UBS

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Chief Investment Office GWM
Investment Research

UBS International Pension Gap Index

Contents

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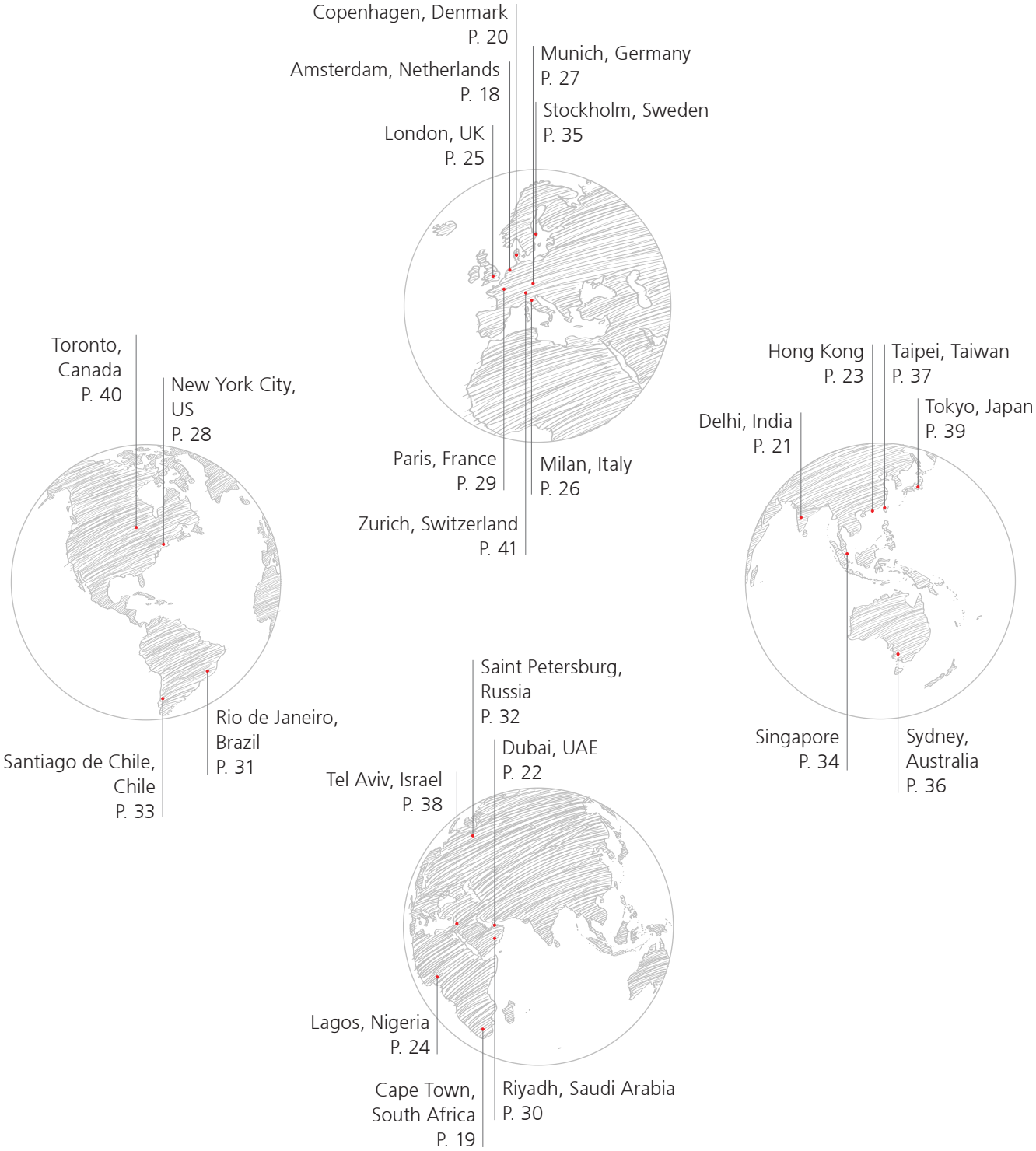
Jane around the world



Editorial

Jackie Bauer

James Mazeau

Retirement is not the end of the road. It is more the beginning of an open highway. For any road trip to be a success, some form of preparation is needed. This includes budgeting how much money you need and want to spend. Retirement is no different. Being aware of your future income sources and spending requirements is a prerequisite to making the most out of it. Yet it's a topic that is too often overlooked.

Thinking ahead will help you answer one of the most important questions: Will your pension be enough to sustain your desired standard of living in old age? The UBS International Pension Gap Index shows that the answer is often no. In most countries around the world, relying solely on the mandatory pension is not enough to maintain your accustomed lifestyle. However, private savings and investments can smooth out bumps in the road.

But how much capital do you really need? The answer depends on your individual situation. You need to understand how your pension system works and what benefits you can reasonably expect from it. Further, you need to think about how much money you might need in old age to finance your dreams. Regardless of your situation, the earlier you start preparing your retirement road map, the more options you keep open.

We hope this report helps you navigate through the complexity of pension systems and assists you in planning your personal financial situation. We encourage you to take matters into your own hands to make the most of the journey ahead.

Enjoy the read.

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Overview of results:

A call to action

The UBS International Pension Gap Index analyzes 24 pension systems around the world. With the help of a fictitious character, we assess how much income a retiree can expect to receive from the mandatory pension system*[1]. We also determine to what extent that income is sufficient to maintain an accustomed standard of living in retirement. Our aim is to show readers that they should take additional steps to secure their financial situation in old age. The results are a call to action: Private savings and investments are required almost everywhere to maintain a comfortable lifestyle in retirement.

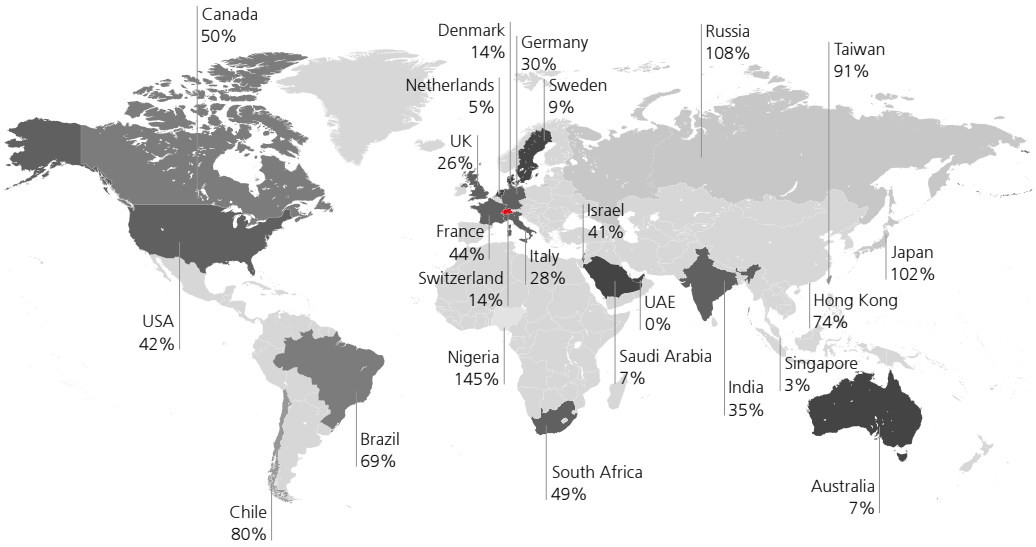
There are just a few places where Jane—and perhaps most of her peers—can lean back and relax, especially if they start late with private pension provisions. However, the key statistic, the required private voluntary savings as a share of current net income[2], varies substantially among the 24 jurisdictions (Fig. 1). The results are clearly influenced by the person for which they are calculated. Jane may not always be the perfect representative, but her situation nevertheless gives a sense of how much personal engagement a pension system demands from its participants. The results can be broadly divided into three categories: places where starting to save at 50 is feasible, others that require starting at a younger age, and those where significant lifelong personal effort is required.

The rest of the report is organized as follows: We first introduce "average Jane" and the way we approach the analysis. We then provide a brief overview of the structure of modern pension systems, their strengths and weaknesses, and a summary of the results. The general mechanism of pension systems and our results should not be judged relative to one another, but by evaluating their individual sustainability and adequacy both for the individual beneficiary today and for society as a whole in the future. Further, we explain what the overall conclusion of this analysis means for the reader and make recommendations to prepare for retirement. This is followed by one-pagers detailing the features and results of each pension system.

Figure 1

UBS International Pension Gap Index

Required savings rate in %, the darker the color the lower the savings rate



Source: UBS

1 Words/expressions marked with * are explained in the glossary.
2 For details about the calculation method please consult the appendix.

Introducing:

"Average Jane"

Jane is a single 50-year-old woman with one adult child. She has worked her whole life in the same city since starting her career at age 20. With the exception of a three-year break at 30, she has been continuously employed in full-time positions and will stay employed until she retires at the statutory retirement age. Today, Jane enjoys a basic urban lifestyle. She earns the median[3] wage that a woman working full-time receives in her city and enjoys moderate regular increases in income.

We analyze how 24 Janes in cities around the world are covered by their local pension systems. The cities in our study are: Amsterdam, Cape Town, Copenhagen, Delhi, Dubai, Hong Kong, Lagos, London, Milan, Munich, New York, Paris, Riyadh, Rio de Janeiro, Saint Petersburg, Santiago de Chile, Singapore, Stockholm, Sydney, Taipei, Tel Aviv, Tokyo, Toronto, and Zurich. This enables us to compare the pension systems in these jurisdictions based on Jane's specific characteristics[4].

Jane has had a good life, but until now has not saved for anything more than a rainy day. At age 50, she still has on average 15 years of work before she retires. Jane realizes that she needs to start thinking about the "longest holiday" of her life. The future is by definition uncertain, as are her retirement benefits. But planning ahead today will increase her peace of mind.

How should she prepare for retirement?

Jane needs to think about the lifestyle she desires and will be able to afford, as well as any special circumstances she might face, and the costs associated with them. Most likely the first half of her retirement will be more active than the second. Jane is realistic and knows that she will not easily be able to finance a luxurious lifestyle in retirement. Nonetheless, she aims to continue her basic urban lifestyle after she stops working. It includes living in a two-room[5] rental apartment in a middle-class outer city neighborhood. This will often represent her single largest cost.

While some work-related expenses such as regular commuting will drop, other costs will rise. Since she has more free time, she will enjoy more leisure activities, spending time with family and friends. For example, she will undertake regular activities with her grandchildren and meet with friends over food and coffee. Additional recreational spending will have to be on a small scale, for an occasional local vacation rather than regular overseas journeys. Toward the latter part of her retirement, Jane also has to consider her health and potentially rising medical and frail-care costs.

Jane needs to think about the income she can expect from the mandatory retirement system and the additional private savings she needs to support her desired lifestyle. Until now, she has only contributed the minimum required amount to the mandatory pension system. This means in most cases that she may receive far less in pension payments than she needs to finance her retirement. We calculate her required savings rate. This is the proportion of her current net salary Jane will need to save and invest until retirement to maintain her current lifestyle once she stops working.

Jane needs to think about the lifestyle she desires and will be able to afford, as well as any special circumstances she might face and the costs associated with them.

3 The median is the number that divides a ranked scale into two parts: 50% of the numbers will be lower and 50% higher. So the median is not as affected by outliers as an arithmetic average would be by extremely high or low wages. Median statistics are not published for all jurisdictions; in those cases, the average is used and adjusted.
4 Jane as we have created her is not representative of a particular person, nor entirely true to individual cultural norms. Nonetheless, a standardized persona is needed for our analysis to ensure comparability across pension systems.
5 Two room = single bedroom, single living room plus kitchen/dining room and bathroom.

Pension systems:

A relatively new concept

- Three pillars: Different objectives and mechanisms
- Pensions influenced by culture
- Strengths and weaknesses

Throughout history, humans have worried about the economic consequences of old age. Traditionally, the old have relied on their families or charity, or have been forced to sell valuables to finance their basic needs. Informal solidarity systems prevailed.

Old age insurance has only been formalized very recently relative to the history of humanity. The first pension schemes, mostly company-managed, were established in the early 19th century and only covered a small proportion of workers. Throughout the second half of the 20th century, the concept of income in retirement has been generalized and incorporated in mostly state-managed social security programs. It is only in the last 40 years that personal solutions have flourished. This has created complex pension ecosystems.

Three pillars: Different objectives and mechanisms

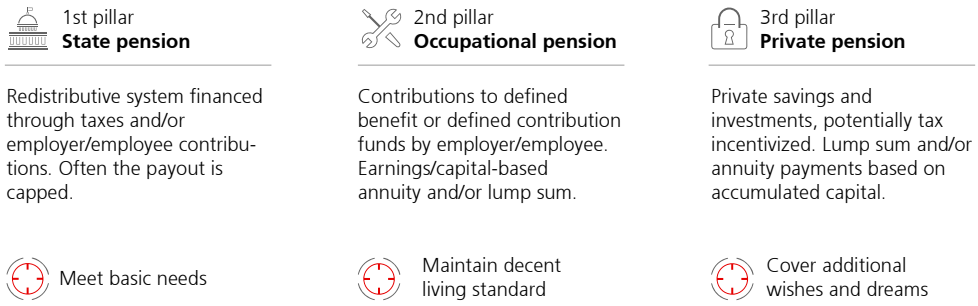
Today, state-backed pension systems can be broadly classified into three pillars (Fig. 2). Contributions to all three pillars are usually tax deductible up to a certain level, whereas pension payouts are usually taxed, sometimes at lower rates than regular income.

The first pillar is often a mandatory, collective and publicly managed scheme. It usually pays a stream of basic income that is indexed to inflation or wage growth. The amount is customarily earnings- or contributions-related, but is generally capped. It is sometimes means tested*. The receipt of benefits is typically conditional on having worked for a minimum period. First pillars are commonly financed through taxes and worker and/or employer contributions. A common feature of these schemes is the pay-as-you-go* nature of financing, meaning that contributions from current workers finance the pensions of current retirees.

The second pillar is often a mandatory, collective and privately managed scheme. It is mostly occupa-

Figure 2

Basic principle of multi-pillar pension system



Source: UBS

tion-related and provides a pension payout in the form of an annuity* and/or a lump sum*. The amount of the benefit is related to earnings contributions. As a general rule, the more you have earned or contributed, the higher the benefits you can expect to receive. Second pillars frequently come in the form of funded defined benefit* or defined contribution* plans. In the former, payouts are defined in advance according to a formula, such as the average wage during the working period. Defined contributions pay a benefit that depends solely on the amount of assets accumulated until retirement in the case of a lump sum, or additionally on life expectancy* and market conditions if an annuity is available.

The third pillar is a voluntary, mainly personal and privately managed plan. It can be structured through various products, like savings accounts with restrictions, insurance or simply private investments. They are offered by many different providers. Payouts can take various forms such as lump sums or annuities. Despite the voluntary nature of these plans, they are of utmost importance in certain pension systems. This is particularly true where mandatory schemes only aim to ensure a basic income in old age.

Pension influenced by culture

Every government has different ambitions for its pension system. Most at least ensure a basic income to avoid penury in old age. Some also aim to ensure a decent living standard. Few want and can provide pensions that fully replace working income. Many, however, provide a framework that people can use voluntarily to improve their personal outlook.

> Every government has different ambitions for its pension system.

Which approach is best? Our report does not tackle this question, as the answer is highly political and depends on one's view of the role of the state. We look at how pension ambitions are implemented in various jurisdictions. We do not compare mandatory systems based on the level of benefits they provide, as this is a subjective parameter that is tied to the prevailing culture, traditions and politics. Rather, we focus on analyzing whether the various schemes can sustainably deliver the benefits they are designed to provide. Each national system has its strengths and weaknesses. Therefore it is important to understand what drives individual pensions and what determines the stability of the overall system.

Clearly, financial well-being in retirement is conditional on having a job in working age to contribute and save for old age or acquire future benefit rights. Therefore, a sound labor market is a prerequisite for any pension system to perform well. In addition, with populations aging around

> A sound labor market is a prerequisite for any pension system to perform well.

the world, pension systems and labor markets are more interdependent and need to adapt to those changes in tandem. Building a pension tends to be harder for women. They more often leave paid employment or work part time to take care of older or younger family members. Social and family policies also need to adjust to modern and aging society, as do companies. Moreover, longer life expectancies are obliging people to seek to stay in the workforce longer, even though the job market doesn't always accommodate older workers.

Strengths and weaknesses

First pillar schemes are especially dependent on the labor market and demographics, given they are based on an intergenerational* redistributive model where future promises rely on future contributors. High unemployment therefore reduces the contributions that directly finance retirees. In the long run, the system also comes under severe strain if the demographic structure of society changes and the future funding source dries up. When the working-age population shrinks and the retired population grows, financial imbalances appear unless the system adjusts. As first pillar schemes often finance basic needs, it is hard to reduce their benefits. Higher contribution rates or tax rates and a rising retirement age are required. Ideally, all of these measures should be enacted countercyclically, but this is often easier said than done.

In the second pillar, schemes are fully backed by assets that are usually invested on behalf of participants. High unemployment and shifting demographics have less impact on a pension fund's assets and investment returns. Depending on the exact design of the system, unemployment still represents a risk to personal savings, but these schemes are much more exposed to investment risk. For defined benefit plans, overly generous payouts may be hard to finance when investment returns falter. If the fund has a lot of participants in or close to retirement, it has limited risk-taking ability. This reduces return prospects. In defined contribution plans, participants are exposed to longevity risk*, bad investment advice or inaction and limited knowledge when they are responsible for their own investments.

Third pillar plans share similar weaknesses to the second pillar. In some countries, the access to second and third pillar is de facto reserved for formally employed middle to high income earners. In these circumstances, only the well-off enjoy the benefits of these schemes. Workers benefit the most if they have access to all three pillars. In essence, the more pillars an individual can build on, the more diversified their income streams and the better their safety net. There is no one-size-fits-all, and what works in one place might not work in another. Most importantly, different pillars, no matter how well designed and how well they function together, need to be easy to apply and be broadly accepted by the public.

> When the working age population shrinks and the retired population grows, financial imbalances appear unless the system adjusts.

Personal responsibility:

Necessity and freedom

- Starting at 50 may work
- Manageable if one starts young
- Save as you go

The pension systems we analyze in this report all have strengths and weaknesses. They have different sensitivities to demographics, economic and financial shocks, and political interests. Different systems also require different levels of additional private saving to ensure a comfortable retirement. Below, we divide these into three groups according to the level of additional personal commitment required on top of the mandatory pension system.

Starting at 50 may work

In the first category are systems that require a savings rate of 0–20% of current net income, which is in most cases manageable for a full-time employee. The UAE stands out as the only system out of the 24 we analyze where private savings are not required. Its pension system consists of only one defined benefit pillar. It is financed by employee and employer contributions, but also benefits from the nation's natural resource wealth. Thus, the UAE offers most nationals a pension income almost equivalent to working income, depending on contribution time.

Singapore, too, relies on just one pillar, but it is split into three branches with different targets, a mix of savings, pensions and medical coverage. This provides a broad foundation for pension savings. Given that contribution rates are high, the system delivers a high replacement rate*. Australia is one of few jurisdictions with a low required savings rate that relies mainly on a defined contribution plan with some state pension support. The nation's mining boom and the thriving economy benefited those who have invested their pensions over the past few decades and enjoyed high stock market returns.

The other jurisdictions in this group—the Netherlands, Denmark, Sweden and Switzerland—run similar three-pillar models where workers receive part of their pension through a redistributive state-managed system, part from an occupational pension fund, and are also incentivized to save privately. The Nordics and the Netherlands are particularly interesting examples, since they have enacted progressive reforms linking pension system parameters to demographics. Their systems are therefore less impacted by populist ideas and political meddling. In Denmark, the retirement age is linked to life expectancy, and will thus climb to 75 if life expectancy continues on its current path. In Sweden, part of the pension annuity is linked to the balance between the generations. Switzerland is the only country still having a hard time adjusting to demographic realities, and it is an open question how much longer it can stay in this group.

Manageable if one starts young

In this second category, our analysis suggests savings of between 20% and 50% are required from age 50 to supplement income from the mandatory pension system. This group includes Italy, Germany, the UK, India, Israel, the US, France, South Africa and Canada. Such a high savings rate is not feasible for our Jane, but most likely will be manageable for young people with a long-term financial plan. The younger one starts to invest, the lower the saving effort required. Continental Europe in particular faces aging societies and a lack of willingness to compromise on reforms. Italy is a rare exception, having implemented reforms some years ago. It is now gradually phasing out its burdensome public defined benefit plan. This also means younger generations already know today that their pensions relative to their lifetime contributions will be lower than Jane and her peers who are retiring soon can expect.

France and Germany continue to rely heavily on redistribution. While France spreads this over two branches of its first pillar, Germany has only one

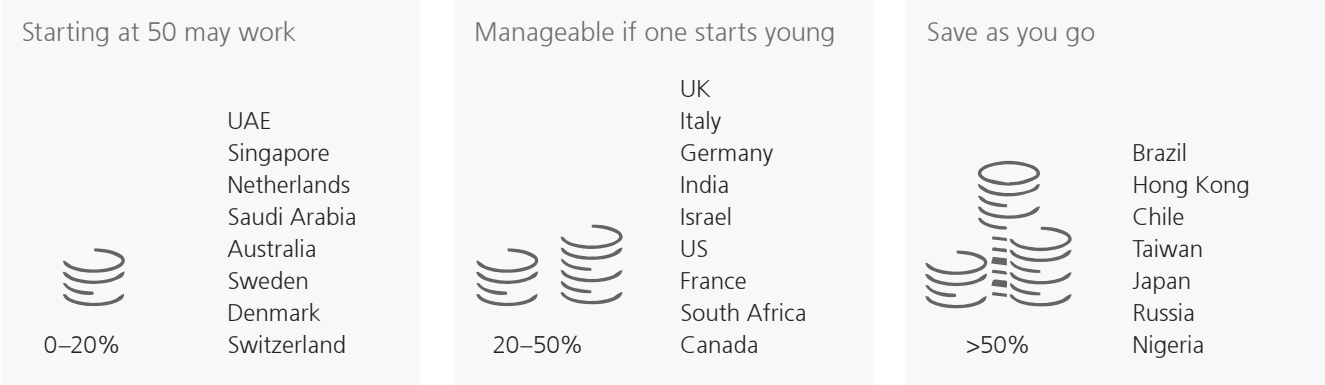
state-backed solution. However, whereas occupational pension plans are not widespread in France, in Germany about two-thirds of workers are covered, even though it is not mandatory. Thus, for many Germans the situation might be more favorable than our result indicates. The UK follows the classical Anglosphere model with a small state pension and reliance on company-sponsored pension plans. The latter has only been mandatory for the last few years, and thus younger generations might have better coverage. Canada is also at the lower end of this group. While it relies on a pay-as-you-go fund, it provides low pensions that aim to replace only a third of average wages. While this is supported by taxpayer-financed social security supplements, it makes the defined benefit fund sustainable over the long term.

Save as you go

In this last category, more than 50% of current income must be saved after 50, and sometimes even more than 100% to maintain the current lifestyle in retirement. This impossible undertaking arises for various reasons like such as short time horizon, high inflation or low pension payouts, among others. These pension systems require a high level of personal responsibility from a young age. The category includes Brazil, Chile, Hong Kong, Taiwan, Japan, Nigeria and Russia. Cultural norms in some of these regions may provide multi-generational family or community support networks, which may remedy pension system shortcomings.

The reasons for the high required savings rate are as different as the cultures. Russia and Brazil, for example, rely heavily on redistribution in an economy where wages are low and the benefits of economic growth are not evenly distributed. Nigeria's high inflation makes it difficult to accumulate real savings. Chile has a well-developed pension system, but high fees consume a substantial share of pension value.

The pension systems in Hong Kong and Taiwan have only become mandatory recently. While the former has benefited from being a hub for financial services and the latter from manufacturing, wages of the majority of workers have not risen in line with economic growth, which makes saving harder. Japan is the furthest advanced from an economic perspective and has high living standards, but also has the most challenging demographic profile. With one of the highest life expectancies in the developed world, retirement is simply too long on average for citizens to start enjoying it at 65 based on the mandatory system alone.



Sustainability and adequacy:

Not mutually exclusive

- Compromise necessary
- Continuous improvement

A low retirement age plus high life expectancy equals long retirements. The longer that period, the more savings are needed, either within or in addition to the official pension system. Yet this is not always the case; Emiratis and the Swiss, for example, have among the highest number of years in retirement, yet a comparatively low required savings rate. This is because their pension systems promise high benefits. Whether they can continue to do so sustainably is a different question. On the other hand, the US has one of the shortest retirement spans, but is only average in terms of required savings rate. Its system is deliberately designed merely to help avoid poverty in old age.

More often than not, systems that offer generous benefits tend to be less sustainable. This is particularly the case if those benefits come from redistribution between the generations (e.g. Switzerland, Germany). The long-term finances of pension systems based on a higher degree of personal responsibility or purely defined contribution mechanism tend to be more sound, but often provide lower income (e.g. Canada, Hong Kong). These examples highlight the trade-off between pension sustainability and pension adequacy.

However, just because a pension system is more sustainable or more adequate does not mean it is better in absolute terms. There are different parameters like contribution rates or retirement age that need to be weighed against each other, and still it remains a judgement call. Moreover, what may be a good system for one person might not be perfect for another, depending on wage and lifestyle, among other things. Last, the evaluation might also look different depending on whether one does it through the individual or collective lens.

Compromise necessary

The Netherlands and Denmark have enacted reforms to make their systems more sustainable without compromising on adequacy. Yet this is not a heavenly miracle; it is based on give-and-take. Workers have to be prepared to increase their time in the workforce and employers have to appreciate more experienced older workers. Resource-rich regions like the Middle East are in a more favorable starting position to sustain adequate pension levels if they manage their public finances well and build their future economic success on a broader basis beyond hydrocarbons.

> Private savings and a sound investment strategy are key for a financially secure retirement.

However, in general it is clear that most people cannot fully rely on income from mandatory pension systems, no matter how adequate and sustainable they are, to maintain their accustomed lifestyle in retirement. Even if they start to save at a young age and thus require less savings than Jane, they may have to brace for change if the system needs reforming. Private savings and a sound investment

strategy are key for a financially secure retirement. As we see by looking at the individual results of this analysis, realizing this at the age of 50 may in most cases be too late. Even if it is not late, it requires a lot more effort compared to starting at an earlier age.

A pension system's overall adequacy should not only be judged by what the mandatory part offers. The incentives for private provisions, as well as the economic environment and thus the ability to save privately, also matter. Adequacy and sustainability can be combined in a public pension system, as demonstrated by the Netherlands and Sweden.

Continuous improvement

Financial concerns related to old age have changed dramatically over the past 150 years. The worry is no longer: How will I survive when I'm too old to work? Now retirement has become a social right in the developed world, and the main question is: Will I be able to sustain my lifestyle when I stop working? And tomorrow's expectations may yet be very different from today's.

To continue to fulfill their purpose, pension systems must be periodically reviewed and reformed. They must adapt to evolving social norms, demographic developments and economic realities. Pension systems face many challenges such as rising life expectancy and changing work habits. Will all of them stand the test of aging societies and the fourth industrial revolution? The stakes are high, and there is no guarantee that all will keep their current promises.

> Clear rules help workers to project themselves into the distant future, which is what retirement planning is about.

Political gridlock can jeopardize the sustainability of pension systems when fixed parameters, such as retirement age, are reviewed and decided on by politicians. Some systems have freed themselves from such risk by implementing rule-based approaches, such as indexing retirement age to life expectancy. Clear rules help workers to project themselves into the distant future, which is what retirement planning is about. We think these initiatives are key to the long-term success of pension systems, as they free up precious political time for forward-looking discussions.

> The main question today is:
> Will I be able to sustain my lifestyle when I stop working?

If you are preparing for retirement, we think it is paramount that you understand your pension system. You need to know the goal of the system, its limits and vulnerabilities. Above all, depending on your lifestyle and financial objectives, you need to figure out what share of the job is in your hands. And, most importantly, you need to factor reforms into your calculation.

Your action plan:

Building long-term financial security

- Budgeting is the best starting point
- Investing is a bigger hurdle
- Time horizon and goals determine your savings and investment strategy

Saving and investing can be challenging, especially for a retirement lifestyle that is neither imminent nor tangible. Moreover, it requires a conscious effort. You need to sit down and analyze your financial situation, grapple with future uncertainties, make assumptions, and take decisions with potentially far-reaching implications. The result of this analysis might indicate that you need to change your current accustomed lifestyle. However, once this initial hurdle is overcome, small checks and adjustments should be sufficient along the way, and the reward will be peace of mind.

Budgeting is the best starting point

How much can I save? The easiest way to answer this question is to set up a budget. This provides a much better feeling of how much you spend, what you spend on, and more importantly reveals the level of spending required to maintain or improve your lifestyle. It provides an opportunity to ask whether that spending is actually necessary, whether it delivers actual material or emotional value, and whether a more elaborate lifestyle is really necessary for happiness. Perhaps capital could be better allocated, either by spending differently or saving. More often than not this simple budgeting exercise leads to positive surprises.

However, a budget is only the first step in a holistic financial plan. You also need to analyze your financial situation in detail. What is the time horizon left to generate income from employment and how long is your investment horizon? What is your risk appetite? How much cash do you need? How much can you invest? Here it helps to determine your spending plans, like buying a car or real estate, financing a child's education, or sustaining a certain lifestyle. These goals also make saving a more tangible exercise.

Trade-offs may be required between consuming now or saving to consume later. There is no right or wrong answer on how much to save. What's more, savings for future consumption can be invested and can even be an important factor to reach your spending goal. Overall, it comes down to the lifestyle one wants to lead, both today and tomorrow. Since humans are prone to letting emotions trump rationality, it helps to discuss these issues with a trusted person.

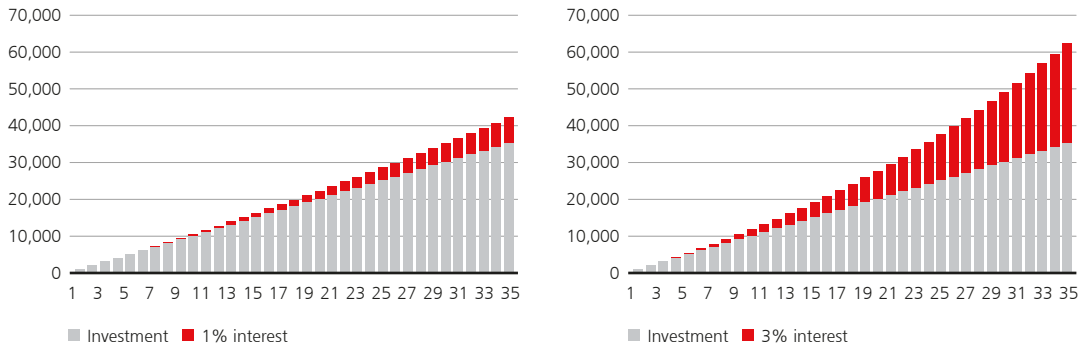
Investing is a bigger hurdle

Cash savings invariably lose value over time due to inflation. Since interest rates are low around the world, it is hard to find low-risk returns. Our required savings rate for Jane assumes that savings are invested in a mix of bonds and equities. If savings were not invested, Jane's required savings rates would be at least double. Investing makes a difference even if only small amounts are put to work on a regular basis. Over a long time horizon, the compound interest effect is an important contributor to your financial success (Fig. 3).

Figure 3

Example of the compound interest effect

Annual savings of 1,000 Swiss Francs with 1% and 3% interest



Source: UBS

Time horizon and goals determine your savings and investment strategy

Most people experience investing as an emotional endeavor. Moments of volatility and market downturns stick in our minds. However, if you are disciplined, you are likely to be successful in most environments. A focused investment concept using our Liquidity. Longevity. Legacy. (Fig. 4) framework helps you set the right investment strategy to match your lifestyle and your life goals in every financial market situation.

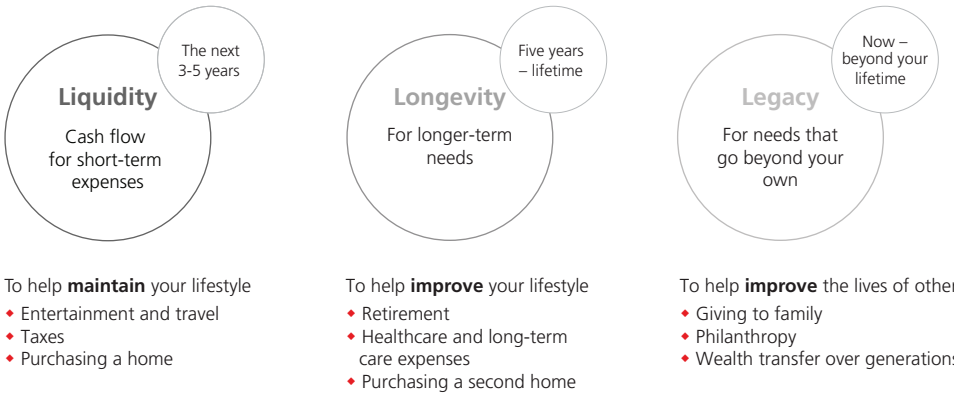
This starts with the right amount of liquid assets—such as cash, bonds, and borrowing capacity—that will be sufficient to cover any amount of spending in the next three to five years that isn't already covered by reliable sources of income. A Liquidity strategy can provide a buffer that enables you to finance your living costs in any market situation. It also gives the riskier assets in your portfolio—particularly in the Longevity strategy, which represents the other assets you plan to spend during your lifetime—a chance to recover from a downturn before you resume tapping into them to cover your spending needs. If you hold too much in your Liquidity strategy you may miss out on return opportunities

> A Liquidity strategy can provide a buffer that enables you to finance your living costs in any market situation.

Disclaimer:
UBS Wealth Way is an approach incorporating Liquidity. Longevity. Legacy. strategies that UBS Financial Services Inc. and our Financial Advisors can use to assist clients in exploring and pursuing their wealth management needs and goals over different timeframes. This approach is not a promise or guarantee that wealth, or any financial results, can or will be achieved. All investments involve the risk of loss, including the risk of loss of the entire investment.

Figure 4

UBS Wealth Way



Source: UBS

that could help you fund and grow your Longevity strategy.

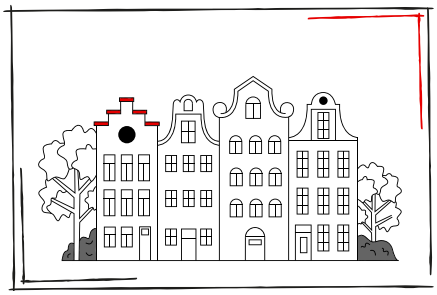
The Longevity strategy should be mainly invested to protect your retirement, with a preference for investments that provide consistent growth and income. They should grow faster than inflation to finance your future spending needs and to serve as a reservoir for topping up your Liquidity strategy periodically. As the Longevity strategy is not directly used to cover your daily liquidity needs, you can consider longer-term investments and incorporate some illiquid investments as well. Your risk tolerance and investment time horizon determine the appropriate mix between bonds, equities, and alternative investments.

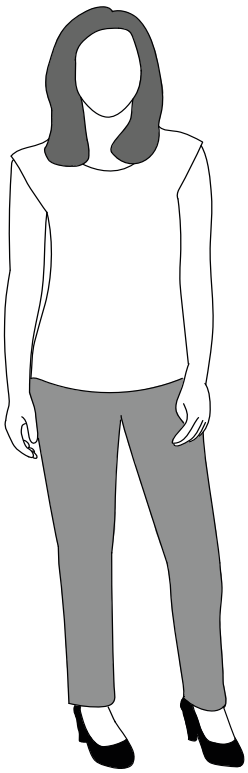
Should you be nearing retirement and already want to think about how much to leave to the next generation, you can start to set up a Legacy strategy. These assets will last beyond your lifetime. This means that you can invest more in riskier, higher-yielding, and illiquid instruments, although we still recommend a diversified approach to reduce the risk that an individual investment or asset class will cause you to fall short of your growth aspirations. For your Legacy strategy, we would recommend involving the next generation in investment decisions, especially around philanthropic decisions. If a portion of your Legacy strategy is earmarked for inheritance, the appropriate allocation for those assets should reflect your heirs' investment time horizon.

Disclaimer:
Timeframes may vary. Strategies are subject to individual client goals, objectives, and suitability. This approach is not a promise or guarantee that wealth, or any financial results, can or will be achieved.

Jane around the world

Netherlands
Amsterdam





Jane's numbers

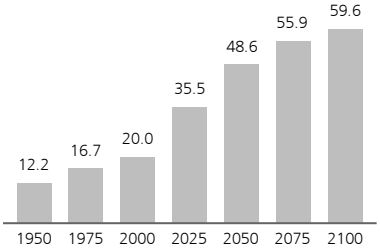
Savings rate
5%

Replacement rate
106%

Retirement age
68

Life expectancy at 50
84

Old-age dependency ratio*
(65+ per 100 15-65):



Well-established state and company sponsored schemes

The Netherlands has a well-established pension system, built on three pillars. All residents can benefit from the state-administered Old Age Pensions system (AOW). Workers contribute 17.9% of gross salary to the scheme, with minimum and maximum contributions for low and high earners respectively. All those who have lived or worked in the country receive a flat payout in retirement. The amount is reviewed periodically and currently stands at almost EUR 1,300 per month for singles; couples receive less per person. The full amount is received for a participation of 50 years. In this pay-as-you-go system, the reference retirement age is currently 66, but is set to increase with changes in life expectancy.

On top of the AOW, more than 90% of employees participate in the quasi-mandatory occupational pension scheme provided by employers. There are various types of pension funds. The most common is a defined benefit (DB) plan with annuity payments based on average pay. The options to retire early, postpone payouts, combine payouts with another job or even receive more in the early phase of retirement exist. In DB plans, all employees contribute the same percentage of their pensionable salary, corresponding to gross salary minus an offset, with a cap for high earners. Employee contributions typically range between 4% and 7%, while employer contributions can vary widely depending on the pension fund. Banks and insurance providers offer voluntary private pension solutions which benefit from tax relief.

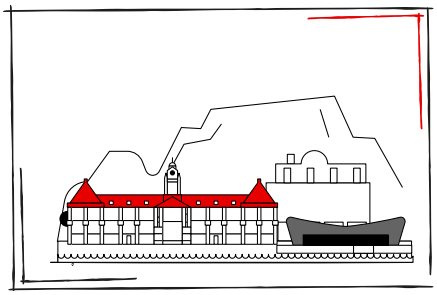
Jane's almost there

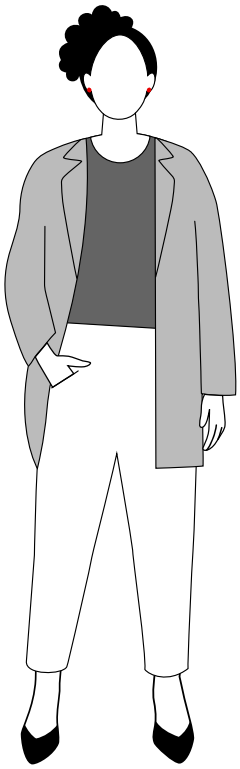
We assume Jane has contributed to a defined benefit scheme with average pay indexed to wage development. Upon retirement, estimated at 68, the sum of her AOW and occupational pensions would represent 106% of her last net salary. The replacement rate above 100% is partly explained by the fact that she will pay lower social contributions in old age. Despite her high projected replacement rate, Jane would still have to set aside 5% of her current net salary starting from today to maintain her current lifestyle. This is manageable for Jane even though the cost of living in Amsterdam does not leave her much room for saving.

The big transition is coming

Future pension reforms aim to move away gradually from DB plans and toward defined contribution (DC) plans, which are considered fairer, more flexible and resilient to changes in the labor market. All DB plans will transition to DC by 2027. While this pension system seems robust in comparison to others, it is not immune to demographic change. The old-age dependency ratio is high and climbing, which will increase pressure on the AOW.

South Africa
Cape Town





Jane's numbers

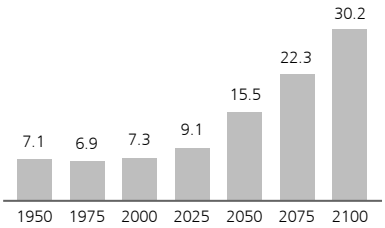
Savings rate
49%

Replacement rate
57%

Retirement age
60

Life expectancy at 50
79

Old-age dependency ratio*
(65+ per 100 15-65):



Tax-financed safety net in old age

South Africa's pension system is based on three pillars: a means-tested state pension, occupational pension plans and voluntary solutions. The government-sponsored old-age pension (Sassa grant) is a safety net against poverty in old age. This means-tested retirement income is financed through tax revenues and paid to residents aged 60 and above. The monthly grant is a fixed amount that progressively decreases and eventually disappears, depending on income and assets, among other conditions.

Salaried workers additionally benefit from employer-sponsored pension plans that come in the form of defined benefit, defined contribution or hybrid plans. Defined benefit plans are more common in the public sector. Contributions are usually mandatory and tax deductible up to a certain limit. They are generally paid two-fifths by employees and three-fifths by employers. There is no official retirement age to receive an occupational pension. Upon retirement, at least two-thirds of pension fund assets must be converted into an annuity, with the balance available as a lump sum. A multitude of voluntary pension solutions exist, usually with tax incentives.

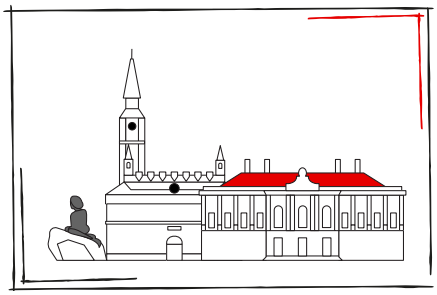
Contributions are not enough

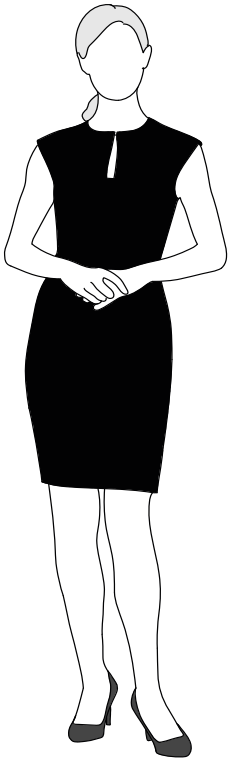
We assume Jane and her employer have contributed 12.5% of her income to her pension fund and she retires at the age of 60. Jane will then receive a pension equivalent to 57% of final net salary, requiring her to save 49% of her net salary to continue to finance her current lifestyle in retirement. She would not be entitled to Sassa grants in her 20-year retirement period as her occupational pension and assets are too high. With a higher total contribution rate throughout her career, Jane could significantly increase her replacement rate and lower her savings gap.

Good, but not good enough

South Africa's pension system is the continent's most developed, but many workers do not benefit from its full potential. The issues lie with the labor market and the state of the economy. High unemployment and a significant informal economy mean that many people do not prepare for financial independence in old age. A large majority of elderly people currently rely on government grants to make ends meet.

Denmark
Copenhagen





Jane's numbers

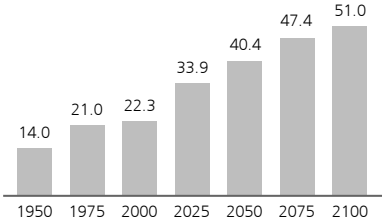
Savings rate
14%

Replacement rate
58%

Retirement age
69

Life expectancy at 50
90

Old-age dependency ratio*
(65+ per 100 15-65):



Sustainability and adequacy can be combined

Denmark's pension system consists of three pillars. The first includes a means-tested state pension, available to every resident, financed by taxes. Additionally, all residents are entitled to the ATP pension (Arbejdsmarkedets Tillægspension). It is financed by employees (one-third) and employers (two-thirds). Contributions depend on employment level. The full-time equivalent is currently DKK 248 per month. It is a fully funded insurance scheme meant to supplement the state pension. It relies on intergenerational redistribution and pays a lifelong pension. However, ATP payouts are low and not enough to ensure an adequate living standard. While not mandatory, coverage in an occupational pension fund is almost universal in Denmark. The second pillar is managed by private providers as purely defined contribution plans. Contribution rates vary, mostly between 10% and 20%, and are shared by employers and employees. Investment strategy and capital accumulation are different for each individual, and pensions are usually paid as annuities. The third pillar consists of voluntary, tax-incentivized savings options; this is not considered in this analysis.

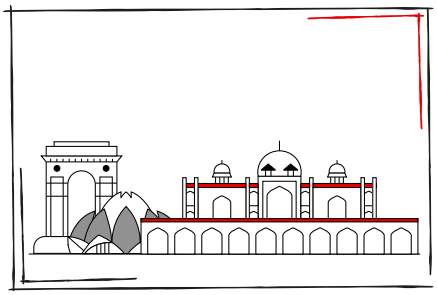
Adequate retirement living standard possible

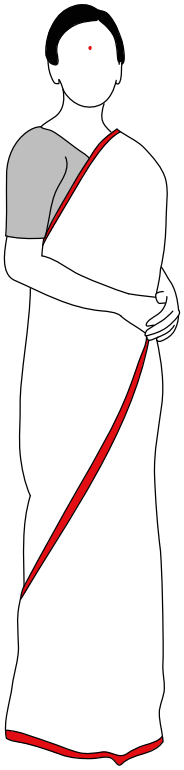
If Jane lived in Denmark, she would have one of the longest official working lives in the world, with the retirement age rising from 65 years currently to 69 by the time our fictitious character retires. Her pension from the first pillar state pension, ATP and second pillar pension fund would be 58% of her final net salary. Jane needs to save 14% of net income from age 50 to 69 to ensure her living standard stays unchanged during her 22 years of retirement. This low required savings rate is partly explained by the higher-than-average retirement age, and partly by the adequacy of pension income compared to living costs.

Continuous reform efforts rewarded by stability

Denmark's demographics are changing, but less rapidly than elsewhere in Europe. Today there are three wage earners per retiree, and the number will fall gradually to two per retiree by 2100. This gives the government more time to adjust its pension system to demographic change, which it is already doing by slowly raising the retirement age to 75 over the next few decades in accordance with life expectancy. Clarity and transparency around the future retirement age makes long-term financial planning more feasible. Denmark offers a high degree of coverage, but also relies on a large share of tax income to finance its overall social security system, which includes the state pension. This needs constant monitoring given lower expected workforce growth.

India
Delhi





Jane's numbers

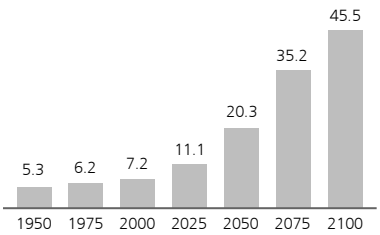
Savings rate
35%

Replacement rate
84%

Retirement age
58

Life expectancy at 50
79

Old-age dependency ratio*
(65+ per 100 15-65):



Generous benefits, but low coverage

India's pension system is based on a defined benefit scheme called the Employees' Pension Scheme (EPS) as well as a defined contribution scheme called the Employees' Provident Fund (EPF). These state-managed systems mainly cover formally employed, white-collar professionals and public servants. Private companies may offer additional pension solutions. Overall, less than a quarter of the Indian workforce is covered by pension insurance.

Since 2014, the unfunded EPS has been closed to new entrants earning more than a certain wage, currently INR 15,000 per month. For employees below the threshold, the government contributes 1.16% and the employer 8.33% of wages. Existing members who earn higher wages can continue to contribute voluntarily, but have to shoulder the government contribution. The official retirement age is 58, but early retirement is possible. The monthly pension is calculated based on the average of the last 60 months' salary (up to a cap) times the total contribution years divided by 70. Late retirement is encouraged, with a 4% increase in pension payout for every additional year.

In the EPF scheme, contributions are shared between employer and employee. For salaries below a certain threshold, currently INR 15,000 per month, these contributions are 3.66% and 12% respectively. For higher salaries it is 12% each. Contributions earn a fixed rate of return set by the government. Payout is only possible as a lump sum which is tax exempt. The official EPF retirement age is 55, but early withdrawals are allowed for various purposes, like marriage, life insurance or medical expenses.

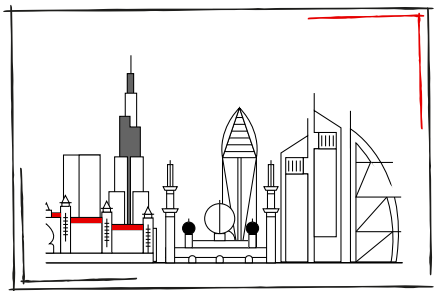
Few Indians are average Jane

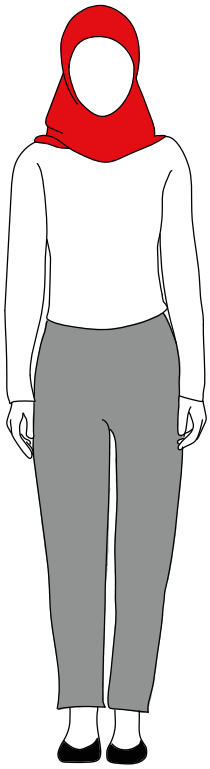
If Jane lived in Delhi and were part of the minority that is formally employed in the private sector, she would be covered by the EPF for her 38-year career and would have accumulated funds in the EPS until 2014. Thus she would be required to save 35% of her current net income to continue to meet her living costs in retirement. She will retire at 58 on 84% of her final net salary. Such high replacement rates are not uncommon in India given high contribution rates to the EPF and generous fixed investment returns. However, the fact that Jane has not used any of her EPF assets before retirement is rather unusual.

An aging society needs to shift into focus

Many Indians choose to draw on their pension assets before retirement to fund important social outlays, such as weddings. With rising economic prosperity bringing longer life expectancies, and a population transitioning from ten workers per retiree to only two by the end of the century, adjustments to the pension system are necessary. Most importantly, pension provision needs to cover a larger share of the population and be dedicated for retirement.

United Arab Emirates
Dubai





Jane's numbers

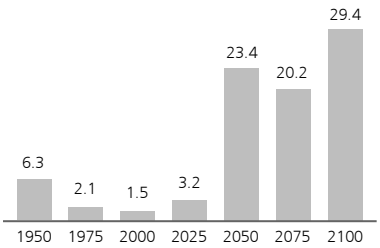
Savings rate
0%

Replacement rate
101%

Retirement age
60

Life expectancy at 50
86

Old-age dependency ratio*
(65+ per 100 15-65):



Defined benefits rely solely on state funding

The United Arab Emirate's pension system is based on a single publicly administered defined benefit scheme. It covers Emiratis and citizens of the Gulf Cooperation Council; slightly different rules apply to other nationals. All UAE nationals working in the public and private sector are eligible for retirement income at age 50 with at least 15 years of service, or at the official age of 60 even with fewer years of contribution. All the emirates share the same pension system and have a common administrator except for Abu Dhabi, where the pension fund is managed separately based on its own pension law, though it follows the same principle. Contributions to the pension fund total 20% of wages and are paid by employees (5%), employers (12.5%) and the government (2.5%). The pension payout is 60% of the average of the last five years' wages, with an additional two percentage points added for every year above the 15-year minimum, but no more than 100% in total. The regular monthly annuity is adjusted for inflation, and Emiratis pay no tax on their income.

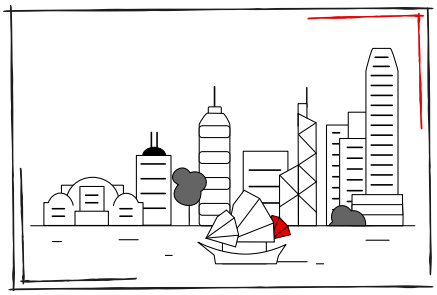
No lifestyle change between working age and retirement

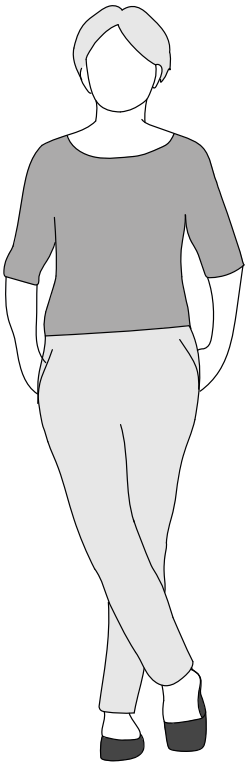
Given Dubai-based Jane started working at age 20, she would have fulfilled the 15 working years criteria already today. In our model, she works until the statutory pension age of 60 and thus receives the maximum pension. Even with this extended working period she still has to finance 27 years of retirement given a life expectancy of 86. With a pension based on recent income, this is feasible for her, and she does not have to make additional savings to continue financing her accustomed lifestyle in old age. Her replacement rate is over 100% of her last net salary, since there are no social contributions to be paid in retirement compared to working life.

Young population makes reforms appear less pressing

The UAE's population is one of the youngest globally. Currently more than 30 people are in working age for every one person in retirement. But this ratio is not stable. Over the next three decades, the ratio will fall to four workers per retiree. The country has been in a transition phase for some time, trying to diversify its economy away from natural resources. Incentivizing its abundant young talent pool to join in this innovation spree can further enhance the economy's potential. While the Emirates will most likely not run out of natural resources anytime soon, the risk of sharply declining energy prices and thus lower revenues exists. Europe serves as an example that reforms should be implemented while they can still be sweetened with compensation measures, and not just when demographic reality knocks on the door.

Hong Kong





Jane's numbers

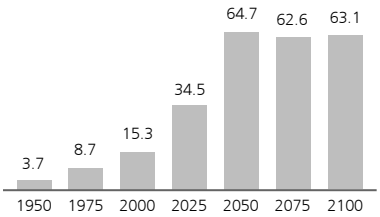
Savings rate
74%

Replacement rate
31%

Retirement age
65

Life expectancy at 50
89

Old-age dependency ratio*
(65+ per 100 15-65):



Investment responsibility in employees' hands

The Mandatory Provident Fund (MPF), an occupational pension fund akin to a second pillar, is the only mandatory pension system in Hong Kong. It is a fully funded occupational defined contribution plan. The plan was introduced in 2000, which means that many employees did not start saving until then, and that elderly workers therefore don't have a full savings history. Employers and employees are required to contribute in equal proportions, currently 5% of gross wages each up to a monthly income of HKD 30,000. The capital is invested in the worker's chosen investment fund and strategy. While there is no statutory retirement age, the retirement age range of 60-65 for civil servants is a good indication. Retirees receive a lump-sum payment on retirement that they can use at their discretion, for example to buy an annuity. Additionally, Hong Kong has a state-managed, tax-funded social security system, including the old-age living allowance (OALA) and the old-age allowance (OAA), that provides support for the needy on a means-tested basis. Further private third-party options are available on a voluntary basis.

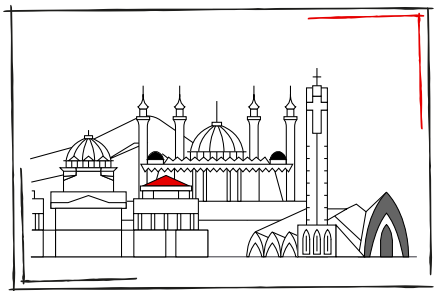
High private savings requirements due to a relatively young system

If Jane lived in Hong Kong, she would retire at 65 with a pension income of only 31% of her net final salary. Her required savings rate to maintain her current lifestyle is 74% of her current net income. Jane's life expectancy in Hong Kong is 89, making her retirement last a total of 24 years. Due to her low pension income, she will receive an additional social security payment, the OALA. Hong Kong has high rents, increasing Jane's cost of living. Even if Jane did not live alone, private savings and investing would be key to financing her long retirement.

Sustainable system, but low benefits

While Hong Kong has one of the most sustainable pension systems in Asia, it illustrates the trade-off between sustainability and adequacy. The benefit of this system is that its main pillar does not rely on state financing. But it also leaves retirees uncertain about the payouts they will receive, as they depend on investment returns. Additionally, the share of the government budget allocated to its first pillar is rising, as is the city's old-age dependency ratio. With one of the lowest fertility rates in the world, its retired population will grow from one per three workers to one per less than two workers over the next two to three decades. This will make retirement financing more costly for public as well as private pockets.

Nigeria
Lagos



Jane's numbers

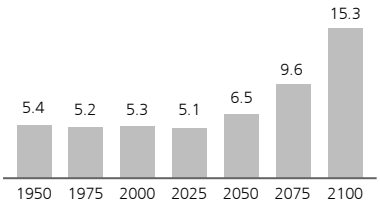
Savings rate
145%

Replacement rate
41%

Retirement age
60

Life expectancy at 50
79

Old-age dependency ratio*
(65+ per 100 15-65):



Occupational pension for formal workers

The Nigerian pension system formally relies on a single pillar. The 2004 Pension Reform Act changed the pension system from optional defined benefit plans to mandatory fully funded defined contribution ones. Companies with more than three employees withhold 8% of employee wages, to which they add another 10%. Employees can choose the pension fund administrator (PFA), that manages their pension investments. These are mostly private companies. The law sets investment restrictions on retirement savings accounts. PFAs offer default investment allocations for under 50s, over 50s and retirees. Beneficiaries can opt for funds with fewer restrictions and choose other features such as Shariah compliance*.

Upon retirement, set at a minimum age of 50 for men and women, insured persons can either choose a life annuity from an insurance company or opt for a programmed withdrawal. Pension assets can be withdrawn prior to retirement for compelling reasons such as inability to work. Partial lump-sum withdrawals are allowed as long as the balance of the fund is sufficient to generate a payout equivalent to at least 50% of last salary.

Uncommon Jane

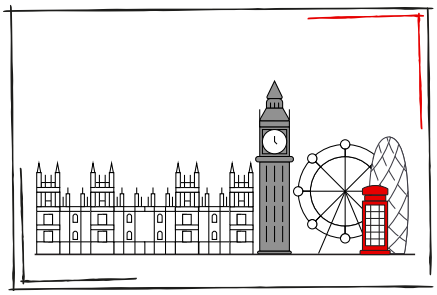
We assume Jane retires at age 60 and chooses a programmed withdrawal. We also assume she only started contributing to a pension fund in 2004 when it became mandatory. Jane's pension payment will replace 41% of her final net salary, and to make up the gap she will need to save 145% of her current wage. With one child, Jane is far from average. The average Nigerian household is large, and parents may rely on their children and their extended community for support in old age.

Keeping up with inflation

The national pension authority imposes a strong home bias* for pension fund investments. This supports the country's investment needs, but also introduces other risks such as lack of diversification. Inflation has risen by a double-digit percentage annually on average since the turn of the century, and pension fund returns have not always been able to beat this rate in the recent past. Given the choice, some Nigerians would probably invest their old-age savings in local assets outside the public system, including their business or real estate, or seek international diversification.

The Nigerian pension system is modern by design. However, it does not cater to the vast majority of informal or self-employed workers. Less than 10% of the working population has a retirement savings account. Most Nigerians are left to fend for themselves.

United Kingdom
London



Jane's numbers

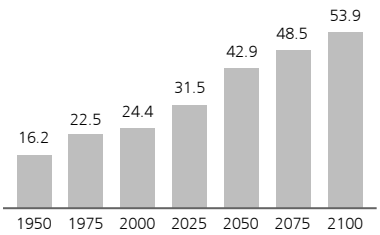
Savings rate
26%

Replacement rate
64%

Retirement age
67

Life expectancy at 50
87

Old-age dependency ratio*
(65+ per 100 15-65):



Mandatory occupational pension still young

For a long time, the only guaranteed pension income in the UK came from the state pension, which covers basic necessities. The new State Pension offers a flat rate payment, currently capped at GBP 179.6 per week, adjusted for previous National Insurance contributions and price developments. It is financed by the government without any dedicated individual contributions. Currently, workers reach full eligibility after 35 years of employment.

The Pensions Act 2008 introduced an occupational mandatory defined contribution scheme, which was phased in beginning in 2012. People who entered the workforce before 2012 will have lower pension capital at retirement compared to younger workers unless they have saved voluntarily. The total compulsory contribution rate was 2% for the period 2012–2017, 5% in 2018 and, currently, 8% for all subsequent years, shared between employer and employee. Employees can contribute more, voluntarily, or can even opt out of their employer's plan if they have equivalent private options available. The pension capital is invested until retirement, at which point it can be withdrawn all at once or in installments, immediately or at a later point. Up to 25% can be withdrawn tax free, while the other 75% is taxed whether it is withdrawn as a lump sum or an annuity.

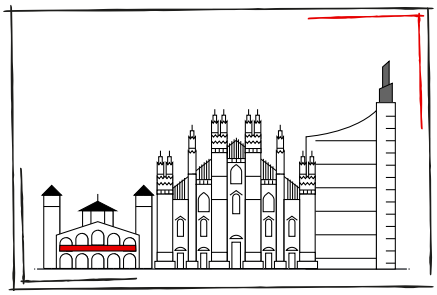
Private savings part of Britons' retirement plan

The two mandatory pension pillars provide London-based Jane with a net replacement rate of 64%. Until she retires at 67, Jane will need to save an additional 26% of net salary each month to finance her basic urban lifestyle in retirement. This highlights that the pension system is not intended to provide a high replacement rate, and thus private savings are imperative. As the new scheme started in 2012, Jane could not fully contribute compared to later generations. Assuming a life expectancy of 87 years, Jane can expect to enjoy retirement for 21 years. She could improve her prospects by using voluntary options such as additional company-offered plans, as well as other third-party arrangements.

Incentives to save more will rise

Other reforms were introduced along with the mandatory occupational pillar. They include tax incentives to postpone early retirement, or to take the money in installments rather than all at once. Voluntary tax-optimized savings options have also become available. This is important as the average UK household has a relatively low savings rate of approximately 8%. Additional reforms include a further rise in the retirement age to at least 68. While demographic change is taking place more slowly in the UK than elsewhere in Europe, the number of workers per retiree has dropped from four in 2000 to little more than three today, and will decline further to just two over the next 50 years.

Italy
Milan



Jane's numbers

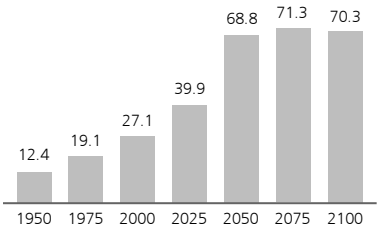
Savings rate
28%

Replacement rate
86%

Retirement age
67

Life expectancy at 50
88

Old-age dependency ratio*
(65+ per 100 15-65):



Transition underway

Italy's pension system is in transition. In 1995, a fully funded defined contribution (DC) plan was introduced that covers all wage earners since. Total contributions amount to 33% of salaries, financed two-thirds by employees and one-third by employers. This new pension system also requires workers to save approximately 7% of their gross salary in a pension fund. This so-called Trattamento di Fine Rapporto (TFR) existed before the 1995 reform, but was earmarked to cover periods of unemployment and held by the employer. Under the new system, full pension eligibility is reached after 35 working years, and the retirement age stands at 67.

Before 1995, Italy's public pension system consisted of a single unfunded defined benefit (DB) plan managed by the state. Past contributions into this scheme have been carried forward. The pension capital in this plan grows at the rate of nominal GDP. At retirement, the effective pension for the decommissioned scheme is calculated with a transformation coefficient determined by the government, which is based on total contributions and life expectancy.

Generous replacement rate will decline

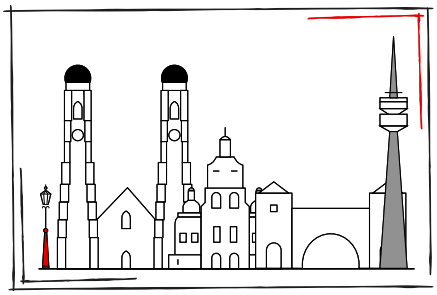
Since Jane entered the job market before the 1995 reform was introduced, she can expect to receive roughly 86% of her final net salary from the old DB, the TFR and the current DC scheme.

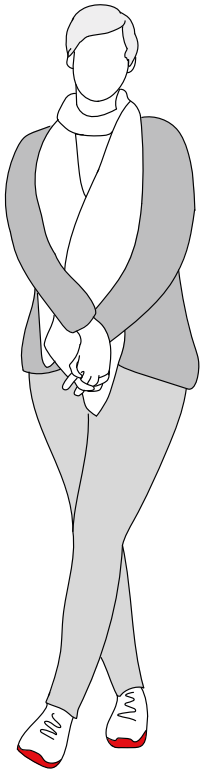
This is far higher than younger workers who entered the workforce after 1995 can expect. Jane must save about 28% of net earnings every month until retirement to finance her basic urban lifestyle in Milan. Jane's retirement age will be 67 with a life expectancy of 88 years.

New system phase-in implies lower pensions

Italy, like many of its European neighbors, has accounted for the fact that life expectancy is rising and that the share of pensioners will increase from one per 2.5 workers to one per 1.5 workers over the next few decades. The statutory retirement age has been rising gradually, but plans to link pension age to life expectancy and thus to continue to increase it slowly have been shelved lately. The transition from defined benefit to defined contribution fund is making the Italian pension system more sustainable. However, this also means that future pensions should be less generous. For younger workers, the additional TFR pension savings should partially compensate for the lack of public defined benefit pensions. Further it implies that the share of savings directed to long-term investments and private voluntary pension plans will need to rise, and those investments should focus more on equities rather than traditional bond products for their greater return potential.

Germany
Munich





Jane's numbers

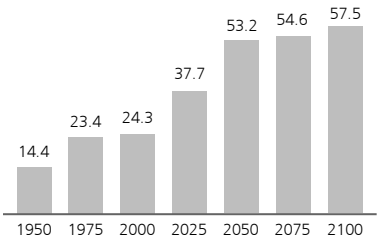
Savings rate
30%

Replacement rate
62%

Retirement age
67

Life expectancy at 50
87

Old-age dependency ratio*
(65+ per 100 15-65):



Only one mandatory pillar

Germany's mandatory state pension system relies on a single defined benefit scheme. It is a pay-as-you-go system that redistributes income between the generations. Employer and employee share equally in contributions, which currently total 18.6% of wages, with a cap. Due to an aging population, the scheme also relies on state subsidies to cover promised benefits. The Deutsche Rentenversicherung is responsible for its administration. Pension payments are determined by a points system. The formula to calculate the accumulated points is based on number of years of contribution as well as a person's wage in relation to the country's average wage. A point receives a value at retirement accounting for price and wage development. Germany's second pillar, the occupational pension, is not mandatory, and only about two-thirds of workers are covered. About as many have a voluntary third pillar, mostly the state incentivized Riesterrente. However, this option is rather expensive.

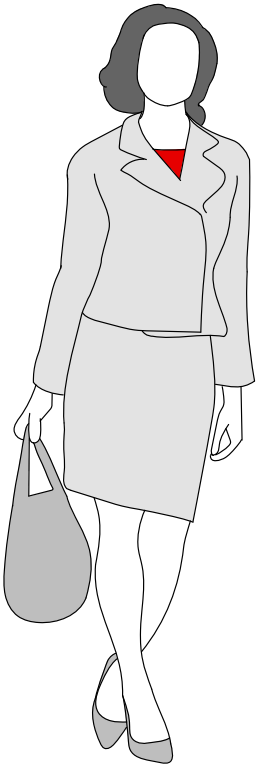
High lifestyle costs make it difficult to save

In Munich, Jane would have to save 30% of her current net wage to sustain her basic urban lifestyle in retirement. Her replacement rate of 62% based on the mandatory part of the pension system is about country average. Given the high living costs in Munich, her savings potential is limited. Germany-based Jane can expect to live to 87 and thus private savings are important for her 21-year retirement. This means disciplined investments from an early age are required to enable Germans to maintain their lifestyle in retirement. Given the average household savings rate in Germany is 10%, this seems feasible.

Unsustainably high level of government spending

Germany has undertaken some reforms over the past couple of years. The pension age is rising slowly; it was 65 in 2012 and will reach 67 in 2031. The calculation used to translate contributions into a monthly pension already includes a sustainability factor, which adjusts according to the changing ratio of workers to retirees. Additionally, to deal with rising outflows and stagnant inflows, tax breaks for pensioners will be phased out by 2040. The population is aging fast, and fewer than three workers currently support every retiree, down from more than six in the 1950s. In two to three decades it will be only two workers per retiree. This could undermine the sustainability of the German pay-as-you-go system, which already costs the state more than 10% of GDP compared to a 7.6% OECD average.

United States of America
New York City



Jane's numbers

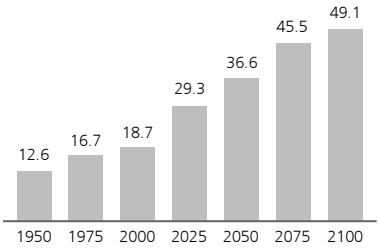
Savings rate
42%

Replacement rate
50%

Retirement age
67

Life expectancy at 50
84

Old-age dependency ratio*
(65+ per 100 15-65):



Taxpayer-financed social security system

The US mandatory pension system is called the Old-Age, Survivors and Disability Insurance Program, or more commonly Social Security. It works on a pay-as-you-go basis. Currently, employers and employees each pay 6.2% of gross wages, and the scheme is supplemented by tax revenues. The highest 35 years of wages adjusted for wage development are used to calculate the pension. Each year is credited with points, and a minimum amount, approximately 10 years' worth of contributions, is needed to be eligible for retirement. The pension is progressive and divided into three tranches, meaning the initial dollars of income receive a higher replacement value to ensure basic survival for lower-income households. The subsequent dollars receive lower replacement rates. Early retirement is possible, with reduced benefits starting at 62. Late retirement is encouraged, with increased benefits up until age 70. The money not needed to pay current benefits is held in Social Security's trust funds. These funds are close to their peak and will decline as ever more people rely on their benefits, while the number of contributors is stagnant.

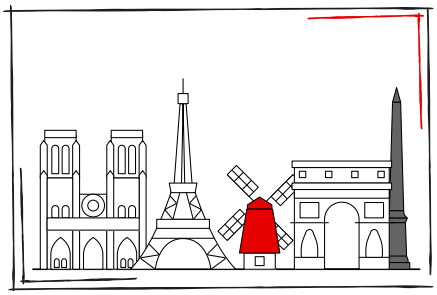
Intentionally low replacement rate

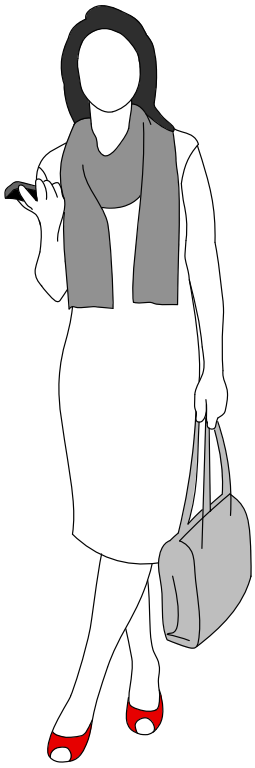
Social Security is intended only to provide the basis for an individual's pension income. However, as Jane earns a median salary, her replacement rate will be almost 50%. Nonetheless, this alone does not provide her with an income in retirement sufficient to finance her lifestyle. For this, she must save 42% of her monthly net wage for the next 17 years. New York is one of the most expensive cities in the world, which explains part of the high savings requirements. But as Americans are widely aware, private savings are needed to supplement their Social Security pension. For example, the 401(k), which encourages tax-deferred contributions, is a popular scheme. As it is not compulsory for employers to offer the 401(k) scheme, it is not considered in our calculations. But due to a contribution cap, it would most likely not be able to fill the gap completely and further voluntary savings, preferably with a long-term investment strategy, would be required.

A young population buys time

The Social Security Administration has raised the retirement age to cope with demographic change. It is currently 66 years and two months, and will increase by two months per year over the next five years to hit 67. The US has one of the lowest life expectancies in the developed world, and its population is relatively young. Thus the effects of demographic change will materialize more slowly than elsewhere. Currently, there are still four workers for every retiree. Nevertheless, without government action, Social Security's reserve is projected to be depleted by 2035. The system is thus not very sustainable and will need adjustment.

France
Paris





Jane's numbers

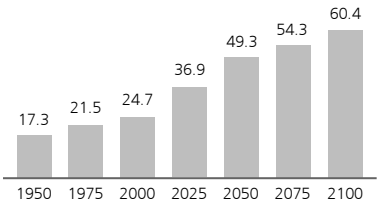
Savings rate
44%

Replacement rate
78%

Retirement age
65

Life expectancy at 50
87

Old-age dependency ratio*
(65+ per 100 15-65):



It's all based on redistribution

France's retirement system is based on a multitude of schemes. We take the two most common ones into account. Both work on a pay-as-you-go basis, are administered by public bodies and are subsidized by public money. All employees are eligible for the Régime Général de la Sécurité Sociale (RGSS). Employer and employee contributions total 15.45% of wage up to a ceiling and 2.3% thereafter. The standard RGSS pension is based on 50% of the average of an employee's 25 highest annual salaries. For the purpose of the calculation, past salaries are adjusted for wage growth. Pension payouts are adjusted for inflation every year.

AGIRC-ARRCO is the occupational pension for private sector workers. The schemes for managers and civil servants have different names, but similar mechanisms. It is funded three-fifths by employees and two-fifths by employers. Total contributions are 7.87% on a first tranche of wage and 21.55% on a second. The contributions are translated into points. At retirement, the accumulated points are converted into an annuity payment based on the value of a point.

Employees can leave the workforce at age 62 with a full pension if they have worked the required number of quarters, which is birth year dependent. If their contribution period is too low, they can take a pension cut or work longer and benefit from a full pension at age 67, no matter what. Parents receive additional pension benefits to compensate for time spent on childcare.

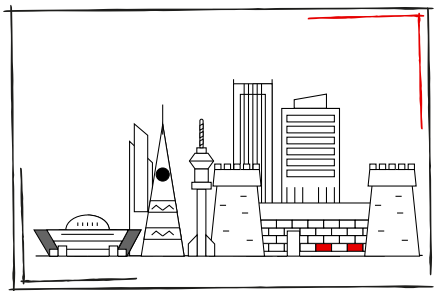
The later the better

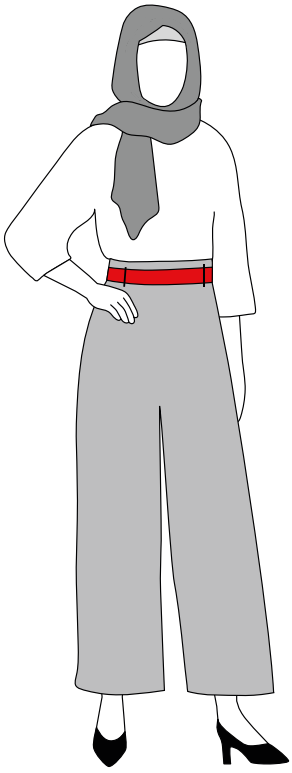
We assume Jane retires at age 65 with a full pension. In the first year of retirement, she will receive about 78% of her last net income from RGSS and her occupational pension, the latter making up less than one-third of benefits. With a life expectancy of 87, Jane will enjoy 23 years of retirement. She would need to save about 44% of her disposable income to supplement her retirement income from the mandatory system. This is almost impossible to achieve considering she lives in Paris, where the cost of living is high compared to the median wage.

Will France liberalize pensions?

France has fewer than three workers for each retiree, and the sustainability of the French system is reduced by high and rising public debt. The current government has initiated pension reforms, but they are currently on hold and will probably only resume after the next presidential election. It seems the pay-as-you-go model is here to stay.

Saudi Arabia
Riyadh





Jane's numbers

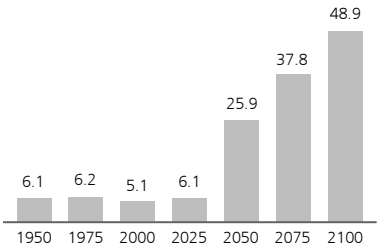
Savings rate
7%

Replacement rate
102%

Retirement age
60

Life expectancy at 50
81

Old-age dependency ratio*
(65+ per 100 15-65):



Redistribution for citizens

Saudi Arabia's basic pension system is a pay-as-you-go scheme. It is mandatory for all Saudi employees, excluding foreign workers. Civil servants are covered by another scheme. Total contributions sum up to 18% of wages, half of which are covered by employers.

Saudis, both men and women, can claim a pension from the age of 60, provided they have at least 10 years of contributions. The pension is based on the average wage of the last two years and the contribution period. There is a backstop to prevent large pay rises in the last two years prior to retirement. Pensions are increased by up to 20% depending on the pensioner's number of dependents.

Early retirement is possible at age 55 in case of arduous working conditions. It is also possible to retire before the age of 60 if one has contributed for at least 25 years. Employment and pension can be combined after 60, with potentially a lower pension payout before the age of 65. Workers who have contributed but do not meet the requirements for a pension may receive a lump sum.

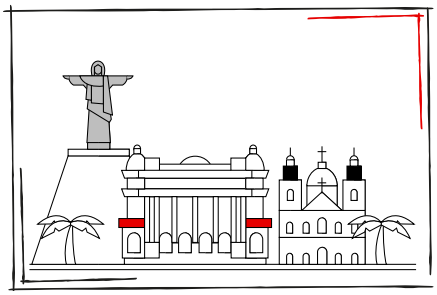
It's almost too easy for Jane

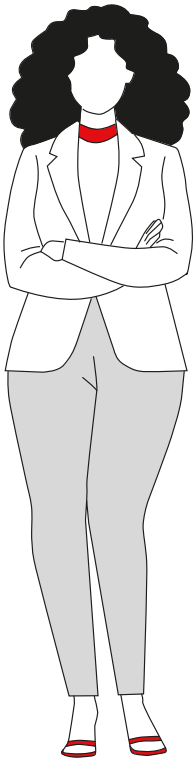
We assume Jane retires at the age of 60 on 102% of her last net income. This rate is above 100% mainly because there are no retirement contributions on pension payments. With a relatively high pension, Jane needs to save 7% of her net salary to maintain her current lifestyle in retirement. Covering this is manageable with her estimated 20% savings capacity.

Too generous to be sustainable

The Saudi pension system does not incentivize workers to secure their financial situation in retirement personally. The concept of a tax break doesn't exist, as income is not taxed, which makes incentivizing private pension savings harder. However, like most other societies, Saudi Arabia's population is aging. This threatens the fragile equilibrium of its pay-as-you-go scheme. The old-age dependency ratio is expected to rise quickly over the coming few decades. Planned reforms aim to increase the retirement age to 65 for men and 63 for women by 2028.

Brazil
Rio de Janeiro





Jane's numbers

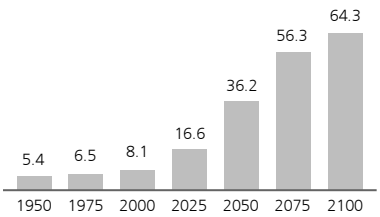
Savings rate
69%

Replacement rate
46%

Retirement age
62

Life expectancy at 50
83

Old-age dependency ratio*
(65+ per 100 15-65):



A mostly redistributive system

The mandatory Brazilian pension system is based on a pay-as-you-go scheme (RGPS) that is mainly for the private sector and is operated by the National Social Security Institute (INSS). Most civil servants are enrolled in the RPPS scheme, which is not discussed in this report. The RGPS is financed through contributions from workers and employers. System parameters were changed in 2019. Employees contribute between 7.5% and 14% of their wages depending on salary level, with a cap for high earners. Employers contribute at least 20% of wages. The state chips in to cover redistribution shortfalls.

The minimum retirement age is 65 for men and 62 for women. The RGPS pension is based on a formula that takes into account length of contribution, average wage during the contribution period and life expectancy at retirement. RGPS payouts have a floor and a cap and are periodically adjusted. A full pension corresponds to 60% of average wage during the contribution period provided men have worked at least 40 years and women 35. The minimum contribution period is 20 years.

Workers in the private sector may voluntarily contribute to their employer's existing pension plan if one is available. These come in the form of defined benefit, defined contribution or hybrid plans. Only around 10% of the workforce is enrolled in occupational pension funds.

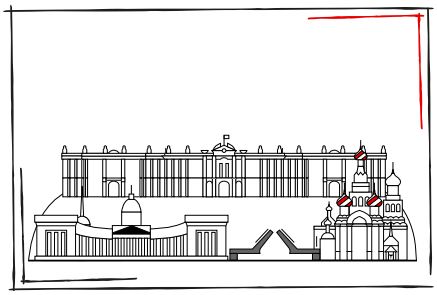
Mandatory is not enough

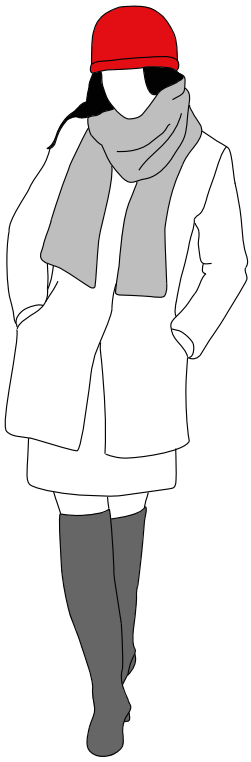
We assume Jane has contributed only to the RGPS scheme. At the ordinary retirement age of 62, her pension would be about 46% of her last net salary. To maintain her current lifestyle in retirement, Jane would need to save and invest 69% of her net income, which is not feasible. Contributing to employer-sponsored schemes would definitely help.

Reforms versus demographics

Brazil's pension system faces a demographic challenge: lower birth rates, higher life expectancy and an aging population. The dependency ratio is set to more than double in the next 30 years. Until recently, civil servants enjoyed very generous pensions. Government spending on RGPS pensions alone stood at 8.5% of GDP in 2018, which is very high considering coming demographic developments. Long-awaited pension reforms were enacted in 2019, but may not be sufficient to offset demographics and decades of generous benefits.

Russia
Saint Petersburg





Jane's numbers

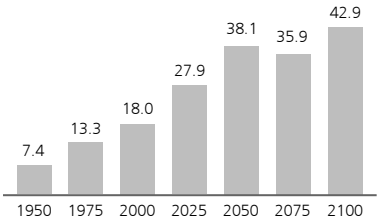
Savings rate
108%

Replacement rate
30%

Retirement age
60

Life expectancy at 50
84

Old-age dependency ratio*
(65+ per 100 15-65):



Employers cover all contributions

The mandatory Russian pension system is based on a national pay-as-you-go system. Employers contribute 22% of employees' wage up to a certain threshold (and 10% thereafter) to the Russian Pension Fund (PFR). Employees do not contribute anything, while self-employed workers contribute according to different rules. Contributions give rise to points according to a formula, with a cap on the number of points one can accumulate per year. Women receive pension points for part of the time spent on childcare.

In retirement, the monthly pension is calculated as the total number of points accumulated multiplied by the value of a point, in addition to a basic flat rate benefit. The values of the points and the basic flat rate are adjusted annually by the government by at least the rate of inflation. A minimum amount of points and contribution period are required to receive a pension. Non-working pensioners with low pension incomes can benefit from various supplementary means-tested benefits.

The retirement age is currently 56 for women and 61 for men, and is set to increase gradually to 60 and 65 respectively by 2028. Early retirement is only permitted for long careers or arduous working conditions. Late retirement is incentivized, with each year of postponement increasing the pension payout. Pension and work can be combined with some restrictions. Pensioners above 80 receive double the basic flat rate benefit.

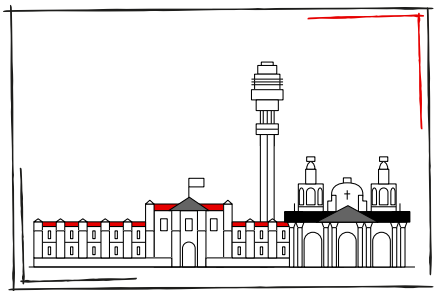
Little time to save

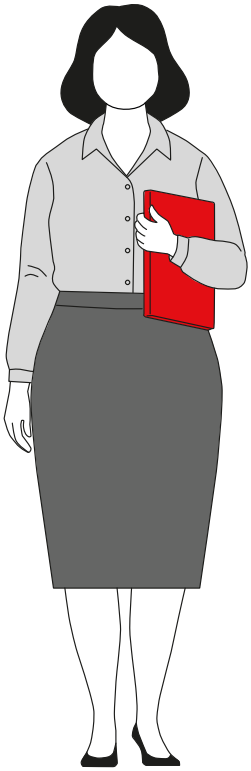
We assume Jane retires at 60, even though she could in theory be entitled to early retirement due to her long time in the workforce. Her replacement and required savings rates will be 30% and 108% respectively. Saint Petersburg-based Jane will not be able to sustain her lifestyle in retirement based on the public pension alone. Closing the gap in 10 years is an impossible challenge. Delaying her retirement age by a couple of years would significantly lower the required savings effort.

Frozen plan and pending reforms

During the Soviet era, the pension system was entirely state financed. Since the Soviet Union's collapse, the pension system has been amended several times. The government still contributes significantly to meeting pension obligations. In 2002, a defined contribution plan was introduced for a share of pension contributions (6% of wages). This plan has been suspended since 2015, and contributions have been shifted to the pay-as-you-go system to improve its financial balance. The raising of the retirement age should ease the pressure on public finances, but further reforms are needed.

Chile
Santiago de Chile





Jane's numbers

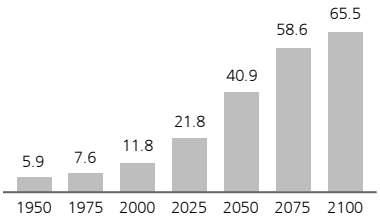
Savings rate
80%

Replacement rate
46%

Retirement age
65

Life expectancy at 50
87

Old-age dependency ratio*
(65+ per 100 15-65):



Long-established defined contribution plans

The Chilean pension is based on three pillars. The first is a solidarity pension, the second an occupational defined contribution scheme, and the third is private solutions. The first pillar is financed by tax revenues and ensures a minimum income in old age. Various conditions must be met to benefit from this pension, including 20 years of residency in Chile. The solidarity pension is progressive, adjusted for inflation, and paid out from the age of 65.

The second pillar is a mandatory defined contribution plan for all workers, established in 1981. The minimum retirement age is 60 for women and 65 for men. Employers do not contribute. Employees and self-employed persons contribute 10% of earnings (up to a salary ceiling) to one of a handful of authorized private Pension Fund Administrators (AFP). They can choose their AFP fund allocation from among five risk strategies, with age-based restrictions. Changing AFP is subject to fees, and there are lock-in periods in some cases. AFPs typically levy service fees on contributions and payouts. Various payout types exist, including life annuities and programmed withdrawals. Early retirement is possible provided the accumulated capital exceeds a given threshold. Pensioners can continue to work while receiving a pension.

When women give birth to or adopt children, the state gives them a voucher worth 18 months of pension contribution at minimum wage. This capital is invested and grows with the rest of the pension capital and can be cashed in from the age of 65. Voluntary private solutions are well developed including company-sponsored and individual schemes. Contributors benefit from tax incentives and a large choice of investment funds.

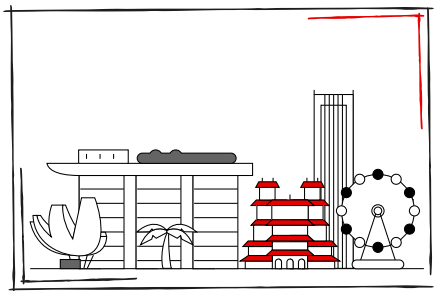
Too late to catch up

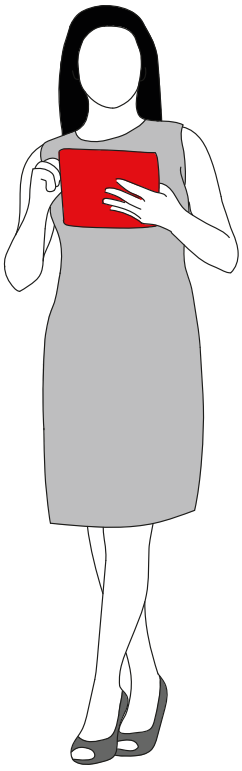
We assume Jane retires at the age of 65 and chooses a lifetime annuity for her occupational pension. She is eligible for the solidarity pension, like a majority of women retirees today. Jane's pension is 46% of her net final salary, and her required savings rate to maintain her lifestyle is 80% of her current net salary. The high cost of living in the capital city and the comparatively low median wage make it very hard for her to save and invest for retirement. Starting to think about retirement at 50 is too late to maintain her living standard in old age.

Some fine tuning could help

The Chilean pension system is advanced, especially compared to other Latin American systems, but it would benefit from more calibration. Discussions over pension reforms include raising pension fund contributions to 16%, with part of the increase falling on employers. Increasing the number of AFPs could also boost competition and drive down fees. Suggestions include the creation of a state AFP and linking fees to performance.

Singapore





Jane's numbers

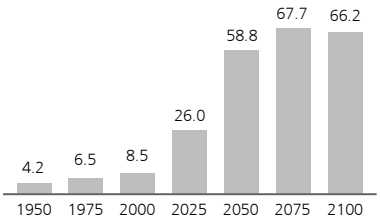
Savings rate
3%

Replacement rate
88%

Retirement age
65

Life expectancy at 50
90

Old-age dependency ratio*
(65+ per 100 15-65):



Savings vehicle for all phases in life

Singapore's pension system, administered by the Central Provident Fund (CPF), is a funded scheme with three features: the ordinary account (OA), the special account (SA) and the medisave account (MA). The OA is intended to provide a savings vehicle to fund retirement, housing, education, and other purposes. OA savings can be accessed before retirement. At age 55, any funds left in the OA up to a ceiling are combined with the SA, and then called the retirement account (RA). This is reserved solely for retirement. A certain minimum amount of the RA has to be used to purchase an annuity to ensure lifelong income. The rest can be withdrawn as a lump sum. The MA can only be used for medical purposes, and contributions are currently capped at a total of SGD 63,000. Contributions are paid by both employee and employer, and range between 12.5% and 35% of salary depending on age. A larger share of the total contributions is allocated to the OA in younger years. As employees age, the share allocated to SA and MA rises. Each account earns a fixed rate of interest, which currently stands at 2.5% for OA and 4% for all other accounts. A small amount of total savings receives an additional 1% interest. Currently, the legal minimum retirement age is 62, but this is set to rise to 65 over the next ten years.

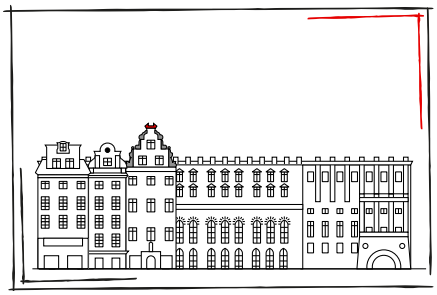
Use of funds before retirement determines savings rate

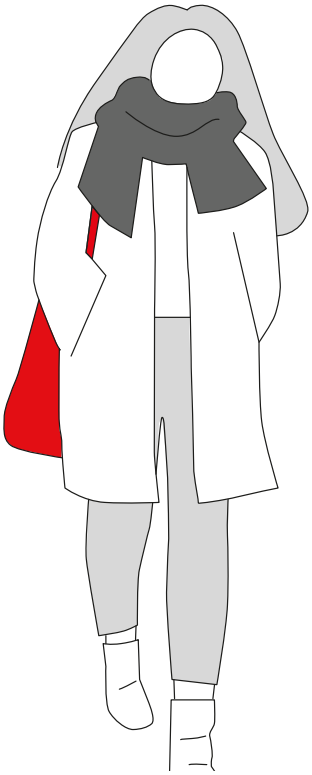
If Jane lived in Singapore, she would receive a pension equivalent to 88% of her final net salary and have to save only 3% of her current net salary to continue to finance her living standard. This comfortable position is due to not only the comparably high overall contribution rate, but also steady high returns. The fact that Jane has not used her OA savings to buy an apartment, as many residents of Singapore do, additionally increases her retirement savings.

Rising old-age dependency ratio requires adjustments

Singapore's system has many positive features. The three pillars prioritize retirement provision, but also serve other important life events. Guaranteed investment returns incentivize people to save early and to withdraw pension capital later or in installments. However, Singapore's population is aging rapidly, and its citizens have a high life expectancy. While there are still almost four workers for each retiree, this number is only one-fifth of what it was in the 1950s. There will be fewer than two workers for each retiree in two to three decades' time. This raises challenges, including how long high rates of return can be achieved, and whether the incentives for working longer and saving more are sufficient to accommodate demographic change.

Sweden
Stockholm





Jane's numbers

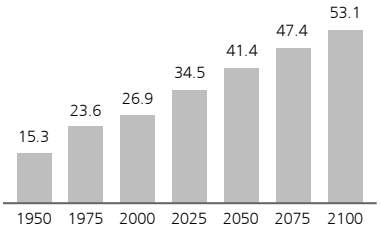
Savings rate
9%

Replacement rate
71%

Retirement age
67

Life expectancy at 50
86

Old-age dependency ratio*
(65+ per 100 15-65):



Redistribution with a pinch of choice

The Swedish mandatory pension system is based on state-managed schemes and occupational pension funds. Total contributions amount to 18.5% of gross wages, three-fifths of which is paid by the employer. Employer contributions above a ceiling are not credited to the scheme, but instead are paid as tax to the state. The state pays contributions for individuals who are away from work to provide childcare. Contributions are channeled into two schemes: the vast majority flows into a pay-as-you-go plan called the income pension (inkomstpension) and the balance into a funded defined contribution plan called the premium pension (premiepension).

Income pensions are paid in the form of annuities. Payouts depend mainly on personal contributions, historical average wage growth, the retirement age and life expectancy. Pensions continue to grow in retirement provided a balance is kept between total contributions and payouts in the scheme. Retiring later leads to higher pensions. In the premium pension, assets grow with the investment performance of underlying funds. Workers can choose their allocation from hundreds of funds and change them at any time. Roughly 30% of Swedes stick to the AP7 default fund. State pensions are available from the age of 62 but the minimum retirement age will gradually be raised to 67 by 2026. There is also a means-tested top-up pension (garantipension) financed with tax revenues for those with small pensions.

Around 90% of employees in Sweden participate in the quasi-mandatory occupational pension scheme, based on industry-specific defined contribution plans. Contributions amount to 4.5% of employee wage up to a threshold and 30% thereafter. Again, employees may have a say in fund allocation. The minimum retirement age is 55 for this scheme. Private pension solutions exist, but have not been tax deductible since 2016.

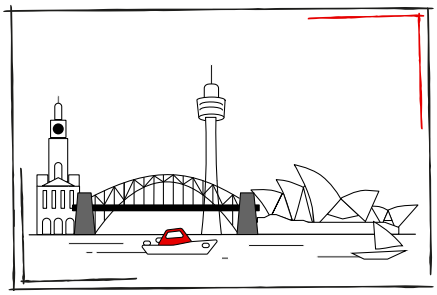
"Money, money, money"

Money shouldn't be an issue for Jane. We assume she retires at age 67 and chooses a guaranteed annuity for her premium and occupational pensions. The net pension in her first year of retirement will be 71% of her last net salary. Jane should be able to set aside the required 9% of her current net income to maintain her lifestyle in retirement.

Can it get any better?

The Swedish pension system is state of the art in many ways. Major pension reforms introduced in the 1990s are bearing fruit. Still, the income pension system is highly influenced by demographics. Current reform discussions revolve around indexing retirement age to life expectancy. On the premium pension side, the fund offering should be streamlined.

Australia
Sydney



Jane's numbers

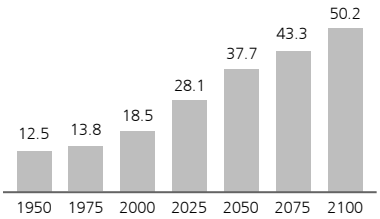
Savings rate
7%

Replacement rate
55%

Retirement age
67

Life expectancy at 50
88

Old-age dependency ratio*
(65+ per 100 15-65):



Basic coverage but highly sustainable

The Australian pension system is built on two pillars: Mandatory private pension funds and a means-tested state-financed pension scheme. Since 1992, employers have been obliged to contribute to their employees' superannuation funds, a defined contribution scheme. The employer contribution rate is currently 9.5% of gross earnings and supposed to rise to 12% over the next years. Employee contributions are voluntary, but attract tax benefits. The superannuation fund capital is invested at a risk level of the employee's choosing. At retirement, the balance is converted into annual installments. If income and the value of existing assets are below a certain threshold, retirees receive additional social security benefits from the Age Pension paid by the government and funded by tax revenues. The Age Pension top-up is important in later retirement years, when it compensates for the loss of purchasing power of the occupational pension. The Age Pension is also intended to favor low to medium income earners, as higher income earners receive progressively lower payments.

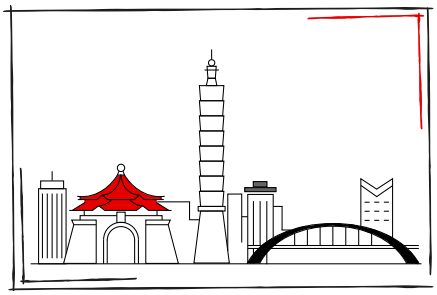
Occupational pension in focus

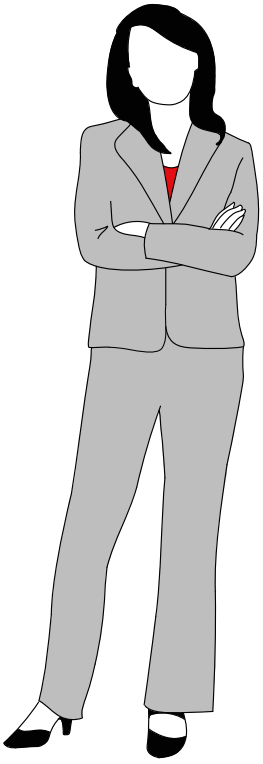
Jane is eligible for the Age Pension. This is partly due to the fact that contributions to superannuation funds (so-called super-contributions) only started in 1992, with initially low contribution rates, and partly that she does not contribute herself, as it is not mandatory. Her total pension payment is 55% of her net final salary, requiring her to save 7% of her current net salary to continue to finance her accustomed lifestyle in retirement. Despite high living costs in Sydney, this is feasible. Australia's retirement age is not set in stone. We assume it is 67 for Jane, which coincides with the start of Age Pension payouts. She has a life expectancy of 88 years, making her retirement 22 years long. Jane can invest her savings either through tax-optimized private super-contributions or through private solutions.

Fiscally stable, but vulnerable to domestic shocks

Australian demographics are changing more slowly than elsewhere in the developed world. The ratio of working to retired people has fallen from more than seven to around four over the past seven decades, and recent restrictions on immigration may accelerate the trend. Despite the government-sponsored Age Pension, public pension spending is fairly low, and given its modest debt-to-GDP ratio, Australia has room to maneuver. However, the national economy depends heavily on natural resources, leaving it vulnerable to price volatility. Further, superannuation funds may have concentrated positions in the Australian market and could be exposed to domestic shocks, especially in the housing market. The latter is also a concern for private individuals who have their wealth and pensions concentrated in their real estate. It is therefore important to mitigate those risks with an internationally diversified investment approach for private savings.

Taiwan
Taipei





Jane's numbers

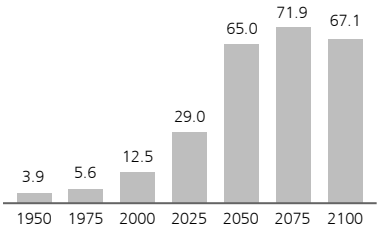
Savings rate
91%

Replacement rate
32%

Retirement age
60

Life expectancy at 50
86

Old-age dependency ratio*
(65+ per 100 15-65):



Official retirement age not realistic for many

Taiwan's occupational pension for private-sector workers is called the Labor Pension. It is a funded defined contribution plan, established in 2005, in which employers have to contribute at least 6% (up to TWD 150,000 per year) of an employee's gross salary, while employees can voluntarily contribute up to 6%. The pension fund capital earns a guaranteed investment return at least equal to the two-year deposit rate. At retirement, insured persons with more than 15 years of service can choose between an annuity or a lump sum. Workers with less contribution years can only receive a lump sum. Workers are eligible to retire at 60, but many decide to work longer. Before 2005, workers would accumulate a maximum of 45 points, two for the first 15 years of work and one for each subsequent year. Each point was roughly worth one month's wage. The benefit was small and distributed as a lump sum.

In addition to the Labor Pension, all private and public workers participate in the Old-Age Benefit pension system managed by the Taiwanese government. Contributions currently stand at 10.5% of monthly insured wages, financed by employees (20%), employers (70%), and the government (10%). Total contributions will rise to 13% over the next few years. As for the Labor Pension, retirees can choose between a lump sum and a monthly pension if they have worked more than 15 years; otherwise they receive a lump sum. The monthly pension payment is adjusted for inflation and paid until death.

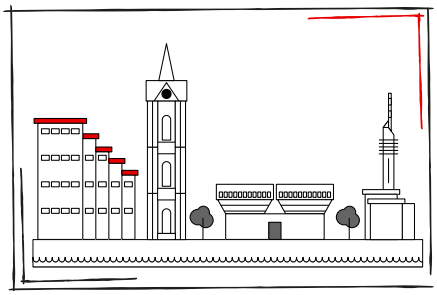
High savings rate makes up for low pension

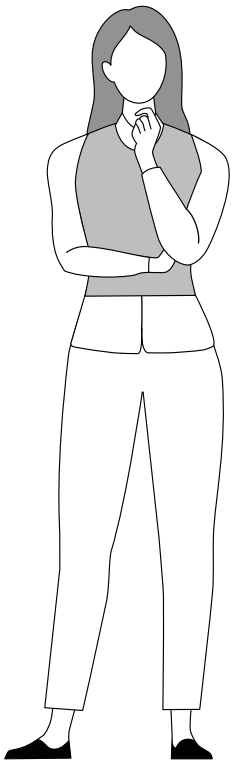
Jane, who lives in Taipei, has to save 91% of her net salary every month, assuming she retires at 60, to finance her basic urban lifestyle in retirement. If Jane were to stay in the workforce a couple more years, as many Taiwanese do, this figure would fall substantially. The Labor Pension, including the claims from the pre-2005 system, and Old-Age Benefit will provide her with a replacement rate of only 32%, due to a low contribution rate. Taiwanese Jane's life expectancy of 86 implies a need to finance 27 years of retirement with just 10 years left to work. Taiwan's household savings rate is generally high, and homeownership is common. Therefore, many Taiwanese may be better prepared for retirement than Jane is at age 50.

Rapid economic growth requires an adequate pension system

Taiwan's economic growth has been rapid in recent years. Likewise, its pension system has evolved over the last decades. By now the majority of Taiwanese are covered by a labor insurance scheme, but pension payout is low. Like so many of its Asian neighbors, Taiwan's demographics are changing fast. This is putting further pressure on the pension system. The ratio of active workers to retirees is falling. The Old-Age Benefit, which is financed via redistribution, is less sustainable than the Labor Pension.

Israel
Tel Aviv





Jane's numbers

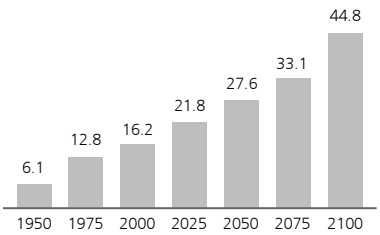
Savings rate
41%

Replacement rate
66%

Retirement age
62

Life expectancy at 50
85

Old-age dependency ratio*
(65+ per 100 15-65):



Defined contribution along state support

Israel's pension system is organized around two mandatory pillars: a public old age insurance scheme and occupational pension funds. Israeli residents above the age of 18 must pay into the national insurance system (Bituach Leumi), a pay-as-you-go scheme. Contributions amount to 14.6% of employee wages, around half of which are paid by the employer. Contributions are reduced for low earners and capped for higher earners.

The minimum retirement age is currently 67 for men and 62 for women. Upon retirement, all insured workers are entitled to a flat payout indexed to inflation. The payout is income-tested until the age of 70. Early retirement is not allowed, but late retirement is possible until 70, and rewarded with a 5% increase for every year. Workers who have contributed for a long period receive a top-up of up to 50%. Pension and labor income can be combined up to the age of 70.

On top of the Bituach Leumi, salaried and self-employed workers have been required to contribute to defined contribution plans since 2008. Total contributions currently stand at a minimum of 18.5% of wages, two-thirds of which are paid by employers. Depending on the company, employees can contribute more, with a cap on the income tax advantage related to these contributions. Upon retirement, individuals receive a lifetime annuity. Part of the accumulated capital can be paid as a lump sum provided the annuity amount exceeds half of the national average wage.

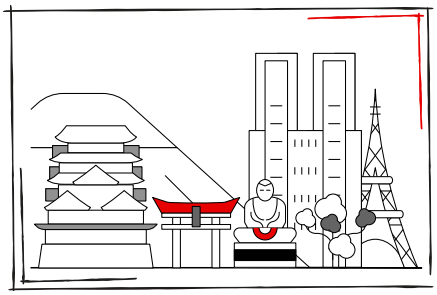
Too late to keep up

We assume Jane did not contribute to occupational pension funds before they became mandatory. This impacts the size of her pension. When retiring at age 62 and opting for a lifetime annuity, her pension payments will be 66% of her final net salary. Maintaining her current lifestyle requires she saves 41% of her current net salary. That savings effort is more than Jane can afford, but younger people will likely have better retirement prospects as they will have contributed more and from an earlier age.

More reforms needed

The Israeli pension system has undergone many rounds of reform in the last 25 years, which should bear fruit in the future. The change in Israel's old-age dependency is forecast to be less severe than OECD peers. However, increasing life expectancy and decreasing birth rates mean further adjustments to minimum retirement ages will be needed. Current discussions revolve around gradually raising the retirement age for men and women to 70 and 65 respectively.

Japan
Tokyo



Jane's numbers

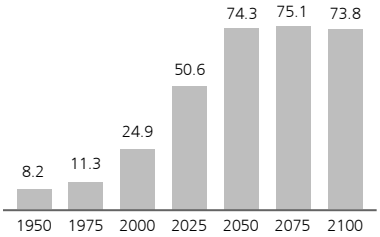
Savings rate
102%

Replacement rate
40%

Retirement age
65

Life expectancy at 50
91

Old-age dependency ratio*
(65+ per 100 15-65):



Largest pension fund in the world

Japan has a two-tier pension system. Both schemes are unfunded pay-as-you-go systems where workers fund their retired counterparts. The first is called the National Pension, administered by the Japan Pension Service. This pays a flat rate calculated as a share of the national average income. It is distributed to all who qualify with 10 years of coverage at the age of 65. The second, called the Employee Pension, is related to earnings and calculated based on working years and average lifetime salary. Both schemes pay annuities that are continuously adjusted. Japanese pension capital is invested in the largest pension fund in the world, the Government Pension Investment Fund, with approximately USD 1.6tr of assets as of end-2020. While it was set up by the government, it is administered independently.

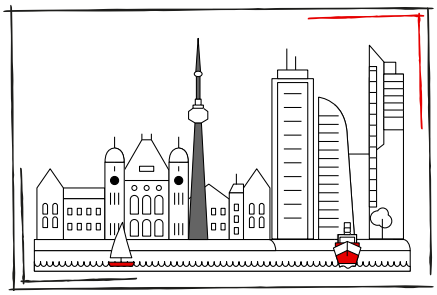
Retirement age not realistic

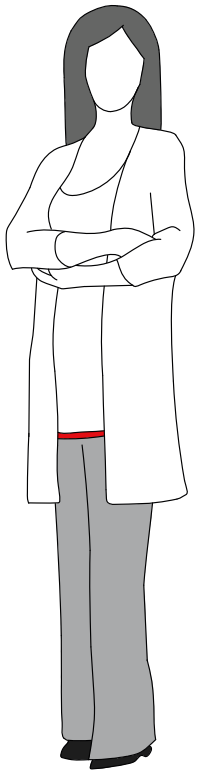
In Tokyo, Jane would have to put aside a striking 102% of her monthly net salary, in addition to the mandatory pension system contributions, to maintain her lifestyle when retired. Her pension is only 40% of her final employment income. Japan has one of the highest life expectancies in the world and relatively high living standards. While the statutory retirement age is 60, pension benefits are only paid out at 65, and many Japanese choose to work even longer. Jane can expect to live until age 91. We assume she retires at 65 and will need to finance 27 years of retirement. Clearly, this savings gap falls if we consider the voluntary savings options, which are widely used. The average Japanese has a relatively high savings rate. This case shows that making use of private savings is vital to financing one's lifestyle in retirement.

Change is only slow to come

Japan's working-age population is shrinking, while the number of retirees is rising, resulting in a higher bill for pension benefit payments. The country's old age dependency ratio is already around one retiree per two workers. Japan also has a high level of government debt and its spending on pensions as a share of GDP is already high. This suggests a rethink is required to deploy capital into more productive uses. The government has undertaken steps to reform the system in recent years. The pension calculation mechanism has been adjusted to account for an aging population with the so-called macroeconomic slide, which indexes pension payouts to prices and wages, should they rise or fall. However, starting in 2021, pension payouts will no longer be indexed to inflation, but solely to wage growth. Additionally, the voluntary retirement age will be raised to 70, allowing seniors to stay in the workforce beyond the legal retirement age.

Canada
Toronto





Jane's numbers

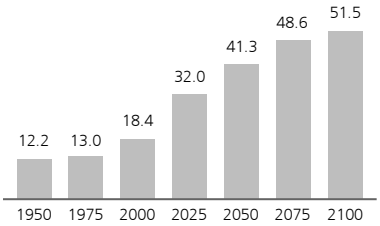
Savings rate
50%

Replacement rate
41%

Retirement age
65

Life expectancy at 50
88

Old-age dependency ratio*
(65+ per 100 15-65):



World-famous pension fund

The Canadian Pension Plan (CPP) is the main pension pillar for all Canadian provinces except Québec. It is a federally administered defined benefit scheme. Its investments are managed by a professional body and it enjoys world recognition for its performance over the past few years. As of 2021, employer and employee each contribute 5.45%, with a cap on insured wages. The total contribution rate will rise over the next few years with the aim to provide a replacement rate of about 30% of final salary at a retirement age of 65. The pension amount depends on the number of months worked and the relevant pensionable earnings. Pensionable earnings are determined according to the ratio between a worker's actual income and a maximum amount set by the government each year.

In addition to the CPP, the Canadian government offers the Old Age Security (OAS) benefit to all qualifying residents. Since the income threshold is high, the majority of Canadian retirees receive it. A second means-tested social security benefit is called the Guaranteed Income Supplement (GIS). It is intended to prevent poverty in old age and provides payments depending on income and assets. Both OAS and GIS are funded by government revenues.

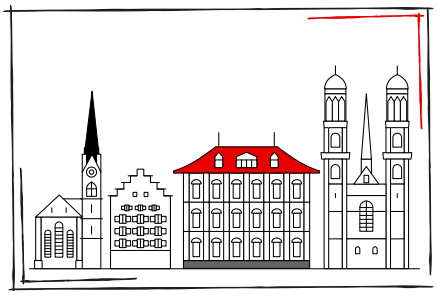
Basic pension supplemented by social security

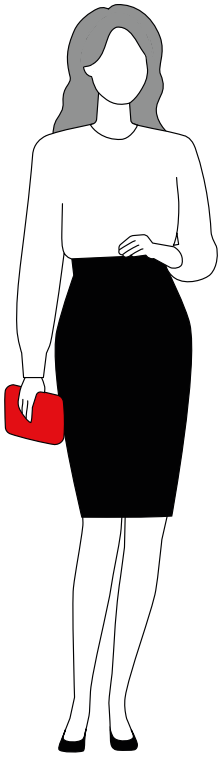
Toronto-based Jane would have to put aside 50% of her monthly income to finance her basic urban lifestyle in retirement. Since her pension income in Toronto would likely be relatively low, she would receive the full OAS pension, but no GIS support. Along with the CPP she receives, she would enjoy a total net replacement rate of around 41%. Jane can expect to live to 88 and has to cover 24 years of retirement. It is especially important for her to consider additional voluntary retirement savings options, such as employer-sponsored plans or private investments.

Private savings crucial to finance retirement

There are still more than three workers for every retiree in Canada, which gives the state-financed supplement schemes some breathing room for now. The CPP scheme is sustainable despite being a defined benefit fund, since payouts are relatively low and it is managed with an eye on the long term. However, with Canadian life expectancy rising, higher contributions and subsequently higher pensions may benefit pensioners' living standards. Private savings are essential to financing an adequate living standard in old age.

Switzerland
Zurich





Jane's numbers

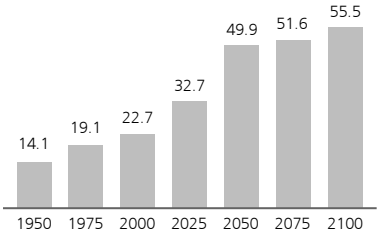
Savings rate
14%

Replacement rate
63%

Retirement age
65

Life expectancy at 50
90

Old-age dependency ratio*
(65+ per 100 15-65):



Pension system strength founded on two mandatory pillars

Switzerland is one of the few countries with two mandatory pension pillars that are both financed by employer and employee. Pillar one is the government-administered old-age and survivor's insurance scheme (AHV). It is a pay-as-you-go scheme that ensures a minimum pension above poverty level. Pillar two is the private occupations pension fund (BV), which follows a funded principle and can be taken as pension, lump sum or a mix. Both pillars are financed equally by employer and employee contributions, in total 8.7% for pillar one and between 7-18% for pillar two. Together, the two aim to achieve a total pension income of 50–70% of pre-retirement income. Besides these two pillars, Switzerland has a third pillar, which is not mandatory and not considered in our calculations. It includes private tax-incentivized savings schemes and life insurance plans. The statutory retirement age is currently 64 for women and 65 for men, with retirement five years earlier or later possible.

Moderate required savings despite high living standards

In Switzerland, Jane has to save an affordable 14% of net salary to fully finance her urban standard of living in retirement. This low required savings rate is due to two factors. First, both mandatory pillars receive dedicated contributions from worker and company. Contributions to the second pillar in particular are high compared to other pension systems. Second, the redistribution system is more generous than elsewhere. The two pillars provide Jane with a replacement rate of about 63% of her prior final income. However, with a life expectancy of 90 and given that Switzerland has one of the lowest retirement ages for women in Europe, she needs to finance 26 years of retirement.

Reforms urgently needed

Switzerland's population is aging rapidly. The ratio of active to retired was as high as five to one in 1970, but is just above three to one today. It is expected to fall to just two to one by 2050. There have been numerous reform proposals in the past few years, but only minor measures have been enacted, which have served to keep the system financially afloat for a few more years. Two bigger reform packages, one for each of the first two pillars, are being debated in parliament as of this writing. Some of the components are vital, like raising the retirement age for women to 65 and increasing incentives for longer employment in the AHV. On the occupational pension fund side, the payout formula should be reviewed, an imperative to make the system more sustainable. However, there are also attempts to introduce redistribution in the second pillar which would damage the foundation and strength of the three individual pillars of the Swiss pension system.

Appendix

Methodology

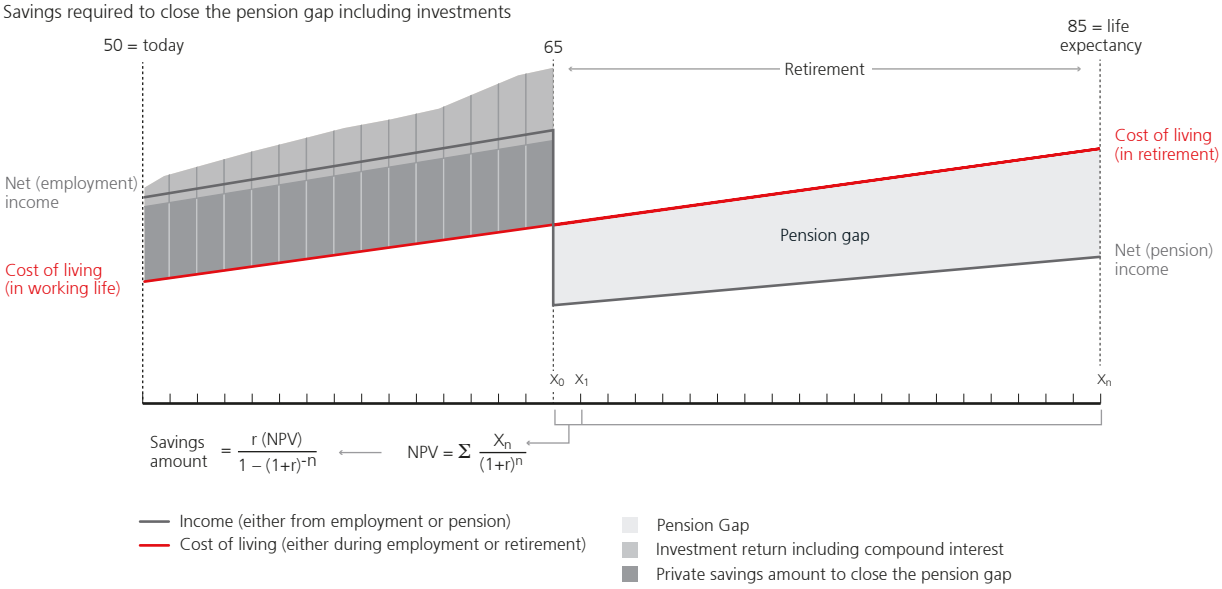
The key statistic of the UBS International Pension Gap Index is the monthly required savings rate Jane needs from age 50 until retirement to support a basic urban lifestyle under each jurisdiction's conditions and is calculated as follows:

1. Estimate average monthly cost of living for every city by creating a retirement cost basket consisting of housing, staples and personal care items, transportation, recreation, medical care, and gifts and donations. This basket is largely based on Numbeo numbers, as well as on the personal experience of UBS staff.
2. Analyze the retirement and social security system to determine the expected pension income.
3. Inflate prices to reflect nominal costs and income at each point in time.
4. Adjust income for tax obligations and other regular charges and fees such as health insurance.
5. Apply an uncertainty discount* to adjust expected net income.
6. Take the difference between total costs and total net income to calculate surplus or deficit for each year of retirement.
7. Apply a net present-value (NPV) calculation, assuming an investment return from a yield-oriented investment strategy, to arrive at the total pension gap* when retirement starts.
8. Perform a second present-value calculation with the result from step seven over the remaining working period to estimate the absolute amount of money needed to be saved, assuming a slightly higher investment return from a balanced mix of equities and bonds.
9. Divide the result from step eight by the current net income to receive the required savings rate. All calculations are performed in the local currency.

Figure 5

UBS International Pension Gap Index Methodology explained

Savings required to close the pension gap including investments



Source: UBS, 2017

Assumptions

All of Jane's jurisdiction-specific characteristics, like retirement age and life expectancy, stem from the most recently available specific data. The jurisdiction's median female gross full-time equivalent income is mostly available on local statistics office databases. Where it is not, which is mainly the case in developing economies, average wage is used with some adjustments. It is important to remember that we use the female median wage, which is often lower than the male equivalent, and thus the pension is lower. For most jurisdictions we have made assumptions about wage development. We have used historically available data, as well as UBS expectations of future productivity growth and inflation rates. Tax rates and social security contributions come from government sources. The required savings amounts are based on the assumption that the savings and the pension capital is invested. During working life we assume an investment strategy in a balanced mix of equities and fixed income. In retirement we calculate using investment returns based on a less risky, mainly fixed income strategy. All investment returns are based on the UBS Capital Market Assumptions. Since pension systems across the world face challenges and are in a constant state of debate and reform, we add an uncertainty discount to each individual analysis (Fig. 6).

Figure 6

Uncertainty discount factor

Australia	7%
Brasil	15%
Canada	5%
Chile	5%
Denmark	2%
France	15%
Germany	15%
Hong Kong	5%
India	15%
Israel	5%
Italy	15%
Japan	20%
Netherlands	2%
Nigeria	5%
Russia	20%
Saudi Arabia	15%
Singapore	10%
South Africa	10%
Sweden	3%
Switzerland	10%
Taiwan	10%
UAE	15%
UK	5%
USA	10%

Source: UBS

Glossary

Defined benefit (DB) plan: A type of retirement plan in which the employer, employee or both make contributions to a registered retirement account on a regular basis. The employer/sponsor promises a specified pension payment, lump sum or combination thereof at retirement. This benefit is usually predetermined by a formula based on the employee's earnings history, tenure of service and age rather than depending directly on individual wage contributions and investment returns. The financial risk lies primarily with the employer/sponsor of the scheme.

Defined contribution (DC) plan: A type of retirement plan in which the employer, employee or both make contributions to a registered retirement account on a regular basis. Starting at retirement, regular or lump sum pension payments are then made from the cumulated savings and the returns on them. As these payments depend on the investment performance of the funds in the account, a DC fund provides much less income security for the employee, and more limited obligation for the employer, than a defined benefit pension plan (i.e., the employee bears the investment and longevity risk).

Home bias: Tendency of investors to invest in financial instruments of their home country.

Intergenerational: Occurring between the generations. In the context of pensions, often relates to issues such as equality, financial redistribution, security, etc.

Life expectancy: The statistical measure of the average lifetime of a specified set of people grouped by age, usually measured as life expectancy at birth. For this report we take life expectancy at age 50 from specific mortality tables.

Longevity risk: The risk of not having sufficient financial resources to meet long-term expenses when living longer than expected.

Lump-sum payment: A one-time payment of total or partial retirement benefits.

Mandatory pension system: A jurisdiction's prevailing pension scheme that citizens and/or residents are legally obliged to participate in and from which they can expect a pension payment in the future.

Means test: The analysis of a person's financial resources (e.g. income, assets) that conditions the receipt of subsidies.

Old-age dependency ratio: The ratio of people in retirement age per 100 people of working age.

Pay-as-you-go pension system: A mostly unfunded defined benefit scheme where no assets are set aside and current pension benefits are funded by current worker's wage contributions and/or taxes.

Pension annuity: A stream of payments over a defined period or until death of the recipient.

Pension gap: The difference between pension income and cost of living in retirement, usually negative.

Replacement rate: The ratio of first net-retirement income to last net-working income.

Shariah-compliant: In the context of pension fund investments, refers to financial instruments that comply with principles of Islamic law.

Uncertainty discount: Jane's estimated pension payout is adjusted with an "uncertainty discount." It accounts for the fact that her pension payout, starting in about 10-20 years and continuing for two decades or more, is not certain today. The uncertainty factor takes into account jurisdiction-specific demographic developments, public finance to support the current pension system and the structure of the pension system itself, as well as potential reform measures. We derive a percentage discount factor for each jurisdiction we have examined.

Sources

Australia: pension system – superannuation www.superguide.com.au, age pension Australian Government, Services Australia; life expectancy – Australian Bureau of Statistics; wage – Australian Bureau of Statistics

Brazil: life expectancy and wage – Brazilian Institute of Geography and Statistics; retirement system – Brazilian government; taxes – PricewaterHouseCoopers

Canada: OAS – Government of Canada; pension system – retirehappy.ca; retirement age – Government of Canada; wage and life expectancy – Statistics Canada

Chile: life expectancy – World Health Organization; wage and life tables – Instituto Nacional de Estadísticas; pension system – Superintendencia de Pensiones, International Center for Pension Management; taxes – PricewaterHouseCoopers; inflation – Banco Central de Chile

Denmark: pension system – European Commission; pension system – ATP www.atp.dk, state pension www.pension.dk; life expectancy – Statistics Denmark; wages – Statistics Denmark

France: life expectancy and wage – Institut national de la statistique et des études économiques; pension system – www.cleiss.fr/, www.agirc-arrco.fr/, www.legislation.cnav.fr; inflation – European Central Bank; taxes – www.service-public.fr/

Germany: wage – Statistisches Bundesamt; life expectancy – Statistisches Bundesamt; pension system – deutsche Rentenversicherung www.deutsche-rentenversicherung.de

Hong Kong: pension system – www.mpfa.org.hk, www.swd.gov.hk/oala; life expectancy – Census and Statistics Department; wages – Census and Statistics Department

India: wage – Labour Bureau Government of India; pension system – OECD; life expectancy – World Health Organization

Israel: inflation and wages – Bank of Israel; life table – Society of Actuaries; taxes – KPMG, Ministry of Finance; pension system – National Insurance Institute of Israel, Shoresh Institute

Italy: pension system – www.epheso.com; life expectancy – Istituto Nazionlae di Statistica; wages – Istituto Nazionlae di Statistica

Japan: life expectancy – National Institute of Population and Social Security Research; pension system – Japan Pension Service; wages – Ministry of Health, Labor and Welfare; social insurance – www.n-jim.jp

Netherlands: pension system – Sociale Verzekeringsbank, Netherlands Enterprise Agency, International Center for Pension Management; life expectancy and wage – Statistics Netherlands; inflation – European Central Bank; taxes – PricewaterHouseCoopers

Nigeria: pension system – National Pension Commission; inflation – Central Bank of Nigeria; taxes – PricewaterHouseCoopers

Russia: pension system – Pension Fund of the Russian Federation; inflation – Central Bank of Russia; wage – Federal State Statistics Service; life expectancy – World Health Organization

Saudi Arabia: pension system – General Organization for Social Insurance; life expectancy – World Health Organization

Singapore: life expectancy – Department of Statistics Singapore; wage – Department of Statistics Singapore; pension system – Central Provident Funds Board; inflation and productivity – Monetary Authority Singapore

South Africa: pension system and taxes – South African Government; life expectancy – World Health Organization; inflation – South African Reserve Bank

Sweden: wage, life expectancy and inflation – Statistics Sweden, Sveriges Riksbank; pension system – Swedish Pensions Agency; taxes – PricewaterHouseCoopers

Switzerland: pension system – Bundesamt für Sozialversicherungen; life expectancy – Bundesamt für Statistik; wage – Bundesamt für Statistik; inflation – Swiss National Bank; productivity – Swiss National Bank

Taiwan: pension system – Bureau of Labor Insurance; life expectancy – National Statistics; wages – National Statistics

United Arab Emirates: pension fund – United Arab Emirates' Government; wages – Dubai Statistics Center; life expectancy – World Health Organization; inflation – International Monetary Fund

United Kingdom: pension system – gov.uk; retirement age – gov.uk; life expectancy – Office for National Statistics; wages – Office for National Statistics

United States: social security system – Social Security Administration; retirement age – usa.gov; inflation – Federal Reserve Bank of America; productivity – Federal Reserve Bank of America; life expectancy – Centers for Disease Control and Prevention

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