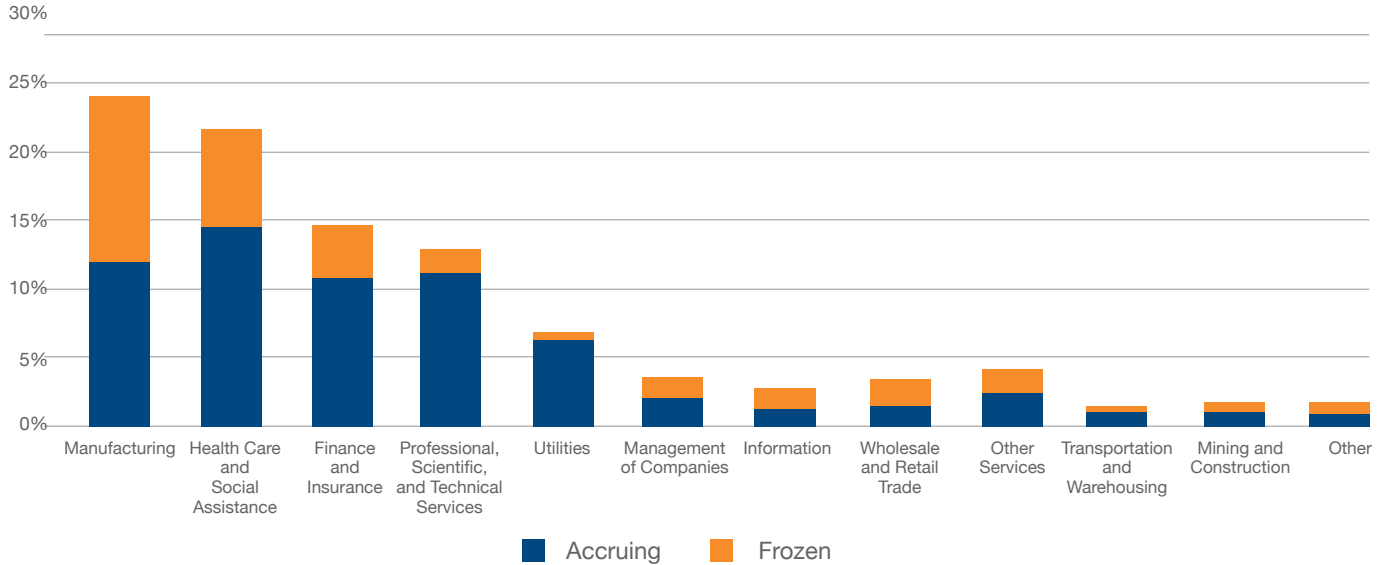
Ninety-four percent of plans that froze cash balance accruals are mixed plans. One interesting question is why such plans have not yet been terminated, especially those that were frozen many years ago. No doubt some do not yet have sufficient assets to settle all plan liabilities (including liabilities associated with traditional annuity benefits), while others may continue to provide traditional annuity accruals to some participants. Still others have been waiting (and waiting, and waiting) for interest rates to rise, which would lower the cost of purchasing annuities for traditional annuity benefits. Yet others may be content to operate frozen plans indefinitely after considering the high costs of plan termination. The hope for many sponsors that converted their traditional annuity plans to cash balance was that the plan change would stabilize and save the plan. But, as we will discuss, the average funded ratio for frozen plans is lower than for accruing plans, indicating that the cash balance design alone did not save the plan.

PLAN SPONSORS

Chart 4 shows the distribution of surveyed plans by industry and between accruing and frozen plans. The top industries with cash balance plans are manufacturing, health care, and finance/insurance, accounting for over 60% of the surveyed plans. Professional services and utilities round out the rest of the top five industries. While 24% of plans are sponsored by manufacturing companies, more than half of those plans are frozen. The health care sector sponsors the most actively accruing plans, followed by manufacturing and professional services.

Chart 4

DISTRIBUTION OF PLANS BY INDUSTRY



The health care sector sponsors the most actively accruing plans, followed by manufacturing and professional services.

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ASSETS

Chart 5 shows the distribution of plans by amount of plan assets, with 37% of plans currently having between \$10 and \$100 million in plan assets, and 14% having assets that exceed that exceed \$1 billion. Total assets for the surveyed plans are \$818 billion, averaging \$765 million per plan. However, with respect to mixed plans, such assets include amounts attributable to both traditional annuity and cash balance benefits. The aggregate assets for the pure cash balance plans are \$10 billion, averaging \$39 million per plan, such lower level reflecting the generally smaller size of those plans and their more recent adoption.

Chart 5
DISTRIBUTION OF PLANS BY ASSET SIZE

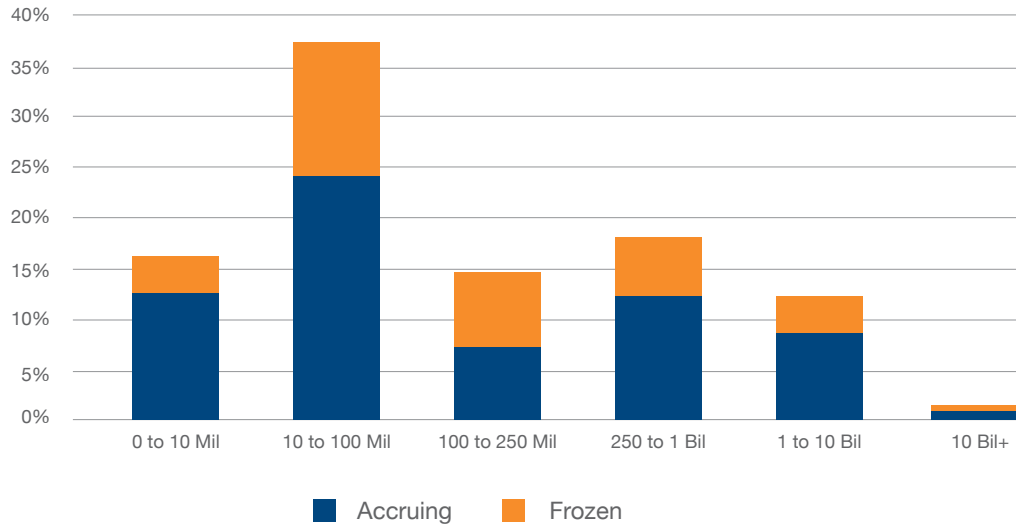
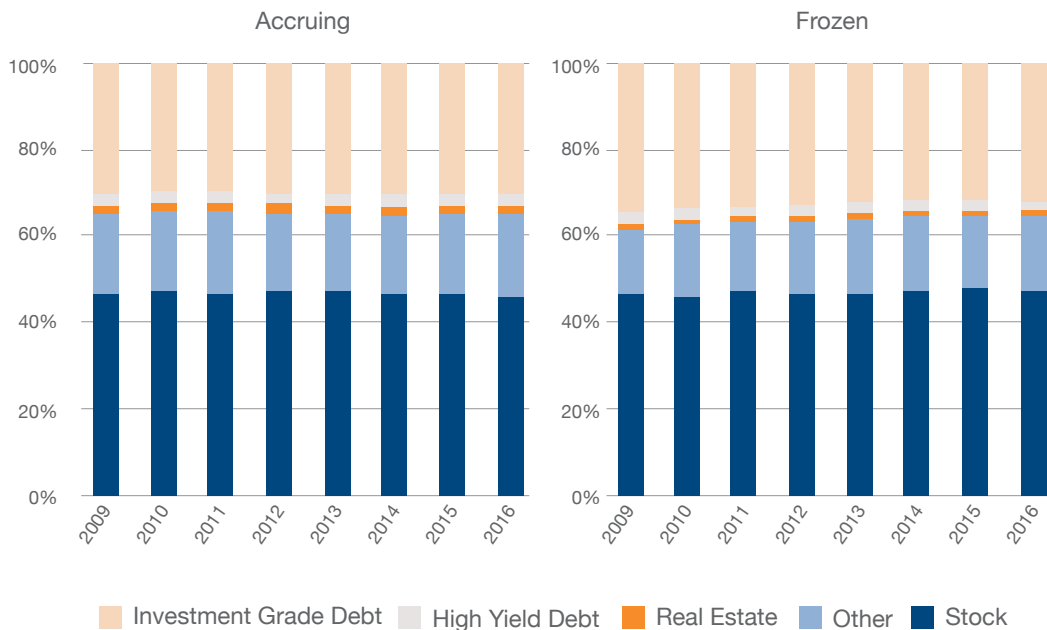


Chart 6 shows the historical average asset allocation for plans with more than 1,000 participants (smaller plans are not required to report this information). The average asset allocation has stayed fairly consistent with little difference between accruing and frozen plans.

Chart 6
AVERAGE ASSET ALLOCATION



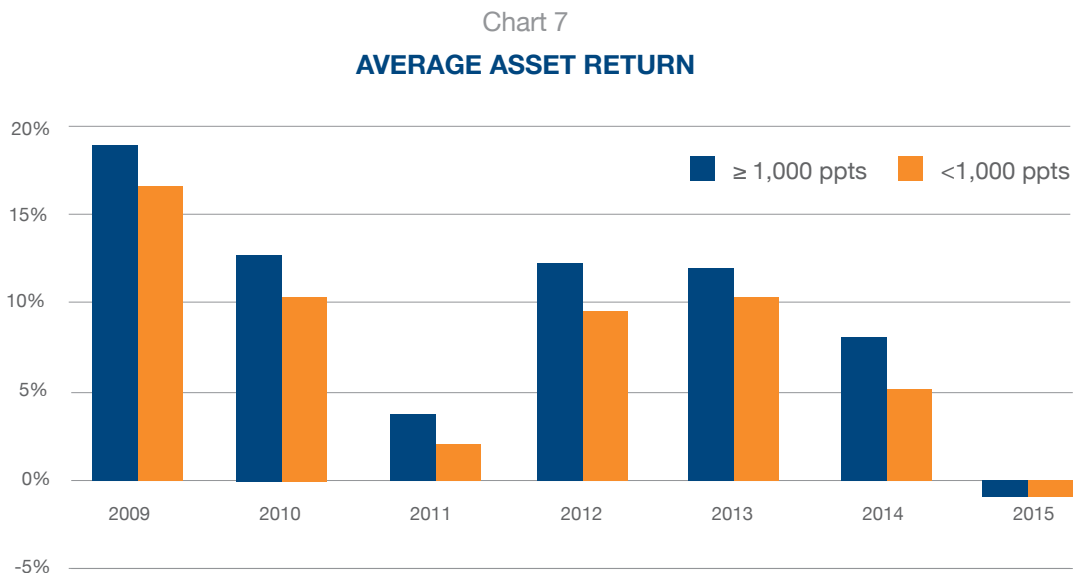
OBSERVATIONS:

Over the same time period, many traditional annuity plan sponsors adopted de-risking strategies such as a higher allocation to fixed income assets. This trend has been even more pronounced among frozen plans, consistent with the path toward plan termination. Neither of these trends – higher allocation to fixed income assets over time and greater emphasis on fixed income assets among frozen plans – apply to cash balance plans. This is likely due in part to the fact that fixed income assets are effective at “immunizing” traditional pension annuity obligations but not most cash balance obligations – e.g., there are no assets that can immunize cash balance accounts credited with long-term bond yields. In such cases, as discussed below, the only viable de-risking strategy for cash balance liabilities involves changing how cash balance accounts are credited with interest – i.e., switching to market-based interest credits – rather than changing how assets are invested.

The only viable de-risking strategy for cash balance liabilities involves changing how cash balance accounts are credited with interest rather than changing how assets are invested.

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Chart 7 shows the historical average asset returns for the surveyed plans with at least 1,000 participants and plans with less than 1,000 participants.



OBSERVATIONS:

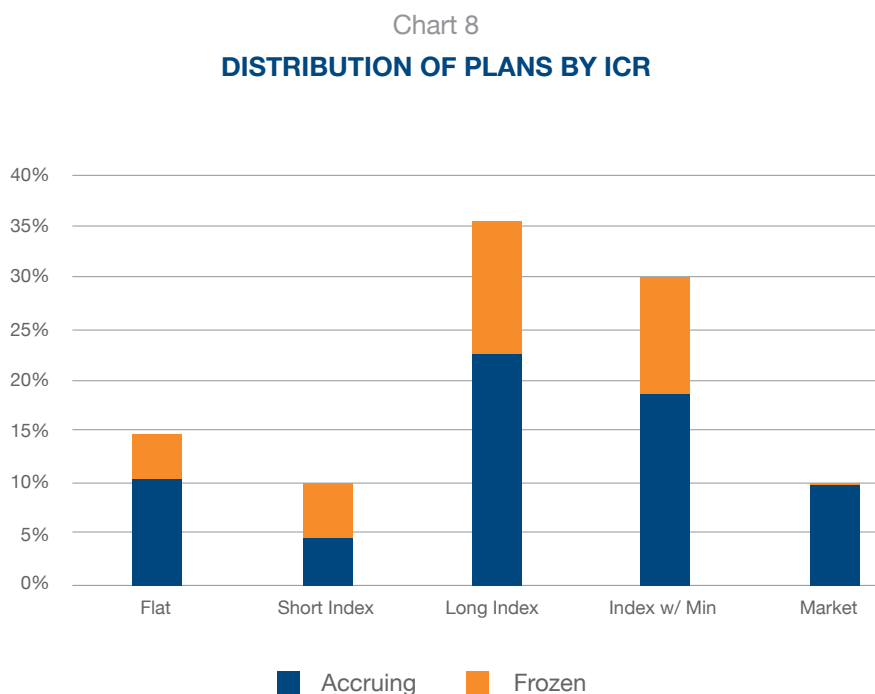
Larger plans have seen consistently better returns (9.3% average return compared to 7.4% for smaller plans during 2009–2015), likely due to economies of scale, increased sophistication, and more aggressive asset allocations among larger plans.

INTEREST CREDITING BASES

For cash balance plans, the two key elements in determining plan benefits and costs are the benefit credits (typically based on participants' pay, age, or service) and interest credits, which are determined by applying an interest crediting rate to participants' cash balance accounts. The basis for crediting interest is a key determinant of both plan costs and risks. Understanding the behavior of plan interest credits is crucial to understanding the behavior of plan liabilities as well as participants' benefits.

Among the surveyed plans, we identified over 50 distinct interest crediting rates, or ICRs, being used by plans. For this analysis, we divided plans into five groups: flat rate, short index, long index, index with minimum, and market return.

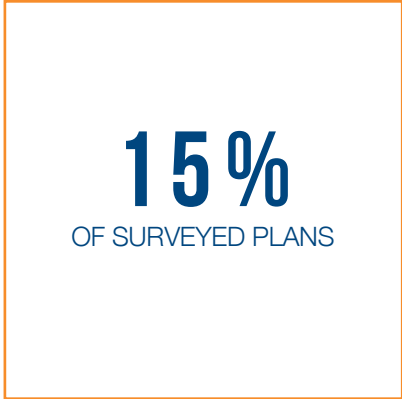
Chart 8 shows the percentage of surveyed plans broken down by the ICR groups discussed below.





Flat rate

A single rate that applies in all years, such as 5%. About 15% of plans in our survey provide a flat interest credit. Of the flat rate plans, 85% provide an interest credit of at least 4%, and 57% provide a credit of at least 5%. The average flat interest credit provided is 4.60%.



OBSERVATIONS:

Under IRS regulations, a flat rate cannot exceed 6%. A flat interest credit has the virtue of simplicity, and it provides certainty to plan sponsors and participants regarding the value of the benefit at any payment age. If a sponsor can accurately estimate when benefits will be paid (a big if), these liabilities can be hedged in a manner similar to traditional pension liabilities. Also, plans with modest flat interest credits (e.g. 2% or less) can be more or less hedged even if the payment date is uncertain. The real problem arises for plans with a generous flat interest credit (e.g. 4% or higher) combined with uncertainty regarding payment dates. This combination produces a valuable option for participants (the higher the flat interest credit, the greater the likelihood participants will defer receipt of the benefit as long as possible unless interest rates move sharply higher), making these liabilities difficult or impossible to hedge.

10%
OF SURVEYED PLANS

Short index

A rate that varies from period to period based on yields on Treasury securities with less than 10 years to maturity, such as the rate on 1-year Treasury bills, or other short-term indices, such as the CPI. Plans that otherwise would be in this category but either (1) have minimum interest credits of 3% or more, or (2) add more than 1% to the short-term index, are included in the index with minimum group. Of the surveyed plans, 10% provide an interest credit based on a short index.

OBSERVATIONS:

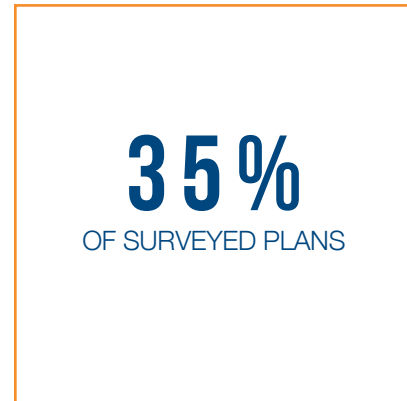
Many early cash balance plans credited interest using a short-term bond index, sometimes with an added fixed margin (e.g., 1%). Beginning in the mid-1990s, a movement to 30-year Treasury bonds occurred due to changes in the law and the issuance of IRS Notice 96-8 regarding lump sums in cash balance plans.

For plans using a short index, the interest credit promise is more or less “investable” – in other words, the sponsor can invest plan assets to move with plan liabilities (i.e., account balances), if desired. Alternatively, sponsors can invest in a riskier portfolio and hope to “beat” the relatively modest interest credit, thereby generating company costs that are below the total benefit credits under the plan, but at the expense of funded status and cost volatility. The downside to this design is that, all else equal, these interest credits will produce lower benefits over a retirement savings horizon than using other interest crediting bases.



Long index

A rate that varies from period to period based on yields on Treasury securities with 10 or more years to maturity, such as the rate on 30-year Treasury bonds or on corporate bond “segment” rates published by the IRS. Plans that otherwise would be in this category but with minimum interest credits of 3% or more are included in the index with minimum group. This is the most common ICR among surveyed plans, with more than 35% providing an interest credit based on a long index. Among these plans, the overwhelming majority (80%) base the interest credit on the yield on the 30-year US Treasury bond.



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For a long index, there is no hedging portfolio available to immunize the promise, so sponsors have no choice but to live with funded status and cost volatility.

OBSERVATIONS:

For a long index, there is no hedging portfolio available to immunize the promise, so sponsors have no choice but to live with funded status and cost volatility. Worse, if long-term interest rates increase, liabilities also increase (because accounts will grow based on higher long-term bond yields), while plan assets (particularly fixed-income investments) decline in value.



30%
OF SURVEYED PLANS

Index with minimum

This design combines a flat rate interest credit of at least 3% with an index, providing participants with the greater of the two interest crediting rates. This category also includes plans that add more than 1% to a short-term index. This group covers 30% of surveyed plans.

The combination of an index with a meaningful minimum poses a great challenge to pension risk management.



OBSERVATIONS:

Under current IRS regulations, a minimum rate cannot exceed 5% (4% if the index is one of the allowable corporate bond rates). Of course, the plan specified minimum can be highly beneficial to participants, especially during periods, like recently, when the index produces very low values. However, the combination of an index with a meaningful minimum poses a great challenge to pension risk management.

Market

Under this design, interest is credited based on the actual investment returns of assets specified under the plan, including the plan's own assets, a designated portion (or portions) of the plan's assets, or on one or more specified outside funds (e.g., mutual funds). Because annual market returns can be negative in some years, the law requires that the cumulative investment return must be at least 0% (i.e., the participant cannot receive less than the sum of the benefit credits). Regulations also permit plans to credit a minimum cumulative return of up to 3% per year (rather than the 0% statutory cumulative minimum). Among the surveyed plans, 10% currently provide an ICR based on market returns.



OBSERVATIONS:

Since interest credits are based on actual market returns, plan assets and liabilities (i.e., account balances) tend to move together, producing an experience very similar to a defined contribution plan. For these plans, financial volatility moves from the sponsor to participants, but, at the same time, participants can hope to earn higher returns than those from other ICR designs and therefore accumulate larger retirement benefits over the long-term. It is even possible for a plan to credit different market returns to different groups of participants, much like target-date funds in a defined contribution plan.

Prior to the passage of the PPA in 2006, all legal guidance related to cash balance plans were provided by the IRS through regulations and other rulings and by the Courts. PPA provided the first formal recognition by Congress of cash balance and other

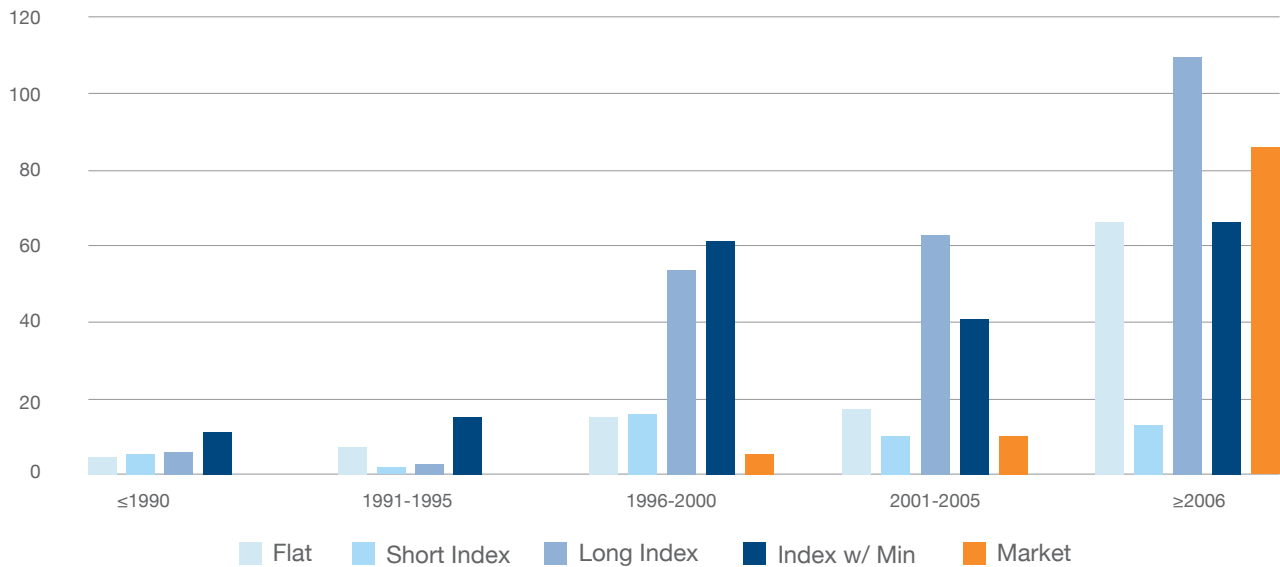
“hybrid” defined benefit plans. Before PPA, due to the limited legal guidance, very few cash balance plans credited interest based on market returns. PPA not only affirmed the legality of market return interest but established an overall standard for cash balance interest crediting based on market rates of return. Cash balance plans cannot provide interest that exceeds market rates of return, as defined in the law and IRS guidance. Adoption of market based interest designs was dependent on the regulatory process (final regulations were not issued until 2014), but today, this design includes 10% of the surveyed plans, almost all of which were adopted in the past 10 years.

Because this design is relatively new, and because it closely aligns plan assets and liabilities, it is not surprising that only 3% of these plans are frozen, compared to over 39% of others.

As mentioned above, the most common ICR designs are long index and index with minimum, which cover about two-thirds (65%) of the surveyed plans. The prevalence of these ICR designs largely reflects IRS guidance in place prior to the 2006 Pension Protection Act.

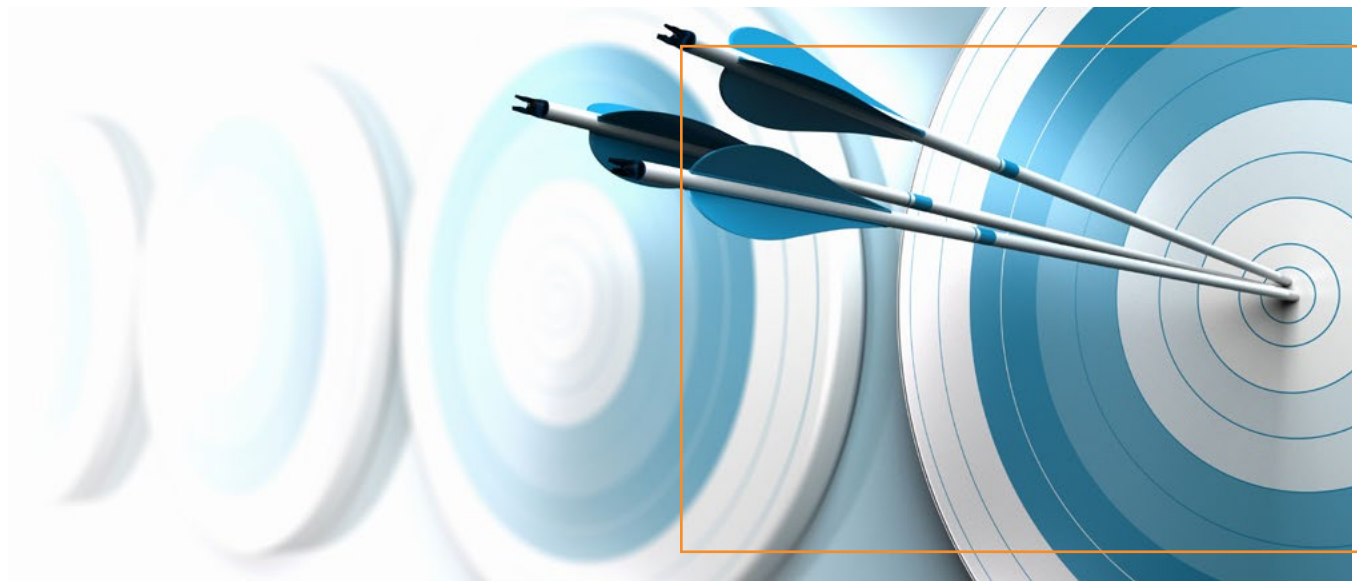
The chart below shows the ICRs used by plans adopting cash balance accruals grouped by year of adoption:

Chart 9
ACCRUING PLANS BY ADOPTION YEAR



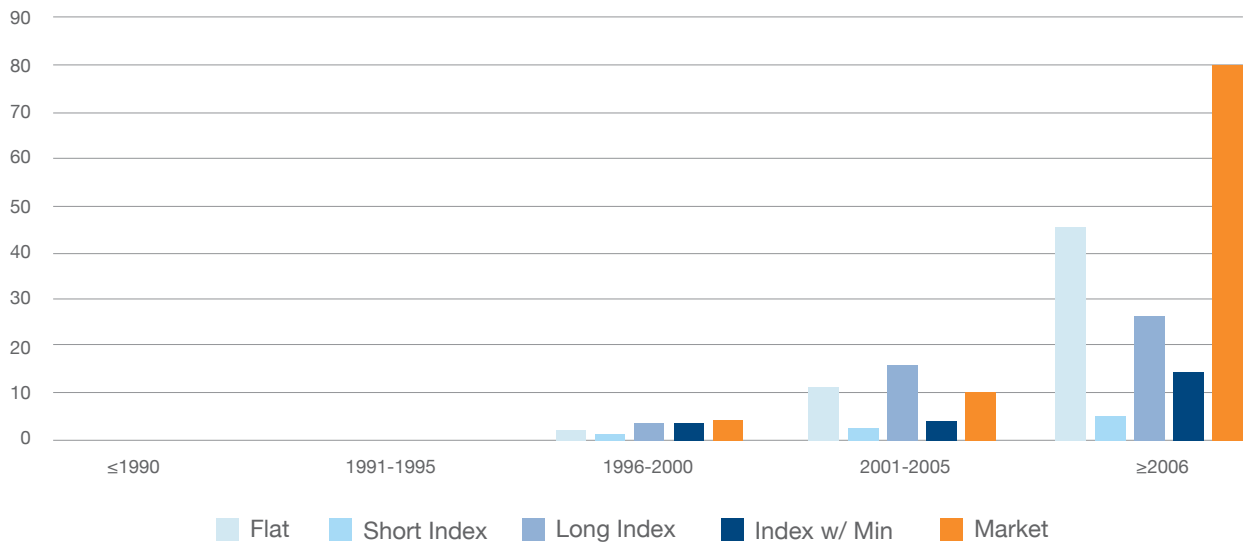
The number of plans adopting cash balance accruals spiked in the second half of the 1990s in the wake of IRS clarifying guidance on lump sum distributions from cash balance plans. In the decade following this guidance, the overwhelming majority of plans adopted “long index” or “index with minimum” ICRs consistent with IRS guidance.

Prior to 2006, very few sponsors adopted market ICRs, but since 2006 (when Congress provided rules for market ICRs), these designs are the second most common. Plans with flat interest credits have also seen more significant adoption rates since 2006.



Of course, prior to 2006, the bulk of plans adopting cash balance accruals were “mixed” plans. In more recent years, the adoption of “pure” cash balance plans has risen significantly, as shown below:

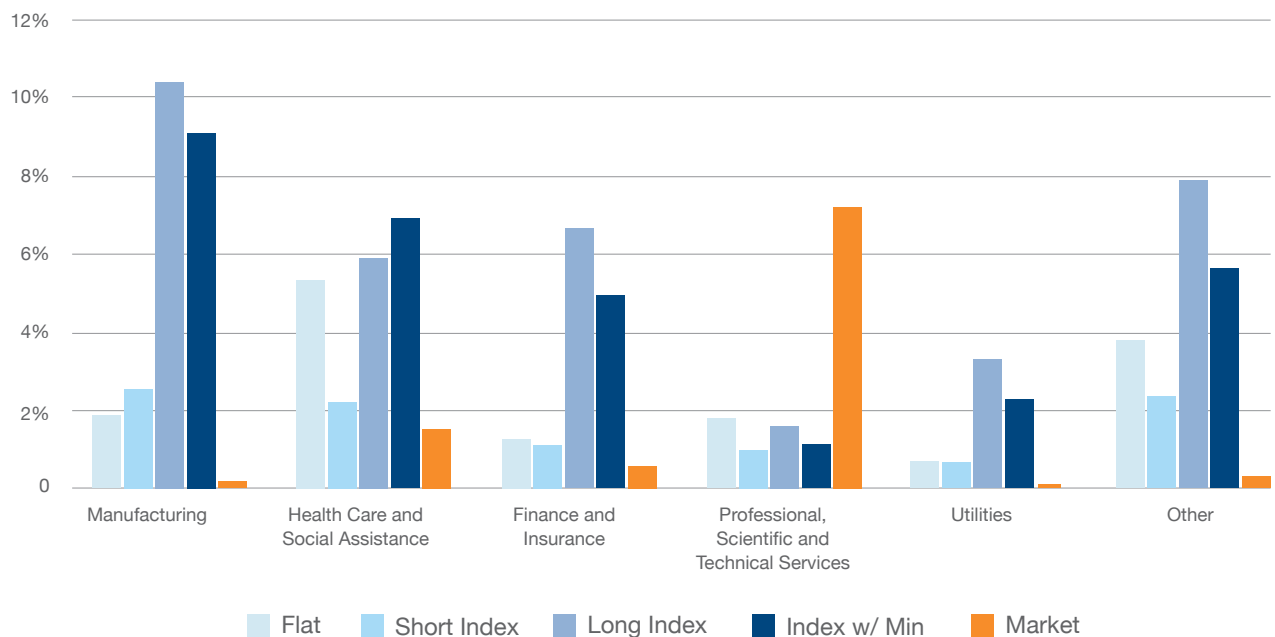
Chart 10
PURE, ACCRUING PLANS BY ADOPTION YEAR



Since 2006, new cash balance plans have adopted market ICRs more often than any other approach.

In Chart 11, we look at the ICR used in the top five industries sponsoring cash balance plans.

Chart 11
DISTRIBUTION OF PLANS BY INDUSTRY AND ICR



In most industries, index-based interest credits (with or without minimums) continue to dominate, but there are a couple exceptions. In the health care industry, flat rate ICRs have a significant presence and market ICRs are gaining ground, while among professional services, flat rate ICRs are overrepresented and market ICRs are dominant.

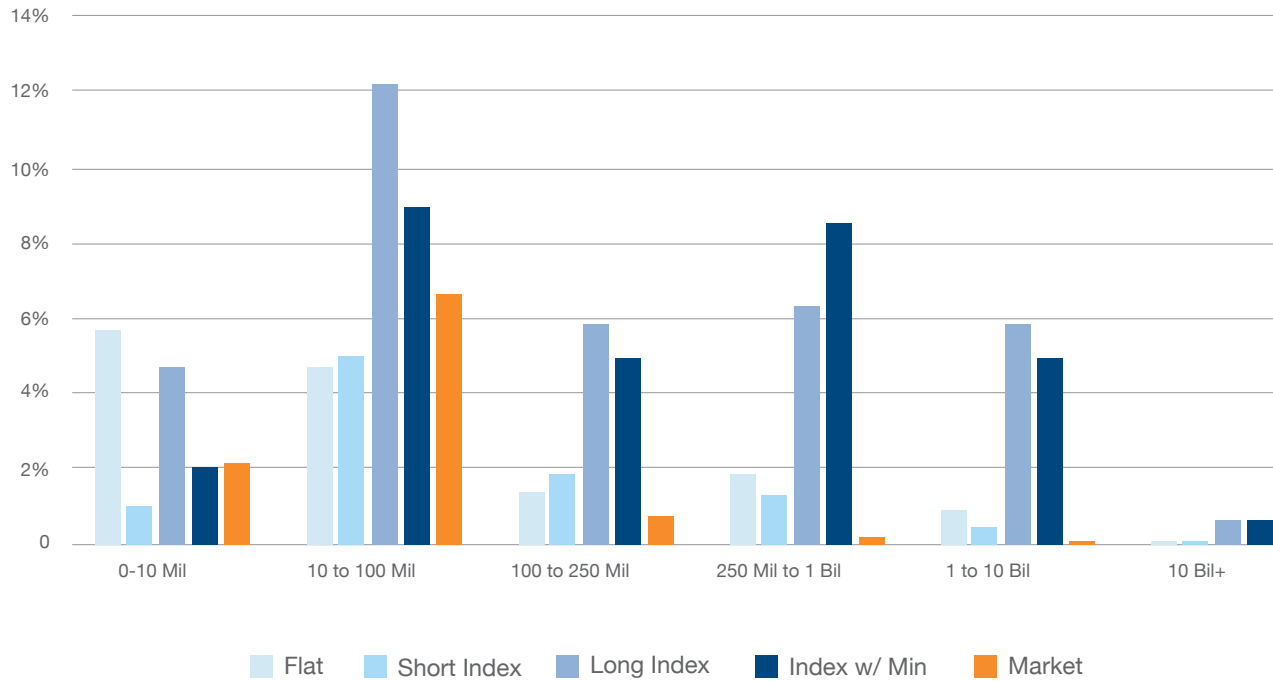
OBSERVATIONS:

The dominance of market ICRs among professional services is primarily at partnerships and other smaller firms that were not burdened by traditional annuity plans and therefore adopted new (pure) cash balance plans following enactment of the PPA in 2006. Other plan sponsors were inclined to wait until definitive IRS guidance on interest crediting was available, which occurred in 2014. For the most part, that guidance is now complete.



Chart 12 looks at the prevalence of different ICRs by plan size in terms of assets.

Chart 12
DISTRIBUTION OF PLANS BY ASSET SIZE AND ICR



Again, index-based ICRs (with or without minimums) are prevalent at all sizes. Plans with flat rate ICRs “skew small”, dominating in the less than \$10 million space but less prevalent among larger plans. Plans with market ICRs are most strongly represented in the \$10-\$100 million space, but they are common among smaller plans and starting to make headway among larger plans, too.



FUNDED STATUS AND FUNDING VOLATILITY

Volatility has been a major driver of the movement away from traditionally designed defined benefit plans beginning before the turn of the century and continuing to date. The potential for volatility creates uncertainty around budgeting and cash management, destabilizes corporate balance sheets, and exposes plans to penalties associated with underfunding, such as massive increases in PBGC premiums in recent years owed by underfunded plans.

For purposes of this section, we consider funded status based on the liability used by the PBGC to determine variable-rate premiums and the associated market value of plan assets. Other funded ratios could have been used, including for minimum funding, financial accounting or estimated termination liability. However, the PBGC numbers were easier to access for the surveyed plans and avoided some pitfalls with the other measures. For example, termination liabilities can only be estimated and are heavily dependent on plan provisions, such as the extent to which lump sums are available and elected.

We observed that cash balance plans are, on average, better funded than the broader pension universe, boasting a median funded ratio of 99%, compared to just 89% among all single-employer defined benefit plans with at least 100 participants.

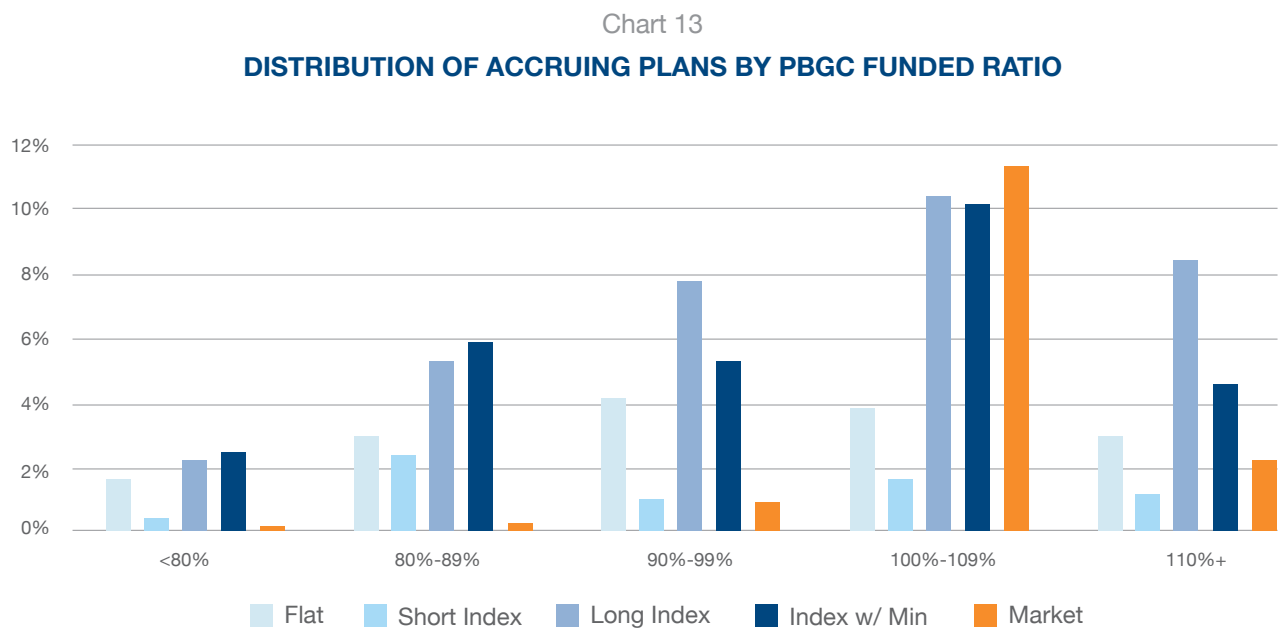
Frozen cash balance plans are less well funded than accruing cash balance plans, with a median funded ratio of just 90% for frozen plans, compared to a median of 100% among plans that provide ongoing accruals.



OBSERVATIONS:

It is likely that underfunding and the decision to freeze accruals are related and are both symptoms of financial challenges at the organizational level. No doubt some cash balance plans that froze accruals had enough assets to proceed with plan terminations. Those plans, which would have been funded at 100% or more when measured using the PBGC variable premium basis, are not included in our analysis. Therefore, the remaining frozen plans are likely to have lower funded ratios than those that terminated. Accordingly, we focus here on cash balance plans that continue to provide ongoing accruals.

Chart 13 shows the most recent funded status of accruing cash balance plans for each ICR basis identified above.



We see that, for plans that provide a flat or short index ICR, funded ratios are dispersed fairly evenly, whereas plans that provide long index or index with minimum ICRs tend to be better funded, although even for these plans, more than 45% are at least somewhat underfunded.

The major exception here are plans that provide a market ICR – more than 90% of these plans are at least 100% funded, and funded ratios are generally tightly bunched around 100%. Given that these plans typically define liability growth in terms of plan asset returns, this result is not surprising.

OBSERVATIONS:

One complication with Chart 13 is that, in many cases, cash balance plans have significant legacy liabilities based on traditional annuity formulas, and these liabilities are responsible for the wide range of funded status shown in Chart 13. Funded ratios are relatively lower for plans using flat and short index ICRs because such ICRs were much more common in early cash balance plans (i.e., those adopted before the mid-1990s) and those early adopters were almost entirely conversions from traditional annuity formulas.

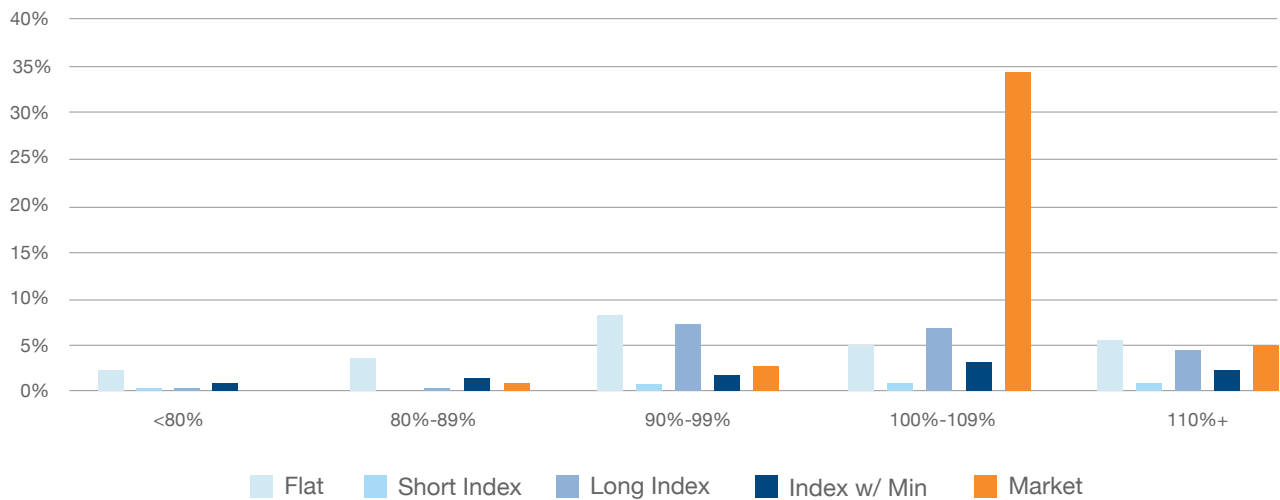
More than 90% of plans that provide a market ICR are at least 100% funded, and funded ratios are generally tightly bunched around 100%.

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To remove the impact of the legacy annuity formulas, Chart 14 shows the most recent funded status of only pure (i.e., no legacy annuity liabilities) accruing cash balance plans included in our survey.

Chart 14

DISTRIBUTION OF PURE, ACCRUING PLANS BY PBGC FUNDED RATIO



This analysis shows that, overall, pure cash balance plans tend to be very well funded, with the vast majority of the plans having funded ratios of 90% or higher. Plans that credit market rates of return have a strong tendency to be funded at 100% or higher.

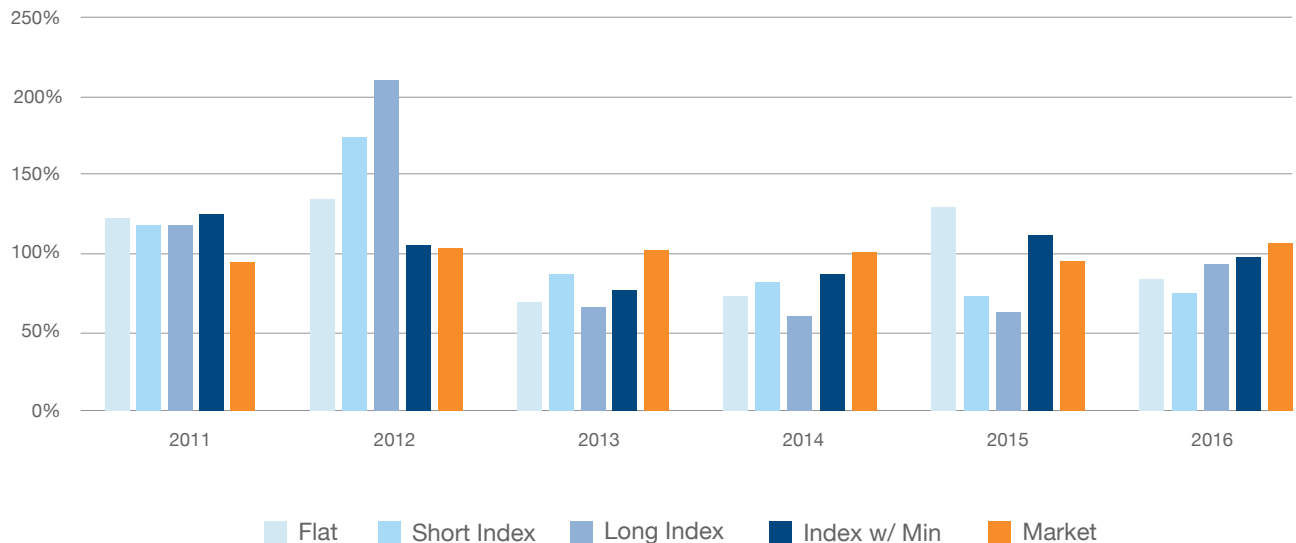
OBSERVATIONS:

The overall higher funded ratios for plans with market ICRs relates, in part, to the sponsors of those plans tending to contribute amounts close or equal to the sum of the benefit credits granted each year. Because plan assets tend to be invested similarly to how the accounts are being credited with interest, the funded ratios tend to remain close to 100% no matter what is happening in the securities market. In contrast, sponsors of plans with other ICRs exhibit a much broader range of funded ratios, with about 10% of plans showing a funded ratio below 90%.

To gauge the impact of changing market conditions on financial outcomes, we next look at the pattern of annual funding for different types of plans. The graph below shows “normalized” contributions during 2011-2016. We calculate normalized contributions by looking at the average contribution during the six-year period and expressing each year’s contribution as a percent of this average. The result is that plans with level annual contributions would show up as 100% each year on the normalized scale. First, we consider the results of these calculations for all of the accruing plans in the survey.

Chart 15

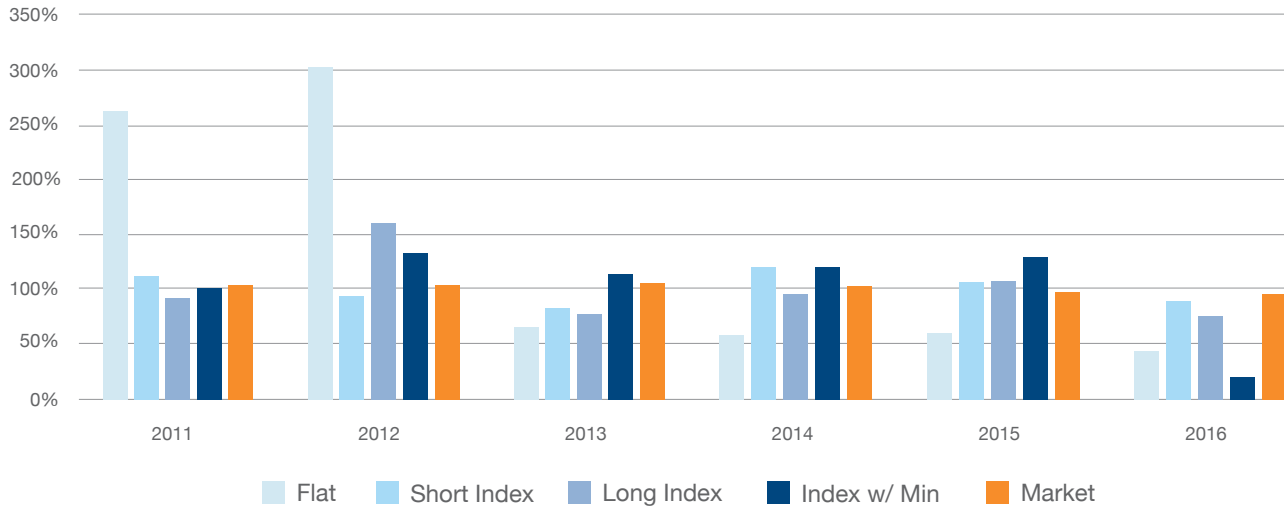
NORMALIZED ANNUAL CONTRIBUTION OF ACCRUING PLANS



Based on this metric, plans with long index ICRs have the widest range of normalized contributions and are the most volatile, with contributions ranging from 60% of the normalized contributions in 2014 to 210% in 2012. More generally, all types of cash balance plans appear to suffer from significant funding volatility except for those with market ICRs, where the range of contributions goes from 93% in 2011 to 105% in 2016.

As discussed above, many of these plans include legacy annuity liabilities that are responsible for at least some of the volatile funding pattern. In order to remove that impact, in Chart 16 we apply the same methodology to pure, accruing cash balance plans:

Chart 16
NORMALIZED ANNUAL CONTRIBUTION OF PURE, ACCRUING PLANS



Except for plans that provide a flat ICR, annual funding is less volatile for these pure cash balance plans as compared to all currently accruing surveyed plans. Plans that provide short index ICRs do pretty well here, with contributions ranging from 83% of normalized contributions in 2013 to 120% in 2014. But once again, plans with market ICRs see the most stable funding pattern (95% of normalized in 2016 to 105% in 2013.)

OBSERVATIONS:

The contribution patterns here reinforce the story on funded ratios above. Changing market conditions have virtually no impact on plans with market ICRs both because asset and liability values tend to move in tandem and sponsors of those plans tend to contribute amounts close or equal to the sum of participants’ benefit credits each year. The impact of changing market conditions on other plans is more pronounced from year to year due to the mismatch between assets and liabilities and the application of the ERISA funding rules, which permit actuarial gains and losses due to investment experience, interest rate changes, and other plan experience to be funded over 7 years.



Changing market conditions have virtually no impact on plans with market ICRs because asset and liability values tend to move in tandem.

4

EMPLOYEE OUTCOMES

To this point, we have focused on the impact of cash balance plans on employers; in this section, we look at the benefits produced under different ICR designs for participants.

Chart 17 shows the average interest credits provided by different types of cash balance plans from 2009 through 2015.

Chart 17

AVERAGE ANNUAL INTEREST CREDIT



Not surprisingly, plans that provide flat ICRs produce consistent interest credits from year to year, and plans that provide index with minimum ICRs have seen a similar experience, due to minimum rates applying in most years for many of these plans because of historically low Treasury rates at all durations. The plans that provide short index and long index ICRs have also produced broadly stable interest credits over the period reviewed, consistent with the recent behavior of short- and long-term interest rates, respectively.

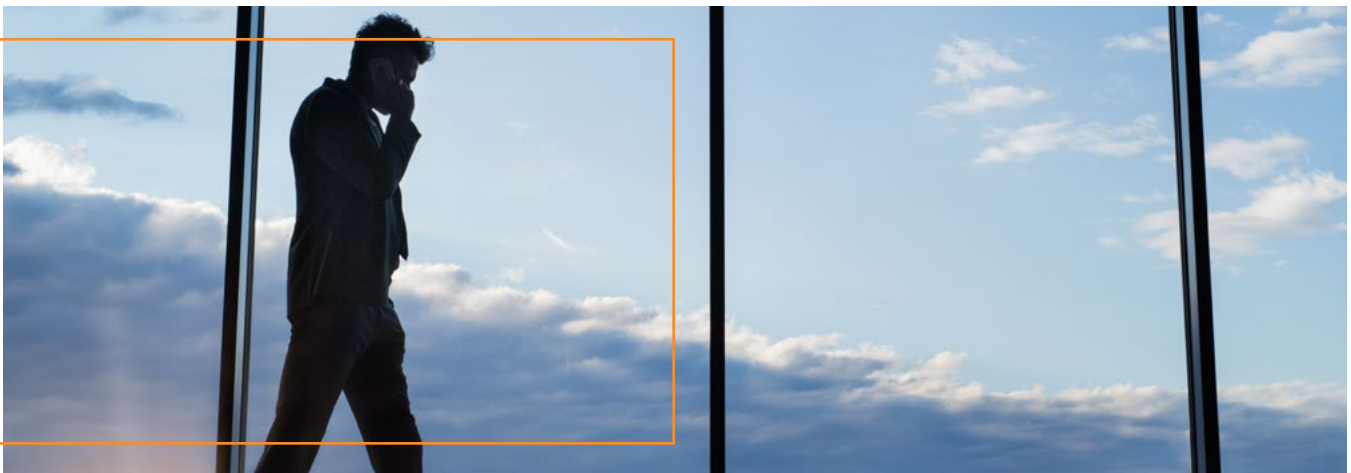
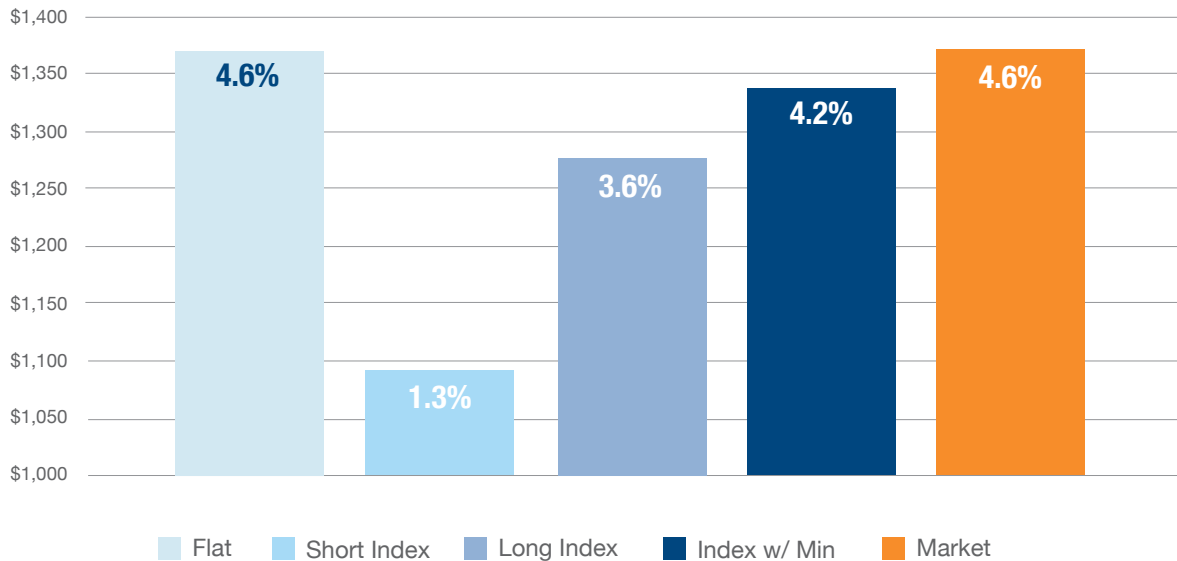
Market ICRs are the outlier here, producing both the highest ICRs among cash balance plans (9.3% in 2009) and the lowest (-0.6% in 2015), an experience similar to what participants in defined contribution plans have seen.

OBSERVATIONS:

The average results above don't show the total picture, especially for plans using flat and index with minimum ICRs. In practice, there is a fairly wide range of plan specified flat rates (1% to 7.5%) and 3% or higher minimum rates for the index with minimum ICRs (3% to 7%). In contrast, the ranges of interest rates credited among plans using either short- or long-term ICRs was relatively narrow in any given year. For plans using market ICRs, the range of returns in any given year showed some variation among the plans due to the different market basket of assets specified in the plans for crediting interest.

Chart 18 illustrates the impact of the annual ICRs shown above on a participant with a \$1,000 account balance at the beginning of 2009 and ignoring the impact of future accruals (average annual returns are shown in the boxes on the chart).

Chart 18
GROWTH OF \$1,000 BALANCE FROM 2009-2015



Overall, plans with flat and market ICRs have provided the most generous interest credits during this seven-year period (a 4.6% compound annual return), but plans with flat ICRs have done so with no volatility to participants. Plans that provide index with minimum have delivered average returns of 4.2% per year, while those that provide long index ICRs have returned 3.6% per year on average. From this, we can infer that the presence of minimum interest credits in plans that would otherwise be long index has increased the return to participants by about 0.6% per year (4.2% minus 3.6%) during 2009-2015.

Finally, plans that provide short index ICRs have lagged significantly over the period in question, delivering an annual return of just 1.3% on average, consistent with the very low short-term interest rates prevailing during this period.

FINAL THOUGHTS ON EVOLVING CASH BALANCE DESIGNS

Traditional defined benefit plans include a bundle of financial and demographic risks to employers. Over the past two decades, employers underwriting these promises have suffered unprecedented volatility and costs much higher than anticipated. Not surprisingly, many employers have been moving away from these designs and toward more transparent designs that move retirement-related risks to employees.

Cash balance plans have always represented a step in the direction of increased transparency and reduced employer risk. The fact that 65% of cash balance plans continue to accrue benefits, a much higher percentage than traditional annuity plans, indicates that they have been helpful to employer risk management compared to traditional annuity plans. In some industries, the prevalence of accruing cash balance plans is even higher. Notably, more than 90% of cash balance plans sponsored by utility companies continue to provide new benefits.

But most cash balance plans still present risks to employers, in terms of funded status and cash flow volatility. The risks are greatest for plans that provide generous flat or minimum interest credits but also exist for plans that provide interest credits based on a long index such as the 30-year Treasury yield. In some ways, de-risking these cash balance promises is more difficult and expensive than de-risking traditional annuity liabilities. An effective de-risking strategy for these cash balance plans would be to change to a market interest crediting basis rather than changing how assets are invested.

Plans that provide short index interest credits can deal effectively with employer risks, but greater certainty comes at the expense of participants, who typically earn very modest interest credits.

Market interest credits address employer risk issues while producing benefits as good as or better than other ICR designs, but they introduce volatility into participant account balances similar to defined contribution plans. However, most participants are arguably in a better position than employers to withstand short-term investment market fluctuations because they will not (or should not) tap those assets for a long time. Plan sponsors that have adopted or moved to market return design structures have reduced or eliminated market and cost volatility from their retirement program while providing participants with professionally managed investment returns that have produced better participant outcomes.



APPENDIX

A cash balance plan is a defined benefit plan that expresses benefits as account balances. Each participant has a notional account that grows with benefit credits while actively participating (typically based on participants' pay, age, and/or service, analogous to an employer-funded DC plan) and is adjusted periodically by plan specified interest credits (analogous to DC plan investment returns) while the account remains in the plan or until an annuity commences. Interest credits may be based on a fixed rate, an inflation index, a bond yield, a corporate bond "segment" rate, the trust's rate of return, or a combination of investable funds.

Sources and Data

Our analysis is based on publicly available information found in IRS Forms 5500 from the Department of Labor and the Pension Benefit Guaranty Corporation historical premium database. All data released by the DOL through February 2018 is included.

Other references to total single-employer plans and premium increase were found in 2017 Private Pension Plan Bulletin released by the Employee Benefits Security Administration and the PBGC 2017 Annual Report.

The surveyed plans include single-employer plans with at least 100 total participants in 2014, 2015, or 2016 that filed a Form 5500 or Form 5500-SF. Plans with characteristic code "1C" or with "Cash Balance" in the plan name were selected for analysis. Plans that file on the Form 5500-EZ, including "one-participant" plans that file on the Form 5500-SF, are excluded from the analysis. Additionally, terminated plans, multiple-employer plans, and plans that do not contain cash balance features are excluded from our analysis.

Off-calendar year plan years are included in the analysis based on the calendar year in which the plan year ends.

Unless otherwise explicitly stated, the following terms mean:

- **Assets: the fair value of assets reported on the Form 5500 Schedule H**
- **Asset allocation: based on the Form 5500 Schedule R**
- **Asset return: based on line 10 of the Form 5500 Schedule SB**
- **Frozen plan: plans where the cash balance benefit is no longer accruing, in some cases a mixed plan may still have traditional annuity benefits accruing**
- **Industry: classification is based on line 2d of the Form 5500**
- **Participants: count is based on line 6f of the Form 5500 or line 5b of the Form 5500-SF**

Historical information assumes the most recent ICR applies to all participants and has been in effect since the adoption of the cash balance feature. ICR for a plan is based on our understanding of the description in attachments to a plan Form 5500 Schedule SB. Classification of ICRs ignored specific months and any rounding or averaging. When determining the interest crediting rate applicable for a plan year, the rate applicable for the November preceding the plan year is assumed to apply for the entire plan year. Interest credits may be based on a fixed rate, an inflation index, a bond yield, a corporate bond "segment" rate, the trust's rate of return, or a combination of investable funds.

The following charts provide additional details on information used in the survey.

Chart 19 provides detail on the plans surveyed. For plans with multiple cash balance formulas, we applied professional judgment on a case-by-case basis to identify the formula applicable to the most participants and used that formula.

Chart 19
DISTRIBUTION OF SURVEYED PLANS

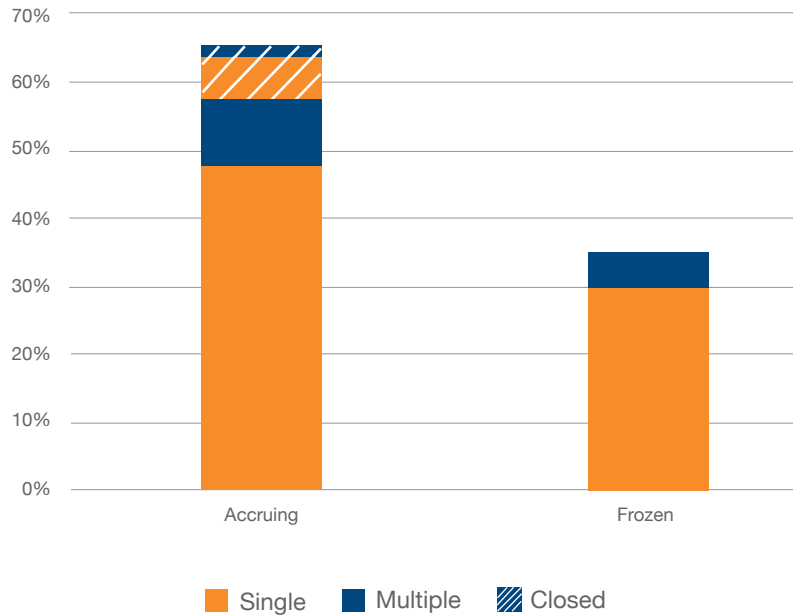


Chart 19 also identifies the subset of 83 accruing plans included in the survey that have closed participation to new entrants at some point.

Chart 20 shows the distribution of plans by participant count:

Chart 20
DISTRIBUTION OF PLANS BY PARTICIPANT COUNT

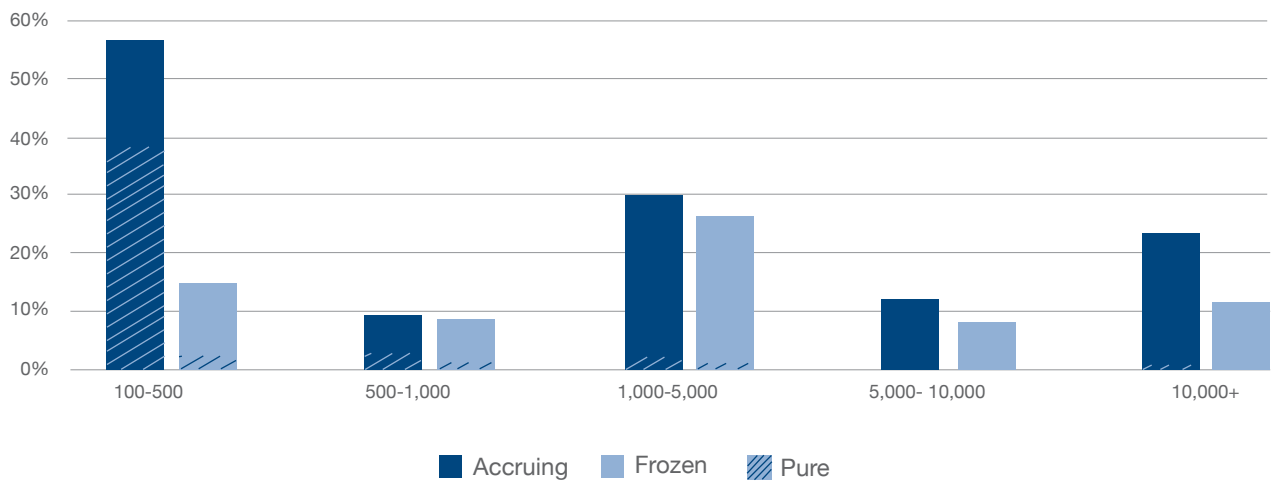


Chart 21 provides additional detail on the usage of various interest crediting rates:

Chart 21
DISTRIBUTION OF PLANS BY ICR

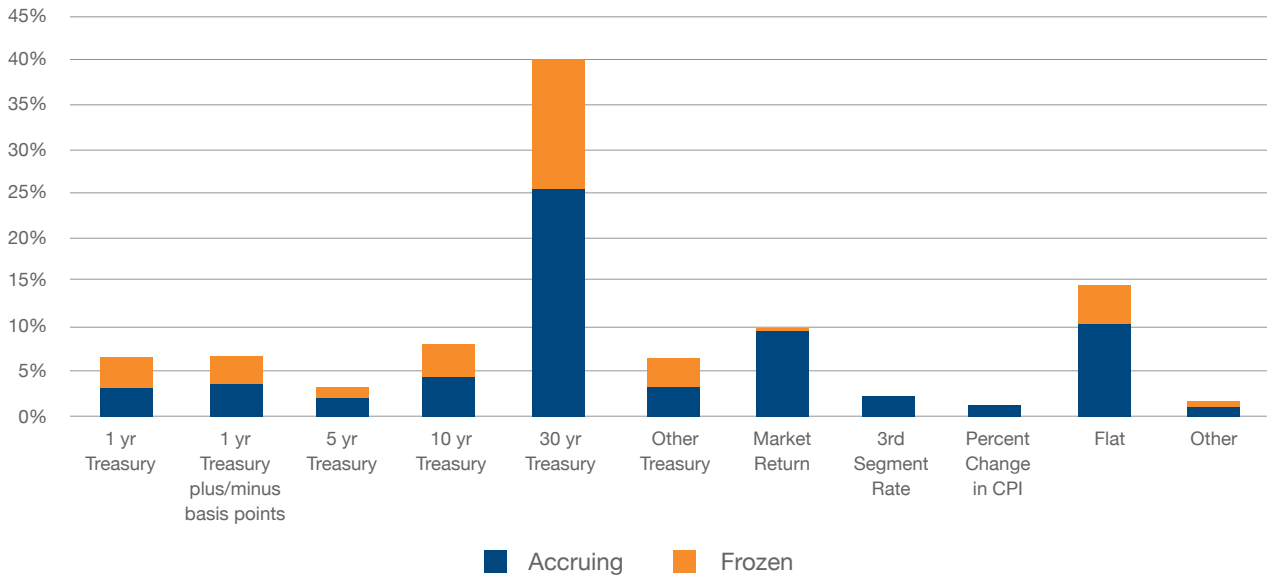


Chart 22 shows distribution of plans by participant count and ICR:

Chart 22
DISTRIBUTION OF PLANS BY PARTICIPANTS AND ICR

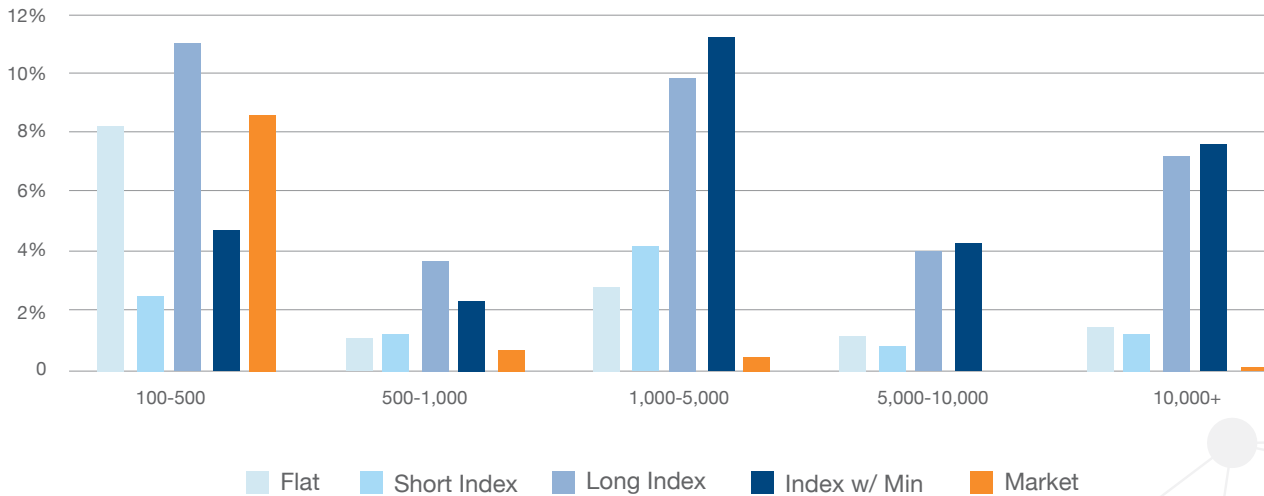
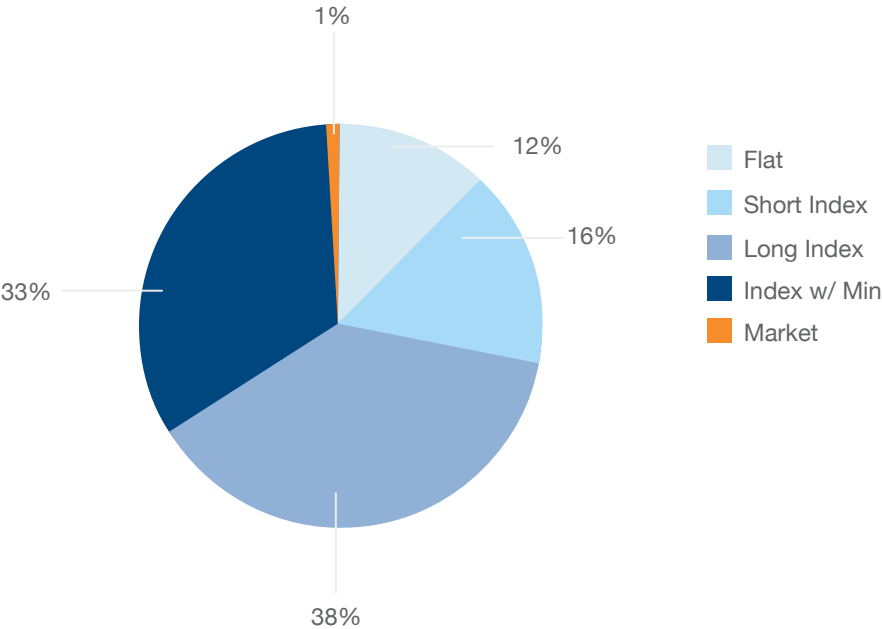


Chart 23 shows the distribution of frozen plans by ICR:

Chart 23
BREAKDOWN OF FROZEN PLANS



Charts 24-27 show the historical average PBGC funded ratios for surveyed plans and relevant subsets.

Chart 24
AVERAGE PBGC FUNDED RATIO
 ALL PLANS

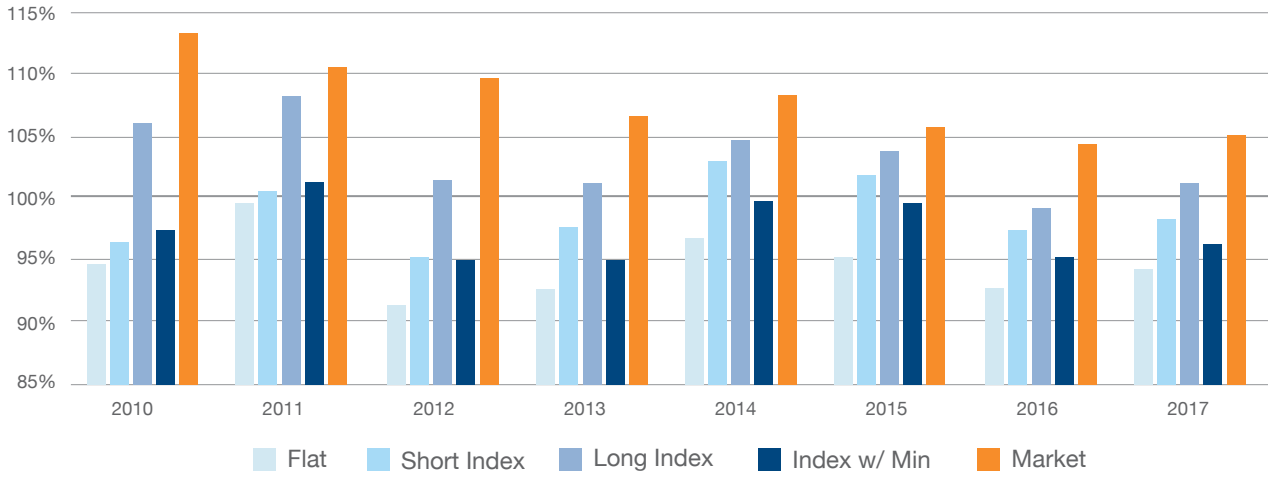


Chart 25
AVERAGE PBGC FUNDED RATIO
 ACCRUING PLANS

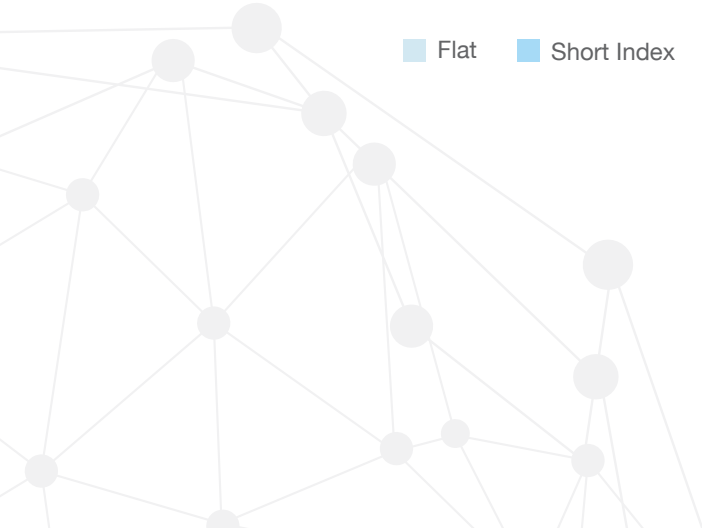
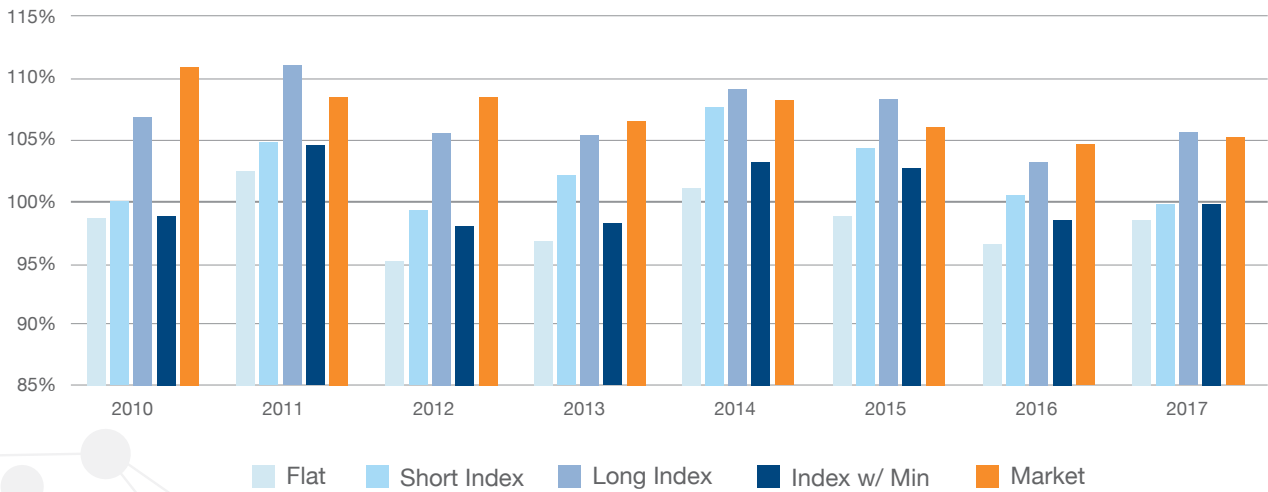


Chart 26
AVERAGE PBGC FUNDED RATIO
 FROZEN PLANS

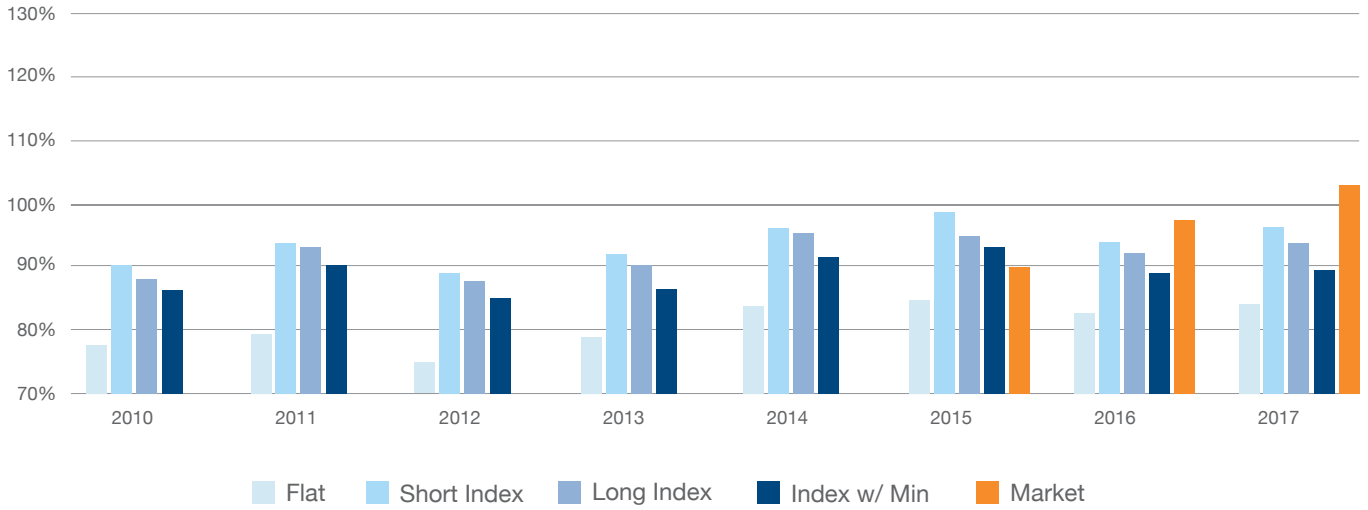
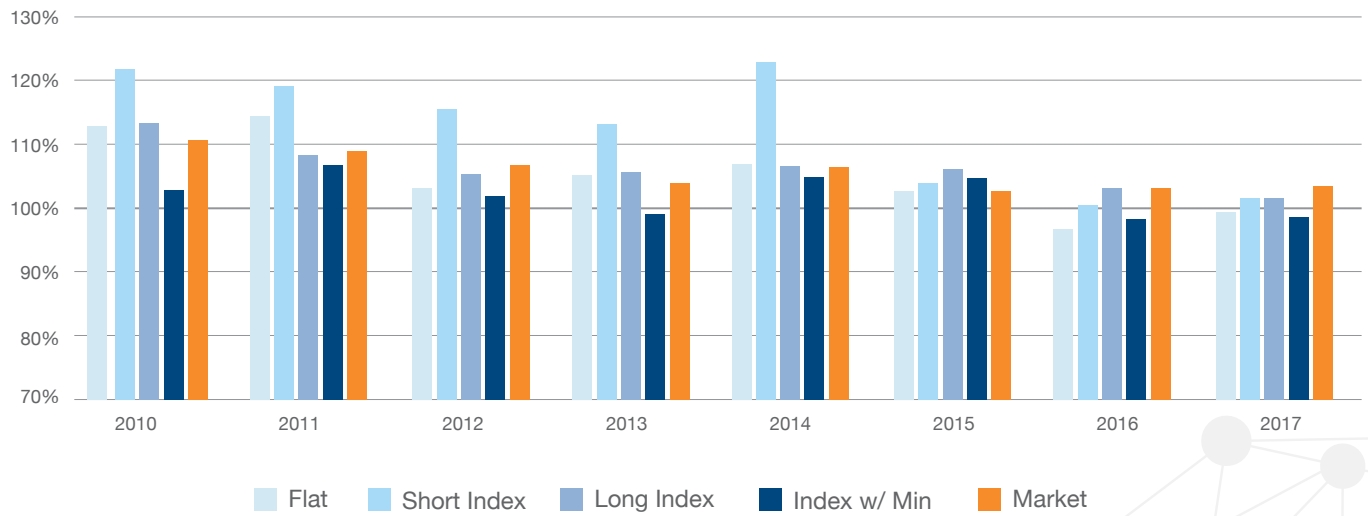


Chart 27
AVERAGE PBGC FUNDED RATIO
 PURE PLANS



CASH BALANCE REPORT AUTHORS

The following individuals have contributed to producing this 2018 cash balance plans survey & trends report.



Larry Sher, FSA

Partner (New York)

Larry Sher is considered one of the country's foremost experts on cash balance plans. As Chief Actuary at Kwasha Lipton (the firm noted as the pioneer of the cash balance design), Larry has been instrumental in the development of cash balance plans since the beginning. Larry consults with companies around all aspects of Cash Balance plan design and financing and has helped numerous sponsors reduce DB plan volatility and risk. As a nationally recognized thought leader on Cash Balance plans, he has provided consultation to regulators and members of Congress. He has also served as the consulting and testifying expert in several high-profile cash balance plan disputes. He is regularly called on to speak at industry events and has had numerous articles published. Larry is a Fellow of the Society of Actuaries and has served on the Actuarial Standards Board and on the Boards of the Conference of Consulting Actuaries and the American Academy of Actuaries. He is a past president of the Conference of Consulting Actuaries.



Tom Miano, FSA

Partner (Dallas)

Tom Miano has extensive experience around retirement plan design, bargaining, accounting and financing issues, as well as other postemployment benefit valuations. He has great insight and knowledge on the inner workings of large and complex programs. Tom helped design the current cash balance plan for AT&T, which is the largest cash balance plan in the country, when he was their lead actuary. Tom is a Fellow of the Society of Actuaries.



Brian Donohue, FSA

Partner (Chicago)

Brian has consulted with employers on retirement plan design and financing issues for over 30 years, with an emphasis on cash balance and other hybrid designs, and he serves as an expert resource to October Three’s technical group and consulting team. Brian has been instrumental in refining our vision of providing efficient, effective retirement benefits to employees. Brian joined October Three in 2011 from AonHewitt, where he was a national resource and a member of the Actuarial Technical Leadership team. He has written and spoken widely on retirement topics for two decades. Brian is a Fellow of the Society of Actuaries.



Jeff Stevenson

President/CEO (Chicago)

Jeff Stevenson founded October Three with the mission of radically changing how defined benefit plans are designed and administered. Jeff believes that many of the deficiencies of today’s defined benefit market can be overcome and successful financial outcomes can be achieved for both plan sponsors and plan participants through effective plan design strategies and technology developments. Jeff is both an actuary and an attorney, and is generally credited with starting the cash balance plan movement among large professional service firms. He is an innovator and a driving force behind the development of the modern DB plan.



John Kleiser, FSA

Partner (Dallas)

John Kleiser leads our cash balance practice focused on large professional service firms, which we call our Flexible Deferral Plan practice. During John’s career, he has had experience working with qualified retirement plans of all types, serving as actuary for many large and mid-sized organizations. John is considered a leading authority on the design and administration of effective cash balance plans. John is a Fellow of the Society of Actuaries.



Courtney Bach, ASA

Partner (Dallas)

Courtney Bach has focused her practice on the design, implementation and administration of qualified retirement plans for large professional service firms. She has worked with companies of all sizes doing actuarial and administrative projects, and is at the leading edge of cash balance plan design.



Brian Fleming

Consultant (Dallas)

Brian is an actuarial consultant in the Dallas office. He maintains our cash balance plan database and works on plan valuations, nondiscrimination testing, and plan maintenance for a variety of clients. With a love for numbers and desire to provide best practices, Brian is most excited to help clients understand their options through innovative solutions he and his coworkers can provide.





OCTOBER THREE – A DIFFERENT PERSPECTIVE

WHAT MAKES OCTOBER THREE DIFFERENT?

October Three was built around a refreshingly different approach to Defined Benefit (DB) plans. In an industry mired in confusion and overall skepticism, we saw an opportunity to create clarity and to build a new understanding about where the industry is headed and how an organization's DB plan can evolve to deliver more.

How we do that is two-fold. First, we design solutions that fit both the urgent needs of today and the impending needs of the future. And we do so with openness and full transparency, granting customers a refreshing level of insight into their plans.



We know how to share our expertise in a way that's easily understood. As Einstein said: "If you can't explain it simply, you don't understand it well enough." We're experts in what we do. But we don't show off what we know. Instead, we're about communicating in a way that delivers clarity and garners long-term trust.

At the end of the day, we believe in treating our clients fairly and with respect. And we believe that by shedding light on alternative solutions in the DB arena, we can help our clients move from a sense of powerlessness and negativity to one of empowerment.





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