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THE RETURN OF INFLATION:
What it means for insurance

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The Geneva Association

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Foreword

The post-pandemic surge in inflation, turbo charged by the war in Ukraine, has had massive economic, social and political ramifications, touching on the everyday lives of people and businesses around the world. The return of inflation also has profound implications for insurers, who must find ways to carefully manage the risks, as well as respond to the changing needs of customers.

While there are hopes that inflation may ease in 2023, it will continue to be higher than in pre-pandemic times. Geopolitical tensions continue to simmer and global supply chains remain vulnerable. On top, wider societal challenges such as climate change and population ageing will contribute to a higher inflationary environment going forward, as huge amounts of capital are mobilised for decarbonisation, expenditure on health and elderly care is ramped up and tensions on labour markets are exacerbated.

The sudden shift from low inflation requires immediate responses from insurers, ranging from product redesign, repricing and cost management to changes in asset allocation. Fully meeting customer protection needs in a higher-inflation world may also require changes to solvency capital requirements, which were set during an extended period of low interest rates and make it difficult for insurers to offer financial guarantees, for example.

Amongst these issues, however, there may also be opportunities for the insurance industry. The value of insurance typically increases in uncertain times as the role of financial protection and risk mitigation becomes apparent. While inflation accompanied by an economic slowdown typically weighs on insurance demand, sharpened risk perception and awareness may offset this effect.

With macroeconomic uncertainty set to prevail, this report takes a timely look at the impact of inflation and rising interest rates on insurers and considers potential responses to the challenges they pose. We hope it provides useful insight for insurers on how they can adapt to continue to meet customer needs and play their societal role of providing protection in a dynamic economic environment such as this.

Jad Ariss
Managing Director

Executive summary

Three forces could make inflation stick: decarbonisation, deglobalisation and demographics.

The resurgence of inflation in late 2021 came as a surprise, if not a shock. It arose from the continued aftermath of the COVID-19 pandemic, which saw pent-up demand, government stimulus packages and supply chain bottlenecks, and was followed by sharp energy and food price increases as a result of Russia's invasion of Ukraine in late February 2022.

Three other, more structural forces could make inflation 'stick', even if central banks succeed in taming the current episode during the course of 2023. First, decarbonisation and the need for massive capital expenditure on green energy as well as higher carbon prices; second, deglobalisation and the trend towards supply chain reshoring and increasing protectionism; and third, demographic changes, as ageing populations will require more public expenditure on health and elderly care and may cause shortages in labour supply.

The immediate impact of inflation on non-life (property & casualty and health) insurers' earnings is negative, primarily through rising future claims costs on current insurance policies, the need to bolster loss reserves and, in case of stagflation, reduced demand. The effect on life insurers' earnings is more neutral. As opposed to non-life insurance, most life insurance products, e.g. mortality, wealth accumulation and longevity protection, offer benefits that are nominally fixed. Having said this, inflation tends to erode the value proposition of life insurance with fixed benefit payouts, weighing on new business and leading to higher lapses.

Lower equity markets, rising interest rates and widening credit spreads adversely affect insurers' balance sheets through mark-to-market valuation losses. On the other hand, higher interest rates, i.e. discount rates, have a favourable effect on the net present value of future liabilities.

The impact of inflation on non-life insurers' earnings is negative while the effect on life insurers is more neutral.

There is a wide range of management actions insurers can take to respond to the new macroeconomic environment. In terms of product design, with customers typically suffering a reduction in real income, insurers could offer more affordable, low-cost products with an increased focus on risk and loss prevention.

With tight labour markets and increasing wage pressure, insurers will also maintain their drive to improve operational cost efficiency and overall productivity, i.e. output per employee. Digitalisation is one obvious route to achieve this objective in areas such as distribution (the biggest non-claims cost block), marketing and customer service.

The main underwriting response is to reprice insurance risks that exhibit elevated claims costs. The need and scope for doing so depend on the competitive environment in the relevant insurance markets, insurers' assumptions concerning central banks' ability to tame inflation within a reasonable period of time and the degree of public policy and regulatory constraints and interventions.

To counter rising claims costs, insurers may further accelerate claims automation and straight-through processing as well as expand (or build) partner and supplier networks in order to negotiate fixed prices for a longer period of time.

In investment management, there is some scope for inflation protection on the back of tactical asset allocation, for example by tilting the investment portfolio away from bonds towards commodities, equities and real estate. For insurers, however, such benefits remain elusive in light of very high solvency capital requirements for those asset classes.

Inflationary episodes typically hurt demand for insurance. Arguably, however, in times of inflation the value of insurance goes up.

Inflationary episodes typically cause lower economic growth or even recessions, which hurt demand for insurance, especially in areas where customers consider insurance a discretionary or non-essential expense. However, we argue that for customers, and society at large, the value of insurance increases in times of inflation, for the following reasons:

- Customers' reduced financial flexibility adds to the relevance of financial protection and stability afforded by insurance coverage;
- The role of insurance in encouraging loss prevention and reduction becomes more relevant as individuals, households and businesses face a higher financial burden from any uninsured losses and a lower inflation-adjusted value of fixed payouts;
- Financial intermediation further gains in importance. Life insurers in particular can help transform individuals' and households' short-term (cash) deposits into longer-term, higher-yielding savings, which are less prone to value erosion than deposits;
- By stabilising people's financial situation, insurance also contributes to mitigating social inequality. As long as insurance coverage is in place and remains affordable, vulnerable people are less exposed to falling (back) into poverty following a financial shock exacerbated by a sudden surge in inflation.

Insurance demand could also benefit as a result of sharpened risk awareness and portfolio shifts from financial to real assets.

Going forward, demand for insurance could benefit from the shock experience of resurging inflation. Such shocks – similar to what we witnessed as a result of COVID-19 – typically affect risk perception and sharpen risk awareness.

Demand for non-life insurance could also benefit from portfolio shifts from financial to real assets. Furthermore, increasing prices of real assets such as cars and property translate into higher demand for insurance as asset owners seek to expand policy limits.

For life insurance, inflation presents particular challenges as it erodes the value of future fixed payouts, making in-force life insurance products less attractive, adversely impacting sales and increasing lapses and surrenders. However, the effects of inflation on interest rates are widely considered more relevant. Customers might have more appetite for savings-oriented life insurance products that come with higher yields and inflation-protection features.

More generally, as professional absorbers and managers of risk, macroeconomic shocks such as unexpected inflation challenge insurers' role in society, but they also offer opportunities. With that in mind, this research report offers the following conclusions and recommendations for insurers, policymakers and regulators:

- Similar to the pandemic, insurers could use the shock of inflation to demonstrate their value and resilience in times of uncertainty. Insurers help customers remain resilient in times of increasing financial stress and volatility when the value of protection becomes much more apparent;
- At the same time, insurers need to respond to the profitability and solvency challenges presented by inflation. The spectrum of measures ranges from product redesign, repricing and cost management to changes to asset allocation;
- Customers have woken up to the risk of unexpected rampant inflation. Insurers' perceived value going forward will therefore also depend on their ability to manage inflation risk on behalf of their customers. Evolving customer expectations may result in changes to product design, especially in life insurance (e.g. insurance products that combine yield guarantees with profit-sharing features);
- Policymakers and regulators should adapt solvency regimes, designed in an era of lower interest rates, to the new macroeconomic realities. As interest rates rise and normalise, there will be growing appetite from customers for the protection offered by financial guarantees. Prohibitive risk capital charges for such guarantees ultimately hinder the insurance industry from tackling the pension savings gap.

1 Introduction

Introduction

While inflation has been virtually absent over the last 30 years, it has accelerated sharply since spring 2021.[1]

This phenomenon affects multiple facets of the socio-economic landscape, with consequences that will be felt long after the current surge in inflation has subsided.[1]

- Inflation erodes savings and purchasing power. It disproportionally hurts the poor who spend an above-average share of their income on items such as food and energy and have less of a cushion to absorb price increases. Research has shown that prices may rise more quickly for those who have lower incomes, a phenomenon called inflation inequality.[2] For middle-class workers, too, one common worry is that increases in prices outpace rises in wages, causing their real incomes to decline. In summary, inflation has undesired effects on the distribution of income and wealth. It magnifies economic disparities, also between high-income and lower-income countries.[3]
- Inflation shortens the horizons of people and businesses. With stable prices, they do not have to pay attention to year-to-year changes in the average price level. Price stability enables planning for the distant future. If inflation proves persistent and volatile, businesses will struggle to predict their probable profitability in real terms, which makes them less inclined to invest in new opportunities.[4]

Inflation has undesired effects on wealth and income distribution. It magnifies economic disparities, also between high- and lower-income countries.

- Inflation also harms decision-making. The price signals that direct resources to the most deserving activities become distorted. Businesses find it more difficult to distinguish between price movements that reflect changes to demand and supply versus those that are merely driven by responses to the falling value of money. As a consequence, relative prices will no longer give correct signals regarding relative costs of production, compromising the efficiency of resource allocation.[5]
- Inflation can destabilise the political system, with citizens favouring extreme and populist positions. It might fuel discontent-driven riots and public displays of violence and may even adversely affect ethical behaviours like industriousness and precautionary saving.[6] This requires particular attention from the insurance industry, since inflation has been found to drive crimes in general, and those committed for monetary gain, like insurance fraud, in particular.[7]

However, inflation will also enable economies to exit a long period of deflation and low interest rates, with beneficial effects such as higher returns for savers and the end of asset bubbles, for example.

The connection between today's high inflation and future perspectives mainly comes in the form of changing expectations. If currently high inflation prompts a rethink about the likely level of medium-term inflation, such a persistent shift in the expectations of households, businesses and investors can play a significant role in perpetuating inflation (e.g. by workers potentially starting to bargain for higher wages, which

1 International Monetary Fund (IMF) 2022a.
2 Hobjin and Lagakos 2003.
3 Brookings 2022.
4 Ladd 1981.
5 Nakamura et al. 2018.
6 Vinod 2022.
7 Rosenfeld et al. 2019.

could herald another round of price increases as corporations pass on the extra costs to their customers).

In addition, the longer-term inflation outlook is shaped by a number of structural trends. Over the last few decades, growing central bank credibility in combination with efficiency gains as a result of globalisation and digitalisation have helped keep inflation in check. Going forward, based on this structural view, upward pressure on prices should be expected. This is sometimes referred to as '3D inflation', i.e. inflation structurally driven by decarbonisation, deglobalisation and demographics.[8]

Against this backdrop, this report endeavours to:

- Assess the risk of a longer-lasting inflationary period, differentiating between cyclical and structural determinants
- Explore specific implications for insurers' earnings and balance sheets, insurers' responses across their value chain and, on that basis, the ramifications of inflation for the demand and supply of insurance, i.e. insurance penetration
- Highlight the particular value of insurance for customers in times of inflation.

8 ING 2022; Paulus and Thiess 2021; section 2.2 of this report.

2 Inflation outlook

Inflation outlook

The resurgence of inflation in late 2021 came as a surprise, if not a shock, to households, businesses and policymakers alike.

In the following section, we examine the current cyclical drivers of this bout of inflation, such as the aftermath of the pandemic and the disruption to global energy markets. Even more important is an analysis of those factors that might lead to structurally higher levels of inflation going forward, such as deglobalisation. Those drivers could make inflation 'stick', even if central banks succeed in taming the current episode during the course of 2023.

2.1 The cyclical view

The cyclical components of inflation comprise factors that are related to the particular current economic conditions in which inflation unfolds.[9]

Most central banks have clear mandates of price stability based on which they successfully built their credibility over the past few decades. In fact, inflation-targeting policies (i.e. central banks explicitly stating the medium-term inflation rate to be maintained) have been adopted by many of the most important central banks worldwide. Against this backdrop, inflation expectations of households and businesses have remained largely anchored so far, which suggests a short-term and cyclical bout of inflation.[10] Furthermore, after a prolonged period of very low, zero or even negative interest rates (in advanced economies), central banks have the possibility of cautiously raising them while avoiding the extreme hikes seen in the 1980s (when rates surpassed 20% and choked off economic growth).[11]

The aftermath of the COVID-19 pandemic is one of the most important cyclical drivers of the current inflationary episode. Economists often distinguish between demand-pull inflation (caused by excessive demand) and cost-push

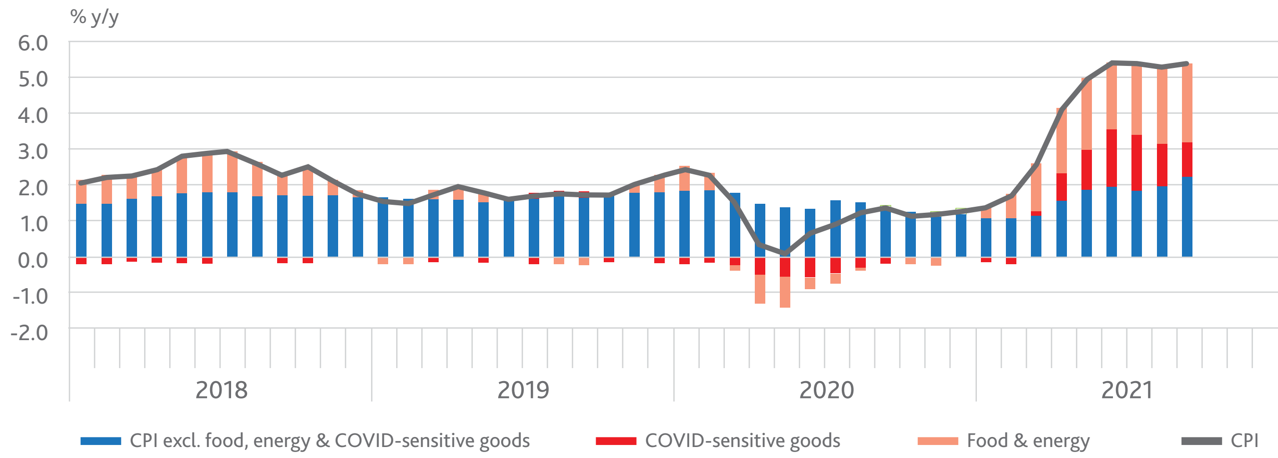
The aftermath of the pandemic created fertile ground for both demand-pull inflation (caused by excessive demand) and cost-push inflation (caused by rising prices for producers).

inflation (caused by rising prices for producers). The pandemic has created fertile ground for both conditions. Lockdowns triggered severe demand shocks, causing buyers to opt out of consuming in favour of saving, quickly followed by much-increased consumption as soon as economies reopened, which allowed businesses to raise prices without losing customers. Additionally, manufacturers cut back on production, expecting consumers' income to fall, thus creating a scarcity of goods. Instead, thanks to large fiscal support by governments, the opposite happened.12 As seen in Figure 1, in 2021, COVID-sensitive goods were among the key drivers of inflation in the U.S. This led experts to erroneously believe that surging inflation in 2021 was primarily a cyclical phenomenon.[13]

At the same time, the pandemic disrupted supply chains and created bottlenecks that increased production and import costs, thus driving up prices. To make matters worse, energy and food prices increased sharply as a result of Russia's invasion of Ukraine in late February 2022.[14] Combined, these cyclical forces led to the inflationary shock. However, other, more structural forces are at play in the global economy that could change inflationary levels more permanently and challenge the once widely shared view that high inflation is a thing of the past.

9 IMF 2022b.
10 Rehn 2021.
11 St. Louis Federal Reserve Bank 2022.
12 Deloitte 2022.
13 KOF 2021.
14 Organisation for Economic Co-operation and Development (OECD) 2022.

FIGURE 1: COMPONENTS OF INFLATION IN THE U.S.



Source: KOF[15]

2.2 The structural view

Factors that move the baseline value of inflation upwards in the long run have caused concern in the past few years. Today's bout of high inflation brings these topics to the forefront of economic debate. The effects of decarbonisation, deglobalisation and demographic shifts have been identified as some of the most relevant issues that will shape the inflation outlook over the next decades, a phenomenon referred to as '3D inflation'.[16]

2.2.1 Decarbonisation

Climate change in general, and new technologies designed to address it in particular, are considered to be key determinants of inflation. Decarbonisation is believed to be inflationary, since green investments are usually capital intensive; furthermore, the employment of emission-reducing technologies in sectors that are hard to decarbonise can contribute to an increase in production costs and, therefore, prices. According to the International Energy Agency (IEA),[17] reaching the net-zero target would require an average annual investment of USD 5 trillion in the energy sector through the end of this decade, pushing up demand for certain metals or minerals and thus exerting an upward pressure on energy prices.

Decarbonisation, deglobalisation and demographic shifts will shape the inflation outlook in the next decades, a phenomenon referred to as '3D inflation'.

The public sector response to climate change also contributes to inflationary pressures. Taxing and putting higher prices on emissions make emission-containing products and activities more expensive. Moreover, the impact of decarbonisation on food prices needs to be taken into account: the growing use of biofuels as clean energy sources and the need for reforestation can reduce the space available for food crops.[18]

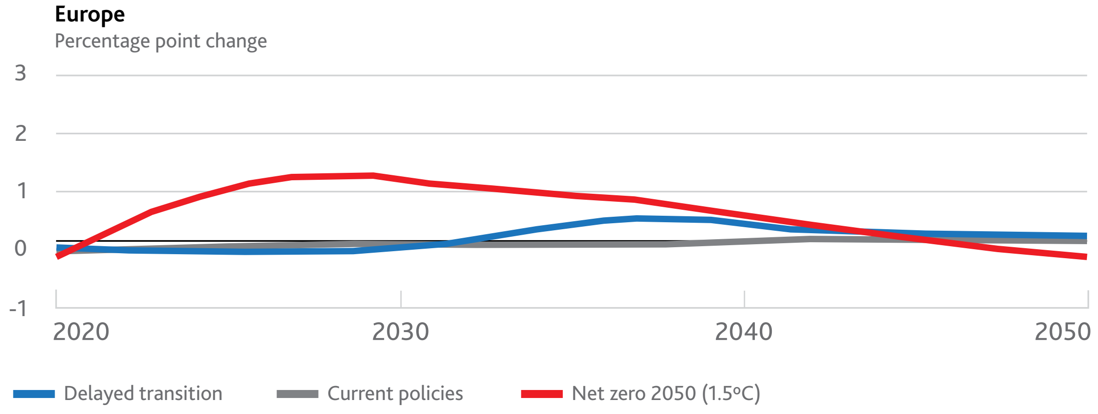
Green investments are usually capital intensive and emission-reducing technologies are associated with higher production costs and prices.

The necessity of a fast-paced switch to renewable energy and more sustainable consumption inevitably affects prices. The European Central Bank (ECB) dubbed this emerging trend as 'fossilflation', one of the legacy costs of the prolonged dependency on fossil fuels.[19]

As illustrated in Figure 2, reaching the net-zero goal by 2050 will be inflationary, at least in Europe and over the medium term[20, 21]

15 KOF 2021.
16 ING 2022.
17 IEA 2021.
18 Bloomberg 2021a.
19 Schnabel 2022.
20 Network for Greening the Financial System (NGFS) 2021.
21 BlackRock 2022.

FIGURE 2: CHANGES TO BASE CASE INFLATION IN DIFFERENT DECARBONISATION SCENARIOS

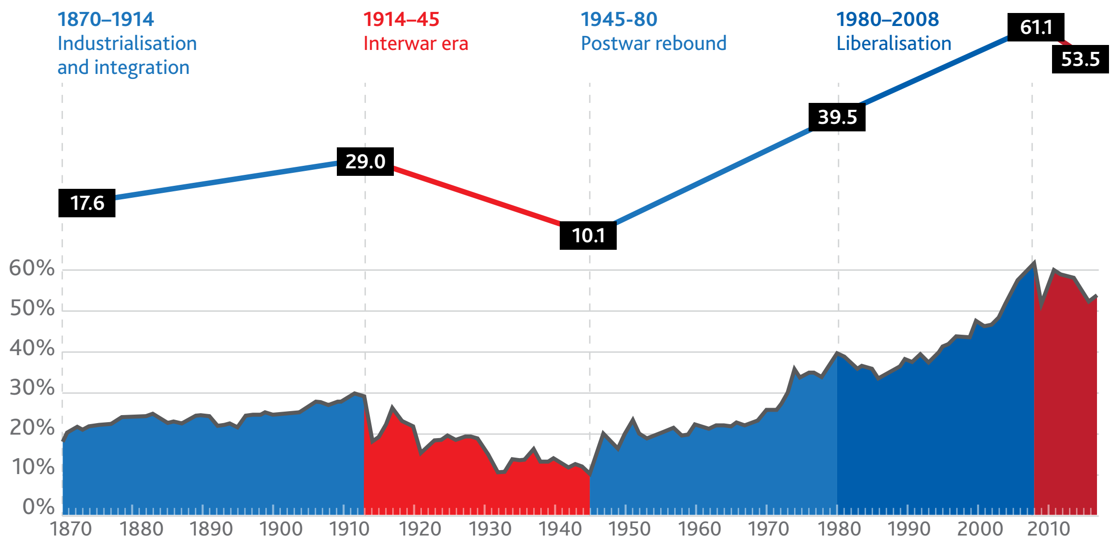


Source: NGFS 2021

2.2.2 Deglobalisation

Another key structural factor adding to inflation concerns is the gradual increase in geopolitical tensions, the relentless retreat of open global markets and the diminishing interdependence and integration between economies around the world. As highlighted by Figure 3, starting with the 2008 Global Financial Crisis (GFC), these factors have translated into a declining Trade Openness Index (TOI) and ignited discussions about 'peak globalisation' and the future of integrated markets.[22] The pandemic and the Russia-Ukraine war have added further momentum to this trend, making public- and private-sector decision-makers wonder whether global supply chains have been stretched too far.

FIGURE 3: TRADE OPENNESS INDEX, 1870–2017



Source: Procurement Integrated Enterprise Environment (PIIE).23 The TOI is defined as the sum of world exports and imports as a share of global gross domestic product (GDP).

22 Harvard Business Review 2010.
23 PIEE 2020.

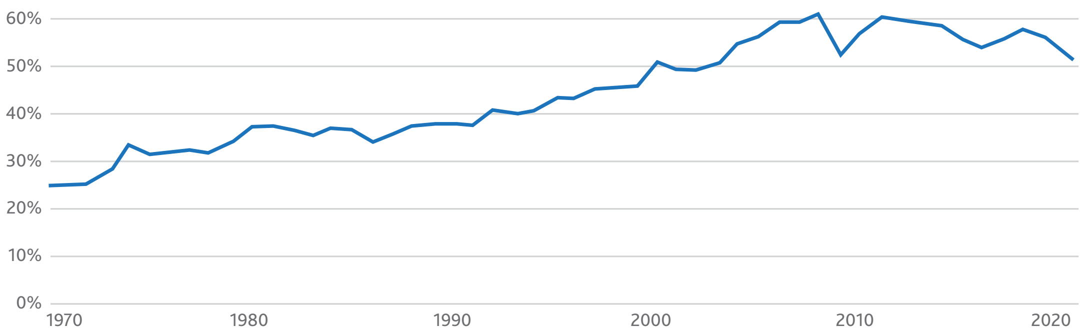
Deglobalisation has major implications for inflation: reshoring production due to geopolitical considerations and the increasing practice of 'double sourcing' (i.e. the deliberate creation of slack in supply chains) will mean higher prices for manufactured products and commodities,[24] in particular due to the increase in labour costs and more expensive sources of other inputs. This is especially true for countries where the political inclination is slanted towards addressing economic inequality, for example in the form of minimum wages.

Another key factor related to deglobalisation is the changing patterns of international trade as a result of protectionist measures and 'trade wars' (especially between the U.S. and China). As shown in Figures 4 and 5, as early as 2008, the share of international trade in global GDP began to decline and has not recovered since. The same is true for foreign direct investment inflows, which have shrunk by 35% from 2007 to 2020, a trend further exacerbated by COVID-19.

Reshoring production and double sourcing mean higher prices for manufactured products and commodities.

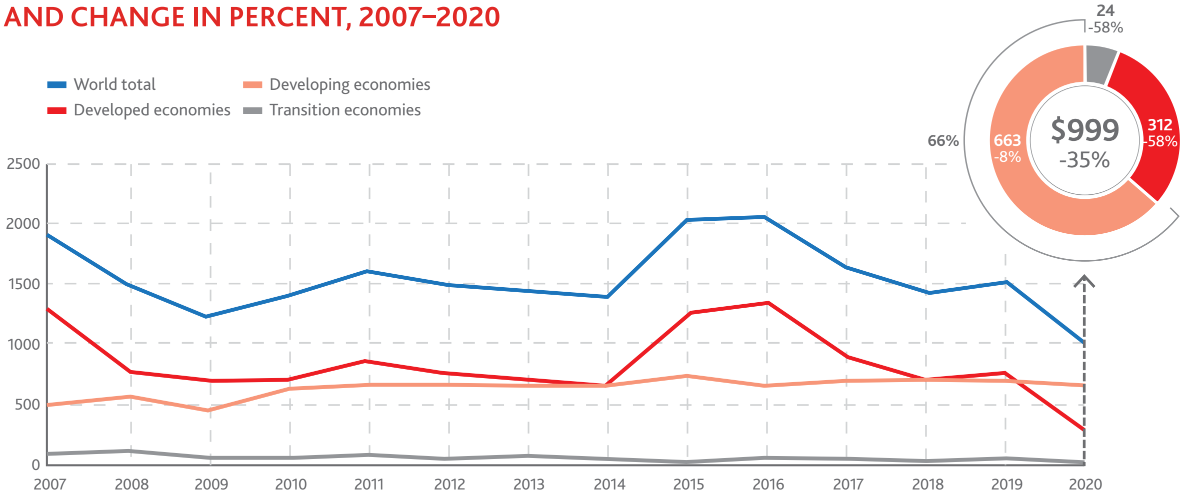
In fact, free trade agreements have been important contributors to the previous extended period of low inflation, since they allowed companies access to cheap labour and lower import prices.[27] The current trade war between China and the U.S. is exerting upward pressure on prices. It also adds to uncertainty regarding what will come next, further contributing to the risk of deanchoring inflation expectations. For this reason, the removal of protectionist measures in favour of more open trade would be an important contribution to control inflation and curb firms' expectations of increasing prices.[28]

FIGURE 4: TRADE AS A SHARE OF GLOBAL GDP, 1970–2020



Source: Our World in Data[25]

FIGURE 5: FOREIGN DIRECT INVESTMENT INFLOWS, IN USD BILLION AND CHANGE IN PERCENT, 2007–2020



Source: United Nations Conference on Trade and Development (UNCTAD)[26]

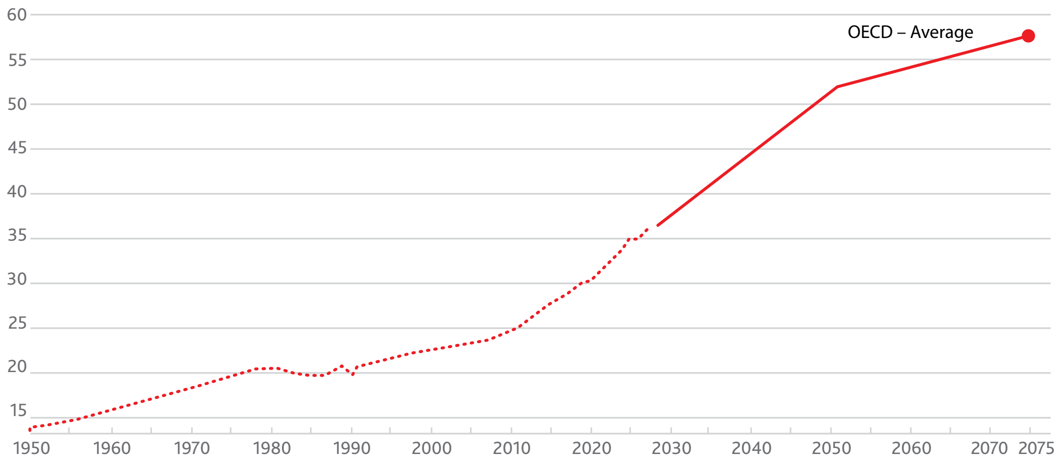
24 Del Negro et al. 2022.
25 Our World in Data 2022.
26 UNCTAD 2021.
27 Kwark and Lim 2020.
28 Hufbauer et al. 2022.

2.2.3 Demographics

Demographic change is an important factor in determining the level of inflation across countries. Specifically, a larger share of the dependent population is associated with higher inflation, while a larger working population usually means lower inflation.[29] While it is difficult to fully rationalise these relationships due to the number of (conflicting) factors at play, a deteriorating old-age dependency ratio[30] (as shown in Figure 6) is set to impact prices. An ageing population will require increased public expenditure on health and elderly care.

> ***Population ageing will require increased public expenditure on health and elderly care and may cause labour supply shortages.***

FIGURE 6: AVERAGE OECD OLD-AGE DEPENDENCY RATIO, 1950–2075



Source: OECD[31]

Overall, the link between demographic structure and inflation has been found to be U shaped: a relative larger share of young and old-aged dependents is likely to be inflationary, while a relative larger share of working-age population is considered to be disinflationary. The rationale is that (young and old) dependents consume but do not contribute to the production process, while population ageing may cause a shortage in labour supply, possibly increasing the bargaining power of workers and pushing up wages and prices.[32, 33]

All of the structural factors discussed in this section directly affect long-term inflation expectations that have been rising since 2020, now reaching an expected 10-year average inflation rate of 2.35% in the U.S. and 2.2% in Europe, slightly above the ECB's target rate. Such levels have not been seen since the early 2000s.[34] While it seems that inflation expectations are still well-anchored,[35] history suggests that expectations can deanchor rather quickly. Before the recent inflationary spikes, long-term expectations already appeared to be gradually moving away from central banks' targets[36] and have been continuing to shift ever since.[37] An eventual deanchoring of expectations would mean potentially skyrocketing inflation deriving from the integration of such expectations into the wage-price setting mechanism.

Even if the current bout of cyclical inflation is brought under control quickly, these structural changes, combined with a generally higher degree of unpredictability, may suggest higher levels of inflation over the medium to long term, with implications for the behaviour of individuals, households and businesses.

29 Goodhart and Pradhan 2020; Juselius and Takats 2018.
30 The old-age dependency ratio is defined as the number of individuals aged 65 and over per 100 people of working age, defined as those aged 20–64.
31 OECD 2022.
32 Bodnàr and Nerlich 2022. However, some scholars argue that declining and ageing populations could put deflationary pressures on the economy through lower aggregate demand (Bruegel 2015).
33 Rehn 2021.
34 Schnabel 2022.
35 Bloomberg 2021b.
36 Galati et al. 2021.
37 IMF 2022b.

Figure 7 summarises the key factors shaping the structural medium- to longer-term inflation outlook.

FIGURE 7: '3D' INFLATION AND KEY FORCES AT WORK

Decarbonisation	Deglobalisation	Demographics
Green investments are capital intensive and will require large public expenditure	Reshoring of production increases costs and prices	Increasing public expenditure related to healthcare and pension systems
Carbon taxes will exert an upward pressure on prices	Trade wars destabilise economic systems and drive up inflation	Decline of working-age population leads to more bargaining power of workers, increasing production costs
The need for reforestation and the growing demand for biofuels could drive up food price inflation		Tendency of younger generation to save less than their parents

Source: The Geneva Association

"In the face of decarbonisation and deglobalisation, inflation is expected to remain structurally higher going forward. Correspondingly, we expect a higher level of interest rates. The normalisation of interest rates will enhance insurers' relevance for customers. Think of guaranteed-yield products in life insurance, for example, which might re-emerge as complements to unit-linked products and help insurers offer a broader suite of products to increasingly risk-averse customers."

Arne Holzhausen, Global Head Insurance, Wealth and Trend Research, Allianz

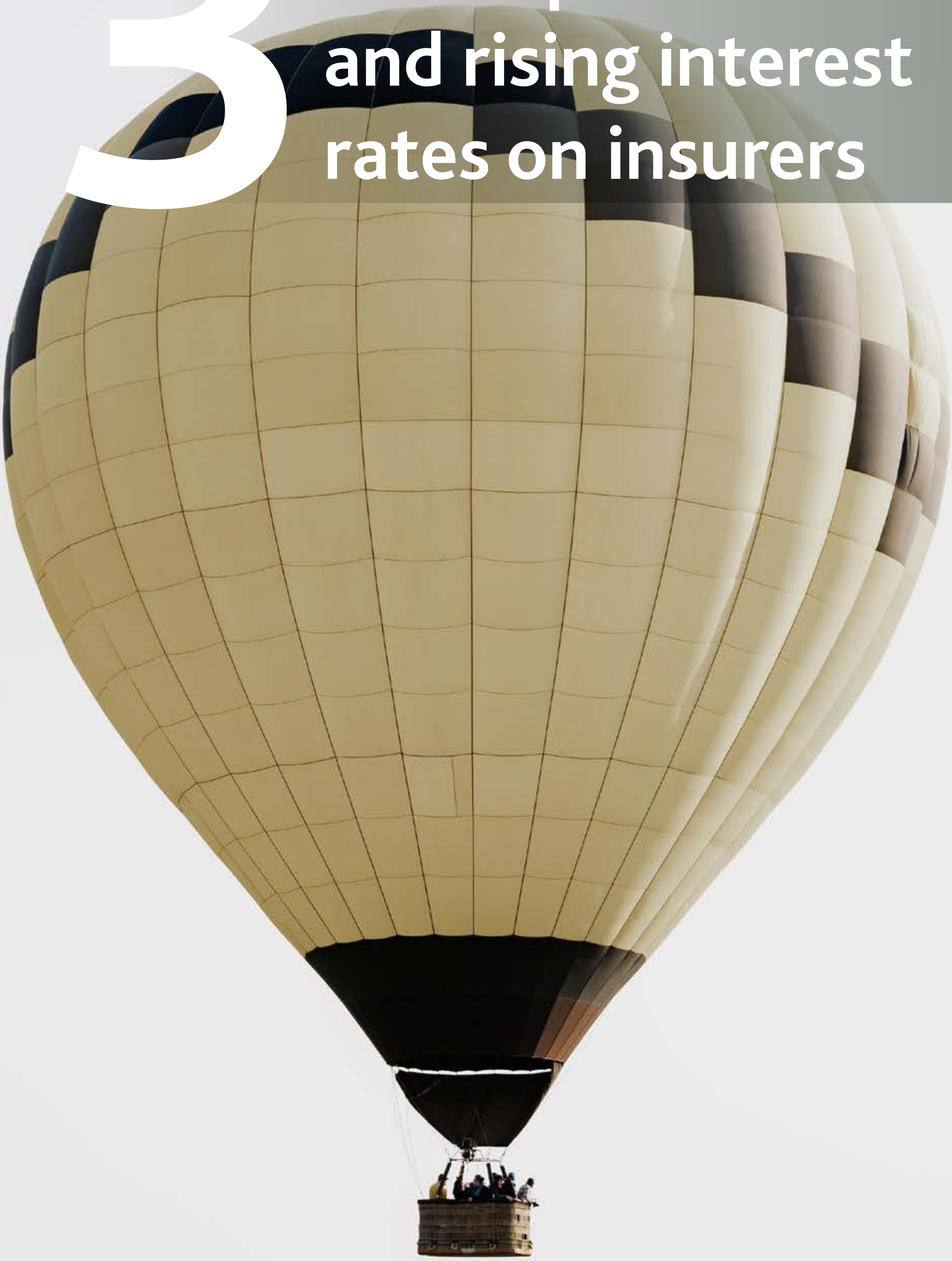
"Structurally higher levels of inflation are not a given. Even though the reshoring of supply chains is likely to add to inflation, its pace in Europe may be slowed down by the prospect of sustainably higher energy prices. In addition, parts of the green transition and the associated strong demand for materials could be delayed due to the tightening of monetary policy and less fiscal leeway for new projects. Also, digitisation will continue to accelerate as companies will want to capture more opportunities for enhanced cost efficiency. Finally, as to demographics, labour shortages and wage-cost inflation are rather cyclical in nature while the ageing of populations is also disinflationary."

Olivier Colsoul, Senior Strategist, AG Insurance

"Following shortly after the pandemic shock, governments are now facing another major budget challenge posed by the energy crisis and the need to cushion the impact of skyrocketing energy prices for households. With public finances under sustained and growing stress, we have already seen governments look to insurers to play a 'social' role by paying claims beyond their legal obligation, increase prices by less than commercially needed and as a target for additional taxation."

Ben Coumans, Group Director Strategy and M&A, Ageas

3 The impact of inflation and rising interest rates on insurers



The impact of inflation and rising interest rates on insurers

The following section examines the effects of inflation and rising interest rates on non-life and life insurance companies. We distinguish between the impacts on insurers' earnings, primarily from a claims perspective, and the effects on balance-sheets, which are driven by rising interest rates.

3.1 Earnings

3.1.1 Non-life insurance

The immediate impact of inflation on non-life (property & casualty and health) insurers' earnings is clearly negative. It occurs through two main channels: first via rising future claims costs on current insurance policies and the need to bolster loss reserves,[38] and second via inflation-induced changes to interest rates which lead to higher realised capital losses.[39]

The immediate impact of inflation on non-life insurers' earnings is negative and occurs mainly through rising future claims costs and inflation-induced changes to interest rates.

During bouts of inflation, especially those accompanied by wage increases, property and car repair costs typically rise faster than consumer-price inflation, leaving claims ratios in property and motor insurance particularly vulnerable.[40]

Another major component of property & casualty (P&C) claims is for medical services, for example under workers' compensation or as part of a liability claim. In general, medical claims costs tend to exceed the general inflation rate.[41]

Longer-tailed P&C lines of business, where claims may need years to settle, are most exposed to unanticipated surges in inflation that are not accounted for in the pricing of insurance contracts and may accumulate over time. Among those lines of business are medical malpractice and general liability.

With claims payouts based on indemnity, health insurance is as vulnerable to inflation as P&C insurance, both due to higher claims and the risk of reserve deficiencies. On top, as mentioned before, health cost inflation typically exceeds consumer-price inflation. This reflects relatively

38 For the purpose of our analysis, we define claims inflation as the sum of general consumer-price inflation and other factors usually referred to as 'social inflation' or 'superimposed inflation', which includes, for example, wages of the workers who repair vehicles, litigation costs or medical costs for bodily injuries (The Geneva Association 2020a. Author: Darren Pain).

39 Hartwig 2022; D'Arcy 1982.

40 Masterson 1968; Pecora and Roe 2003; Kessler 2022.

41 Ibid, as shown as early as 1968 by Masterson. At the end of 2022, medical inflation was still lagging behind unexpectedly high headline inflation. As soon as wages and other medical costs catch up with general inflation, we expect a return to the historical pattern of medical inflation exceeding general inflation.

low productivity in the health sector, with wages typically rising faster than productivity growth. The main reason for this pattern is the labour intensity and personalised nature of healthcare.[42]

Non-life claims inflation is expected to translate into hardening rates to make up for rising loss costs.

Having said this, P&C and health claims inflation is expected to translate into hardening rates to make up for rising loss costs. Policies are typically repriced every year, based on claims experience and other factors.[43]

Table 1 summarises the different drivers of claims cost inflation by line of business.

TABLE 1: INFLATION EFFECTS ON NON-LIFE CLAIMS COSTS BY LINE OF BUSINESS

Line of business	Impact on claims	Causes
Property	High	Rising construction prices and wages
Motor	High	Rising costs for car parts (physical damage, wages and medical costs (bodily injury)
Workers' compensation	High	Rising wages and medical cost inflation
Liability	Medium to high	Rising wages and general/social inflation
Health	High	Rising wages and medical cost inflation

Source: The Geneva Association

As a result of inflation, non-life insurers are also likely to experience adverse development (i.e. insufficiency) on loss reserves for unsettled claims. Loss reserves are typically set based on the assumption that recent years' inflation rates will continue. For some casualty lines of business, however, loss settlement periods may take decades. Therefore, if inflation starts to rise, the loss reserves established to settle these claims will prove insufficient.[44] Any reserve increase will diminish the insurer's earnings and shareholders' equity.[45]

On the investment side, in principle, gains in returns from inflation-induced higher interest rates could offset higher claims. However, at least in the short run, this is unlikely to happen and the overall impact of inflation on non-life insurers' profitability is set to be negative, driven by the claims and reserving channel as well as potentially lower investment income due to higher-realised capital losses in the short term. With fixed coupons and principals, bond values decline if interest rates rise or are anticipated to rise. Stocks also tend to decrease in value because a higher discount rate is applied to future earnings. Over time, however, bond and stock returns benefit from higher reinvestment yields and corporate earnings, respectively.[46]

High or rising inflation tends to erode the value proposition of life insurance with fixed benefit payouts.

42 The Geneva Association 2019. Author: Kai-Uwe Schanz; Baumol 1993; Masterson 1968.
43 Swiss Re 2022a; Bohnert et al. 2015; section 4 of this report.
44 Dorofti and Jakubik 2015.
45 Lockton 2022; Conning 2022; German Association of Actuaries 2014; Ahlgrim and D'Arcy 2012.
46 Fama and Schwert 1977; Securities and Exchange Commission (SEC) 2013.

3.1.2 Life insurance

Most life insurance products, e.g. mortality, wealth accumulation and longevity protection, offer benefits that are nominally fixed. Payouts are defined at the inception of the policy and not indexed to inflation. Therefore, and in stark contrast to non-life insurance, the effect of inflation on life insurers' earnings is neutral for most segments of business. This is not the case, however, with certain morbidity products, such as disability and long-term care, which typically offer cost-of-living adjustments.[47]

Having said this, inflation has significant indirect effects on life insurers' earnings by weighing on sales and the persistency of various products. High or rising inflation tends to erode the value proposition of life insurance with fixed benefit payouts. If inflation is 5% per annum, a death benefit paid out to the beneficiaries in five years will have lost almost 30% of its current value. This not only discourages people from buying life insurance, it also leads to increased lapses for savings policies with fixed returns as policyholders try to capitalise on higher rates of return on newer life insurance or other financial products.[48]

On the other hand, if, as a result of inflation, people expect interest rates to stabilise at higher levels, sales of (guaranteed) savings-type life insurance will increase.[49] Also, as interest rates climb, the nominal profitability of in-force life savings products with guarantees will improve, partially offsetting negative earnings effects from higher lapses and surrenders.

Administrative expense inflation is another challenge for life insurers. It primarily affects long-term policies with fixed premiums where the administrative expenditure premium load could soon prove insufficient to cover actual expenses.[50]

As life insurers invest primarily in long-dated bonds, higher reinvestment yields will take time to positively affect earnings as bond portfolios gradually roll over into higher yields. In the short run, investment income is likely to suffer as a result of higher-realised capital losses.[51]

Table 2 summarises the impact of inflation and rising interest rates on the profitability of life insurance.

TABLE 2: INFLATION AND INTEREST RATE EFFECTS ON THE PROFITABILITY OF LIFE INSURANCE

Area	Effect
Protection products	■ Neutral due to nominally fixed payouts (but slightly ▼ negative due to higher lapse rates)
Savings-oriented products	▲ Positive due to higher interest rates
Investments	Short term: ▼ Negative due to higher realised capital losses Long term: ▲ Positive due to higher reinvestment yields
Expenses	▼ Negative, especially for long-term policies with fixed premiums and expense loadings

Source: The Geneva Association

47 Ahlgrim and D'Arcy 2012.
48 See Li et al. (2007) for empirical evidence. Also see section 5 of this report.
49 Berends et al. 2013.
50 Swiss Re 2010; Gerber 1995.
51 Swiss Re 2022a.

3.2 Balance sheets

Lower equity markets, rising interest rates and widening credit spreads adversely affect insurers' balance sheets through mark-to-market valuation losses. As insurance investment portfolios are dominated by fixed-income securities held to maturity, these interest-rate-induced valuation losses do not impair earnings but reduce the insurer's net asset value (shareholders' equity) in Generally Accepted Accounting Principles (GAAP) and International Financial Reporting Standards (IFRS) accounting.[52]

On the other hand, higher interest rates, i.e. discount rates, have a favourable effect on the net present value of future liabilities. The economic effect on an insurer's balance sheet is neutral if assets and liabilities are matched and the declining economic value of assets is fully offset by a declining value of liabilities.[53] If the duration of an insurer's assets is shorter than the duration of its liabilities, the company's economic value will benefit from rising interest rates as liabilities will be devalued more than their matching assets. This is the case for the European Union's life insurance sector, for example.[54] The economic impact on P&C balance sheets tends to be negative as the duration of assets is typically longer than those of liabilities.[55]

Table 3 summarises the main inflation and interest rate effects on insurers' earnings and balance sheets.

TABLE 3: THE IMPACT OF INFLATION AND RISING INTEREST RATES ON INSURERS

	Non-life insurance earnings	Life insurance earnings	Net asset value
Inflation impact	▼ **Negative** due to higher claims and expenses, need to increase reserves and higher realised capital losses	■ **Neutral** to moderately negative as most benefits (liabilities) are nominally fixed ▼ **Negative** due to lower sales, and higher lapses, expenses and realised capital losses	▼ **Negative** (extent dependent on business mix and asset allocation)
Interest rate impact	▲ **Moderately positive** due to higher reinvestment yields on short duration bonds	▲ **Positive** due to gradually higher sales and margins of savings products	▲ **Positive** if asset duration is shorter than liabilities duration ▼ **Negative** if asset duration is longer than liabilities duration
Total impact	▼ **Negative**	■ **Neutral** to moderately positive	▼ **Negative** for P&C ▲ **Positive** for life

Source: The Geneva Association

52 Windsor et al. 2020.
53 Ibid.
54 European Insurance and Occupational Pensions Authority (EIOPA) 2019.
55 Ibid.

Interview with

Markus Riess

CEO, ERGO, and co-sponsor of The Geneva Association's Socio-economic Resilience work stream

Even if the current bout of inflation recedes over the next few months, what do you expect the lasting effects on the decision-making of households, businesses and policymakers to be?

Currently, many drivers affect the outlook and generate uncertainty. Most prominently, the ongoing geopolitical instabilities and economic policy reactions, primarily aimed at limiting energy prices, pose unprecedented challenges for our generation. This creates a very complex environment for consumers and businesses to navigate. The latest forecasts from leading economic institutes conclude that inflation is likely to remain above the level that we have experienced throughout the last 20 years.

> ***"The ongoing geopolitical instabilities and economic policy reactions, primarily aimed at limiting energy prices, pose unprecedented challenges for our generation. This creates a very complex environment for consumers and businesses to navigate."***

One can argue that the value of in-force insurance for policyholders increases in times of inflation. Do you agree?

That is indeed true, considering that the insurance industry fulfils its obligations to customers, even if the costs of property damage or medical treatment rise. However, insurance companies need to react to inflationary pressure in order to maintain the overall risk- and cost-bearing capacity.

Additionally, rising interest rates offer life insurance customers the opportunity to benefit from increasing returns on investment.

How are insurers responding to inflation?

Of course, every insurer should closely monitor price developments, focusing on the drivers relevant to the respective coverages, such as repair costs, construction prices or medical inflation. Naturally, insurers have to react to sustained cost increases by adjusting premiums. However, the balance of an increase in premiums on the one hand, and potential adverse selection effects on the other, must always be kept in mind. The same logic applies to reserving, especially in long-tail business. In this context, rising interest rates can mitigate selection issues by making it easier to finance long-term guarantees.

Product design should also be reviewed. Lump-sum benefits, maximum sums insured, caps and deductibles help to limit maximum loss exposure, while also reducing the extent of required premium adjustments.

In addition, digitisation and automation constitute crucial levers to counter the increase of operating costs. Substantial efficiency gains resulting from such endeavours can drive down cost ratios and will ultimately strengthen the resilience of our industry.

On the investment side, there are two divergent aspects. On the one hand, rising interest rates are positive regarding reinvestment yields. However, on the other hand, escalating fears of an economic recession and the geopolitical environment can substantially affect market values and volatility.

What are the implications of the current inflationary episode for insurance demand and supply?

To cover rising bills, insurers generally need to increase premiums, thereby further reducing the spending power of policyholders. Under these conditions, households may decide to cut down on insurance coverage that is not considered essential.

> ***"If insurers properly manage the challenges ahead and limit negative effects on profitability, there should be no sustained impact on market capacity and insurance supply."***

The uncertainty resulting from inflationary pressure has a particularly large impact on life insurance, considering that customers' commitments are typically long term. Notwithstanding, the increased risk awareness in the wake of the pandemic and higher interest rates tend to support demand for savings products.

If insurers properly manage the challenges ahead and limit negative effects on profitability, there should be no sustained impact on market capacity and insurance supply. Furthermore, P&C rate hardening will help to keep the business attractive.

A lasting negative effect on total insurance supply is only probable if insurance companies grossly underestimate imminent cost increases or face limitations in premium adjustments.

What can insurers do to maintain or even strengthen their role in society in the face of inflation?

Especially in the face of inflation, insurers take on the role of emphasising the fundamental importance and value of risk protection and mitigation. Cost discipline and operational excellence achieved by a high degree of automation and digitalisation enables insurers to minimise the cost burden borne by customers.

With respect to life insurance, our industry can close important coverage gaps resulting from demographic developments and the increasing inability of the public sector to intervene. Regarding non-life insurance, our industry needs to innovate and expand the boundaries of insurability.

Last but not least, the insurance industry can and should contribute to the required decarbonisation of our economy. The current crises have shown that our collective effort is imperative in this regard.

4 Insurers' responses to inflationary shocks: A value chain perspective

Insurers' responses to inflationary shocks: A value chain perspective

The following section highlights a range of management actions insurers typically consider to mitigate the negative effects of inflation on their profitability and solvency.

4.1 Product management

Most links of the insurance value chain lend themselves to strategic and operational responses. This analysis prepares the ground for the exploration of effects on insurance demand and supply, i.e. insurance penetration, and, ultimately, the role of insurance in society.

As discussed earlier, long-tail P&C business is particularly vulnerable to inflation. In this context, contract design offers ways to mitigate inflation exposure, for example by shortening the duration of liabilities or by indexing limits and deductibles.[56] Specific measures include a shift to 'claims-made' policies, which only cover claims reported during the policy period regardless of the date of occurrence; sunset clauses, where the insurer will only respond to losses reported before a predetermined future date; and index clauses, which link premiums, limits and deductibles/retention to an inflation-related index (and would also avoid onerous repricing).[57]

Inflation is also likely to prompt insurers to offer more lower-cost and lower-risk products with an increased focus on risk and loss prevention (e.g. through Internet of Things applications and automotive telematics)[58] as well as usage-based propositions, which try to respond to affordability issues faced by customers, especially in a recessionary inflation environment.[59]

Contract design offers ways to mitigate inflation exposure, for example by shortening the duration of liabilities or by indexing limits and deductibles.

4.2 Marketing

With tight labour markets and increasing wage pressure, insurers will maintain their drive to improve operational cost efficiency and overall productivity, i.e. output per employee. Digitalisation is one obvious route to achieve this objective in the marketing function. At the same time, online marketing also allows for better targeting of customers, based on an enhanced understanding of their needs and the ability to offer more tailored products.[60] In addition, digital marketing applications enable insurers to refine their pricing and make their processes faster and more customer-centric.[61] These capabilities are likely to prove particularly beneficial in times of inflationary recessions when an increasing number of customers will more critically review the cost-benefit characteristics of their insurance policies.

4.3 Underwriting/pricing/reserving

The main underwriting response is to reprice insurance risks with elevated claims costs. The need and scope for doing so depends on the competitive environment in the relevant insurance markets, insurers' assumptions concerning central banks' ability to tame inflation within a reasonable period of time and the degree of public policy and regulatory constraints and intervention.[62]

56 Gallagher Re 2022.
57 Swiss Re 2010.
58 The Geneva Association 2021a. Authors: Isabelle Flückiger and Matteo Carbone.
59 Scott 2022.
60 Eling and Lehmann 2018.
61 Eckert et al. 2022.
62 The Geneva Association (forthcoming).

> ***The main underwriting response is to reprice insurance risks with elevated claims costs.***

However, calculated premiums do not only reflect inflation but also interest rates and expected investment income, which are rising because of monetary policy responses to inflation.[63] In addition, insurers are likely to steer new business towards propositions with lower risk profiles and shorter durations. At the same time, insurers could proactively offer increased limits to their customers in order to avoid underinsurance as a result of inflation.[64] Last but not least, in times of inflation, insurers, especially in the P&C segment, will more frequently need to ascertain the adequacy of their technical reserves.[65]

4.4 Distribution

As the biggest non-claims cost block in insurance, acquisition and distribution is a natural focus of corporate efficiency drives, even more so in times of wage inflation. While traditional intermediaries, such as agents and brokers, still dominate distribution for most insurance classes around the world, an increasing amount of insurance is gradually being offered through mobile and internet channels, too, as part of omni-channel strategies.[66] This trend is expected to further accelerate in the face of inflation as both insurers and insureds are under increasing pressure to capture cost efficiencies.

4.5 Claims

Claims costs are not only driven by general (consumer-price) inflation but also reflect specific legal, societal and scientific developments, which give rise to what is widely referred to as social inflation.[67] This phenomenon might be affected by increased general inflation, for example by raising individuals' propensity to sue and affecting public attitudes to corporations and economic inequality. Such changes could impact jury awards and settlements. Therefore, in times of rising general inflation, it is even more important for non-life insurers to monitor claims cost inflation above and beyond general inflation.[68]

To counter claims cost inflation, insurers will place even more emphasis on boosting claims cost efficiency, for example by accelerating claims automation and straight-through processing as well as expanding (or building) partner and supplier networks in order to negotiate fixed prices for a longer period of time. Claims professionals will also sharpen their focus on claims with the longest cycle times, i.e. a high exposure to price inflation.[69]

> ***In times of rising general inflation, it is even more important for non-life insurers to monitor claims cost inflation above and beyond general inflation.***

4.6 Customer service

In customer service as well, insurers will boost expense management discipline. At the same time, they are likely to invest in increased productivity and digital self-service, especially as customers grow more familiar with and expectant of digital tools for interaction and service transaction completion.[70]

4.7 Asset management

In general, effective insurer responses to inflation would have to occur preventively, rather than ex-post. Once inflation has picked up, the value of inflation-linked securities and the level of interest rates reflect capital markets' inflation expectations, which drive up the cost of any hedging strategy. Also, inflation-linked bonds are typically characterised by limited supply and liquidity.[71] Their effectiveness therefore depends on the timing and terms of purchase.[72]

> ***Effective insurer responses to inflation would have to occur preventively, rather than ex-post.***

Also, there is consensus that, for any long-term strategic asset allocation, hedges among traditional asset classes against unexpected inflation are imperfect or even ineffective. However, there is some scope for inflation protection on the back of tactical asset allocation, for example by tilting the investment portfolio away from bonds towards commodities, equities and real estate in response to an inflation shock.[73] For insurers, however, such benefits remain elusive in light of very high solvency capital requirements for those asset classes.

63 German Association of Actuaries 2014.
64 McKinsey 2022.
65 Gallagher Re 2022; Swiss Re 2010.
66 The Geneva Association 2018. Author: Christian Schmidt.
67 The Geneva Association 2020a.
68 Bohnert et al. 2015.
69 McKinsey 2022.
70 Eckert et al. 2022.
71 Attié and Roache 2009.
72 Kessler 2022.
73 Attié and Roache 2009.

Table 4 illustrates key insurer responses from a value chain perspective.

TABLE 4: HOW INSURERS RESPOND TO INFLATION ACROSS THE VALUE CHAIN

Product design	Marketing	Underwriting/pricing/reserving	Distribution	Claims	Customer service	Investments
Shorten durations in long-tail business	Invest in online marketing to counter wage inflation and improve customer targeting	Reprice insurance risks	Invest in online sales and policy binding to counter wage inflation	Monitor claims inflation above and beyond general inflation	Invest in digital self-service to counter wage inflation	Consider inflation-linked bonds and 'inflation-proof' equities and real estate
Design more affordable, lower-risk, 'essential value-based' products		Write more new business in lower-risk segments		Invest in claims automation and partner networks		
		Review and adjust reserves more regularly				

Source: The Geneva Association

5 Inflation and the role of insurance in society

Inflation and the role of insurance in society

Inflationary episodes typically entail lower economic growth or even recessions, which hurt demand for insurance.

5.1 The value of insurance in times of inflation

Inflationary episodes typically entail lower economic growth or even recessions, which hurt demand for insurance, especially in areas where customers consider insurance a discretionary (non-essential) expense item. However, we argue that for customers and society at large, the value of insurance increases in times of inflation, for the following reasons (see Table 5 and Box 1):

- Customers' reduced financial flexibility during an inflationary shock adds to the relevance of financial protection and stability afforded by insurance coverage; especially in periods of inflationary recession, insurance customers are likely to attach a particular value to the 'peace of mind'[74] derived from insurance. Customers feel more reassured about their ability to absorb (inflated) financial shocks from major unexpected events, replace lost assets and cover more costly routine expenses such as annual medical checkups and dental visits. The financial value of non-life insurance in particular increases in times of inflation as its key benefits, such as cost savings and cash-flow smoothing in the event of major losses, gain in importance, especially for lower-income earners.[75]

- The role of insurance in loss prevention and reduction is especially relevant as individuals, households and businesses would face a higher financial burden from any uninsured losses and a lower inflation-adjusted value of fixed payouts.[76] Based on their risk data and expertise, insurers have a competitive edge in prevention-oriented risk assessment and control.[77]

- In the absence of price stability, insurers' traditional role in financial intermediation further gains in importance. Life insurers in particular can help transform individuals' and households' short-term (cash) deposits into longer-term, higher-yielding savings, which are less prone to value erosion than deposits.[78]

- By stabilising the financial situation of individuals and households, insurance also contributes to mitigating social inequality: as long as insurance is in place and affordable, vulnerable people are less exposed to falling (back) into poverty following a financial shock exacerbated by a sudden surge in inflation.[79, 80] This role of insurance matters greatly in times of inflation, when low-income earners' income and wealth tend to suffer disproportionately.[81]

74 Even though it is very challenging to quantify 'peace of mind' in terms of economic utility, Haushofer et al. (2017) show that the provision of health insurance reduces levels of self-reported stress and the stress hormone cortisol through a 'peace-of-mind effect'.
75 Access to Insurance Initiative (a2ii) and International Association of Insurance Supervisors (IAIS) 2017. For insurers, the flipside of absorbing price volatility is the need to increase reserves, also in response to regulatory and rating agency requirements.
76 Swiss Re 2022b.
77 The Geneva Association 2021a.
78 Some of these deposits are precautionary savings to complement or substitute for insurance. With effective insurance in place, the need for precautionary savings, which are particularly vulnerable to value erosion in times of inflation, reduces (Chou et al. 2003; Liedtke 2007).
79 The Geneva Association 2020b. Author: Kai-Uwe Schanz.
80 MAPFRE 2020.
81 Jaravel 2021.

TABLE 5: THE VALUE OF INSURANCE IN TIMES OF INFLATION

Financial flexibility	Loss prevention and reduction	Financial intermediation	Mitigation of social inequality
Absorbs financial shocks, replaces lost assets and covers routine expenses Enables cost savings and cash-flow smoothing	Mitigates financial burdens from uninsured losses and lower value of inflation-adjusted fixed payouts	Transforms cash deposits into longer-term, higher-yielding savings less prone to value erosion Mobilises savings for 'real' investments	Protects low-income earners from income and wealth erosion

Source: The Geneva Association

Box 1: The value of (in-force) insurance in times of inflation – An insurance economics perspective

Inflation is no stranger to the insurance industry. In some areas, it has been causing headaches for years. Take medical inflation, for example, where healthcare costs regularly rise faster than the general price level, albeit for a 'good' reason: medical progress not only leads to better and more individualised treatment methods, but usually also to more costly ones. Even though innovations are by their very nature difficult to forecast reliably, the industry has been good at dealing with this kind of inflation in the past. It is more difficult to deal with so-called 'social inflation', which is usually used to describe the phenomenon that compensation payments of all kinds have been set much more generously in recent years (especially in the U.S.). This affects a number of insurance lines, e.g. motor third-party liability and especially directors' & officers' liability, where premiums have to be (sharply) increased and limits reduced.

The current situation, however, where prices are rising across the board, is a new challenge for the insurance industry – at least for the vast majority of insurance managers, who know the inflationary 1970s only by hearsay. The rapid rise in prices is not even the biggest challenge; the surprise factor weighs more heavily. As Augustín Carstens, Managing Director of the Bank for International Settlements (BIS), rightly pointed out: "The rise in inflation came as a surprise to most observers… Economic forecasts are often wrong. But the forecast misses in 2021 were unusually large."[82] This means that premium planning will become wastepaper in a short time. The consequence is significant deterioration in the combined ratio; in many insurance lines and markets, negative underwriting profitability is unlikely to be avoided in 2022.

For insurance customers, the fact that they have been able to buy expensive insurance cover relatively cheaply – compared with the skyrocketing prices of car and home repairs – is a positive development. The value of their insurance coverage has increased. Of course, insurers will try to restore their profitability in subsequent years; premium increases are inevitable, because in the long run, only a profitable insurance business can also offer lasting and reliable risk protection. But from the customer's point of view, one advantage remains: because inflation came as such a surprise, the adjustments will be made later. Given the scale of the cost-of-living crisis, it is even quite likely that insurers will proceed with a sense of proportion and spread adjustments over several years, not least out of self-interest: excessive price increases could lead to sensitive volume losses if customers, households and companies alike can no longer cope with the price increases.

The salient feature of the insurance concept thus also proves its worth in times of inflation. In the collective, financial burdens cannot only be shared but also smoothed out over time. The insurance industry cannot undo inflation for its customers, but it can act as a kind of buffer, creating valuable time for adjustment. The need to fight inflation resolutely is thus not in question. On the contrary, a return to 'normal' and above all (relatively) stable inflation rates is essential. The insurance industry can cushion a shock to a certain extent, but not a lasting aberration with its immense economic and social costs.

Contributed by Arne Holzhausen, Global Head Insurance, Wealth and Trend Research, Allianz

82 Carstens 2022.

5.2 Effects of inflation on insurance demand and supply

5.2.1 The demand side

Non-life insurance

Financial shocks typically affect risk perception and sharpen risk awareness. This is a fertile ground for increased demand for insurance.[83]

As early as 2011, Feyen et al. found inflation to positively affect demand for non-life insurance. The authors argued that, in theory, "this result could reflect the portfolio shifts from financial to real assets and the anticipation of consumption in very high inflationary environments, resulting in additional demand for non-life insurance."[84] Inflationary asset bubbles in the real estate sector, which boost insurable economic activity, could be a case in point.

Hodula et al. also believed that the positive relationship between inflation and non-life insurance demand could be at least partly explained by increasing prices of real assets such as cars and property.[85] Price increases of such goods translate into higher demand for insurance as asset owners seek to increase policy limits.

Shocks such as inflation affect risk perception and sharpen risk awareness, providing a fertile ground for increased demand for non-life insurance.

On the other hand, inflationary episodes that come with lower economic growth or even recessions are typically associated with overall lower demand for non-life insurance, especially in areas where customers consider insurance a discretionary (non-essential) expense item. Lower inflation-adjusted income reduces the demand for insurance.[86] In addition, it may prompt low-risk customers to buy less insurance or to forego it.[87]

Price increases in response to inflation are also expected to have a dampening effect on non-life insurance demand. However, non-life insurance has been found to be relatively price-inelastic given the absence of close substitutes. The decline in demand is typically lower than the increase in prices. [88]

On the other hand, inflationary episodes that come with lower economic growth or even recessions are typically associated with overall lower demand for non-life insurance.

Life insurance

An early empirical study for Brazil found customers to be sensitive to inflation by lowering their demand for life insurance.[89] Numerous later studies confirmed these findings for different countries and regions.[90] Outreville[91] and Black and Skipper[92] suggested that inflation has a negative effect on personal savings, also in the shape of life insurance.

Similar to non-life insurance, slower economic growth, eroding inflation-adjusted incomes and price increases are set to curb demand for life insurance products (both protection and savings), especially as life insurance has been found to be more price elastic than non-life insurance, potentially reflecting the fact that their investment components have close substitutes in the form of investment products provided by banks or funds.[93] For protection products, however, this negative impact on demand is somewhat offset by customers' desire to insure higher benefit limits.[94]

Inflation erodes the value of future fixed payouts, making in-force life insurance products less attractive, adversely impacting sales and increasing lapses and surrenders.

83 The Geneva Association 2021b. Author: Kai-Uwe Schanz. However, the effect on risk perception will largely depend on people's expectations concerning central banks' ability to bring inflation under control.
84 Feyen et al. 2011.
85 Hodula et al. 2021.
86 Outreville (2012) offers a comprehensive analysis of economic growth as a determinant of insurance demand.
87 Rothschild and Stiglitz 1976.
88 Hodula et al. 2021.
89 Babbel 1981.
90 Browne and Kim 1993; Outreville 1996; Beck and Webb 2003; Li et al. 2007.
91 Outreville 1996.
92 Black and Skipper 2000.
93 Hodula et al. 2021.
94 Swiss Re 2022c.

For life insurance demand, the effects of inflation on interest rates are considered most relevant.[95] Customers are expected to have more appetite for savings-oriented life insurance products that come with higher yields and inflation-protection features.[96]

5.2.2 The supply side

The most significant effect on insurance capacity arises from mark-to-market losses on invested assets as a result of monetary policy responses to inflation, i.e. interest rate hikes. Through the second quarter of 2022, publicly traded insurers across the globe have reported more than USD 200 billion of unrealised losses on their fixed-income portfolios as rising interest rates have diminished bond values. [97] According to this report, by mid-year 2022, over a quarter of publicly-traded insurers had lost more than 20% of their year-end 2021 shareholders' equity due to rising interest rates pushing down the market values of current bond holdings.

The most significant effect on insurance capacity arises from interest rate hikes.

Another key determinant of insurance capacity is the ability of insurers to adjust prices. As mentioned before, this ability not only depends on market conditions but also on the degree of political intervention and regulatory constraints. The latter could have an adverse effect on insurance supply. As discussed in section 4.3, inflation could also prompt insurers to revisit their risk appetite, especially for longer-tail risks, which are most exposed to inflation. The insurance capacity for certain liability products may decrease as a result.

On the life insurance side, a supply-positive effect is carriers' potentially growing appetite to allocate (more) capital to savings-type products in order to benefit from normalising interest rates. The range of commercially viable life insurance products and solutions is set to expand.[98] Table 6 summarises the main inflation- and interest rate-induced effects on insurance demand and supply.

"As insurers we play an important role in society by helping customers to overcome headwinds. With the inflationary shock, many of our customers are struggling to manage their finances. We offer them practical solutions to prevent problems from piling up and getting worse. And together with other companies, NGOs and governments we have set up platforms that help our clients develop healthy and sustainable payments habits."

Bart Boon, Senior Manager Corporate Strategy, Achmea

"In many countries, the current bout of inflation has taken the shape of a serious cost-of-living crisis. In this environment, insurance is more relevant than ever as a shock absorber and provider of risk protection, loss prevention and long-term investments. Many households and businesses perceive the return of inflation as a systemic event. The effects on risk perception are set to translate into higher demand for insurance. This coincides with an opportunity for the private insurance sector to play a stronger role in the face of increasing pressure on public-sector balance sheets."

Jerome Haegeli, Group Chief Economist, Swiss Re

"The impact of inflation on insurance demand is highly ambiguous. On the one hand, the customer value of savings-oriented fixed-benefits life insurance products, for example, decreases and depresses demand. On the other hand, inflationary shocks present insurers with an opportunity to highlight the role of insurance as a protection instrument and to sensitise customers to protection gaps."

Clarence Wong, Chief Economist, Peak Re

"In light of central banks' most recent experience, monetary policies and, as a result, inflation will become much more volatile and uncertain going forward. In this environment, insurers' value for customers will increasingly depend on their ability to offer protection against inflation risk. This is especially true for life insurance where customers can also opt for savings and investment solutions offered by banks, for example. Insurers will need to put up more capital and increase prices in order to meet a more uncertain monetary and inflation environment, and customers' increased demand for inflation protection."

Philippe Trainar, Director of the SCOR Foundation for Science

95 Black and Skipper 2000.
96 Beck and Webb 2003; Li et al. 2007.
97 Oldwick 2022.
98 Fluctuations in interest rates also affect statutory accounts. In order to deal with such volatility the US National Association of Insurance Commissioners (NAIC) requires the creation of a so-called Interest Maintenance Reserve (IMR) to accumulate capital gains and losses from interest rate fluctuations and amortise and use them to adjust net investment income levels. However, negative balances are not allowed which, in sustained periods of rising rates, creates inconsistencies in economic and statutory accounting and can lead companies to make uneconomic decisions (https://content.naic.org/sites/default/files/inline-files/ACLI%20IMR%20Letter_103122.pdf).

TABLE 6: THE IMPACT OF INFLATION AND RISING INTEREST RATES ON INSURANCE DEMAND AND SUPPLY

	Demand		Supply	
	▲ Positive	▼ Negative	▲ Positive	▼ Negative
Non-life	• Heightened risk perception and awareness • Portfolio shifts from financial to real assets • Need for higher policy limits	• Price increases • Slower economic growth • Lower inflation-adjusted income levels		• Mark-to-market losses on fixed-income securities • Potential political and regulatory constraints on repricing • Reduced risk appetite for longer-tail business
Life	• Higher yields on savings-type policies • Higher demand for inflation-protected products • Need for higher policy limits of protection products	• Less attractive long-term savings • Less attractive fixed-benefits products • Increasing competition from banks and fund managers • Price increases • Slower economic growth • Lower inflation-adjusted income levels	• Expanded range of viable products due to higher interest rates	• Mark-to-market losses on fixed-income securities • Potential political and regulatory constraints on repricing

Source: The Geneva Association

5.3 Effects of inflation on insurance penetration

Insurance penetration is defined as the ratio of premium volume to GDP. It measures the importance of insurance relative to the size of the economy. As it is based on the product of quantity and price, penetration is, however, not a perfect measure of consumption. A higher premium volume might reflect a higher quantity or a higher price. In life insurance, a higher penetration may simply be the result of a shift from premium-light mortality to premium-heavy savings products. Also, a lack of competition may increase the price of insurance without implying a higher level of insurance consumption. Despite these shortcomings, we use insurance penetration as a proxy for the insurance industry's relevance in economy and society.

Given the ambiguities around the effects of inflation on insurance demand and supply, there are no unequivocal conclusions as to the impacts of inflation on insurance penetration. Based on the logic outlined above, relevant factors (with contradictory effects) to examine include:

- Sums insured
- Prices (premium rates)
- Changes to the product mix (savings versus protection, long tail versus shorter tail)
- Competition
- Customer behaviours in the face of affordability issues and changing risk perception.

For those policyholders who are financially able to avoid underinsurance, sums insured and prices will rise in tandem with inflation for most non-life insurance and protection-oriented life insurance policies, pushing up (nominal) premium volumes. However, as outlined before, eroding inflation-adjusted incomes, slower economic growth and price increases may offset those effects. Changes to the product mix are expected to favour life insurance penetration as savings-type policies become more attractive. In non-life lines of business, on the other hand, insurers' reduced risk appetite and shift to more short-tail products may weigh on premium volumes.

Changes to the product mix are expected to favour life insurance penetration as savings-type policies become more attractive. Non-life insurers' reduced risk appetite and shift to more short-tail products may weigh on premium volumes.

Some empirical studies found a positive relationship between (non-life and life) insurance penetration and inflation.[99] They suggest that inflation fuels fears about the unknown and the future more generally, which prompts people to spend more on protecting their lives and assets. Others, however, found evidence in favour of the opposite hypothesis of inflation denting insurance penetration.[100]

In the context of life insurance, Beck and Webb[101] showed that countries with higher inflation rates typically experience lower levels of penetration. According to their calculations, Brazil – the country with the highest average inflation rate in their sample – would have seen life insurance penetration six times above the actual level if the country had achieved the average inflation rate of the sample of 68 primarily developing countries.

As mentioned before, for life insurers, the inflation-induced interest rate effect is most important. Given the fact that the 'secular' decline in interest rates over the past three decades has curbed the demand for premium-heavy, savings-type life insurance policies[102] one may hypothesise that the ongoing 'normalisation' of interest rates will reverse this trend and ultimately translate into higher levels of life insurance penetration.

Table 7 offers an overview of the main factors influencing insurance penetration in an environment of inflation and rising interest rates.

TABLE 7: THE IMPACT OF INFLATION AND RISING INTEREST RATES ON INSURANCE PENETRATION

Non-life penetration		Life penetration	
▲ Positive	▼ Negative	▲ Positive	▼ Negative
Higher sums insured Higher prices	Lower inflation-adjusted levels of income Slower economic growth Shift to lower-risk, shorter-tail products	Higher sums insured in protection business Higher prices Shift to savings products	Lower inflation-adjusted levels of income Slower economic growth Increased competition from banks and fund managers

Source: The Geneva Association

99 Das and Shome 2016; Olarewaju and Msomi 2021.
100 Hwang and Greenford 2005; Alhassan 2016.
101 Beck and Webb 2003.
102 The Geneva Association 2022. Authors: Adrita Bhattacharya-Craven, Richard Jackson and Kai-Uwe Schanz; IAIS 2020.

Box 2: The impact of inflation on insurance penetration – An insurance economics perspective

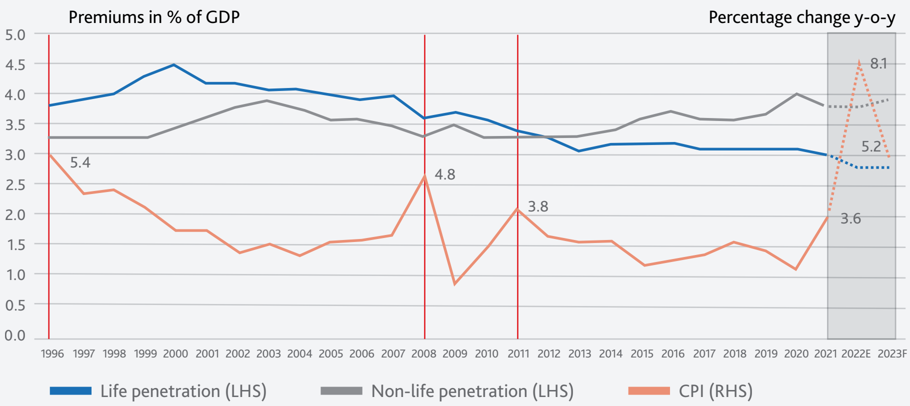
Global economic growth is set to slow sharply over 2023, and inflation rates are at multi-decade highs, which will weigh on insurance penetration (ratio of premiums to GDP). Inflation affects insurance penetration via various channels and to varying degrees depending on the nature of the business. Ultimately, however, inflation is expected to have a negative impact on penetration as decreasing affordability on corporate and household level hurts demand for insurance products. The extent to which the current bout of inflation reduces penetration is one of the key exacerbating factors behind increasing protection gaps.

Inflation hinders insurance demand

Businesses and individuals, when burdened with a mix of higher costs and budgetary restrictions, tend to scale back their demand for goods and services, especially for those deemed unnecessary – insurance included. In 2022, inflation exceeded three or four fold the level expected by economic agents, making it resemble more a cost-of-living crisis than a traditional upswing of an inflation cycle. Its extent cuts right through the affordability of insurance products for both corporates and households.

In Figure 8, we examine the relationship between several previous spikes in inflation and insurance penetration and present our estimates for inflation and insurance penetration in 2022-23. We show a time series of CPI (measured as percentage change on an annual base) and insurance penetration (calculated as non-life (P&C and health) and life premiums in percent of GDP, respectively). Since 1996, there have been three periods when inflation was higher than 3%: 1996 (food price shock), 2008 (skyrocketing gas prices) and 2011 (food crisis).[103] These three most recent inflationary episodes also impacted insurance penetration, down for both non-life and life insurance. When CPI came down, insurance penetration also quickly recovered as businesses and households regained purchasing power to buy more goods and services in anticipation of improved economic growth. Simply put, when buyers seek more affordable covers, all else equal, it translates into lower premium generation for insurers.

FIGURE 8: THE RELATIONSHIP BETWEEN INFLATION AND INSURANCE PENETRATION



Source: Swiss Re Institute

Inflation pushes up the price of insurance products

Higher claims and administrative costs will cut right through underwriting results and push up prices of insurance products correspondingly. Within non-life, we expect motor, property and health lines claims to be the most negatively affected in the short term due to disproportionately high inflation in car parts, construction costs and medical costs. Long-tail business, such as liability claims, will be more affected by wage and healthcare inflation in the longer term. For life insurance, as benefits are usually fixed at the start of the policy, the price of in-force business will see a limited impact from high inflation, as opposed to the pricing of new business that will reflect higher levels of inflation.

In 2022, the market saw steep increases in prices for goods, like energy and food, but also for insurance products. Despite reduced demand, nominal premium volumes may still register positive growth given the ongoing hardening of market conditions described above. However, these growth rates are considerably more modest (or erased) when adjusted for inflation.

103 See the Annex for a country-specific analysis based on changes to insurance penetration.

For lines of business where covers are compulsory by law, however, the headwind is likely to be less severe given that demand is more inelastic. There, for budgetary considerations, insurance can be considered a non-discretionary item. That said, the discretionary versus compulsory nature of some lines of business can differ from market to market as the enforceability of mandatory coverages could vary. For example, compliance with mandatory health insurance coverage in emerging markets is much lower than it is in advanced markets where the decline in demand is likely to be lower, similar to motor- and environmental-related liability insurance, for example.

Conclusion

No single historical episode is a perfect forecast for current and future events. But when looking for historical similarities, it is useful to see what they can teach the insurance industry about inflation in 2022–23 when global yearly CPI changes are forecast by the Swiss Re Institute to reach more than 5% (2022: 8.1%, 2023: 5.4%), with even higher levels forecast for the U.S. and Europe. Insurers should take some underwriting actions to mitigate the effects of prolonged inflation and address the challenging claims cost environment. Simultaneously, they can leverage digitalisation to innovate insurance products and solve 'real pain points' of customers, ultimately increasing industry and societal resilience.

Contributed by Li Xing, Swiss Re Institute

"The example of South Africa demonstrates that life insurers can thrive in the presence of persistent inflation. Even spikes in inflation did not affect the trend towards rising levels of life insurance penetration over the past few decades. With inflation being the norm, insurers have proven responsive and committed to their key mission of mobilising savings and strengthening people's resilience."

Arthur Kamp, Chief Economist, Sanlam Investments

6 Conclusions and recommendations

Conclusions and recommendations:

How to maintain and further strengthen the role of insurance in times of inflation

On the heels of the pandemic, large parts of the world are experiencing an inflationary shock unseen in decades. The subsequent reversal of the global interest rate environment is weighing on economic growth, with recessions starting to affect a number of major economies. For insurers as professional absorbers and managers of risk, such disruptions present both challenges and opportunities for their role in society. Based on the findings of this report, we offer the following conclusions and recommendations for insurers, policymakers and regulators.

Demonstrate the value of insurance in times of shock

The COVID-19 pandemic has significantly strengthened the risk awareness of individuals, households and businesses. Despite contractual ambiguities and fundamental insurability issues in the area of business continuity risk, insurers have proven their mettle during the pandemic and continued to pay legitimate claims in a 'business-as-usual' manner. Life and health insurers in particular have proven their worth by meeting their obligations in the face of increasing mortality and hospitalisation rates. Demand for such insurance products has surged as a consequence and remains structurally above pre-pandemic levels, especially in emerging markets.[104]

The inflationary shock offers similar opportunities for insurers that help customers remain resilient in times of increasing financial stress when the value of protection becomes much more apparent.[105] At the same time, insurers need to respond to the profitability and solvency challenges presented by inflation. Adjusting prices and risk appetite are among the inevitable responses but further improved cost efficiency could help insurers soften the potentially negative impacts on their customers.

Protect profitability and solvency

For non-life insurers in particular, inflation and subsequent increases in interest rates generate adverse impacts on earnings and net-asset value. Remedial action, ranging from product redesign, repricing and cost management to changes to the asset allocation, is inevitable in order to be able to offer lasting and reliable risk protection in the long run.

Insurers need to respond to the profitability and solvency challenges presented by inflation. Adjusting prices and risk appetite are inevitable responses but improved cost efficiency could help soften the negative impacts on customers.

104 The Geneva Association 2021b.
105 See section 5.1.

Respond to changing customer needs in light of inflation

Customers have woken up to the risk of unexpected rampant inflation. Insurers' perceived value going forward may therefore also depend on their ability to manage inflation risk on behalf of their customers. Evolving customer expectations may give rise to changes to product design. In addition, normalising interest rates revive customer appetite for life insurance products, which combine yield guarantees with profit-sharing features. However, painful lessons from the past suggest that caution should be taken when re-entering the financial guarantee business.[106]

Adjust solvency regimes to reflect the new macroeconomic realities

With normalising interest rates, there is now clear customer appetite for the protection offered by financial guarantees. Prohibitive risk capital charges for such guarantees, set during an extended period of interest rate declines, ultimately hinder the insurance industry from tackling the pension savings gap.[107]

> *"For insurers, the right thing to do in the current environment of macroeconomic volatility is to be sympathetic to the challenges our customers are going through. A purely commercial response to inflation may have a structurally negative impact on demand and could cement underinsurance, which is not in the long-term interest of the insurance industry. Going forward, insurers may want to explore the scope for innovative products and solutions that address some of the increased macroeconomic risks customers are facing."*
>
> **Rachel Turk, Group Head of Strategy, Beazley**
>
> *"During the pandemic, many people have developed a much better understanding of the relevance of insurance, for example in the shape of health protection. Right now, in the midst of an inflationary shock, insurers have a similar opportunity by promoting products that link sums insured to inflation. Traditional life insurance is a case in point. The redesign of existing products would make customers feel more confident that insurance will remain a useful tool in times of unexpected inflation."*
>
> **Manuel Aguilera Verduzco, Director General, MAPFRE Economics**

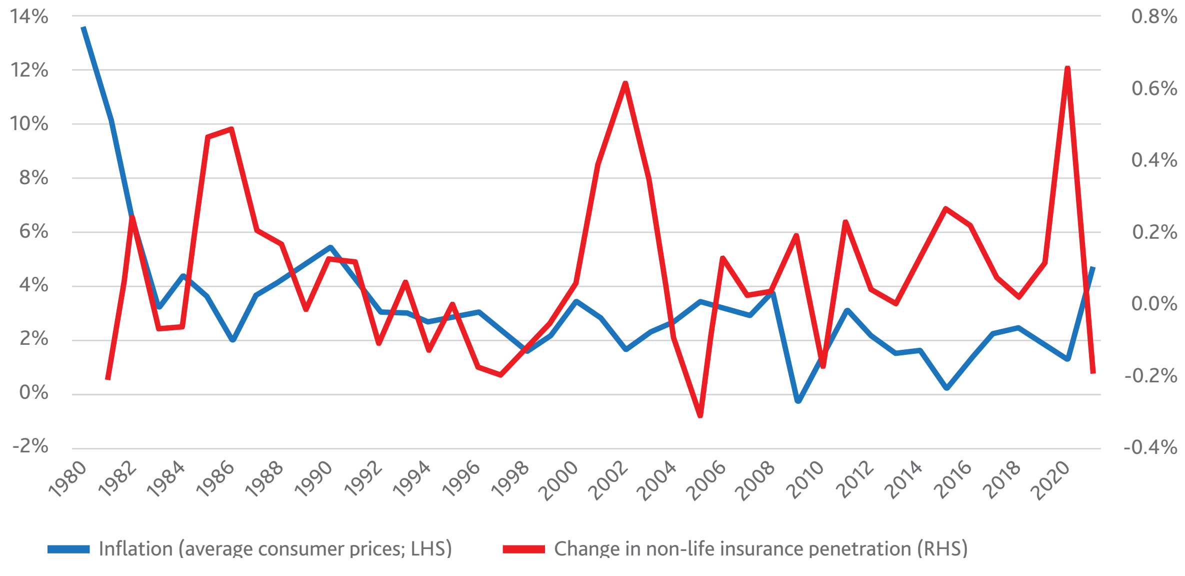
106 Swiss Re 2020.
107 Insurance Europe 2021.

Annex:
The long-term relationship between changes to insurance penetration and inflation – Evidence from four countries

Empirical evidence for non-life insurance

Complementing the analysis in Box 2, the following charts compare consumer price inflation with changes to non-life insurance penetration for the U.S., U.K., Germany and South Africa, covering the period from 1980 to 2021. The emerging pattern is ambiguous. Periods where we observe a negative relationship between inflation and non-life insurance penetration are followed by years where the relationship turns positive.

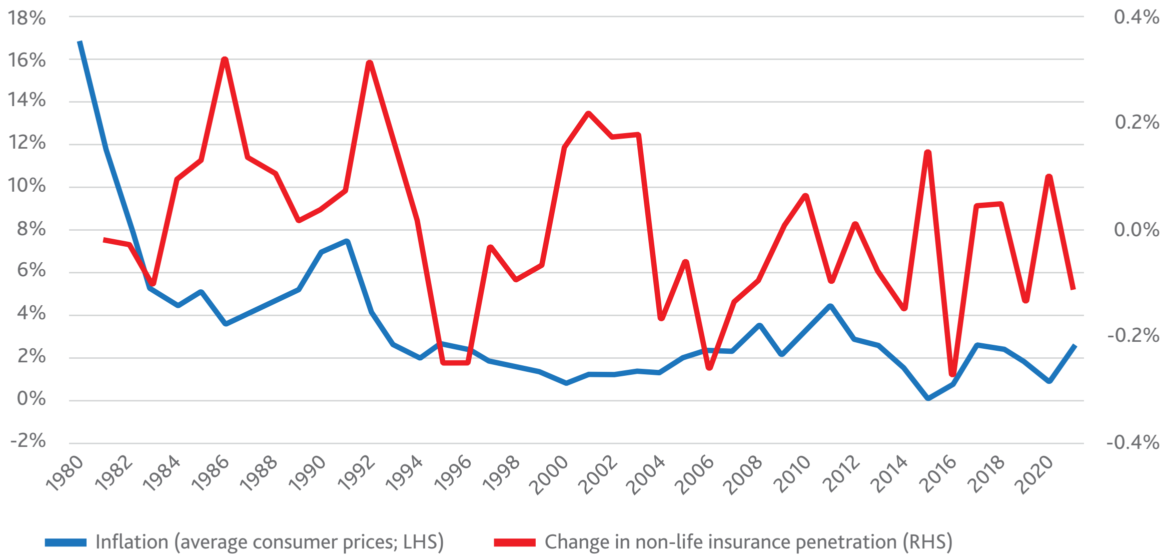
FIGURE 9: U.S. – CHANGES IN NON-LIFE INSURANCE PENETRATION AND CONSUMER PRICE INFLATION 1980–2021



Source: The Geneva Association, based on Swiss Re sigma explorer and IMF World Economic Database

Over the past four decades, non-life insurance penetration in the U.S. has gradually increased, from 5.7% to 9.1%. Over the same period of time, inflation has seen a sharp reduction from double-digit levels at the beginning to below the Federal Reserve's target of 2% towards the end of the sample period, except for 2021 when inflation started to spike and penetration decreased. From 1981 to 2003, non-life insurance penetration increased steadily while inflation receded. Following the burst of the dotcom bubble and continuing after the GFC of 2007 and 2008, non-life insurance penetration growth became more stagnant while inflation kept declining (Figure 9).

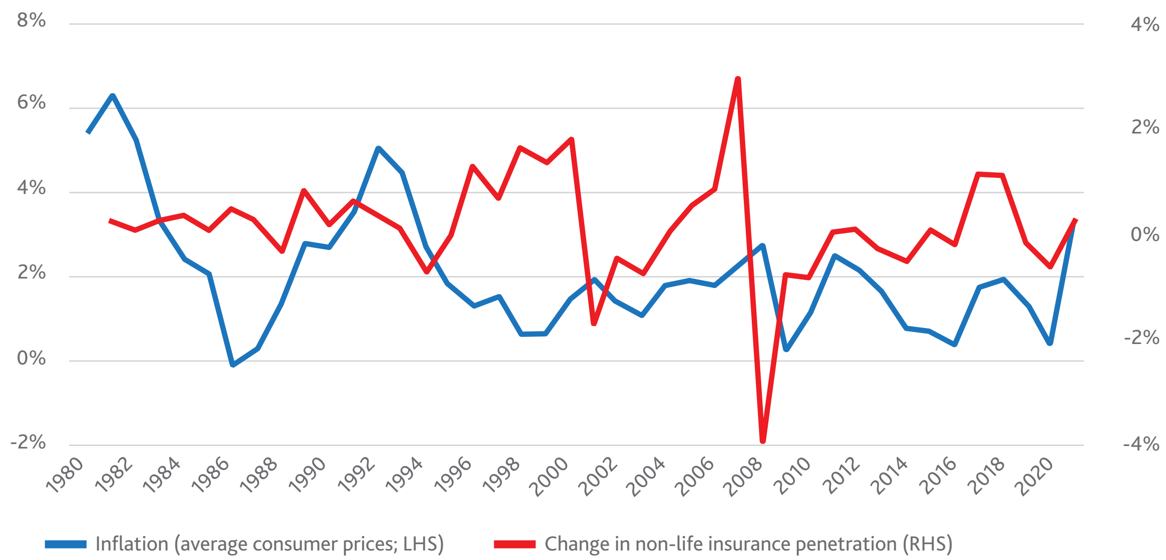
FIGURE 10: U.K. – CHANGES IN NON-LIFE INSURANCE PENETRATION AND CONSUMER PRICE INFLATION 1980–2021



Source: The Geneva Association, based on Swiss Re sigma explorer and IMF World Economic Database

During the four decades of the sample period, non-life penetration in the U.K. hovered around 2% whereas inflation came down sharply. It is interesting to note that the spike in inflation at the end of the 1980s and early 1990s had no adverse impact on non-life insurance penetration. Also, there was no discernible impact on non-life penetration when inflation fell from more than 4% to almost zero between 2011 and 2015 (Figure 10).

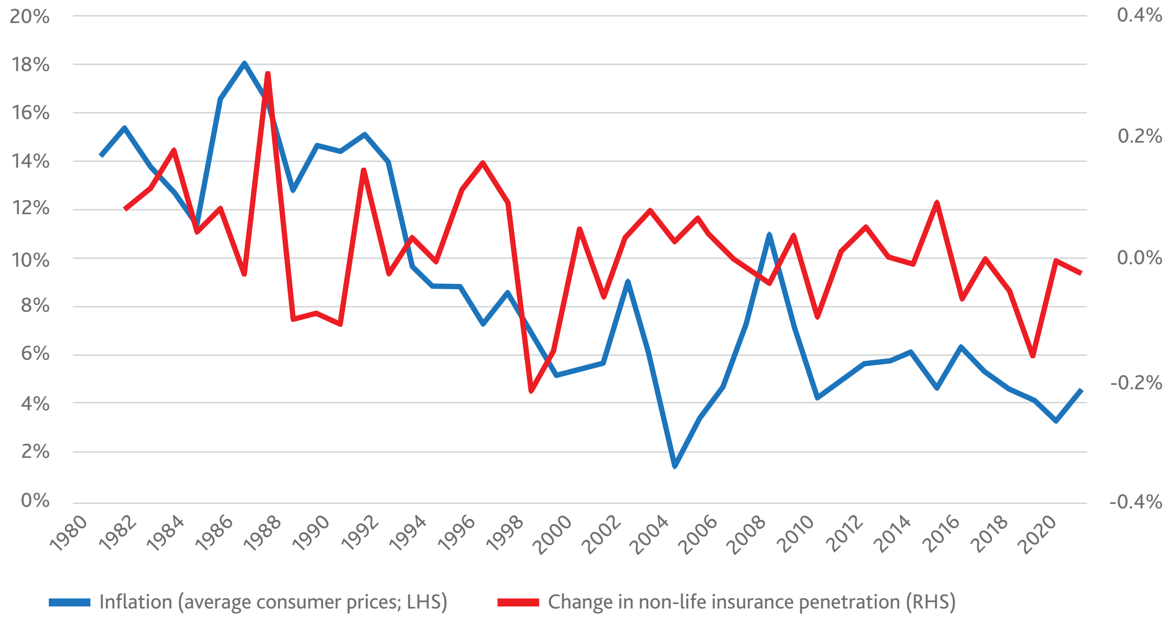
FIGURE 11: GERMANY – CHANGES IN NON-LIFE INSURANCE PENETRATION AND CONSUMER PRICE INFLATION 1980–2021



Source: The Geneva Association, based on Swiss Re sigma explorer and IMF World Economic Database

During the observation period, non-life insurance penetration in Germany expanded from around 2.5% to close to 4%. Over the same period of time, inflation declined continuously, albeit from a lower level than in the U.S. and U.K. During most of the 1980s, lower inflation was accompanied by increasing non-life insurance penetration. Interestingly, the late 1980s/early 1990s rebound in inflation went hand-in-hand with a continued increase in non-life penetration. The second half of the 1990s also saw a concurrence of reduced inflation and increased non-life insurance penetration. In 2008, non-life insurance penetration plunged while inflation remained virtually unchanged (Figure 11).

FIGURE 12: SOUTH AFRICA – CHANGES IN NON-LIFE INSURANCE PENETRATION AND CONSUMER PRICE INFLATION 1980–2021



Source: The Geneva Association, based on Swiss Re sigma explorer and IMF World Economic Database

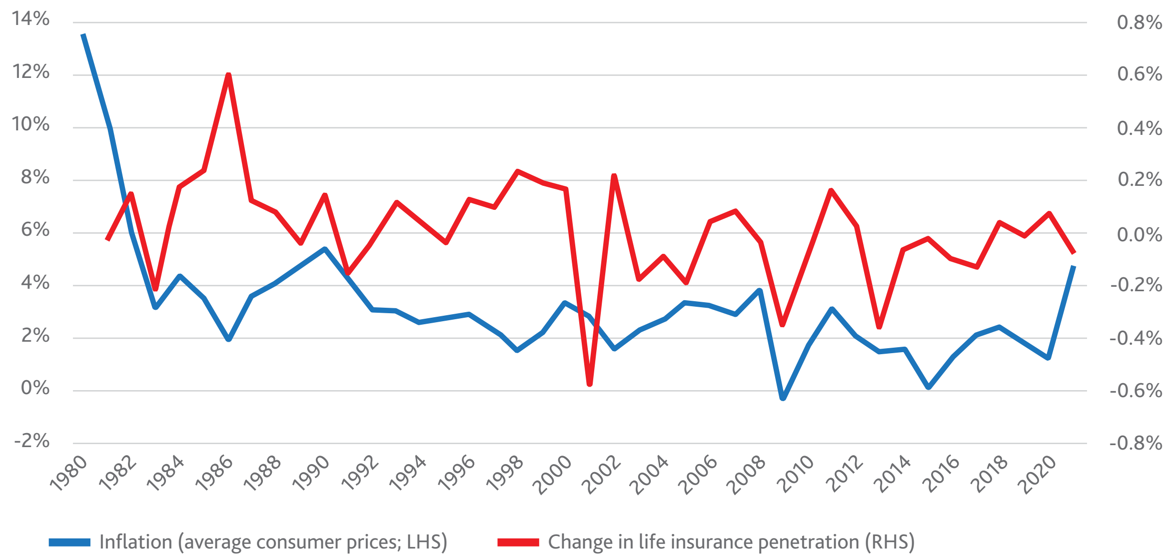
Over the past four decades, non-life insurance penetration in South Africa moderately expanded from 1.7% to 2.2%. The drop in inflation to single-digit levels from 1993 did not have a noticeable effect on non-life penetration (Figure 12).

Empirical evidence for life insurance

The following charts compare consumer price inflation with changes to life insurance penetration for the U.S., U.K., Germany and South Africa, covering the period from 1980 to 2021.

Compared to non-life insurance, the emerging picture is somewhat clearer. In the U.S., the U.K. and Germany, there seems to be a robust relationship between declining inflation and increasing life insurance penetration. In South Africa, however, the pace of growth in life insurance was even faster in times of higher inflation.

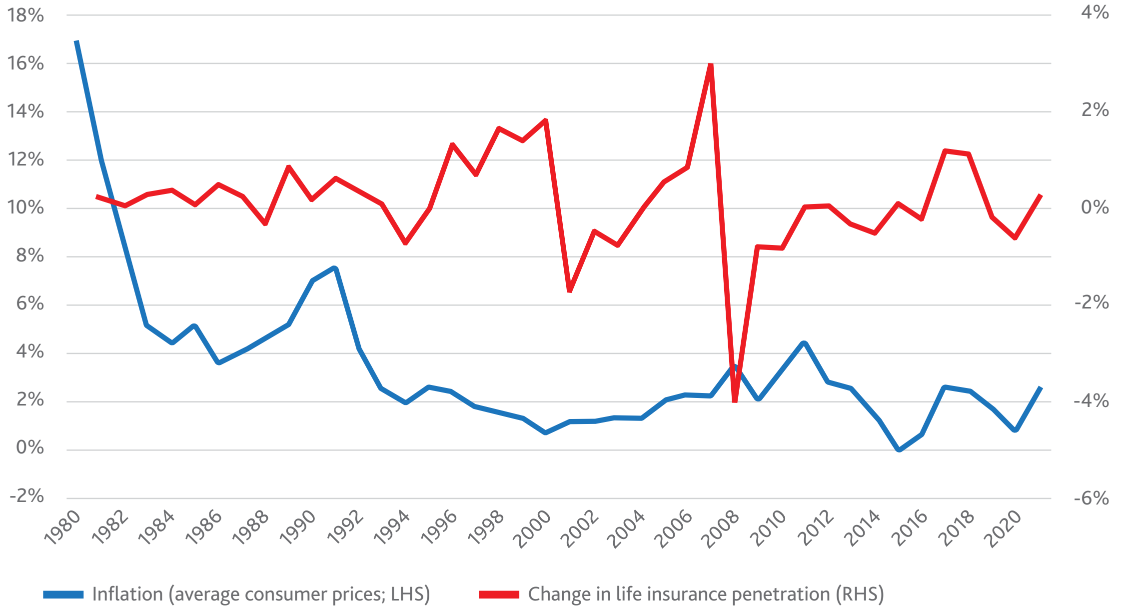
FIGURE 13: U.S. – CHANGES IN LIFE INSURANCE PENETRATION AND CONSUMER PRICE INFLATION 1980–2021



Source: The Geneva Association, based on Swiss Re sigma explorer and IMF World Economic Database

Over the past four decades, life insurance penetration in the U.S. has barely grown (from 2.3% to 2.6%). It expanded steadily during the 1980s and 1990s when inflation was brought under control. The rebound of inflation in the late 1980s had no negative effect on life insurance penetration. Life insurance penetration peaked in 2000 at about 4% and has been eroding ever since (Figure 13).

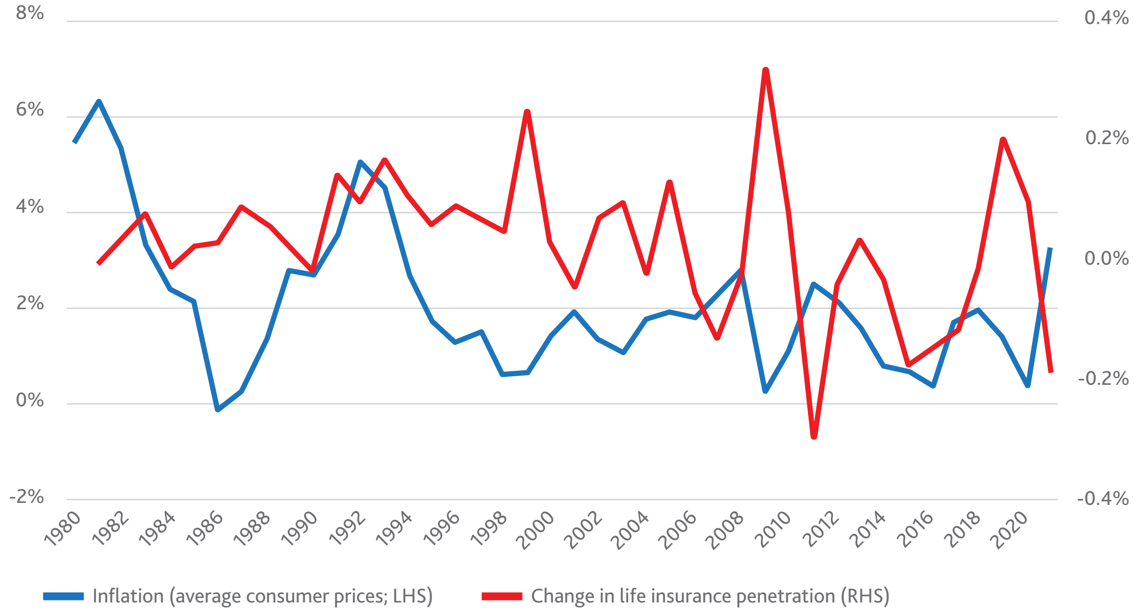
FIGURE 14: U.K. – CHANGES IN LIFE INSURANCE PENETRATION AND CONSUMER PRICE INFLATION 1980–2021



Source: The Geneva Association, based on Swiss Re sigma explorer and IMF World Economic Database

Since 1980, life insurance penetration in the U.K. has increased significantly from 2.7% to 8.9%. It reached a double-digit peak before the dotcom bubble burst and the global financial crisis hit. Up until the financial crsis, there was a strong relationship between falling inflation and increasing life insurance penetration. The inflationary spike in the early 1990s did not adversely impact life insurance penetration (Figure 14).

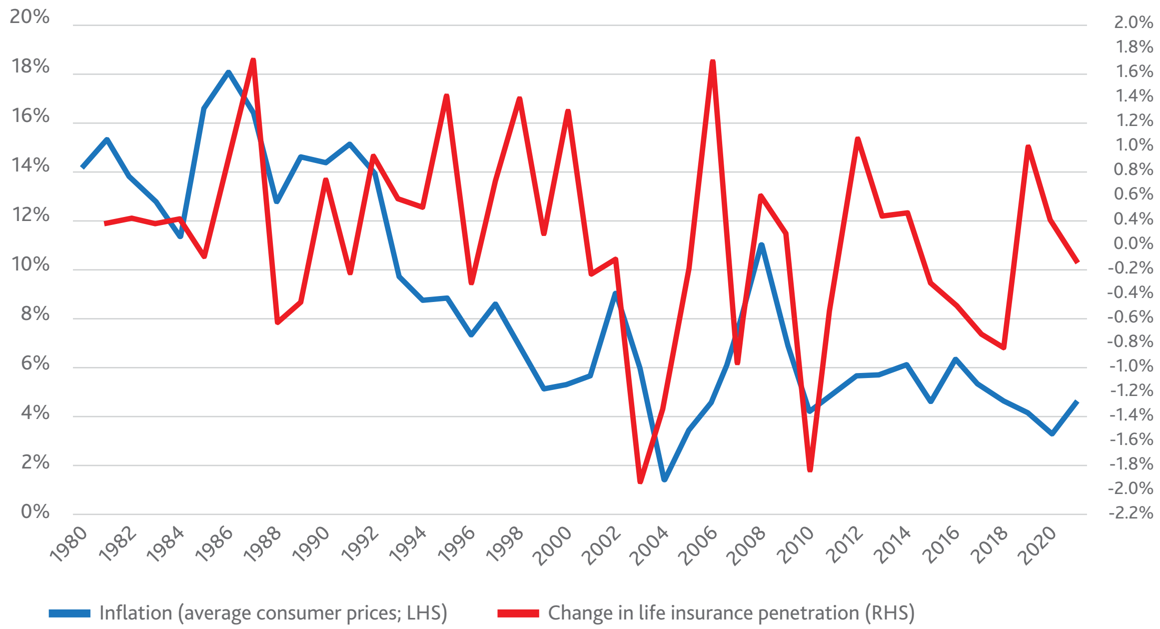
FIGURE 15: GERMANY – CHANGES IN LIFE INSURANCE PENETRATION AND CONSUMER PRICE INFLATION 1980–2021



Source: The Geneva Association, based on Swiss Re sigma explorer and IMF World Economic Database

During the observation period, life insurance penetration in Germany rose from 1.5% to close to 2.6%. Receding inflation also went hand-in-hand with gradually expanding life insurance penetration. Brief upticks in inflation did not negatively affect this growth trajectory. The German life insurance industry also weathered the global financial crisis remarkably well. Life insurance penetration only started to erode modestly from 2010, from 3.3% to its current level of 2.6% (Figure 15).

FIGURE 16: SOUTH AFRICA: CHANGES IN LIFE INSURANCE PENETRATION AND CONSUMER PRICE INFLATION 1980–2021



Source: The Geneva Association, based on Swiss Re sigma explorer and IMF World Economic Database

Over the past four decades, life insurance penetration in South Africa has more than tripled to about 10%. Even in the permanent presence of double-digit inflation until the early 1990s, life insurance penetration more than doubled, and almost doubled again to 13% through the year 2000. Thereafter, it started to erode to its current level while inflation continued to further moderate (Figure 16).

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