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Perspectives From Anna: Evolution of Retirement and Risk-sharing Ideas

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My career has been devoted to working in the financial security system, first in life insurance companies (1958–1976), then in employee benefits consulting (1976–2004), and starting in 2005, independently as a phased retiree doing speaking, writing and research. In the last 15 years, I have been mostly concerned about the individual and the interaction of system components and the way they affect individuals.

For many years, I have been passionate about improving the financial security system, creating better opportunities for older individuals who want to phase into retirement and work on a different basis at older ages, filling gaps in risk protection, and improving retirement security for women. In this column, I have chosen to focus on some big ideas and changes I have encountered in my career, thinking about what they mean today. Over my career, I have seen major steps forward but also changes that are very troubling and mean less risk protection and a less effective retirement system. What I observed in the insurance industry seems very relevant to retirement plans and employee benefits, so I have included experience in both the insurance industry and with employee benefits. My perspective primarily focuses on the U.S.

INSURANCE COMPANY PRODUCTS AND RISK SHARING

When I started working in the life insurance industry, most of the large companies were mutual companies (i.e., owned by the policyholders). The common form of life insurance policy was a participating whole life policy. These policies generally provided coverage for life, had loan provisions, and paid a cash value to people who terminated the policy before death. They had premiums larger than what was expected to be needed to provide the benefits, and the excess of the premiums over the actual cost of insurance was returned to the policyholders in the form of dividends. This form of risk sharing provided a lower cost to the policyholder when investment returns and other actuarial experience results were good, and a higher cost when they were not. Profits were to be shared with the policyholders. Participating group annuities were used to fund pension benefits. Some pension benefits, particularly for smaller plans, were partly funded with individual life insurance policies.

Other insurance companies were stock companies, owned by shareholders. Profits went to the shareholders. Stock companies wrote nonparticipating policies, usually with lower but guaranteed premiums. The risk level and cost to the individual buying the insurance was set by the contract provisions, and the company and its stockholders earned profits and sometimes experienced losses. The stockholders bore the risk of higher-than-expected claim costs or expenses.

While whole (or ordinary) life insurance and annuity contracts were long-term with long-term price commitments, other forms of insurance were priced on a shorter-term basis. Health insurance policies might be priced one year at a time. Long-term care policies were designed for long-term coverage, but the provisions of these policies typically gave the company the right to adjust premiums for a class of policyholders if the experience justified the rate increase. Premium rates, including increases on existing contracts, were subject to the approval of insurance regulators in state insurance departments. So, the risk of long-term costs changing was borne by a class of policyholders, and risks were shared between the company and the policyholders, even if it was not a participating policy. Health risks were shared according to the contract, but the insurers often adjusted premiums annually based on the health care costs of the entire group of policyholders for that coverage.

Specialized policies also provided for partial risk sharing. Variable annuities and universal life insurance contracts were examples of policies that incorporated a sharing of good investment results, limited downside risk, and included a substantial charge for providing this floor. These policies could be sold by stock or mutual companies.

During the last few years of my time in the life insurance industry, I saw a big shift that has continued since then. Many formerly mutual companies were demutualized and became stock (or for-profit) companies with the profits belonging to the shareholders rather than the policyholders. Many companies were also merged or sold to other companies. Blocks of business (such as all the long-term care insurance sold by Company A) were sold or transferred to Company B. There was an overall decline in risk sharing with the policyholder and a big increase in focus on shareholder profits from these products. Purchasers who wanted to do business with a company they trusted often found that they were doing business with someone else along the way, because the policy they had purchased was transferred to another insurance company. Long-term care insurance

turned out to be more costly than anticipated, and policyholders often experienced large premium increases.

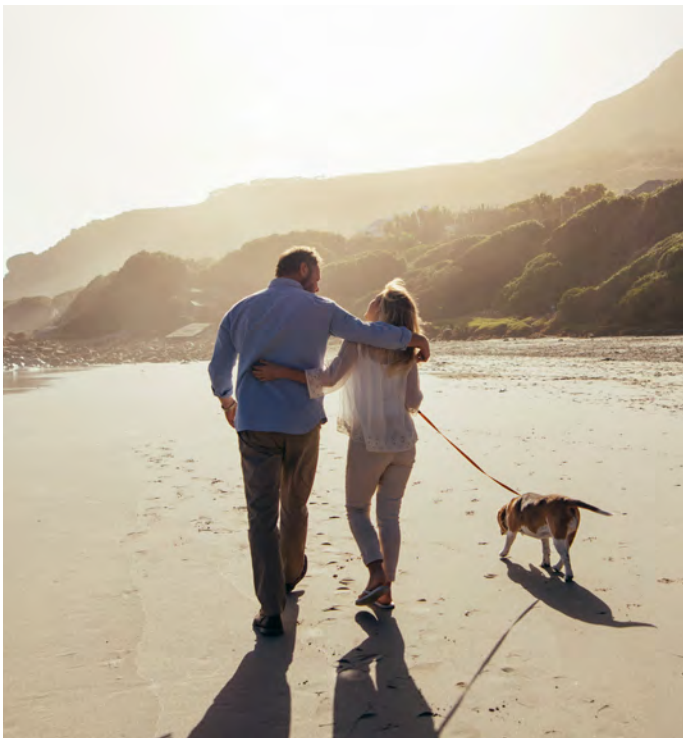
Over the long run, many people who had purchased what they thought would be stable long-term risk protection products found out that these products had become more expensive or did not provide as much coverage as they had expected.

HISTORY OF RETIREMENT IN THE UNITED STATES

For understanding the retirement system, context is important. Before the industrial age, life spans were much shorter, and people worked as long as they could. They often lived near or with extended families, and multigenerational households were common. The family and nearby community were the primary support mechanisms for older people who could no longer work. Families had many children, and people did not live to very old ages. There was no formal government or municipal-based retirement system, but some people accumulated a lot of wealth. Some people did well, but many others did not.

Dora Costa provides us with a history of retirement in the United States, spanning the period 1880 to 1990, focusing primarily on men.[1] Systems to provide economic support during retirement shared risk among employers, the retired individuals and society at large through government programs. Factors that have influenced the history of retirement include longer life spans, the shift from an agricultural to an industrial society, and the development of systems to provide economic support during retirement. Some highlights from the history are as follows:

- The prevalence of retirement among men age 65 and older rose rapidly from about 25 percent at the beginning of the 20th century to more than 80 percent at the end of the 20th century.
- In earlier periods, many more retirees were dependent on children and family and the community. Retirement usually did not occur until people were no longer able to work.
- The nature of retirement changed from a time of withdrawal from all activities to a period of discovery, personal fulfillment and relative independence.
- Retirement expanded from being an opportunity available only to the relatively wealthy and became an option available to many more workers.
- The earliest large-scale old-age pension in the U.S. was the Union Army Pension, payable at age 65 and first available as a pension in 1890.
- Retirement from agricultural roles was much more likely to be gradual than retirement from an industrial job.



- People retired both because of economic incentives that enabled them to retire, such as Social Security, pensions and growing income, and because of factors that drove them out of the labor force, such as poor health and poor job opportunities.

Retirement ages are an important factor in determining how generous benefits are. Age 65 was established as the retirement age in the Union Army Pension Plan. The 1910 Massachusetts Commission on Old Age Pensions defined the old as those aged 65 or older. In 1920, post office letter carriers and clerks became eligible for pensions at age 65. The Commission on Economic Security decided in 1934 that 65 should be the pension age for the Social Security program.[2]

The first private pension plan in the U.S. was founded by American Express in 1875, but the growth in pension plans was slow. Twelve private pension plans existed in 1900. By 1930, 2.7 million employees—about 10 percent of all private wage and salary workers—were covered by retirement plans. The tax incentives included in the Revenue Act of 1942 led to the expansion of pension plans after World War II, so that 41 percent of private-sector wage and salary workers were covered by 1960, and nearly half by the mid-1980s.[3]

In the United States, the Social Security system was put into place in the 1930s, bringing a retirement benefit to most of the working population. Establishment of the Social Security system

led to significant increases in retirement and acceptance of age 65 as a common retirement age. Benefits were small initially but significantly increased during the 1950s.[4] The conditions for payment also were liberalized. Initially, Social Security required full withdrawal from the labor force to collect benefits. Later, these restrictions were loosened, first with an earnings test that allowed some earnings while collecting benefits after full retirement age and then ultimately with an elimination of such offsets at full retirement age.

The Social Security early-retirement age of 62 was added later. The normal retirement age of 65 was increased in 1983, with an implementation plan that would slowly move the normal retirement age to 67. The 1983 change was the only legislated change in normal retirement age, and these changes remain in effect today. Further fine-tuning of the system is needed. Projected revenues will not be adequate to pay benefits beginning around 2034. A range of options for correction of the imbalance are available, although few executive or legislative leaders have yet mustered the courage, foresight or support to address this "third rail" challenge.

RISK SHARING IN RETIREMENT PLANS

The risks involved with U.S. Social Security were spread across the entire population, and the system was financed primarily on a pay-as-you-go basis, with a trust fund that was used to smooth out the differences between contributions and benefit payments. The formulas for taxes and the payment of benefits served to distribute benefits between different population segments. Higher-income individuals received lower monthly benefits per dollar of tax paid, because the formula distributed benefits more heavily to lower-income individuals. But since higher-income individuals tend to live longer than lower-income individuals, they receive benefits longer on average. Further analysis is needed to see how these two factors can be reconciled. Benefits are paid to spouses, and single-earner couples receive relatively higher benefits per dollar of tax paid than dual-earner couples.

Employer-sponsored benefit plans were primarily of two types: defined benefit and defined contribution. Defined-benefit (DB) plans provided for a benefit determined by a formula, and contributions were intended to be the actuarially determined amount needed to pay the benefits for life. Defined-contribution (DC) plans provided a benefit determined by the account balance after all contributions and net investment income was accumulated, with participants generally determining how to decumulate their account.

DB plans can be paid for by the employer only (noncontributory plans), or the cost can be shared by the employer and employee (contributory plans). In noncontributory plans, the employer bears the risk, and in contributory plans, the method of setting the contributions determines how the risk is shared. However, in the U.S., most private-sector DB plans are noncontributory. The plan design may also build-in some different risk sharing:

- **Benefits determined based on final average earnings.** Pre-retirement inflation risk is borne by the employer in noncontributory plans.
- **Benefits determined based on career average earnings or flat benefit plans.** Pre-retirement inflation risk is borne by the employee in noncontributory plans, but some plans provide for ad hoc increases in benefits during periods of high inflation, thereby sharing the preretirement and/or postretirement inflation risk.
- **Plans that include automatic cost-of-living increases after retirement.** Post-retirement inflation risk is borne by the employer in noncontributory plans, but such plans were rare in the private sector in the U.S. For plans not providing cost-of-living increases, the retirees bore the inflation risk unless their plan provided for ad hoc increases in benefits, thereby sharing the risk.

In the U.S. private sector and in many other countries, DB plans are in a state of major decline, ad hoc increases are now very rare, and employers and employees are sharing the risk based on the plan design. Public employer plans are much more likely to be contributory and may share risk in different ways. For example, the use of benefit increases tied to inflation may depend on plan experience.

Traditional DB plans were often designed so that employees who worked a full career with an employer would have a benefit that would produce an adequate retirement income when it was added to Social Security. In the U.S., the permitted designs and provisions for such programs were heavily regulated by federal law.

DC plans can include employee savings alone, savings from both the employer and the employee, or employer savings alone. Where the employer contributes, the contribution may be a fixed percentage of pay, a match based on employee contributions, or a contribution based on profits. Contributions can vary with factors such as age and/or length of service. The employee bears all the investment and longevity risks and the risk that benefits will be adequate in the mid- to long-term. Competitive business considerations were often important in the design of programs.

In the 1970s to 1990s, it was common for larger well-established businesses to offer a combination of a DB and a DC plan. The DB plan would be noncontributory, and the employee savings, often with a match, would be invested in the DC plan. The

employer shared risk with the employee by assuming the DB plan risk and letting the employee assume the DC risk.

A SHIFTING LANDSCAPE

In the last 20 years, an increasing number of companies have only DC plans or at least only DC plans for new employees.

DB plans were long viewed as attractive, for several reasons:

- DB plans worked very well for long-service employees but not for individuals who were in and out of the labor force or for those who had many different jobs. Employers were focused on their long-service employees.
- DB plans were a good method to reward long service and also enable long-service employees to retire with dignity.
- DB plans were viewed as the most cost-effective way to provide decent retirement benefits to long-service employees.
- Practice and regulations accommodated aggressive investment policies and permitted smoothing of asset values and calculations based on long-term assumptions to give a stable and attractive cost picture.

However, over time, circumstances changed, and major plan sponsors viewed the plans as less desirable. Some of the factors that led to change included the following conditions:

- Life spans were increasing, but retirement ages were rarely adjusted in employer-sponsored plans. As a result, periods of retirement and retirement costs kept growing.
- The thinking about what constitutes good practice in pension funding began to shift. Financial economics moved the thinking from a long-term focus to a shorter-term, more market-driven focus.
- Changes in accounting rules made costs as reflected in profit-and-loss statements less stable.
- Changes in funding rules limited or prohibited contributions to well-funded plans and increased required contributions to plans that were less well funded.
- Regulatory guidance and practice made it clear that a company buying another company with an overfunded plan can terminate the plan and recapture the surplus. Well-funded plans tended to make companies takeover targets.
- Fluctuations in investment markets caused plans that had been well funded to become less than well funded, and large contributions were required at the wrong time for the business.

- Some older, very large companies shrank, leaving them with a lot of retirees relative to their active workers, and sometimes with a relatively old workforce as well. In such a scenario, DB plans become much more expensive.
- DB regulations got more and more complex.
- There was a growing focus by corporate plan sponsors and regulators on including pension risk as an important component of overall corporate risk management.

The bottom line was that, for many businesses, the DB plan was no longer attractive. Companies were freezing plan benefits, terminating plans, or offering different plans to new and existing employees. They were increasingly looking for methods to de-risk their programs.

DC plans were growing, and in companies with generous contributions, long-service employees were doing fine. But overall, DC plans were not a good solution for many workers, and people were seeking new ideas.

LOOKING AT RISK TYPES AND HOW THEY MIGHT BE MANAGED

Retirement involves a wide variety of risks. If we think about DB and DC retirement arrangements, the four biggest risks are investment risk, interest rate risk, inflation risk and longevity risk. Depending on the type of plan, either the plan sponsor or the plan participant bears this risk, or it is shared. Table 1 shows examples of methods for managing each risk applicable to the plan sponsor and the participant.

Table 1
Examples of Methods of Risk Management in Pension Arrangements

Risk	Plan Sponsor Strategies	Individual Participant Strategies
Investment	Move from DB to DC or shared risk design Use investment strategy to reduce risk Transfer to financial institution (e.g., sell liability through risk transfer program) Use liability-driven investments	Choose target date fund Choose investment mix and investments Delegate to investment manager Seek advice Transfer risk to financial institution
Interest rate	Move to DC or shared risk design Pay out lump sums Offer gradual purchase of annuities Use liability-driven investments Use account-based DB design that credits interest based on an index	Consider risk when choosing investments Buy annuity gradually over time Consider duration when buying any bonds
Inflation	Move to DC or shared risk design Use plan design to help allocate risk Invest in assets that help Index or partly index benefits, or provide ad hoc increases	Save more to increase funds Use inflation-indexed bonds (although yields are very low) Purchase annuity including inflation indexing
Longevity	Move to DC or shared risk design Pay out lump sums Index retirement ages Choose DB assumptions that build in mortality improvement Use financial instruments	Use lifetime payout option Spend only investment income Retire later Use long planning horizon Do not withdraw too much from savings (although this only partially manages risk)

A SEARCH FOR NEW IDEAS

In 2006–2010, the Society of Actuaries embarked on Retirement 20/20,[5] a major project to search out new ideas for retirement designs for the future. The project was conducted assuming a regulation-free environment. Several key ideas emerged from that discussion and the situation today with regard to those ideas:

- **The importance of insurance** was discussed extensively. Individuals and society do better when risks are shared and individuals are not left on their own to bear too much risk. Where retirement systems do not provide an appropriate level of insurance, the bottom line is that too many individuals are in trouble, and too much pressure is put on the social safety net and on families.
- **Self-adjusting mechanisms** are design features that adjust benefits and share risk, but a lack of clarity in communication can increase participant uncertainty. Self-adjusting mechanisms added to DB plans can help preserve risk pooling without placing all the risk on a single party (e.g., society, a plan sponsor or an individual). Benefits, contributions or both can be adjusted. Individuals focused on new solutions are often focused on thinking about self-adjusting mechanisms. Some traditional plans include self-adjusting mechanisms, and some new plans have tried to use these ideas.[6]
- **Signals and default features** are important. Both are ways of handling risk and uncertainty. The lessons of behavioral finance have taught us that structured choices can create better outcomes. Participants look to signals sent by the retirement system to tell them when and how much to save, how to invest, when to retire, and how to manage retirement benefits.[7] Auto-enrollment and investment defaults are now well developed, but there remains much to do with defaults for the distribution period. That is an active subject in 2018.
- **The role of the employer** was discussed extensively, and there was clearly interest in alternatives that place less responsibility on the employer. Today in the U.S., there has been discussion for several years about expanding the potential for multiple-employer plans and about offering programs that simplify administration and/or fiduciary responsibility for the employers offering the benefits.[8]

Retirement 20/20 focused on effective **use of the markets** to produce better retirement results. The project recognized the challenges created by informational asymmetry—individuals' lack of knowledge and uncertainty around risks and their inability to manage those risks effectively. Concerns were expressed about how to use markets effectively.

Retirement 20/20 was followed by another project from the actuarial profession. The American Academy of Actuaries had

moved thinking about new ideas further with its Retirement for the AGES project. Their website states:

> *Retirement for the AGES provides a framework based on **fundamental principles** by which the Academy will illustrate the strengths and shortcomings of retirement systems and proposals to reform them. It addresses the needs of retirement plan stakeholders in both the private and public sectors. The framework is based upon four key principles with specific elements that can be graded or scored:*
>
> > ***A**lignment – between stakeholders' roles and their competencies.*
> >
> > ***G**overnance – that defines roles, reduces conflicts of interest, manages competing needs, and properly staffs boards.*
> >
> > ***E**fficiency – in maximizing returns and minimizing risks.*
> >
> > ***S**ustainability – of the system; achieved through appropriate cost allocation and protection from extraordinary market gyrations and inflation.*[9]

The academy has graded a few plans according to this framework. That is discussed further in a later section of this article, under the heading "What Works Well: Grading Different Systems."

A search for new retirement program structures also took place in Europe. The United Kingdom's Department for Work and Pensions set forth new and different ideas:

> *Defined Ambition (DA) is a new category of pensions the Department for Work and Pensions (DWP) would like to introduce to complement existing Defined Benefit (DB) and Defined Contribution (DC) pensions. It aims to provide more certainty for individuals than DC and less cost volatility for employers than DB pension schemes. Over time there has been a shift from DB to DC pension schemes. Previously, many individuals were able to rely on a DB pension, guaranteeing them a pension based on their final salary or career average earnings with employers bearing the risks of longevity, investment and inflation. In DC schemes, individuals take on more of the risk as they save in their pension, buying an income product at retirement when the insurer promises an income for life. The Government, along with members of the pension industry, are looking at alternative models of pension saving that do not leave either individuals or employers shouldering the entire risk of pension saving. Defined Ambition proposes three new categories of pensions: Flexible DB, DC Plus, and Collective Defined Contribution (CDCs) schemes.*[10]

All of these ideas share a quest for different methods of risk sharing in order to improve the results for individuals while maintaining an acceptable level of risk for plan sponsors.

LESSONS LEARNED FROM OTHER COUNTRIES

Population aging is a global trend, and there are vast differences in retirement systems and economic and demographic patterns by country. However, a variety of demographic patterns repeat in industrialized and some other nations, and many retirement systems face parallel challenges. Some commonalities exist in the retirement system issues across countries. The annual Melbourne Mercer Global Pension Index study provides a brief summary of retirement systems in 27 countries, evaluating and scoring these systems based on a framework that includes adequacy, sustainability and integrity. I believe that the study and the ratings encourage the development of new ideas.

The 2016 study identifies seven challenges that many countries need to meet:

- Increase state pension age and retirement age to reflect increasing longevity and reduce the cost of pension benefits.
- Promote higher labor force participation at older ages, thereby limiting the continued increase in the period of retirement.
- Encourage or require higher levels of personal savings.
- Increase the coverage of employees and/or self-employed in the private retirement system, recognizing that many individuals will not save for the future without a mandate.
- Reduce pre-retirement leakage of retirement funds.
- Review the indexation of public pensions to preserve the real value of the pension.
- Improve the governance of private plans and increase transparency.

APPLYING NEW IDEAS FOR THE FUTURE

I have been involved in discussing retirement and the future in a variety of settings for many years. While the business community in the United States and probably in other countries as well has been focusing on defined-contribution plans as their preferred solution, I feel strongly that there are other ideas that offer better solutions. My preference is to pool and share risk, offering employees and retirees the benefits of risk pooling while at the same time expecting them to educate themselves and share somewhat more of the risk than in a noncontributory defined-benefit plan.

One idea that has not gotten much attention except in government programs is to index retirement ages or move them up with increased life spans. I explore this idea in my paper presented at the 2014 Living to 100 symposium.[11] Failure to adjust retirement ages has resulted in ever-growing periods of payment for DB plan benefits, and I believe this is one of the

Table 2
Retirement for the AGES Scoring of Several Plans

Plan	Overall	Alignment	Governance	Efficiency	Sustainability
Defined benefit (traditional)	C+	B+	C–	A–	D–
Defined contribution	C	C–	C+	D+	C+
New Brunswick	A–	A–	A–	A–	A
South Dakota	B+	A	B+	A–	B

Source: Data from American Academy of Actuaries, Retirement for the AGES: Building enduring retirement-income systems, *http://www.actuary.org/Retirement-for-the-AGES* (accessed August 2018). Each plan is described and rated, and the rating is explained.

reasons that so many plans have been frozen or terminated. Adjusting to longer life spans is an important part of risk sharing.

In 2014, Andy Peterson and I prepared a paper about risk-sharing alternatives for pension plans[12] for the Pension Research Council. That paper includes two case studies: the shared-risk plan in New Brunswick, Canada, and the Savings Insight Plan offered by Buck Consultants in 2014.

The shared-risk plan in New Brunswick provides (1) a new design that splits benefits between a base benefit and ancillary benefits, (2) protocols to keep the plan's operations on track and (3) a new risk management regulatory framework to ensure compliance with the program.[13] The New Brunswick model weaves together plan design and plan financing; funding levels can trigger benefit adjustments up or down. (That is a concept also used in variable annuities and variable life insurance policies.) The level of funding called for is greater than that provided for by the "best estimate" assumptions, which are required for private plans in the United States. The program calls for funding base benefits with an expected 97.5 percent level of success and ancillary benefits with an expected 75 percent level of success. Triggers for contribution and benefit adjustment are supplied. The program is administered by an independent board of trustees.

These ideas could be applied to a wide range of different benefit formulas. The key points for me are that employees get the benefits of risk pooling while the risk to the plan sponsor is limited, and the impact of severe adverse events is shared. Variations on these ideas are possible and open thinking about new paths for the future. This program is a very strong and creative solution to many of the challenges facing retirement systems in different settings.

The Savings Insight Plan is a defined-contribution plan that provides for calculating the contributions needed to provide an adequate benefit at retirement and provides various means to help the employee achieve a good retirement. The program includes auto-enrollment, auto-increases in contributions, and a modeling tool that enables participants to modify their decisions and customize them. Contribution amounts recommended vary by individual and are substantially higher than default auto-enrollment contributions in many plans. These ideas offer a different type of solution for the challenges facing plan sponsors. Variations on these ideas also are possible.

The American Academy of Actuaries examined the New Brunswick plan as part of its Retirement for the AGES project. It also examined the South Dakota Retirement System, a public-sector employee plan in the United States that includes more provisions for risk sharing than the traditional noncontributory DB plans offered to business employees. The South Dakota plan has a benefit formula linked to final average earnings and adjusts cost-of-living increases based on funded status. The plan is financed by a combination of employer and employee contributions. If funding requirements are not met for three years, the plan board is required to recommend to the governor and the retirement legislative committee that benefits be reduced, contributions be increased or a combination of the two strategies be applied.[14]

WHAT WORKS WELL: GRADING DIFFERENT SYSTEMS

The Melbourne Mercer study grades the retirement systems in 27 countries on adequacy, sustainability and integrity. It focuses heavily on the public systems and the benefits provided to all.

The American Academy of Actuaries, as part of its Retirement for the AGES project, has graded several systems overall and on each of the four major principles. Table 2 provides the grades for a traditional DB plan, a traditional DC plan, the New Brunswick risk-sharing program and the South Dakota state employees' plan.

It should be remembered that all rating systems reflect the perspective of the organization developing them. The traditional DB plan has an overall C+ rating, with its lowest rating in the sustainability category. Sustainability is also a major factor in the Melbourne Mercer study evaluations, and it has been recognized as important in recent years. I do not remember anyone talking

about sustainability more than 15 years ago. The traditional DB plan also receives a low grade for governance.

In contrast, the South Dakota plan, a DB plan with some risk sharing built in, rates better overall and rates the same or better in every category. The New Brunswick risk-sharing program rates well in every category, much better than the traditional DB plan and a little better than the South Dakota plan. In the troublesome area of sustainability, it is rated A, and South Dakota is rated B.

The DC plan is rated C overall, and it rates D+ on efficiency. It should be noted that a dollar of contribution to a DC plan will generally provide less overall benefit to plan participants than a dollar of contribution to a DB plan.

CONCLUSIONS

A wide variety of methods exist for managing retirement savings in order to optimize resources for retirement. Business custom and practice, as well as legal requirements, constrain the possible options in any jurisdiction. Financial resources are a constraint for each organization offering benefits. Risks have been shared in a variety of different ways in retirement systems and in insurance products. Sometimes ideas used in one arena cross over into the other, but at other times, they do not.

As populations are aging in many countries, the need for retirement security is growing. Even so, businesses have been trimming back their support for retirement and moving away from DB plans, which offer risk pooling and risk protection for individuals but are risky to plan sponsors, and toward DC plans that place the vast majority of the risk on the individual. Life spans have increased noticeably, but generally, retirement ages have not kept up, leaving the DB plan sponsor with a more expensive plan that is paying out benefits for longer periods of time.

Many people who have worked in the retirement system are pessimistic, but I believe we can improve the future. We need to do several things:

Adjust retirement ages so that the expected retirement period is a percentage of the life span or a certain period before the expected end of the life span, versus an ever-growing period based on fixed retirement ages.

Search for different methods of sharing risk, moving beyond traditional DB and DC plans. I applaud the innovation in the New Brunswick risk-sharing program. I hope that these ideas can be used more in the future and that others also will seek new ideas.

Continue discussion and innovation in the areas of risk sharing and defined-ambition plans.

When DC is the primary retirement vehicle, include features in the management of the program to focus the participant on

what is needed for retirement and on the need for managing the program thoughtfully during the retirement period.

Work with regulators to encourage innovation and provide safe harbors to those who innovate, giving them a time period to test the new ideas and see how well they work.

Improve work options for older employees and enhance phased retirement options.

I hope this perspective will encourage more discussion of these issues and inspire further innovation. ■

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ENDNOTES

1 Dora L. Costa, *The Evolution of Retirement: An American Economic History 1880–1990* (Chicago: University of Chicago Press, 1998).

2 Ibid..

3 Ibid..

4 Ibid..

5 For a variety of reports and articles, see the Society of Actuaries Retirement 20/20 website. The initiative started in 2005, and a series of papers providing model designs for the future were chosen and published in 2010. Then in 2017, there was a new call for models focusing on the public sector. These models include several different risk-sharing ideas, and the papers were released in 2018. *https://retirement2020.soa.org*

6 Note that shared-risk designs have been used in some insurance products. Traditional participating insurance contracts are a form of shared-risk design, as are variable annuities and universal life insurance policies.

7 This is particularly important when the DC plan is the primary or only retirement plan.

8 Various legislative proposals would expand the use of DC multiple-employer plans. The Retirement Enhancement and Savings Act of 2018 had been introduced into Congress as of the time of this writing, and it includes liberalization of multiple-employer plan rules. President Trump in August 2018 signed an executive order instructing the Departments of Labor and Treasury to issue regulations that would expand the availability of multiple-employer plans.

9 American Academy of Actuaries, Retirement for the AGES: Building enduring retirement-income systems, *http://www.actuary.org/Retirement-for-the-AGES*.

10 From Defined ambition: Consumer perspectives, research report no. 866 (U.K. Department for Work and Pensions, June 2014), *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/323219/rr866-defined-ambition-consumer-perspectives.pdf.*

11 Anna Rappaport, "How well have retirement systems adapted to longer life?," 2014 Living to 100 Monograph (Chicago: Society of Actuaries, 2014), *https://www.soa.org/essays-monographs/2014-living-to-100/.*

12 Anna M. Rappaport and Andrew Peterson, Risk-sharing alternatives for pension plan design: An overview and case studies, PRC WP2014-09 (Pension Research Council, Wharton School, University of Pennsylvania, September 2014), *https://pensionresearchcouncil.wharton.upenn.edu/publications/papers/.*

13 For a discussion and evaluation of this plan, see American Academy of Actuaries, Retirement for the AGES, *http://www.actuary.org/Retirement-for-the-AGES*. For background on the plan, see Rebuilding New Brunswick: The Case for Pension Reform (Government of New Brunswick, February 2013), available at *http://ppforum.ca/sites/default/files/NB_Pension%20Reform% 20Case_EN.pdf. http://leg-horizon.gnb.ca/e-repository/monographs/31000000047551/31000000047551.pdf*

14 One of the papers submitted to Retirement 20/20 in response to the request for models used in the public sector was about South Dakota. This paper won a prize in 2018.