White Paper

We'll Live to 100 – How Can We Afford It?

May 2017
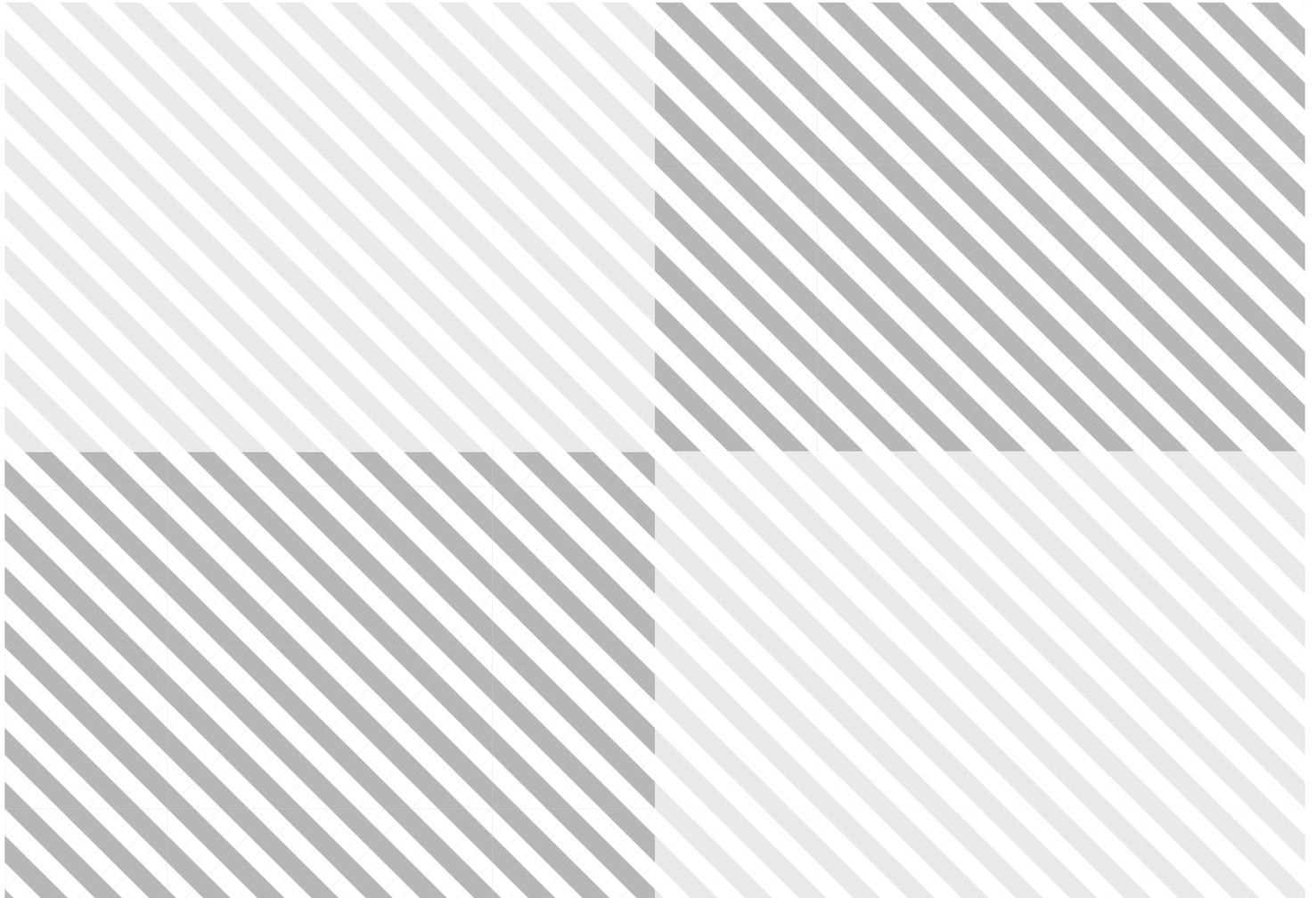
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published to elicit comments and further debate.

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1. Executive Summary

The challenges we face to provide our ageing societies with a financially secure retirement are well-known. In most countries around the world, standards of living and healthcare advancements are allowing people to live longer. This should be celebrated, but we should also consider the implications for the financial systems that have been designed to meet our retirement needs, which in many countries are already under severe strain.

This report has been produced as part of the Forum's Retirement Investment Systems Reform project that has brought together pension experts to assess opportunities for reforms that can be adopted to improve the likelihood of our retirement systems adequately and sustainably supporting future generations. The issues and findings discussed are the result of numerous interviews, discussions and workshops.

With this in mind, we would like to thank our project partner Mercer as well as the input from our Steering Committee and Expert Committee which has allowed us to draw on unique expertise from different communities and knowledge networks.

Richard Samans
Head of the Centre for the Global Agenda,
Member of the Managing Board

2. Introduction

Since the middle of the last century, life expectancy has been increasing rapidly. On average, it has been increasing by one year, every five years (see Figure 1). Babies born today in 2017 can expect to live to over 100[1], or in other words, they will live to see the year 2117.

While increased longevity is a positive step for individual and societal health and productivity, this change has a profound impact on the traditional make-up of our societies and the social protection systems that are designed to support us in our old age.

In Japan, which has one of the world's most rapidly ageing populations, retirement can begin at 60[2,3]. This could result in a retirement of over 45 years for those who will live to the current life expectancy of 107[1] (see Figure 2). What is the impact of a population that will spend 20%-25% more time in retirement than they did in the workforce? How do we rethink our retirement systems that were designed to support a retirement of 10-15 years to prepare for this seismic shift?

One obvious implication of living longer is that we are going to have to spend longer working. The expectation that retirement will start early- to mid-60s is likely to be a thing of the past, or a privilege of the very wealthy.

Figure 1: Longevity has been increasing steadily since the middle of the 20th century[4]

BORN IN	LIFE EXPECTANCY
2007	103
1997	100
1987	97
1977	94
1967	91
1957	88
1947	85
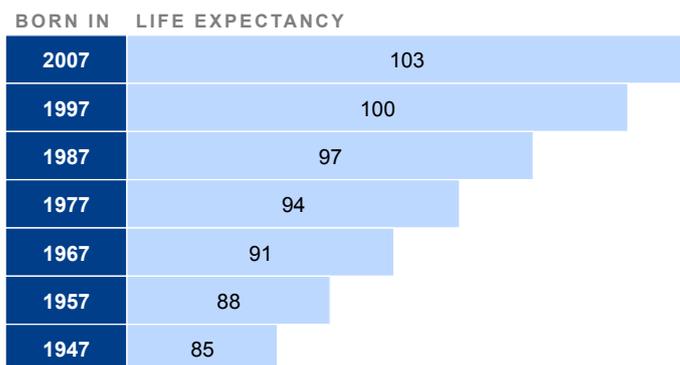
Source: www.100yearlife.com

Absent any change to retirement ages, or expected birth rates, the global dependency ratio (the ratio of those in the workforce to those in retirement) will plummet from 8:1 today to 4:1 by 2050. The global economy simply can't bear this burden. Inevitably retirement ages will rise, but by how much and how quickly demands urgent consideration from policy-makers.

Given the rise in longevity and the declining dependency ratio, policy-makers must immediately consider how to foster a functioning labour market for older workers to extend working careers as much as possible. Employers also have a

key role to play in helping workers reskill and adapt their work styles to support a longer working career.

This paper focuses on the sustainability and affordability of our current retirement systems. To protect against poverty in old age, we believe that retirement systems should be designed to provide a level playing field and equal opportunity for all individuals. A well-designed system needs to be affordable for today's workers and sustainable for future generations to ensure that all financial promises are met.

Healthy pension systems contribute positively towards creating a stable and prosperous economy. Ensuring that the public has confidence in the system, and that promised benefits will be met, allows individuals to continue to consume and spend through their working and retired years. If this hard-earned confidence is lost, there is a significant risk that retirees will moderate their spending habits and consumption patterns. Such moderation would have a negative impact on the overall economy, particularly in countries where the size of the retired population continues to grow.

Action is needed to realign our existing systems with the challenges of an ageing population. Those who take proactive steps will be better equipped in the years ahead.

In this short paper, we will share findings on:

– The challenges we are facing and the current savings shortfall
– System design recommendations for policy-makers
– Actions for policy-makers

Figure 2: Oldest age at which 50% of babies born in 2007 are predicted to still be alive
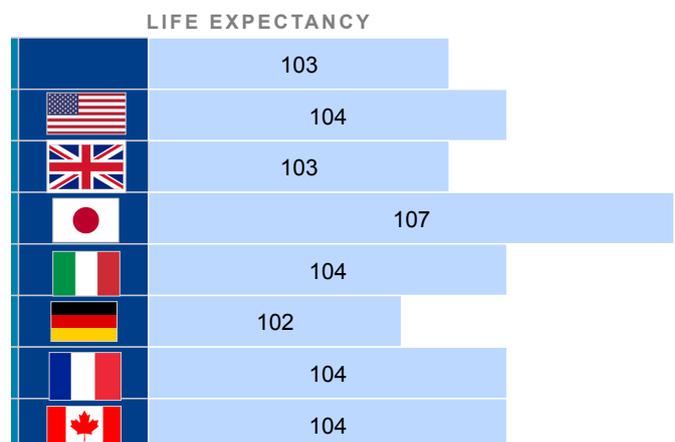
	LIFE EXPECTANCY
	103
USA	104
UK	103
Japan	107
Italy	104
Germany	102
France	104
Canada	104

Source: Human Mortality Database, University of California, Berkeley (USA) and Max Planck Institute for Demographic Research (Germany). Available at www.mortality.org

3. Retirement System Challenges

The key driver of the challenges facing retirement systems is increasing life expectancy and a falling birth rate. This leads to a smaller workforce supporting an ever growing population of retirees.

If increases in life expectancy were matched by corresponding increases in the the retirement age, the challenge would be less acute, but so far we have seen only gradual steps to increase retirement age. In some countries, the retirement age is falling. In Poland, legislation was recently introduced to drop the public retirement age to 65 for men and 60 for women[4]. Based on demographic changes alone, workers entering the workforce today should accept and plan for a longer working career; Poland's approach is only exacerbating the challenge.

We have identified five additional factors that are putting increasing strain on global retirement systems.

Lack of easy access to pensions
Many workers in developed and developing markets still lack easy access to pension plans and saving products. In many cases there are options available, but take-up is low. The lack of opportunity to begin saving, and encouragement to make putting money aside a habit, is severely limiting many people's ability to accumulate savings.

The self employed, and informal sector workers are least likely to have access to a workplace savings plan. Those working at smaller companies, where regulation may make providing a plan overly burdensome for employers, are also at a disadvantage.

Long-term, low-growth environment
Over the past 10 years, long-term investment returns have been significantly lower than historic averages. Equities have performed 3%-5% below historic averages and bond returns have typically been 1%-3% lower. Low rates have grown future liabilities, and at the same time investment returns have been lower than expected and unable to make up the growing pension shortfall.

Taken together, these factors have put increased strain on pension funds as well as on long-term investors that have commitments to fund and meet the benefits promised to current and future retirees. Individuals have also been impacted and have seen smaller growth in their retirement balances than in the past.

Low levels of financial literacy
Levels of financial literacy are very low worldwide. This represents a threat to pension systems which are more self-directed and which rely more on private savings in addition to employer- or government-provided savings.

Research[4] indicates that most people are not able to answer questions on basic financial concepts. This is increasingly important in pension systems that require individuals to make key decisions. The lack of awareness of the basics on how interest and returns will compound over time, how inflation will impact savings, and the benefits of holding a broad selection of assets to diversify risks means that many individuals are ill-equipped to manage their own pension savings. Some groups are particularly vulnerable, including women, the young and those who cannot afford, or choose not to seek, financial advice.

Inadequate savings rates
To support a reasonable level of income in retirement, 10%-15% of an average annual salary needs to be saved. Today, individual savings rates in most countries are far lower. This is already presenting challenges where traditionally defined benefit structures would have provided a guaranteed pension benefit. Now, as workers look at their defined contribution retirement balances, with no guaranteed benefits, they are realizing that the retirement income their savings will provide will be much lower than expected.

This will continue to be a challenge unless the importance of higher savings rates is better understood and communicated. Given the current long-term, low-growth environment, it is unrealistic to expect that saving ~5% of a paycheck each year of your working life will provide a comparable income in retirement.

High degree of individual responsibility to manage pension
The popularity of defined contribution systems has been growing steadily over the past few decades and they now account for over 50% of global retirement assets. The way that these plans are designed puts a high level of responsibility on individuals to manage their retirement savings. This includes deciding how much to save each year, which investments to choose, how long they are likely to live, when they should retire, and how to withdraw their savings when they do decide to retire full-time.

The information reported to individuals often does not make it easy to make informed decisions to try to meet a target level of retirement income. For example, the account balance does not help individuals understand what they would likely receive as a monthly income and the investment return achieved does not help determine whether to increase savings rates, stay employed longer and delay retirement or take more investment risk.

Figure 3: Challenges facing global retirement systems

Increasing life expectancies and lower birth rates

Population over 65 will increase from 600 million today to 2.1 billion in 2050

8 workers per retiree today, compared to 4 per retiree in 2050

Low levels of financial literacy

Globally, the majority of citizens are not able to correctly answer simple financial literacy questions

Increasingly important given trend towards self-directed nature of pensions

Lack of easy access to pensions

Over 50% of workers globally are in the informal/unorganized sector

48% of retirement age population do not receive a pension

Inadequate savings rates

Contributions to DC plans typically significantly lower than 10%-15% target

Saving rates are not aligned with individuals' expectations for retirement income – puts at risk the credibility of the whole pension system

Long term low growth environment

Persistent investment returns ~3-5% (equities) and 1-3% (bonds) below historic averages

Returns mis-aligned with benefit projections and individual expectations

High costs eroding investment growth

High degree of individual responsibility to manage pension

Defined contribution plans (individually managed) account for over 50% of pension assets

Individuals are required to be their own investment manager, actuary and insurer

4. How Big is the Retirement Savings Gap?

To understand the scale of the retirement challenge we have estimated the size of the shortfall in pension saving – the retirement savings gap. We have also projected these calculations to 2050 to determine how quickly the gap will grow if measures are not taken to increase saving levels.

The calculations assume that for most individuals, their retirement needs will be met by a combination of income from three sources[8]:

1. Government-provided first pillar pension
2. Employer (public or private sector) pension
3. Individual savings

We analysed publicly available data on the level of funding of government-provided first pillar systems and public employee systems, the funding of employer-based systems, and the levels of individual pension savings[9]. The aggregate level of savings across these has been compared to expectations of average annual retirement income needs and life expectancies. We have assumed that current global conventions of retiring between 60 and 70 are maintained, and that individuals do not simply remain in the workplace longer.

To give the best possible global view, we have targeted eight countries with data available and the largest established pension systems or populations. These countries are shown in Figure 4 below.

Figure 4: Size of the retirement savings gap ($ trillions, 2015)
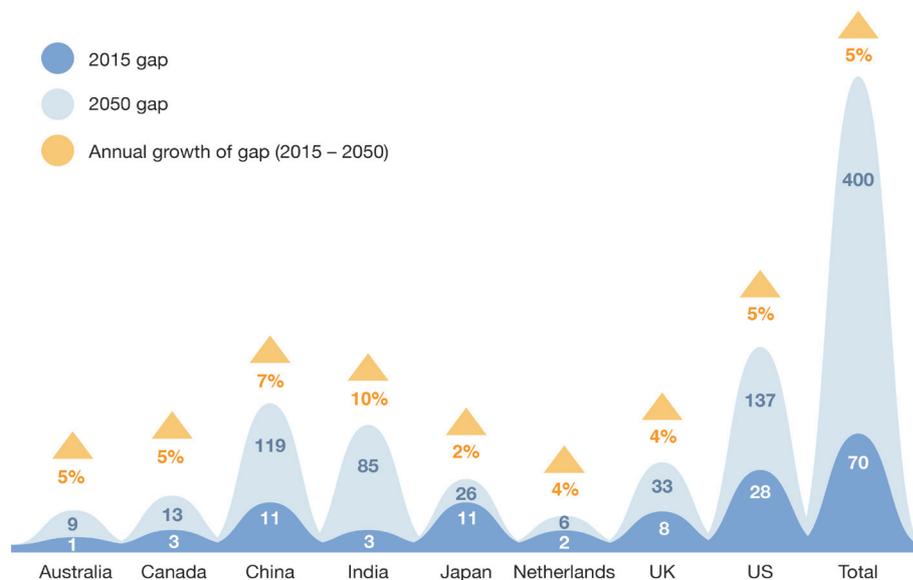
Source: Mercer analysis

The retirement savings gap in 2015 is estimated to be ~$70 trillion, with the largest shortfall being in the United States. In terms of GDP, this gap represents ~1.5 times the annual GDP across the countries studied. Based on our forward-looking projections, the gap will grow by 5% each year to ~$400 trillion by 2050. This means an additional $28 billion of deficit each day.
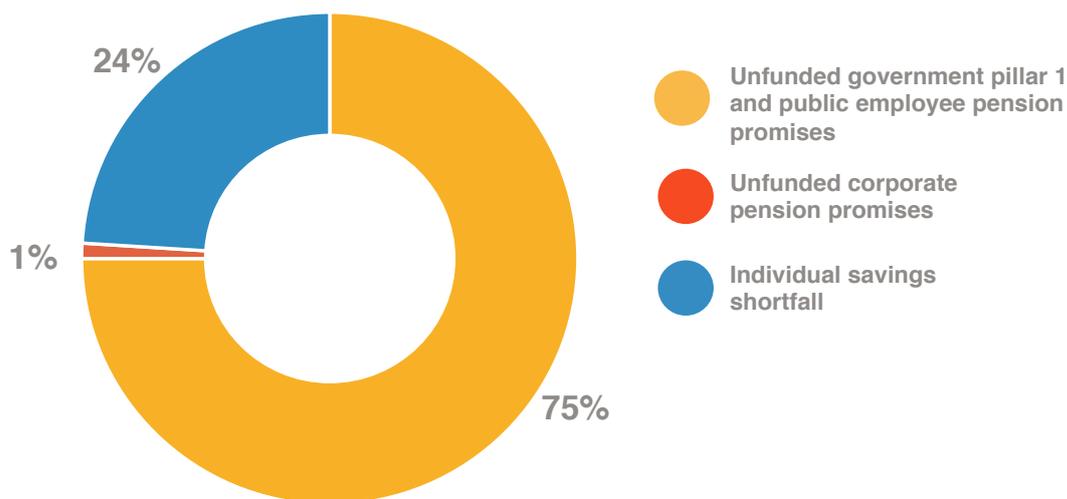
Looking at the US specifically, the gap is growing at a rate of $3 trillion each year. This increase is the equivalent of five times the annual US defence budget, or 60% of BlackRock (the world's largest asset manager) assets under management, which in 2016 stood at $5 trillion.

The savings gap will grow fastest in China and India at growth rates of 7% and 10% respectively. There are three key drivers of this growth:

– **Rapidly ageing populations** – there will be over 600 million retirees in China and India by 2050

– **High percentage of informal sector workers** – 9 in 10 Indian workers[10] are in the unorganized sector with limited access to retirement savings accounts

– **Growing middle class** – as wages and quality of life increase, expectations for retirement income also grow. Wage growth is currently ~10% in India and 6% in China

Of the $70 trillion gap for 2015, over 75% is associated with unfunded government-provided pillar one pensions and pensions promised to public employees.

Figure 5: Breakdown of the 2015 retirement gap (~$70 trillion)

- **Unfunded government pillar 1 and public employee pension promises** (75%)
- **Unfunded corporate pension promises** (1%)
- **Individual savings shortfall** (24%)

Source: Mercer analysis; more details can be found in the Appendix

The underfunding of corporate pension plans considers defined benefit plans and only accounts for ~1% of the entire gap.

The largest corporate DB markets are the US and UK and have ~$4R Trillion of pension liabilities. However, due to the high level of regulatory scrutiny these plans must be highly funded and have, on average, fluctuated between 75% and 85% funded in recent years[11]. The gap is modest compared to other components of the pension system.

For individual savings, we have assumed that retirees will receive income from the mandatory public system and that their income will then need to be "topped up" to provide 70% of pre-retirement income to adequately support them level with individual savings. This 70% income replacement rate target is in line with OECD guidelines[12]. However, it is a crude guide as low-income workers will need an income replacement rate closer to 100%, while higher-income workers will require less than the target. For a more accurate measure, total household wealth and debt should also be considered, rather than looking at the individual in isolation.

More details on the approach, and a more detailed breakdown of results can be found in Appendix 3.

5. Key Findings and Principles for Retirement System Design

To close the retirement savings gap, there are three key areas that we believe governments and retirement policy-makers should focus on which will have the biggest impact on the overall level of financial security:

– Provide a "safety net" pension for all
– Improve ease of access to well-managed cost-effective retirement plans
– Support initiatives to increase contribution rates

Poverty protection for the elderly should be the minimum requirement for any government's pension system. It should be the responsibility of the government to provide a pension income for all citizens that acts at a "safety net" and prevents those who miss out on other forms of pension provision from dropping below the poverty line. This should be the foundational objective of a country's pension system, but in many countries this first pillar pension[8] provision is lacking or is significantly underfunded to meet future needs.

In many countries, particularly developing countries, there are large portions of the population that are not covered by the existing pension system. Either they are not aware of the options available, or they do not take the steps required to contribute regularly.

Those who work in the informal sector, for smaller employers, or are self-employed are the most likely not to have access to pension plans. Any programmes created to increase the number of people saving for retirement should target individuals working in these occupations.

In countries where there are challenges to establish employer-based or individual pension schemes, introducing universal pension benefits may be the only way to significantly reduce poverty among the elderly.

Today, there are many tools that can be used to make saving easier. Technology can make saving automatic by deducting contributions directly from employees' pay before it reaches their personal account. We also know that behavioural nudges improves savings rates. Governments can make it compulsory for all employers to automatically enrol new employees into a retirement savings account and to contribute on their behalf.

Encouraging people to take steps to save is vital; it is also important to quickly build confidence in the system to which individuals are contributing. Whether contributions are mandatory or voluntary, it will be difficult to gain consumer support if individuals can see only low returns and high fees. Therefore, it is important to consider the most efficient ways to manage new assets coming into the system that allow the system to be credible and held in high regard.

The level of pension contributions is also very important, particularly in individual-defined contribution plans where the assets invested will have a direct impact on the final retirement balance accumulated. Countries[13] that have supported increasing contributions have typically phased in higher contributions gradually, so that employers and individuals have been able to adapt over time.

In each of these areas, policy should use all of the tools available to leverage everything we know about how individuals make decisions, helping to guide or nudge to improve the outcomes achieved. For example, incorporating automatic design features, efficient default options or opt-out approaches can allow individuals to be successful without having to be pension experts. More details on the tools available can be found in Appendix 1.

A collection of initiatives that governments, pension funds and companies have taken to address retirement challenges can be found in the Retirement Handbook published by the World Economic Forum.

Exhibit 1: In-depth study of US financial security

Much attention has been focused recently on the impact of the long-term, low-growth environment on the health of pension funding and individual savings. However, analysis completed as part of this project shows that the impact of lower returns on the individual savings gap is smaller than may be expected on retirement security.

Using US market data and EBRI's Retirement Security Projection Model[14], we looked at the impact of reducing the investment rate of return from historic norms to 2016 forward-looking assumptions[15]. Despite more than halving the real equity return from 8.6% to 3.45% and reducing the real bond return from 2.6% to 0.15%, the change in the retirement savings shortfall (RSS)[16] is modest. As you can see in Figure 6 below, reducing return assumptions only increased RSS by ~35%, from $4.1 trillion to $5.55 trillion.

This was lower than expected by some given the compounding effect of rates of return over long time periods. They would have expected the lower returns to have a much bigger impact on RSS over the next 50-60 years.

The projections look across the full US population for those aged 35-64, but shortfalls are by definition only produced for those households which are simulated to have insufficient savings in retirement. Therefore, when the return assumptions are reduced, this group (who typically have the smallest savings) experiences a relatively small increase in their shortfall.

Low returns do negatively impact those with savings, but these individuals are less likely to have insufficient savings in retirement. Conversely, higher returns will benefit those saving today, but it will not help those without money already saved and no intention or ability to start to contribute to a savings plan.

The conclusion from this analysis is that, at a national level, having large portions of the population with zero or very low savings is a bigger challenge than low returns or high fees. Increasing the percentage of those saving, particularly middle- and lower-income earners, will have the most significant impact on the overall level of retirement security. Once assets are being accumulated, investment returns and fees will have a very significant impact on the level of income that retirement savings will provide.

This analysis is focused on the US market, but we would expect similar results in other countries.

Figure 6: US individual retirement savings shortfall

RETURN ASSUMPTIONS (REAL)	HISTORIC	FORWARD LOOKING
Equities	8.6%	3.45%
Bonds	3.6%	0.15%
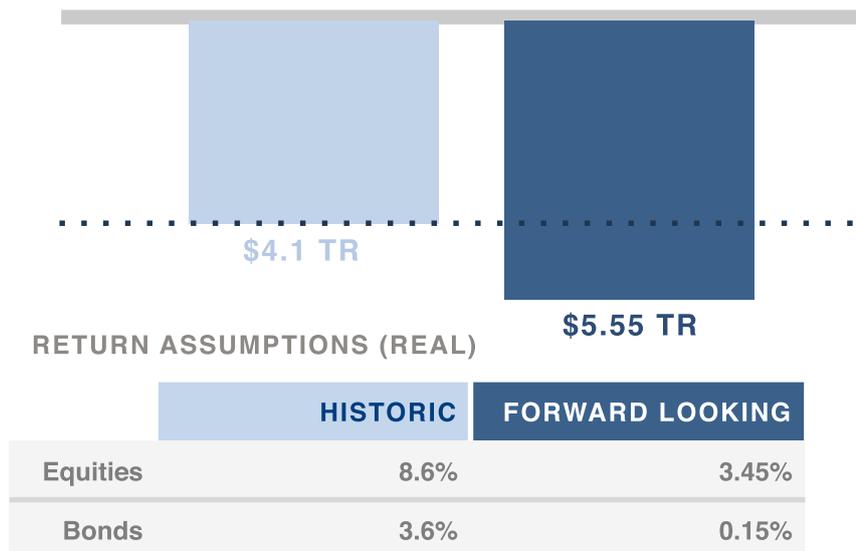
Source: EBRI Retirement Security Projection Model® Version 2732

Principle #1: Adapt to the changing workforce

In many industries and countries, the most sought-after occupations or specialties did not exist 10 or even five years ago, and the pace of change is set to accelerate. The Future of Jobs[17] report by the World Economic Forum estimates that 65% of children entering primary school today will ultimately end up working in completely new job types that don't yet exist.

Workforce dynamics have also been changing. The number of individuals working past age 65 has more than doubled since 1995 as shown in Figure 7.

Older workers also want the flexibility to work longer, rather than being forced to retire at a set age – increasing their own financial security and continuing to use their skills to support their employers' needs.

Other challenges include workers who adopt non-traditional employment or those who take time out of the workforce and can be disadvantaged by a system designed for continuous employment with one employer.

Job mobility has made the challenge more complex. The number of companies that people will typically work for over their career has been growing, as is shown in Figure 8. This increases the importance of transferable or portable savings plans that can easily follow the individual between jobs and even across national borders.

Figure 7: Percentage of people over 65 still working
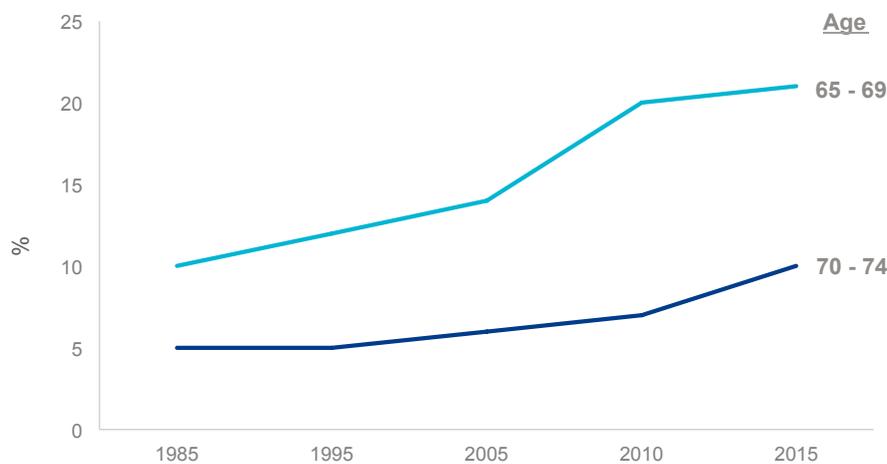
Source: Department for Work and Pensions, UK

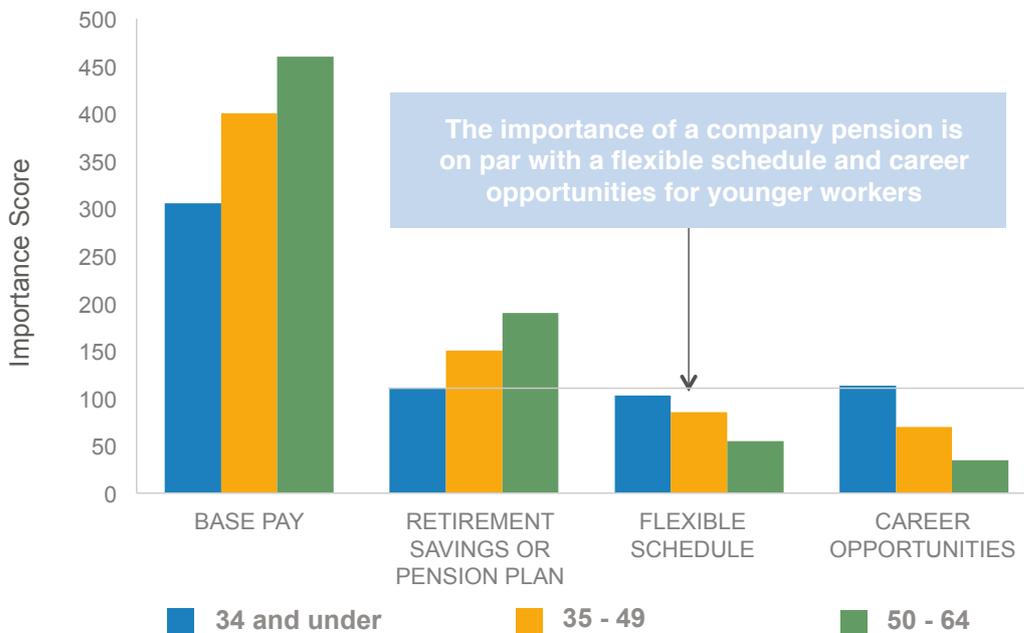**Figure 8:** Average number of companies worked at in first years for US graduates
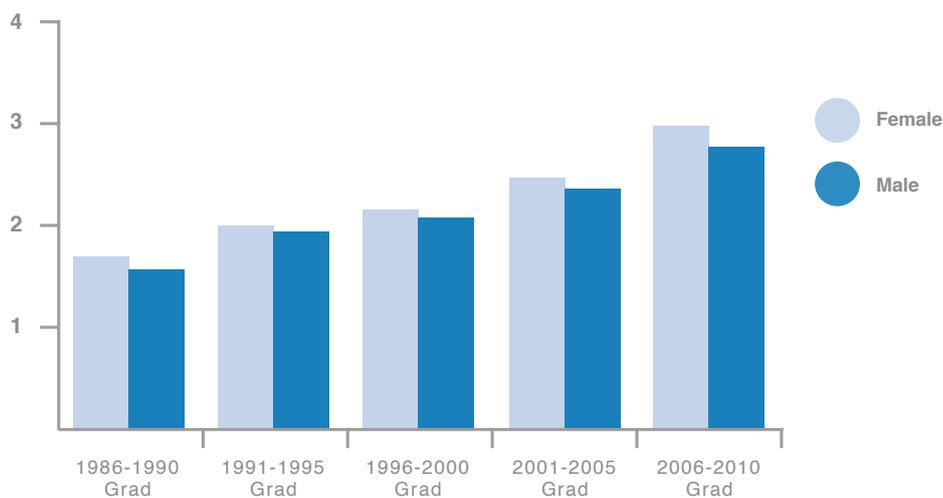
Source: LinkedIn

In this rapidly changing environment, with increased job mobility, to meet the savings needs of today's workers we need retirement systems that allow the flexibility to save when individuals have additional income. Savings should also be portable between jobs rather than tied directly to one employer. In Denmark, an online dashboard[18] collates pension information and provides individuals with a holistic view of their different retirement savings balances.

Traditionally, employers have provided retirement plans as part of their employee benefits packages, but as can be seen in Figure 9, for those under 34, opportunities for career advancement and a flexible work schedule are as important as the company offering a retirement savings or pension plan. How can employers be encouraged to provide retirement savings provisions and financial education for their workforce?

Figure 9: Survey question: What is most important when looking for a new job?

The importance of a company pension is on par with a flexible schedule and career opportunities for younger workers

Legend:
- **34 and under**
- **35 - 49**
- **50 - 64**

Source: Mercer, Inside Employees Minds, 2015

Or, perhaps a new perspective is necessary, and the traditional employer-provided plan needs to be re-thought. In an environment where employees are less connected to their employers, it may be more sensible to enrol citizens in a retirement savings account based on their national ID. Another idea that has been proposed is linking savings to spending. Contributions to savings accounts could be made electronically when purchases are made. There are likely to be advances in financial technology and other behavioural economic techniques that will provide powerful mechanisms to encourage people to save. These accounts could be multi-purpose, rather than narrowly focusing on saving for retirement, and support broader financial well-being.

Principle #2: Incorporate measures to reduce the gender imbalance

Globally, retirement balances of women are typically 30%-40% lower than those of men. The drivers of the disparity are that women have, on average, lower career salaries and longer periods out of the workforce. Lower salaries have a direct impact as individual contributions are often by default a percentage of salaries, but they are compounded by women receiving lower employer-matching contributions than their male colleagues.

Figure 10: Typical retirement balances

30 − 40% Lower
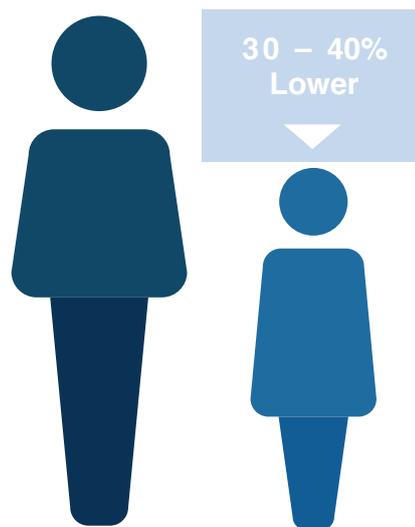
On average, women also have longer life expectancies and will have to spread their savings across more years in retirement.

There are some examples of steps being taken to reduce the gender gap in retirement income. For example, life expectancy across men and women is averaged when calculating occupational pension benefits under European law[19]. This change removes any gender discrimination against women who, based on female-only life expectancies being used, would receive a lower monthly income.

Some of the existing norms on the value of work within a company and work, or caring in a home environment, need to be challenged.

To build a productive society, we need to value work performed outside traditional companies and workplaces. Work in the home by parents looking after young children, or adult children looking after elderly parents or seriously ill family members, should be recognized in the retirement systems and, ultimately, by the pension payouts they receive.

Credits could be given to those stepping away from their career, so they are not disadvantaged, or the government or employers should continue to make pension payments. Those taking time out of their career working for a traditional employer should not be penalized and their contributions to society should be acknowledged.

Principle #3: Share risks to reduce the burden on individuals

As defined contribution systems become the predominant structure for retirement savings, policy-makers should be aware of the increased burden on individuals to manage their account and their savings contributions, to be their own investment consultant and investment manager, determine their own life expectancy, and to make the important decisions at the point of retirement on how to withdraw their savings.

Collective defined contribution systems, such as those adopted in the Netherlands and Canada, allow members to pool or collectivize their retirement savings, to reduce risks and fees.

There are many ways that these systems can be designed and risks shared. Figure 11 outlines one approach for a collectivized structure where investment and longevity risk are shared, but pension benefits are "targets" rather than guaranteed. More simple structures are possible where individuals can benefit from the cost benefits of pooled money management, without pooling investment or longevity risk.

Figure 11: Example of a collective defined contribution system with pooled investment and longevity risk. Pension payouts are based on a "target" but are not guaranteed.

Defined Benefit	Collective Defined Contribution	Defined Contribution
Pooled assets across all accounts	Pooled assets or notional accounts	Individual accounts
Predominantly employer contributions	Combination of employer and individual contributions	
Trustees determine investment policy and investments		Individual makes investment decisions*
Trustees take investment risk	Investment risk pooled	Individual takes investment risk
Trustee take longevity risk	Longevity risk pooled	No longevity protection
Guaranteed pension	Target pension, not guaranteed	No target or guaranteed pension

* Plan trustee can determine a default investment policy and asset allocation but there is a broad scope for individuals to make their own choices if they wish

Collective systems can provide many of the features of traditional defined benefit systems where the plan is managed for all participants to meet the investment policy and target pension benefits. Individuals are not required to manage their own accounts, and pension funds or insurance companies hold assets and make decisions collectively and for the benefit of all.

However, these systems need to be designed very carefully to ensure that they maintain support and the confidence of all generations and individuals participating. Benefits can be indexed to increase over time so investment policy needs to be designed to produce sufficient income to meet future needs. Contributions from today's workers need to continue as expected to ensure that future pension benefits

are not impacted. The risk associated with maintaining parity between the benefits received by today's retirees and future retirees within a collective pension plan is referred to as intergenerational risk.

When designing a collective structure, it is important to determine:

1. The pillar of the pension system the structure will support – first pillar/safety net income or additional/supplementary pension income
2. The risks that will be pooled (investment, longevity, etc.)
3. The appropriate governance structure to oversee and manage
4. How to clearly communicate the objectives and benefits of the systems to participants – this is vital to ensure public confidence and support

Another approach to introduce risk-sharing into retirement savings is to incorporate insurance coverage into the "decumulation" of savings. For those who have accumulated savings through their working career, purchasing an annuity from an insurance company can be an effective way to guarantee a secure consistent income in retirement. Annuity purchase can be bought at the point of retirement, or in the years leading up to retirement deferred annuities can be purchased and added to an individual's investment portfolio. These deferred annuities do not provide income immediately but guarantee an income at a certain age. For example, an 85-deferred annuity will start making regular payments if the individual lives to 85 years old. The design of deferred annuities allows individuals to have the confidence that if they do live longer than they expect, they will not be left with no income.

Insurance products are notoriously complicated and difficult for individuals to become comfortable with. The majority of providers of annuity products are private sector insurance companies, but some governments have taken steps to introduce national annuity providers. CPF LIFE, for example, is Singapore's national annuity provider[20].

Principle #4: Be conscious of other financial needs

Individuals who save from the start of their working career will have double the savings of those who delay starting contributing to their retirement savings after 10 years of work. But saving for retirement may not be the first priority for paycheques in our twenties. So, what is the appropriate level of government and employer guidance versus individual choice?

Based on a Mercer survey of US workers (see Figure 12), immediate financial concerns are a significant source of worry for all workers, regardless of age. Retirement income only becomes the highest priority concern for individuals aged 50 or older.

Retirement savings should not be considered in isolation – looking at retirement savings alone does not give a full picture of an individual's overall financial health. For example, a focus on retirement assets only would wrongly conclude that the first individual in Figure 14 below is more financially secure. The truth, when considering the full picture of other assets and debt held, is that the second individual has a much healthier overall position.

Figure 12: Survey question: What is your biggest financial worry?
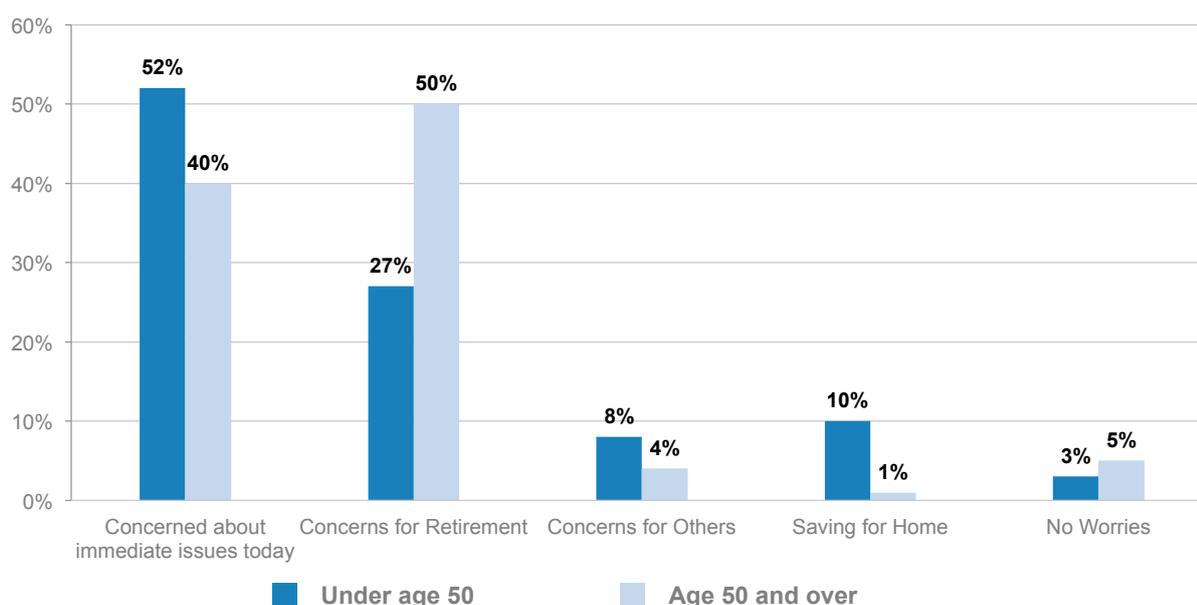
Source: Mercer, Inside Employees Minds, 2016

Figure 13: Survey question: What is your biggest financial worry?

Income	Total	Under $25k	$25 - $50k	$50 – $100k	$100 – $150k	$150 - $300k	$300 – 500k	>$500k
Saving enough for retirement	18%	5%	14%	19%	19%	23%	28%	11%

Source: Mercer, Inside Employees Minds, 2016

As can be seen in Figure 13, retirement is a much lower priority for individuals with lower income, who may face more challenges in meeting day-to-day expenses.

To motivate individuals to save more, the first step should be help them to realize that their target income will be hard to achieve with their current level of savings. Therefore, information about their expected retirement income or the probability of achieving the target income with the existing investment portfolio should be provided as part of regular reporting.

Figure 14: Comparison of two individuals' overall financial position

Age	62	62
Salary	$50,000	$50,000
Company Retirement balance	$150,000	$100,000
Home Equity (after mortgage)	$100,000	$200,000
Credit Card Balance	$25,000	$5,000
Individual Savings	$20,000	$50,000

6. Actions for policy-makers

As with all areas of public policy, the challenges are numerous and barriers to change are high. While the challenge can seem overwhelming it is important to continuously evolve the systems in place to start to put positive changes in motion. Pension systems by their long-term nature change very slowly. If we continuously review, assess and take small steps over time we will more likely be able to meet the needs of today's retirees and afford the promises we are making to today's workers.

Figure 15 shows some of the high priority actions we believe governments and policy-makers should be taking. It will not be easy, but setting the appropriate expectations at government level is vital to ensure that we can adjust to a society in which living to 100 is commonplace and affordable for all.

Figure 15: Checklist for policy-makers

RETIREMENT POLICY CHECKLIST

- ☑ Review national retirement age
- ☑ Make saving easy for everyone – use technology where needed
- ☑ Support financial literacy efforts, starting in schools and targeting vulnerable groups
- ☑ Provide clear communication on the objective of each pillar of the national pension system, and the benefits that will be provided
- ☑ Aggregate and standardize pension data to give citizens a full picture of their financial position

For more information on initiatives that governments, pension funds and companies have taken to address their own retirement challenges, please see the Retirement Handbook published by the World Economic Forum.

The World Economic Forum is in a unique position to bring together multistakeholders – national/state/local governments, regulators, private investors, institutional investors, asset managers and insurance companies. The Retirement Investment System Reform project, in collaboration with Mercer, was launched to provide an opportunity to draw from solutions and experiences around the world and to focus on this critical and challenging topic.

Our objective is to raise awareness among key stakeholders of the implications of the market shift and to look for opportunities to drive pension policy reforms. We will also identify best practices and draft recommendations aimed at ensuring: 1) access by individuals to retirement solutions; 2) the sustainability of retirement systems; and 3) access by businesses and infrastructure to long-term capital.

The World Economic Forum would like to extend thanks to everyone who has taken time to support this project and report, and for your ongoing partnership.

7. Acknowledgements

8. Appendix – Supporting Materials

1. DC system framework

Given the increasing prevalence of DC systems, we have developed a framework to assess these systems and to identify potential opportunities for improvements.

The framework separates the features of a defined contribution system into four categories

A. Access
B. Participation
C. Adequate Savings
D. Efficient Asset Decumulation

These components target the key steps in the lifecycle of an individual DC participant. Each individual needs to have access to a savings plan, participate in the plan and contribute a portion of their income and make sufficient contributions to grow adequate savings. Finally, once they reach retirement age they need to be able to draw down their savings in an efficient manner.

For each component, we have identified "tools" that can be used to improve the DC system.

Figure A1: DC system framework
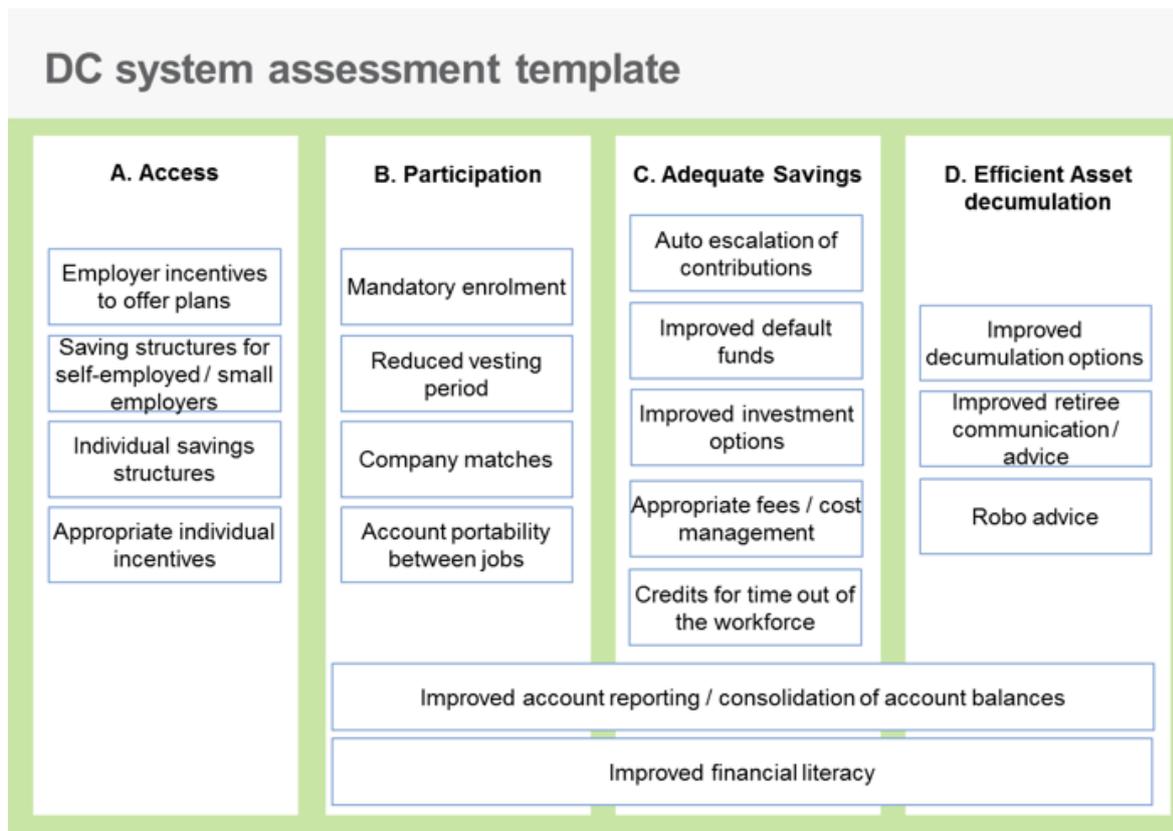
2. DC system assessments

For a number of countries, we have completed a high-level assessment of their national systems against the DC system framework to provide a high level summary of:

1. Reforms that have been implemented
2. Reforms in progress
3. Opportunities for further system improvements

Best opportunities are defined as those with the lowest barrier to implement but the highest potential benefit.

Figure A2: DC system assessments

Germany

Best opportunities to improve systems

A. Access	B. Participation	C. Adequate Savings	D. Efficient Asset decumulation
Employer incentives to offer plans	Mandatory enrolment	Auto escalation of contributions	Less flexible decumulation options
Saving structures for self-employed / small employers	Reduced vesting period	**Improved default funds**	More flexible decumulation options
Individual savings structures	Company matches	**Improved investment options**	Improved retiree communication / advice
Appropriate individual incentives	Account portability between jobs	Appropriate fees / cost management	Robo advice
		Credits for time out of the workforce	

Improved account reporting / consolidation of account balances
Improved financial literacy

Hong Kong

Best opportunities to improve systems

A. Access	B. Participation	C. Adequate Savings	D. Efficient Asset decumulation
Employer incentives to offer plans	**Mandatory enrolment**	Auto escalation of contributions[2]	Less flexible decumulation options
Saving structures for self-employed / small employers	Reduced vesting period	**Improved default funds**	**More flexible decumulation options**
Individual savings structures	Company matches	**Improved investment options**	Improved retiree communication / advice
Appropriate individual incentives	**Account portability between jobs[1]**	**Appropriate fees / cost management**	Robo advice
		Credits for time out of the workforce	

Improved account reporting / consolidation of account balances
Improved financial literacy

1. In Asian region there is a significant movement of the workforce between countries
2. Contributions are typically 10% (5% from employer and 5% from employees)

Japan

Reforms currently being rolled out

A. Access	B. Participation	C. Adequate Savings	D. Efficient Asset decumulation
Employer incentives to offer plans	Mandatory enrolment	Auto escalation of contributions	Less flexible decumulation options
Saving structures for self-employed / small employers	Reduced vesting period	**Improved default funds**	More flexible decumulation options
Individual savings structures	Company matches	**Improved investment options**	Improved retiree communication / advice
Appropriate individual incentives	Account portability between jobs	**Appropriate fees / cost management**	Robo advice
		Credits for time out of the workforce	

Improved account reporting / consolidation of account balances
Improved financial literacy

United Kingdom

| Opportunities to improve system | Reforms currently being rolled out |

A. Access

- Employer incentives to offer plans[1]
- Saving structures for self-employed / small employers
- Individual savings structures
- Appropriate individual incentives

B. Participation

- Mandatory enrolment
- Reduced vesting period
- Company matches
- Account portability between jobs

C. Adequate Savings

- Auto escalation of contributions
- Improved default funds
- Improved investment options
- Appropriate fees / cost management
- Credits for time out of the workforce

D. Efficient Asset decumulation

- Less flexible decumulation options
- More flexible decumulation options
- Improved retiree communication / advice
- Robo advice

Improved account reporting / consolidation of account balances

Improved financial literacy

1. Regulation on multi-employer defined contribution master trusts is currently being considered, to bring regulation in line with other pension regulation

United States

| Best opportunities* to improve systems |

A. Access

- Employer incentives to offer plans
- Saving structures for self-employed / small employers
- Individual savings structures
- Appropriate individual incentives

B. Participation

- Mandatory enrolment (with opt out**)
- Reduced vesting period
- Company matches
- Account portability between jobs

C. Adequate Savings

- Auto escalation of contributions
- Improved default funds
- Improved investment options
- Appropriate fees / cost management
- Credits for time out of the workforce

D. Efficient Asset decumulation

- Less flexible decumulation options
- More flexible decumulation options
- Improved retiree communication / advice
- Robo advice

Improved account reporting / consolidation of account balances

Improved financial literacy

**To be feasible in US environment

3. Size of the gap calculation methodology

To understand the scale of the retirement challenge we have estimated the size of the shortfall in pension savings – the retirement savings gap. We have also projected these calculations to 2050 to determine how quickly the gap will grow if measures are not taken to increase saving levels.

The calculations assume that for most people, their retirement needs will be met by a combination of income from three sources[8]:

1. Government-provided first pillar pension
2. Employer (public or private sector) pension
3. Individual savings

We analysed publicly available data on the level of funding of government-provided, first-pillar systems and public employee systems, the funding of employer-based systems, and the levels of individual pension savings[9]. The aggregate level of savings across these has been compared to expectations of average annual retirement income needs and life expectancies. We have assumed that current global conventions of retiring between 60 and 70 years of age are maintained and that individuals do not simply remain in the workplace longer.

To give the best possible global view, we have targeted eight countries with data available and the largest established pension systems or populations. These countries are Australia, Canada, China, India, Japan, Netherlands, United Kingdom and United States. More details on the breakdown is shown in Figure A3.

For individual savings, we have assumed that retirees will receive income from the mandatory public system and that their income will then need to be "topped up" to provide 70% of pre-retirement income to adequately support them level with individual savings. This 70% income replacement rate target is in line with OECD guidelines. However, it is a crude guide as low-income workers will need an income replacement rate closer to 100%.

When considering individual pension assets, we have tried to account for the fact that the majority of savings are held by the wealthy. Therefore, we have excluded assets held by the wealthiest 10% based on wealth inequality data provided by the OECD. For a more accurate measure, total household wealth and debt should also be considered, rather than looking at the individual in isolation.

In some countries, e.g. the Netherlands, the mandatory pension system provides an income greater than 70% of typical final salary. In this case, the individual savings gap is zero.

Figure A3: Savings shortfall – breakdown country by country ($ trillions of 2015)

	Unfunded government pillar 1 and public employee pension promises	Unfunded corporate pension promises	Individual savings shortfall	Total 2015	Total 2050
Australia	1.5	0.0	0.0	1.5	8.7
Canada	2.5	0.0	0.1	2.7	13.4
China	7.7	0.0	3.0	10.7	118.7
India	1.3	0.0	2.1	3.5	85.4
Japan	6.7	0.2	4.1	11.0	25.7
Netherlands	1.7	0.0	0.0	1.7	6.4
UK	5.9	0.1	2.0	8.0	32.8
US	23.2	0.6	4.1	27.8	136.8
Total	50.5	0.9	15.6	66.9	427.8

Sources:

- Implicit Pension Debt and Credit Rating, K. van Langen, October 2014
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- Global Compensation Planning Report, Mercer, 2016
- Global Wealth Report, Credit Suisse Research Institute, 2016

4. Endnotes

1. Source: Human Mortality Database, University of California, Berkeley (USA) and Max Planck Institute for Demographic Research (Germany). Available at www.mortality.org

2. Source: Pensions at a Glance 2015, OECD

3. The pension age is already scheduled to rise for second-pillar (occupational) pensions from 60 to 65 years old. The national public pension benefits start at 65. Current reforms are starting to require companies to offer options to their employees to work beyond 60

4. Source: https://www.bloomberg.com/news/articles/2016-11-16/polish-lawmakers-approve-budget-bulging-retirement-age-reduction

5. Life expectancies have been rising on average, but there are some notable exceptions (for example, in the US where life expectancies have been reported to be falling https://www.cdc.gov/nchs/data/databriefs/db267.pdf

6. In many developing pension systems the high level of government bonds crowds out pension funds making other productive investments

7. Source: The Economic Importance of Financial Literacy: Theory and Evidence, Lusardi and Mitchell. Survey results based on questions regarding interest, inflation and risk diversification

8. For more details on the World Bank's Pension framework, please see http://siteresources.worldbank.org/INTPENSIONS/Resources/395443-1121194657824/PRPNoteConcept_Sept2008.pdf

9. It should be noted that the overall level of household debt has not been incorporated. This could change the observations in China where there are typically high levels of household saving, compared to western Europe and the US where households can hold a significant amount of financial debt

10. See more details at: http://pinboxsolutions.com/

11. We assume that DB plans should target to be 100% funded, and that the systems in the countries analysed are not book reserve systems (as in place in Germany) where insurance guarantees to match benefit payments

12. The OECD defines those living in poverty as households with an income of less than 50% of the national median income. The latest information and data can be found at https://data.oecd.org/inequality/poverty-rate.htm

13. In Australia employer contributions are currently at 9.5% and are set to rise to 12%; the UK introduced mandatory (with an opt out) contributions for employers and employees that started at 3% and will increase to 9% by 2019. In Singapore, their contributions to support housing, medical care and retirement income is covered by contributions to three accounts that totals 37% of earnings – 17% paid made by the employer and 20% by the employee (below the age of 55).

14. EBRI Retirement Security Projection Model® Version 2732

15. JPM and BlackRock capital market assumptions

16. Retirement Savings Shortfalls (RSS) represent the present value (at age 65) of all simulated deficits in retirement for US households where the head of household is 35-64. For more information see Jack VanDerhei, Retirement Saving Shortfalls, The Journal of Retirement, Fall 2015, Vol. 3, No. 2: pp43-60

17. http://www3.weforum.org/docs/WEF_FOJ_Executive_Summary_Jobs.pdf

18. For more information see https://www.pensionsinfo.dk

19. More details on EU Law can be found at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:373:0037:0043:EN:PDF

20. More details on Singapore's CPF LIFE are available at https://www.cpf.gov.sg/members/schemes/schemes/retirement/cpf-life