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OPERATION DEF-



**CREATIVE ARRANGEMENTS
FOR SHARING RISKS**
BY JOHN TURNER, CONRAD
FERGUSON, RAJISH SAGOENIE AND
MARK-ANTHONY MACHARIA

DB
PLANS

RISK



EMPLOYERS ARE REDUCING THE PENSION RISKS THEY BEAR.

They have done so in at least three ways. First, they have shifted from defined-benefit (DB) plans to defined-contribution (DC) plans. Second, they have engaged in pension de-risking techniques, such as by selling their DB pension liabilities to insurance companies (Ed. Note: This de-risking technique is discussed in a separate article in this issue of *The Actuary*.) and by offering lump sum payments to their participants and retirees. Third, they have shifted from traditional DB plans to hybrid plans.

Around the world, numerous types of hybrid pension plans are in use, and even more have been proposed by pension experts. This article discusses the risk-sharing arrangements provided by a number of different types of hybrid pensions. It focuses on hybrid designs in the United States, Canada and the Netherlands, discussing some of the major types. These countries have been chosen as they all have a robust system of employer-sponsored pension plans (“second pillar”) in addition to social security pension systems. A detailed discussion of the New Brunswick (Canada) shared risk plan is included because of the extensive attention it has received as a desirable model of a hybrid design. The article categorizes the hybrids as to the type of risk-sharing arrangement they involve.

PLANS THAT SHIFT RISK TO PARTICIPANTS DURING THE ACCUMULATION PERIOD

Traditionally, the second pillar of the pension system in the Netherlands has consisted of DB schemes where the employer bore almost all the investment and longevity risk of the plan. As a result of the increasing risk and earnings losses associated with these plans, many companies in the Netherlands have moved toward risk-sharing DC plans.

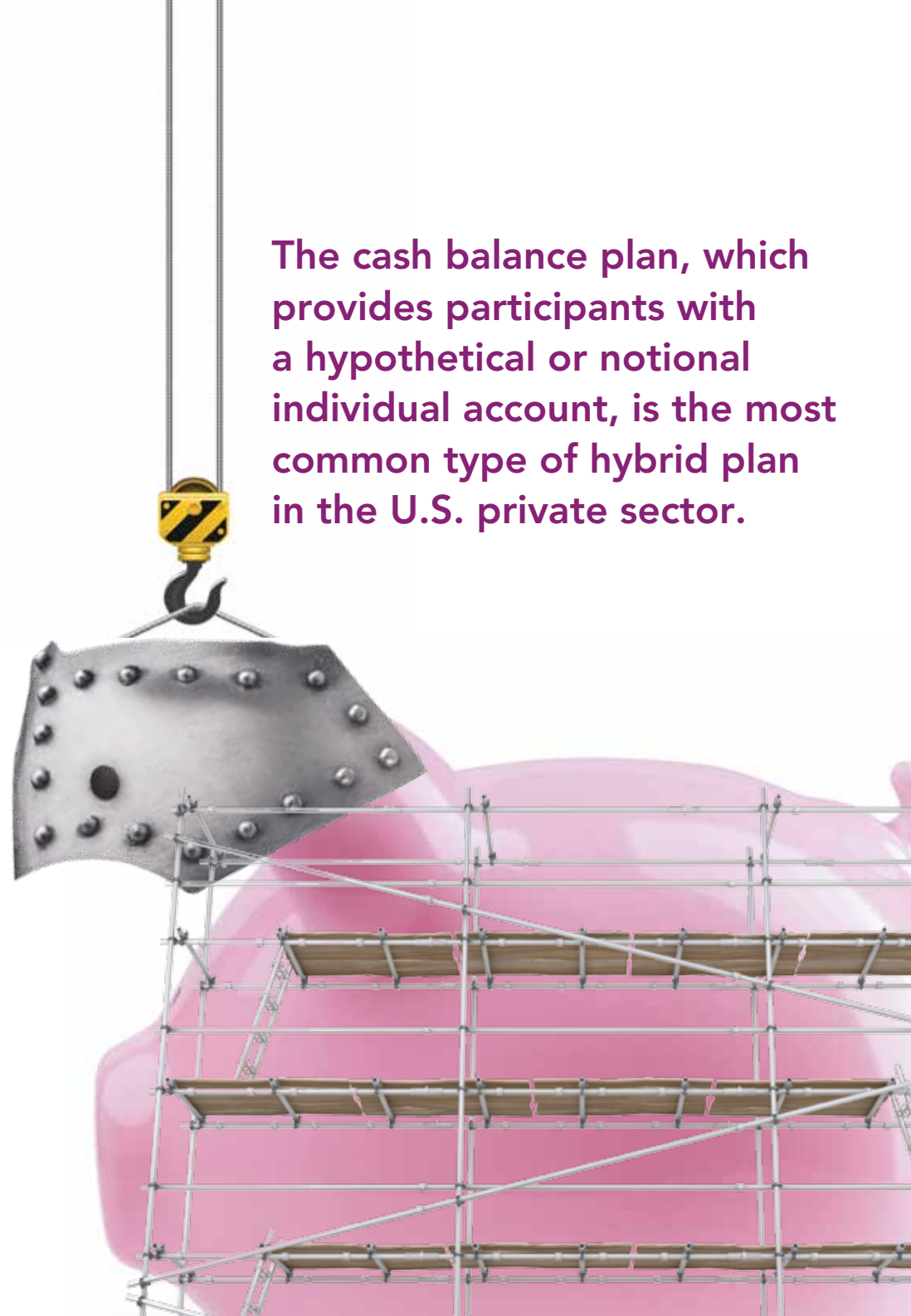
These DC plans typically have contributions that increase by age, and the accrued capital must be used to buy an annuity at retirement. In recent years, however, a variation of the DC plan that has elements of a DB plan has been introduced into the country in the form of the Collective Defined Contribution (CDC) plan.

Unlike a DC scheme, where employees have individual accounts, within a CDC scheme contributions are pooled for investment and longevity risk-pooling purposes. Contributions to the fund are normally made in the form of a fixed percentage of salary from both the employer and the employee. There are no contribution risks for the employer and employee. On retirement, instead of purchasing an annuity for retiring members, benefits are typically paid out of the plan. These benefits are in the form of a DB-type, career-average benefit and are received as consumer-price-indexed payments.

PLANS THAT SHIFT FUNDING RISK TO PARTICIPANTS BY CUTTING BENEFIT ACCRUALS FOR FUTURE BENEFITS

Multiemployer plans in the United States are collectively bargained plans that are DB plans from the perspective of participants, with benefit formulas that determine the value of benefits. However, from the perspective of employers they operate like DC plans. Over a bargaining cycle, typically two or three years, the employers' contributions are fixed but can be adjusted when a new contract is negotiated. Participant benefit accrual rates are more likely to be reduced in contract negotiations when funding shortfalls occur rather than when there are no shortfalls, which shifts investment risks to participants. Until recently, benefits already accrued could not be cut back, but a law passed in 2014 permits benefit cutbacks in some circumstances.

The cash balance plan, which provides participants with a hypothetical or notional individual account, is the most common type of hybrid plan in the U.S. private sector.



**OPERATION
SHARED RISK PLAN**



PLANS THAT SHIFT INVESTMENT RISK TO PARTICIPANTS THROUGH A DC PLAN THAT IS TIED TO A DB PLAN

Floor offset plans, also called floor plans in the United States and underpin plans in the United Kingdom, combine a DB plan and a DC plan. They differ from other hybrids that are single plans in that they are two different plans working in combination. The DB plan provides a guaranteed minimum benefit, and, like cash balance plans, is insured in the United States by the Pension Benefit Guaranty Corporation (PBGC). The retiree receives the higher of the amount provided by the DB plan or by the DC plan. Thus, the DB plan can be viewed as providing a notional account that, if larger than the DC plan account, becomes the source of the annuitized retirement benefits. These hybrids protect participants from the downside risk of financial market investment, but to the extent that the DC plan accumulations produce a larger benefit, participants can gain from that upside potential. Whether the DB or the DC benefit is larger may depend on the participant's age when joining the plan and age at retirement. If the participant takes early retirement and is eligible for an early retirement subsidy, the DB benefit is likely to be larger. If the participant delays retirement, has a longer working career and is not eligible for an early retirement supplement, the DC benefit is more likely to be the larger of the two.

To limit the financial market risk to the employer, the plan may limit the investment options the participant may choose in the DC plan, or the plan may select the investments. The DC plan must be converted into an annuity, but the participant generally must bear the longevity and interest rate risk of the conversion.

Flexible pension plans in Canada offer a participant in a DB plan a tax-sheltered

savings account to which he or she can contribute. The participant bears investment risk on that account. At retirement that person uses the savings account to purchase extra benefits from the DB plan. For example, a participant could purchase automatic inflation indexing and unreduced early retirement benefits. A flexible pension plan provides participants both DB and DC features and gives participants the ability to have a role in designing their benefits. A risk of flexible plans is the risk of accumulating assets in the DC account that exceed the value of ancillary benefits a member can purchase. In this case, the member runs the risk of forfeiting those excess assets.

PLANS THAT SHIFT RISKS TO PARTICIPANTS DURING THE PAYOUT PHASE

The following plans shift annuitization risk to participants.

The most common type of hybrid plan in the U.S. private sector is the **cash balance plan**. Unlike a traditional DB pension plan or a traditional DC plan, a cash balance plan provides participants with a hypothetical or notional individual account. Each participant's account is periodically credited with an amount, usually based on a percentage of the participant's salary. The hypothetical account balances are also credited with interest earnings. Participants accrue benefits in a pattern similar to the accrual in a DC plan, with the exception that accrued benefits cannot fall, as can happen in a DC plan during a financial market downturn, because the interest crediting is always positive.

Pension equity plans (PEPs) in the United States, called by the more descriptive name of final salary lump sum plans in the United Kingdom, allow for the accrual each year of a certain percentage of final average pay. That percentage can increase with tenure or age so

as to reward long-tenure or older participants. At retirement, the annual percentage amounts accrued over the participant's career are summed and then the total percentage is applied to final average pay to determine the participant's final account balance. The benefit payable is then determined from that balance. Compared to a traditional DB plan, this plan shifts annuitization (interest and longevity) risk to participants. In a PEP the

employer bears the investment risk on the assets in which the plan is invested. PEPs are classified under U.S. pension law as DB plans and are insured by the PBGC.

The PEP is similar to a cash balance plan in that participants have notional individual accounts that are credited each year. The value of the account grows with increases in the participant's earnings, rather than growing

due to crediting of interest payments, as is done with cash balance plans. Participants do not bear any investment risk. Like in cash balance plans, participants bear interest rate risk if they choose to convert their account balances to annuities, and they bear longevity risk if they do not convert to annuities. While cash balance plans have accrual patterns similar to DC plans, PEPs have accrual patterns similar to final average DB plans.

NEW BRUNSWICK SHARED RISK PENSION PLAN



NEW BRUNSWICK INTRODUCED A NEW PENSION REGIME IN 2012 NAMED THE SHARED RISK PLAN (SRP). This model received the highest mark in a review of recently enacted pension regimes by the American Academy of Actuaries.

The SRP was introduced as an *optional* new form of pension regulation with identical risk management and funding protocols applying to public and private sector plans, single- and multiemployer plans, and all types of DB structures.

The new law attempts to increase both plan member benefit security and plan sponsor contribution stability by introducing a hybrid target benefit risk managed pension regime to which existing DB plans can be converted or new pension plans established.

The SRP was built on the premise that a successful pension model would rest on the following key principles:

| PRINCIPLES ESTABLISHED | WHAT DO THEY MEAN? |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sustainability and Affordability | <ul style="list-style-type: none"> • High degree of pension security for members • Stable contributions for employers and members • Risk management to maintain plan for the long term |
| Integrity (Transparency) | <ul style="list-style-type: none"> • Pension goals and risks clearly stated upfront • Who shares in risks and rewards and by how much is pre-established in the pension plan documents |
| Equity | <ul style="list-style-type: none"> • No party can game the system at expense of another • All groups of members treated consistently |

The model's development involved intensive discussions with unions in the public and private sectors, and the employers. The required contributions for some pre-existing benefits were shockingly high for the desired security level. Testing alternative future benefits against desired security levels served as a foundation to build the pension legislation. By moving away from traditional thinking (best-estimate assumptions about future results) and focusing on stochastic analysis of possible economic futures, a benefit and operations structure emerged.

By dividing future benefits into "base benefits" (in the public sector usually without cost-of-living or final salary adjustments) and additional "target benefits," it was possible to achieve very high security for "base benefits" with a high likelihood that "target benefits" would be met.

In effect, four actions occurred:

- Retirement age for future benefit accruals was modified to make the plans affordable given most recent credible mortality and improvement data.
- All "target benefits" were made contingent with the "cushion" between "base" and "target" becoming a form of "risk-based capital."

PLANS THAT SHIFT RISKS TO PARTICIPANTS DURING THE ACCUMULATION PHASE AND THE PAYOUT PHASE

Target benefit plans in the United States set contributions by employers and participants at a fixed level or within a fixed range based on a target benefit level. They operate like a pooled DC plan, with pooling of investment risks and longevity risks among participants. Employer contributions can be

structured so that they are a higher percentage of pay for older workers. These plans use funding reserves to smooth fluctuations in benefits over time.

These plans have some similarities with multiemployer pension plans in that the employer contribution is fixed in advance. In these plans, longevity risk is pooled because they provide a benefit as an annuity.

In addition, the problem of participant management of investments can be avoided by having a single pooled management of investments, but often the plans' investments are participant-directed.

A noteworthy development in the area of hybrid plans was introduced in the Canadian province of New Brunswick. See the sidebar, "New Brunswick Shared Risk Pension Plan."

- Contributions were set to have over a 20-year period a minimum 97.5 percent likelihood of delivering "base benefits" as well as a minimum 75 percent likelihood of delivering the "target benefits."
- Market-consistent risk analysis was used to set both an "investment policy" to control investment volatility and a "funding policy" to distribute gains over the amount needed to sustain "base benefits" or absorb losses below that level so that future contributions could be regarded as "next to fixed" with only minor future variability. In effect, the small variability in contributions becomes another source of "risk-based capital."

Funding levels are measured not only against assets backing accrued base benefits but also against these assets plus the present value of contributions above the normal cost for future "base benefits" over the next 15 years, reflecting replacement of current members (the open group funding ratio, "OGFR"). In effect, the funding valuation measures funding capacity and not funding level. The 15-year period was selected because it already existed in the DB legislation for funding going-concern deficits.

The funding liabilities are initially measured using a market-linked discount rate (near the rate derived from AA corporate yield curve). Once established, the discount rate becomes part of the spending test each year. If it is on the high side, spending can occur earlier, risk is increased, and spending will be lower in later years because the model is self-correcting (i.e., it is the actual investment returns that are distributed, not the expected future returns). The opposite is true if the discount rate is lower.

Every year, a funding valuation is conducted to assess the OGFR, which serves as a trigger for actions that can or must be considered by the trustees under a "funding policy." This policy must contain a Funding Deficit Recovery Plan and a Funding Excess Utilization Plan based on constraints established in regulations.

While requiring high security in the short term was not realistic, the combined actions of benefit and contribution decisions via a fully integrated funding policy produced a model that is expected to become stronger over time.

The future "base" and "target benefits" vary considerably by plans that have converted to the SRP to date. The constants are the commitments to conduct comprehensive stochastic risk management; to develop "investment policies" appropriate to the plan; to develop a "funding policy" with which to share returns; and to establish future contribution schedules with only a very small variability (up or down) in long-term contributions.

The "shared risk pension plan" is, in effect, a **modified target benefit plan** built with a focus on stochastic security testing as opposed to best estimates. The combination of new future benefit accruals, asset mix, spending decisions and contribution decisions form multilayers of protection against base benefit reductions. They also produce a resilient plan that can weather the vast majority, but not all, economic climates with quite secure target benefits.

While the exact rubric may be unlikely to emerge in other jurisdictions, the methodology used in New Brunswick is robust and may well merit consideration in other jurisdictions.

CONCLUSIONS

This article describes a number of different types of hybrid pension plans, focusing on plans being used in the United States, Canada and the Netherlands. Hybrid pensions differ from traditional DB plans, where employers typically bear all the investment risk, and traditional DC plans, where individual employees typically bear all the investment risk related to their pension accounts. Hybrid pensions offer creative solutions to the question of how investment and longevity risks should be shared between employees and employer.

Hybrid plans generally have been developed out of a desire of employers to shift to workers some of the risks that the employers have traditionally borne in DB plans. Hybrid plans have been developed that, for example, provide predictable, stable contributions for employers, thus dealing with the problem employers may encounter in DB plans of large swings in required contributions. In some cases, hybrid plans have also been motivated by the desire to protect workers from some of the risks they would bear in traditional DC plans. For example, they can involve workers collectively bearing investment risks but with pooling of investment risks, allowing the provision of a stable, predictable benefit. In sum, hybrid plans can combine the best features of traditional DB and DC plans. ▣

Note: Portions of this article have been extracted from Turner's research paper cited here. Turner, John A. 2014. "Hybrid Pensions: Risk Sharing Arrangements for Pension Plan Sponsors and Participants." Society of Actuaries. <https://www.soa.org/research/research-projects/pension/hybrid-pensions-risk-sharing.aspx>. The principal author, John Turner, would like to thank Conrad Ferguson for his information on the New Brunswick Shared Risk Pension Plan, and Rajish Sagoenie and Mark-Anthony Macharia for their contributory comments that focused on the Netherlands.

John Turner is director of the Pension Policy Center in Washington, D.C. He can be reached at jaturner49@aol.com.

Conrad Ferguson, FSA, FCIA, is an actuary at Morneau Shepell Ltd in Fredericton, New Brunswick, Canada. He can be reached at cferguson@morneaushepell.com.

Rajish Sagoenie is principal and managing director at Milliman in Amsterdam. He can be reached at rajish.sagoenie@milliman.com.

Mark-Anthony Macharia, FSA, CERA, is a risk analyst at NN Group in the Hague. He can be reached at Mark.Macharia@nn-group.com.



HYBRID PENSIONS OFFER CREATIVE SOLUTIONS TO THE QUESTION OF HOW INVESTMENT AND LONGEVITY RISKS SHOULD BE SHARED BETWEEN EMPLOYEES AND EMPLOYER.