sigma

Reshaping the social contract: the role of insurance in reducing income inequality

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Executive summary

Income inequality is negative for economies, social cohesion and financial markets globally.

Income inequality within countries is negative for social cohesion, economic growth and financial markets. It is also detrimental to most insurance markets, leading to overall lower insurance penetration and reduced household protection, our research finds. Income inequality in advanced economies has in general been rising for 40 years. This is as measured by the Gini coefficient, which shows the distribution of income across the population and is the most common statistic used to describe inequality.[1] Inequality in emerging economies is in general higher than advanced markets, but declining. A key driver is globalisation, which, since the 1990s, has grown the middle class in economies such as Brazil and China at the fastest rate ever seen. In contrast, the US middle class has shrunk from almost 60% of the population in the 1980s to less than 55% in 2018.

Economic shocks, including today's cost of living crisis, hit low-income households the hardest.

In terms of immediate effect, economic shock events tend to disproportionately affect lower-income households and poverty rates. This is happening today as the conflict in Ukraine has exacerbated the current cost of living crisis by pushing up energy and food prices further. The World Food Programme states that currently 276 million people globally face acute food insecurity, more than double the number in 2019. Sustained inequality also has negative economic implications: it impacts productivity and aggregate demand, so reducing growth. Inequality erodes trust in institutions and can provoke social unrest too. In the longer term, we see structural trends such as deglobalisation, digitalisation and climate change shaping inequality. We also expect the "S" in ESG, for social issues, to play a bigger role in investment decisions in the future.

Income inequality and a stagnating middle class reduce insurance protection, leaving less of a buffer against shocks – especially in advanced economies.

Inequality has a significant impact on insurance demand. In advanced economies that have become more unequal since the 1990s, there has been almost no growth in insurance penetration. We find that in advanced economies, household insurance protection would have been about USD 252 billion higher than actual in 2019 had equality remained at 1990 levels. Putting this in the context of protection gaps, we estimate that the rise in inequality in advanced economies since 1990 has widened the natural catastrophe protection gap by about 2.5% of 2019. This suggests that an extra USD 1.7 trillion of assets could have been covered against natural perils, had inequality not risen. Advanced economies' mortality protection gap is estimated to be 8% larger, equal to USD 5.4 trillion in sums assured as of 2019.

Insurance is a powerful tool to promote economic growth and reduce inequality.

Insurance is a powerful tool to promote economic growth and reduce inequality, by supporting the incomes of households that suffer shocks. Studies have shown that insurance can raise economic growth by managing risks and saving lives by encouraging risk mitigation. By enhancing households' predictability of outcomes, insurance can enable more complex economic interactions. By supporting improved decision-making, it can result in a more equitable distribution of the resulting gains.

Narrowing inequality is a priority for the public and private sectors alike.

Addressing inequality can strengthen the social contract and support public trust in institutions. In the short-term, governments need to consider tailored policies to alleviate the current cost-of-living crisis many households face. In the long-term, it is incumbent on both the public and private sectors to take action to tackle inequality. Governments should enact a policy mix that distributes economic opportunities and outcomes more equally. Policymakers must also use risk transfer mechanisms to distribute risks to incomes more equitably, such as social security systems, transfers to enhance low-income individuals' risk protection, or public-private partnerships (PPPs) to expand insurability. Private insurance has a role by driving innovation to reach less protected communities. In the current high-inflation environment, product design and policy support that promote affordability of insurance covers are of particular importance. Agro insurance is a key tool to mitigate the elevated threat of food insecurity. Our findings suggest that if policy shifts stimulate a gradual decrease in the Gini coefficient by one point over the next decade, this could add a cumulative USD 700 billion of additional insurance demand in advanced economies.

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[1]   The Gini coefficient measures the distribution of income across the population. A Gini coefficient of zero means perfect equality, while one (or 100%) means maximum inequality. Source: F. Solt, "Measuring Income Inequality Across Countries and Over Time: The Standardized World Income Inequality Database (SWIID)." *Social Science Quarterly* 101(3), 2020, pp 1183–1199. SWIID Version 9.2, December 2021.

Key takeaways

Economic shocks such as the war in Ukraine create inequality headwinds for vulnerable groups.

By pushing up food prices at a time of high inflation, the war will increase food insecurity and the cost of living crisis, with an outsized impact on the lowest-income populations. Long term, we see trends like climate change and digital adoption influencing inequality.

Current status of drivers of inequality in the US, Germany and China, and historical trend

|		US	Germany	China
Drivers	**Policy space** SRI Macroeconomic Resilience Index, 2021	0.65 ↘	0.64 ↘	0.48 ↘
	Current inflation Annual inflation rate, March 2022	8.50% ↘	7.30% ↘	1.50% →
	Globalisation KOF Globalisation Index, overall, 2021	82.28 ↘	88.73 ↘	64.57 ↘
	Digitalisation World Bank Digital Adoption Index, 2016	0.75 ↗	0.84 ↗	0.59 ↗
	Climate change SRI Climate Economics Index, 2021	17.90 ↘	19.40 ↗	32.70 ↘
	Inflation & unemployment Misery index, March 2022	12.1 ↘	12.3 ↘	5.46 ↘
Inequality metrics	**Income inequality** Income share of the top 1% of the population, 2021	19.06% ↗	12.77% →	14.00% →
	Gini coefficient Gini coefficient of disposable Income, per capita, last available	38.60 ↗	29.30 ↗	41.80 ↘

Current ranking vs. other countries: ● Top ● Middle ● Low   Latest value: 0.0   Trend since GFC to 2019 (pre-COVID-19): →

Note: **traffic lights** indicate whether a country is in the top (green), middle (blue) or lowest (pink) third of country scores. Inflation rate is green if within +/−1% of the central bank target, blue if +/−1 to 1.5% of the target, and pink if more than +/−1.5% from the target. **Arrows** indicate whether a metric has increased or decreased since the Global Financial Crisis. Climate Economics Index arrows are estimates due to data availability. The Gini coefficient measures income distribution across a population.
Source: Bloomberg, SWIID, KOF Globalisation Index, World Bank Digital Adoption Index, World Inequality Database, Swiss Re proprietary indicators

Insurance demand benefits from a growing middle class and declining inequality.

The S-curve illustrates how economic development (GDP per capita) creates growth in demand for insurance.

Non-life insurance penetration rate and GDP per capita by country, 2019
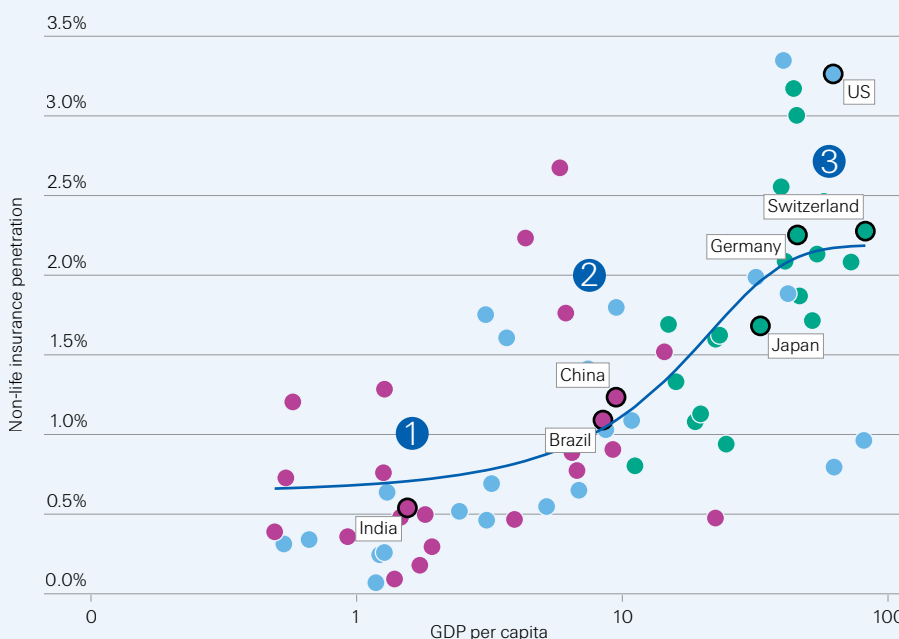
↗ **Growing middle class boosts insurance penetration...**

1 There is little demand for insurance in countries with high poverty rates.

2 Emerging economies' rapid growth lifts large parts of their populations out of poverty and strongly grows the middle class. The S-curve slopes up steeply given growth in insurable assets and affordability of insurance products.

3 Declining middle class contributes to flattening of the S-curve for high-income countries.

↘ **...but rising inequality holds back insurance markets**

2 Declining inequality and an elastic demand for insurance in middle-income countries contribute to the steep slope of the S-curve.

3 Rising inequality and inelastic demand for insurance contribute to the flattening of the S-curve for high-income countries.

Inequality: ■ Low ■ Middle ■ High — Traditional S-curve

Note: colour of dots indicates the inequality level of the country in the latest year available, as measured by the Gini coefficient (from lowest inequality in green, to highest inequality in red). Blue line shows the fitted S-curve model, a non-linear relationship between insurance penetration and economic development that has been discussed in previous *sigma* publications. Source: Swiss Re Institute

Rising inequality in advanced economies has taken a toll on households' risk protection and resilience since 1990.

Insurance protection against catastrophes and mortality risks in advanced markets would have been approximately USD 252 billion (6.9%) greater in 2019 if income inequality had remained at 1990 levels. This translates into roughly USD 39 billion of foregone protection against expected P&C losses and about USD 213 billion in foregone life benefits.

Estimated premiums and protection impact (insured losses) in 2019 by insurance segment, due to changes in inequality

		Advanced economies	Emerging economies
Change in Gini coefficient	1990–2019, points	2.1	−2.5
P&C insurance	Direct premiums written, 2019, USD bn	1,405	139
	Estimated impact:		
	On premiums, USD bn	−60	9
	On premiums, %	−4.3%	6.7%
	On insured losses, USD bn	**−39**	**4**
Life insurance	Direct premiums written, 2019, USD bn	2,268	189
	Estimated impact:		
	On premiums, USD bn	−194	−8
	On premiums, %	−8.6%	−4.0%
	On life benefits, USD bn	**−213**	**−8**
Total	Direct premiums written, 2019, USD bn	3,673	328
	Estimated impact:		
	On premiums, USD bn	−254	2
	On premiums, %	−6.9%	0.5%
	On total claims, USD bn	**−252**	**−4**

Note: emerging economies excludes the following countries: Czech Republic, Hungary, Poland, Russia, Slovakia, Romania, Ukraine, China, Vietnam, Laos and India. We classify these as "transition economies" that have undergone significant structural and/or economic transitions and exhibit different growth and development trends from the other emerging economies in our sample. See the *Income inequality and insurance* chapter for the full details. The Gini coefficient measures the distribution of income across the population. A Gini coefficient of zero means perfect equality, while one (or 100%) means maximum inequality. Source: SWIID, Swiss Re Institute

The public and private sectors can work to reduce inequality by transferring income risks away from individuals.

Public sector risk transfer mechanisms include social security systems, public disaster assistance and acting as "insurer of last resort". Private insurance providers can work with policymakers to deliver risk transfer public-private partnerships and, with an enabling regulatory framework, can drive innovation in products and distribution to extend the reach of insurance protection. With respect to food security, public-private agriculture insurance programmes can play a supportive role.

A risk transfer policy matrix for reducing inequality

		Government intervention designed to reduce inequality		
		Social security risk transfer	Other government involvement	Support for private insurance risk transfer
Income cohorts	**Low income**	Reduced private social security contributions, risk transfer via social security (health, unemployment, pension) and welfare programmes	Incentives for loss prevention; public disaster assistance; PPPs with insurance sector; insurer of last resort (e.g. housing, motor, pandemic risk)	Subsidise use of private insurance (eg, agro, mortality); regulatory support for microinsurance and digital distribution
	Middle income	Income-based social security contributions, risk transfer via social security (health, unemployment, pension)	Incentives for loss prevention; PPPs; insurer of last resort (e.g. housing, motor, pandemic risk)	Promote private insurance; tax benefits for life/pension insurance; regulatory support for digital distribution
	High income	Progressive income tax; capital gains tax, wealth tax; estate tax; corporate tax	Insurer of last resort (eg, commercial terrorism risk backstop); policies reducing financial market risks	Promote private insurance

Source: Swiss Re Institute

Inequality: risking social dis-cohesion

Inequality matters because fairness within a society keeps the social contract between a government and its citizens intact. Sustained high income inequality is negative for social cohesion and also for economic growth and financial markets, which benefit from more equitable division of income. Inequality in advanced economies is relatively low but rising, while in emerging economies it is higher but declining. The key driver of both trends is shifts in the size of the middle class, in turn driven by globalisation. Shocks to the economy tend to hit lower income households hardest: the current conflict in Ukraine has put millions of people at risk of food insecurity and falling into poverty. This in addition to the strain on inequality caused by the COVID-19 pandemic. Longer-term, we see deglobalisation, the digital divide, climate change and fiscal and monetary policy as future drivers of inequality.

Matters of equality

Inequality occurs when individuals of a given society have differing access to resources and opportunities.

Inequality refers to the socio-economic phenomenon of unequal distribution of resources and opportunities among members of a society, in terms of differing levels of income and wealth. Equal access to the basic pillars of livelihood, such as healthcare, education, justice, employment and technology, among others, is the necessary precursor for equal opportunity to generate income and wealth. In the United Nations' *Sustainable Development Goals* (SDGs), goal #10 is: *"Reducing inequality within and among countries"*, because persistent or growing inequality is a cause for concern.

High inequality can disrupt social cohesion and call into question the fairness of the social contract, leading to populism and unrest.

Equality matters because when a social system is perceived to work in favour of the few, the result can be popular discontent and macroeconomic instability (see *Inequality and the economy*).[2,3] A society with a large and prosperous middle class tends to experience stronger social cohesion (eg, lower crime rates, higher trust and satisfaction in public institutions and greater political stability), on account of being more equitable in terms of income and access to the basic pillars of life. Inequality calls into question the concept of the social contract, by challenging its intended fairness across all members of society, opening the door to episodes of civil disobedience, vandalism, rioting and looting. It is also an exacerbator of populism, the political shift to respond to groups of people who feel left behind or ignored by the elite. Whether in the US, UK, Germany, the Philippines or Chile, populist movements have gained ground by building on people's sense of inequality, using it as evidence of a decline in democratic legitimacy.

We use the Gini coefficient as a measurement of inequality.

We use the Gini coefficient measure of income inequality, sourced from the Standardized World Income Inequality Database (SWIID), throughout this study as a standardised metric.[4] The Gini coefficient provides a measure of inequality at a point in time that facilitates empirical analysis over time and comparisons between countries.

Inequality and the economy

Income inequality can have repercussions for macroeconomic growth.

While some degree of income inequality may be desirable to the extent that it incentivises people to excel, compete, save and invest, empirical evidence has demonstrated that high sustained levels of income inequality negatively affect macroeconomic growth and stability. Using IMF estimates of the impact of higher inequality on GDP growth, real GDP growth is believed to have been 0.2 percentage points (ppt) lower annually on average since 1980 due to a growing upper income quintile.[5] The Economic Policy Institute estimates that rising inequality has slowed

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2 *How Are Economic Inequality and Growth Connected?*. Washington Center for Equitable Growth, 2014.
3 S. Memon and I. Qureshi, "Income inequality and macroeconomic instability", *Review of Development Economics*, 25(2), 2021, pp.758–789.
4 F. Solt, "Measuring Income Inequality Across Countries and Over Time: The Standardized World Income Inequality Database", op. cit.
5 *Causes and Consequences of Income Inequality: A Global Perspective*, IMF, June 2015. The IMF reports that every 1ppt increase in the income share of the top quintile of a population negatively affects annual GDP growth by 0.08ppt for the following five years. The same increase in the income share of the bottom quintile is associated with 0.38ppt higher growth.

growth in US aggregate demand by 4ppt of GDP annually between 1979 and 2012.[6] A study from the World Bank found that a certain level of inequality helps boost GDP per capita in poor countries by enabling more investment from wealthy entrepreneurs, but this effect reverses in high- and medium-income countries.[7]
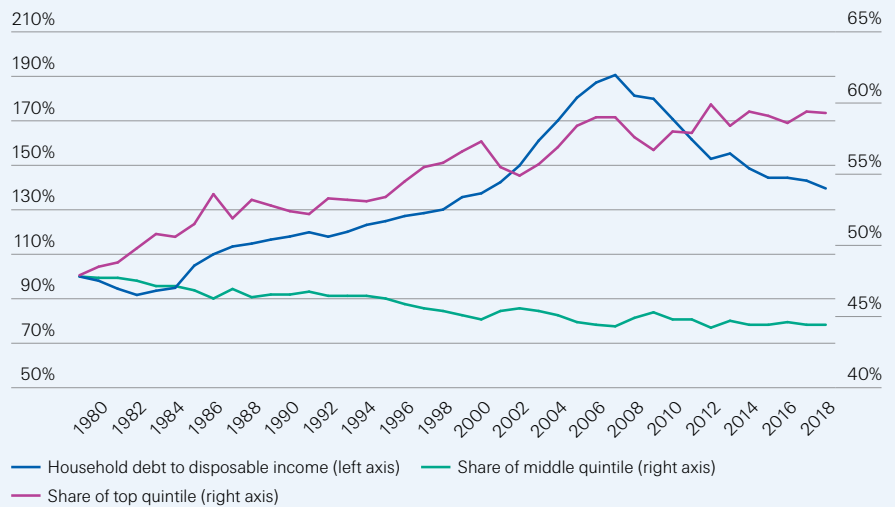
Inequality can result in under-investment in human capital.

Declining investment in human capital is one channel through which widening income inequality affects GDP growth.[8] As a country develops, human capital becomes more prominent as an engine of economic growth. However, less-good education opportunities for the children of low-income households can hamper skills development and undermine occupational choices. These in turn result in less productive employees, lower wages, and so lower overall economic participation than would be the case in a more equitable economy. Under-investment in education tends to reduce social mobility between generations, which can lead to persistent inequality and be detrimental to economic growth in the long run.[9]

Inequality can amplify economic instability.

Inequality also contributes to economic instability, for example by generating finance-driven business cycles. Both the Great Depression, starting in 1929, and the Global Financial Crisis (GFC) of 2008–09, were preceded by sharp increases in income inequality. The IMF shows that higher income inequality increases the bargaining power of high-income households, creating rapid growth in the size of the financial sector.[10] Its research finds that the consumption of the rest of the population is supported by credit growth, leading to a large increase in leverage, and ultimately to a surge in debt-to-income ratios among lower- and middle-income households (see Figure 1). Higher debt-to-income ratios raise the likelihood of widespread defaults when a shock occurs, potentially amplifying the shock into a full-on crisis or recession.

Figure 1
US household debt leverage and income shares of the top 20% (top quintile) and third 20% (middle quintile) of US households, 1979–2020, indexed (1979 = 100)

— Household debt to disposable income (left axis)   — Share of middle quintile (right axis)
— Share of top quintile (right axis)

Source: FRED, Congressional Budget Office, Swiss Re Institute

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6 *Inequality is slowing US economic growth*, Economic Policy Institute, December 2017. If instead the horizon is lowered to pre-GFC (ie, 1979–2007), the drag on demand is estimated to have slowed growth by 2ppt of GDP.

7 *Effects of income inequality on aggregate output: Policy Research Working Paper*, World Bank, June 2015.

8 O. Galor, *Inequality, human capital formation and the process of development*, IZA Discussion Paper Series, January 2012.

9 M. Corak, M., "Income inequality, equality of opportunity, and intergenerational mobility", *Journal of Economic Perspectives*, 2013.

10 M. Kumhof and M. Ranciere, "Inequality, Leverage and Crises", *IMF Working Paper*, 2010.

Drivers of (income) inequality, to date

Extreme poverty has declined globally in the past three decades, but the trends of income inequality are mixed.

Over the past three decades, the proportion of the global population living in extreme poverty, defined by the UN as people living on less than USD 1.90 a day, has fallen from about 43% to less than 10%. This can be taken as a sign that globally, income inequality appears to have declined over the years. Within countries, however, a trend of declining income inequality has by no means been universal.

Figure 2
Gini coefficient of disposable income in major advanced (left) and emerging economies (right), 1980-2019

Source: SWIID, Swiss Re Institute
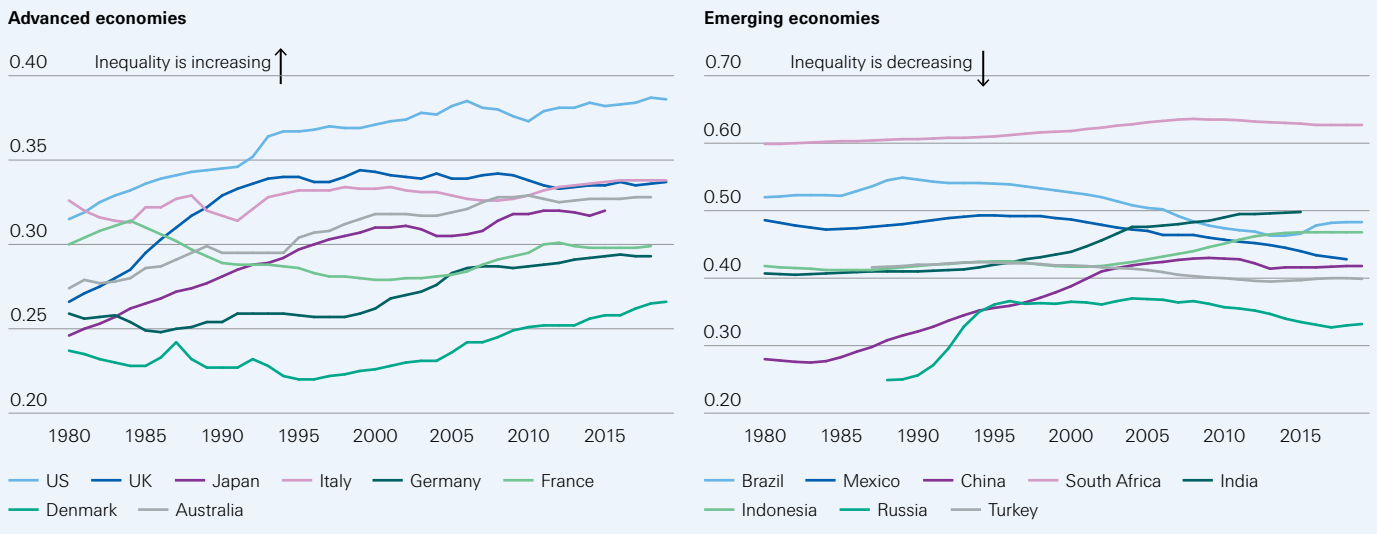
By the absolute reading, advanced economies are "more equal" than emerging economies.

By the absolute values of Gini coefficients, advanced economies, collectively and individually, are "more equal" than the emerging economies, with coefficients closer to zero (see Figure 2). However, the Gini coefficients of many advanced economies have been on a steadily rising trend over the past 40 years. Among emerging economies, a general trend (with exceptions) has been a fall in the Gini coefficient from around the turn of the 21st century. This is on account of economic development, with average incomes in emerging economies growing at a higher rate than those in advanced economies. This has lifted millions out of poverty into an expanding middle class. In advanced markets, the reverse has happened: the middle class has been shrinking or stagnating.

Income inequality has risen in many advanced economies since 1980.

Advanced economies becoming more *unequal*, emerging economies more *equal*
Income inequality as measured by the Gini coefficient has risen in many advanced economies since 1980, and at different speeds. The most significant rise has been in the US, where the Gini coefficient rose from 0.32 in 1980 to 0.39 in 2019. On this measure, the US is the most unequal of all advanced economies. In contrast, countries with similar average income levels as the US, such as Norway and Switzerland, had lower Gini coefficients most recently at 0.26 (in 2019) and 0.30 (in 2018), respectively. Countries in Europe with larger middle-class populations, rank as the most equal in the world. Nonetheless, Gini coefficients have stalled or even increased in economies such as the UK and Germany, where inequality has risen by seven and three Gini coefficient points, respectively, in the past 40 years.

Among emerging economies, the general trend is one of declining inequality.

Among emerging economies, a general trend has been one of declining income inequality, but the outcomes have been mixed. For instance, there has been a significant decline in the Gini coefficient for Latin America, as several economies in the region, including Brazil, have shown improvements in addressing inequality. Overall, however, the region is one of the most unequal in the world (see *Income inequality in Latin America*). In other emerging economies, trends have been more varied, with the largest

increases in income inequality since the early 1990s seen in Russia, India and China. This comes as they transitioned away from highly regulated, planned economic systems and, in the case of China, underwent major urbanisation and industrialisation.[11] In China, inequality increased considerably during its economic transition in the early 1980s, with the Gini coefficient growing from 0.28 in 1980 to a peak of 0.43 in 2009. Since then, this trend has started to reverse. An IMF study found that a widening rural-urban gap and regional disparities in China explained a large share of the historic rise in inequality, while recent trends are driven by policy initiatives to combat it, as the country has been shifting its growth model towards one more diversified, domestically focused and inclusive.[12] In India, at 0.5 (in 2015) the Gini coefficient is the second highest among emerging economies, rising from 0.41 in 1990. South Africa has consistently been one of the most unequal countries globally, with a Gini coefficient above 0.6 since the 1980s.

Income inequality in Latin America

Latin America remains one of the most unequal regions in the world, despite progress in growing its middle class and reducing extreme poverty.

For many decades, the top 1% of earners of the population in Latin America as a whole has consistently captured around 24% of the average total income (see Figure 3). The top 10% of earners have taken 55% of the total. This comes despite considerable progress in increasing the size of the middle class and reduction in poverty. The percentage living in extreme poverty declined from 15% in 1990 to 3.7% in 2019.[13] The Gini coefficient declined from an average of 0.53 to 0.46 over the same time frame, but this was more driven by the lowest earners moving up the income ladder than by decreases in the share of the top 1% or 10% of earners.

Figure 3
Income shares of the top 1% of population, by global region
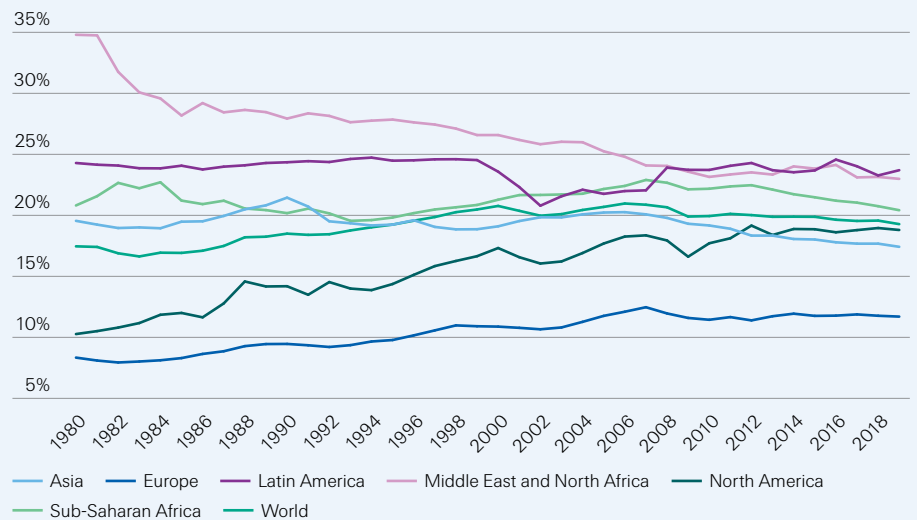
Note: the methodology is based on different data sources such as household surveys and national accounts, and data availability varies across countries and time. When 2019 is not available, the latest estimate is used.
Source: *World Inequality Database (WID)*

Drivers of inequality in the region include the large informal and unskilled labour force, productive structure constraints and poorly designed tax systems.

According to a study from the IMF, the main contributor to declining inequality in Latin America over the years has been investment in education, followed by higher foreign direct investment and tax revenues.[14] The importance of investment in education is supported by studies of the causes of inequality in Latin America, as the region has a large informal labour sector and a large unskilled labour force.[15] Low technological sophistication and limited areas of comparative advantage are structural constraints on income equality in the region. Poorly designed tax systems, an archaic international tax system and widespread tax evasion have also limited the capacity of tax-based redistribution policies.[16]

[11] M. Ostry, M.Berg and S. Kothari "Growth-equity trade-offs in structural reforms", *IMF Working Paper*, 2018.
[12] S. Jain-Chandra et. al. "Inequality in China – trends, drivers and policy remedies", *IMF Working Paper*, 2018.
[13] The World Bank at http://iresearch.worldbank.org/PovcalNet/povDuplicateWB.aspx,
[14] A. Osueke, E. Tsounta, "What is behind Latin America's declining income inequality?" *International Monetary Fund*, 2014.
[15] V. Amarante. "Income inequality in Latin America: a factor component analysis", *The Review of Income and Wealth*, August 2016.
[16] *Latin America is the world's most unequal region. Here's how to fix it*, World Economic Forum, January 2016.

Advanced economies' middle classes shrink as inequality rises

The middle class has shrunk in the US and other advanced economies.

The US is once again a notable example. The size of the middle class has declined fairly rapidly since the early 1980s, from almost 60% of the population to less than 55% in 2018 (see Figure 4). The US middle class is today one of the smallest among advanced economies. In western European countries, the middle class is considerably larger than in the US, although there has also been decline/stagnation since the early 2000s. In Germany, for example, the middle class has gone from 76% in 2000 to 70% in 2016.

Since the 1990s many emerging economies have recorded the fastest expansion of the middle class ever seen.

In many emerging economies, the middle class has grown by multiples since the 1990s, a period of the most rapid expansion of the middle class globally ever seen. Even in China, where income inequality had increased, the middle class has expanded from close to zero to more than 42% in 2016, meaning that an estimated 400 million people were lifted out of poverty in that time. The middle classes in Brazil, Russia, Turkey and Chile have also grown rapidly over the last 30 years, by between 30 to 40%.

Figure 4
Size of the middle class as percentage of total population, selected countries

Advanced economies

Emerging economies

US | UK | Canada | Italy | Germany | France | Netherlands | Australia | Norway | Switzerland

Brazil | Mexico | China | South Africa | India | Indonesia | Russia | Turkey | Chile | Colombia
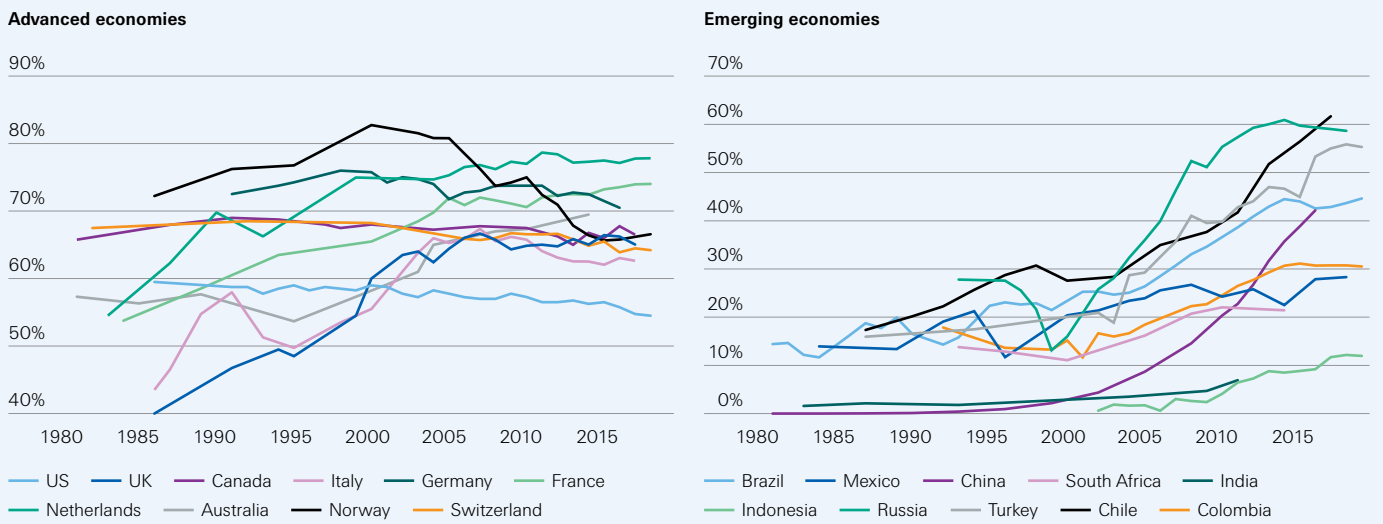
Note: data availability varies across countries. We use the World Bank's definition of middle class as all those living on a daily income of USD 13-70 (2011 PPP) for emerging economies, except India. For India we use USD 10-50 due to its lower income level. China and India data is for urban populations. The daily income threshold for advanced economies is USD 25-80. Source: World Bank, Swiss Re Institute

Globalisation has contributed to rising inequality *within* advanced *and* declining inequality *in* emerging economies.

A main driver of these developments in advanced and emerging economies has been globalisation. Our empirical analysis and other studies show that globalisation has been a statistically significant driver of decreasing income inequality within emerging economies, with some exceptions, but rising income inequality within advanced economies.[17,18] This is because globalisation has had opposite effects on the middle class in advanced versus emerging economies. With the opening of markets in the 1990s, the availability of capable, huge low-wage labour supplies in emerging economies and low-cost communication networks in the 2000s, there was a vast movement of production from advanced to emerging economies. This process helped create the middle class in emerging economies. On the other hand, it has contributed to stalling labour income and rising income from capital and intellectual property in advanced economies.

The rollback of welfare states and taxation have contributed to inequality in advanced economies.

The scale of welfare states and differences in taxation regimes are other factors contributing to inequality trends in advanced economies. For instance, income redistribution through progressive taxation (higher tax rates for higher income households) and transfers such as social security, cash transfer programmes and

17 F. Dorn, C. Fuest and N. Potrafke, "Globalisation and income inequality revisited", *European Commission Discussion Papers*, July 2017.
18 W. Keller, and W. W. Olney, "Globalization and executive compensation", *NBER Working Paper Series*, May 2017.

unemployment benefits are more generous in Europe than in the US. Around 47% of national income is taxed and redistributed in Europe versus 35% in the US.[19] Personal income tax progressivity in the US declined steeply in the 1980s and 1990s.[20] Pre-distribution policies such as labour market regulations, minimum wages and access to healthcare and education are also factors that explain the lower inequality (and larger middle class) in many European countries relative to the US.[21]

Inequality going forward: drivers and inherent risks

Shocks to the economy can impact the level of income inequality, while structural factors drive long-term trends.

Just two years into the 2020s, the world has experienced two large-scale shock events: a global pandemic and war in Ukraine. Both have significant consequences for the global economy, and also immediate direct and indirect impacts on the level of income inequality. Medium and low-income households have been hit disproportionately hard, leading to an increase in poverty rates. Over the longer term, however, structural factors such as de-globalisation and climate change remain the main drivers of trends in income inequality.

How the conflict in Ukraine may impact income inequality

The conflict in Ukraine in addition to sanctions on Russia can disrupt supply chains worldwide, particularly energy and agricultural commodities…

The conflict in Ukraine is a humanitarian crisis, resulting in large-scale destruction and death, and both the displacement of people within the country and refugee flows across borders. The economic fallout is also significant. We expect global inflation to be higher and growth to slow more than previously anticipated as a result of the conflict, and see heightened recession risk, particularly for Europe.[22] Current circumstances, including extensive economic sanctions on Russia, will disrupt supply chains worldwide. Commodity prices, especially energy and agricultural, have surged, adding to existing inflationary pressures from supply chain disruptions and the economic rebound from the COVID-19 crisis. Russia and Ukraine account for 12% of all calories traded globally, and are among the largest producers of wheat (34%), barley (27%) and sunflower oil (73%) in the world.[23] In the short-term, global food markets face challenges in replacing the lost supplies from Russia and Ukraine, which translates into higher prices.

…and significantly affect food markets.

Since 2020, global food prices have increased significantly (see Figure 11) as a result first of the global pandemic, followed thereafter by the conflict in Ukraine. By March this year, the index was up 34% year-on-year, at its highest since 1974. Wheat prices, for example, were already almost 50% above their 2017–2021 average in mid-February 2022 and climbed another 30% in the two weeks following the invasion.[24] The countries most dependent on Russia and Ukraine for wheat exports are in Africa, the Middle East and some parts of Asia. In Egypt, the world's largest wheat importer, bread prices rose by 50% in first week of March.[25] Increased costs of energy and fertilizers, important inputs for farmers, could further extend the negative impacts on global food supply. According to the International Food Policy Research Institute, the real test will be in the coming months when the next planting season begins.[26]

Poverty can immediately rise with increased food prices and less resilient countries are at greater risk of food security.

Food price spikes can instantly affect progress toward eradicating extreme (income) poverty. A study from the IMF estimates that the global food price spike of 2008 (see Figure 11) kept or pushed 105 million people into poverty. Another spike in food prices in 2011 pushed 48.6 million into poverty in the short run.[27] Poverty can immediately rise with increased food prices because supply adjustments to rising prices take time and poorer households spend a greater share of their income on food. The current unfolding food crisis threatens to cause a surge in severe malnutrition and even starvation. As a reference, in 2020 the number of undernourished was more than five times higher than

[19] *Why Is Europe More Equal Than the United States?* World Inequality Database, *6 October 2020.*

[20] C. Gerber et al. "Personal income tax progressivity: trends and implications", *International Monetary Fund*, 2018

[21] T. Blanchet, L. Chancel, and A. Gethin, "Why US Inequality Is Higher Than Europe's", *Project Syndicate*, 12 *November 2019.*

[22] *sigma* 2/2022: Stagflation: the risk is back, but not 1970s style, Swiss Re Institute, 28 April 2022.

[23] J. Glauber, D. Laborde, "How will Russia's invasion of Ukraine affect global food security?" *International Food Policy Research Institute*, 24 February 2022.

[24] *War in Ukraine will cripple global food markets*. The Economist, 12 March 2022.

[25] *Shoppers scramble for staples as the food fallout from the war in Ukraine spreads around the world*, TIME, March 8, 2022

[26] *Ukraine Invasion Threatens Global Wheat Supply*, The New York Times, February 24, 2022.

[27] Chapter 1: Poverty and food prices developments. In *Global Monitoring Report*, IMF, March 2012.

the highest surge in the last two decades as result of the pandemic.[28] Since 2019, the number of people facing acute food insecurity has more than doubled from 135 million to 276 million.[29] Countries with higher income inequality and lower levels of economic resilience are at higher risk of food insecurity because in these countries, a greater share of household expenditure is spent on food (see Figure 5).

Figure 5

Share of consumer expenditures spent on food versus income inequality (left); and versus SRI Macroeconomic Resilience Index (right)
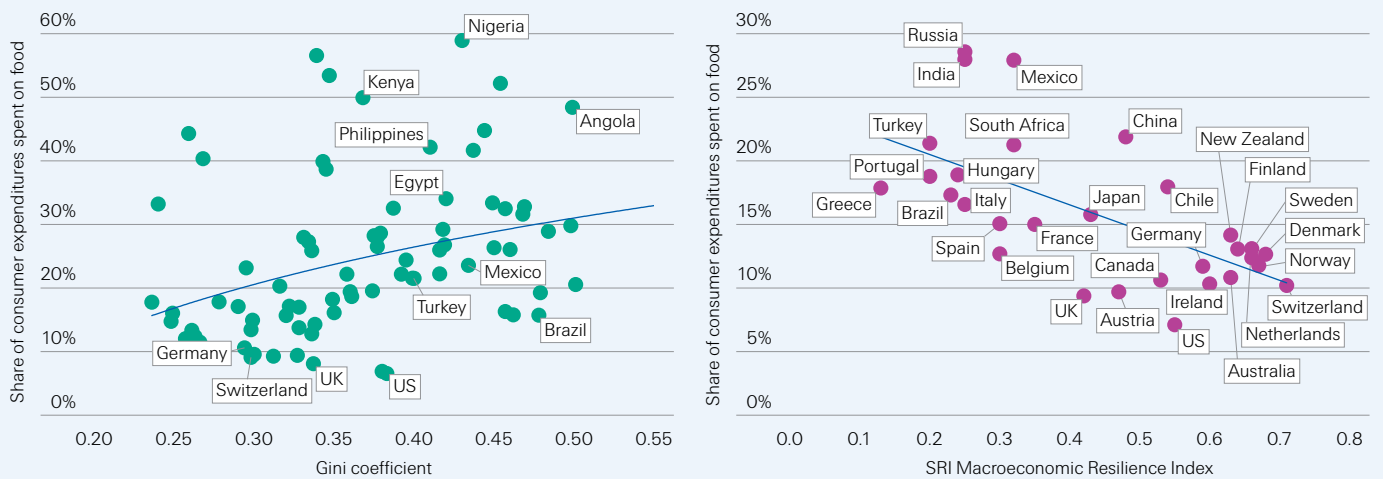
Note: left chart: data for 2016. Right chart: data and estimates for 2020.
Source: SWIID, USDA, Swiss Re Institute

Inflation is at multi-decade highs, disproportionately hurting low-income households.

The war in Ukraine is adding to already-existing inflationary pressures that resulted from the pandemic. Headline consumer price index (CPI) inflation has been recording multi-decade highs, for instance at 8.5% in the US and 6.2% in the UK in March 2022, which has eroded the purchasing power of households. High inflation disproportionately affects real disposable incomes of low-income households and the elderly, which is also referred to as "inflation inequality",[30] and reflects that those on lower incomes spend relatively more on necessities. For example, data for the US and Brazil show that households in the lowest income quintile spend 31% and 27% of their income on food, respectively. For the highest income quintile, the shares are 6% and 7% (Figure 6, left). Higher food prices coupled with higher household energy bills and fuel costs, are exacerbating the current cost-of-living crisis, with lower income households in particular having little cushion to absorb prices rises (see Figure 6, right).

[28] *The State of Food Security and Nutrition in the World 2021*, Food and Agriculture Organization of the United Nations, 2021.
[29] *A hunger catastrophe*, World Food Programme, 6 April 2022.
[30] X. Jaravel, "Inflation Inequality: Measurement, Causes, and Policy Implications", *Annual Review of Economics*, pp599–629, 2021.

Figure 6
Household spending on food as percentage of pre-tax income, by income quintile (left); US excess cash per household, by income quintile (right)
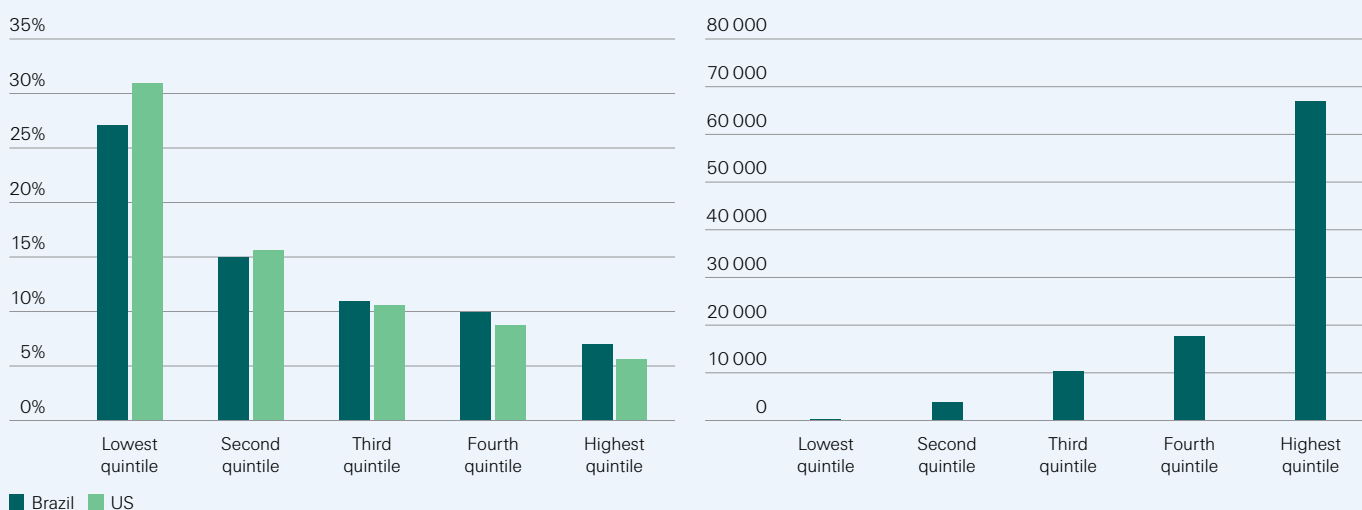
Note: left chart: US data as of 2020 and Brazil, 2018. Right chart: data as of 30 September 2021. Source: left: left: US Bureau of Labor Statistics, IBGE, Imaflora, Swiss Re Institute. Right: US Bureau of Economic Analysis from *Insights: State of Play*, KKR, March 2022

If recession risks materialise, income inequality could increase further.

If the war were to lead to recession, income inequality would likely increase. Recessions generally hit medium and low-income households harder, both through job losses and falling average incomes. In Brazil, after a successful reduction in inequality and poverty in the 2000s, over 4.6 million fell into extreme poverty following the country's deepest economic recession in 2014–16. This saw the share of population in extreme poverty rise from 5.6% in 2014 to 7.7% in 2017.[31] Research has found income inequality to be counter-cyclical, with high unemployment and lower wages weakening the relative position of low-income households.[32]

The impact of COVID-19 on income inequality

Preliminary studies suggest that COVID-19 may have had a negative impact on income inequality.

Preliminary studies suggest that the COVID-19 pandemic may have worsened income inequality by reinforcing pre-existing inequalities in areas such as gender and race employment. Time lags in statistical releases mean we cannot yet fully see how the pandemic has changed indicators such as countries' Gini coefficients. However, early research from the IMF estimates that the average Gini coefficient in emerging and low-income countries may have increased by 2.6 ppt during the first wave of COVID-19, to a level close to that of 2008, meaning the reverse of a decade's gains.[33] World Bank simulations project a higher Gini coefficient for 29 out 34 emerging and low-income countries from 2019 to 2020, compared to 11 if there had been no pandemic.[34]

High-frequency data shows the pandemic reinforced income disparities between rich and poor, job types, gender and ethnicity.

Certain high-frequency data also offer indications of the impact of COVID-19 on inequality. For example, data on billionaire wealth suggest that the gap between rich and poor has widened. The wealth of the world's ten richest rose from USD 686 billion to USD 1.2 trillion, up by two-thirds since COVID-19 began, while the incomes of 99% of the population fell.[35] In the labour market, workers in certain sectors as well as of specific gender and race were hit harder during the pandemic. Outsized job losses were observed in high-contact services and low-wage front-line jobs. Informal workers in the "gig economy" were also exposed, in some cases falling outside the scope of furlough programmes and unemployment insurance. Meanwhile, in what has been termed a "she-cession", women dropped out of the workforce at higher rates than men for reasons such as childcare and home-schooling. At a global level, employment

[31] *A reversal in shared prosperity in Brazil*, World Bank Group, 31 July 2020.
[32] *Demand composition and income distribution*, IMF Working Paper, December 2014.
[33] "World Economic Outlook: A Long and Difficult Ascent", *International Monetary Fund, October 2020.*
[34] *COVID-19 and Economic Inequality: Short-Term Impacts with Long-Term Consequences.* Policy Research working paper, World Bank, January 2022.
[35] *Forbes's 35th Annual World's Billionaires List: facts and figures* 2021, Forbes, 6 April 2021.

losses were higher for women (5.0%) than for men (3.9%) in 2020, undoing some of the gender equality progress of recent years.[36] The pandemic has also accentuated racial disparities in employment. In the US, for example, the gap in unemployment rates for Afro-American and white workers widened by on average 1.3 ppt compared to 2019.[37]

More targeted social protection policies, such as in Europe, helped blunt the impact of COVID-19.

While these developments suggest inequality is likely to have risen, the effects were blunted in countries that pursued more targeted social protection policies. While isolating the impact of policies is tricky, simulations of 27 European countries found the 2020 relative Gini coefficient would have risen by 3.6% without policy responses, in contrast to falling 0.7% following the policy responses.[38]

Future drivers of income inequality

Several key themes are shaping inequality trends.

We believe the following current-day themes will become increasingly influential drivers in shaping future trends in income inequality within economies.

Globalisation has peaked and its reversal may impact inequality in the future.

Globalisation peaked at the time of the GFC, and COVID-19 has accelerated what has since been a trend reversal.[39] Many companies and governments are moving production to parallel supply chains and/or "re-shoring" operations.[40] Further deglobalisation and nationalism could be fuelled by geopolitics, especially after the conflict in Ukraine. The US Secretary of the Treasury, Janet Yellen, has recently spoken about a new multipolar international order with the need for "friend-shoring" of supply chains to trusted countries.[41] From a labour market perspective, deglobalisation may imply a partial undoing of the previous rise in inequality in advanced economies. From a real income perspective, however, re-shoring could lead to higher costs of production, disproportionately undermining the disposable incomes of lower-income households.

The digital divide and income inequality are self-reinforcing.

The "**digital divide**" refers to the gap in digital infrastructure (including internet speed and broadband coverage); inclusivity (eg, affordability of broadband); institutions (including restrictions on alternative local broadband solutions) and digital proficiency across income and social groups (eg, age, race, rural vs urban).[42] The digital divide and income inequality are self-reinforcing: the divide is between the underprivileged versus the wealthy and middle class. It is more pronounced in developing countries (see Figure 7). This divide exacerbates inequality within countries, as those on the wrong side face barriers to studies and finding work.[43] Addressing this is already a focus for many policymakers, but more needs to be done. For example, research suggests that in the US, the current bipartisan deal to deliver broadband to all Americans has an investment shortfall of at least USD 175 billion.[44]

[36] *Employment impact of the pandemic worse than expected*, ILO, 27 October 2021.

[37] L. Monte, D. J. Perez-Lopez, "Covid-19 Pandemic hit Black households harder than White households, even when pre-pandemic socio-economic disparities are taken into account", *US Census*, July 2021; *Civilian Unemployment Rate*, US Bureau of Labor Statistics, January 2022.

[38] V. Almeida, S. Barrios, M. Christl et al, "Households´ income and the cushioning effect of fiscal policy measures during the Great Lockdown", *JRC Working Papers on Taxation and Structural Reforms,* No 06/2020, European Commission, 2020.

[39] D. Irwin, "Globalization is in retreat for the first time since the second world war", *Peterson Institute for International Economics*, 23 April 2020.

[40] *sigma* 6/2020 – De-risking global supply chains, Swiss Re Institute, 11 September 2020.

[41] Press Conference from Secretary of the Treasury Janet L. Yellen as Part of 2022 IMF-World Bank Spring Meetings, G7 and G20 Finance Ministers and Central Bank Governors Meetings, 21 April 2022.

[42] B. Chakravorti, "*How to Close the Digital Divide in the U.S.*", Harvard Business Review, 20 July 2021.

[43] M. García-Escribano, "*Low Internet Access Driving Inequality*", IMF, 29 June 2020.

[44] B. Chakravorti, "*How to Close the Digital Divide in the U.S.*", op. cit.

Figure 7
Percentage of individuals using
the internet by location, 2020
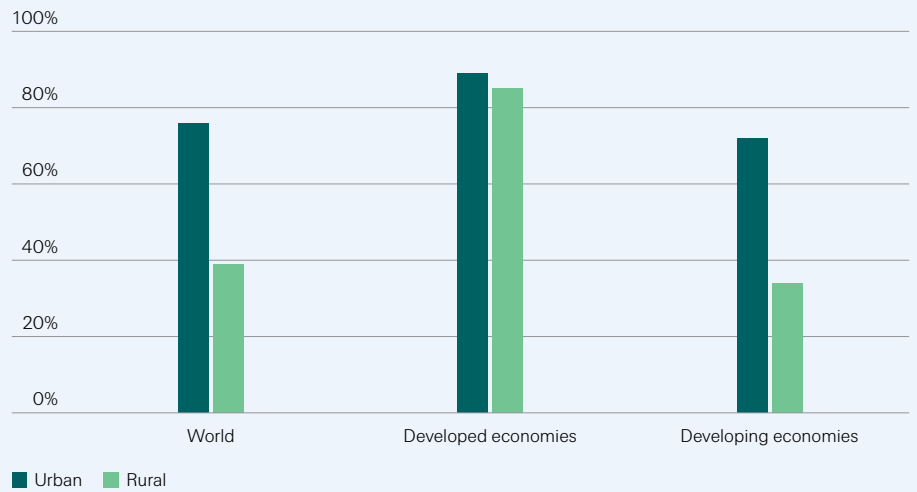
Source: *Internet use in urban and rural areas*, ITU, 15 November 2021, Swiss Re Institute

The impact of climate change is unequal
across time and space.

Climate change will likely make the world more unequal due to its disproportionate
impacts on emerging economies, for two key reasons. Emerging economies are more
dependent on agriculture and natural resources, leaving them more exposed to climate
change and extreme weather events. Our modelling confirms they will lose a greater
share of their incomes when climate shocks hit.[45] Second, these countries have fewer
resources to adapt to climate change and take mitigating measures than wealthier
countries. Recent research shows that more than 100 million people, mostly in emerging
economies, may be pushed into extreme poverty by climate change by 2030.[46] Our own
research estimates that if the Paris Agreement and 2050 net-zero emissions targets are
not met, the world stands to lose up to 10% of total economic value by that time. The
economic impact is significantly higher for low-income countries in Africa and Emerging
Asia than for advanced economies in Europe and North America (see Figure 8).

Figure 8
Potential GDP loss from climate change by 2050
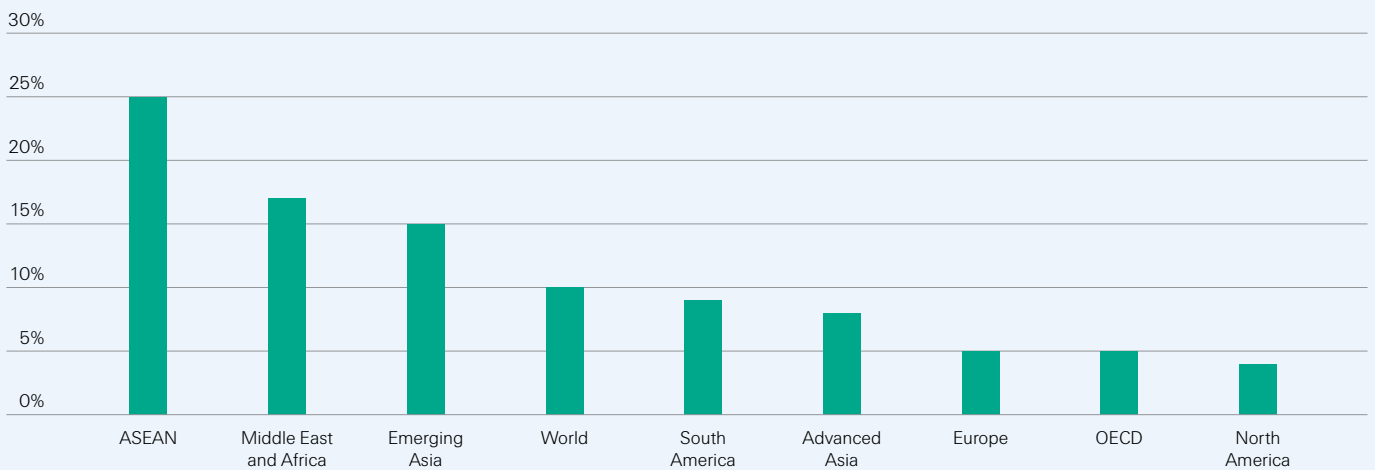
Note: figure shows our simulation for severe economic impacts/uncertainties from climate change. Values shown represent the additional GDP loss by mid-century in a
2.6°C no-mitigation scenario versus if Paris Agreement target of "well below 2°" warming is met. Source: Swiss Re Institute

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[45] *The economics of climate change: no action not an option*, Swiss Re Institute, 22 April 2021.
[46] *COVID, climate change and poverty: Avoiding the worst impacts*, World Bank, 7 October 2020.

Greater emphasis on the "S" in ESG will become more important for investors.

On the other hand, there is a growing opportunity for private capital to make a positive difference to inequality. The "S" in ESG, referring to social issues such as diversity, inclusion, and equality has been an under-represented investment theme and risk factor, but this is changing fast. The investment community is placing greater emphasis on the "S", supported by a growing investable pool. Social bond issuance climbed to new records in 2020 and 2021 as governments tried to mitigate the socio-economic impact of the pandemic (see Figure 9).[47] SDG-linked bonds, which were launched in 2017 and cover many social-related goals, should also help but need to grow in volume. [48] ICMA, which first established green bond principles, has published expanded social bond principles that should further attract investors to this emerging asset class as transparency, disclosure and reporting improves.[49]

Figure 9
Global issuance of social bonds, USD billions
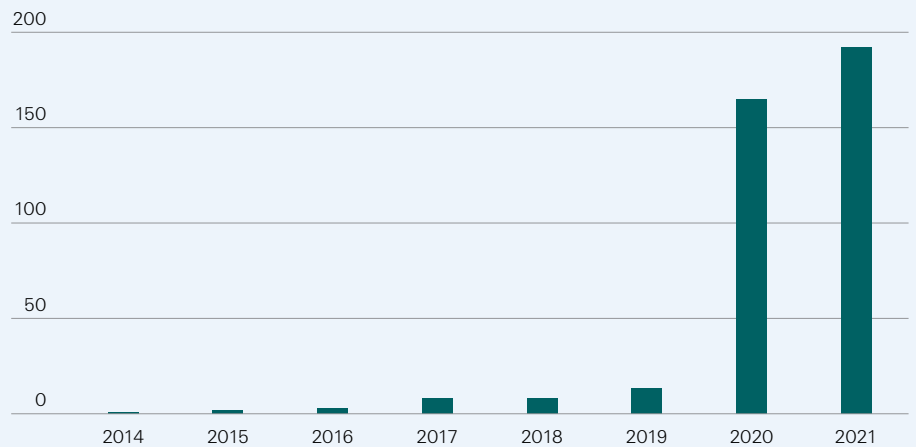
Source: Refinitiv Eikon

Economic policy orthodoxies are shifting, with implications for inequality.

Shifts in monetary and fiscal policy orthodoxies will also have significant impacts on inequality. Higher debt resulting from the COVID-19 emergency stimulus measures could exacerbate intergenerational inequality, pushing repayment burdens onto future generations and limiting the ability for countries to take on more debt in response to future shocks. High debt levels also factor into monetary policy decisions. Central banks of countries with limited fiscal space may keep inflation higher and real interest rates lower than desired, which is likely to benefit owners of real assets compared to fix-income assets and nominal pension claims.

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[47] Social bonds are used to finance issues that address specific social issues, like affordable basic infrastructure, essential services (e.g. water), affordable housing, employment generation and socio-economic advancement and empowerment.
[48] *World Bank launches first SDG-linked bonds*, IISD, 16 March 2017.
[49] *Social Bond Principles*, International Capital Market Association, 2021.

The US misery index reflects mounting pain from high inflation.

The US misery index

The misery index,[50] which sums inflation and the unemployment rate, provides a combined view of two main stress factors to households' economic wellbeing. The concept originated in the 1970s with the development of stagflation, where both inflation and unemployment were elevated. Now, high inflation has pushed the misery index for the US to 12.1, in the 76th percentile of all readings since 1971 (see Figure 10). There are non-linear relationships between inflation and inequality.[51] This suggests the current high inflation episode is raising inequality. In addition, inflation surges create cost of living challenges, which disproportionally affect low income households.

Figure 10
Evolution of the US misery index, 1971–2022

Recession — US misery index
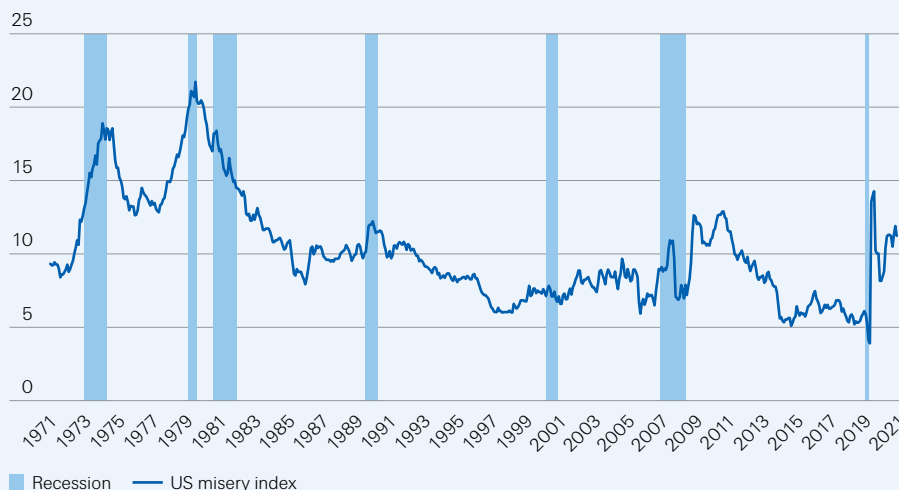
Note: the misery index is computed as the sum of headline CPI and the unemployment rate.
Source: Swiss Re Institute, Bloomberg

The US and Germany are currently slightly better positioned across these themes than China when based off current absolute levels in metrics.

Table 1 provides a snapshot of today's status of the US, Germany and China for these drivers of inequality relative to other countries (see traffic lights) and their historic trend (see arrows). On balance, the US and Germany fare slightly better than China at present, but this may well change. Encouragingly, while in absolute terms China may currently be at a weaker level on some of these drivers and metrics than other countries, it has been trending towards directional improvements or stayed stable. That contrasts with the US and Germany, where the metrics have directionally deteriorated in some cases. Strong globalisation scores have opposite implications for inequality in the US and Germany versus China (see *Advanced economies' middle classes shrink as inequality rises*).

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[50] *Economic Insights: Don't let the job market fool you, economic distress is high*, Swiss Re Institute, 16 March 2022.

[51] M. Balcilar et al. "The relationship between the inflation rate and inequality across US states: a semiparametric approach." *Quality & Quantity* vol. 52, 2018.

Table 1
Current status of relevant drivers and metrics for inequality and historical trend in the US, Germany and China

Current status of drivers of inequality in the US, Germany and China, and historical trend		US	Germany	China
Drivers	**Policy space** SRI Macroeconomic Resilience Index, 2021	0.65 ↘	0.64 ↘	0.48 →
	Current inflation Annual inflation rate, March 2022	8.50% ↘	7.30% ↘	1.50% →
	Globalisation KOF Globalisation Index, overall, 2021	82.28 ↘	88.73 ↘	64.57 ↘
	Digitalisation World Bank Digital Adoption Index, 2016	0.75 ↗	0.84 ↘	0.59 ↗
	Climate change SRI Climate Economics Index, 2021	17.90 ↘	19.40 ↗	32.70 ↘
	Inflation & unemployment Misery index, March 2022	12.1 ↘	12.3 ↘	5.46 ↘
Inequality metrics	**Income inequality** Income share of the top 1% of the population, 2021	19.06% ↗	12.77% →	14.00% →
	Gini coefficient Gini coefficient of disposable Income, per capita, last available	38.60 ↗	29.30 ↗	41.80 ↘

Current ranking vs. other countries: ● Top ● Middle ● Low   Latest value: **0.0**   Trend since GFC to 2019 (pre-COVID-19): →

Note: **traffic lights** indicate whether a country is in the top (green), middle (blue) or lowest (pink) third of country scores. The annual inflation rate is green if within +/−1% of the central bank target, blue if within +/−1 to 1.5% of the central bank target, and pink if greater than +/−1.5% from the central bank target. **Arrows** indicate whether the metric has increased or decreased over the time period. Arrows are estimated for the Climate Economics Index due to data availability. The **Gini coefficient** measures the distribution of income across the population. A Gini coefficient of zero means perfect equality, while one (or 100%) means maximum inequality.
Source: Bloomberg, Standardized World Income Inequality Database (SWIID), KOF Globalisation Index, World Bank Digital Adoption Index, World Inequality Database, Swiss Re proprietary indicators

Inequality and the social contract

The social contract is the implicit agreement between individuals and the state to enable a peaceful society.

The social contract is the implicit agreement between the individual and state with regards to the rights, duties and expectations of each in order for society to live peacefully together.[52] In practice, this refers to individuals obeying the law and paying taxes in return for the government providing basic services, infrastructure, and a safety net should individuals fall on hard times. The social contract has been weakening in advanced economies, not only for lower-income individuals, but also middle-income individuals who feel increasingly squeezed, be it by healthcare and education costs rising faster than wages in the US, by lower real pensions and rising housing costs in Europe, or uncertain labour rights from the growing gig economy.[53] The outcome is lower public trust in governments and institutions, and even episodes of social unrest. Popular discontent has filtered into politics, with populists calling for system change. The year 2016 was a pinnacle for populism, with the US presidential election and the Brexit referendum.

COVID-19 both strained and reshaped the social contract in many countries.

During the COVID-19 pandemic, lower-skilled workers bore the brunt of the labour market downturn. Despite enacting unprecedented support measures, governments faced accusations of not doing enough, suggesting that citizens' expectations of their governments from a financial perspective had risen.[54] In some emerging economies, governments introduced fiscal cash transfers, which may begin to reshape the social contract by shifting citizens' expectations of the duties of governments. However, elevated debt and lower subsequent fiscal ammunition is likely to constrain these governments' responses to future crises in the long term. Elsewhere, many citizens challenged the power of the state through resistance to vaccine mandates and lockdowns. Such action strained the already-weakening social contract and built distrust as the state vs. individual struggle to reconcile evolving definitions and expectations of the social contract.

[52] *Social contract defined*, Britannica.
[53] *Under Pressure: The Squeezed Middle Class*, OECD, 2019.
[54] Some argue that the social contract was partly renewed during the COVID-19 crisis, even if temporary. *COVID-19 has revived the social contract in advanced economies – for now. What will stick once the crisis abates?* McKinsey, December 2020.

The recent surge in food prices could aggravate social tensions and increases in social unrest.

The recent surge in food insecurity could aggravate social tensions and spark social unrest. One study found that food price increases caused greater social unrest in the period 1990–2011.[55] For instance, the spike in food prices in 2007 to 2008 led to unrest in several African countries, Haiti and Yemen. And a surge in food prices from 2010 to 2011 was followed by a wave of social upheaval that became known as the Arab Spring. In some cases, the consequences can be profound, including the collapse of a government (Egypt, Tunisia) and/or civil war (Syria, Yemen).[56]

Figure 11
Food price spikes and social unrest
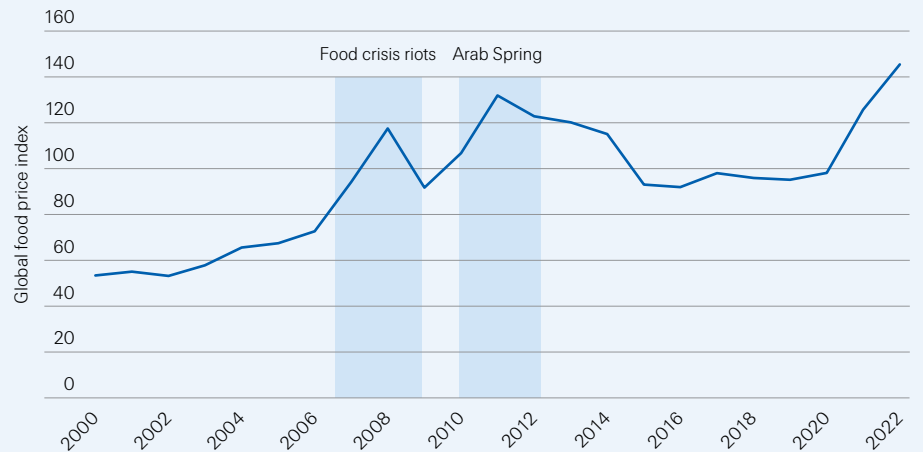
Note: data are shown through March 2022.
Source: FAO, Swiss Re Institute

[55] M. Bellemare, "Rising food prices, food price volatility, and social unrest", *American Journal of Agricultural Economics*, June 2014.
[56] *Food price spikes and social unrest: The dark side of the Fed's crisis-fighting*, Foreign Policy Magazine, May 2020.

Income inequality and insurance

High income inequality has a significant impact on insurance demand and protection coverage. The rapid expansion of emerging countries' middle classes has driven growth in insurance demand, whereas rises in inequality in advanced countries in the past 30 years have hampered their insurance markets. Our research finds that if advanced economies' Gini coefficients in 2019 were the same as in 1990, their insurance protection would have been about USD 252 billion, or 8.4%, higher than actual. In a group of emerging economies we study, declining inequality since 1990 had a more complex effect, boosting P&C insurance protection by about USD 9 billion, but leading to USD 8 billion lower life insurance protection. This reflects different savings rates in more equal societies. Mortality and natural catastrophe protection gaps in advanced economies would have been smaller by USD 5.4 trillion and USD 1.7 trillion in sums insured, respectively.

Inequality has significant implications for insurance demand.

Economic growth is a key driver of insurance demand, but not all growth translates into insurance demand equally because individuals in different income brackets have a differing propensity to consume insurance. This impacts individuals' ability to take on insurance coverage and protect themselves against catastrophic expenses. Using three decades of proprietary data on annual insurance premiums for 76 countries, we study the relationship between economic development, inequality level and insurance demand for different insurance segments.

Insurance demand in many emerging economies benefited from rapid growth in the middle class and declining inequality.

Economic development, the size and growth of the middle class, inequality and insurance penetration are closely interwoven. The S-curve, as described by Swiss Re Institute's past research, illustrates the relationship between economic development and insurance penetration (see Figure 12). Less-developed countries tend to be more unequal, with a small middle class and greater poverty, and also to have lower insurance penetration ("1" in Figure 12). More developed countries tend to be more equal and with a larger middle class and higher penetration ratios. Middle-income countries are characterized by a dynamic whereby rising economic development (proxied by GDP per capita) leads to even stronger growth in demand for insurance. This results in a rising insurance penetration ("2" in Figure 12). Drivers include the expansion of the middle class with growth in insurable assets, increased affordability of insurance products and a higher share of income spent on insurance as inequality declines.

Figure 12
Insurance penetration rate and GDP per capita, 2019
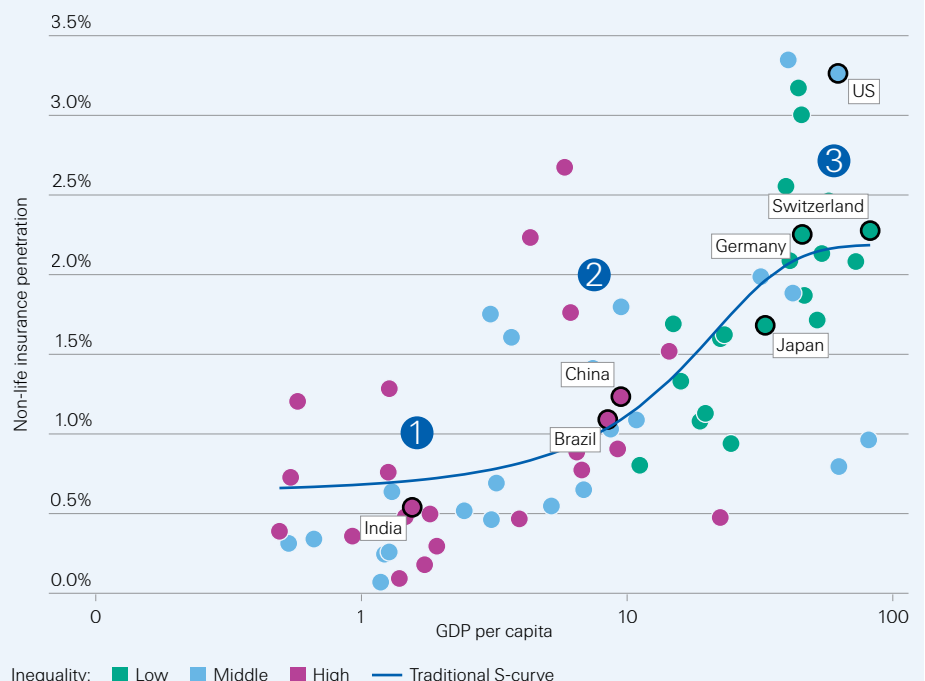
Inequality: ■ Low ■ Middle ■ High —— Traditional S-curve

Note: colour of dots indicates the inequality level of the country in the latest year available, as measured by the Gini coefficient (from lowest inequality in green, to highest inequality in red). Blue line shows the fitted S-curve model, a non-linear relationship between insurance penetration and economic development that has been discussed in previous *sigma* publications. Source: Swiss Re Institute

How income inequality impacts insurance coverage

Higher inequality curbs insurance demand in advanced economies
In advanced economies, trends over the past three decades suggest that countries that experienced bigger increases in inequality had lower growth in total insurance penetration (see Figure 13). We find a negative and significant relationship between average changes in the total insurance penetration rate (total premiums written as a share of nominal GDP) and changes in income inequality within the country, proxied by the Gini coefficient for disposable income. Countries such as Japan, Australia and Austria, which experienced very high growth in the Gini coefficient over the last three decades (around 0.5% annually on average), experienced the slowest growth in insurance penetration rates (below 0% annual average growth) in our advanced economy sample. Similarly, economies such as Greece and Portugal in which inequality decreased on average since the 1990s, saw some of the largest increases in insurance penetration (about 3% annual growth on average).

In advanced markets, a rising Gini coefficient correlates with slower insurance penetration growth in the past three decades.

Figure 13
Average growth in total insurance penetration rate vs average growth in Gini for advanced economies, 1990–2019
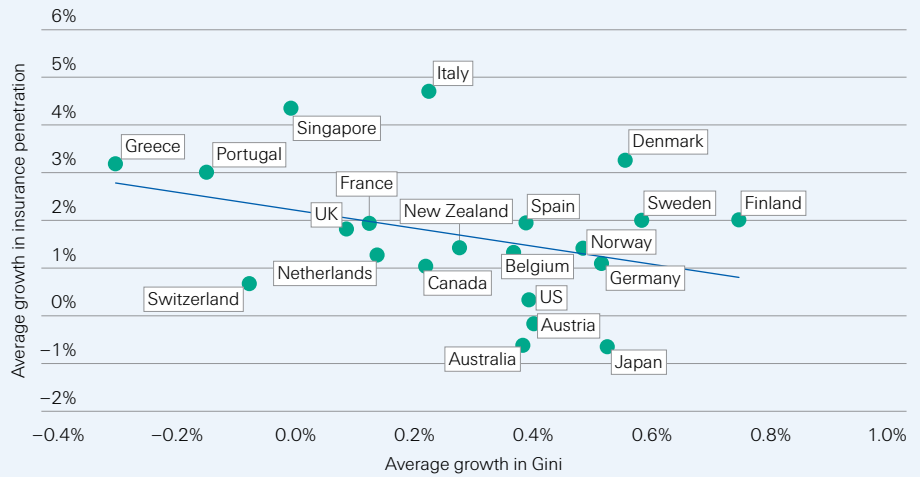
Note: figure shows average annual growth in insurance penetration rates (where penetration rate is calculated as total insurance as share of GDP) and average change in Gini coefficient. Source: Swiss Re Institute

How income inequality affects insurance demand: a quantitative methodology
We analysed the relationship between insurance penetration growth and levels of inequality to understand the magnitude of the effect of the latter on the demand for insurance in advanced and emerging economies. We estimated 12 different panel regression models of insurance penetration rates (defined as written premiums as share of GDP). The models simulated the period 1990–2019 and included controls for GDP per capita at purchasing power parities, the Gini coefficient, country and year fixed effects, and additional control variables (see Table 2). This generated estimates of elasticities of insurance penetration to inequality.

We study the relationship between inequality and insurance demand for different lines of business and levels of economic development.

Table 2
Estimated elasticities of insurance penetration to Gini coefficient

Elasticity of insurance penetration to Gini coefficient	Number of countries	P&C	average	Life	average
Advanced economies	23	−0.5 to −0.3	−0.4	−1.3 to −0.7	−0.9
Emerging economies (w/o transition countries)	39	−1.0 to −0.6	−0.9	0.8 to 1.2	1.0
Other variables included		GDP per capita (PPP) Global non-life rate index Financial development index		GDP per capita (PPP) CPI inflation Financial development index	

Note: table shows estimation results of 12 panel regressions of insurance penetration of different lines of business on GDP per capita (PPP) and the Gini coefficient. Regressions are run on different samples with different model specifications and control variables; there is a wide range of values for coefficients due to collinearity. We use the average for the modelling further below. Regressions cover the period 1990–2019 and include country and time fixed effects. Source: Swiss Re Institute

P&C insurance: higher inequality equates to less household protection

Inequality is detrimental for households' P&C insurance protection at every level of economic development...

Our regression results find that inequality is detrimental for households' P&C insurance coverage at every level of economic development. Across advanced and emerging economies, more unequal societies have a lower propensity to consume P&C insurance. Table 2 indicates that a 1% increase in the Gini coefficient reduces P&C insurance penetration by 0.3% to 0.5% in advanced economies (column 1) and by a stronger 1.4% to 2.0% in emerging economies (column 2). This is a strong and significant effect and is evident across both advanced and emerging economies. This is because the share of income spent on P&C insurance tends to decrease with individuals' income level. Hence, in countries where wealthier individuals account for a larger share of GDP, a lower share of overall income is used to acquire insurance protection (see *Incomes, spending differences and insurance demand*).

Life insurance: inequality can be beneficial in emerging economies

...but increases demand for savings life products in emerging economies.

The effect of inequality on life insurance is more varied. Our results suggest that in advanced economies life insurance responds *negatively* to rising inequality, while responding *positively* in emerging economies. We estimate that a 1% increase in the Gini coefficient is associated with a 0.9% decrease in life insurance penetration for advanced markets, and 1% increase in penetration in emerging economies. The positive correlation in emerging markets can be explained by differences in saving patterns, since savings products make up approximately 80% of all life insurance premiums. Individuals in higher income brackets typically spend a lower share of their income on consumption of goods and services, and more on savings. More unequal economies have a higher propensity to save and so higher savings rates (see *Incomes, spending differences and insurance demand*). Life insurance is a key savings product in emerging economies that have less-developed financial markets for other retail investment products. The propensity to purchase life insurance is therefore positively correlated with the savings rate in these economies.

We expect emerging economies to eventually exhibit the same negative relationship between savings and life insurance as in advanced economies.

In advanced economies with more developed financial markets, life savings products compete with more alternatives for retail savings products, and the savings rate is negatively correlated with life insurance ownership. The propensity to purchase life savings products declines for higher income groups. As a result, the savings rate and life insurance penetration are negatively correlated in advanced economies. We expect the relationship between inequality and life insurance buying in emerging economies to converge towards this same negative pattern over time, as financial markets develop and more alternative retail savings products become available.

Transition economies followed a different pattern of growth and inequality in the 1990s and 2000s.

A subset of emerging economies we studied have undergone significant structural and/or economic transitions and exhibit different growth and development trends from the other emerging economies in our sample.[57] These countries, primarily in Asia and eastern Europe, shifted from predominantly planned to largely market-driven economies in the 1990s and early 2000s. We include India in this group, given its extensive economic liberalisation, globalisation and privatisation since the 1990s. Transition economies experienced a significant rise in inequality, from a low base, at the same time as strong economic and insurance market growth. This contrasts with the other emerging economies, where inequality has declined in tandem with insurance market growth. However, neither the trend in inequality metrics, nor the strong positive correlations with economic and insurance market development, can be generalised beyond the transition phase. For most of the countries, this ended before the GFC, and we expect the former transition economies to develop more in line with the other emerging economies in the future. We thus exclude them from our assessment.[58]

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[57] *Transition Economies: An IMF Perspective on Progress and Prospects*, IMF, 3 November 2000. In our study, the transition economies are: Czech Republic, Hungary, Poland, Russia, Slovakia, Romania, Ukraine, China, Vietnam, Laos and India.

[58] For a discussion of drivers for rising inequality in transition economies see P. Mitra and R. Yemtsov, *Increasing inequality in transition economies: Is there more to come?* World Bank, 2006.

We use the estimated elasticities to model the historical impact of inequality on insurance demand.

In a second step of modelling we used the model elasticities shown in Table 2 to calibrate estimates for the insurance premiums lost or gained assuming that the Gini coefficients in 2019 were the same as in 1990. Estimated changes are applied to observed direct premiums written (DPW) in 2019. The results are shown in Table 3. We did not model health insurance, which is exposed to significant government involvement in areas of product design, underwriting and pricing in many countries.

Advanced economies' rising inequality has contributed to less risk protection for households.

Overall: rising inequality has lowered risk protection
In all countries we study, economic development and insurance penetration are positively correlated, meaning that households and individuals have gained greater risk protection as countries have grown richer. However, on average, rising income inequality in advanced economies has had a negative effect on insurance penetration since the 1990s. This impact varies depending on the business segment.

Table 3
Estimated impact on premiums and protection (insured losses) in 2019 by insurance segment due to rising (falling) inequality since 1990

		Advanced economies	Emerging economies
Change in Gini coefficient	1990–2019, points	2.1	−2.5
P&C	Direct premiums written, 2019, USD bn	1,405	139
	Estimated impact:		
	On premiums, USD bn	−59.8	9.3
	On premiums, %	−4.3%	6.7%
	On insured losses, USD bn	**−39**	**4**
Life	Direct premiums written, 2019, USD bn	2,268	189
	Estimated impact:		
	On premiums, USD bn	−194.1	−7.5
	On premiums, %	−8.6%	−4.0%
	On life benefits, USD bn	**−213**	**−8**
Total	Direct premiums written, 2019, USD bn	3,673	328
	Estimated impact:		
	On premiums, USD bn	−253.9	1.8
	On premiums, %	−6.9%	0.5%
	On total claims, USD bn	**−252**	**−4**

Note: emerging economies excludes the following countries: Czech Republic, Hungary, Poland, Russia, Slovakia, Romania, Ukraine, China, Vietnam, Laos and India. We classify these as "transition economies" that have undergone significant structural and/or economic transitions and exhibit different growth and development trends from the other emerging economies in our sample. The Gini coefficient measures the distribution of income across the population. A Gini coefficient of zero means perfect equality, while one (or 100%) means maximum inequality. Source: Swiss Re Institute

Inequality reduced mature economies' demand for P&C and L&H insurance by USD 25 bn.

Inequality reduced insurance demand in advanced economies
Our model estimations suggest that P&C premiums in advanced economies would have been USD 60 billion or 4.3% higher in 2019 than their actual levels, had each country's level of Gini remained the same as in 1990 (see Table 3). This translates into roughly USD 39 billion of foregone protection against expected P&C losses. Even more pronounced, advanced economies' life premiums would have been almost USD 194 billion (8.6%) higher in 2019. This is equivalent to USD 213 billion in foregone life benefits. In our model, the US, Japan and Germany each experienced detrimental impact to insurance demand of 5–6% of 2019 P&C premiums, and of 11–14% of life insurance premiums. The US, the most-affected market in absolute terms, saw more than USD 100 billion of estimated foregone premiums from its rise in inequality. The Scandinavian countries Finland, Denmark and Sweden are the most affected in relative terms, with a reduction of more than 7% of 2019 P&C insurance premiums and of 16% or more of 2019 life premiums (see Table 4).

Protection gaps are significantly larger in advanced economies than if inequality had not increased.

Finally, we modelled the impact of rising inequality on insurance protection gaps in advanced economies. We estimate that the natural catastrophe protection gap for 2019 was about 2.5% larger due to the rise in inequality than it would have been had inequality remained at 1990 levels. This translates into USD 1.7 trillion of more asset values that would have been covered against natural catastrophe risks, had inequality not risen. We also modelled the impact on the mortality protection gap. The result was an advanced market mortality protection gap in 2019 that would have been 8% larger (USD 5.4 trillion in sums assured) than if inequality had not increased since 1990.

Inequality trends created a mixed impact in emerging economies

Emerging markets' declining inequality had largely offsetting effects on life and P&C demand.

The effect of inequality on insurance markets in emerging economies is more complex. Without transition countries, the average Gini coefficient of our sample of emerging economies declined by 2.5 points since 1990. The average effect on P&C insurance was a boost of USD 9 billion or 6.7% of 2019 DPW, and for life business a headwind of USD 8 billion (4%). The decline in inequality in Latin America has led to estimated double-digit benefits to the P&C insurance markets of Brazil, Mexico, Peru and Argentina. For Brazil, the outcome was more than USD 2 billion of additional P&C premiums (see Table 4). However, lower inequality had the effect of reducing 2019 life premiums in these markets by 10% or more. For Brazil, life premiums would have been more than USD 4 billion lower than if inequality had remained at its 1990 level. In the emerging economies where inequality rose, such as in South Africa, Indonesia and Egypt, the life insurance sector has benefited (see Table 9 in the appendix).

Table 4
Estimated direct premiums written (DPW) lost (added) in 2019 due to rising (falling) inequality since 1990

	Gini, 2019 or latest available	Change in Gini since 1990	P&C 2019 DPW USD bn	Modeled impact USD bn	as a %	Life 2019 DPW USD bn	Modeled impact USD bn	as a %
Finland	26	5	5	−0.5	−10%	24.1	−5.2	−22%
Denmark	26.6	3.9	8.6	−0.6	−7%	27	−4.2	−16%
Sweden	26.3	3.9	9.1	−0.6	−7%	28.3	−4.5	−16%
Germany	29.3	3.9	88.6	−5.6	−6%	104.5	−14.6	−14%
Japan	32	3.9	87.3	−5	−6%	311.1	−39.3	−13%
US	38.6	4.1	702.6	−34.2	−5%	633.6	−68.6	−11%
Peru	44.1	−8.4	1.8	0.3	15%	2.1	−0.3	−14%
Thailand	39.1	−5.4	7.7	0.9	11%	18.1	−2	−11%
Brazil	48.3	−6.3	20.5	2.2	11%	41.3	−4.3	−10%
Mexico	42.8	−5.5	11.8	1.3	11%	14.1	−1.4	−10%
Argentina	37.6	−4.5	8	0.8	10%	1.3	−0.1	−10%
Malaysia	39.9	−4	4	0.3	8%	12.6	−1	−8%

Source: Swiss Re Institute

Transition economies boosted insurance growth despite rising inequality; a one-off trend that will change in the future.

Transition economies experienced no statistically identifiable negative effects from the average 5.9-point increase in inequality since 1990. Economic growth has lifted a significant proportion of the population of these countries out of poverty and into a growing middle class. This transition was accompanied by increases in formal employment, financial inclusion and the development of insurance supply, all of which has boosted growth of insurance premiums far above economic growth. By now, many of the countries in this group have moved beyond the transition phase, with Gini coefficients peaking in the mid to late 2000s (eg, China, Russia, Poland, Czech Republic, Romania, Slovakia). Going forward, we expect inequality to become a potential detriment to insurance growth for this group of countries as well.

Incomes, spending differences and insurance demand

The highest-earning consumers spend less of their income on P&C insurance…

One explanation for why inequality influences insurance penetration rates is that individuals' propensity to purchase personal lines insurance changes with their income. We analysed data from the US Bureau of Labor Statistics to illustrate this point (see Figure 14).[59] While individuals in the lowest quintile of income distribution spend on average 5% of their earnings on motor insurance, those in the highest quintile spend only 1%. Demand for products such as motor and health insurance thus increases less than income, in relative terms, for richer households. The risk exposure for motor liability is much more linked to the location and amount of driving than the income of the driver. Insurance cover is mandatory in many countries and commuting via car is often a necessity because of a lack of public transport alternatives. Car ownership (in terms of numbers of cars per household) also increases more strongly than income for middle-income households, but less than income for top earners.[60] The share of spending on motor insurance therefore decreases as consumers' income goes up.

…and health insurance spending is inelastic at all income levels.

A similar pattern holds for spending on health insurance, which accounts for 13% of income for the poorest 20% of population, but for only 5% of income for the richest 20% of population. For health insurance, the income elasticity of insurance demand is significantly below one, reflecting its status as a necessity rather than a luxury good.[61] Differences in income may have a greater effect on consumers' choice between different health plans, as opposed to demand for insurance overall. Income correlates positively with demand for voluntary health insurance for low-income households, due to limited affordability.

Figure 14

US household spending as share of after-tax income on health and motor insurance in 2020, by income quintile
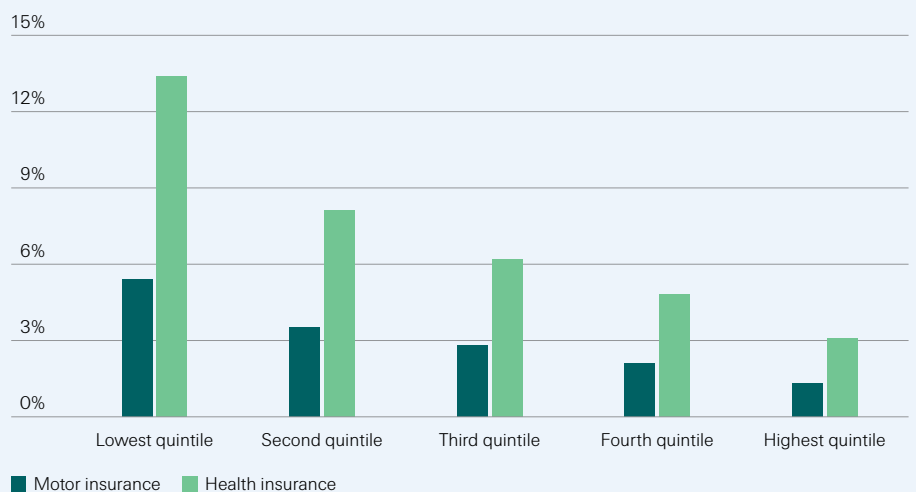
Source: US Bureau of Labor Statistics, Swiss Re Institute

Reduced affordability of insurance for low-income households is one expected impact of the high-inflation environment.

Reduced affordability of insurance for low-income households is one expected impact of today's high-inflation environment, an economic fallout effect from the COVID-19 pandemic and the conflict in Ukraine. This is because these households already a spend a larger share of their disposable income on food and energy (see Figure 6). In many economies, the rise in food and energy prices are in excess of core inflation and wage gains. As essential items, food and energy purchase is hard to reduce or substitute for. We therefore expect that for low-income households, the cost-of-living crisis will mean reduced insurance demand because risk protection solutions are often considered less "essential". The scaling back of insurance take-up will only further reduce the financial resilience of society's most vulnerable.

Increasing income in the middle class has a strongly positive impact on insurance demand.

Strengthening the income of the middle class boosts demand for insurance and strengthens the resilience of these households by protecting them from catastrophic financial shocks. Additional income that is earned by the highest income group does

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[59] US Bureau of Labor Statistics, "Table 1101. Quintiles of income before taxes: Annual expenditure means, shares, standard errors, and coefficients of variation", *Consumer Expenditure Surveys*, 2020.

[60] We used 2018 data from the UK Office for National Statistics on car ownership by income decile to model income elasticities of car ownership. The elasticity drops below one for the top two income deciles.

[61] See for example T. Cheng, *How income influences our healthcare decisions*, World Economic Forum, 2015.

not translate into the same additional demand, since there are no affordability headwinds to overcome, and resilience is supported by more alternatives like financial assets and access to credit. These demand characteristics imply that reducing income inequality would strengthen insurance demand. Every additional dollar earned by lower tiers of income distribution would translate into larger increases in insurance demand than equivalent dollars earned in the higher income tiers. This suggests a boost in insurance demand for countries that grow their middle class by lifting households out of poverty. The same applies to rising inequality in advanced economies, but with opposite effects: a stagnating middle class is a headwind for the growth of insurance protection and financial resilience of households.

Insurance as a mitigator of inequality

Insurance typically benefits from lower inequality, and also mitigates it. Insurance is a powerful tool to promote economic growth and reduce income inequality, by reducing inequality of outcomes for households that suffer shocks. Across economies, P&C insurance is a critical component of economic growth and resilience. Life insurance may reduce income inequality more than P&C insurance, especially in advanced economies. High insurance take up also enables governments to weather disasters and protect social programmes, so strengthening the growth potential and resilience of societies.

Insurance is associated with lower inequality, higher growth, and safer societies.

Insurance protects assets and income from adverse shocks; encourages risk taking and investment in small business; and improves educational and health equality. By providing financial relief when households incur catastrophic expenses, lose assets or the ability to earn income, insurance can serve all segments of society. The protection it provides is especially important for the most vulnerable. Without insurance, low- and even middle-income families can fall (back) into poverty should a severe shock strike. A UK study found that one third of households dropped into a lower income quintile after an unexpected adult death and 20% fell into poverty.[62] A 2007 meta study of surveys found that globally, 808 million people suffered financial catastrophe in 2010 because of healthcare expenditures, equivalent to 12% of the world's population.[63] In addition, studies have shown that insurance can raise economic growth by managing risks and mobilising domestic savings.[64] By enhancing households' predictability of outcomes, insurance can enable more complex economic interactions, and by supporting improved decision-making, it can result in a more equitable distribution of the resulting gains. As such, insurance can create a positive feedback loop – higher coverage supports a more equal society and promotes economic growth, and in turn growth ultimately boosts insurance demand and penetration.

P&C insurance is an enabler for economic development.

A significant body of literature supports the association between insurance and lower income inequality. In emerging economies, insurance is especially necessary for inclusive growth. Property insurance enables banks to lend for major projects; life insurance is a significant source of investment funds; and private health insurance can help governments direct resources to the poorer sections of society.[65] Empirical literature supports this assertion. For example, using Granger causality tests, research has shown that growth in P&C premiums precedes lower inequality (and growth) in emerging economies.[66]

Table 5
The ways in which insurance improves resilience

	Micro / household level	Macro / societal level
P&C	Provides payment after financial loss, stabilises long-term financial planning (eg, education, retirement savings)	Improves resilience against catastrophes (nat cat, pandemic), reduces stress on government finances, protects social programmes
	Incentivises loss mitigation behaviours	Positive externalities of loss mitigation, including lower uninsured losses
	Enables borrowing for investment by households and businesses	Improved financial inclusion and economic growth potential
Life & health	Life and disability insurance protects income of main breadwinner, stabilises long-term financial planning (eg, education, retirement savings)	Long-term risk and capital protection can support more durable consumer demand for goods and services
	Can supplement public pensions and protect consumption in retirement	Insurers promote financial stability by providing a stable source of long-term capital
	Improves access to healthcare	Decreases health gaps

Source: Swiss Re Institute

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[62] A. Corden, et al " Financial Implications of Death of a Partner", *University of York working paper,* December 2008.

[63] A. Wagstaff, et al "Progress on catastrophic health spending in 133 countries: a retrospective observational study", *The Lancet Global Health,* 6(2), 2018.

[64] M. Arena, *Does Insurance Market Activity Promote Economic Growth? A Cross-Country Study for Industrialized and Developing Countries: Policy Research Working Paper; No. 4098,* World Bank, 2006.

[65] R. Lester, *Insurance and Inclusive Growth,* World Bank Policy Research Working Paper, June 2014.

[66] Lee I, et al. "Insurance Market Development and Income Inequality", *The International Review of Financial Consumers,* 2(1) 2017, 43–53.

The impact of insurance depends on the type of economy and type of insurance.

The specific impact of insurance on inequality depends on factors including the development stage of a country's economy and the type of insurance. Across economies, P&C insurance is a critical component of economic growth and resilience. For individuals it provides resilience in the face of adverse shocks, and for businesses it supports entrepreneurial risk-taking. P&C insurance tends to grow ahead of life insurance in most emerging economies, in particular in commercial insurance. Life insurance has been identified as playing an important role in mitigating social inequality.[67] Widespread access to health insurance is also critical for minimising unequal health outcomes.

Insurance supports individuals...

Insurance contributes to lower inequality by supporting people after adverse shocks.

Inequality reduces individuals' ability to withstand adverse events. Counteracting the financial effects of these events is the core function of insurance. In contrast, when disparities exist in levels of insurance coverage, catastrophes perpetuate poverty and inequality. Poor households are less likely to be insured, have fewer assets and less access to credit with which to rebuild wealth. Empirical research suggests that life insurance may reduce income disparity more than P&C insurance in most countries, except low-income countries.[68] Without a well-developed life insurance market, surviving family members are vulnerable. Unmitigated financial shocks to vulnerable households can aggravate or perpetuate housing, health, and educational inequities.

Indirect effects include loss mitigation behaviour...

Insurance also promotes individual and household resilience by providing economic incentives to facilitate loss mitigation behaviour. For example, some flood insurance programmes offer premium rate discounts when homes are elevated above the base flood elevation. There may be premium discounts for wind, earthquake and wildfire mitigation measures.[69] However, homeowners may be reluctant to make investments due to uncertainty about their ability to capture the benefits of lower premiums in the future. Standardisation and long-term contract features relating to premium discounts could strengthen the economic incentives to invest in safety features.

...and improved decision making.

An additional indirect benefit is that insurance supports decision-making at critical moments. Experimental psychology has shown that people make poorer decisions when they live under tight resource constraints. Scarcity reduces the "mind capacity" available for use in decision making.[70] By supporting individuals in times of great need, insurance can contribute to greater equality of opportunity, mitigating vulnerability and inequality of outcomes.

Individuals and businesses rely on insurance to secure large investments.

Insurance also encourages thoughtful risk-taking and investment. The role of insurance in protecting collateral is critical for certain forms of borrowing, such as mortgages and small businesses. For example, property insurance supports home ownership and enables borrowers to qualify for a conventional loan by protecting the lender against the potential loss of the loan collateral. Similarly, motor insurance is a requirement for most automotive financing, which is critical for car ownership. When poor households have access to a car, household members are more likely to be or become employed, keep their jobs, increase their earnings, work more hours, and leave welfare programmes.[71] In developing countries, agricultural insurance is usually a requirement to enable farmers to use crops and livestock as collateral. This allows them to invest more in equipment, materials or technologies to improve yields.

...and societies

Private insurance increases macro resilience against disasters.

Inequality can negatively affect an economy's growth path by exacerbating income and asset losses from shock events. Individual-level impacts can accumulate and affect national economic welfare. Insurance mitigates these losses and boosts macroeconomic resilience by facilitating stronger recovery after a shock event, providing a cash infusion just when a country or region needs it most. Insurance can also have positive second-order network effects on local economies, as it promotes confidence and encourages

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[67] K. Schanz, "The role of insurance in mitigating social inequality". *Geneva Association*, August 2020.

[68] Lee I, et al. "Insurance Market Development and Income Inequality", *The International Review of Financial Consumers,* 2(1) 2017, 43–53.

[69] C. Kousky, "The Role of Natural Disaster Insurance in Recovery and Risk Reduction", *Annual Review of Resource Economics,* 11 (2019): 399–418.

[70] S. Mullainathan and E. Shafir, *Scarcity: Why Having Too Little Means So Much,* Times Books, 2013.

[71] N. J. Klein, "Subsidizing car ownership for low-income individuals and households." *Journal of Planning Education and Research,* 2020.

accelerated investment after a disaster.[72] Research by the Bank of International Settlements found that major natural catastrophes have a significant negative impact on economic activity, driven by uninsured losses. Where sufficiently insured, however, events are inconsequential in terms of foregone output.[73] This impact is particularly evident in low-to middle-income countries, which suffer more when uninsured but recover faster when insured. Our own analysis supports this finding: the positive growth effect from insured losses is stronger for emerging than for advanced economies.[74]

Insurance reduces the burden on government resources and thus protects social programmes and fiscal space.

The rising incidence of exogenous shocks – whether from climate risks, pandemics, geopolitics and war – represents a financial burden for governments as well as for people and businesses.[75] In developed economies, public programmes provide significant assistance after catastrophes, especially to vulnerable demographics. Our previous *sigma* analysis concludes that for advanced economies with high insurance penetration, disasters result in less deficit expansion and thus protect public programmes and fiscal space. Many emerging economies have more limited fiscal resources and access to credit, which is why insurance is more important as a shock absorber for them.[76] For such countries, public insurance programmes can be useful to protect government assets and spending plans. Examples such as the Caribbean Risk Insurance Facility and African Risk Capacity Group provide vital natural catastrophe protection and support macro resilience.

Agro insurance can help improve food security and poverty.

Agro insurance can play an important role in improving food security and poverty, as about 80% of the world's poor live in rural areas.[77] It helps farmers, particularly small-scale ones, to manage their risks, including adverse weather events. It can also help farmers mitigate period of elevated input (fertilizer, energy) and output prices, such as currently happening as a result of the conflict in Ukraine. Agro insurance can assist farmers maintain income levels and continue to farm even in the case of a lost harvest, therefore, reducing uncertainty. It can also facilitate access to credit markets by reducing the risk of loan default in the event of catastrophic production losses, which in turn provides financing for food production. A study found that in Eastern India, the take-up of agro insurance is associated with increased rice yields of large farmers by 49% and small farmers by 16%.[78]

Expanding health insurance and levelling out access to care is a first step in addressing health inequality.

Health insurance complements social protection by covering healthcare costs and improving access to healthcare, enabling more individuals to benefit from preventative care.[79] Health inequality is typically attributed to three factors: disparities in health patterns, disparities in care and inequality in insurance and the financial means to pay for care.[80] The disparities are especially stark in advanced economies without universal insurance coverage. In the US, where nearly 30 million individuals are uninsured, the gap in life expectancy between the wealthiest and poorest 1% has grown to 10–15 years.[81] The benefits of expanding care can be significant. After the American Rescue Plan Act (APRA) of 2021 provided additional financial incentive for Medicaid expansion, research has been conducted into its effects. Medicaid expansion and its associated gains in coverage have been linked to improvements in access to healthcare, financial security, and certain measures of health status and outcomes.[82]

[72] *sigma* 5/2019: Indexing resilience: a primer for insurance markets and economies, Swiss Re Institute, 7 September 2019.

[73] G. von Peter, S. von Dahlen and S. Saxena, "Unmitigated Disasters? New Evidence on the Macroeconomic Cost of Natural Catastrophes," *Bank for International Settlements Working Paper*, No 394, 2012.

[74] Result of stronger benefit of insurance in advanced economies in M. Breckner et al, "Economic Development and Resilience to Natural Catastrophes – Insurance Penetration and Institutions", *Conference paper*, 12 February 2016.

[75] T. Holzheu, and G. Turner, "The Natural Catastrophe Protection Gap: Measurement, Root Causes and Ways of Addressing Underinsurance for Extreme Events", *The Geneva Papers on Risk and Insurance – Issues and Practice*, 2018.

[76] *sigma* 5/2019: Indexing resilience, op. cit.

[77] *End poverty in all its forms everywhere*, United Nations, 2019.

[78] T. Ranganathan, A. Mishra and A. Kumar "Crop Insurance and food security: evidence from rice farmers in Eastern India," *2019 Allied Social Sciences Association Annual Meeting, Agricultural and Applied Economics Association*, January 2019.

[79] S. Wanczeck et al, "Inclusive Insurance and the Sustainable Development Goals", *Deutsche Gesellschaft für Internatioale Zusammenarbeit (GIZ) GmbH*, July 2017.

[80] K. Schanz, op. cit.

[81] R. Chetty et al, "The Association Between Income and Life Expectancy in the United States, 2001–2014", *JAMA*,315(16), 2016, pp.1750–1766.

[82] *Building on the Evidence Base: Studies on the Effects of Medicaid Expansion, February 2020 to March 2021*, Kaiser Family Foundation, May 2021.

Reshaping the social contract: how governments and insurers can act to reduce inequality

Addressing inequality within countries can strengthen the social contract and support public trust in institutions. In the short-term, governments need to consider tailored policies to alleviate the current cost-of-living crisis. In the long-term, action from both the public and private sectors is needed to tackle inequality. Governments can form a policy mix that distributes economic opportunities and outcomes more equally. They must also ensure that risks to incomes are distributed equitably by use of public and private risk transfer mechanisms, such as social security systems, enhancing individuals' risk coverage through financial transfers to make insurance more affordable, or public-private partnerships to expand insurability. Measures to support private risk transfer include enabling regulatory frameworks and encouraging risk mitigation action. Private insurance has a role to play too, driving innovation to reach under-served communities. Our findings suggest that policy shifts leading to a gradual decrease in the Gini coefficient by one point over the next decade could add USD 700 billion of cumulative additional insurance demand to advanced economies.

Inequality affects the distribution of economic opportunities, outcomes and risks.

For broad-based societal acceptance of the social contract, we see three dimensions of inequality coming into play. These are:

1) inequality in how economic **opportunities** are distributed within a society;

2) inequality in how **outcomes** of economic activity (ie, incomes) are distributed; and

3) inequality in the distribution of **risks** to income.

Public policy and private insurance both play a role in addressing inequality.

Public policy influences all these areas, but particularly equality of access to opportunities and equality of outcomes from economic activity: this is inclusive growth. Public insurance programmes, as well as the private insurance sector, contribute by mitigating risks for economic participants

A policy framework for inclusive growth

Public policies to address inequality should aim deliver inclusive growth.

The goal of public policy should be the promotion of inclusive growth to reduce inequality and ensure the benefits of economic activity are shared fairly across all groups of society. However, every country has a unique economic, societal and institutional situation and there is no "one size fits all" set of policies to address inequality. Instead, a framework that categorises policy options can help to unpick inequality challenges (see Table 7). This identifies three stages at which policy interventions can occur:

1) **Pre-working life**: education and training to best equip people for work.

2) **Participation in economy**: social policies such as minimum wages and benefits and improving productivity, eg through competition and innovation.

3) **Redistribution of economic outcomes**: taxation, social security, and transfers to correct the market-driven outcomes of individual economic activity.

Table 6
Public policy matrix for reducing economic inequality

		Stage at which policy intervention occurs		
		Pre-working life	**Participation in economy**	**Redistribution of economic outcomes**
Income cohorts	**Lowest income**	Primary education and early-childhood programmes; vocational training	Minimum wage; apprenticeships; in-work benefits	Social transfers (housing, food assistance, family, child benefits); reduced workers' social security contributions; guaranteed minimum income; Earned income tax credit
	Middle income	Public higher education; adult retraining programmes	Industrial policies; occupational licensing; on-the-job training; collective bargaining and work councils; trade policies	Unemployment insurance; pensions
	Highest income	Inheritance, gift and estate taxes	R&D tax credits; competition and antitrust policies	Progressive taxation; wealth taxes; corporate taxes

Source: Adapted from D. Rodrik and S. Stantcheva, "A Policy Matrix for Inclusive Prosperity", *NBER Working Paper 28736*, 2021.

Advanced and emerging economies have different policy priorities to combat inequality.

Policy interventions to lower inequality differ depending on the level of economic development in a country. In advanced economies, this broadly boils down to education, fair and safe working practices, labour market, taxation and redistribution policies. Governments also need to foster productivity growth, such as through investments into resilient and sustainable infrastructure, incentives for research and development, enabling regulation and capital guidelines for entrepreneurship, among others. Emerging economies' policy efforts to boost inclusive growth often need to focus first on governance, the quality of institutions, deregulation, improved labour force participation through education and gender equality, broadening formal employment and the tax base (shift from consumption to income taxes), financial inclusion and creating an economic environment to attract capital and retain talent. Against the backdrop of the current energy and food price surge, we expect to see tailored policy responses such as tax cuts, means-tested transfers and subsidies, especially in some emerging economies, as a means to limit price rises of key CPI items. Such fiscal interventions aim at building trust in government, critical to strengthening the social contract. Monetary policy is not well suited to address the price rises caused by supply shortages. Multilateral development banks can also play a role in addressing inequality and food security by funding projects in infrastructure, energy, education, environmental sustainability and providing financial assistance to countries most in need.

Structural reforms typically positively affect growth and living standards.

Empirical evidence suggests that structural reforms typically have a positive impact on economic growth and living standards.[83] Policy design ideally aims at finding programmes that can improve both inclusiveness and growth. They include public infrastructure to crowd-in private investment and improve productivity, education and health spending; measures to improve labour-force participation; and support for R&D.[84] Many major economies have recently embarked on large-scale structural reforms. The Euro area's NextGenerationEU (NGEU) funds, which focus on improving digitalisation while ensuring the low-carbon transition, are tied to country-specific structural reform initiatives. In China, the government has made significant progress in opening up its economy and on the green transition, as well as product and labour market reforms. The USD 1.2 trillion US infrastructure bill touches every sector of infrastructure, from transportation and water to energy, broadband and protecting natural resources.

[83] Examples include Adhikari et al. (2016), "Can Reform Waves Turn the Tide? Some Case Studies Using the Synthetic Control Method", *IMF Working Paper No. 16/171*, 2016: P. Gal, A. Hijzen, "The Short-Term Impact of Product Market Reforms: A cross-country firm-level analysis", *IMF Working Paper No. 16/116*, 2016; Bordon et al. "When Do Structural Reforms Work? On the Role of the Business Cycle and Macroeconomic Policies", *IMF Working Paper No. 16/62*,2016; and "Time for a supply side boost? Macroeconomic effects of labour and product market reforms in advanced economies, *IMF World Economic Outlook,* 2016.
[84] Y. Zouhar, J. Jellema, N. Lustig, and M. Trabelsi. "Public Expenditure and Inclusive Growth – A Survey", *IMF Working Paper 21/83*, 2021.

Risk transfer: the role of the public and private sectors

Both public and private sector-led risk transfer mechanisms support households' financial resilience and mitigate inequality caused by adverse events. From direct government interventions to public-private partnerships and support for private insurance offerings, these aim to reduce financial risks to low-income households in particular. Governments support the transfer of risk through social security programmes (see Table 7, column 1) and measures such as public disaster assistance, risk transfer public-private partnerships, and incentives for loss mitigation (column 2). Finally, certain risks, such as peak natural catastrophes, pandemics and unemployment, can challenge the bounds of insurability for private insurance.[85] Governments can use public support mechanisms to facilitate and enhance the private risk transfer process (column 3). We see the need for action for both the public and private sectors to enhance risk transfer with the goal of reducing financial risks and improving inequality.

Table 7
Risk transfer policy matrix for reducing inequality

		Government intervention designed to reduce inequality		
		Social security risk transfer	**Other government involvement**	**Support for private insurance risk transfer**
Income cohorts	**Low income**	Reduced private social security contributions, risk transfer via social security (health, unemployment, pension) and welfare programmes	Incentives for loss prevention; public disaster assistance; PPPs with insurance sector; insurer of last resort (e.g. housing, motor, pandemic risk)	Subsidise use of private insurance (e.g. agro, mortality); regulatory support for microinsurance and digital distribution
	Middle class	Income-based social security contributions, risk transfer via social security (health, unemployment, pension)	Incentives for loss prevention; PPPs; insurer of last resort (e.g. housing, motor, pandemic risk)	Promote private insurance; tax benefits for life/pension insurance; regulatory support for digital distribution
	High income	Progressive income tax; capital gains tax, wealth tax; estate tax; corporate tax	Insurer of last resort (e.g. commercial terrorism risk backstop); policies reducing financial market risks	Promote private insurance

Source: Swiss Re Institute

Modernise social security risk transfer to ensure future protection
Social security plays a central role in the policy mix to build and protect social cohesion. Social security contributions are proportional not to risk but to income. With mandatory participation and a government backstop, social security institutions can redistribute income and take on undiversifiable risks such as unemployment and pandemic health risks. However, growing social security spending as populations age is challenging governments' fiscal positions,[86] particularly in countries with already-high levels of debt (eg, Brazil and Argentina). We estimate that in emerging economies, the pension savings gap, one of the pillars of social security systems, is about three times their aggregate GDP,[87] as high as for some major advanced markets.[88] Underfunding this key safety net is likely to undermine the social contract in future. Modernising social security systems is necessary to keep them sustainable and to sustain trust, and should be done with a focus on vulnerable households.

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[85] T. Holzheu, G. Turner, "The Natural Catastrophe Protection Gap", op. cit.

[86] *Fiscal challenges and inclusive growth in ageing societies*, OECD, 2019.

[87] In 2019 values. *sigma* 2/2021, Emerging markets: the drive for sustainable retirements in an ageing world, Swiss Re Institute, July 2021.

[88] A World Economic Forum 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%). The WEF estimates were as of 2050 value. *Global Pension Timebomb: Funding Gap Set to Dwarf World GDP*, WEF, 26 May 2017

Subsidise low-income households' use of insurance

Governments can offer financial incentives to promote insurance.

Affordability is a major reason for under-insurance, particularly for lower-income households and small and medium-sized enterprises. Many governments promote the purchase of insurance with tax benefits, although they are progressive in nature. More targeted fiscal support for low-income households can be achieved with vouchers.[89] Many countries have beneficial tax rules for life and health insurance. There are also government subsidies to support agro insurance programmes. On the other hand, property and motor insurance is frequently exposed to premium taxation, reducing the economic benefits to policyholders.

Use public-private partnerships to expand insurability

Governments can actively promote private insurance as a risk transfer mechanism.

Joint solutions between governments and the insurance sector can supplement social security systems to support households' resilience and incomes. For example, in China local city governments have endorsed an inclusive insurance programme known as "Huiminbao"; a collaboration with the private insurance industry to expand the coverage of health insurance. Individuals can use the contributions they make to their social security accounts to purchase additional health insurance cover to complement and extend their existing social security coverage. Local governments support the programme through product design, pricing and promotion.[90] Other examples for public private partnerships are government backstops for terrorism risks such as in France, Germany, Spain, the UK and the US, and government-run risk carriers for residual (hard-to insure) risks, like the US National Flood Insurance Program. It is important to avoid crowding out of private insurance capacity for risks that are insurable in the private market.

Create regulatory frameworks that enable market development

The regulatory framework can enable the insurance market to expand availability of risk transfer solutions.

Governments and regulators set rules that enable the insurance market to develop and expand the availability of risk transfer solutions. For example, compulsory insurance schemes can widen the scope of risk transfer. Compulsory insurance is used in virtually all countries, mostly as part of social security schemes related to health, old age and unemployment, or as compulsory liability insurance (eg, motor liability insurance). The main advantage of mandatory schemes is that they form the widest possible risk pools and eliminate adverse selection.

Allow regulatory flexibility to foster insurance innovation

Regulatory flexibility can stimulate innovation.

For example by enabling insurers to use new technologies in products and distribution. This can include less onerous licensing and prudential requirements, allowing electronic enrolment and administration of policies, removing taxes, and permitting distribution through non-traditional channels. Such flexibility has been key to the development of microinsurance. In 2018, 18 countries across Africa, Asia and Latin America had adopted a microinsurance regulatory framework, and 23 countries were in the process of doing so, up from just six in 2009.[91]

Encourage households to adopt risk mitigation measures

Governments and insurers can encourage risk-mitigation behaviours.

Governments play an important role in setting standards for risk mitigation, building standards and zoning. In general, households tend to under-invest in mitigation measures. Research cites behavioural biases (notably myopia), biases in risk perceptions (salience and availability) and economic concerns (not being able to recoup mitigation expenses in case of a home sale) that discourage individuals from investing in cost-effective protective measures.[92] Concerns about under-investment in loss mitigation are exacerbated in a world of climate change, as efforts to reduce disaster risk and break the cycle of disaster-induced poverty become increasingly important.[93] For low-income households, vouchers or grants can help to cover costly (mandatory) mitigation measures.

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[89] C. Kousky, H. Kunreuther, "Addressing affordability in the national flood insurance program." *Journal of Extreme Events,* 2014.

[90] *Supplemental health insurance spreads among population*, website of Shanghai Municipal People's Government, 2 December 2020.

[91] *State of microinsurance regulation 2018,* Access to Insurance Initiative, 2018.

[92] J. C. Aerts et al, "Integrating human behaviour dynamics into flood disaster risk assessment", *Nature Climate Change*, 8(3), 2018.

[93] S. Hallegatte et al, *Unbreakable: Building the Resilience of the Poor in the Face of Natural Disasters,* World Bank, 2017.

How private insurance can counter inequality

Insurers can expand access to under-served communities.

The private insurance industry has a vital role to play in the drive to lower inequality in countries. Working alongside and in partnership with the public sector, private sector insurers can focus on extending and expanding insurance markets to provide coverage to a broader and more diverse range of communities.

Enhance access to insurance for under-served communities

Rapid growth of mobile technology in emerging economies can leapfrog under-developed distribution networks.

New technologies and changing customer preferences are shifting the insurance distribution landscape.[94] High mobile telephony penetration in emerging economies offers alternative routes to access insurance for under-served demographics. Digital distribution can make insurance accessible to those who live in remote areas and/or have no access to the formal financial sector yet. Leveraging digital and mobile technologies can lower the cost of insurance and leapfrog access in markets where a traditional distribution system does not yet exist. Many successful insurance partnerships with mobile network operators are already in place, such as Bima's, (a leading mobile-delivered health and insurance provider in emerging markets) multitude of partnerships with mobile operators and microfinance entities across Africa and Asia.[95] Insurers can also collaborate with companies in other sectors, such as pharmacies or agricultural supply companies.

Alternative channels are being activated to distribute insurance to under-served consumer groups.

Alongside new technologies, insurers can bring into use a wide range of other new distribution channels to widen access to coverage. These alternatives to traditional agency or salesperson-led sales interactions can include utility and remittance companies, cellphone networks, cooperatives, financial institutions and insurance aggregators, to reach new consumers who have not bought insurance before. For example, in the UK, in 2019 nearly 30% of new sales for auto and home insurance, and about 20% of life insurance new business, were purchased through affinity and programme business, in which insurance products are marketed to a particular "community", niche market or class.[96]

Extend microinsurance coverage for low-income households

Microinsurance can make insurance coverage more affordable for low-to middle-income countries.

Microinsurance can make affordable and efficient insurance products available to households through unconventional product design, and distribution and claims management processes. The use of microinsurance has increased in recent years, particularly for life, property and agricultural exposures. The Microinsurance Network reports that between 179 and 377 million people were recorded as covered by a microinsurance in the 30 countries covered in 2021. Health microinsurance became the most important product in both Africa and Asia last year. In Latin America, life insurance continued to be the dominant product line, with health microinsurance reaching a relatively low number of customers.[97] For the recently emerged middle class, we see elevated financial vulnerability due to the current surge in food and energy prices. Affordable life and health insurance covers are even more important now, to prevent households from falling back into poverty in the event of a mortality or sickness event.

Strengthening resilience by tackling inequality could be a USD 700-billion premium opportunity for advanced economies

A small decline in inequality would be a big gain for macroeconomic stability and boost advanced economies' insurance demand by about 700 USD billion over a decade.

Looking forward, reversing advanced economies' rising inequality trend through the policy actions described above, could significantly boost insurance demand. Based on our modelled elasticities in Table 2, we estimate that a gradual decrease in the Gini coefficient by one point over the next decade – roughly the pace it has increased over the past three decades – would add a cumulative USD 700 billion of additional insurance demand to advanced economies. US households would see the largest potential gains, where a gradual one-point fall in the Gini coefficient would add about USD 250 billion in cumulative insurance demand over the next decade. Increased equality within societies would thus have an additional benefit of strengthening resilience by extending insurance coverage.

[94] *Swiss Re COVID-19 consumer survey 2021: views of insurance in Asia Pacific one year on*, Swiss Re Institute, June 2021.
[95] See https://bimamobile.com/the-bima-model.
[96] *A Roadmap to the Future of Insurance: Program and Affinity Business*, Majesco, October 2020.
[97] *The Landscape of Microinsurance 2021*, Micro Insurance Network, 2021.

Appendix

Table 8
Advanced economies: estimated direct premiums written (DPW) lost (added) in 2019 due to rising (falling) inequality

	Gini, 2019 or latest available	Change in Gini since 1990	P&C 2019 DPW USD bn	modeled impact USD bn	as a %	Life 2019 DPW USD bn	modeled impact USD bn	as a %
US	38.6	4.1	702.6	−34.2	−5%	633.6	−68.6	−11%
Japan	32.0	3.9	87.3	−5.0	−6%	311.1	−39.3	−13%
UK	33.7	0.8	95.9	−1.0	−1%	267.1	−5.9	−2%
France	29.9	1.0	70.5	−1.0	−1%	167.8	−5.3	−3%
Germany	29.3	3.9	88.6	−5.6	−6%	104.5	−14.6	−14%
Italy	33.8	2.1	39.8	−1.1	−3%	124.2	−7.5	−6%
Canada	30.1	1.8	55.2	−1.4	−3%	55.6	−3.2	−6%
Taiwan	29.0	1.4	5.7	−0.1	−2%	97.4	−4.5	−5%
Spain	33.0	3.3	30.3	−1.4	−5%	30.8	−3.1	−10%
Australia	32.8	3.3	29.7	−1.4	−5%	21.0	−2.1	−10%
Switzerland	29.9	−0.7	16.6	0.2	1%	30.1	0.6	2%
Sweden	26.3	3.9	9.1	−0.6	−7%	28.3	−4.5	−16%
Denmark	26.6	3.9	8.6	−0.6	−7%	27.0	−4.2	−16%
Belgium	26.0	2.5	15.9	−0.7	−4%	18.7	−1.8	−10%
Finland	26.0	5.0	5.0	−0.5	−10%	24.1	−5.2	−22%

Source: Swiss Re Institute

Table 9
Emerging economies: estimated direct premiums written (DPW) lost (added) in 2019 due to rising (falling) inequality

	Gini, 2019 or latest available	Change in Gini since 1990	P&C 2019 DPW USD bn	modeled impact USD bn	as a %	Life 2019 DPW USD bn	modeled impact USD bn	as a %
Brazil	48.3	−6.3	20.5	2.2	11%	41.3	−4.3	−10%
South Africa	62.7	2.1	8.7	−0.3	−3%	37.8	1.2	3%
Mexico	42.8	−5.5	11.8	1.3	11%	14.1	−1.4	−10%
Thailand	39.1	−5.4	7.7	0.9	11%	18.1	−2.0	−11%
Indonesia	46.8	5.0	5.2	−0.6	−11%	16.4	2.6	16%
Malaysia	39.9	−4.0	4.0	0.3	8%	12.6	−1.0	−8%
Chile	45.8	−4.6	4.5	0.4	9%	7.9	−0.7	−8%
Turkey	39.9	−2.1	7.8	0.4	5%	2.0	−0.1	−5%
Argentina	37.6	−4.5	8.0	0.8	10%	1.3	−0.1	−10%
Colombia	47.8	−3.7	5.7	0.4	7%	2.9	−0.2	−6%
Philippines	40.8	−1.7	1.8	0.1	4%	4.3	−0.2	−4%
Peru	44.1	−8.4	1.8	0.3	15%	2.1	−0.3	−14%
Kenya	45.4	−2.8	0.9	0.05	5%	1.0	−0.05	−5%
Egypt	41.9	2.3	0.9	−0.05	−5%	0.9	0.05	5%
Nigeria	42.8	−0.7	0.7	0.01	2%	0.7	−0.01	−1%

Note: this table is missing the largest emerging economies: China, India and Russia, as well as the other transition economies, for which modelling of inequality was not conclusive. Source: Swiss Re Institute.

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