

sigma

Emerging markets: the drive for sustainable retirements in an ageing world

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Executive summary

Emerging markets face a pension savings shortfall of USD 106 trillion as their populations age.

The pension savings gap averages USD 40 000 or about 8.5x workers' average annual income.

Individuals are becoming responsible not only for pension funding but risks such as morbidity and longevity too.

Insurance can protect against disruption to pension savings and retirement income.

Partnership is crucial for a sustainable pension system that can strengthen societal resilience.

The world's formerly young emerging markets are ageing fast. Falling birth rates and rising life expectancy create a challenge of how to sustainably fund an adequate quality of life over longer retirements. We estimate the pensions savings gap for emerging markets' working populations at USD 5.4 trillion per year.¹ This is equivalent to USD 106 trillion cumulatively, or about three times emerging markets' GDP, as high as estimates for advanced markets. Given the different levels of economic development, the shortfall highlights an imminent need for emerging markets to act or risk "growing old before they grow rich".

Each worker has a pension savings gap of about USD 40 000, or about 8.5 times a worker's average annual income, representing the potential financial burden to individuals to support their post-retirement living.² The figures vary widely by region: emerging Europe, with relatively higher per-capita incomes and lower expected long-term interest rates, has a pension savings gap of about USD 110 000 per worker, more than double that of Latin America and emerging Asia. However, workers in emerging Asia face a future financial burden just as large as in emerging Europe, as both regions have a per-worker pension savings gap of around 11 times respective average annual incomes. Latin America is much lower (6.2x).

Individuals will increasingly need to make their own funding arrangements for retirement as responsibility for pension provision is shifting onto savers. This is transferring both funding risk, as our pension savings gap measures, but also risks such as longevity, mortality and morbidity. These all have the power to disrupt a person's ability to save for their pension and achieve a stable income in retirement. The challenge is acute for emerging markets, with typically less-well-developed social welfare systems and fewer personal resources. A period out of work due to sickness, family care or even death will impact a household's savings, resulting in a potentially much smaller retirement income. In older age, health and long-term care (LTC) costs can quickly deplete savings, making it harder to decumulate assets effectively. We estimate the global protection gap for mortality and health risks at almost USD 1.2 trillion in premium equivalent terms, of which about 60% is from emerging markets.³

Assurance and protection insurance can support individuals in emerging markets to accumulate and decumulate assets more smoothly. The re/insurance industry has a key role to play in offering life, medical, disability and critical illness covers. Some solutions exist already: in markets such as Australia and Chile, compulsory protection has been embedded in pension schemes with wide success. Other solutions need to be developed. Bundled products are a key opportunity: insurers can explore and trial composites of mortality, morbidity and LTC protection with a savings component, to adapt to changing lifecycle needs to offer flexible, responsive life-long covers.

A sustainable and integrated pension system that can strengthen societal resilience requires a strong partnership between individuals, employers and the public sector. Without a strong system, the cost of under-funding retirements will ultimately return to governments through higher poverty, poorer health, higher health costs to society, and even social discontent.⁴ Emerging market governments can lay strong foundations for the pension system through a sound regulatory framework, education, incentives to participate such as tax exemptions, and effective public-private partnership.

¹ As of 2019 value, based on the average worker. The pension savings gap is the unfunded gap between pension funds available and the retirement need of emerging markets' working populations. We calculate it as the sum of money required to fund 65% of wage income in retirement years, minus all mandatory and voluntary pension contributions and expected returns on pension funds/savings in working years. See page 13 for full information.

² Our estimates take into account the negative impact of COVID-19 through forecasts for lower income and lower interest rates for 2020 and relevant future years.

³ *sigma* Resilience Index 2021, Swiss Re, 15 June 2021.

⁴ *Income poverty in old age: An emerging development priority*, United Nations; *Poverty and health*, World Bank, 25 August 2014.

Key takeaways

Old-age dependency ratios in 2020 and 2050F, emerging and advanced markets

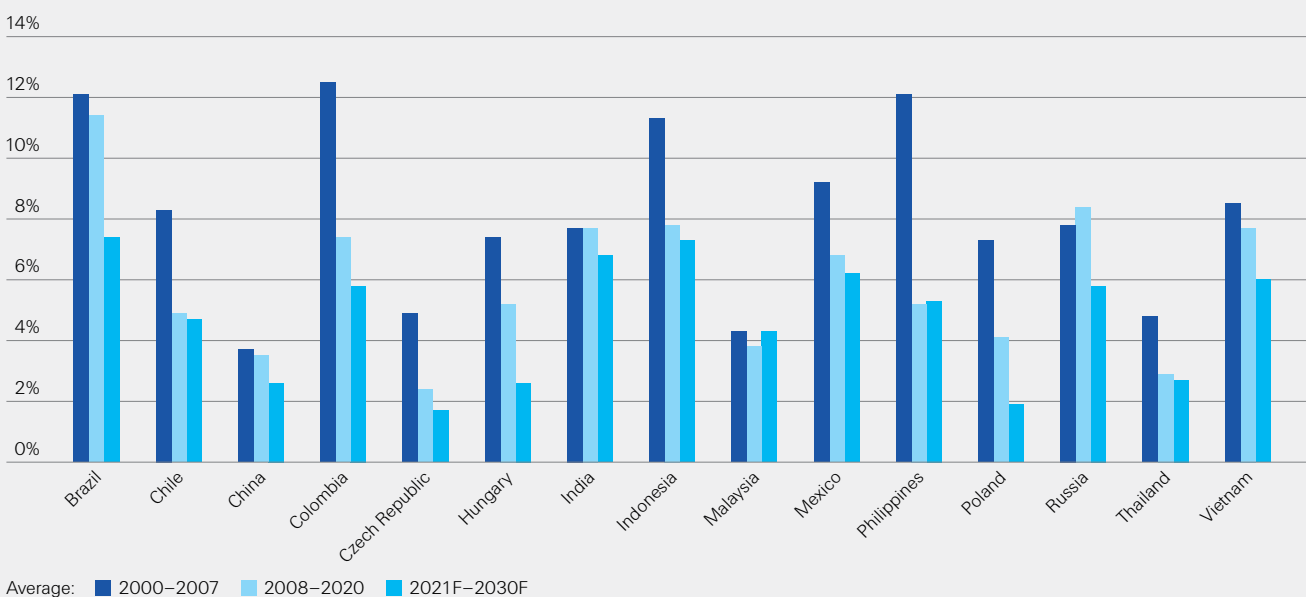
Emerging markets are at risk of “growing old before they grow rich”. Old-age-dependency ratios (the population above 65 years old as a percentage of population aged 15 to 64) are rising and are above the global average in many emerging markets. Pensions systems are coming under strain as a result.



Note: Bubbles refer to size of population ages 65 years old and above. Unfilled bubbles show 2020 actual data and filled bubbles are 2050 forecast data.
Source: United Nations, Swiss Re Institute

Average 10-year government bond yields in emerging markets, 2000–2030F

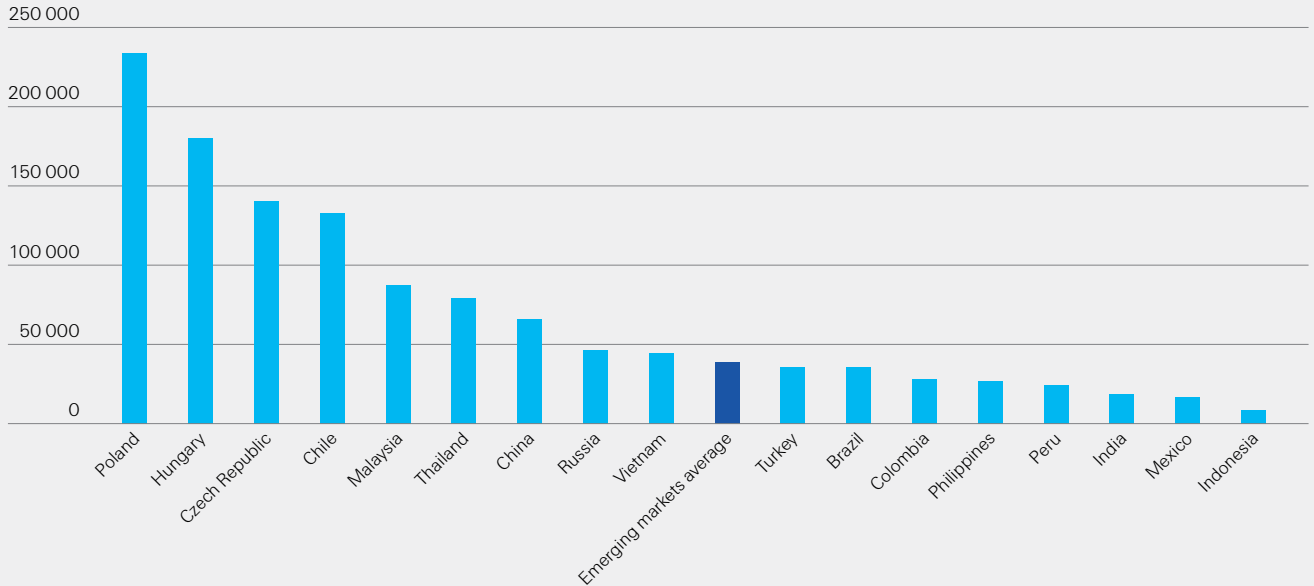
Emerging market interest rates have trended downward in the past two decades, and we expect rates to remain low between 2021 and 2030. Pension funds’ long duration nature make them sensitive to interest rate changes. Low interest rates reduce expected asset returns and increase the present value of pension fund liabilities, lowering their funding ratio.



Note: 10-year government bonds yield forecasts for Czech Republic, Hungary, Poland and Russia refer to the average between 2021 and 2024.
Source: CEIC, OECD, IHS Markit, Swiss Re Institute

Emerging markets pension savings gaps per worker in USD, 2019 values

We estimate that emerging markets face an unfunded pension savings gap of about three times their aggregate GDP, as high as for major advanced markets. Per worker, countries' estimated pension savings gap ranges from less than USD 9 000 to around USD 234 000, with an average of about USD 40 000. There is an imminent need for action.

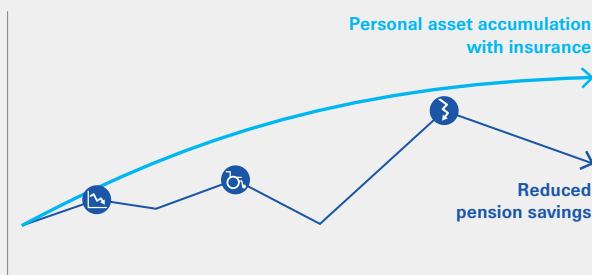


Source: Swiss Re Institute

Insurance protects against disruptions to pension savings and retirement income

Governments and employers are taking less responsibility for pension provision. This is transferring to individuals risks such as longevity, morbidity and market risks, which have the power to significantly disrupt pension saving and stable retirement incomes. Assurance and protection can support smoother asset accumulation and decumulation throughout their lifecycle.

Working life



Market risks
Low interest rates,
volatility,
inflation risk

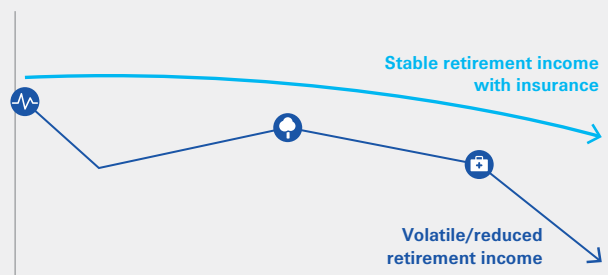


Morbidity risks
Sickness,
critical illness,
disability



Mortality risk
The death of a
breadwinner

Retirement life



Market risks
Low interest
rates, volatility,
inflation risk



Longevity risk
Pension pressure
from longer life
expectancy



Long-term care risk
Expenses that
quickly deplete
savings in older age

Note: illustrative.

Source: Swiss Re Institute

Introduction

Emerging markets' rapid population ageing is transforming their economic and social outlook. By 2050, these nations will be home to almost 80% of the world's population aged 65 and above. Yet on average only about 30% of their workers are covered by any sort of formal retirement income scheme. The "demographic dividend" of young workers that has driven economic growth is disappearing and old-age dependency ratios are rising. Pension systems are changing as a result, with a greater role emerging for individual funding and protection.

Emerging markets will be home to almost 80% of the world's elderly population by 2050.

Emerging markets are ageing rapidly. Declining fertility rates and rising life expectancy mean that by 2050, almost 80% of the 1.54 billion people aged 65 and older will live in emerging markets.⁵ Global life expectancy reached 73 years in 2018, up from 68 years in 2000, reflecting significant medical and socio-economic progress.⁶ Yet in most countries retirement age is around 60 years, and longer post-retirement lives create challenges for pension systems. In emerging markets, on average only about 30% of the working-age population is covered by any sort of formal retirement income scheme.⁷ We believe private asset accumulation will be key to ensure adequate and sustainable retirement income. Throughout their lives, individuals face risks to accumulating assets for retirement. More can be done to mitigate these risks and re/insurers can play a vital role in helping individuals to secure their financial future.

Ageing is a challenge for emerging markets, which are still at an early stage of economic development.

"Growing old before they grow rich"

For emerging markets still at an early stage of economic development, population ageing is an acute challenge. Much of their recent decades of growth has been driven by an abundant supply of labour in the form of a large, young workforce. This has enabled rapid capital accumulation and high savings and investment rates, since savings are highest during working-age years, by economic lifecycle theory. This demographic dividend (the contribution to economic growth from a change in a country's demographic make-up) contributed on average 0.3% to 0.5% of annual economic growth between the 1970s and the 2010s, according to the latest United Nations estimate. In China, the dividend was as high as 1.4% per year by 1991.⁸

Economies are at risk of "growing old before they grow rich".

Emerging markets are now at risk of "growing old before they grow rich". The demographic dividend is rapidly inverting into a negative factor. An ageing population is expected to result in a shrinking labour force, lower productivity and slower economic growth. A smaller working-age population must support a growing older population, leading to rising old-age dependency ratios and challenging the funding of pension systems. The dependency ratio measures the burden on the overall economy from supporting the ageing population. The higher the dependency ratio, the greater the burden. The old-age dependency ratio in emerging markets is expected to increase sharply between 2020 and 2050, as Figure 1 illustrates. Most emerging economies are on a par with major economies such as the US and Germany, and above the world average.

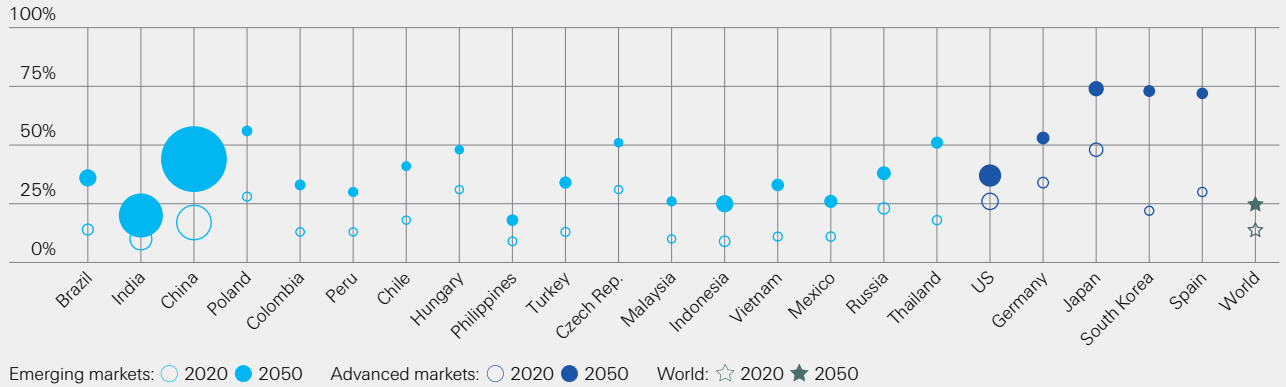
⁵ *World Population Prospects 2019 Dataset*, United Nations. Emerging markets refer to less developed countries defined by United Nations.

⁶ Source: World Bank.

⁷ *Social protection for older persons: Policy trends and statistics 2017–19*, ILO Policy Paper, 2018

⁸ *Support ratios and demographic dividends: estimates for the world*, United Nations Department of Economic and Social Affairs, Technical Paper No. 2017/1.

Figure 1
Old-age dependency ratio in selected markets, 2020 vs 2050F



Note: Bubbles refer to size of population ages 65 years old and above. Unfilled bubbles show 2020 actual data and filled bubbles are 2050 forecast data. Source: United Nations, Swiss Re Institute

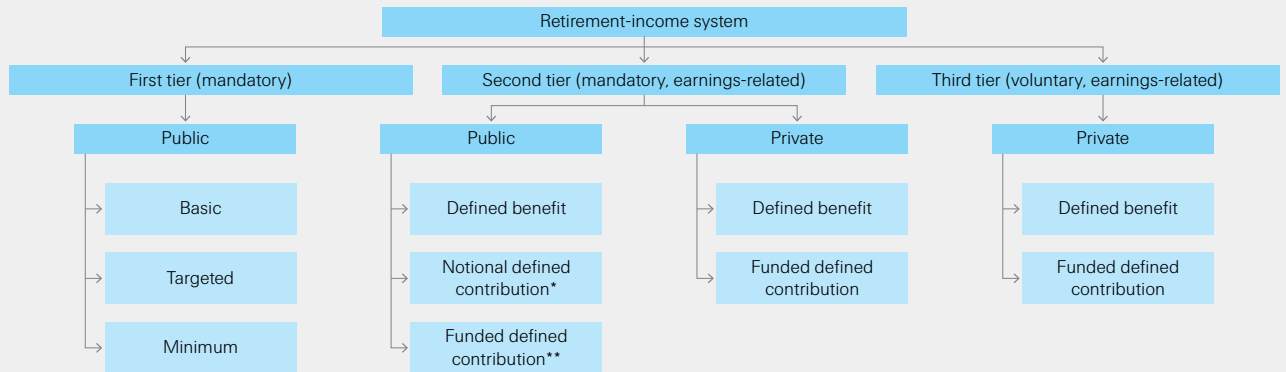
Emerging markets' main pension provision is through mandatory contribution-based funds.

Pension systems are adjusting to manage longer retirements

Retirement provision in most emerging markets consists of three tiers (see Figure 2):

- First tier: basic public pension, typically flat-rate, either universal or means-tested, funded directly from governments' fiscal balance. All countries worldwide offer some form of this, according to the OECD.
- Second tier: all mandatory, government-defined, contribution-based pensions. These are the majority of pension funding sources. Employed workers and employers contribute, and pension benefits are linked to workers' earnings history. second tier pension funds are either managed by government or private administrator.
- Third tier: private voluntary pension funds and insurance. More typical in advanced markets; emerging markets tend to rely on the second tier.

Figure 2
Three tiers of retirement-income provision



Note: **Funded defined contribution scheme is managed through individual accounts where the accumulation of contributions and investment returns is paid out to the employees at retirement. *Notional defined contribution scheme is a relatively new development, but exists in Poland. It is a pay-as-you-go scheme in which contributions made by the public apply a notional rate of return to individual accounts, similar to the funded defined contribution plan. Source: OECD, Swiss Re Institute

Introduction

Most emerging markets use DB pension schemes but these typically run at a deficit.

Governments have shifted towards DC pension schemes since the 1990s.

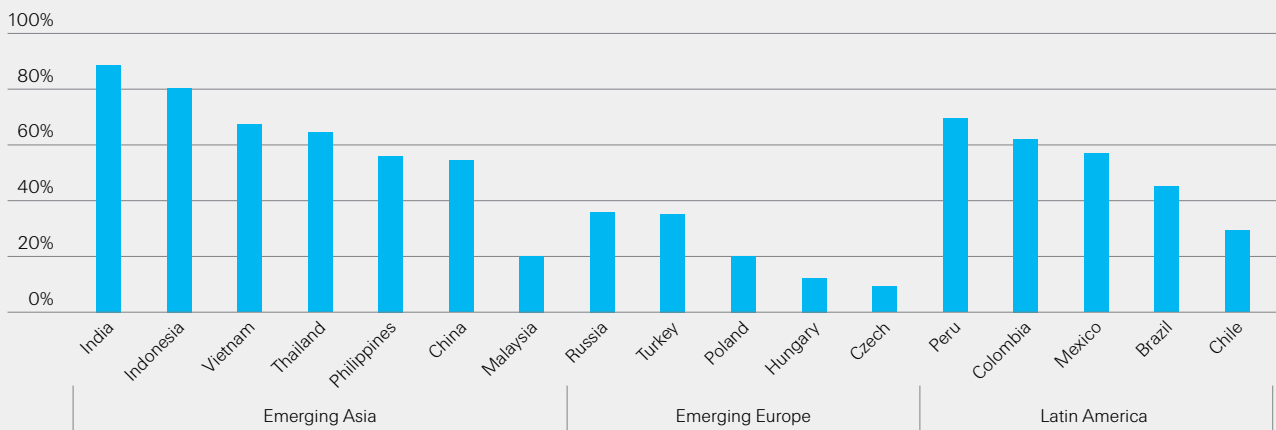
Pension coverage ratios are very low in emerging Asia due to large informal sectors.

Second-tier pension schemes have historically been defined benefit (DB), providing eligible employees with a guaranteed income for life when they retire. DB schemes are the major pension funding structure in 58% of advanced countries and 64% of emerging countries.⁹ Most governments pay DB pensions from the contributions of current workers and employers, paying them directly out as benefits to retirees rather than investing them. Where contributions fall short of the pension payments needed, the scheme’s sponsor must fill the deficit. This “pay-as-you-go” (PAYG) approach creates the risk that governments finance a growing share of DB pension obligations.

Since the 1990s, governments have gradually shifted towards defined contribution (DC) pensions for younger cohorts of the population, albeit DB still represents the majority share. Mandatory DC pensions are individual accounts into which the employee, employer or both make regular, government-determined contributions. The pension benefit depends on the value of assets accumulated over the individual’s working life. DC plans now coexist with DB plans in several markets. Some emerging Asian countries (eg, India, Indonesia and Malaysia) also use “provident funds”, government-mandated, centrally managed individual accounts that typically provide lump-sum benefits.¹⁰

Pension coverage, the proportion of working population covered by pension provision, is generally low in emerging markets. This partly reflects countries’ high degree of economic informality. Nearly 2 billion people work informally in emerging and developing countries, according to an estimate from the International Labour Office (ILO), almost all of whom lack social protection.¹¹ Many emerging Asian countries have low pension coverage. In India and Indonesia, more than 80% of total employment is in the informal sector including agriculture (see Figure 3), and pension coverage is only 8%. More formalisation of the economy would help to increase pension coverage. Countries in emerging Europe (eg, Poland, Hungary and Czech Republic) have the highest coverage rates, on a par with advanced economies (see Table 2). However, these economies are fiscally weaker and their pension systems may be less sustainable.

Figure 3
Informal employment as a percentage of total employment (2019 or latest year available)



Source: ILO, national governments, Swiss Re Institute

⁹ *The Future of Saving: The Role of Pension System Design in an Aging World*, IMF, 2019.

¹⁰ *Pensions at a glance Asia/Pacific*, OECD, 2018.

¹¹ *Women and men in the informal economy: A statistical picture. Third edition*, ILO, 2018.

Table 1**Second-tier pension scheme characteristics in emerging markets (latest year available)**

Region		Pension scheme *		Retirement age **		Mandatory contribution rate***	Pension coverage ****	
		DB	DC	Men	Women		% of population aged 15 to 64	% of labour force
Emerging Asia	China		x	60	55	24%	56%	70%
	India	x	x	60		20%	8%	14%
	Indonesia		x	58		5.7%	8%	11%
	Malaysia		x	55		21%	28%	43%
	Thailand	x	x	60		20%	34%	32%
	Philippines	x		65		15%	21%	31%
	Vietnam	x		62	50	20%	21%	24%
Emerging Europe	Russia	x	x	60	55	27%	49%	66%
	Turkey	x	x	60	58	20%	28%	52%
	Poland	x	x	65	60	20%	59%	88%
	Hungary	x		64.5		29.5%	60%	88%
	Czech Republic	x		63.9	62.1	28%	70%	92%
Latin America	Brazil	x		65	62	27.5%/34%	39%	53%
	Chile		x	65	60	10%	41%	60%
	Colombia	x	x	62	57	16%	23%	31%
	Mexico	x	x	65		6.5%	19%	28%
	Peru	x	x	65		10%/13%	20%	24%

Note: *Data on pension scheme splits (between DB and DC) and retirement ages are from *OECD Pensions at a glance 2019*; World Bank Pension Database; and national sources. **Averages are reported where there are multiple retirement ages, as of the latest statutory requirements. China plans to steadily increase the retirement age as part of its 14th Five-Year Plan. In the case of Indonesia, retirement age will rise by an additional year every three years until it reaches 65 in 2043. ***Data on mandatory contribution rates is collected from respective national statistics agencies (updated by end-2019). For India, the mandatory contribution rate is the weighted average of contribution rates under the Employee Provident Fund (for different income levels) and National Pension Scheme. ****Data on pension coverage comes from ILO Policy Paper 2018: *Social protection for older persons*.

Source: OECD, World Bank, ILO, national statistics agencies, Swiss Re Institute

Individuals will increasingly need to make their own retirement funding arrangements.

Individual funding and protection will be key for households' resilience

Longer retirements, coupled with progressively less government and employer support, make it likely that individuals in emerging markets will increasingly need to make their own funding arrangements for their retirement. Life insurance complements mandatory pension systems by providing savings and other protection covers that help to reduce or avoid shocks to individuals' income and asset accumulation in times of adversity. Paid insurance claims have a long-term benefit beyond the immediate event as families can avoid decisions like selling income-generating assets or taking children out of school. There is a significant opportunity to grow the role of protection life products, which cover financial market volatility, mortality, morbidity and longevity risks during working and post-retirement years.

Re/insurers recycle saving pools into investments that can help drive green economic growth.

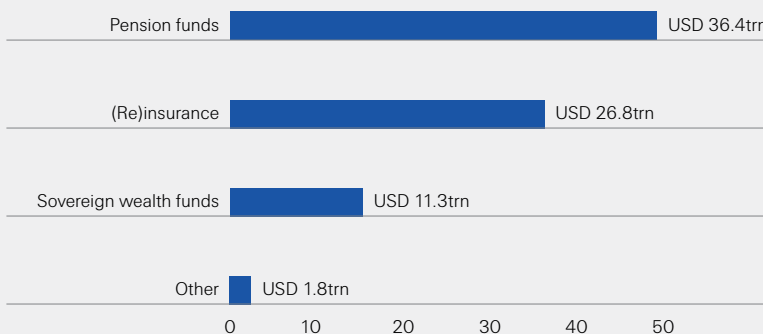
Re/insurers also promote domestic capital markets development.

Long-term capital providers can power economic growth

Re/insurance companies are not only risk absorbers but also institutional investors and so providers of long-term finance to the economy. The real economy needs capital investment to drive economic growth. Re/insurers are among the world’s largest institutional investors, managing USD 26.8 trillion of funds (see Figure 4). Growing the investment role of the insurance sector can help recycle the saving pools into the real economy, which supports economic growth. However, re/insurers need sufficient long-term investment opportunities. Policymakers, regulators and institutional investors will need to work together to create financial infrastructure and investment vehicles that enable re/insurers to invest in infrastructure, housing and other long-term projects that offer a match for long-term liabilities. An example is infrastructure debt, to finance public-private infrastructure development. This asset class requires large-scale, long-term funding and is well-suited to re/insurers’ illiquid long-dated liabilities. Re/insurers are ideal providers of such finance, but need a supportive investment environment. Governments can provide this by offering tax incentives (eg, no tax payable on coupons) or attractive statutory capital requirements. Policyholders, too, could become investors in infrastructure debt through DC-like insurance saving schemes, given the right incentives. In return for locking-in capital for a number of years, policyholders could receive tax breaks and attractive returns.

Institutional investors support the development of domestic capital markets. Shallow emerging market capital markets can be a challenge for institutional investors such as re/insurers and pension funds, both private and public, as all are long-term investors seeking to put capital to work at scale. A limited supply of investment opportunities can severely affect returns and so sums paid to individuals. Growing pension and life insurance assets can create a virtuous circle in which institutional assets add fund supply to local stock and bond markets, promote market depth, help modernise market infrastructure and support best-practice financial regulation.¹² A study in Chile found that pension reform added 0.5 points to GDP growth over a 21-year period, with enhanced capital market structure one of the main channels for such benefits.¹³ Re/insurers can also help to drive the greening of financial systems, as they typically incorporate environmental, social and governance (ESG) factors in investment decision-making processes.

Figure 4
Assets under management (AuM) by type of institutional investor



Institutional investors have **USD 76 trillion AuM**, approximately 100% of global GDP

Global re/insurers and pension funds account for **35%** and **48%** of institutional AuM respectively

Source: Swiss Re Institute, OECD, PwC, Preqin, Statista

¹² Y. Hu, "Growth of Asian Pension Assets: Implications for Financial and Capital Markets", *Asian Development Bank*, May 2012.
¹³ A. de la Torre & S. Schmukler, "Emerging Capital Markets and Globalization the Latin American Experience", *World Bank*, 2007.

Pension sustainability under pressure

Structural economic changes are increasing the difficulty of emerging markets meeting future pension obligations. Shifting demographics, weaker labour markets, reduced government fiscal room and lower interest rates have negative effects on long-term pension sustainability. The COVID-19 crisis has exacerbated these trends in the short term. Government pension reforms are shifting retirement funding risk, and exposure to broad lifetime risks, to individuals.

Structural trends threaten the sustainability of emerging market pension systems.

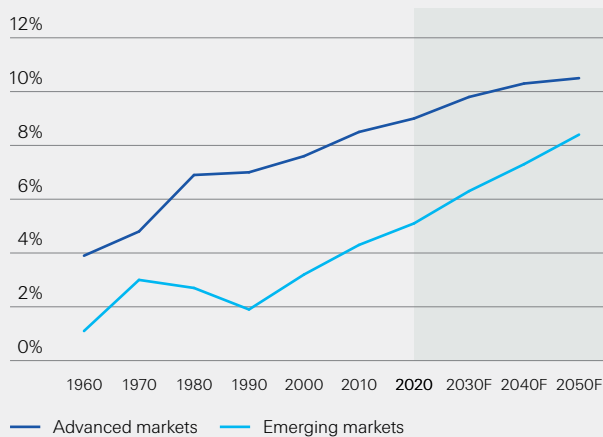
Emerging market pension systems are under strain. Public expenditure on pensions is forecast to increase significantly as populations age.¹⁴ There is a strong case for governments to fund a sustainable pension system, to mitigate other societal costs driven by poverty and ill-health. Yet most emerging markets face long-term pressure on fiscal headroom, labour market participation and interest rates. The COVID-19 crisis is exacerbating these trends in the near term. Governments are responding with pension reforms that transfer risks related to funding and economic resilience onto individual pension savers. As people assume more responsibility for their pension funding, they will need a broad array of assurance and protection to help smoothly accumulate and decumulate assets for their retirement.

Rising public pension spending will be problematic for countries with an already high level of debt.

Growing pension spending challenges government fiscal positions

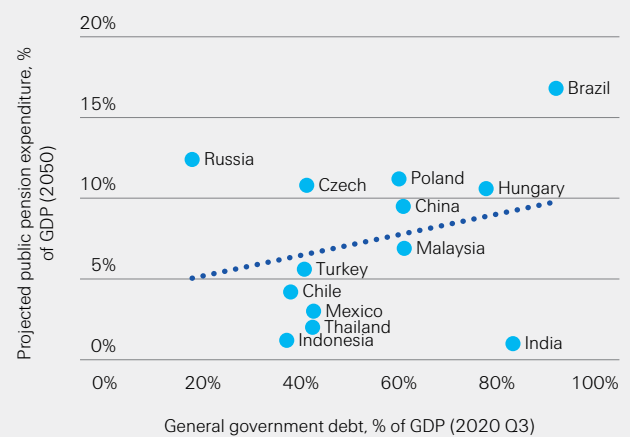
Public expenditure on pensions – both tier 1 and tier 2 benefits – has increased sharply over recent decades. Since the 1990s, pension spending as a percentage of GDP has grown at a faster pace in emerging markets than advanced markets, due to rapid population ageing in the former (see Figure 5). Many governments are reforming public pensions to contain future public spending. However, ageing demographics and relatively poor old-age protection systems in most emerging markets mean governments face higher fiscal pressure over the long run. Projections from the IMF and OECD show that countries with high debt today are most at risk of high expected public pension expenditure by 2050 (see Figure 6). Brazil, Hungary, Poland and China in particular face challenges, with implications for debt sustainability.

Figure 5
Public pension spending as a percentage of GDP, 1960–2050 projected



Source: IMF, Swiss Re Institute

Figure 6
Projected public pension expenditure in 2050 vs. government debt in 2020, as % of GDP



Source: BIS, IMF, OECD, Swiss Re Institute

¹⁴ *The Challenge of Public Pension Reform in Advanced and Emerging Economies*, IMF Policy Paper, 28 December 2011.

Pension sustainability under pressure

The COVID-19 shock has impacted governments' debt levels.

COVID 19 crisis adds pressure to public finance sustainability

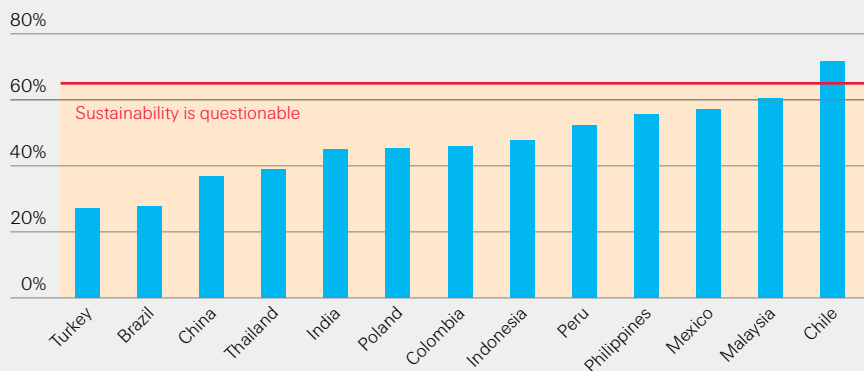
The effect of COVID-19 on economic growth will likely be cyclical and transitory. The crisis will likely have a more structural impact on debt and future borrowing needs. The unprecedented policy response to the COVID-19 shock is pushing emerging market fiscal deficits and public debts to record levels. Public debt to GDP in emerging markets climbed from the pre-global financial crisis (GFC) level of 38% in 2007 to 53% in 2019, and further to around 63% in 2020. Still, the increase is even more pronounced in advanced markets, where public debt to GDP surged from 77% in 2007 to 135% in 2020, close to the post-World War II record of about 150%.¹⁵ The experience after the GFC showed that high public debt is negative for long-term growth and creates a cycle of low growth and unsustainable public finances.¹⁶

Most emerging markets face risks to their pension system sustainability.

The likely future sustainability of current pension systems

The Mercer Sustainability Index measures pension system sustainability, equating higher scores to more sustainable current pension systems.¹⁷ An index value below 65 means a system's sustainability is questionable and needs improvement. Of the 13 emerging markets the index covers, Chile scores highest with 71.7 (see Figure 7). Most emerging markets face risks to the sustainability of their pension system. The most important indicators explaining the different scores are projected demographic factors, mandatory contribution as a proportion of wages, and the level of pension assets relative to GDP. The index includes indicators such as level of pension scheme funding, expected length of retirement, current government debt, real economic growth and others.

Figure 7
Mercer Sustainability Index, 2019



Source: Melbourne Mercer Global Pension Index 2019

Declining labour force participation means more funding pressure on a shrinking workforce.

Labour market changes suggest lower contributions from workers

Shifting demographics bring about changes in labour market composition with implications for pension funding. Labour participation is falling significantly for young workers (15–24 years old) as well as for 25–54 year olds in emerging markets (see Figure 8). Lower labour participation by younger cohorts postpones asset accumulation and reduces contributions to fund PAYG schemes. In emerging markets overall, labour participation has declined from 67% in 1990 to 60% in 2019. The workforce (the cohort aged 25–54 years), is expected to account for 49% of total population in 2050, compared to 56% in 2020 (see Figure 9).

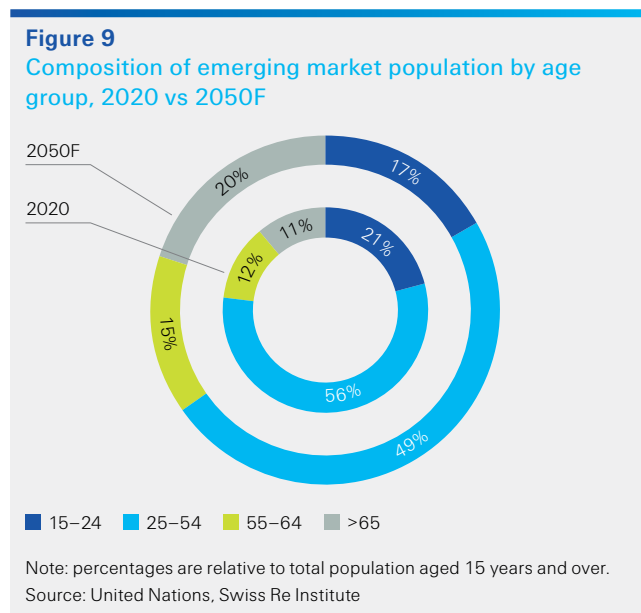
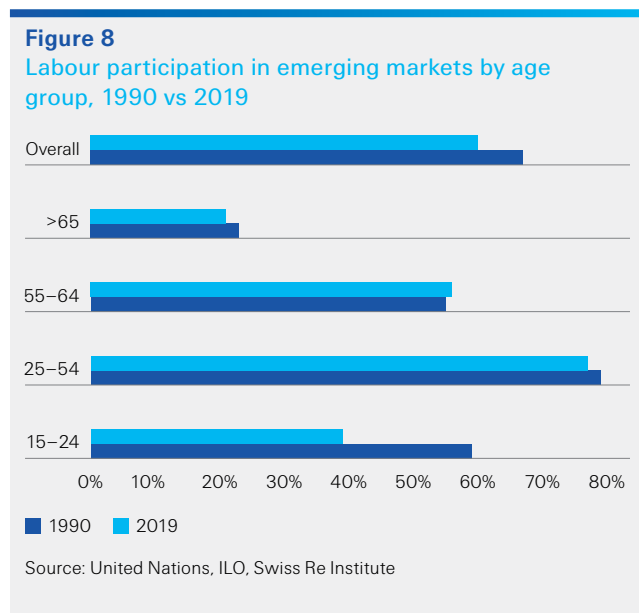
¹⁵ IMF Debt Monitor and IMF historical public debt database. Advanced and emerging markets refer to advanced and emerging G20 economies.

¹⁶ *Public debt and growth*, IMF working paper WP/10/174, July 2010; *The impact of high and growing government debt on economic growth*, ECB, August 2010.

¹⁷ Melbourne Mercer Global Pension Index 2019.

COVID-19 will likely reduce younger workers' earning prospects and trigger early retirement.

The COVID-19 recession in 2020 adds to the challenge. Young workers pay a particularly heavy price in economic crises due to their lack of experience and high concentration in vulnerable sectors. The International Labour Organization (ILO) and Asian Development Bank (ADB) expect youth unemployment to at least double from its pre-COVID-19 level in several emerging Asian countries.¹⁸ Workers who enter the labour market during a crisis are more likely to experience long-term underemployment and persistently lower wages.¹⁹ Pension systems suffer as higher youth unemployment lowers long-term pension contributions.²⁰ At the same time, higher numbers of older workers leave the labour force early, either voluntarily, through widespread early retirement provision, or involuntarily due to redundancies. These increase the number of early claims for pension benefits.²¹



Declining interest rates are another hit to pension asset accumulation.

Long-term declines in interest rates impact pension fund solvency

Pension funds' long duration nature make them sensitive to interest rate changes. Low interest rates reduce expected asset returns and increase the present value of pension fund liabilities, lowering their funded ratio. Emerging market interest rates have trended downward in the past two decades, as Figure 10 illustrates. The average 10-year government bond yields in 15 emerging markets were much lower in 2008–2020 than in 2000–2007. The drivers were structural trends, such as population ageing, weak productivity growth and expansionary monetary policy during recessions.²² Average yields in many emerging markets are expected to fall further in the period 2021–2030.

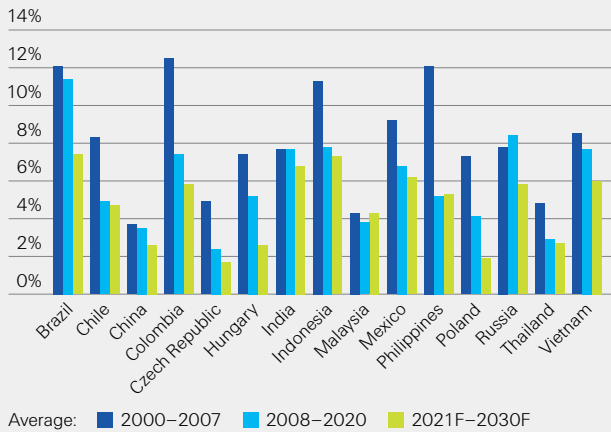
COVID-19 caused a further fall in interest rates.

The unprecedented monetary easing to combat COVID-19 caused policy rates to hit record lows in many countries in 2020. The pandemic may also lead to lower interest rates in emerging markets for longer. An IMF study showed that pandemics have historically kept interest rates low for decades.²³ This is a concern for emerging markets, where most pension AuM are held in cash deposits or invested in bonds (see Figure 11).

¹⁸ *Tackling the COVID-19 youth employment crisis in Asia and the Pacific*, ILO and ADB, 2020
¹⁹ B. Cockx, "Do youth graduating in a recession incur permanent losses?", *IZA World of Labor*, 2016; and H. Schwandt & T. von Wachter, "Unlucky Cohorts: Estimating the Long-Term Effects of Entering the Labour Market in a Recession in Large Cross-Sectional Data Sets", *Journal of Labour Economics*, Volume 37, No. S1, January 2019.
²⁰ "Labour market during the COVID-19 crisis: A preliminary view", *VoxEU*, 14 April 2020.
²¹ *Pension schemes in the COVID-19 crisis: impacts and policy considerations*, IMF, 20 July 2020.
²² *Low interest rates: what they mean for insurers*, Swiss Re, 7 September 2020.
²³ *The long economic hangover of pandemics*, IMF Finance & Development, Vol 57, number 2, June 2020.

Pension sustainability under pressure

Figure 10
Average 10-year government bond yield in selected emerging markets, 2000–2030F

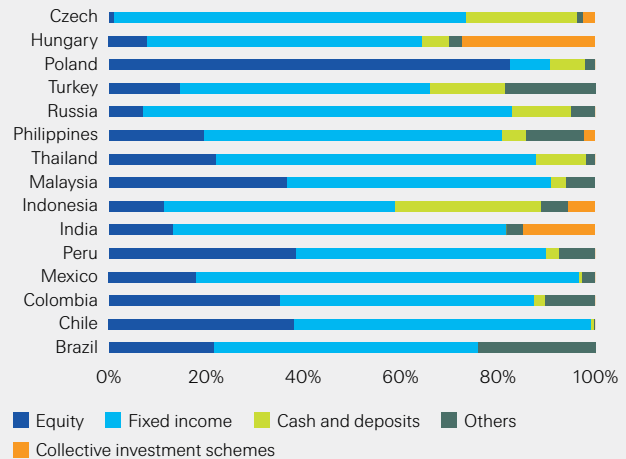


Average: ■ 2000–2007 ■ 2008–2020 ■ 2021F–2030F

Note. 10-year government bonds yield forecast for Czech Republic, Hungary, Poland and Russia refers to average between 2021 and 2024.

Source: CEIC, OECD, IHS Markit, Swiss Re Institute

Figure 11
Pension fund asset allocation, 2019



Source: CEIC, OECD, IHS Markit, Swiss Re Institute

Emerging market governments are reforming pension schemes to alleviate public finance burdens.

Governments can introduce automatic adjustment mechanisms as well as education and incentives.

Pension reforms put the focus on individual savers

Emerging market governments have enacted a slew of pension reforms to relieve funding pressure on their pensions systems. Chief among them is the shift from DB to DC schemes, which transfers the risks associated with saving, investing and longevity from the government or pension provider to individuals, a trend we expect to continue.²⁴ Other common reforms include:²⁵

- *Raising the retirement age* (including equalising the retirement age between men and women) is one of the most-advocated measures to increase pension contributions and defer pension withdrawals. Almost half of the emerging countries we study have raised the pensionable age thresholds to better align with increasing life expectancy (e.g. in China).²⁶
- *Increasing contribution rates* is encouraged in some markets (eg. in Mexico, Chile) through tax incentives to expand the pension funding base.
- *Tightening eligibility rules* can be implemented based on minimum working years and minimum pension contribution periods (eg. Indonesia).
- *Reducing high benefit ratios* relative to working-age incomes by limiting to a monthly ceiling and implementing vesting periods (eg. in Brazil).
- *Curtailing early retirement benefits* to certain working groups based on the persons' working conditions, work environment factors and regional living conditions. This was introduced in Russia.

Governments may also tighten the link between earnings and benefits, and introduce automatic adjustment mechanisms in pension plan designs, such as linking pension contributions and benefits to life expectancy, demographic ratios or funding balances. In addition to such structural reforms, governments can use education, incentives to participate, and strong partnerships with the private sector to encourage long-term pension accumulation.

²⁴ However, some emerging markets (eg. Poland and Hungary) abolished their mandatory funded DC schemes following the 2008 global financial crisis and the fiscal consolidation undertaken thereafter.

²⁵ *The Future of Saving: The Role of Pension System Design in an Aging World*, IMF, 2019.

²⁶ "Postponing retirement, by how long and by when". *Xinhua Net*, April 2021, http://www.xinhuanet.com/politics/2021-04/13/c_1127322308.htm

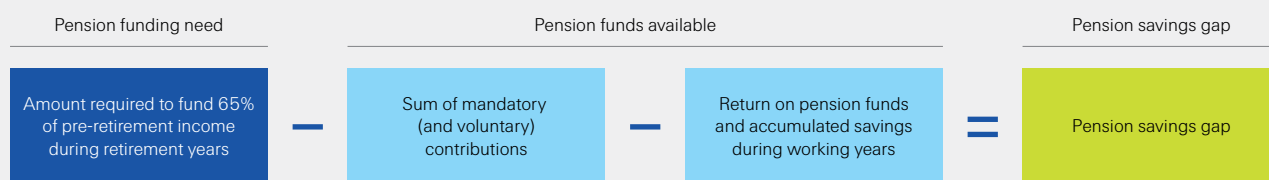
Quantifying the pension savings gap

Emerging markets' pension savings fall short of the funding needed for the current working population's retirements. We estimate a USD 5.4 trillion-per-year pension savings gap for workers in emerging markets, or USD 106 trillion in cumulative terms – about three times GDP and as high as estimates for many advanced markets. The pension savings gap per worker ranges by country from less than USD 9 000 in Indonesia to more than USD 230 000 in Poland. Given emerging markets' lower level of economic development, the gap indicates a need for imminent action.

The pension savings gap represents the shortfall in pension funding for the working population's retirement.

The strain on pension systems suggests governments and individuals face future financial stress. We estimate the size of the pension savings gap between the sum needed to cover retirement income for the average current working population in emerging markets, and the pension assets available (we focus primarily on second tier pension funding). This gap represents the funding deficit for pensions that could destabilise public finances and increase old-age poverty (see Figure 12).

Figure 12
The emerging markets pension savings gap



Source: Swiss Re Institute

Methodology at a glance

- We assume a flat income replacement rate of 65% of full working income to fund retirement in all countries.²⁷
- We do not consider the pension savings gap for the proportions of populations that are not in the labour force.
- We study 17 countries representing 80% of emerging markets' total GDP.
- The gap is estimated at country level using aggregate numbers. Estimated values for representative countries are extrapolated to get regional numbers.
- We use publicly available data sources such as national statistics agencies, pension funds, national insurance supervisors and the United Nations, as well as internal long-term macroeconomic forecasts.
- We first estimate the gap at the year of retirement for each market, then convert the estimated numbers to 2019 values using Swiss Re Institute projected long-term government bond yields in respective markets as discount rates.
- See Appendix for more details of our model inputs and methodology.

The emerging market pension savings gap stands at USD 106 trillion at 2019 value, equating to 3x total GDP.

A significant pension savings gap

We estimate the emerging market pension savings gap at USD 5.4 trillion for every year of their workers' retirements (see Figure 13), or USD 106 trillion in cumulative terms for all retirement years.²⁸ This represents the deficits in national PAYG DB pension systems, and inadequate replacement ratios in DC schemes, for all people

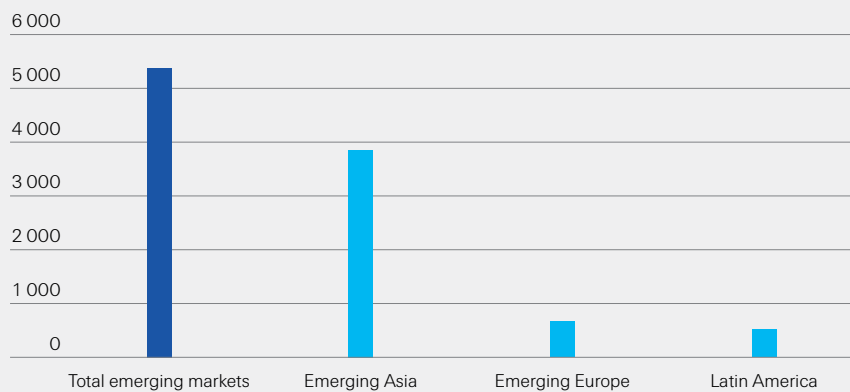
²⁷ Replacement rate is the percentage of pre-retirement income required to maintain a similar standard of living. Although replacement rates used in other studies range from 65% to 75%, we chose 65% to reach conservative results.

²⁸ Our estimates take into account the negative impact of COVID-19 through lower income and lower interest rates forecasts for 2020 and relevant future years.

Quantifying the pension savings gap

employed in the formal and informal workforces. The gap indicates that current funds available will not meet a 65% replacement rate for workers' incomes in their retirement years. It illustrates the scale of the opportunity for insurers to provide cover to households as they accumulate personal assets. The USD 106 trillion total gap is equivalent to about three times (296%) total emerging markets GDP in 2019, as high as estimates for major advanced markets. A World Economic Forum (WEF) study estimated major economies' pension savings gaps in a range from about 300% to above 600% of 2019 GDP (Australia: 294%, US: 304%, Canada: 363%, Japan: 436%, UK: 625%).²⁹ Given the different levels of economic development between advanced and emerging markets, there is an urgent need for emerging markets to act.

Figure 13
Emerging markets pension savings gap per year in USD billions, in 2019 values



Source: Swiss Re Institute

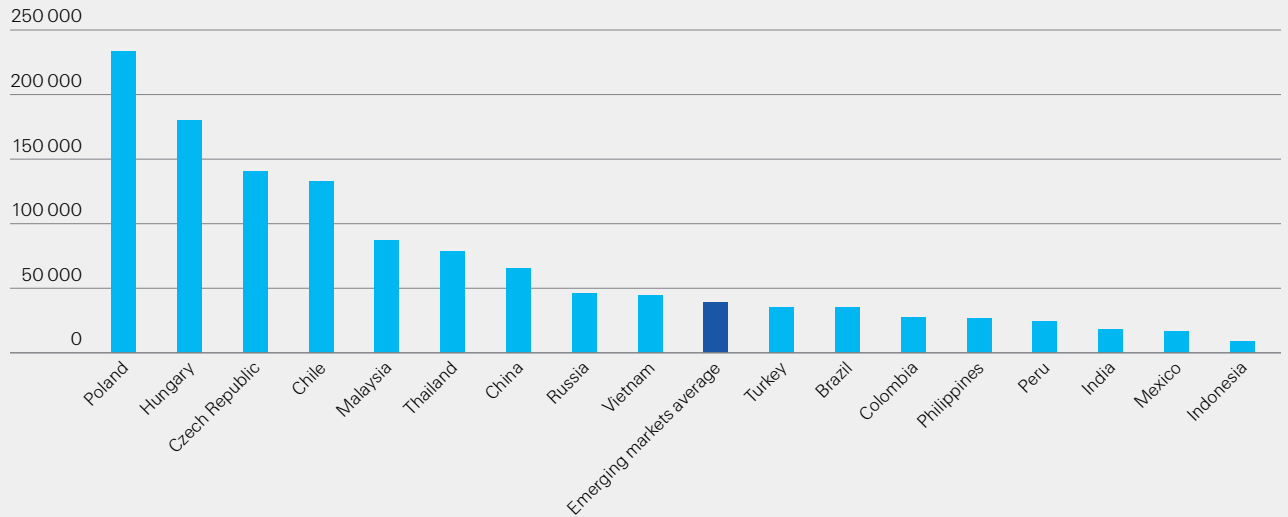
The per-worker pension gap is on average about USD 40 000 for all emerging markets.

The pension savings gap per worker represents the potential financial burden on current workers to support their post-retirement lifespan. Taking the USD 106 trillion cumulative pension gap on a per-worker basis, we estimate it at about USD 40 000, or about 8.5 times the average annual worker's income. However, there is a wide range from about USD 234 000 at highest to about USD 8 700 at lowest (see Figure 14).³⁰ On average, emerging Europe, with relatively higher per-capita income and lower expected long-term interest rates, has the highest per-worker pension gap of about USD 110 000. This is more than double the average for Latin America and emerging Asia (both about USD 50 000). However, the financial burden on workers in emerging Asia is as high as for emerging Europe at around 11 times their respective average annual incomes, much higher than for Latin America (6.2x).

²⁹ The WEF estimates were as of 2050 value. We discounted these future values to 2019 value and expressed them as a percentage of 2019 GDP. This showed that China's pension gap would be equivalent to 342% of 2019 GDP versus our estimate of 359% of 2019 GDP. Similarly, for India, the WEF estimate of pension gap in 2019 value would be 412% of 2019 GDP, compared to 312% of GDP in our model. *Global Pension Timebomb: Funding Gap Set to Dwarf World GDP*, WEF, 26 May 2017.

³⁰ The per-worker gap estimates in the text are the closest round numbers derived from model results.

Figure 14
Emerging markets' pension savings gaps per worker in USD, 2019 values

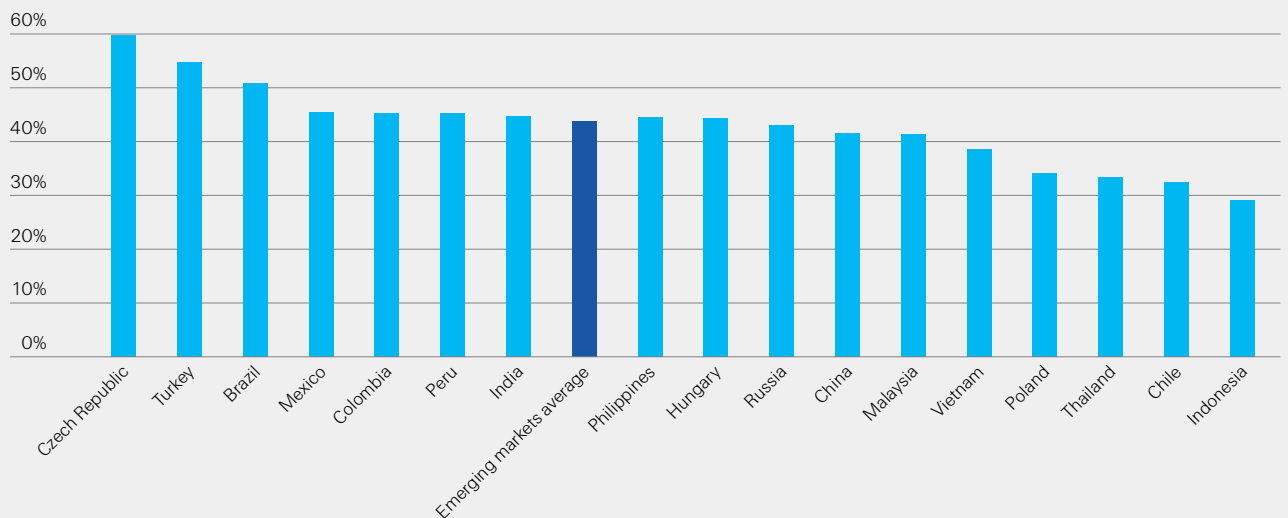


Source: Swiss Re Institute

Current pension assets will cover about 44% of the funds needed for retirement in emerging markets.

We also measure the gap as a percentage of the retirement income need to indicate how adequate pension benefits are to maintain recipients' living standards. Countries' adequacy levels range from 60% to 30% (see Figure 15). We estimate that current pension assets and savings will cover only about 44% of the money that emerging markets need to fund retirement, on average. Pensions are more adequate in emerging Europe than in other regions, as current pension assets and savings cover 49% of the region's retirement income need. In emerging Asia and Latin America, only just above 40% of retirement income can be covered by current assets and savings, slightly below the average and an indicator of low pension adequacy.

Figure 15
Emerging markets' available pension savings as a percentage of pension funding need



Source: Swiss Re Institute

Quantifying the pension savings gap

Emerging Asia has a USD 3.8 trillion per-year pension savings gap.

In **emerging Asia**, the pension savings gap is USD 3.8 trillion per year, which sums to a cumulative USD 74 trillion over workers' retirements. This reflects the large working populations in the economies of India and China in the region. Per worker, the pension savings gap is about USD 50 000 on average. Malaysia has the region's highest pension savings gap per worker (about USD 87 000), or nine times each worker's average annual income, a function of its early retirement age (55 years) and so longer retirements, as well as lower expected long-term interest rates compared to other emerging Asian markets. The adequacy of pension provision (pension savings gap as a percentage of the retirement income need) is lowest in Indonesia, as low contribution rates lead to lower pension savings available compared to the need. This more than offsets the gains from a young labour force and late retirement age. Thailand and Vietnam also have low pension adequacy rates. Pension coverage is generally low. In India and Indonesia, more than 80% of employment including agriculture is informal, and pension coverage is only 8%.

Poland has the highest per-worker pension savings gap of all emerging markets, at about USD 234 000.

Emerging Europe has a smaller annual pension savings gap at USD 663 billion, accumulating to USD 13.5 trillion over full retirements. However, individual economies have high per-worker pension savings gaps. Workers in Poland face a pension savings shortfall of around USD 234 000 each, the highest of all emerging markets and equivalent to 15.5 years of average annual wages. Low expected long-term interest rates, a relatively old labour force and long retirements all contribute to this high per-worker pension gap. Czech Republic has highest pension adequacy, holding sufficient current pension assets to meet 60% of the retirement income need, the highest of all markets we study.

Latin America faces a USD 514 billion per year pension savings gap.

In **Latin America**, the USD 514 billion pension savings gap per year sums to a cumulative USD 10 trillion over all workers' retirements. Brazil has the largest pension savings gap per annum at USD 180 billion, a reflection of its large working population. Workers in Chile face the largest pension savings shortfall in the region, at USD 133 000 each, resulting from the combination of relatively high wage income and a low pension contribution rate (10%). This also creates low pension adequacy, as current assets and savings cover only 42% of the retirement income that Chilean workers need. Brazil has the highest pension adequacy, with current funds able to provide about 50% of income needed. Peru has the lowest pension coverage rate at 24%, reflecting low wages and less formal employment.

Sustaining the social pension schemes is a priority for the Chinese government.

China's pension savings gap per worker and pension adequacy are about the median level of all emerging markets.

Our study findings focus on a pension system's adequacy.

China: stronger public and private pension provision the priority

China's authorities and research institutes are aware of the growing challenge facing the country's social pension scheme in providing for workers' retirements. The government has prioritised the development of pension protection in its 14th Five Year Plan.³¹ A number of domestic studies suggest the deficit in the social pension fund ranges from USD 1.2 trillion to USD 2.4 trillion.³² This refers to the shortfall in the fund that pays out to retirees who are eligible to receive pension payments for basic protection. The Chinese government is promoting pension system reform, with a focus on encouraging involvement from private insurance (the third tier of the pension framework) to enhance protection. The China Banking and Insurance Regulatory Commission recently issued a notice promoting the development of "special commercial pension insurance" in China as part of efforts to overhaul the system for retirement saving.³³ The pilot programmes first took place in Zhejiang and Chongqing from 1 June 2021.

Our study estimates the annual pension savings gap for China's working population during their retirement years, maintaining their current living standard, with a replacement ratio of 65% of annual income. Using the newly released census data for worker age, we estimate the pension savings gap per worker in China at about USD 66 000, which ranks seventh among the 17 markets in our study (see Table 2 for full country list). This is equivalent to 9.7 times a worker's average annual income in 2019. The country's large labour force and relatively high income per capita result in an aggregate annual pension gap of USD 2.5 trillion per year.³⁴ However, this probably overestimates the scale of the pension savings gap since China's high national saving rate and high value of real estate, widely used as retirement assets, are both factors that would increase the value of pension fund assets.³⁵ We did not quantify these due to data unavailability and incomparability across the emerging markets we study.

Quantifying the pension savings gaps highlights the challenge for emerging markets. Each country's gap is a function of a unique combination of statutory, demographic and economic factors. Our findings are not a comment on the strength or weakness of a country's pension system. We instead describe two key parameters: the absolute-size pension savings gap and the degree of pensions adequacy. These offer insurance companies a view of the potential protection need and how the industry may contribute, either through insurance solutions or public-private partnerships.

³¹ See www.gov.cn/xinwen/2021-03/21/content_5594201.htm, available in Chinese only.

³² In 2020 the Insurance Association of China estimated the pension fund deficit to be around CNY 8–10 trillion (USD 1.2–1.5 trillion) over the next five to 10 years. Source: "Research estimates China is facing a pension deficit of CNY 8–10 trillion over next 5–10 years", *XinHua Net*, November 2020. http://www.xinhuanet.com/fortune/2020-11/20/c_1126765951.htm. The Chinese Academy of Social Sciences in 2019 estimated that the social pension fund deficit would reach USD 1.6 trillion by 2050 including fiscal subsidies, or USD 2.4 trillion without fiscal support. Source (Chinese): China Pension Actuarial Report 2019–2050, *Chinese Academy of Social Sciences*, World Social Security Research Center, <http://www.cisscass.org/yanjiucginfo.aspx?ids=26&fl=3>; Research finding: pension fund in China will run out by 2035, *Deutsche Welle*, (dw.com). 报告：中国养老金“坐吃山空” 2035年结余耗尽 | 经济纵横 | DW | 13.04.2019.

³³ "China Promotes Private Retirement Savings to Shore Up Strained Pension System", *Caixin* (caixinglobal.com), 17 May 2021.

³⁴ The labour force in China was about 784 million in 2019, compared with 495 million in India, 136 million in Indonesia and 107 million in Brazil. World Bank, <https://data.worldbank.org>. The per capita salary in China was USD 14 554 (urban non-private sector workers) in 2019, compared to USD 2 124 in India, or an average of USD 4 705 in emerging Asia. Source: National Bureau of Statistics of China, Ministry of Statistics and Programme Implementation of the Government of India and CEIC.

³⁵ *China's High Savings*, International Monetary Fund, 2018.

Quantifying the pension savings gap

Table 2
Factors shaping a country's pension savings gap

Country	Pension savings gap per worker as of 2019, USD			Key factors
	Annual pension gap (gap per post-retirement year), USD billions	Adequacy: available assets and savings as percentage of retirement income need		
Poland	233 739	188	34%	<ul style="list-style-type: none"> ■ Highest pension savings gap per worker of all emerging markets. High wage income and relatively low contribution rates compared to other countries in emerging Europe result in greater pension need ■ Older labour force
Hungary	180 313	49	44%	<ul style="list-style-type: none"> ■ High wage income creates a high pension need relative to pension funds available, resulting in a large pension savings gap per worker ■ Highest contribution rate of all emerging markets ■ Late retirement age offsets a relatively old labour force
Czech Republic	140 390	39	60%	<ul style="list-style-type: none"> ■ The highest pension adequacy rate of all emerging markets, and second-highest contribution rate ■ Oldest labour force of all emerging markets (with Russia)
Chile	132 649	57	32%	<ul style="list-style-type: none"> ■ Highest pension savings gap per worker in Latin America ■ Second-lowest adequacy rate of all emerging markets ■ High wage income and low contribution rate (10%) result in low funds available relative to pension need ■ Moderate interest rates
Malaysia	87 152	50	41%	<ul style="list-style-type: none"> ■ Highest pension savings gap per worker in emerging Asia. Longest post-retirement period of all emerging markets due to early retirement age (55), which results in greater pension need ■ Low interest rates compared to other emerging Asia markets
Thailand	78 921	85	33%	<ul style="list-style-type: none"> ■ The third-lowest pension adequacy ratio of all emerging markets. Older labour force and higher life expectancy result in longer post-retirement years and so a higher pension requirement and lower assets and savings compared with the pension need ■ Lower interest rates compared to other emerging markets in Asia
China	65 809	2 523	43%	<ul style="list-style-type: none"> ■ Higher wage income, older labour force and early retirement age result in relatively high pension need ■ Highest pension coverage of the labour force of all emerging Asian markets ■ Greater demographic pressure due to one-child policy (1979–2015), though partly offset by higher deposit ratio due to cultural reasons
Russia	46 275	150	43%	<ul style="list-style-type: none"> ■ Oldest labour force of all emerging markets (along with Czech Republic) and early retirement age results in longer post-retirement years
Vietnam	44 471	78	39%	<ul style="list-style-type: none"> ■ Earliest retirement age for women (50) of all emerging markets ■ The pension savings gap is likely underestimated due to large informal labour force
Turkey	35 469	43	55%	<ul style="list-style-type: none"> ■ The second highest adequacy rate: relatively high pension savings available to pension funding need, as a result of higher expected returns on savings (the highest expected interest rates of all emerging markets) ■ Relatively young working population, but early retirement age
Brazil	35 376	180	51%	<ul style="list-style-type: none"> ■ Second highest gap per worker in Latin America ■ The third highest adequacy ratio: relatively higher pension savings available to pension funding need due to high contribution rate ■ Relatively younger labour force and late retirement age
Colombia	27 837	26	45%	<ul style="list-style-type: none"> ■ Early retirement age results in longer post-retirement years, despite young labour force ■ The gap is likely underestimated due to large informal labour force
Philippines	26 576	79	44%	<ul style="list-style-type: none"> ■ Relatively low contribution rate partially offsets gains from young labour force and low post-retirement years ■ Younger labour force and late retirement age
Peru	24 567	24	45%	<ul style="list-style-type: none"> ■ Second-lowest gap per worker in Latin America as low wage income results in lower pension need ■ The gap is likely underestimated due to large informal labour force
India	18 361	492	45%	<ul style="list-style-type: none"> ■ Lower gap than China due to younger labour force, longer contributing years and higher interest rates ■ The gap is likely underestimated due to large informal labour force
Mexico	16 593	57	45%	<ul style="list-style-type: none"> ■ Low contribution rate (7%) results in low assets and savings available as proportion of pension need, despite young labour force and late retirement age ■ Relatively high expected interest rates
Indonesia	8 692	81	29%	<ul style="list-style-type: none"> ■ Lowest pension savings gap per worker: higher retirement age with fewer post-retirement years, and relatively high expected interest rates ■ The lowest adequacy ratio. Low pension savings available compared to its own pension need due to low contribution rate, offsetting the gains from young labour force and late retirement age^{A)} ■ The gap is likely underestimated due to large informal labour force

Note: ^{A)} The Indonesian government has announced that it will gradually increase the retirement age to 65 years. Since our pension estimates are forward looking, we have taken into account proposed changes in the future. Source: Swiss Re Institute

Insurance to fill savings and other protection gaps

Individuals in emerging markets will increasingly need to make their own funding arrangements for their retirement. Longevity, mortality, morbidity and investment risks have the power to disrupt pension savings and retirement incomes. We estimate the mortality and health insurance protection gaps in emerging markets combined were more than USD 700 billion in 2020. Individuals will need more tailored insurance protection to offset these risks.

Insurance can provide protection against disruption to pension saving and stable retirement incomes.

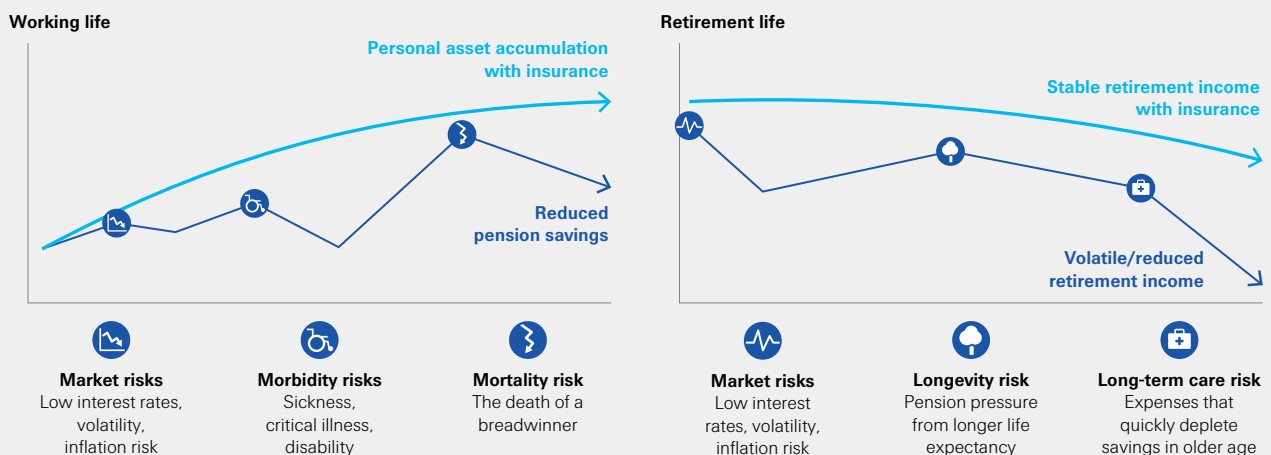
The significant pension savings gap indicates that individuals will need more support to save the personal assets they need to fund their retirements. Longevity, mortality, morbidity and investment risks can disrupt the process of saving for a stable retirement income. Individuals need not only personal savings, but assurance and protection to support "smooth" asset accumulation and decumulation. The re/insurance industry can provide protection against these risks in the form of life, medical, disability and critical illness products. International best practice shows that insurance can maximise positive outcomes for individuals when it is embedded or bundled as a compulsory element in a standard pension scheme.

Disruptions to savings and post-retirement income

Individuals are exposed to mortality, morbidity and market risks as they accumulate assets for, and decumulate assets in, retirement.

Individuals are increasingly exposed to risks that have the power to disrupt asset accumulation and decumulation during their financial lifecycle (see Figure 16). A period of unemployment due to sickness, family care or even death can result in a potentially much smaller retirement income. In their working years, the accumulation phase, individuals face risks related to *financial market conditions* that can impact investment returns. For instance, low interest rates mean individuals would need to save more and/or make riskier investments to meet their target returns. Similarly, when retiring, low rates have made annuities less attractive. Re/insurers can help by providing products that offer a guaranteed income and allow a level of investment exposure as well as protection against volatility. Individuals also face *mortality risk*: loss of income (and potentially savings) due to the premature death of a breadwinner; and are vulnerable to *morbidity risk*: expensive health shocks that can quickly deplete savings, especially in older age, without welfare support or medical insurance. In the decumulation phase, individuals face risks related to market conditions as well as longevity, morbidity and LTC risks.³⁶

Figure 16
Risks that can jeopardise pension savings and a stable retirement income



Source: Swiss Re Institute

³⁶ There are also risks of expense shocks related to catastrophic health expenditures and property and liability risks that can threaten a family's long-term financial planning. These can be protected by the broad range of non-life insurance products that are out of scope of this analysis.

Insurance to fill savings and other protection gaps

Emerging markets' mortality and health protection gaps combined total more than USD 700 billion.

There is a significant gap in protection against morbidity and mortality risks for households globally, one that is particularly wide in emerging markets. For mortality and health risks, we estimate the global protection gap at USD 1.2 trillion in premium equivalent terms as of 2020. About 60% of this is attributed to emerging markets.³⁷ For instance, our SRI Health Resilience Index study showed emerging markets facing health protection gaps of about USD 468 billion. Our SRI Mortality Resilience Index study found mortality risk to be significantly under-protected in emerging markets. The ratio of protection available to protection need varies from 27% to 43% in emerging markets, meaning 57%–73% of mortality risk is not protected. In absolute terms, the mortality protection gaps for these markets were about USD 238 billion as of 2020. These two areas of life protection total an opportunity of more than USD 700 billion in premium equivalent terms.

Table 3
Mortality and health resilience indices and protection gaps in 2020

	SRI Mortality Resilience Index	Protection gap in premium equivalent (USD billion)	SRI Health Resilience Index	Protection gap in premium equivalent (USD billion)
Emerging Asia-Pacific	27%	120	76%	306
Emerging Europe	43%	90	88%	62
Latin America	43%	28	80%	100

Source: Swiss Re Institute

Insurance can enhance savings and smooth individuals' mortality, morbidity and longevity risks.

Protecting pension savings and post-retirement income

It is important for individuals to consider which assurance and protection they need to support smooth asset accumulation and decumulation. To an extent, re/insurers can offer protection through existing products, but we believe more can be done. For example, markets such as Australia and Chile show that life insurance can be embedded as a compulsory element in a pension scheme. The insurance industry will need to support new products, solutions and routes to market to navigate the challenges of ageing populations and the low interest rate environment.

Traditional life insurance products can be embedded into pension systems.

Life insurance and mandatory pension systems

Governments and insurers can work together to embed traditional life insurance products into mandatory pension systems, increasing the protection associated with accumulating savings. This can take the form of a compulsory insurance purchased through the mandatory DC pension scheme to protect individuals against mortality and morbidity risks. In Chile, workers receive disability and term life insurance through the pension system. (see *Traditional life insurance in the Chilean pension system*).

DC schemes could provide the framework for employers to pre-select one (or more) life insurance products alongside retirement savings plans.

DC pension schemes could also provide the framework for employers to pre-select one (or more) life insurance products to offer employees alongside retirement savings plans. Affiliates (ie, workers enrolled in the scheme) can select the product, determine the level of cover, and allocate a portion of pre-tax retirement savings contribution to pay ongoing life insurance premiums. This eliminates the need for employees to decide from among many product options and reflects an explicit employer-sponsor endorsement of the product. The universal employment-based DC superannuation system in Australia is a similar example. Employers are required to contribute (9.5% of salary as of 1 July 2020) to employees' superannuation funds, which in addition to retirement savings, provide basic level of death, total and permanent disability, and income protection cover. Employees may ultimately increase or decrease contributions toward mortality and disability cover. The

³⁷ *sigma Resilience Index 2021*, op. cit.

adherence of life insurance cover through superannuation funds is high, about 70% of all life policies in Australia.³⁸

Digital advice tools can guide employees on appropriate life insurance coverage.

Insurers can expedite and simplify the life protection buying process by distributing products through the established employer-led retirement savings platforms that employees are familiar with and trust. Insurance providers can also strengthen the customer relationship by providing useful tools such as online calculators for retirement savings, or robo-adviser technology. These can provide guidance on the appropriate level of life insurance coverage based on income and contribution levels, to help employees make sense of complex information, narrow their options and overcome inertia. This would be particularly helpful for middle-income earners, who often lack access to financial advisers.

Life insurance could be embedded in employer-sponsored complementary retirement plans.

The life insurance sector can also add value to employer-sponsored voluntary retirement plans that complement the mandatory scheme. Employers often offer employee-paid supplemental life coverage at little extra cost to their employees. Results from Swiss Re Institute surveys in the US show a relatively strong preference among respondents to buy life insurance from their employer.³⁹ Life insurance embedded in retirement plans was the most preferred option to buy. Since group life insurance policies are job-dependent, a desirable feature would be portability of a policy when an employee leaves a job or retires.

LTC risks can also be transferred to the insurance industry.

Life protection has a role to play in the decumulation phase of individuals' lifecycles too. Emerging markets' LTC spending will increase significantly in the coming decades due to their rapidly ageing populations, and tightening public finances will make the growth in funds needed a greater challenge. This is another opportunity to transfer LTC risks to the insurance industry. For example, in China in 2017, 6% of the population between 60 and 79 years old needed LTC. Of those aged 80 years and above, 26% needed LTC.⁴⁰ In response to the growing LTC need, the Chinese government has run pilot programmes for LTC provision in 15 cities to date.⁴¹ It is now considering listing LTC insurance as the sixth social insurance programme after pensions, healthcare, unemployment, work injury and maternity benefits, on a compulsory basis. Policymakers have involved the private sector to design a participation mechanism, and encouraged insurers to innovate commercial LTC products to fit Chinese consumer demand.

³⁸ See "Insurance through super", moneysmart.gov.au/how-life-insurance-works/insurance-through-super.

³⁹ *Life insurance within qualified defined contribution retirement plans: insuring the US middle-income market*, Swiss Re, 2019.

⁴⁰ *Healthy ageing in China*, Swiss Re, 2020.

⁴¹ According to the National Healthcare Security Administration, by the end of June 2019, more than 88.54 million people in China were covered under the LTC insurance programme and more than 426,000 subscribers had received benefits, with the average annual payment of over 9,200 yuan (USD 1,419). "Promoting the sixth insurance program", *Chinadaily.com.cn*, 25 January 2021.

Chile's pension system involves mandatory life insurance purchase by PFAs on behalf of affiliates.

Traditional life insurance in the Chilean pension system

Chile pioneered the first privatised national pension system in Latin America in 1981, at a point when the system in place since the 1920s faced bankruptcy. The reform created an individual capitalisation system, where individual accounts owned by workers were managed by private pension fund administrators (PFAs). This model has been followed by more than 30 countries across Latin America, eastern Europe and southeast Asia. The current Chilean system retains the core structure but has undergone numerous modifications, and more are expected. In recent years there has been increased pressure for change as the average retirement payment is less than the minimum wage. This is in line with our estimate of the pension savings gap for the country. Despite the existing challenges, one feature of the current system that has worked is the required purchase of disability and death insurance cover by PFAs with a life insurer on behalf of their affiliates through a bidding process. The premium is paid as a percentage of the affiliate's salary (currently at 1.99%) compulsorily by employers.

Bundling biometric risk protection with savings products can support asset accumulation.

Bundling protection: biometric risk and a savings component

Protection-type life insurance can support private voluntary (third tier) pension savings, helping to safeguard individuals' retirement savings while also protecting against life events such as death or disability that reduce their capacity to save. Instead of pure life or savings contracts, insurers can offer consumers composite products that provide mortality, morbidity and LTC protection with a savings component. In Brazil, for example, the most popular life cover is a savings product called Vida Gerador de Benefício Livre (VGBL), sold with additional risk protection riders (additional provisions that can expand the benefits in insurance policies) such as mortality and morbidity coverage. VGBL accounts for more than 80% of premiums in Brazil's life insurance market, and for almost 40% of all accumulated retirement funds under the voluntary tier in 2019. Emerging markets are also trialling other new concepts for combined life and savings products such as Universal Life Insurance.⁴²

LTC insurance can be a hybrid of savings/annuity and life products.

LTC insurance can be structured as a hybrid of savings/annuity and life products. Hybrid products pay out a death benefit early, or increase the monthly payment from the annuity at the onset of LTC need. The advantage is that if care is not needed, the underlying life or savings product still gives the insured a payout. This also helps overcome loss aversion and can make LTC insurance more attractive to consumers. Underwriting and pricing for hybrid products can be complex, but small benefits can be offered with little or no additional underwriting.

Critical illnesses and disability can create financial stress on savings plans during working years.

Insurers could also bundle savings products with morbidity risk riders. Disability or critical illnesses such as cancer can create huge financial stress during working years due to loss of income from unemployment and out-of-pocket medical and non-medical expenses. People often overestimate the social security benefits they would receive in the event of disability, or assume that government programmes negate the need for insurance, or that standard health insurance plans provide full cover. The cost of critical illnesses can go far beyond the provisions of medical plan cover.

Consumers value insurance that targets specific demographics and adapt to changing circumstances.

There is also an opportunity to offer insurance that bundles coverage, targets specific demographics and can adapt to changing lifecycle circumstances. According to a recent Swiss Re survey in emerging Asia, households prefer life insurance with savings components.⁴³ The survey data shows that among life insurance owners, 46% in Indonesia and 39% in Malaysia and China currently own savings products, compared with 7% in Japan, 15% in Australia and 16% in South

⁴² Universal Life Insurance is a type of permanent insurance, ie. a policy that provides lifetime coverage as long as policyholders pay premiums and fulfil any other requirements. It combines a savings and an insurance component. It also offers consumers flexibility in premium payments, death benefits and in the savings portion.

⁴³ *Closing Asia's Mortality Protection Gap*, Swiss Re, 2020.

Protection products bundled with tax advantages can incentivise consumers.

Innovative products can grow with a consumer's changing lifecycle needs.

Insurers should design solutions in the context of multi-generational family needs.

Property is a key long-term saving vehicle for many people in China...

...but mortgage insurance is under-utilised.

Korea. Critical illness protection is the most favoured bundling option for wealthy and older consumers, followed by hospital/surgical cash and medical reimbursement, while accident benefits are more popular among young consumers.

Many pension schemes focus on pre-tax asset accumulation or savings and do not cover mortality and morbidity risks. Products that bundle protection with tax incentives can be an effective tool to close mortality and morbidity protection gaps. The same survey mentioned above found that in Malaysia, Thailand and India, consumers often seek life insurance for tax savings. Such products can particularly benefit consumers who dislike paying regular premium via salary deductions. For example, bundled products that can fund protection riders by accepting a lower investment return may be attractive.

There is space to innovate with single-policy products that evolve with consumers' changing lifecycle needs. Traditional products require lapse and early termination with charges if a consumer experiences an adverse life event such as death of a partner. A flexible insurance product might fund a high mortality sum-assured in savings years, then exit that rider and enter into a guaranteed minimum income benefit for life during the decumulation phase. For example, Ladder Life and Insurtech in the US allows customers to change the limits of their term life policy as financial needs change, rather than cancel an existing policy to buy a new one.⁴⁴

Life insurance for the sandwich generation

In many emerging markets, families support the financial needs of older people. This creates risk should a family suffer the disability or premature death of the main breadwinner. A Swiss Re study in 2018 estimated that in China, families funded 21% on average of the total annual spend for those aged over 65.⁴⁵ In Poland, the equivalent average family contribution was 24%. In both cases this was more than double the proportion funded by families in advanced markets. China's structure of younger generations providing for their parents is vulnerable as family sizes decline due to current low fertility rates and the historical 'one-child' birth policy. The sandwich generation, which cares for parents while raising a family, faces growing financial pressure as a result of the "4:2:1 problem" of single-child families.⁴⁶ Insurance solutions for "sandwich generation" family needs can include bundling services with life insurance to help families manage the resource burden arising from the death of a breadwinner. In Singapore, Malaysia and Hong Kong, Swiss Re and insurers developed first-in-market solutions that protect three generations of a family: policyholders, their children and their parents. They offer parent protection riders, such as for major cancers, and child protection benefits, in addition to protecting policyholders against death, disability and critical illness.⁴⁷

Combining life and mortgage protection

In China, individuals often rely heavily on real estate as a long-term savings vehicle. Our recent market survey shows that 94% of Chinese respondents owned a house in 2019, much higher than the average level of 80% for emerging Asia (excluding China). Nearly half of Chinese households (47%) also own a second house for investment and leisure purposes, again the highest in emerging Asia.⁴⁸

High property ownership and high value of properties imply a substantial protection gap for Chinese households if they lose a breadwinner unexpectedly, creating the

⁴⁴ "Ladder continues to garner industry-wide recognition and demonstrate accelerated growth", *PR Newswire*, 15 May 2018.

⁴⁵ *Who pays for ageing*, Swiss Re, 2018.

⁴⁶ It refers to 4 grandparents and 2 parents for 1 working adult to support. See "Elderly care – coping with the 4:2:1 problem", *China Outlook*, July 2014. <http://chinaoutlook.com/elderly-care-coping-with-the-421-problem/>

⁴⁷ "Old is gold", *Asia Insurance Review*, October 2019.

⁴⁸ Nearly 40% of residents in China's Tier 1 cities are migrant workers, creating strong demand for rented housing. The survey also found that 35% of respondents from emerging Asian markets (excluding China) own secondary property.

Insurance to fill savings and other protection gaps

risk of the family losing their home. However, there is under-utilisation of mortgage insurance – insurance that will repay an outstanding mortgage loan if the insured cannot fulfil the repayment liability due to unexpected disability or death. Unlike in advanced markets, mortgage protection insurance is not yet widely used in most emerging markets, including China. The People's Bank of China, the central bank, made mortgage insurance a compulsory condition for mortgages in 1998, but to lighten regulation, the China Banking and Insurance Regulatory Commission (CBIRC) removed it again in 2006. Today some commercial banks require mortgage protection insurance to approve mortgage requests, but rules vary by bank. Take-up of mortgage protection insurance is relatively low as a result. More work is needed to promote use of mortgage protection insurance to protect families from extreme adverse events.⁴⁹

⁴⁹ *Expanding insurance protection for China's urban residents*, Swiss Re, 2020.

Conclusion

The strain on pension systems is here to stay and risks are transferring to individuals.

The pension savings gap indicates the need for personal funding with support from insurance protection.

Improvements in skills, a later retirement age and more women in the workforce can compensate for shrinking labour force.

The re/insurance industry complements public pension systems.

Individuals typically welcome a broad range of life insurance solutions to help close protection gaps.

Emerging markets are at risk of growing old before growing rich

Governments in emerging markets face a significant challenge in providing adequate retirement income for their working populations. Pension sustainability is threatened by structural trends of a shrinking labour force, lower interest rates and weaker fiscal positions. For example, China's national academia has estimated that the country's social pension fund will run out by 2035.⁵⁰ Reforms to increase workers' contribution rates and raise retirement ages show governments trying to address the challenge. There is also a global trend of shifting mortality, morbidity, market and longevity risks from governments to individuals, which makes personal asset accumulation key.

The scale of the challenge is huge. Our quantitative study finds that emerging markets face a USD 5.4 trillion per year, or USD 106 trillion cumulative pension savings gap to provide for their current working populations, as of 2019. Results suggest current pension assets are sufficient to cover only 43% of the pension need. The pension savings gap is around three times the GDP of all emerging markets. It illustrates the scale of the working population's need for protection support to sustain asset accumulation and decumulation uninterrupted by adverse events.

Government actions can mitigate the impact of population ageing

Declining working-age populations are problematic for governments but it is in their interest to ensure a sustainable and integrated pension system. Underfunding this key safety net ultimately returns costs to the state in other forms, such as through old-age poverty and ill-health, even fuelling social discontent. The following measures can counteract the effects of ageing populations on economic growth:

- efforts to expand the formal sector and achieve full employment;
- improving skill sets and productivity of the existing labour force;
- improvements in education and additional investment in research and development, as well as in human and physical capital to increase productivity;
- increasing female participation in the labour force;
- a higher retirement age, to lower the old-age dependency ratio and keep the workforce stable or growing;
- higher inter-regional and international migration.

There is a growing role for private insurance protection

Individuals will increasingly need to make their own funding arrangements for their retirement in emerging markets. The re/insurance industry complements public pension systems by providing savings and protection covers. While pension savings products, including voluntary pension savings accounts and annuities, are the core of life insurance offerings, protection insurance insulates individuals from exposure to risks during the accumulation (saving for retirement) and decumulation (retirement-spending) phases of their financial lifecycle. This strengthens families' economic resilience.

The re/insurance sector has an opportunity to insulate individuals better from mortality, morbidity, longevity and market risks to enable greater asset accumulation and decumulation. This will become increasingly important as risks are passed from governments to individuals. Our mortality and health protection gaps indicate that life insurers have a premium opportunity worth more than USD 700 billion in emerging markets. Innovative solutions that integrate, bolt on or bundle life covers alongside public and private pension savings vehicles are being trialled and adopted. These are proving valuable, particularly where insurers can offer them in an easily

⁵⁰ China Pension Actuarial Report 2019–2050, op. cit.

Conclusion

accessible, affordable format, and through the platforms that people are familiar with and trust. Further solutions could work to alleviate the financial pressure on the sandwich generation in many markets, which struggle to support parents as well as raise children. However, securing emerging markets' future retirement needs will require the combined efforts of public and private sector stakeholders. There is a significant opportunity for governments, regulators, re/insurers, businesses and individuals to work together to make a success of emerging markets' ageing process.

Re/insurers can support pension systems by developing affordable products and raising awareness.

There is more that re/insurers and other stakeholders can do. In emerging markets particularly, insurance needs to be accessible, affordable and flexible. Insurers can invest in new distribution channels designed to reach people with less access to traditional financial services, design products to serve lower-income brackets of populations, and build in customisation to address the changing risks to families through their lifecycles. Re/insurers can also help raise public awareness of the importance of funding and protecting an adequate retirement income plan. This is key since individuals tend to overestimate the support they will receive from social programmes.

Partnership will enable insurers to help individuals to mitigate their lifecycle phase risks.

Public-private partnerships are key to drive societal resilience

Emerging markets need a sustainable and integrated pension system formed from a strong partnership between individuals, employers and the state. Partnership between governments and the insurance industry can create the long-term solutions to insulate individuals from mortality, morbidity, financial market and longevity risks. There is also an important role for regulation. The insurance solutions we put forward rely on a strong legal and regulatory framework to support insurers to offer sustainable life insurance coverage such as for LTC, as well as savings products.

Partnership will also be key to channelling insurance capital to productive use.

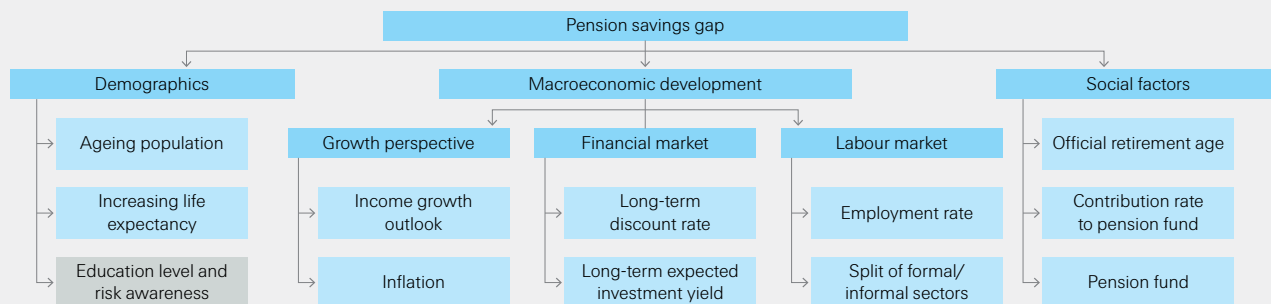
Re/insurance companies are not only risk absorbers but also providers of long-term finance, helping to recycle saving pools into investment in the real economy to drive growth. By working together, policymakers, regulators and institutional investors can deliver financial infrastructure and investment vehicles for long-term projects that can be a match for long-term liabilities. Public-private partnership can also facilitate capital market development. Taking steps to make it easier for re/insurers to deploy their balance sheets locally in emerging markets can over time deepen and broaden domestic bond and stock markets. This again supports economic development.

Appendix

Calculating the emerging market pension savings gap

The inputs into our model span demographic, economic and social factors (see Figure 17).

Figure 17
Key factors affecting the pension savings gap



Note: "Education level and risk awareness" is coloured grey because this factor is not directly used as an input variable in the model, but implicitly affects social development and households' private pension savings. Source: Swiss Re Institute

We estimate gaps at country level using aggregate data.

We use data for 17 emerging markets representing 80% of emerging markets' total GDP. Gap numbers are estimated at the overall country level using aggregate numbers. Estimated values for representative countries are extrapolated for regional numbers. Data has been collected from publicly available sources, such as national statistics agencies, private pension funds, national insurance supervisors and the United Nations, as well as internal long-term macroeconomic forecasts.

The gap is the difference between the present value of future pension needs and total pension funds available.

In our model, the pension need for each country is a function of the level of income (average earnings of employed population) that needs to be replaced post-retirement; demographic metrics (such as retirement age and life expectancy); the number of post-retirement years to be funded and the income replacement rate. We use a flat income replacement rate of 65% of full working income to fund retirement. We do not consider the proportion of populations that is not in the labour force. Pension funds available includes mandatory pension contributions from employees, employers and/or governments; years to retirement (remaining working years); total pension fund assets (both mandatory and voluntary, managed by pension fund administrators, life insurers and government agencies); the capital (savings) expected to be accumulated during remaining working years; and expected investment returns.⁵¹

We use a two-stage approach to estimate the pension savings gap.

We use a two-stage approach to estimate the gap numbers. We first estimate the gap at the year of retirement for each market (funds needed at the year of retirement – funds available at the year of retirement). We then convert the estimate to 2019 values, to facilitate comparison across markets, using long-term government bond yields as discount rates.

Emerging markets vary significantly in areas such as retirement age.

Emerging markets take very different approaches to the key variables affecting pension savings. These include *retirement age*: while workers' average age is similar in Russia, Poland, Hungary and Czech Republic, workers in Russia need to contribute to pension funds for 17.4 additional years (as of 2019), while workers in Poland, Hungary and Czech Republic need to contribute for 22–24 more years. This enables them to accumulate more pension funds. Similarly, in Indonesia an average worker requires only 13 years of post-retirement financing, but Malaysian retirees need

⁵¹ We use the average projected long-term government bond yield of each market as the rate of return.

funding for 25.6 years owing to the earlier retirement age.⁵² Another is the *mandatory saving rate*: in Indonesia, workers are expected to save only 6% of their earnings towards their post-retirement years, in Hungary it is a much more considerable 30% of their earnings.⁵³

There is no one standard way to measure the pension savings gap.

Estimates vary, but all studies conclude that there is a significant pension savings gap to be covered.

How other studies have calculated pension savings gaps

A number of studies have sought to measure pension savings gaps in the past, using different methodologies.⁵⁴ Accordingly, estimates vary depending on the approach. Most of the studies focus on advanced markets. Aviva estimated the potential pension savings gap in Europe using a bottom-up approach for the markets it covered, assuming a replacement rate of 70% and a uniform discount rate of 4% across all markets.⁵⁵ In contrast, another study approached the calculation using GDP and old-age dependency ratios to project the amounts needed for retirement, before deducting an estimate of monies saved in pension funds. This assumed a replacement rate of 60% and a 5% discount rate.⁵⁶

UBS estimated a pension savings gap index for 12 advanced markets in another study. This first estimated the cost of living for the retired population and then compared it to the income available from various sources (social security system, personal savings etc.) to come up with a gap estimate. More recently, pension savings gap estimates by WEF assumed that retirees will receive income from the mandatory public system that will then need to be “topped up” with individual savings to provide 70% of pre-retirement income as a level that would adequately support them. While the studies mentioned here are not an exhaustive list, they demonstrate that there is no one standard way to measure the pension savings gap. Although the estimates of these studies vary depending on the approach used, all conclude that there is a significant pension savings gap that needs to be covered.

⁵² Measured as the difference between overall life expectancy and official retirement age.

⁵³ Saving rate in pension products or assets that are predominantly used for pension financing.

⁵⁴ *The Pension Gap Epidemic: challenges and recommendations*, The Geneva Association, Oct 2011

⁵⁵ Look at *Mind the Gap: Quantifying the pensions savings gap in Europe*, Aviva, September 2016 for a review of various studies on this topic.

⁵⁶ R. Marin, *Global Pension Crisis: Unfunded Liabilities and How We Can Fill the Gap*, John Wiley & Sons, 2013.

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Swiss Re Management Ltd
Swiss Re Institute
Mythenquai 50/60
P.O. Box
8022 Zurich
Switzerland

Telephone +41 43 285 2551
Email institute@swissre.com

Authors

Caroline de Souza Rodriguez Cabral
Xin Dai
Irina Fan
Jessie Guo
Mahesh Puttaiah
Viola Wang

The authors would like to thank
Thomas Holzheu, Chris Ip and Hao Jiang
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sigma editor

Alison Browning

Managing editor

Dr Jerome Jean Haegeli
Swiss Re Group Chief Economist

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Swiss Re Management Ltd.
Swiss Re Institute
Mythenquai 50/60
P.O. Box
8022 Zurich
Switzerland

Telephone +41 43 285 2551
swissre.com/institute