

**Constructing New Retirement Systems:
Choosing between Insurance and Investment, Choice and Default**

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Abstract

Retirement 20/20 is the Society of Actuaries initiative to find new retirement systems (focusing on tier II) that meet the needs of stakeholders better than the existing DB/DC models. The first steps in the initiative were to identify characteristics of a successful new retirement system, by identifying the needs and risks of stakeholders in the system. What has emerged is an understanding of the tension that exists today between investment and insurance, choice and default (including how choices are structured). In addition, the *Retirement 20/20* initiative has constructed a Measurement Framework that can be used to analyze how well plan designs meet the needs and risks of stakeholders in the system; in the analysis of several plans, we have brought out other features that lead to successful retirement systems. This paper summarizes what we've learned to date about the balance between investment and insurance, choice and default, highlight roles for stakeholders and suggest new ways of bringing people together to prepare for their retirement.

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Introduction

Retirement 20/20 (R20/20) is a strategic initiative of the Society of Actuaries to develop new retirement designs. R20/20 systematically explores new ideas for retirement systems that go beyond the existing defined benefit (DB) or defined contribution (DC) framework. During the 20th century, many employers established private pension plans; initially pensions were of the DB type. DB plans are a form of insurance for individuals, paying fixed benefits over a lifetime once the individual retires. Their primary forms of payment have guarantees of amount and guarantees to pay as long as, but only as long as, the individual (and potentially the individual's beneficiary) lives. Covered employees have many guarantees, but few choices. The last few decades of the 20th century saw a decline in the DB plan as private employers moved to DC plans. DC plans promise a fixed contribution which goes into an account which (usually) accumulates with investment earnings. This fund accumulates wealth which can then be used to meet retirement needs. R20/20 seeks to discover new designs that could move beyond the DB/DC paradigm. More details about R20/20, and an overview of the work to date, are found in Appendix I.

R20/20's analysis has focused on analyzing the needs, risks and roles of stakeholders in the system, and exploring key themes that emerged early in the process (e.g. aligning roles with skills, inclusion of self-adjusting mechanisms). As R20/20 participants have worked through the needs and risks facing the stakeholders in the retirement system, we've discovered that there is a key tension as to whether private retirement wealth (outside of social insurance) should be in the form of insurance or investment wealth. In addition, another key tension is the degree to which

stakeholders, particularly individuals, ought to have choices (e.g. whether their retirement wealth is primarily insurance or investment, how much wealth is accumulated, how that wealth is converted to income in retirement and whether payment streams are annuitized). These tensions arise because of competing needs and risks of the primary stakeholders: society, individuals, employers and markets.

Individuals. Individuals' preferences may vary over their lifecycle, and the presence of either a one-size-fits-all DB or DC model may not accommodate such dynamic preferences. Individuals are poor at retirement planning and make poor choices, the consequences of which (inadequate retirement wealth, outliving retirement assets) are not realized until the individual is older and poor outcomes may not be remedied easily.

Society. Society (current and future generations of taxpayers) has an interest in retirement stability, defined as the greatest number of individuals being able to support themselves in retirement with least reliance on social insurance and welfare. Future taxpayers prefer that retirees have as much private wealth accumulated so they do not have to transfer as much income directly to retirees in the form of increased social insurance or welfare benefits. Society also wants its elderly population to have a certain minimum level of support. Society needs strong defaults, to protect future taxpayers against the negative consequences of bad choices made today.

Employers. While society has, to date, granted employers the decision as to whether employees accumulate retirement wealth as investment or insurance, employers' choices are driven by what best serves their core business operations. Employers find that employees want pension benefits, but are generally indifferent as to the form. Younger employees were less likely to prefer defined benefit plans, although plan preferences vary by employment type¹

(AAA/SOA 2004). As such, the employer then focuses on the drawbacks it associates with sponsoring insurance (DB) plans (e.g. volatility of contributions and accounting costs, assumption of long-term liabilities, administrative costs, and fiduciary risk).

Markets. Within R20/20, markets were originally defined as the capital markets within which retirement wealth is accumulated and de-accumulated. While the capital markets are an important tool of the system, markets aren't a stakeholder in the system's success, per se. Using markets wisely, however, through transparency and proper pricing of risk, is key to the success of any retirement system. As such, R20/20 considers markets as a stakeholder in its analysis.

The Society of Actuaries has also developed a tool to consider how well the needs and risks of stakeholders are met by any particular retirement model. This tool, called the Measurement Framework, outlines 34 criteria for the four stakeholders which determine how well any particular system meets retirement needs. The criteria allow a more nuanced evaluation of a plan that goes beyond the insurance/investment and choice/default framework.

To date we've analyzed three existing systems that differ from the corporate DB/DC model. From the Measurement Framework we've identified other features to consider in creating a successful retirement system: strong governance framework, alignment of roles with skills, presence of self-adjusting mechanisms (that share risk among stakeholders), solidarity among plan participants, use of groups, a degree of independence from employer, and use of nearly default free discount rates for measurement.

What we've learned from R20/20 is that we need to consciously balance setting the line between investment and insurance, and how we think about choices versus defaults (including how we structure choices and set defaults), and how we design systems with the other key features. Our understanding of needs, risks and roles of key stakeholders in the system must

govern how we design new systems. What we have today is a system which has been hampered by regulation. What is needed is for the system to evolve to permit new ways of thinking about how to achieve this balance.

Investment vs. Insurance

One key differentiation is whether the goal of the Tier II retirement system is to insure against the economic risks of retirement or accumulate wealth to meet economic needs in retirement. While both of these require the same thing – an accumulation of wealth during the working years – they are very different in terms of what guarantees they bring, what choice (or lack thereof) they offer, how they use the markets, and how they accommodate individual situations. Stakeholders in the retirement system have different points of view as to whether wealth or insurance is the key need.

Society focuses on ensuring that most individuals have sufficient retirement security. Generations with (overall) inadequate retirement income will increase pressure to raise social insurance benefits, increasing the direct transfer of wealth from workers to retirees. Society is also at risk with greater variation in the level of retirement income; to the extent that the dispersion of private wealth increases (more people reach retirement with less than adequate or more than adequate income) society faces unpleasant choices. Individuals with less than adequate income may press for an overall increase in social insurance benefits or may draw more welfare benefits. Government can finance these benefits by increasing taxes on retirees with more wealth, but this is complicated and politically dangerous (objections might be raised both from retirees, who see their wealth at stake, and workers, who see their potential future wealth at stake).

R20/20 participants noted that while society favors insurance, it favors a degree of insurance such that individuals' needs are met and future taxpayers are not burdened by excessive cost or risk. The consensus is that a degree of annuitization is important, and it may be important for society to mandate or encourage (e.g. through tax policy) annuitization in addition to what Social Security provides. This conclusion that a degree of, but not necessarily full, annuitization is valuable is supported by other research (Dushi and Webb, 2004).

Insurance arrangements do a better job of meeting the retirement needs and risk preferences of individuals. The Measurement Framework includes eleven individual criteria, six of which are met by insurance forms of payment (guaranteed income, predictability of income, sensitive to family needs, requirement for individual skills, investment risk, and longevity risk). Three others (sensitivity to employment conditions, inflation risk and premature retirement risk) can be met by either insurance or wealth measures. Only two (retirement flexibility and portability) are difficult to meet within the existing insurance structures (although insurance structures could be redesigned better to meet those needs). The individual criteria are discussed further in the section on the Measurement Framework.

Individual preferences for investment type vehicles, particularly while they are younger, may reflect the preference for portability and for flexibility in timing and manner of retirement distributions. Portability has been seen as a strong feature in the DC system, even though that portability has been shown to create leakage (retirement assets being cashed out on job transfer) (Munnell and Sundén, 2006). Knowledge workers in particular are phasing into retirement, often by combining work with retirement as they reach their 50s and 60s (sometimes by choice and sometimes due to labor market conditions or a need to care for parents/spouse). One challenge for future insurance models is to accommodate better portability and flexibility of payment.

Portability is perceived to be important while individuals are many years from retirement. Portability is more important among younger workers and younger retirees than older workers or older retirees (AAA/SOA 2004). Retirees have stronger preference than workers for guaranteed income streams, regardless of whether they are through a defined benefit or defined contribution arrangement (AAA/SOA 2004).

While individuals need insurance protection, there are several factors which keep individuals from voluntarily seeking it. Individuals prefer to maintain levels of wealth as a cushion against health shocks, including the potential need for care (in home or institutional) as individuals age; individuals also prefer wealth for bequest motives (Ameriks et al, 2008). Finally, individuals tend to underestimate their own life expectancy (Society of Actuaries, 2005). Annuitization can have other benefits; individuals with more of their wealth annuitized tend to consume less than individuals with less of their wealth committed to lifetime income (Butrica and Mermin, 2006) which may mean that annuitization can help individuals with less wealth manage that wealth better through retirement. Focus group participants only considered a few years ahead in their planning horizon (possibly decreasing the value they saw in annuitization); they also, however, reported deciding whether they could afford to retire by comparing monthly expenses with monthly income (Greenwald et al 2006).

If we consider the view of the markets or of employers on whether benefits take the form of investment or insurance, these stakeholders are indifferent. As noted earlier, employers generally prefer sponsoring plans DC (investment) plans rather than DB (insurance) plans, but this is because of the risk that sponsorship places on employers. If we consider the needs of employers (managing workforce, supporting primary business purpose, responsive to owners)

and risks they face (business risk, regulatory risk, fiduciary risk and litigation risk), in theory, there should be no preference for an insurance or investment model.

Traditionally, DB plans (insurance) have been valued by employers for their ability to attract, retain and retire workers effectively. However, for many employers, these features have been overshadowed by the associated risk associated with DB plan sponsorship. If an employer wants an insurance vehicle (DB plan), the employer essentially establishes a captive annuity writer. Shareholders (business owners) may prefer that managers not take risk outside the core business. In addition, the employer (as plan sponsor) must meet complex funding and accounting rules, and operational requirements for everything from notices on benefit payment to restrictions on payments to highly compensated employees. The investment model has been friendlier to the manager: the manager retains the ability to adjust contributions, cash cost equals accounting cost, and there is no balance sheet impact; the investment model presents less risk to company operations. If the employer's role did not require it to sponsor the investment or insurance arrangement, the employer should be indifferent between the models (and might prefer insurance models if they provide an advantage in attraction, retention and retirement).

From the markets' point of view, retirement assets are invested in the markets whether they are in an investment or insurance form. Today, we associate the insurance form with insurers, who invest primarily in risk-free assets. DB plans, however, invest in both risk-free and risky assets (equities), and the typical lifecycle DC fund holds some portion of investments in risky assets. There is a debate that retirement systems operate more efficiently by investing in risky assets, because the long horizon of the typical DB plan allows investors to ride through market declines (cite); similarly lifecycle theory states that individuals can invest in risky assets because when participants are younger, they have more tolerance for risk (cite) (and they can

weather market downturns). Others have argued to the contrary; that over the long time horizon equities become more risky (Bodie, 1995). R20/20 participants have not settled on whether retirement systems should invest savings (in the investment or insurance form) in only risk-free assets or risk-free and risky assets; the choice of market investments is part of the construction of models.

Market Innovation and the Cost of Insurance. One theme that has emerged from R20/20 is how to use the markets better in insurance arrangements: do we have the right market instruments to drive down the cost of insurance arrangements?

In the 20th century, many individuals derived their non-Social Security income through employer sponsored DB plans. While these plans were never universal, they provide a significant source of retirement income, particularly at the middle and upper income tiers (Reno and Lavery, 2007). Plan sponsors have hedged many risks of retirement, including investment returns and cohort mortality risk², by charging current or future shareholders (corporate plans) or taxpayers (public plans) the cost of any losses.

If the system is to change, and we are to move away from the employer (as sponsor) guarantee yet retain the insurance guarantee within the plan, then more hedging may be required. (Self-adjusting mechanisms are one way to allow the plan to continue to take investment risk by sharing that risk with participants; these mechanisms are discussed in the Measurement Framework section.)

One question that has emerged is whether such hedging requires new market instruments. Can we design new retirement systems if these instruments are not yet available? The conclusion has been that we probably have to design the system first and go to the market to demand the new instruments. And, in turn, there has to be sufficient demand (e.g. higher levels

of annuitization than seen today) for the market to be able to create the hedging instruments. If you consider the chicken-and-egg dilemma of creating the market instruments first to encourage the insurance instruments or creating the insurance instruments (with strong demand) and then asking the markets to respond with hedging instruments, it is the latter path that R20/20 participants believe will be successful. The market can only react to strong, well-defined institutional demand. Creating more demand for annuities will allow us to bring the price down by creating the demand for hedging instruments to spread the risk of annuitization to the wider capital markets. In reality there may be a ratcheting effect (demand for annuities creates demand for instruments which creates more insurance products).

Choice vs. Default

The issue of choice covers several concepts: the degree of choice within the system, how choices are framed, whether certain choices are encouraged or discouraged (through framing or other incentives) and who pays the penalty if bad choices are made. To the extent there are no choices, what is the default? And within a choice scenario, how is the default selected? Any system with choice requires strong defaults; retirement systems with choice function better with strong defaults (Choi et al. 2005).

Choice is costly. The lowest-cost risk-pooling option is to gather a large number of people and give them the exact same benefit. The pool benefits from no anti-selection (people electing to be or not be in the pool based on their individual understanding of their risk) and similarity of benefits drives down administrative cost. In the purest example of choice between cost and wealth – the private annuity market – we find that the cost of private market annuity sales to individuals is higher due to anti-selection on the part of the consumer (Finkelstein and Poterba 2002).

Society is mostly indifferent between choice and default, but, where choice produces bad outcomes for society, or where choice increases the cost of the system (taking money away from other social goals), society may prefer defaults. And similarly, to the extent that choice produces increased disparity in wealth levels, implying likely rebalancing through unpopular taxation, some level of default may be preferred. Society may prefer to structure choices, through tax incentives or penalties, to ensure future taxpayers are defended against bad choices.

Individuals say they want choice (all other things being equal), as noted earlier in the investment section, they often cannot use that choice effectively. Studies on 401(k) plans have shown that left to their own actions, even with good education, participants don't always act in their own best interests (Karlsson, Massa, and Simonov 2007; Choi et al. 2005). The retirement planning process is psychologically uncomfortable because it is a reminder of pending decline and future death (Weber 2004). Structured choices and strong defaults help individuals make better choices, and keep individuals from having to make uncomfortable decisions. The extent to which choices are offered, incentivized or penalized depends on how the system weighs the desire of individuals for choice against the needs of society.

Retirement Signals. R20/20 participants have discussed retirement signals, particularly signals sent regarding retirement age and the retirement process. One of the first themes to emerge out of R20/20 was support for new norms for work and retirement: changing retirement from an event to a process, and eliminating the idea of the "right" age at which everyone ought to retire. Some R20/20 participants focused on removing existing signals that encourage early retirement. Other participants expressed concerns that not all workers could work to later retirement ages. The consensus that emerged was that new retirement systems ought to be

neutral regarding retirement ages, and to set up systems that allow workers to treat retirement as a process, rather than an event.

At our most recent R20/20 conference, attendees discussed how retirement age within social insurance (Social Security in the US), serves as an important signal. Participants also discussed how Social Security benefits are presented. For example, if choices between early and normal retirement are presented with a break-even age, this presentation tilts participants to take early retirement. If benefits are shown based on the increased monthly payments at later retirement ages, this could tilt participants toward taking later retirement. The choice of how to retire, (all at once or in stages), and when, is a choice that must be framed. If the tier II retirement system does not send any signals for retirement age (it is retirement age neutral) participants will find signals from other sources. The most likely source will be the social insurance system. R20/20 participants continue to consider how retirement age signals should be designed. .

Employers are largely indifferent to the degree of choice individuals have within the system. However, employers are not indifferent to their own choices. Employer choice within the retirement system today is very limited: most private employers can choose only to sponsor a single-employer DB or a single-employer DC plan. Sponsorship of a plan (even a DC plan) brings a host of regulatory, legal and fiduciary risks. Most private employers who do not sponsor a plan are unable to offer retirement benefits to their employees. Employers with unionized employees can choose to have those employees belong to a multi-employer plan, but those plans bring risk to employers as well (exiting from a multi-employer plan can be expensive).

R20/20 has focused on providing a wide range of options for the employer's role. Choices need to be included to allow employers to have a role in education, in offering employees access to a plan or to a range of third-party plans, in providing funding toward third-party plans, or in sponsoring and funding their own plan. Adding more opportunities for employers to provide access to benefits (without having to sponsor plans) could lead to higher coverage in plans by individuals. In addition, employers may agree to partially fund benefits (defer compensation) if they can do so without facing the fiduciary, administrative and regulatory risk of plan sponsorship. The cost of entry into the system would be lowered, which could increase coverage of individuals.

University and other select not-for-profit employers, for example, can elect to provide access and funding to the TIAA-CREF plan without bearing administrative costs, fiduciary risk or investment risk. From the employer's standpoint, TIAA-CREF acts like a DC plan: once the contribution has been paid, the plan is fully responsible for the benefits. From the participant's standpoint, the TIAA annuity acts like a variable annuity; while annuity payments vary based on fund performance, the annuity provides protection against outliving assets.³

In the Netherlands, there are industry wide plans, often organized by union or industry, where the employers participate in the fund but bear no responsibility for the fund operation. The plans are structured a bit differently in that future contribution levels can vary based on fund performance, but there are mechanisms to modify retirement benefits as well. R20/20 participants suggest that other employers could be given the option to participate in similar plans, where the employer's responsibility ends once the contribution for that year's benefit has been made. Third party non-employer plan sponsors are discussed in the Measurement Framework section.

Choice, to markets, represents innovation. To the degree that all benefits are standardized and mandated, markets are unable to respond and innovate. When R20/20 participants discussed how markets look at default options, they focused on a need for a balance between innovation and standardization.

There may need to be some degree of standardization, for example of simple annuity products (life annuities and deferred life annuities, aka longevity insurance), to give individuals clear and comparable choices among annuity providers. A degree of standardization helps consumers understand the benefits and compare price and quality between insurers for these standardized products. Introduction of standardized products should also decrease cost, by making price comparisons easier (driving competition), but also by increasing market share (consumers may look first to standardized products, and may be more willing to purchase if they understand product differences). One benefit of increasing market share would be to drive down the anti-selection, which would greatly reduce cost; the closer the market can come to a compulsory market, the lower the cost to annuitants. A study of the UK annuity market showed that compulsory annuities were considerably less expensive than voluntary annuities, with the difference driven largely by anti-selection in the voluntary market (Finkelstein and Poterba, 2002). The increased market share could then further drive down cost by driving demand for market based hedges for insurers and others issuing the products.

R20/20 participants recognized that too much standardization drives out innovation; insurers and other financial service companies should continue to be able to develop innovative insurance and investment products. Many wealthy retirees use existing annuity products to structure income, protect against adverse consequences and satisfy bequest needs. Continued innovation in the annuity market can also benefit retirees with lower levels of wealth, as products

that were designed for the wealthy, for example, may find a market among less wealthy consumers. Retirement 20/20 participants believe market innovation is one key to the success of the retirement system.

Measurement Framework

SOA volunteers and staff have developed the Measurement Framework (SOA 2009a, forthcoming) as a way of evaluating new retirement systems. The Measurement Framework takes the point of view of the four stakeholders and considers for each stakeholder what criteria they consider key in a retirement system. It develops a simple rating of how well the design being analyzed meets each criterion, and considers how well it meets it in the presence of moral hazard. It also separately tests four new concepts that bridge stakeholders: self-adjusting mechanisms, new norms for work and retirement, aligning roles with skills and alignment with markets. A complete description of the Measurement Framework tool is found in Appendix II.

The Measurement Framework was developed to help us understand what retirement system design features best met the needs of stakeholders within the system. It allows a systematic comparison of new designs. The stakeholder criteria are provided in Tables I-IV. .

Five plans have been evaluated in the Measurement Framework: single-employer corporate final pay DB, single-employer corporate DC (401(k)), Ontario Teachers Pension Plan (OTPP), Dutch industry wide schemes, and the Clergy Retirement Security Program (DB) of the United Methodist Church (UMC plan) (which was chosen as an example of a church plan). The latter three plans will be collectively referred to as “non-traditional plans” because they fall outside the corporate sponsored DB/DC framework. The non-traditional plans all provide participants a DB type benefit, but otherwise differ in terms of how risk and responsibility is shared. A brief description of each plan is found in Appendix III. We have studied them as case studies for other ways of operating a retirement system.⁴ The preliminary analysis of these non-traditional plans have highlighted some principles for successful retirement design: strong governance framework, alignment of roles with skills, presence of self-adjusting mechanisms

(that share risk among stakeholders), solidarity among plan participants, a degree of independence from employer, use of groups, and use of nearly default free discount rates for measurement. Some of these principles (strong governance) are well-understood and some are still being evaluated (self-adjusting mechanisms) for their potential usefulness. And, some of these principles may not be usable outside of the non-traditional plan.

Strong Governance. Plans with robust, transparent, and well-understood governance structures work well. Each of the non-traditional designs has a degree of independence from the organizations that fund the plans; partly because of this degree of independence they have a robust governance structure to ensure the plan functions properly. Key features for these non-traditional plans include:

- Independent boards made up, in whole or in part, of retirement and investment experts. The OTPP Board has eight members plus a chair, all of whom are retirement professionals (the Ontario Teacher's Federation may appoint one teacher to the Board).
- Board members may be chosen by employers or employees but they do not act as representatives of the employer or employee. Typically they have professional experience in pensions and investments.
- Plans have pre-set rules about how to change contributions or benefit levels (some plans have pre- or post-retirement inflation indexation). The Dutch industry wide plans have a "policy ladder" which predetermines how contributions and benefit indexation are affected by funding levels in the plan.
- The Board sets the contribution rates and those funding the plan must pay their share of the cost; contribution rates are not negotiable.
- The Board sets benefit levels that are common for all members.

- Where members are union members, benefits are not subject to negotiation (benefit levels are set by the Board, on which the union has representation).

Strong governance implies a strong role for society (government) in its role as regulator. Note that strong governance does not require strong government regulation; in some cases the plans with strong governance exist because there is less government regulation upon the plan and the plan sponsor has taken the responsibility to ensure that its own governance structure is strong. One could argue that too many rules and regulations create a situation where the plan is so busy “following the rules” that it cannot focus on proper governance. Successful retirement systems need strong governance, particularly if these systems are not sponsored by a single employer for a single employee group.

Alignment of Roles with Skill. Within the Measurement Framework tool, plans that allocate roles away from individuals and employers, in particular, score better. Key features for these non-traditional plans include:

- Use of professional investment advisors to make investment decisions (individuals do not make investment choices).
- Independence from the employers of the plan participants. In particular, the plans have an independent board, comprised mostly, if not solely, with retirement and investment professionals who act on behalf of the plan, rather than the plan sponsor (cutting contributions to meet budget needs) or plan participants (raising benefits, particularly in unionized situations).
- Establishment of an independent board with full authority to levy contributions from participants and their employers.

- Offering limited choices to participants structured around traditional annuities (these plans do not offer lump sums except small amounts at termination).

Presence of self-adjusting mechanisms. Self-adjusting mechanisms permit the plan to adjust benefits (including benefits paid to retirees) and contributions based on plan experience. These mechanisms can also be seen as risk sharing mechanisms. One criticism of the DB and DC plans is that by focusing solely on the insurance or investment model, they put all risk to one party (employer sponsors for DB, participant for DC) and none to the other (participant for DB, employer sponsor for DC). A more robust system would share risks. This however requires a new way of thinking about the promise of the benefit that would permit changes in benefit amounts. Examples of self adjusting mechanisms in these non-traditional plans include:

- The Dutch industry wide plan formulae are generally career-pay based benefits. Benefits are indexed pre-retirement and post-retirement with inflation. However, both pre- and post-retirement indexation is conditional on plan performance. In this case, if the plan has negative experience, not only do contributions increase, but expected inflationary increases can be foregone.
- The OTPP has recently introduced conditional inflation indexing for its retirees. This will take twenty years to phase in fully, but eventually, post-retirement indexation for retirees will also be conditional on fund performance.

The idea of self-adjusting mechanisms is they allow the plan to continue to take risk (particularly investment risk); if equities outperform risk-free assets, the participants are able to earn higher benefits for lower contributions. Self-adjusting mechanisms are often designed using ALM models and Monte Carlo type scenarios of market performance given a typical asset mix. Models by definition are limited, and the 2008/2009 liquidity crisis is just one example of

how market events can be more devastating than what can be predicted by typical capital market scenarios. Moreover, steep declines in markets can lead to less available cash for pension funding and higher unemployment, leading to more forced early retirement. These cascading scenarios are outside the ability of computer models to handle. Third parties report that De Nederlandsche Bank has recently acknowledged that existing risk management instruments in the Dutch industry-wide plans are less effective than originally thought (Preesman, 18 March 2009). If self-adjusting mechanisms are not sufficiently robust to withstand market corrections, they may not represent strong retirement design feature.

We are also not sure that self-adjusting mechanisms within an industry collective plan could withstand the decline of that industry (e.g. steel manufacturing in the US). As an industry declines, and more workers are forced into retirement, there would be less money available for cash contributions, more retirees in the fund (than active workers) and possibly more workers entering retirement sooner than might have been predicted. These plans would at the very least have to shift their expectations over time to focus more on lower levels of securitized benefits and may be able to take fewer risks than when originally designed.

Finally, there are fundamental economic questions as to whether it is better to hedge these risks in the market rather than share them with plan participants. The erosion of purchasing power through inflation can erode the insurance protections of retirement benefits, suggesting that this risk ought not to be subject to adjustments for plan performance.

At the 2008 R20/20 conference, participants raised concerns that the willingness of employed participants to take on risk may be very different than the willingness of retirees to take on those same risks; it may be better if these funds are bifurcated so that retiree benefits (and the benefits of those approaching retirement) are securitized while benefits for working

employees might be subject to more investment risk. This may lower the eventual benefits that can be provided, but would provide greater security and better risk management..

Solidarity among members. These non-traditional plans have strong solidarity among members, as evidenced by the following features:

- Both the OTPP and UMC plans are organized around a particular profession (teachers and clergy, respectively). All members of the profession within a large geographic area (Ontario and the US, respectively) are automatically in the plan, and if they change employers (within that profession/geographic area) they remain members of the plan. The organization can also be by union groups.
- Plans may require significant employee contributions. The OTPP requires employees to contribute half of cost of the plan annually (the other half is contributed mostly by the Government of Ontario with minor contributions from other employers in the system). For 2009, employee contributions are 10.4% up to the Canadian Pension Plan (CPP) Maximum Pensionable Earnings limit (\$CN 46,300) and 12.0% over the CPP limit; employer contributions are equal to employee contributions (OTPP 2008).
- Plans adjust contributions or benefits based on fund performance. Adjusting benefits and contributions for members ties members into the performance of the fund, and gives members a share in the stake of how well the plan is managed (as opposed to having a third party – the employer – be solely responsible for plan management).

One concern about the effectiveness of solidarity is the extent to which demographic shifts (plan population aging) can affect the ability of the plan to maintain solidarity. As noted earlier, plans with an aging membership or in a declining industry may have difficulty maintaining solidarity among plan members. Solidarity may also be tested by extreme

conditions; the Dutch industry wide plans are starting to see strains in solidarity, with unions insisting benefits cannot be significantly reduced (Preesman 16 February 2009) and retiree organizations calling for a rescue fund for retirees (Preesman 13 March 2009). These non-traditional plans also have high natural internal cohesiveness among participants (teachers within a union, clergy within a denomination, and Dutch citizens (within a particularly industry or union)); it is not known to what extent the internal cohesiveness must already exist to get the benefits from solidarity.

A degree of independence from the employer. These non-traditional plans have a sponsor who is not the individual employer who is funding the plan. The OTPP is jointly sponsored by the Ontario Ministry of Education and the Ontario Teacher's Federation, making it separate from the independent school boards that employ the teachers covered by the plan. The Dutch industry wide schemes are independent of the employers whose employees participate in the plan. The UMC plan is sponsored by the United Methodist Church and not by the individual parishes.

US multi-employer plans are not sponsored by a single employer, but rather by a group of employers on behalf of their unionized workforce (generally members of specific unions). Multi-employer plans work differently than these non-traditional plans because the participating employers remain responsible for plan underfunding; an employer that wishes to leave the plan must pay a one-time charge for any underfunding at the time of the plan withdrawal (GAO 2004). The employers are interdependent on each other for the economic health for the health of the plan (GAO 2004), which may make an employer reluctant to be the "last large employer standing" in a weak (underfunded) multi-employer plan.

In these non-traditional plans, the employers are, not strictly speaking, responsible for any plan underfunding (although they will likely be charged higher contribution rates should the plan become underfunded). While some may argue this is a weak distinction, we have seen that these non-traditional plans also have stronger governance models and self-adjusting mechanisms that adjust both contributions and benefits.

Use of groups. All teachers in Ontario participate in the OTPP, all ministers in the United Methodist Church participate in the UMC plan, and the Dutch industry wide plans are typically organized by industry or profession (and cover many or all workers in that industry or profession the Netherlands). Participants at the 2007 R20/20 conference, which focused on aligning roles with skills, concluded that having individuals participate in large groups was one way to reduce the information asymmetry between individuals and markets (individuals who don't have expertise in the markets can hire someone who does have market expertise). In addition, it provides for lower administrative and investment fees (than individual account plans or smaller pension plans), improved coverage (all employers are in the system) and perfectly portable benefits (to the extent participants stay within the profession/geographic area). This is in addition to the benefits of pooling of mortality risk.

Nearly default-free discount rates. Several of these non-traditional plans use discount rates that are nearly default-free to measure actuarial funded status. For example, in its 2007 valuation the OTPP presents accrued benefits measured with a of 4.65% discount rate, which is the rate as of January 1, 2007 on long-term Government of Canada real-return bonds plus 50 basis points to reflect the credit risk for the Province of Ontario (OTPP 2008). The Dutch industry wide plans measure accrued benefits⁵ on a fair value basis (using default-free rates) (Ponds and van Riel, 2007).

Conclusion

The balance between insurance and investment, choice and default, has been tipping slowly, based on the preferences of employers, for whom the investment/choice model presents less risk to the business. Individuals have certainly pushed employers in this direction, as the last two decades of the 20th century saw increasing demand by baby boomers for DC plans, which coincided with strong equity markets that made DC plans appear to be secure vehicles for retirement wealth. But is this push for investment over insurance is healthy for the retirement system as a whole: are the needs of future generations met by having so many individuals create investment wealth rather than longevity insurance? Both individuals and society have need for insurance protection; society also faces additional risks if individuals make poor choices.

Employers have played a central role in the system, but the primacy of that role is an accident of history. Many employers are no longer interested or able to sponsor plans that play the insurance role; the risk these systems pose to employers, long-term, do not permit them to sponsor a DB plan. The DC plan is better suited to the employers' risk needs. But, the DC plan is not as well suited to the insurance needs of individuals or society. One potential solution is to take sponsorship of retirement plans that provide insurance type benefits out of the hands of employers and give them to third parties.

Markets work best when well trained agents approach the markets. Financial markets are complex; individuals cannot be expected to understand market complexities, and even individuals with sophisticated knowledge may not want to spend the time making sophisticated choices. Retirement systems work well that utilize markets without requiring great individual knowledge or time.

Our challenge is to design new systems that work on the axes of investment/insurance and default/choice. A certain degree of default/insurance protection must be provided, to meet society's and individual's needs and risks. Any system must be designed with the proper use of markets in mind. Moving this design solely out of the employer based system will open up the possibilities for new creative designs that break out of the DB/DC paradigm.

The Measurement Framework was designed to help us analyze how well particular retirement designs work in meeting the needs, risks and roles identified in the R20/20 process. In looking at the traditional DB and DC system, and focusing on three case studies that are outside this paradigm (OTPP, UMC plan and Dutch industry wide funds) we have highlighted other features that make these non-traditional designs succeed: strong governance, solidarity among plan participants, alignment of roles with skills, inclusion of self-adjusting mechanisms, degree of independence from employers, using the power of groups, and measuring liabilities using nearly default-free rates. While we have concerns that these designs can sustain significant demographic, investment or industry shocks, these features may inspire us toward better retirement systems.

Finally, we cannot forget that the retirement income system does not operate in a vacuum. Individuals (particularly in the US) face challenges in meeting their health and long-term care needs as well, challenges that can keep them from making the right choices regarding retirement income. Participants at the first R20/20 conference recognized this and listed needed improvements in the financing of health and long-term care as key if new retirement systems are to succeed. Considering changes to the health and long-term care systems are outside the scope of the R20/20 project, but, more critically, health and long-term care for retirees must be considered within the context of the larger health care system in the US.

Appendix I –Retirement 20/20 Overview

Retirement 20/20 is an initiative of the Society of Actuaries' Pension Section Council to develop new retirement systems that extend beyond the existing DB/DC paradigm. Initial work on the initiative began in late 2005. R20/20 has brought actuaries together with attorneys, economists, employers and other public policy experts from the US and Canada to systematically explore the fundamental characteristics of a new retirement system. When the initiative started, it was broadly focused to consider the role of social insurance, employer vehicles (Tier II) and private savings. As it has evolved, it has focused on new vehicles for Tier II. Over three conferences participants have discussed the role of social insurance, and whether that needed to change. Participants have reaffirmed the design of existing social insurance systems in the US and Canada as the base upon which to build new Tier II designs.

The first conference was in September 2006, with the goal to understand the fundamentals needed for a successful 21st century retirement system. It introduced the four stakeholders (society, individual, employers and markets) and asked three questions for each stakeholder:

- Who has what needs?
- Who bears what risks?
- Who should or could play what roles?

For purposes of the conference (and future conferences) stakeholders were defined as follows:

- Society is society as a whole (all taxpayers and citizens). It includes current and future generations. Future generations have a stake in the success of the retirement system, because if the system is not successful, they may have to pay higher taxes (transfer more of their

income) to retirees. In this framework, government (politicians) is an agent acting on behalf of taxpayers and citizens (including future generations).

- Individuals are the retirement unit: the persons who will be relying on the retirement system for income during retirement. They face various risks in retirement and need to find ways to hedge, pool, or bear those risks in retirement.
- Markets have two roles. First, it is the market where wealth is accumulated and de-accumulated. Markets also provide opportunities to hedge and pool retirement risks. Markets include capital markets and insurers and other financial services firms that offer retirement income or wealth vehicles.
- Employers have needs to attract, retain, motivate and eventually to retire individuals.

The 2006 conference report (SOA 2007) outlines the conference findings around needs, risks and roles for the four stakeholders. Much of the findings from that conference were used in development of the Measurement Framework. In addition to the specific findings on needs, risks and roles, six themes emerged from the conference:

- Systems should align stakeholders' roles with their skills
- Systems should be designed to self-adjust
- Systems should consider new norms for work and retirement and the role of the normative retirement age.
- Systems should be better aligned with markets.
- Systems should clarify the role of the employer
- Retirement systems will not succeed without improvements in the health and long-term care systems.

These themes emerged in discussions that crossed stakeholders, and were seen as overarching themes that met the needs, risks and role of all stakeholders. The R20/20 initiative has focused on retirement income; conference reports have noted the importance of improvements in health and long-term care, but have not specifically addressed these, as they are outside the scope of the initiative.

The 2007 conference focused on aligning roles with skills for society, employers and markets. The conference focused on these three stakeholders who support individuals; if the roles of these supporting stakeholders are aligned, individuals should be better off. The 2007 conference focused on these questions around role definition:

- Which stakeholder is best suited to take on what role?
- How do you allocate roles based on stakeholder skills?
- How do these role assignments affect other stakeholders?

The 2007 conference report outlines detailed findings (SOA 2008). Conference participants focused on the role of society to provide structure in the system, through consumer protection, helping individuals make better decisions, and setting guidelines about what ought to happen. They concluded that society should work toward goals which include some degree of annuitization (guaranteed lifetime income), helping individuals accumulate retirement wealth and providing oversight to the system.

Markets were seen to function most efficiently when groups approached the markets, when well trained agents were properly incentivized, and when some market product offerings were standardized, but not to the extent that innovation was hampered (conference participants believed it was important to encourage innovation in hedging and pooling instruments).

Finally, employers were best utilized if they could play a number of roles within the system, not just the role of plan sponsor. Opening up the employer role to roles of facilitator (helping individuals accumulate wealth), educator or trusted advisor, and possible additional elective roles as purchasing agent, distributor of retirement income and guarantor (similar to the employer role in the defined benefit system). Opening up the possibilities of the employer role was seen as critically important.

The 2008 conference focused on several themes that emerged over prior conferences

- Changing signals,
- Default distribution options,
- Self-adjusting mechanisms, and
- Market hedging opportunities.

Regarding changing signals, conference participants focused on signals sent within social insurance (Social Security) regarding retirement ages.

Much of the discussion of default distributions focused on why individuals do not annuitize, with conference participants reaffirming the need for a minimum level of annuitization.

The Dutch industry wide design were featured in the discussion on self-adjusting mechanisms; conference participants focused on the strengths and weaknesses of self-adjusting mechanisms (including whether all participants had the same desire for risk).

Finally, the question of whether market hedges needed to be introduced before new retirement systems could be designed was discussed; panelists concluded that market demand would be necessary to drive the introduction of new hedging instruments (e.g. longevity bonds

that hedge against systematic mortality improvements). More detail can be found in the 2008 conference report (SOA 2009b, forthcoming).

Appendix II – About the Measurement Framework

The Measurement Framework was developed as a tool to test how well new designs met the principles for new retirement systems that were being developed within R20/20. The tool was to test whether the design aspects met, or appeared to meet, the needs and risks for each stakeholder, and whether they were best suited to the role identified for that stakeholder. In addition they looked at four of the cross-stakeholder themes from the 2006 conference: self-adjusting (automatically adjust to changing demographic and economic conditions), align roles with skills, support new norms for work and retirement, and align with markets.

The framework assesses 34 characteristics for each of the four stakeholders: society (9 characteristics), individuals (11 characteristics), employers (8 characteristics) and markets (6 characteristics). Tables I-IV shows the characteristics and their definitions.

Each characteristic, or criterion, is assigned a rating on a red-yellow-green scale. There are five color choices: green, yellow-green, yellow, yellow-red and red. The green rating is highest, suggesting that the plan does as well as can be expected in meeting that need or risk, while a red rating suggests the plan does extremely poorly in meeting that need or risk. The ratings are assessed by a team of retirement professionals (actuaries and others) with expertise in retirement systems.

The ratings for stakeholders are combined to create a composite rating. The composite rating can blur differences (a plan with a lot of red and a lot of green can score yellow in the composite rating, as can a plan with a lot of yellow ratings), so the Framework shows color bars together with the summary rating to show the degree of variation in the ratings across all needs and risks for that stakeholder.

In addition to baseline ratings, each characteristic is rated based on the effect of moral hazard. We recognize that a plan can be designed with one intention, but the actions of agents or misunderstandings of stakeholders can lead to different (negative) outcomes. For example, plans that pay benefits in the form of annuities score highly for individuals along the “guaranteed income” criteria; the presence of a lump sum option represents a moral hazard for the individual, which would lower that score. Each category shows scores for both the individual characteristic and that characteristic considering moral hazard.

Figures I and II show a sample page for Individuals with ratings for four characteristics (guaranteed income, predictability of income, retirement flexibility and portability) for a traditional single-employer DB and single-employer DC plan, respectively. Figure III shows the sample summary chart for individuals for a defined benefit plan, with ratings annotated.

Appendix III – Summary of Non-traditional Plans

Ontario Teachers Pension Plan (OTPP). OTPP covers all non-university teachers, in public and certain private schools, and those who work in certain teaching related organizations in the province of Ontario. As of 31 December 2007 the plan had \$CN 108.5 billion in assets and \$CN 115.4 in liabilities (on an accrued benefits basis) (OTPP 2008). The plan is jointly sponsored by the Ontario Ministry of Education and the Ontario Teachers Federation. The plan is an independent corporation, with a board of directors appointed jointly by the Ontario Ministry of Education and Ontario Teachers Federation.

Benefits are 2% per year of service multiplied by final (five year) average salary. The benefit is integrated with the Canada Pension Plan (CPP – Canadian social insurance). Benefits are fully inflation indexed, and are payable to members and survivors as life annuities. Only accrued benefits are protected (the plan may change the plan formula for future service).

Teachers and the government of Ontario (with small amounts from other employers) each fund half the cost of the plan (in 2007 teachers paid \$CN 1,040 million, the Ontario government \$CN 1,060 million and other employers/transfers from other plans \$CN 38 million). For 2009, employee contributions are 10.4% up to the Canadian Pension Plan (CPP) Maximum Pensionable Earnings limit (\$CN 46,300) and 12.0% over the CPP limit; employer contributions are equal to employee contributions (OTPP 2008).

The OTPP is an independent corporation. It is managed by a Board with members nominated equally by the Ontario Teachers' Federation (OTF) and the Ontario Ministry of Education. They jointly set benefit levels, contribution rates for teachers (which are matched by the government and other employers) and how any shortfalls or surpluses are addressed. Board members are retirement professionals appointed by the OTF and Ministry of Education (the OTF

may appoint one teacher). Each group appoints four board members, and the board members jointly appoint their own chair.

The plan was recently updated to modify the inflation index to make 50% of the inflation increase conditional on fund performance, longevity improvements and other factors. In any year where the full inflation increase is not provided, the government and other employers will contribute the amount foregone as an additional contribution (to maintain the 50/50 cost sharing in the plan).

Dutch industry wide plans. Plans are typically collective funds, organized either by occupation or industry. They are designed to be self-sustaining. All employees are expected to join a fund, and all workers should have access to a fund. Almost all industries or occupations have these plans; there are a few private DB plans left but most individuals participate in these funds⁶.

Benefits are typically career pay with accruals of 2% per year or higher, and are generally integrated with social insurance. A fixed benefit, generally the career pay benefit without indexation, is guaranteed. Indexation on the career pay benefits is made conditional to performance of the fund. The fund can “make up” past foregone indexation if superior funding levels achieved. For example, the plan may provide no indexation for a funding level below 85%, partial indexation for funding levels between 85 and 10%, full indexation for funding levels at 105% and above and backlog indexation starts at funding levels of 125% (From Policy Ladder Example, Box 4.1, Kakes and Broeders 2006).

Post-retirement indexation is also conditional on performance of the funds. Plans generally use the same or similar policy assumptions as for pre-retirement indexation.

Contributions also typically vary based on the targeted funding level; if the fund falls below that level contributions are increased gradually; at higher levels contributions are reduced. Certain boundaries are defined by law (e.g. employers and participants must pay actuarial premium if funding level is at or below 140%).

Pension funds are generally invested in equities but measurements are at market rates. Typical fund mix might be 50% equities, 50% bonds (Ponds and van Riel 2007)

UMC Plan. The Clergy Retirement Security Program of the United Methodist Church (UMC Plan) is a church-sponsored plan. It has both a DB and DC component; we will only cover the DB component. Clergy have access to Social Security benefits (unless they decide, as individuals, to opt out).

The UMC General Board of Pensions makes investment decisions, sets contribution levels and makes recommendations to the convention. Most of the Board is elected from the general membership but a few positions are appointed based on expertise. There are additional ad-hoc members, appointed for the expertise, who serve on Board committees.

Participation is mandatory for all regional conferences (regional groupings of local churches, roughly akin to states; there are 63). Regional conferences do not control benefit design, investment policy, or aggregate contribution levels. Plan changes can only be made at convention by an elected committee of 1,000 delegates that meets for two weeks once every four years. By definition, half of the delegates are clergy. That committee makes all decisions that are made on behalf of the worldwide and/or national church.

Benefits are 1.25% times final denominational average compensation for each year of service. Joint and survivor benefits are fully subsidized. Subsidized early retirement is available

after 40 years of service. Benefits are inflation indexed post-retirement. There is a maximum retirement age of 72. Lump sums are not available.

Endnotes

¹ In general, participants preferred whatever type of plan they had. When asked which type of plan they preferred (DB or DC) a majority of workers with a DC plan said they prefer a DC plan (62%) while a majority of workers with a DB plan said they preferred a DB plan (51%); workers who were offered both types of plan were split between their preference for DC (41%) and DB (37%). However, the preference for a DB plan was strongly influenced by preferences of government workers (64% of government workers prefer a DB plan; of non-government workers with a DB plan, 44% prefer a DB plan and 39% prefer a DC plan). As age increases, preferences for a DB plan increased sharply (40% of workers age 50 or older expressed a preference for a DB plan, versus 31% of workers age 40-49 and 20% of workers younger than age 40). Within the survey, only a small percentage of workers (13%) expressed no preference for DB or DC.

² Cohort mortality risk is defined as the risk that mortality will improve (decline) or worsen (increase) for an entire generation. This risk cannot be hedged by pooling; pooling can only hedge the risk that an individual's mortality experience will be different from the average expected mortality experience.

³ The TIAA plan is a variable annuity plan. Corporate single-employer sponsored plans can currently offer this variable annuity design; it does not have to be done through a third party, although it works well for a third party because contributions are fixed.

⁴ The goal of Retirement 20/20 is to look for models that evolve beyond the traditional employer sponsored DB/DC system. The initiative has focused on studying models that are outside that system; this does not imply that there are not strong examples of employer sponsored DB or DC plans.

⁵ Accrued benefits are measured both with future inflation indexation (pre-and post-retirement) and without future indexation. The different measures are used for different purposes in the policy ladder.

⁶ Plans may be organized by single employers; in 2005 14.5% of active participants were in company pension plans, compared to 84.8% in industry-wide plans (Ponds and van Riel 2007).

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**Table I – Society
Measurement Framework Criteria**










Criteria	Definition
Adequate	Protects vulnerable citizens.
Affordable	Does not take resources from other social needs. Ensures risk pooling done efficiently.
Sustainable	Sustainable across and within generations. Equitable across and within generations.
Robust	Fair, covers great majority, creates shared economic growth, avoids adverse incentives
Does not promote economic risk	Efficiently allocates resources and encourages labor force participation.
Does not promote political risk	Promotes fiscal/political integrity and political stability.
Does not lead to system failure	Withstands shocks, not prone to instability or adverse incentives.
Addresses imperfections of other stakeholders	Promotes strong individual decision making and covers lack of market instruments.
Promote social solidarity and integrity	Ensures basic standards of living; ensures risks are shared.

Table II – Individuals Measurement Framework Criteria	
Criteria	Definition
Guaranteed income	Provides substantial level of income protection.
Predictability of income	Facilitates retirement planning.
Retirement flexibility	Allows choice of retirement age, including possibility to phase into retirement.
Portability	Minimizes loss upon employment termination.
Sensitive to employment conditions	Benefits may vary in line with employment conditions.
Sensitive to family needs	Benefits may vary in line with spousal and children needs.
Requirement for individual skills	Level of knowledge required to plan for retirement.
Investment risk	Protects against fluctuations in market returns.
Longevity risk	Protects against possibility to outlive assets.
Inflation risk	Includes both pre and post retirement inflation.
Premature retirement risk	Protects against forced early retirement due to disability, family circumstances, and involuntary termination.

Table III – Employers Measurement Framework Criteria	
Criteria	Definition
Supports primary business purpose	Enhances core purpose of the employer’s business.
Workforce management: attraction & retention	Enhances business value by allowing attraction and retention of the “right employees”.
Workforce management: transition of employees	Enhances business value by facilitating the orderly transition of employees.
Responsive to owners	Responds to needs of owners, e.g., shareholders for public companies, which may limit amount of risk to be taken.
Business risk	Ability to react quickly to changes in the competitive landscape.
Regulatory risk	Allows plan to be operated to fit needs and change to meet conditions easily within regulatory framework.
Fiduciary risk	Allows plan to be easily operated to minimize fiduciary liability.
Litigation risk	Allows management of workforce to avoid lawsuits.






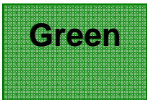

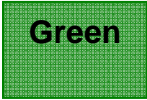

Table IV – Markets Measurement Framework Criteria	
Criteria	Definition
Maximizes use of markets	Effectively uses markets and hedging mechanisms; stakeholders can purchase hedging instruments cost effectively.
Transparent (cost)	Costs of plan are transparent (fees, costs to sponsors, other stakeholders, etc).
Strong Governance	Fiduciary roles of plan sponsors well defined. Plan structure minimizes agency issues, particularly regarding plan investment and risk taking.
Efficiently priced	Market price is well understood and accepted by stakeholders. Plan does not contain features which cannot be efficiently priced. Plans incorporate discipline in pricing.
Efficient risk bearing	Plan efficiently pools idiosyncratic risks and hedges systematic risks (both economic and demographic).
Allocation of risk	Plan efficiently allocates risk across stakeholders, giving each stakeholder the risk he can best bear.

Figure I
Sample Measurement Framework Page, Individual criteria, DB framework

Traditional Final Pay DB Plan (single employer, corporate sponsored)				
Individual's Needs & Risks (Composite Rating  (Yellow-green))				
Criteria	Objective	Rating	Evaluation	Effect of adverse incentives
Guaranteed income	Provides substantial level of income protection.	 Yellow-Green	Benefit promise is well defined and based on final pay (income security). For short service employees, benefits are often quite small and not related to final pay at retirement.	If plan terminates not fully funded, individuals close to or even in retirement can lose some benefits; presence of a government guaranty program could encourage employers to cease funding in financial distress situations.  (Red)
Predictability of income	Facilitates retirement planning.	 Green	Fixed promise allows for retirement planning.	If plan terminates not fully funded, participants can lose some benefits; existence of a government guaranty program can offset some risk but may encourage employers in financial distress to underfund plan.  (Red)
Retirement flexibility	Allows choice of retirement age, including possibility to phase into retirement.	 Yellow	Ability to choose retirement age, but individuals may not understand how promise changes with retirement age; may not be able to phase into retirement with partial benefits.	Early retirement reductions, while actuarially sound, are not easy to understand and can be perceived as unfair by employees, causing them to devalue the plan.  (Red-Yellow)
Portability	Minimizes loss upon employment termination.	 Red-Yellow	Final pay formula creates very small benefits for those who leave pre-retirement.	Lump sums can further expose leakage issues encouraging people to spend what seem to be small lump sums on non-retirement needs.  (Red-Yellow)

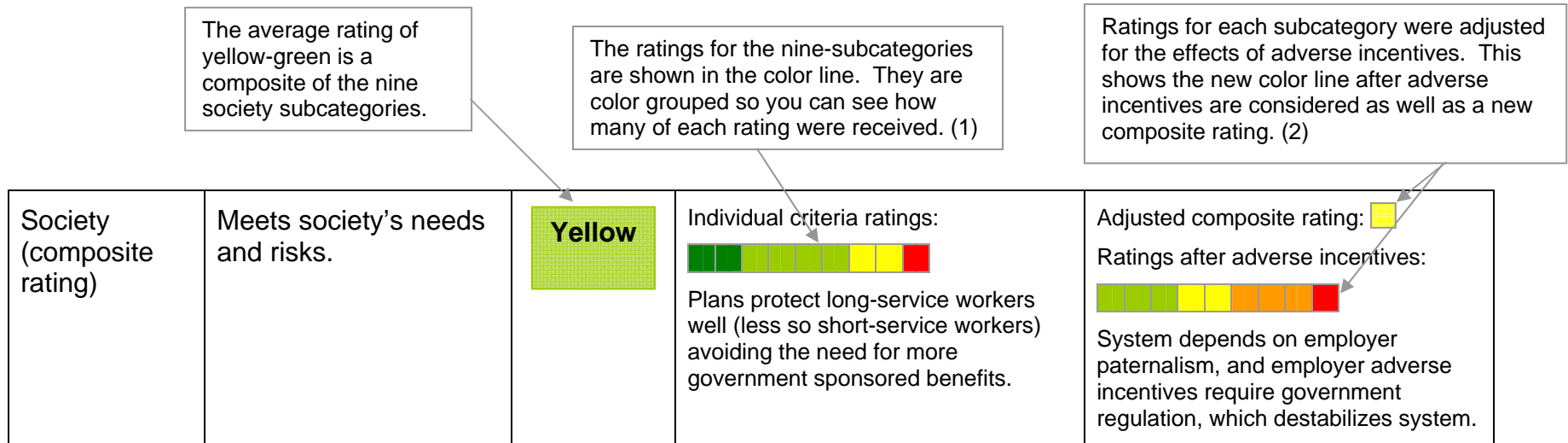
Source (SOA 2009a, forthcoming) (modified for black and white reproduction).

Figure II
Sample Measurement Framework Page, Individual criteria, DC framework

Traditional DC Plan (corporate sponsor, single employer)				
Individual's Needs & Risks (Composite rating:  (Yellow))				
Criteria	Objective	Rating	Evaluation	Effect of adverse incentives
Guaranteed income	Provides substantial level of income protection.	 Yellow	Cumbersome and expensive for individuals to convert account balances to guaranteed income; conversion can also have negative tax consequences	Individuals may be sold products that provide unneeded features, or that do not provide true longevity guarantee. Cost of conversion at an individual rather than group rate harmful for less wealthy individuals with small account balances.  (Red-yellow)
Predictability of income	Facilitates retirement planning.	 Red-Yellow	Works better for wealthier rather than less wealthy individuals (who can afford professional advice). Difficult to manage and understand value of account balance, particularly small balances.	Moral hazard not significant.  (Red-yellow)
Retirement flexibility	Allows choice of retirement age, including possibility to phase into retirement.	 Green	Unrestricted ability to choose retirement age.	No protection for individuals who find they might have to retire early due to disability or other impairment.  (Yellow)
Portability	Minimizes loss upon employment termination.	 Green	Perfect portability	Leakage is common, as participants take small account balances in cash on termination.  (Yellow)

Source (SOA 2009a, forthcoming) (modified for black and white reproduction).

Figure III
Summary chart for Society stakeholder, Traditional DB Plan



Source (SOA 2009a, forthcoming) (modified for black and white reproduction).

(1) The color line shows ratings in green/yellow-green/yellow/red-yellow/red order. In this color line, there are two green, four yellow-green, two yellow and one red rating.

(2) The adjusted composite rating is yellow. The color line shows the adjusted ratings in green/yellow-green/yellow/red-yellow/red order. In this color line, there are three yellow-green, two yellow, three red-yellow and one red rating.