Allianz Pension Report 2023

Reforming against the demographic clock

DRAFT

Dr. Michaela Grimm

Dr. Arne Holzhausen

Executive Summary

After the Covid-19 pandemic, pension reform is back in the spotlight. But although the challenge is a global one, the focus of reform differs: policymakers in industrialized countries are more concerned about sustainability, while those in many emerging markets are faced with the all-important task of broadening the coverage of the pension system in the first place.

We designed the Allianz Pension Index (API) to comprehensively assess the sustainability and adequacy of pension systems. This index is based on three sub-indices and takes into account 40 parameters that are rated on a scale of 1 to 7, with 1 being the best grade. The current edition covers 75 countries and is based on the latest available data as of March 2023.

The first sub-index of the API assesses the pace of demographic change, public indebtedness and general living standards: it therefore reflects the structural preconditions that any pension reform has to take into account. This starting point is most favorable in Israel, the Netherlands and Norway, albeit with an average score of around 3, indicating less-than-stellar preconditions. In Greece, China, Portugal and Italy, on the other hand, the results indicate a need for further reforms amid rapidly aging societies and limited financial leeway to subsidize the social system.

The second sub-index is the sustainability index, which assesses how well a pension is prepared to cushion the impact of demographic change. The existence of supplementary capital-funded elements, incentives to postpone retirement, the introduction of demographic factors in the adjustment of retirement benefits and the retirement age play a crucial role in this respect. Best performers in this sub-index are Egypt and Indonesia, mainly thanks to the increases in their retirement ages and the introduction of capital-funded elements into their pension systems. At the bottom of the scale are Sri Lanka and the United Arab Emirates, given their low retirement ages and a lack of incentives to postpone retirement.

The third sub-index of the API rates the adequacy of pension systems, questioning whether they provide an adequate living standards in old age. This includes benefit levels, coverage of the pension system, access to financial services and the integration of older workers in the labor market. Denmark and Norway, the countries leading the adequacy ranking, have strong capital-funded second and third pillars. At the bottom of the ranking are emerging markets such as Uzbekistan and Laos, where the coverage of the workforce population is still comparatively low and a great part of the population still has no access to financial services.

Combining all three sub-indices, the overall results range from 2.2 in Denmark to 4.7 in Sri Lanka. The unweighted average score for all 75 countries is 3.6. Despite high-profile reform measures, not least in France, this overall score has only slightly improved in recent years: Pension reforms remain a tight race against demographic change. Looking at the sub-indices, adequacy (3.4) scores best, followed by sustainability (3.7) and basic conditions (4.0). These findings suggest most pension systems lay greater emphasis on the well-being of the current generation of pensioners than on that of future generations of tax and contribution payers.

What would an "ideal" pension system look like? Our analysis shows that a more sustainable and adequate pension system is within reach – if a strong capital-funded pillar is in place. However, in many countries, pension reforms have to start with labor-market reforms: Without increasing the share of people in the formal labor market in emerging economies and fostering the integration of older workers in the labor market of industrialized economies, even well-intended pension reforms will yield only meagre results.

	API 2023	Basic Conditions	Sustainability	Adequacy
Denmark	2.2	3.0	2.5	1.4
Netherlands	2.6	2.9	3.4	1.7
Sweden	2.6	3.1	2.9	2.1
New Zealand	2.8	3.1	3.4	2.1
United States	2.9	3.5	2.8	2.6
Taiwan	2.9	4.0	2.8	2.4
Israel	2.9	2.8	3.5	2.5
Belgium	3.0	3.9	3.0	2.4
Australia	3.0	3.1	3.0	3.0
Korea	3.1	4.0	2.8	3.0
Luxembourg	3.1	3.2	4.1	2.1
Switzerland	3.1	3.2	3.9	2.4
United Kingdom	3.1	3.5	3.7	2.4
Portugal	3.2	4.8	2.7	2.8
Germany	3.2	3.9	3.3	2.8
Japan	3.2	4.0	3.8	2.3
China	3.2	4.8	2.9	2.8
Italy	3.3	4.7	3.1	2.7
Norway	3.3	3.0	4.0	2.7
Canada	3.3	3.1	3.9	2.8
Finland	3.3	3.8	3.5	2.9
Estonia	3.4	3.7	3.1	3.4
Ireland	3.4	3.2	3.8	3.0
France	3.4	3.9	3.7	2.8
Bulgaria	3.4	4.7	2.9	3.3
Austria	3.4	4.2	3.9	2.6
Latvia	3.4	4.0	3.7	2.8
Malta	3.4	3.8	4.6	2.1
Greece	3.4	5.0	3.0	3.0
Lithuania	3.4	4.2	3.2	3.3
Indonesia	3.4	4.0	2.1	4.5
Hong Kong	3.4	3.2	3.9	3.1
Mexico	3.5	4.3	2.8	3.8
Kazakhstan	3.5	3.5	3.6	3.3
Spain	3.5	4.6	3.7	2.7
Egypt	3.5	4.4	2.3	4.2
Russia	3.6	4.2	3.6	3.2
Philippines	3.6	4.1	3.1	3.8
Peru	3.6	3.5	3.0	4.4
Slovakia	3.7	4.4	4.0	2.9
Singapore	3.7	3.6	4.1	3.2
Croatia	3.7	4.5	3.5	3.5
Czech Republic	3.7	3.7	3.8	3.6
Mauritius	3.7	4.8	3.6	3.3
Slovenia	3.7	4.4	4.3	2.8
Hungary	3.7	4.2	3.8	3.4
Chile	3.8	4.0	3.7	3.7
Colombia	3.8	4.1	3.6	3.6
Thailand	3.8	4.4	3.5	3.9
Cyprus	3.9	4.1	4.3	3.3
Uruguay	3.9	3.8	4.2	3.6
Poland	4.0	4.5	3.7	3.9
Pakistan	4.0	4.0	2.9	5.0
Qatar	4.0	3.1	4.2	4.2
Vietnam	4.0	4.4	3.6	4.3
Argentina	4.1	3.9	4.4	3.8
Bahrain	4.1	4.0	4.6	3.8
South Africa	4.2	3.9	3.9	4.5
Turkey	4.2	4.1	4.7	3.7
Kenya	4.2	4.2	3.5	5.0
Cambodia	4.2	4.2	3.5	5.0
Kuwait	4.2	4.0	4.6	4.0
Nigeria	4.3	3.7	4.3	4.4
Malaysia	4.3	4.3	4.6	3.9
Brazil	4.3	4.7	4.7	3.6
Romania	4.3	4.4	4.5	4.0
Tunisia	4.3	4.5	4.5	4.0
United Arab Emirates	4.4	3.2	5.1	4.3
India	4.4	4.3	4.9	4.0
Laos	4.4	4.4	3.6	5.3
Uzbekistan	4.5	4.4	3.6	5.3
Saudi Arabia	4.5	3.9	4.9	4.4
Morocco	4.6	4.4	4.7	4.6
Lebanon	4.7	4.7	4.3	5.1
Sri Lanka	4.7	4.4	5.3	4.3

Source: Allianz Research.

1.6bn pensioners and counting

The Covid-19 pandemic erased life-expectancy gains of almost a decade, pushing population aging and pension reform into the background. In fact, to alleviate the financial burden on private households and companies, governments not only put together aid packages worth billions of euros that drove up national debt, but also postponed already agreed upon reform measures, lowered contribution rates and allowed early withdrawals from retirement plans. As a result, the build-up of future pension entitlements and retirement savings slowed, leaving many households with a pension gap. In countries with a high share of informal labor and low coverage of social insurance systems, many low-income households depleted their retirement savings entirely since these were often the only savings they had.

The economic recovery after the pandemic was only short-lived, with the global economy plunged into an unprecedented high-inflation environment, fueled by soaring energy and food prices after the outbreak of war in Ukraine. To fight galloping inflation, central banks gave up on expansive monetary policies and increased interest rates. While this will help to close the retirement savings gaps left by the Covid-19 pandemic, it will also increase the pressure to improve the long-term financial sustainability of public pension systems. With borrowing no longer free, governments' financial leeway to subsidize ailing pension systems from heavily indebted state budgets will shrink further (see box).

Box: The return of positive interest rates – a blessing and a curse

For almost a decade, interest rates remained at record low or even at negative levels. However, unprecedented high inflation rates forced central banks to change tack. In the Eurozone, interest rates turned positive for the first time in eight years, at least in nominal terms. For pension reforms, this is both a blessing and a curse.

For savers, positive interest rates help build up adequate retirement assets via the compound interest effect. For governments, however, they increase the need to reform pension systems to make them sustainable. Since they can no longer take on additional debt at virtually no cost, governments have less financial leeway to subsidize state pension systems in deficit. In the Eurozone alone, due to the rise in interest rates, net interest payments are likely to have increased by almost +20% to EUR207bn in 2022[1].

Higher interest rates in many emerging economies are likely to increase income inequality in old age in the long term. During the Covid-19 pandemic, lower-income households in particular were forced to tap into their retirement savings to compensate for income shortfalls due to a lack of social security. Early withdrawals left more than 4mn people in Chile and approximately 2mn people in Peru without any retirement savings. In Malaysia, early withdrawals summed up to EUR21bn at the end of 2021 and left 6.1mn EPF (Employees Provident Fund) members with savings of less than EUR2,100 in their account; 3.6mn of them had less than EUR210 in their account. The savings of the bottom 40% of EPF members dropped by -38% and those of the middle 40% declined by -18%, even as those of the top 20% of members aged below 55 increased.[2] While middle- and high-income households can benefit from the compound interest effect, low-income households could struggle to build up any retirement savings at all to close the pension gaps.

Higher interest rates could also indirectly increase unemployment: Less profitable companies that previously benefited from low interest rates will be forced out of the market due to rising debt burdens.

While Covid-19 dealt a temporary setback in the development of life expectancy, it will have a long-term impact on private households, state budgets and pension systems. Moreover, record-low births in China, Italy and Brazil point to the possibility that fertility rates could remain permanently lower than expected and thus accelerate the aging of populations even further.

In their latest World Population projections, UN demographers[3] expect the share of people aged 65 and older to rise from 10% today to 17% in 2050. In Asia and Latin America, this share is set to double from around 10% and 9%, respectively, to 19% until mid-century, while in North America as well as in Australia and New Zealand it is expected rise by around 6pps to 24%. Europe will remain the continent with the oldest population by far, with the share of people aged 65 and older set to increase from 20% to 29%. Africa stands apart from this overall trend: After remaining stable at around 3% for decades, the share of people aged 65 and older is expected to rise to a still modest 6% in 2050 (see Figure 1).

Figure 1: The global population is aging faster
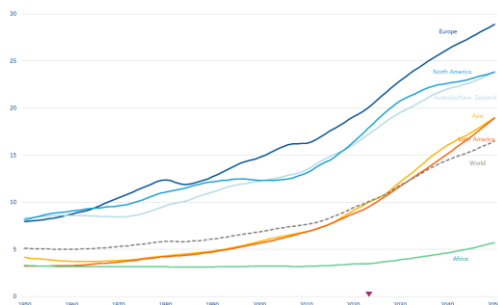
Source: UN Population Division (2022).

---

[1] See Holzhausen, Arne and Kathrin Stoffel (2023): Rates not roses, p. 7.
[2] See Grimm, Michaela and Arne Holzhausen (2023): Wealth without pensions, p. xxx
[3] Source for all demographic data used is United Nations, Department of Economic and Social Affairs, Population Division (2022). World Population Prospects 2022, Online Edition. If not indicated otherwise we refer to the medium variant. Latin America refers to Latin America and the Caribbean.

To put this development into perspective, it is intriguing to look at the absolute numbers: In 2050, there will be around 1.6bn people aged 65 and older worldwide, which is more than the total population of Africa today[4]. About 1bn of them will live in Asia, most of them in China, where this age group is expected to grow from 20 3mn today to 395mn, and India, where their number is set to more than double from 101mn to 250mn. Taken together, these two countries will have far more people over 65 than the other regions of the world combined. The number of people aged 65 and older will reach 200mn in Europe, 142mn each in Africa and Latin America, 100mn in North America and 9mn in Australia and New Zealand.

These numbers underline the importance of preparing pension systems for demographic change to guarantee their long-term financial sustainability and avoid overburdening future younger generations. At the same time, pension systems also have to remain adequate to guarantee a growing share of elderly people a decent living standard in old age. Pay-as-you-go financed pension systems, in which the contributions of the workforce population are used to finance the pensions of current retirees, are doomed to fail to meet these requirements. The challenge will be to find the right balance between guaranteeing sustainability and adequacy at the same time. In many industrialized countries, this implies cuts in benefit levels. In many rapidly aging emerging markets, the coverage of public pension systems and benefit levels are still rather low. However, in both cases, to secure a decent living standard in old-age, complementary capital-funded old-age provision is the only solution.

Since we published our last report, governments have taken measures to improve the long-term sustainability and adequacy of their pension systems. Examples include the pushed-through increase of the retirement age in France, Cambodia's decision to make pension contributions mandatory for all private sector workers, Mexico's changes in the contribution period necessary for receiving a full pension or early retirement benefits or China's introduction of incentives for supplementary capital-funded private provision[5]. However, the elephant in the room remains the retirement age, which in many countries does not reflect the development of further life expectancy in the last decades. Attempts to increase it often spark fierce protests, as seen most recently in France, where the government decided to increase the retirement age by two years to 64, or Uruguay, where the government plans to raise the pension age from 60 to 65 years. In fact, only eight of the 75 countries that we cover in the Allianz Pension Index have adjusted the retirement age to the developments in life expectancy[6].

Box: The Allianz Pension Index (API)

To assess the progress in preparing pension systems for demographic change, we use our Allianz Pension Index (API), which consists of three sub-indices based on six categories and 15 sub-categories. The first sub-index assesses the basic conditions of the analyzed countries via the pace of demographic change, the indebtedness of public households and general living standards. The second sub-index assesses the sustainability of pension systems by measuring how well they are prepared to cushion the impact of demographic change. The existence of supplementary capital-funded elements, incentives to postpone retirement, the introduction of demographic factors in the adjustment of retirement benefits and the retirement age play a crucial role in this respect. The third sub-index of the API rates the adequacy of pension systems, questioning whether they provide an adequate standard of living in old age, which we measure not only in benefit levels. We also take into account coverage, access to financial services and the integration of older workers in the labor market, which gains in importance with increasing retirement ages. In total, we take into account 40 parameters. Each parameter value is rated on a scale of 1 to 7, with 1 being the best grade. The bands defining each parameter's grade are chosen in a way that the grading results of all markets are normally distributed. This implies a relative

---

[4] Africa's total population in 2023 is around 1.5bn, see UN Population Division (2022).
[5] The OECD reported in its latest Pension Markets in Focus edition that the number of people covered by an investment plan and the assets funded pension plans has been increasing further in 2021. See OECD (2023), Pension Markets in Focus 2022, p. www.oecd.org/finance/pensionmarketsinfocus.htm.
[6] Not all countries pushed the retirement age up: In Portugal, the retirement age was lowered in 2023 to reflect the decline in life expectancy caused by the Covid-19 pandemic.

judgement. By adding up all weighted subtotals, the API assigns each market a grade between 1 and 7, with grade 1 indicating that the pension system is in good shape to weather future challenges while 7 indicates urgent reform pressure. This provides a comprehensive view of how each country's pension system is prepared for demographic change.

Despite these reform measures, compared to our previous edition[7], the overall result shows only a slight improvement, with the average grade moving up from 3.9 to 3.6. This is owed to the fact that in our first sub-index, which reflects countries' financial leeway and the demographic situation, as well as the overall living standards, the average scored remained at 4. This overshadowed the slight improvements in the overall sustainability and adequacy sub-indices, where the averages rose from 4.0 to 3.7 and from 3.7 to 3.4, respectively.

Denmark, Sweden and the Netherlands stand at the top of our index, with pension systems that have adjusted the retirement age to developments in life expectancy and have strong capital-funded occupational and private pension pillars. In contrast, Lebanon, Sri Lanka and the United Arab Emirates stand at the bottom of our ranking as they face the triple threat of a rapidly aging population, low retirement ages compared to the rest of the world and low coverage of pension systems. The latter is the result of the high share of informal labor, common to many emerging markets, which underlines that pension-system reforms need to be accompanied by corresponding labor-market reforms: formalizing the labor market is an indispensable precondition for increasing coverage.

In industrialized countries, the most important task is adapting labor markets to an aging workforce population including by fighting against age-old stereotypes about older workers and employees. Resistance against pension-system reforms and especially plans to increase the retirement age are often fueled by older workers' fears of being unemployed for longer before being able to receive retirement benefits, i.e. a hidden pension cut.

---

[7] However, the results are only comparable to a limited extent since we added new countries (Cambodia, Mauritius, Pakistan, Tunisia, Uruguay and Uzbekistan) and decided to include the sub-category Living Standards in the sub-index Basic Conditions. Furthermore, this is a relative judgement, with the bands reflecting the range between the best and the worst performer. In 2020, countries with a gross budget deficit of more than 110% of GDP were graded with 7 but in the API 2023 they would still be graded 6, for example. Against the background of the war in the Ukraine, we decided not to include the scores for Ukraine in the ranking.

API Pillar I: Basic conditions

Aging hasn't stopped

Covid-19 caused millions of premature deaths and wiped out nearly a decade of life-expectancy gains. But the latest data show that life expectancy will return to its previous trend[8], rising from a global average of 73.4 years in 2023 to 77.2 years in 2050.

In Africa, Latin America and Asia, the average life expectancy of a newborn might increase by around five years. Thus, by mid-century, it could already pass the 80-year threshold (80.6 years) in Latin America, and reach 79.5 years in Asia, i.e. the same level as in Europe today. For Africa, demographers expect an increase from 63 to 68 years, which would be just about what it was in North America in the 1950s. The development will probably be less dynamic in Europe and North America as well as in Australia and New Zealand, where the average life expectancy today is already markedly above global average. For Europe and North America, UN demographers expect an increase by around four years, which will make the average life expectancy at birth 84.0 years in 2050. In Australia and New Zealand, life expectancy is expected rise by 3.4 years to 87.0 years (see Figure 2).

Figure 2: Trend towards higher life expectancy continues after temporary setback caused by Covid-19
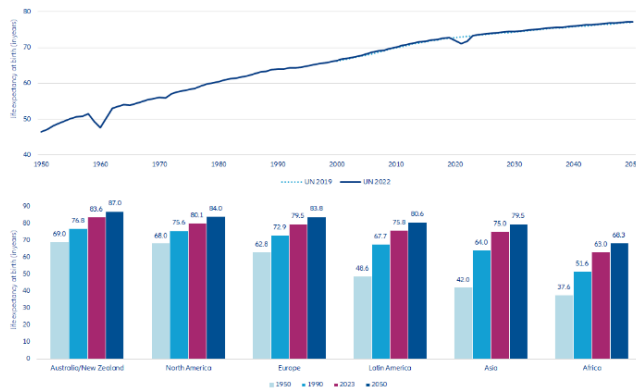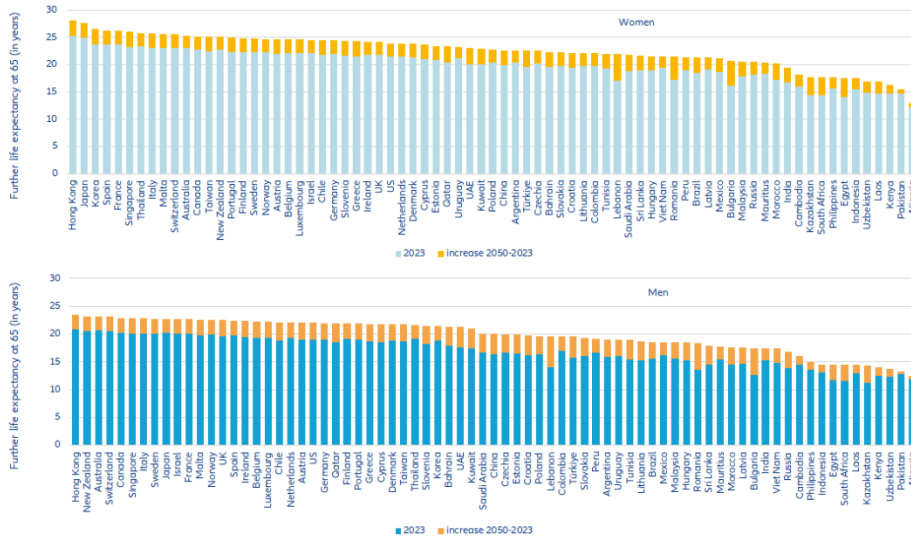

Source: UN Population Division.

In most parts of the world, besides Africa, this development will be mainly driven by increases in life expectancy at higher ages. The global average further life expectancy of a 65-year-old is expected to rise by around two years from 17.7 years today to 19.8 years in 2050. In Europe and North America, the increase could be slightly above the global average (+3 years), while in the other parts of the world the increase is expected to be around two years. This means that by mid-century, the average further life expectancy of a 65-year-old would be around 20 years in Asia and Latin America, 22.1 years in Europe, 23.1 years in Northern America and 24.2 years in Australia and New Zealand.

In the analyzed countries, the further life expectancy of a 65-year-old woman is expected to increase by 2.6 years and that of a man by 2.9 years until 2050. In half of the countries, the average further life expectancy of a 65-year-old man will then be over 20 years and that of a 65-year-old woman over 23 years. However, the range remains huge: Assuming a retirement age of 65, in 2050, a 65-year-old male in Hong Kong could expect to spend 23.5 years in retirement, while a 65-year-old woman would spend 28.1 years. In contrast, the average man and woman of the same age in Nigeria would spend only 12.4 and 12.9 years, respectively (see Figure 3).

---

[8] In fact, compared to the 2019 edition of its World Population prospects, the UN has adjusted its forecasts for Asia, Europe and Northern America slightly upward, from 78.2 years to 79.5 years, from 83.0 to 83.8 years and from 83.8 to 84.0 years, respectively. In contrast, the expectations for Africa were revised downward from 70.1 years to 68.3 years. See United Nations, Department of Economic and Social Affairs, Population Division (2019). World Population Prospects 2019, Online Edition and ibid (2022): World Population Prospects 2022, Online edition.

Figure 3: Further life expectancy to increase further

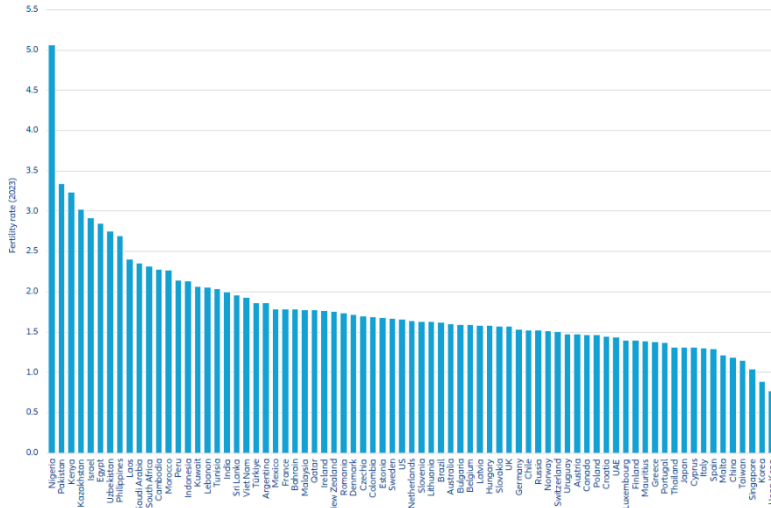Sources: UN Population Division (2022) and Allianz Research.

Birth rates also play a key role in aging societies. In all world regions besides Africa, these have fallen below the reproduction level of 2.1 that is necessary to keep a population stable. While data indicate that the development of life expectancy will probably return to the former trend, news about record-low births from China, Italy or Brazil, for example, raise concerns that fertility rates in many countries might not recover from the baby bust seen during the pandemic but rather remain at lower levels[9]. If birth rates remain at a lower level, the old-age dependency ratio[10] would be around 2pps higher in Australia and New Zealand as well as in Northern America, reaching 41% instead of 39% in 2050, while it would reach 53% instead of an average 50% in Europe. In some countries, the difference could be up to 5pps, like in Hong Kong where it would reach 84% instead of "merely" 79%, while in Italy, it would increase to 76% and not "just" 72%.

In its medium variant, which we used for our calculations, the UN projects that the global fertility rate will decline from 2.3 children per woman today to 2.1 in 2050, assuming that the fertility rate in Africa is going to decline further from 4.2 today to 2.9, while fertility rates in other regions remain more or less stable. That means, it would only decline slightly in Asia (from 1.9 to 1.8) and Latin America (from 1.8 to 1.7), while fertility rates would even slightly recover in North America, Australia and New Zealand, as well as in Europe, i.e. from 1.6 to 1.7 and from 1.5 to 1.6, respectively. In the countries that we cover in our analysis, the fertility rate ranges from 0.8 in Hong Kong to 5.1 in Nigeria. There are marked differences with respect to expected future developments: While UN demographers expect a further decline to 3.0 in Nigeria until 2050, which would be still markedly above the replacement rate, they expect it remain at least constant around 1.0 in Hong Kong (see Figure 4).

---

[9] See United Nations, Department of Economic and Social Affairs, Population Division (2022). World Population Prospects 2022, Online Edition, low variant.

[10] The number of people aged 65 and older per 100 people aged between 15 and 64.

Figure 4: Marked differences in fertility rates

Sources: UN Population Division (2022) and Allianz Research.

As a result, there are marked differences in aging dynamics since the development of old-age dependency ratios in the single countries reflects the development of the fertility ratios and life expectancy of the past decades. While in industrialized countries the absolute level of the old-age dependency ratios is a cause for concern, in many emerging markets, it is the aging dynamic that is more worrisome. This holds especially true for countries in the Middle East: For example, the old-age dependency ratio in Kuwait is expected to increase from 7.3% today to 66% in 2050. In Saudi Arabia, the most populous country of the region, it is set to rise from 4.3% to 34%. Like in our last report, Singapore, South Korea and Taiwan are also among the ten countries with the highest increases in old-age-dependency ratios, while China and Türkiye replaced Lebanon and Vietnam. Denmark and Sweden are the countries with the lowest expected aging dynamics: their old-age dependency ratios are expected to increase from around 33% today to about 40% in 2050.

In 2050, Hong Kong and South Korea will replace Japan as the economies with the highest old-age dependency ratio worldwide, followed by Italy and Spain, where old-age dependency ratios are also expected to increase to above 70%. Kuwait, Taiwan, Greece, Portugal and Singapore will complete the top 10, with old-age dependency ratios ranging between 61% and 66%. At the bottom end of this scale, Kenya, Nigeria and Pakistan are expected to have old-age dependency ratios below 10% (see Figure 5).

Figure 5: Marked differences with respect to aging
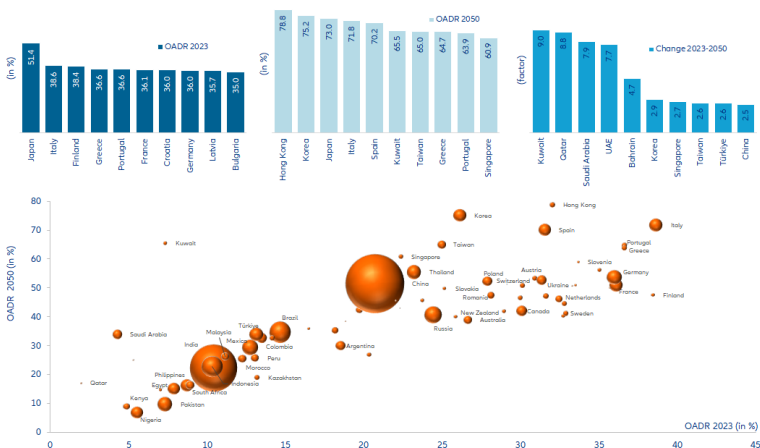
Sources: UN Population Division (2022) and Allianz Research.

Aging comes with a (rising) price tag

The differences in age structures, the coverage of pension systems and their financing are reflected in the share of public expenditure on old-age benefits as a percentage of GDP. According to ILO statistics, these expenditures range from less than 0.5% in Peru to 16% in Italy. Along with Japan and Russia, the share of expenditure on old-age benefits is also above 10% in EU member states. Italy, Greece and France are among those with the highest spending on old-age benefits and still mainly rely on pay-as-you-go financed pension systems. Italy and Greece are also among the countries with the highest benefit levels in the EU. At the bottom are countries with young populations, a high share of informal labor and low coverage of pension systems[11], such as Laos, Cambodia, India and Peru (see Figure 6).

Figure 6: Public expenditure on old age benefits
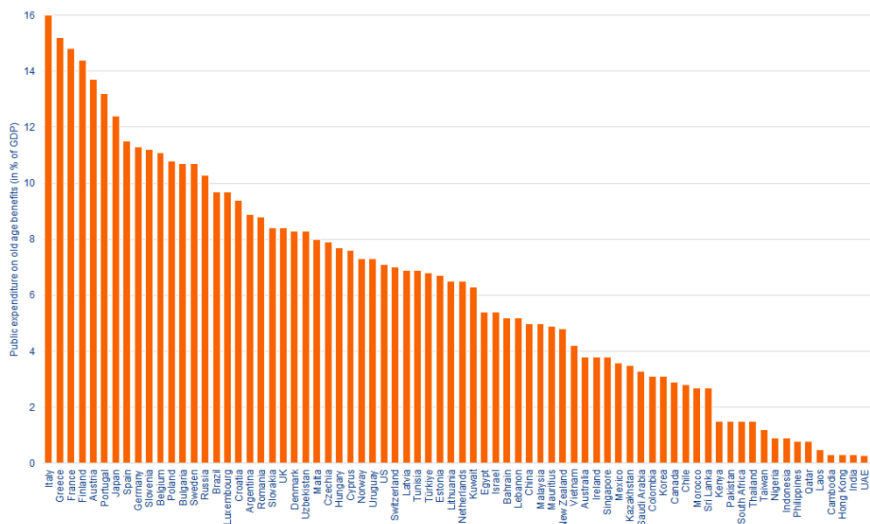
Source: ILO and Allianz Research.

How much a society is willing to spend on its older population t is a political question, reflecting public opinion. But given the already high shares of public expenditure on old-age benefits on the one hand, and the expected increase of old-age dependency ratios on the other, the question becomes less political and more technical: Can future generations even afford these payments? Especially since the Covid-19 pandemic has deteriorated state budgets in most countries, squeezing the financial leeway to subsidize further ailing pension systems in the future. In 60 of the countries[12] that we cover in our analysis, gross budget deficits have increased since the outbreak of the Covid-19 pandemic, with debt levels at the end of 2022 ranging from 3% of GDP in Kuwait to 261% of GDP in Japan. In the top 10 countries with the highest gross debt, we also find some that also lead the ranking for public spending on old-age benefits: Greece, Italy, Portugal and Spain, followed by France and Belgium. In all these countries, gross budget deficits exceed GDP: 105% in Belgium, 116% in Portugal, 144% in Italy and 177% in Greece. The return of positive interest rates is set to reduce governments' financial leeway even further since (re-)financing debt is no longer free. Already in 2022, net interest payments in the Eurozone alone are likely to have increased by almost +20% to EUR207bn[13] (see Figure 7).

---

[11] In Hong Kong, old-age pensions are mainly financed through the Mandatory Pension Fund.
[12] The exceptions are Argentina, Croatia, Cyprus, Denmark, Ireland, Greece, Kuwait, Netherlands, Poland, Portugal, Qatar, Slovenia, Sweden, Taiwan and Vietnam.
[13] See Holzhausen, Arne and Kathrin Stoffel (2023): Rates not roses, p. 7.
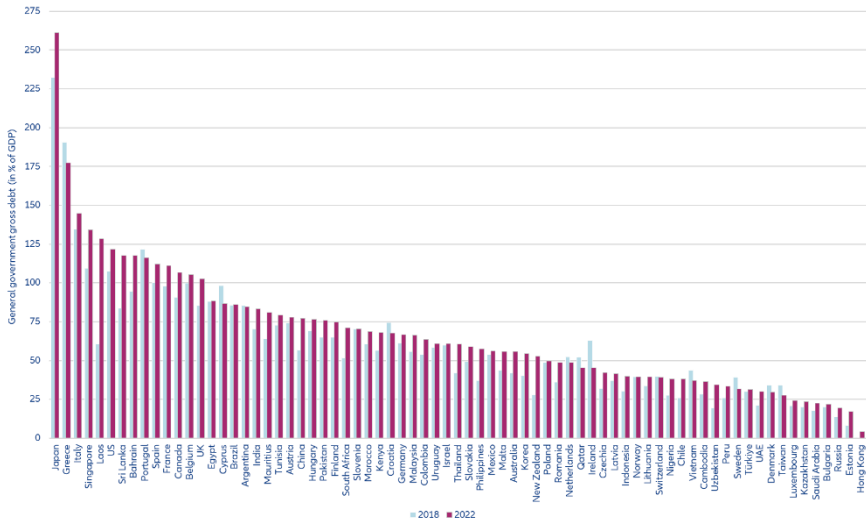
Figure 7: Marked differences
in gross debt to GDP ratios

Sources: IMF and Allianz
Research.

To improve the granularity of the API, this year we have added the sub-parameter general living standards to the basic conditions sub-index. As a yardstick, we use parameters such as average GDP per capita or out-of-pocket health expenditure. These indicators give an even fuller picture of the resources a country has at hand to deal with demographic change.

Like in our last edition, the heavily indebted European countries Spain, Greece and Italy are at the bottom of the ranking in the sub-category Finances and Demography, with scores between 5.6 and 6.1. These countries already have comparatively older populations and their shares of public expenditures on old-age benefits already surpass 10% of GDP. There was also no change at the top of this list, where we find Nigeria with a score of 1.6, followed by Pakistan scoring 2.1. Both countries have young populations and low public spending on old-age benefits. However, both countries also rank on the bottom of the new sub-category living standards with scores close to 7; in contrast, countries such as Singapore, Switzerland and Hong Kong score between 1.5 and 1.8 in this sub-category.

Combining both factors, we find that Israel, the Netherlands and Norway fare best in terms of basic conditions, albeit with relatively mediocre average scores between 2.8 and 3.0. Given their overall living standards, demographic change and financial leeway, the need for further improvements is highest in Greece, China and Mauritius, with scores ranging between 4.8 and 5.0. In the case of Greece, the dismal score is due to the combination of high indebtedness and public expenditures with one of the oldest populations. In the case of China and Mauritius, it stems not only from demographic change but also from the need to improve overall living standards, including the coverage of health systems, which is also reflected in the still comparably low average GDP per capita of both countries.

Source: Allianz Research.

	API 2023	Basic Conditions	Livng Standards	Finances & Demography
Argentina	4.1	3.9	4.0	3.8
Australia	3.0	3.1	2.5	3.4
Austria	3.4	4.2	3.1	5.0
Bahrain	4.1	4.0	3.6	4.2
Belgium	3.0	3.9	2.6	4.8
Brazil	4.3	4.7	4.7	4.7
Bulgaria	3.4	4.7	5.0	4.5
Cambodia	4.2	4.2	6.3	2.7
Canada	3.3	3.1	2.6	3.4
Chile	3.8	4.0	4.1	3.9
China	3.2	4.8	4.6	5.0
Colombia	3.8	4.1	4.3	4.0
Croatia	3.7	4.5	4.4	4.6
Cyprus	3.9	4.1	3.3	4.7
Czech Republic	3.7	3.7	3.8	3.6
Denmark	2.2	3.0	2.7	3.2
Egypt	3.5	4.4	6.0	3.3
Estonia	3.4	3.7	3.7	3.7
Finland	3.3	3.8	2.7	4.5
France	3.4	3.9	2.6	4.8
Germany	3.2	3.9	2.8	4.6
Greece	3.4	5.0	3.8	5.9
Hong Kong	3.4	3.2	1.8	4.2
Hungary	3.7	4.2	4.3	4.2
India	4.4	4.3	6.1	3.0
Indonesia	3.4	4.0	5.6	3.0
Ireland	3.4	3.2	2.6	3.6
Israel	2.9	2.8	2.7	2.9
Italy	3.3	4.7	2.7	6.1
Japan	3.2	4.0	2.1	5.2
Kazakhstan	3.5	3.5	5.1	2.3
Kenya	4.2	4.2	6.7	2.5
Korea	3.1	4.0	2.6	5.0
Kuwait	4.2	4.0	2.7	4.9
Laos	4.4	4.4	6.3	3.1
Latvia	3.4	4.0	4.6	3.6
Lebanon	4.7	4.7	4.7	4.6
Lithuania	3.4	4.2	4.6	3.9
Luxembourg	3.1	3.2	1.9	4.0
Malaysia	4.3	4.3	4.7	4.0
Malta	3.4	3.8	2.7	4.6
Mauritius	3.7	4.8	5.3	4.4
Mexico	3.5	4.3	5.1	3.7
Morocco	4.6	4.4	5.4	3.7
Netherlands	2.6	2.9	2.3	3.3
New Zealand	2.8	3.1	2.7	3.4
Nigeria	4.3	3.7	6.9	1.6
Norway	3.3	3.0	2.0	3.6
Pakistan	4.0	4.0	6.0	2.1
Peru	3.6	3.5	4.8	2.6
Philippines	3.6	4.1	5.9	2.8
Poland	4.0	4.5	4.2	4.8
Portugal	3.2	4.8	3.8	5.4
Qatar	4.0	3.1	2.3	3.6
Romania	4.3	4.4	4.6	4.2
Russia	3.6	4.2	5.0	3.6
Saudi Arabia	4.5	3.9	3.8	4.0
Singapore	3.7	3.6	1.5	5.0
Slovakia	3.7	4.4	4.1	4.5
Slovenia	3.7	4.4	3.4	5.2
South Africa	4.2	3.9	5.4	3.0
Spain	3.5	4.6	3.0	5.6
Sri Lanka	4.7	4.4	5.6	3.7
Sweden	2.6	3.1	2.5	3.5
Switzerland	3.1	3.2	1.7	4.2
Taiwan	2.9	4.0	3.5	4.3
Thailand	3.8	4.4	4.3	4.5
Tunisia	4.3	4.5	5.1	4.1
Turkey	4.2	4.1	4.3	4.1
United Arab Emirates	4.4	3.2	3.2	3.2
United Kingdom	3.1	3.5	2.9	3.9
United States	2.9	3.5	3.2	3.6
Uruguay	3.9	3.8	3.8	3.7
Uzbekistan	4.5	4.4	5.9	3.4
Vietnam	4.0	4.4	5.5	3.6

API pillar II: Sustainability

The pivotal point remains the retirement age

When we talk about the financial sustainability of pay-as-you-go financed pension systems, the financial burden on contribution payers also needs to be considered. Increasing contribution rates implies not only increasing labor costs, which might diminish international competitiveness, but also could trigger a flight to the informal labor market to avoid contributions, especially if the expected future pension payouts are considered incommensurate with contributions made. In more than half of the economies that we cover, contribution rates are already above 20% today, with the highest reported in Singapore[14] (37%), followed by Latvia and Italy (above 30%). In 30 of the countries, half of them emerging markets, contribution rates have increased (see Figure 8).

Figure 8: Small leeway for further contribution-rate increases in many countries
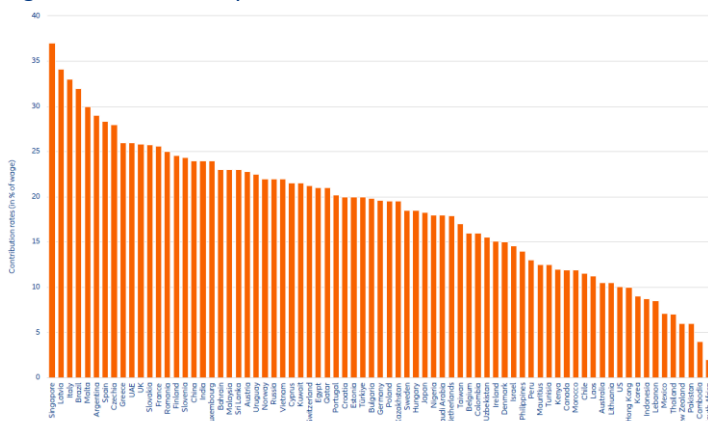
Sources: National social security administrations, ministries of social affairs, ministries of finance, PWC, OECD and Axco.

These already high levels leave only small leeway for further increases. With demographic and financial conditions deteriorating, the existence of built-in stabilizers that dampen the demographic effects on pay-as-you-go financed pension system are all the more important. These include incentives to postpone retirement, like a minimum contribution period that is necessary to claim an early or full pension; early retirement deductions or rewards for postponing retirement age and a built-in demographic factor in the pension formula to adjust benefit levels in line with the development of the average further life expectancy. The retirement age could also be linked to this.

In fact, in 48 of the countries that we cover in our index, at least one of these incentives is already in place. Half of the countries have introduced pension deductions that lower lifelong pension payouts in case of early retirement, and about a third have added demographic factors to their pension calculation and adjustment formulas to adjust benefit levels in line with the development of the average further life expectancy. In almost every country, fulfilling a minimum contribution period is also a precondition for receiving a pension. In most countries, this is around 15 years and will gradually increase. For example, in Egypt, it is set to increase from 10 to 15 years; in Bulgaria, it is going to increase to 40 years for men and 37 years for women and in France, the minimum contribution period to get a full pension is set to increase from 41.5 years currently to 43 years in 2027.

However, increasing minimum contribution periods is a double-edged sword, especially in emerging markets. Given the dominance of informal labor, many workers are not able to fulfil the minimum contribution period requirements, leaving them with lump-sum payments at retirement that are not sufficient to guarantee a decent living standard in old age. At the same time, in countries such an Spain and Italy, working careers are deferred by longer education periods or high youth unemployment, which will also make it difficult to fulfil these requirements. In the worst case, these workers will have to depend on minimum pensions and pension

---

[14] Including contributions to the country's health fund.

supplements tax-financed out of state budgets. The same holds true for an increasing share of the population with broken work histories or jobs in the so-called gig economy. New technologies, especially automation and digitalization, could spur this development further.

However, the linchpin for the long-term stabilization of pension systems remains the adjustment of the retirement age to the development of future life expectancy. In the countries we looked at, the statutory retirement age in the private sector is between 67 for both sexes in Denmark, Greece, Norway and Italy, and 50 years in Qatar and Nigeria. In 23 countries, the retirement age of women was still lower than that of men, despite the fact that women have a higher life expectancy. In 33 countries, the retirement age is set to rise until 2050, but it is questionable if the planned increases will compensate for the expected increases in life expectancy. The retirement age is already being automatically adjusted to the development of life expectancy in only eight countries. The example of Portugal shows that this could – under exceptional circumstances – also lead to lowering of the retirement age. An exception is Türkiye, where the minimum retirement age of 58 for women and 60 for men was recently abolished in favor of a necessary minimum contribution period of 20 and 25 years, respectively (see Figure 9).

Figure 9: Marked differences in retirement ages
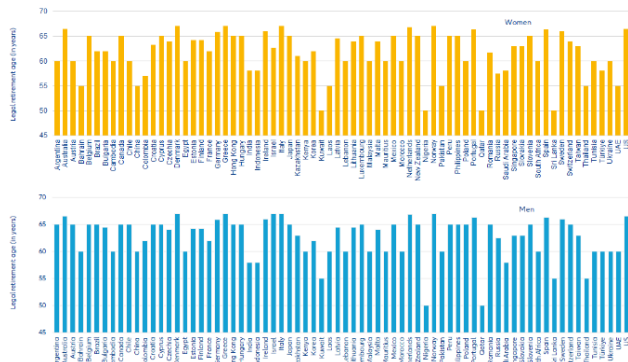
Sources: National social security administrations, ministries of social affairs, EU Commission, OECD and Axco.

To assess if the increases are sufficient to compensate for the expected improvements in further life expectancy, we compared the ratios of the time span of an assumed model career that starts at the age of 15 and ends with the specific pre- and post-reform legal retirement ages to the average time spent in retirement (average further life expectancy at the respective retirement age today and in 2050). Given the different pension ages and further life expectancies for men and women, we did this calculation for both sexes separately. Across all countries, the average time span of working life is 2.6 times the time spent in retirement for men, ranging from 1.1 in Qatar to 3.9 in Bulgaria, and 2.1 for women, ranging from 1.0 in Qatar to 3.2 in the Philippines. In both cases, the average factor is going to decrease further to 2.4 (men), and 2.0 (women). This indicates that without further reforms, the balance between working life and time spent in retirement will further deteriorate.

Taking into account the agreed-upon reforms as of March 2023, increases of retirement ages for men will only be sufficient in 13 of the 75 countries (China, Denmark, Egypt, Estonia, Finland, France, Greece, Indonesia, Italy, South Korea, the Netherlands, Portugal and Sweden), thanks to the automatic adjustment of the retirement age to the development of life expectancy or already-adopted retirement-age reforms. In the case of women, this holds true for 21 countries, which reflects the fact that the retirement age of women and men will be harmonized in many economies. However, this underlines the finding that in most countries, gains in further life expectancy will be higher than the announced increases in retirement age.

However, we should point out that the effective retirement age in most OECD countries is still below the statutory retirement age and that the actual working life span, especially in industrialized countries, is in many cases markedly shorter than stylized by us. This is not only caused by later starts due to longer time spent in education and training, but also by increasing numbers of broken career paths. Women in particular drop out of the workforce for years and work part-time more often than their male peers since they are still the ones

who take care of children or older family members. This further underlines the need to combine pension reforms with labor-market reforms.

Combining all factors, like in our previous edition, Indonesia has the most sustainable pension system of all markets, thanks to the planned increase of the retirement age to 65 in the long run and further financial leeway with respect to future contribution rate increases, since the current rate is still below 10%. With Denmark, there is also a European country at the top of this sub-indicator due to its built-in adjustment of the retirement age to developments in life expectancy, a demographic factor in the calculation of pension benefits as well as a still relatively low contribution rate compared to most EU peers. However, with an average score of 2.6, there is still room for further improvement.

At the bottom of the ranking, there was also little movement. Sri Lanka's pension system still lacks factors that could incentivize the postponement of retirement, while the country still has one of the lowest retirement ages in the private sector worldwide.

Turning to France, with a score of 3.7, it still ranks lower-midfield in terms of sustainability. However, without the (necessary) increase in the retirement age, it would have fared far worse, with a score of 4.4. The reform catapulted France from rank 61 to 40 in the sustainability rankings. Not a bad achievement for one single – even if highly controversial – reform.

|	API 2023	Basic Conditions	Sustainability	Adequacy
Indonesia	3.4	4.0	2.1	4.5
Egypt	3.5	4.4	2.3	4.2
Denmark	2.2	3.0	2.5	1.1
Portugal	3.2	4.8	2.7	2.8
Korea	3.1	4.0	2.8	3.0
Mexico	3.5	4.3	2.8	3.8
United States	2.9	3.5	2.8	2.6
Taiwan	2.9	4.0	2.8	2.4
China	3.2	4.8	2.9	2.8
Bulgaria	3.4	4.7	2.9	3.3
Pakistan	4.0	4.0	2.9	5.0
Sweden	2.6	3.1	2.9	2.1
Australia	3.0	3.1	3.0	3.0
Peru	3.6	3.5	3.0	4.4
Greece	3.4	5.0	3.0	3.0
Belgium	3.0	3.9	3.0	2.4
Estonia	3.4	3.7	3.1	3.4
Philippines	3.6	4.1	3.1	3.8
Italy	3.3	4.7	3.1	2.7
Lithuania	3.4	4.2	3.2	3.3
Germany	3.2	3.9	3.3	2.8
Netherlands	2.6	2.9	3.4	1.7
New Zealand	2.8	3.1	3.4	2.1
Israel	2.9	2.8	3.5	2.5
Finland	3.3	3.8	3.5	2.9
Croatia	3.7	4.5	3.5	3.5
Cambodia	4.2	4.2	3.5	5.0
Kenya	4.2	4.2	3.5	5.0
Thailand	3.8	4.4	3.5	3.9
Laos	4.4	4.4	3.6	5.3
Mauritius	3.7	4.8	3.6	3.3
Uzbekistan	4.5	4.4	3.6	5.3
Vietnam	4.0	4.4	3.6	4.3
Russia	3.6	4.2	3.6	3.2
Kazakhstan	3.5	3.5	3.6	3.3
United Kingdom	3.1	3.5	3.7	2.4
Chile	3.8	4.0	3.7	3.7
Poland	4.0	4.5	3.7	3.9
France	3.4	3.9	3.7	2.8
Spain	3.5	4.6	3.7	2.7
Latvia	3.4	4.0	3.7	2.8
Colombia	3.8	4.1	3.8	3.6
Ireland	3.4	3.2	3.8	3.0
Hungary	3.7	4.2	3.8	3.4
Japan	3.2	4.0	3.8	2.3
Czech Republic	3.7	3.7	3.8	3.6
Switzerland	3.1	3.2	3.9	2.4
Austria	3.4	4.2	3.9	2.6
Canada	3.3	3.1	3.9	2.8
South Africa	4.2	3.9	3.9	4.5
Hong Kong	3.4	3.2	3.9	3.1
Norway	3.3	3.0	4.0	2.7
Slovakia	3.7	4.4	4.0	2.9
Singapore	3.7	3.6	4.1	3.2
Luxembourg	3.1	3.2	4.1	2.1
Uruguay	3.9	3.8	4.2	3.6
Qatar	4.0	3.1	4.2	4.2
Cyprus	3.9	4.1	4.3	3.3
Slovenia	3.7	4.4	4.3	2.8
Lebanon	4.7	4.7	4.3	5.1
Nigeria	4.3	3.7	4.3	4.4
Argentina	4.1	3.9	4.4	3.8
Tunisia	4.3	4.5	4.5	4.0
Romania	4.3	4.4	4.5	4.0
Malta	3.4	3.8	4.6	2.1
Bahrain	4.1	4.0	4.6	3.8
Kuwait	4.2	4.0	4.6	4.0
Malaysia	4.3	4.3	4.6	3.9
Brazil	4.3	4.7	4.7	3.6
Morocco	4.6	4.4	4.7	4.6
Turkey	4.2	4.1	4.7	3.7
Saudi Arabia	4.5	3.9	4.9	4.4
India	4.4	4.3	4.9	4.0
United Arab Emirates	4.4	3.2	5.1	4.3
Sri Lanka	4.7	4.4	5.3	4.3

Source: Allianz Research.

16

API pillar III: Adequacy

Coverage is decisive

Financial sustainability is only one side of the coin. As important is the question of whether the pension system provides an adequate standard of living in old age. This is not only determined by the benefit level that a pension provides. In order to assess the adequacy of pension systems we also take into account the coverage ratio of today's and tomorrow's pensioners, the access to financial services – crucial for building up sufficient retirement savings – and the integration of elderly workers in the labor market.

When discussing the adequacy of pension systems, the first thing that comes to mind is the benefit level. According to ILO standards, the benefit ratio of a first-pillar pension should range between 40% and 60% of an average wage since public pensions are often the only source of income in old age. The latest available OECD statistics indicate that Brazil has one of the most generous pension systems worldwide, with a benefit ratio of 89%. Bahrain, Denmark, the UAE, the Philippines, Luxembourg, Argentina, Qatar, Portugal, Colombia, Italy and Austria complete the list, with the gross benefit level of a male employee who earned 100% of the average wage ranging between 70% and 80%. The "poorest" pensioners can still be found in Kenya, Lebanon and South Africa. In these countries, the gross benefit level is merely 15%. Germany, the US and Japan can also be found in the bottom third of this list, with benefit levels ranging between 30% and just above 40% (see Figure 10).

Figure 10: Marked differences in the generosity of pension systems
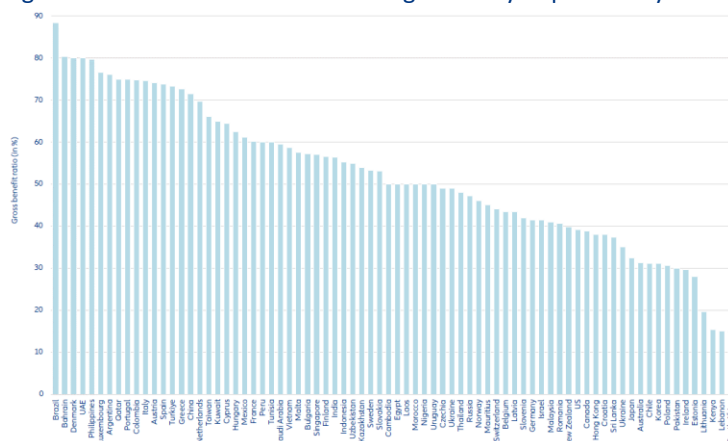
Sources: OECD, National social security administrations, ministries of social affairs, EU Commission, OECD and Axco

However, the picture looks different when the coverage of pension systems is taken into account. In India, for example, only 43% of the population in retirement age is covered by the pension system; in the working age population, it is less than a third. The situation in Colombia is similar, with around 40% of the population covered by the pension system. Efforts to increase coverage in emerging markets are often hampered by the high share of informal labor in sectors dominated by small companies that are not covered by the social insurance system or where wages are often even below the contribution assessment limit. As a result, at the time of entering retirement, many of these workers have not collected the necessary number of contribution years that are required to receive a lifelong pension and receive instead – in the best case – a lump-sum payment that does not provide a decent living standard in old age. In contrast, the coverage in most industrialized countries is 100% or close to it (see Figure 11).

Figure 11: Many private sector employees and retirees in emerging markets still lack pension coverage
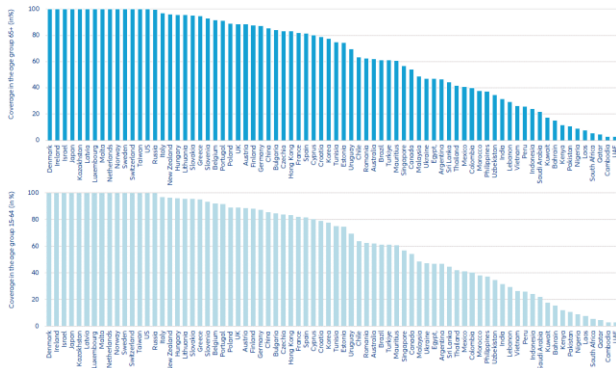
Source: ILO.

Against this background, it is no surprise that 56% of the adult population in Colombia and 67% in India are very worried about not having enough money in old age, according to World Bank data.[15] Therefore, access to financial services and financial literacy are all the more important in emerging markets. On the one hand, private households have an urgent need for private, capital-funded pension provision, since the coverage of public pension systems in these markets is still low. On the other hand, demographic change is forcing governments in these markets to integrate capital-funded elements from the outset when building public pension systems. In recent years, there has been marked progress in this respect: In India, for example, the share of adults with an account at a financial institution has increased from merely 38% in 2011 to 81% in 2021. In 66 out of the 75 markets, more than half the population had access to financial services. However, there is still backlog demand in some emerging markets, with this overall share reaching only 22.5% in Pakistan and less than 30% in Egypt, Vietnam and Lebanon (see Figure 11).

Figure 11: Access to financial services and old age as savings motive
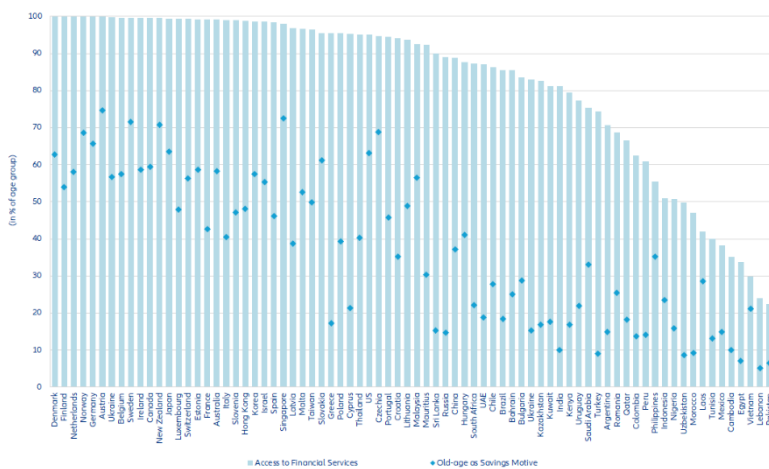

Source: World Bank.

However, the concern about having not enough savings for old age still does not translate into an increase in the share of adults that is in fact saving for retirement in most emerging economies: In India and Colombia, for example, these shares were merely 10% and 13%, respectively. This could be due to the still relatively young population in these economies, but also because of the lack of means and incentives. Not surprisingly, the highest shares of adults in the age group 25 and older that give old age as their main savings motive can be found in rich countries such as Austria, Singapore or Sweden (72-75%).

Access to financial services, differences in income levels and the structure of the pension system are also reflected in the net financial wealth of private households, which ranges from a mere 6% of GDP in Kazakhstan

---

[15] See World Bank (2023).

to an estimated 576% in Hong Kong. The top of this ranking is dominated by countries where strong second and third capital-funded pillars are in place. In contrast, countries with pay-as-you-go financed public pension systems, including Germany, rank rather midfield (see Figure 12).

Figure 12: Marked differences in private households' net financial wealth
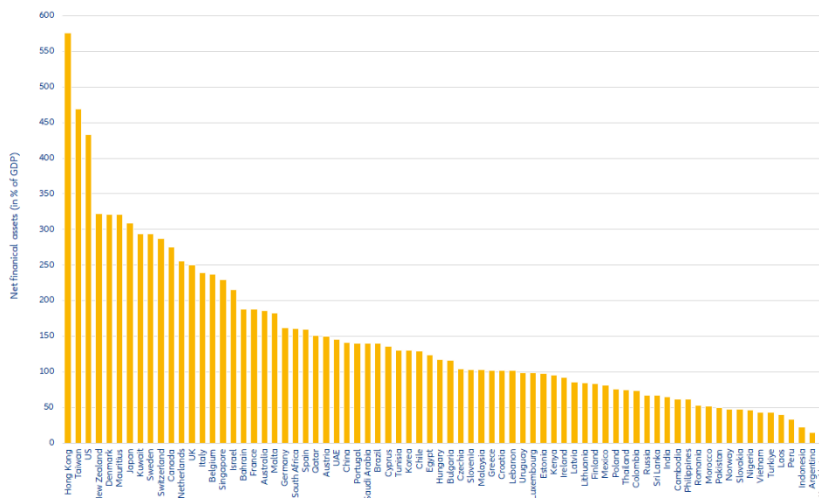
Source: Allianz Global Wealth Report (2022), Credit Suisse.

However, with capital-funded occupational and private provision gaining further in importance, pension fund assets are expected to become more dynamic in the future. They play a crucial role as institutional investors in developing capital markets, and could also become a driver of ESG investments (see box).

Box: Sustainable finance and pension funds: it's a match!

Sustainable finance is booming: From individual savers to large institutions, investors are dedicating an ever-increasing share of their portfolios towards ESG (environment, social, governance) financial products to support the transition to the low-carbon economy. Over the next five years, according to PwC, ESG-oriented funds are set to grow much faster than the market as a whole (+12.9% vs +4.3%) and ESG Assets under Management (AuM) under this scenario are set to reach USD34trn by 2026. Europe is set to remain a driving force in global green finance: It already accounts for more than half of the total ESG AuM, as of 2021, helped by regulatory efforts to promote sustainable finance through common standards, and thus more transparency and comparability of ESG products. The green bond market is a good example: 42% of the total green bond market is denominated in EUR , the result of the EU's standard-setting taxonomy regulation for green bonds.

Despite its skyrocketing growth, the ESG boom has raised some important questions about conflicts of interest – for example jobs (S-related) versus emissions (E-related) – and measurability i.e. data availability. While the former simply addresses the inherent challenges of the green transition itself and the need to manage a "just transition", the latter is a genuine concern – but one that becomes less and less relevant over time as regulatory action is aimed at increasing requirements for ever more disclosures of sustainability information.

At the end of the day, for asset managers and pension funds in particular, financial metrics are what count the most: Pension obligations have to be fulfilled by earning decent returns. But the decisive question is what these key figures will look like in 10 or 20 years. To answer this, ESG criteria play an important role because non-financial factors often become financially material in the long run, reflecting the preservation of natural and social foundations as the basis for successful economic activity. No wonder then that pension funds, the quintessential long-term investors, are embracing sustainable finance.

This is also reflected in the figures. The ECB has started to publish statistics on sustainable finance (experimental indicators on sustainable finance). Even though these data do not go back very far and only cover bonds, the development in the last two years is impressive: The share of green investments in fixed income has doubled in

this period and is now already at 7%. Since pension funds are generally invested for the long term and portfolios change only slowly, this is a rapid development. This share is also twice as high among pension funds as among investors as a whole (see Figure 13).

Figure 13: Share of green investments in debt securities holdings in %, pension funds and total economy
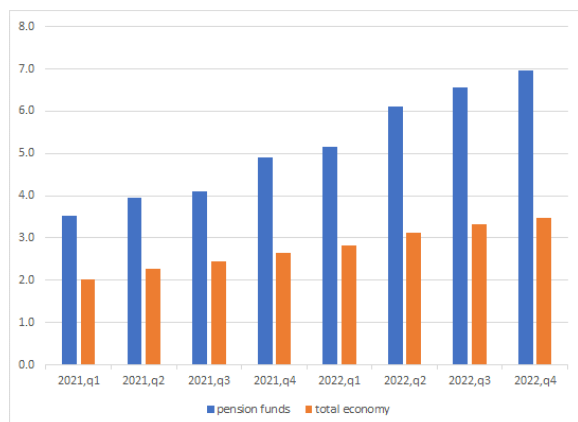

Sources: ECB and Allianz Research.

Strong pension funds represent a win-win situation: They not only stabilize the pension system, but also actively contribute to the green transformation by being at the forefront of the sustainable finance revolution. This is increasingly reflected in their investment policies, in which more and more pension funds are committing to the 1.5°C target of the Paris Climate Agreement. In addition, associations such as the Net Zero Asset Owner Alliance are driving the development further by jointly defining criteria and processes for an investment strategy aligned in this way.

With the coverage and benefit levels of pension systems in many emerging markets still low, labor income is often the main source of income in old age. At the same time, with retirement ages in many industrialized countries set to increase, the acceptance and integration of older workers in the labor markets is crucial to prevent a reduction of benefit levels. A look at today's activity ratios in the age group 65 and older indicate how prepared labor markets are to absorb a rising share of older workers. Like in our previous edition, the highest activity ratios in this age group can be found in countries where pension coverage is still low. Kenya leads in this ranking, with close to 70% of male population and 64% of the female population in this age group still active on the labor market. Kenya is followed by Nigeria, where this holds true for 63% and 50% of workers in these age groups, respectively. At the lower end of this ranking are countries in which the pension system still provides high benefit ratios and retirement ages are rather low, with a slight uptick in activity ratios of the male population in France or Spain (see Figure 14).

However, more efforts are clearly required to adapt labor markets to the needs of an aging workforce population. The protests following the increase of the retirement age in France and Uruguay were also fueled by older workers' fears of not being able to find decent employment as they age (see box).

Figure 14: Activity ratios in higher ages mirror the state of pension systems
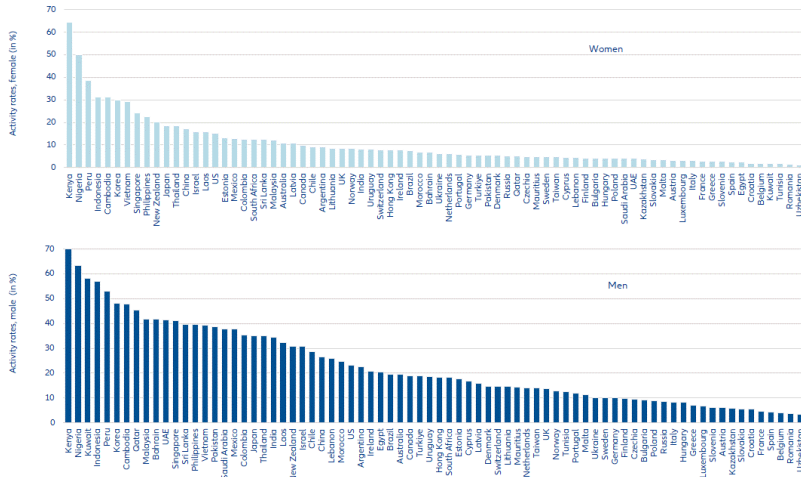
Source: ILO.

Box: *Fighting Ageism, the last frontier of diversity*

In order to prevent a rise in the retirement age merely resulting in longer periods of unemployment before retirement, the participation, employability and acceptance of older workers in the labor market must be increased. These efforts will not only improve the situation of older workers but also help companies to mitigate labor shortages – one of their main problems post Covid-19 – which is likely only to grow in future.

The key to increase the participation rate of older workers is more flexibility in the transition phase from working life to retirement. This includes part-time work and permitting the acquisition of new (additional) pension rights when postponing retirement beyond reaching the statutory retirement age. Other measures are lower social security contribution rates for employees aged 60 and older (like in Singapore for example) and temporary wage subsidies when hiring unemployed workers/employees aged 60 and older.

Measures to improve the employability of older workers include, for example, subsidies for internal training measures in order to promote lifelong learning and skill building, the adaptation of the workplace to the needs of an aging workforce and the promotion of healthy working conditions.

However, most important are changes in attitude. Age discrimination in the recruitment, employment and retaining of workers is still the most common form of workplace discrimination. The efforts in the fight against ageism have to be stepped up significantly.

All factors combined, Denmark and the Netherlands, both countries with strong capital-funded pension pillars and comparatively high public pension benefit levels, have the most adequate pension systems. The overall score is a very good 1.4 in Denmark and 1.7 in the Netherlands. In both countries, the activity ratios of men aged 65 and older are already markedly above 10%, which also reflects the increases in the retirement age in both countries. At the bottom end in terms of adequacy is Laos, joined by Lebanon and Uzbekistan, where both the coverage of the pension system and the development level of the financial sector remain low.

	API 2023	Basic Conditions	Sustainability	Adequacy
Denmark	2.2	1.0	2.8	1.7
Netherlands	2.6	2.9	3.4	1.7
Malta	3.4	3.8	4.6	2.1
Sweden	2.6	3.1	2.9	2.1
Luxembourg	3.1	3.2	4.1	2.1
New Zealand	2.8	3.1	3.4	2.1
Japan	3.2	4.0	3.8	2.3
Switzerland	3.1	3.2	3.9	2.4
Belgium	3.0	3.9	3.0	2.4
Taiwan	2.9	4.0	2.8	2.4
United Kingdom	3.1	3.5	3.7	2.4
Israel	2.9	2.8	3.5	2.5
Austria	3.4	4.2	3.9	2.6
United States	2.9	3.5	2.8	2.6
Italy	3.3	4.7	3.1	2.7
Spain	3.5	4.6	3.7	2.7
Norway	3.3	3.0	4.0	2.7
Germany	3.2	2.9	3.3	2.8
Slovenia	3.7	4.4	4.3	2.8
France	3.4	3.9	3.7	2.8
Latvia	3.4	4.0	3.7	2.8
Portugal	3.2	4.8	2.7	2.8
China	3.2	4.8	2.9	2.8
Canada	3.3	3.1	3.9	2.8
Slovakia	3.7	4.4	4.0	2.9
Finland	3.3	3.8	3.5	2.9
Ireland	3.4	3.2	3.8	3.0
Korea	3.1	4.0	2.8	3.0
Australia	3.0	3.1	3.0	3.0
Greece	3.4	5.0	3.0	3.0
Hong Kong	3.4	3.2	3.9	3.1
Russia	3.6	4.2	3.6	3.2
Singapore	3.7	3.6	4.1	3.2
Bulgaria	3.4	4.7	2.9	3.3
Mauritius	3.7	4.8	3.6	3.3
Cyprus	3.9	4.1	4.3	3.3
Kazakhstan	3.5	3.5	3.6	3.3
Lithuania	3.4	4.2	3.2	3.3
Hungary	3.7	4.2	3.8	3.4
Estonia	3.4	3.7	3.1	3.4
Croatia	3.7	4.5	3.5	3.5
Czech Republic	3.7	3.7	3.8	3.6
Uruguay	3.9	3.8	4.2	3.6
Brazil	4.3	4.7	4.7	3.6
Colombia	3.8	4.1	3.8	3.6
Turkey	4.2	4.1	4.7	3.7
Chile	3.8	4.0	3.7	3.7
Mexico	3.5	4.3	2.8	3.8
Bahrain	4.1	4.0	4.6	3.8
Argentina	4.1	3.9	4.4	3.8
Philippines	3.6	4.1	3.1	3.8
Thailand	3.8	4.4	3.5	3.9
Malaysia	4.3	4.3	4.6	3.9
Poland	4.0	4.5	3.7	3.9
Kuwait	4.2	4.0	4.8	4.0
India	4.4	4.3	4.9	4.0
Tunisia	4.3	4.5	4.5	4.0
Romania	4.3	4.4	4.5	4.0
Qatar	4.0	3.1	4.2	4.2
Egypt	3.5	4.4	2.3	4.2
United Arab Emirates	4.4	3.2	5.1	4.3
Vietnam	4.0	4.4	3.6	4.3
Sri Lanka	4.7	4.4	5.3	4.3
Peru	3.6	3.5	3.0	4.4
Nigeria	4.3	3.7	4.3	4.4
Saudi Arabia	4.5	3.9	4.9	4.4
Indonesia	3.4	4.0	2.1	4.5
South Africa	4.2	3.9	3.9	4.5
Morocco	4.6	4.4	4.7	4.6
Kenya	4.2	4.2	3.5	5.0
Pakistan	4.0	4.0	2.9	5.0
Cambodia	4.2	4.2	3.5	5.0
Lebanon	4.7	4.7	4.3	5.1
Laos	4.4	4.7	3.8	5.3
Uzbekistan	4.5	4.4	3.6	5.3

Appendix I: Methodology of the Allianz Pension Index (API)

The Allianz Pension Index (API) consists of three pillars that are differently weighted *(see respective weightings in brackets)*

- *Basic Conditions*   *(20%)*

- *Sustainability*   *(40%)*

- *Adequacy*   *(40%)*

These three pillars are based on five categories and 11 sub-categories taking into account 40 parameters in total. Each parameter value is rated on a scale of 1 to 7, with 1 being the best grade. The bands defining each parameter's grade are chosen in a way that the grading results of all markets are normally distributed. This implies a relative judgement. By adding up all weighted subtotals, the API assigns each market a grade between 1 and 7, thus providing a comprehensive view of the sustainability and adequacy of the pension system of a respective market compared to other markets.

The pillars in detail

The pillar *Basic Conditions* takes into account living standards as well as the financial and demographic starting points, two major exogenous factors determining the framework and affecting the need for further pension reforms:

- *Living standards (40%)*
  The living standard is mainly determined by the overall prosperity level (50%), the access to health services (30%) and the level of progress (20%) of a society.

- *Finances and demographics (60%)*
  The financial leeway (40%) and the demographic change (60%) determine the need for pension reforms.

General government gross debt and nominal GDP data are extracted from the IMF World Economic Outlook database; the source of data on public spending for old age is mainly the International Labor Organization supplemented with data from national statistical offices and public pension insurance providers and PricewaterhouseCoopers. All population data is derived from the UN World Population Prospects database and the main data source to determine living standards are the World Bank World Development Indicators.

The pillar *Sustainability* assesses if there are built-in mechanisms that cushion the pension system against the impacts of demographic change, based on the categories

- *Preconditions (60%)*
  The category *Preconditions* is split into the sub-categories *Retirement age (80%)*, in order to assess if adopted increases of the retirement age are high enough to compensate for the expected improvements in further life expectancy, and *Minimum contribution period (20%)*.

- *Finances (40%)*
  This category consists of the sub-categories *Financing (70%)* and Pension Formula (30%).

Data sources are the European Commission, the OECD, Axco Life and Benefits reports and the respective national social security administrations and providers.

The pillar *Adequacy* is based on two categories *First Pillar* and *Other Pension* income, which are also split up into further sub-categories:

- *First Pillar (50%)*
  This category takes into account the *Coverage (70%)* and the *Benefit level (30%)* of the pension system.

- *Other pension income (50%)*
  This category is based on the sub-categories Second Pillar (20%), Financial Assets (70%) and Gainful Employment (10%).

The indicator is based on publicly available information of national social security administrations, ministries of finance and ministries of social affairs as well as on including publications of the European Commission, OECD, ILO, UN, Axco and World Bank.

Allianz Pension Index (API)

Basic Conditions 20%	Living Standards 40%	Prosperity	50%	GDP p.c.	LE at birth			
				50%	50%			
		Health	30%	Health exp. OOPs	HALE	Share of population reaching age of 65	Share of population reaching age of 65	
				35%	35%	15%	15%	
		Progress	20%	Urbanization	Internet users	Employment in Agriculture		
				40%	40%	20%		
	Finances and Demography 60%	Financial Leeway	40%	Budget Deficit	Public Spending for Old Age			
				30%	70%			
		Demographic change	60%	OADR 2020	OADR 2050	Change 2020-2050		
				10%	40%	50%		
Sustainability 40%	Preconditions 60%	Retirement Age (Men)	40%	MC/TSiR (2020)	MC/TSiR (2050)	Change MC/TSiR (2020 - 2050)		
				10%	40%	50%		
		Retirement Age (Women)	40%	MC/TSiR (2020)	MC/TSiR (2050)	Change MC/TSiR (2020 - 2050)		
				10%	40%	50%		
		Minimum Contribution Period	20%	(MCP) Men	MCP (Women)			
				50%	50%			
	Finances 40%	Financing	70%	Financing Method	Contribution rates			
				25%	75%			
		Pension Formula	30%	Early Retirement Deductions	Demographic Factor?			
				50%	50%			
Adequacy 40%	First Pillar 50%	Coverage	70%	Coverage 65+	Legal coverage (working age population)	Effective coverage (working age	Obligation?	
				30%	0%	60%	10%	
		Benefits	30%	Gross Benefit Ratio	Minimum Pension			
				80%	20%			
	Other Pension Income 50%	Second Pillar	20%	Financing Method	Obligation?			
				80%	20%			
		Financial Assets	70%	Access to Financial Services	Old-age as Savings Motive	Private HH Net Financial Assets	Gini Coefficient	
				30%	10%	30%	30%	
		Gainful Employment	10%	Activity ratio 65+ (M)	Activity Ratio 65+ (W)			
				50%	50%			

Appendix II: Sources

FIAP (2023): Eleven proposals for increasing contributory pension coverage in Latin America, Pension Notes, no. 68, January 2023, Santiago de Chile, *https://www.fiapinternacional.org/.*

FIAP (2022): Analysis and evolution of non-contributory old-age pensions in Latin America, Pension Notes, no. 66, November 2022, Santiago de Chile, *https://www.fiapinternacional.org/.*

FIAP (2022): Recent proposals for improving Colombia's pension system, Pension Notes, no. 64, July 2022, Santiago de Chile, *https://www.fiapinternacional.org/.*

FIAP (2021): Where did the Argentine Pension Funds go?, Pension Notes, no. 57, September 2021, Santiago de Chile, *https://www.fiapinternacional.org/.*

Gomes, Irena (2023): In 2021, number of deaths exceeds that in 2020 and current series records lowest number of births, Agencia IBGE Noticias, https://agenciadenoticias.ibge.gov.br/en/agencia-news/2184-news-agency/news/36313-in-2021-number-of-deaths-exceeds-that-in-2020-and-current-series-records-lowest-number-of-births (accessed 03. April 2023)

OECD (2023): Pension Markets in Focus 2022, www.oecd.org/finance/pensionmarketsinfocus.htm

International Labor Organization (2023): Dashboards.

International Monetary Fund (2022): World Economic Outlook Database, October 2022, *https://www.imf.org/en/Publications/WEO/weo-database/2022/October* (accessed 6. February 2023).

NSSF (2021): Annual report and audited financial statements 2021, Nairobi 2021; *https://www.nssf.or.ke/downloads* (accessed 9. February 2023).

Refinitiv Eikon, Datastream (2023).

United Nations, Department of Economic and Social Affairs (2023): Economic well-being at older ages: prospects for the future, *https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/PB150.pdf* (accessed 10. February 2023).

United Nations, Department of Economic and Social Affairs, Population Division (2022): World Population Prospects 2022, Online Edition, *https://population.un.org/wpp/Download/* (accessed 6. February 2023).

United Nations, Department of Economic and Social Affairs, Population Division (2019). World Population Prospects 2019, Online Edition.

World Bank (2023): World development indicators.

World Health Organization (2023): WHO Coronavirus (COVID-19) Dashboard, https://covid19.who.int/ (accessed 22. March 2023).

National social security administrations and public pension providers (in alphabetical order of countries):

National Social Security Administration Argentina (2020): https://www.anses.gob.ar

Services Australia (2020): https://www.humanservices.gov.au

Australian Department of Social Services (2020): https://www.dss.gov.au

Australian Prudential Regulation Authority (2020): https://www.apra.gov.au/annual-fund-level-superannuation-statistics

Austrian Pension Insurance Institution (2020): https://www.sozialversicherung.at

Austrian Service for Foreign Citizens (2020): https://www.oesterreich.gv.at

Bahrain Online Guide (2020): http://www.mybahrain.net

Bahrain Social Insurance Organization (2020): https://www.sio.gov.bh

Belgium International Social Security (2020): https://www.socialsecurity.be

Belgium National Social Security Office (2020): https://www.onss.fgov.be

Belgium Federal Pension Office (2020): https://www.sfpd.fgov.be/

Federation of Enterprises in Belgium (2020): https://www.feb.be

Folha de S. Paulo Brazil (2020):   https://www1.folha.uol.com

National Social Securty Office Brazil (2020): www.INSS.gov.br

National Social Security Office Bulgaria (2020):   http://www.nssi.bg

National Statistical Institute Bulgaria (2020): https://www.nsi.bg

Bulgarian Association of Supplementary Pension Security Companies (2020): http://assoc.pension.bg

Government of Canada (2020):   https://www.canada.ca

Social Welfare Institute Chile (2020): https://www.ips.gob.cl

National Council for Social Security Fund China (2020): http://www.ssf.gov.cn

Ministry of Human Resources and Social Security of the People's Republic of China (2020): http://www.mohrss.gov.cn

Social Security Office Mexico (2020): http://www.imss.gob.mx

Office for Social Security of Migrant Workers Croatia (2020): https://migracije.hr

Croatian Pension Insurance Institute (2020): http://www.mirovinsko.hr

Ministry of Finance Croatia (2020): https://www.porezna-uprava.hr

Croatian Financial Services Supervisory Agency (2020): https://www.hanfa.hr

ONE, Oficina Nacional de Estadisticas Cuba

Ministry of Labor, Welfare and Social Insurance Cyprus (2020): http://www.mlsi.gov.cy

Czech Social Security Administration (2020): https://www.cssz.cz

ATP Denmark (2020): https://www.atp.dk

Work in Denmark (2020): https://www.workindenmark.dk

Pensioni Keskus Estonia (2020): https://www.pensionikeskus.ee

Social Insurance Board Estonia (2020): https://www.sotsiaalkindlustusamet.ee/et

Social Insurance Institution of Finland (2020): https://www.kela.fi

Finnish Centre for Pensions (2020): https://www.etk.fi/en

Finnish Centre for Pensions – Statistical Database (2020): https://tilastot.etk.fi

Caisse des Dépôts France (2020): https://retraitesolidarite.caissedesdepots.fr

Cleiss France (2020): https://www.cleiss.fr

Agirc-Arrco France (2020): https://www.agirc-arrco.fr/

German Pension Insurance (2020): https://www.deutsche-rentenversicherung.de

Greek Law Digest (2020): http://greeklawdigest.gr

Government Hongkong (2020): https://www.gov.hk

Central Administration of National Pension Insurance Hungary (2020): https://www.onyf.hu

SpNews Indonesia (2020): https://spn.or.id

Citizens Information Ireland (2020): https://www.citizensinformation.ie

The Pension Authority Ireland (2020): https://www.pensionsauthority.ie/en/

Central Statistics Office Ireland: https://www.cso.ie

National Insurance Institute of Israel (2020): https://www.btl.gov.il

Italian Office of Social Wellfare (2020): https://www.inps.it

National Social Security Fund Kenya (2020): http://www.nssf.or.ke

The Public Institution for Social Security Kuwait (2020): https://www.pifss.gov.kw

Lao Service Portal (2020): http://www.laoservicesportal.gov.la

Manapensija Latvia (2020): https://www.manapensija.la

Government Latvia (2020): http://lm.gov.lv

Doing Business in Lebanon (2020): https://doingbusinessinlebanon.com

International Organization for Migration Lithuania (2020): https://www.renkuosilietuva.lt

The State Social Insurance Fund Lithuania: https://www.sodra.lt

Caisse nationale d'assurance pension Luxembourg (2020): https://www.cnap.lu

General Inspectorate of Social Security Luxembourg (2020): https://igss.gouvernement.lu

Peresko Social Security Organization Malaysia (2020): https://www.perkeso.gov.my

Employees Provident Fund Malaysia (2020): https://www.kwsp.gov.my

Office for Social Security Malta (2020): https://socialsecurity.gov.mt

Office of the Commissioner for Revenue Malta (2020): https://irdpubserv.gov.mt

Le devoir de vous protéger Morocco (2020): https://www.cnss.ma

The Dutch Government (2020): https://www.government.nl

Federation of the Dutch Pension Funds (2020): https://www.pensioenfederatie.nl

Social Insurance Bank Netherlands (2020): https://www.svb.nl

The New Zealand Government (2020): https://www.govt.nz

Legit Nigeria (2020): https://www.legit.ng

Norwegian Labour and Welfare Administration (2020): https://www.nav.no

Norwegian Tax Administration (2020): https://www.skatteetaten.no

DNB Norway (2020): https://www.dnb.no

Plataforma digital única del Estado Peruano (2020): https://www.gob.pe

The Social Insurance Institution Poland (2020): https://lang.zus.pl

Social Security Office Poland: https://www.ssa.gov/policy/docs/progdesc/intl_update/2018-12/index.html

Moving to Portugal (2020): https://www.movingtoportugal.pt

Social Security Office Portugal (2020): http://www.seg-social.pt

Online Qatar (2020): https://www.onlineqatar.com

Government Qatar (2020): https://portal.www.gov.qa

Euraxess Romania (2020): https://www.euraxess.gov.ro

National House of Public Pensions Romania (2020): https://www.cnpp.ro

Pension Fund of the Russian Federation (2020): http://www.pfrf.ru/en/

Ministry of Manpower Singapore (2020): https://www.mom.gov.sg

Singapore Statutes Online (2020): https://sso.agc.gov.sg

Social Insurance Agency in Slovakia (2020): https://www.socpoist.sk

Mladipodjetnik Slovenia (2020): https://mladipodjetnik.si

Social protection Institute of the Republic of Slovenia (2020): https://www.irssv.si

Pension and Disability Insurance Institute of Slovenia (2020): https://www.zpiz.si

Office of Retirement and Disability Policy Slovenia (2020)

South African Government (2020): https://www.gov.za

Ministry of Social Development South Africa (2020): https://www.sassa.gov.za/

Ministry of Inclusion, Social Security and Migration Spain (2020): http://www.seg-social.es

Office of Retirement and Disability Policy Spain (2020)

Ministry of Labour and Social Economy Spain (2020): http://www.mitramiss.gob.es

Government Offices of Sweden (2020): https://www.government.se

The Swiss Authorities Online (2020): https://www.ch.ch

Information Centre on Compensation Offices Switzerland (2020): https://www.ahv-iv.ch

Bureau of Labor Insurance Taiwan (2020): https://www.bli.gov.tw

Statistical Bureau of Taiwan: https://eng.stat.gov.tw

Austcham Thailand (2020): https://austchamthailandadvance.com

Ministry of Labour Thailand (2020): http://www.mol.go.th

Turkish Labor Law (2020): https://turkishlaborlaw.com

Government of the United Arab Emirates (2020): https://government.ae

Assets Publishing Service United Kingdom (2020): https://assets.publishing.service.gov.uk

The Pensions Regulator United Kingdom (2020): https://www.thepensionsregulator.gov.uk

Ministry of Social Policy Ukraine (2020): https://www.msp.gov.ua/en/

Administration of Social Security USA (2020): https://www.ssa.gov/planners/retire/agereduction.html

Nhan Dan Vietnam (2020): https://en.nhandan.com.vn

Vietnam Law and Legal Forum (2020): http://vietnamlawmagazine.vn

.