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Economics & INSURANCE

MAPFRE Economics

Posts

Introduction

In this latest edition of **Economy and Insurance** magazine, we present four articles that take an in-depth look at the major challenges and transformations shaping the global insurance industry. The issue delves into the economic and monetary outlook, the impact of climate change, lending patterns, and evolving trends in the insurance sector, offering a comprehensive view of today's global financial and insurance landscape.

The opening article, *Global Economic Outlook and Monetary Policy*, summarizes key insights from MAPFRE Economics' quarterly report, highlighting a downward revision in terms of global growth and inflation that remains above target, amid high uncertainty and trade tensions. The U.S. Federal Reserve is maintaining a cautious stance, holding off on interest rate cuts, while the Eurozone and Latin America are navigating mixed scenarios, with significant implications for the financial and insurance markets.

The second article, *Industry Outlook for the Insurance Market*, examines the recent performance of the global insurance sector and its outlook. A moderate yet stabler recovery can be seen in the Life and Non-Life sectors, although with regional nuances. The overview analyzes how North America and China are leading growth in Life, while Non-Life shows greater resilience to economic cycles, reinforcing its role as a structural stabilizer of the market.

The third article, *Credit and Insurance Activity*, explores the relationship between lending patterns and the development of insurance. It looks at how lending cycles directly impact demand for insurance, both in Life and Non-Life, and how demographic aging could limit long-term credit growth.

The fourth article, *Climate Change: Extraordinary Risks and Public Policy*, explores how global warming is intensifying extreme events and widening the insurance protection gap. The report assesses existing coverage and compensation mechanisms, from agricultural insurance to catastrophe bonds, and proposes a coordinated approach between insurers and governments to bridge the insurance gap. It also examines climate-related risks in investment portfolios and takes a look at regulatory and sustainable initiatives in key countries.

We hope this edition offers an informed, rigorous, and valuable perspective for industry professionals and anyone seeking to better understand the economic and structural shifts reshaping the insurance landscape.

Global economic outlook (Q2 2025)

Author: MAPFRE Economics

Summary of conclusions from the
MAPFRE Economics report
2025 Economic and industry outlook: second-quarter forecast update
Madrid, Fundación MAPFRE, April 2025

Economic outlook

The **global growth** forecast has been revised downwards to **2.7% for 2025 and 3.0% for 2026** (from 3.1% and 3.0% previously),1 while **inflation** is now projected at **3.4% and 2.9%** for the same years. The baseline scenario remains framed, to some extent, by the controlled slowdown by central banks, key macroeconomic factors that support the slow but sustained drop in inflation, and a risk map that calls for both extra caution and possible divisions as movements become less coordinated. Furthermore, economic activity and prices are also subject to competing supply and demand pressures, with the eventual outcome hinging on political decisions that will determine which forces prevail.

The United States is expected to be most affected, facing a sharper economic deceleration alongside increased inflationary pressures that will hamper the Federal Reserve's actions. In contrast, the **Eurozone** may experience a milder growth slowdown and better-controlled inflation. This, combined with the extraordinary fiscal stimulus implemented, could help cushion the downturn. In **Latin America,** the implications would remain mixed: while lower external demand is expected due to the direction of trade policy, which will particularly affect countries most integrated into value chains with the United States, such as Mexico, there may also be opportunities, as these countries could benefit from a redirection of trade and an influx of capital flows. In **Asia**, despite the continued economic dynamism, trade tensions appear somewhat more pronounced, with less conciliatory measures, particularly in China, leading to a reduction in forecasts for the region.

Implications for the Fed

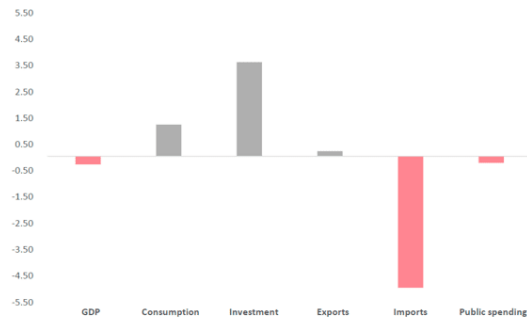
The **U.S. Federal Reserve** decided in May to keep its benchmark **interest rates** unchanged at the **4.25% to 4.50%** range for its third consecutive meeting, with unanimous support from the Federal Open Market Committee (FOMC). No changes were announced to the balance sheet reduction strategy, meaning the pace of quantitative tightening (QT) will continue as planned, with asset sales totaling 5 billion dollars per month.

Since the last meeting, the situation can be summarized as one of high volatility driven by trade uncertainty. However, the data provides little evidence to justify a shift in policy. Economic activity has generally remained positive, with the PMI and ISM, among other sentiment indicators, signaling continued expansion. Although there was a decline in GDP, it appears to be driven by atypical factors. The labor market shows no signs of weakening, and inflation data continues to moderate gradually, although it remains above the target. The tariff policies announced on April 2 have yet to fully materialize. Therefore, responding to them falls outside the Federal Reserve's mandate, given the lack of clarity around the final format of these tariffs and their potential impact on the economy.

Regarding employment, there are still no signs of weakness in the labor market. The **unemployment rate** held **steady** in April at 4.2%, with 177,000 new jobs added and little change in the labor force participation rate, which showed a slight improvement—rising to 62.6% from 62.5% the previous month. From another perspective, higher-frequency data such as weekly unemployment claims showed an uptick in layoffs; however, these remain within the normal range. The JOLTS survey also showed little change, with 7.2 million job openings and a hiring rate of 3.4%, indicating a balanced labor market so far.

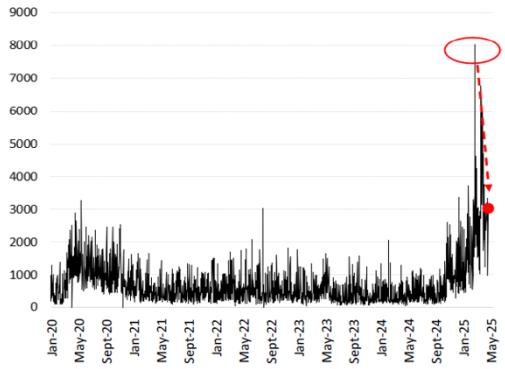
In terms of economic activity, **first-quarter GDP** figures showed a **slight contraction (-0.3%)**, although they were better than preliminary estimates. The decline is mainly explained by a deterioration in net trade and lower government spending. The trade variable reflects an unusual spike in imports ahead of the implementation of new tariffs, a factor that could reverse and normalize if negotiations progress. Meanwhile, the drop in public spending was partly offset by growth in the private sector, where early signs of easing uncertainty are beginning to appear. This could positively affect consumer and business confidence (see Charts 1 and 2).

Chart 1. Contributions to GDP in the first quarter



Source: MAPFRE Economics (based on BLS data)

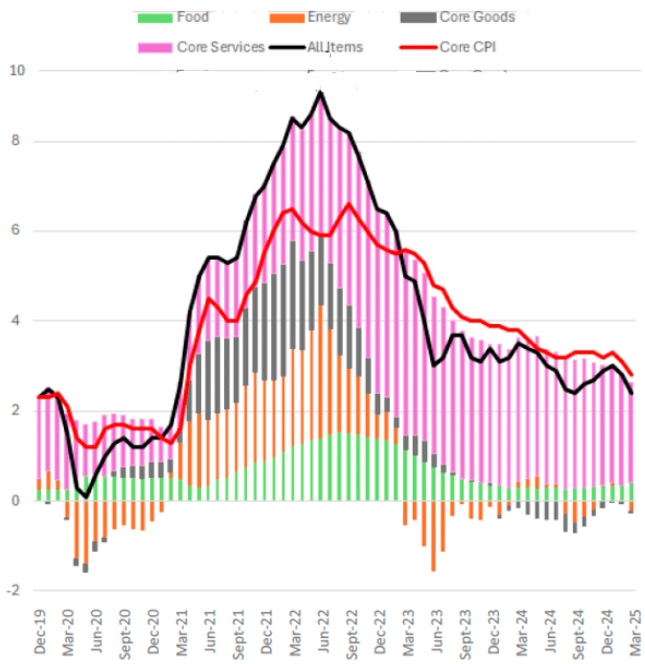
Chart 2: Uncertainty index of U.S. trade policy



Source: MAPFRE Economics (based on EPU data)

Regarding **inflation**, the general Consumer Price Index (CPI) rose by 0.2% month-on-month in April, bringing the **annual rate to 2.3%**. This increase was mainly driven by lower energy prices—a trend expected to persist based on current oil and gas market conditions. As for the core inflation rate, which excludes energy and food, it also declined to 2.8% year-over-year, largely due to fading pressure from the services sector and stable figures in the goods sector (see Chart 3).

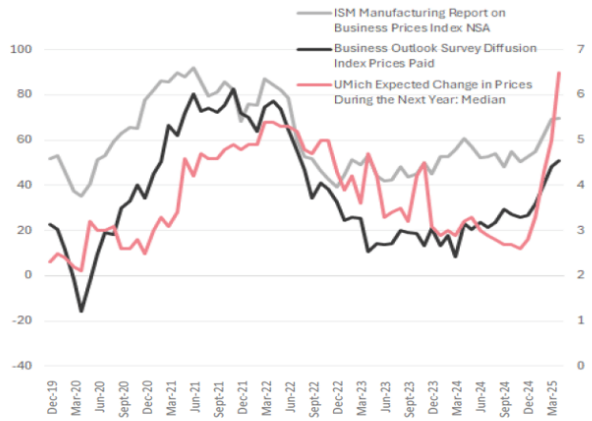
Chart 3: Inflation in the United States by components



Source: MAPFRE Economics (based on Haver data)

In terms of expectations, concerns about potential price increases in the future remain present, as shown by the upticks in various consumer surveys. At the same time, producer surveys align with this view, acknowledging the possibility of introducing and passing on certain tariff surcharges to final prices in the future (see Chart 4).

Chart 4: Inflation expectations in the United States



Source: MAPFRE Economics (based on Bloomberg data)

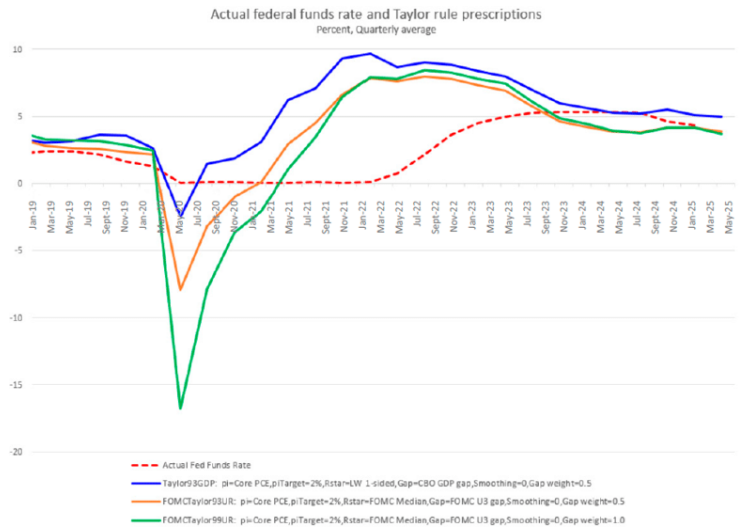
However, despite the lack of a consistent framework providing clarity for future spending and investment decisions, it is worth noting that some optimism seems to be growing again. This anticipates both a potential resolution of trade agreements with the United States' major partners and a consumer whose expectations diverge from actual data, as indicated by initial forecasting exercises (see Chart 5). These expectations are in line with the outlook presented in our most recent report, 2025 Economic and industry outlook: second-quarter forecast update.

Chart 5: United States GDP forecasts for Q2

Source: MAPFRE Economics (based on Atlanta FED data)

For now, the Federal Reserve is sticking to its position of not acting preemptively or responding to signs of a supply shock. It is waiting for data that might indicate a need for action. The pause until the next scheduled meeting in June, when new inflation and growth forecasts will be available, along with new information on tariffs and their potential impact, will allow for a more precise response. This idea is also reinforced by considering that, in line with economic theory, current interest rates remain within the range considered appropriate (see Chart 6).

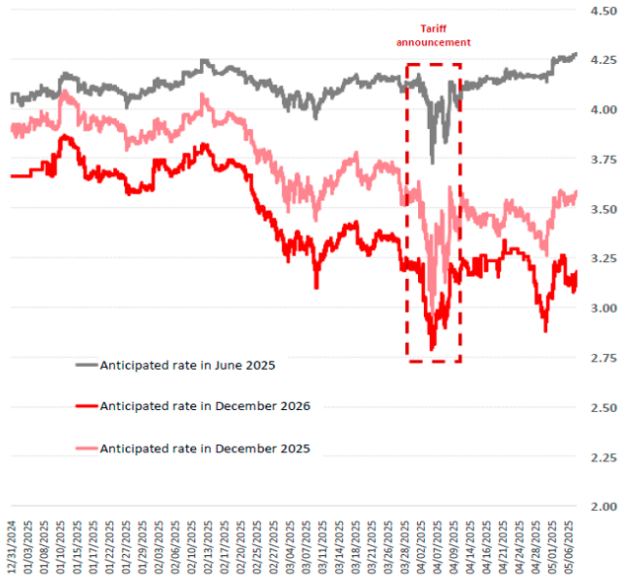
Chart 6: Current interest rate and estimates according to the Taylor rule



Source: MAPFRE Economics (based on Atlanta FED data)

In fact, the Fed has acknowledged the increase in uncertainty for both risks, meaning that the conditions for reducing interest rates will be considered more of a reactive measure rather than a preventive one moving forward. Similarly, after recent market turbulence, the probabilities of a rate cut (as indicated by swaps) have once again aligned with the Federal Reserve's message. The curve has moderated, and June now seems likely to see another pause as the most probable option (see Chart 7).

Chart 7: SWAP-discounted interest rates



Source: MAPFRE Economics (based on Bloomberg data)

The complete analysis of economic and industry perspectives can be found in the report *2025 economic and industry outlook: second-quarter forecast update*, prepared by MAPFRE Economics.

Industry outlook for the insurance market (Q2 2025)

Author: MAPFRE Economics

Summary of conclusions from the
MAPFRE Economics report
2025 Economic and industry outlook: second-quarter forecast update
Madrid, Fundación MAPFRE, April 2025

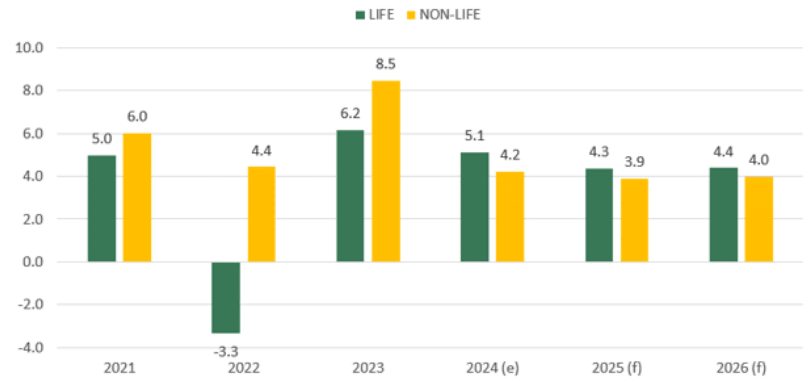
Global economic environment

The macroeconomic environment in 2025 began with moderately positive expectations, marked by projections of a smooth and gradual slowdown in economic activity alongside relatively controlled inflation. This scenario encouraged a progressive monetary easing and a stabilization of interest rate curves, providing a favorable backdrop for the performance of the insurance industry on a global scale. However, throughout the **first quarter of the year**, the situation changed significantly. The **tariff policies pursued by the U.S. government have introduced further instability into the global economic landscape**, affecting short-term projections. This **decline in global economic growth has had a significant impact on the insurance market, leading to a downgrade of growth forecasts**, with the corresponding differences across geographic insurance regions.

Nominal global growth in insurance premiums (2021–2026)

Nominal growth in insurance premiums globally (see Chart 1) **reflects the uneven recovery between Life and Non-Life segments**, driven by macroeconomic volatility, currency fluctuations, and the effects of inflation and global monetary policy. Looking ahead, forecasts suggest a return to nominal stability in the global insurance market after years of high volatility, with expected growth rates of around 4% annually over the medium term. However, this apparent stability could mask structural tensions, such as the persistent insurance gap in emerging markets, pressure on technical margins due to climate change, and the need for the Life segment to adapt to a more uncertain financial environment.

Chart 1. Global: growth in premiums
(annual nominal growth in USD, %)



Source: MAPFRE Economics

A more detailed analysis of each selected period is provided below:

1. Pandemic and post-pandemic cycle (2021–2023)

In 2021, relatively solid growth was observed in both Life (5.0%) and Non-Life (6.0%), driven by the economic rebound that followed the initial impact of the COVID-19 pandemic and the effect of economic reopening.

However, 2022 saw a significant downturn in the Life segment (-3.3%), largely attributed to tightening financial conditions (interest rate hikes), which negatively affected the appeal of traditional savings and Life Protection products. In contrast, the Non-Life segment showed greater resilience with 4.4% growth, thanks to the inflationary effect on premium prices and the recovery of lines such as health and auto insurance.

In 2023 came a turning point: both segments experienced strong rebounds, with 6.2% growth in Life and a notable 8.5% increase in Non-Life. This can be explained by the economy returning to normal, the market's adaptation to new interest rates, and a greater perception of risk that saw more people take out insurance.

2. Moderate medium-term outlook (2024–2026)

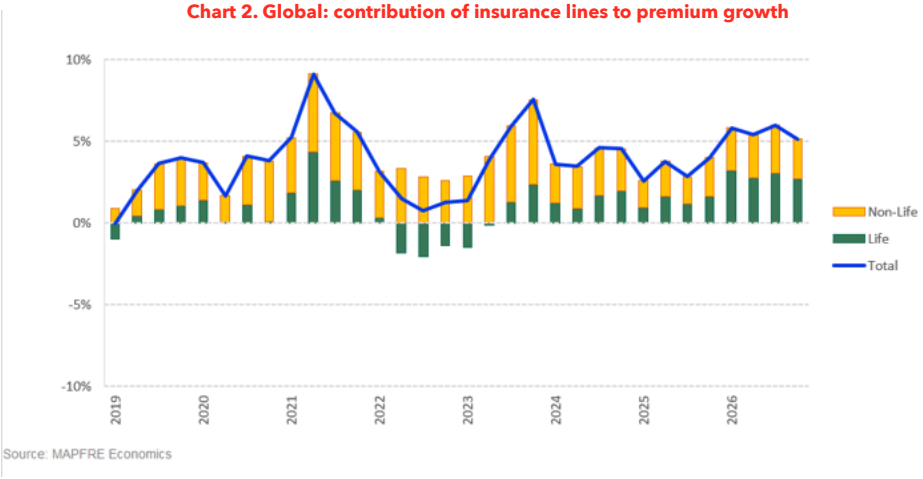
Forecasts for 2024 indicate a moderation in growth: 5.1% for Life and 4.2% for Non-Life. This adjustment reflects the expected global economic slowdown and the stabilization of premium prices after recent peaks in inflation.

For 2025 and 2026, projected growth remains around 4% for both lines, with small fluctuations (Life: 4.3% and 4.4%; Non-Life: 3.9% and 4.0%), respectively. This stability suggests a return to more structural growth patterns, aligned with the advance of digitalization, demographic aging, and increasing exposure to systemic risks (climate, cyber, and health-related).

Contribution of insurance lines to premium growth

Regarding **global premium growth contributions, broken down by Life and Non-Life lines** from the first quarter of 2019 to the end of 2026 (see Chart 2), a significant acceleration in total growth can be seen throughout 2021, peaking in the second quarter of the year (9%), driven by Life. This reflects a post-pandemic rebound effect, likely tied to increased demand for protection and savings products. This recovery contrasts with the contraction seen in 2022, where total growth fell and even dipped into the red in some quarters, with Life clearly making a negative contribution. In contrast, Non-Life continues to make a sustained, positive contribution to growth, even during phases in which growth can be seen to be slowing down. This pattern highlights the structural resilience of the segment, which tends to be more closely linked to the economic cycle (motors, health, and home insurance) and is less volatile in the face of financial shocks. Its role as a stabilizing agent is particularly evident in 2022, preventing a larger decline in overall growth.

Chart 2. Global: contribution of insurance lines to premium growth



Source: MAPFRE Economics

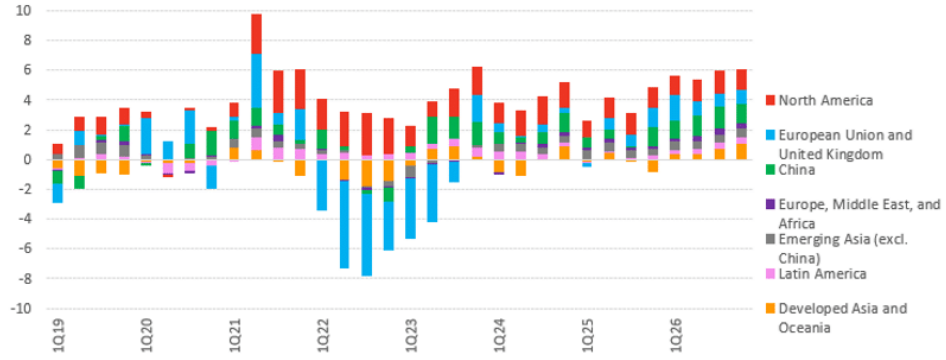
Starting in 2023, a moderate but more stable path of recovery begins. Although the Life segment is recovering, its contribution is more contained and variable, while Non-Life continues to act as the main catalyst of growth. For **the 2025–2026 period, forecasts suggest sustained growth of between 4% and 6%, with a more balanced share between both lines**, suggesting the reconfiguration of the global insurance portfolio toward greater diversification.

Finally, below is an analysis of the contributions to Life premium growth by economic region:

The contribution to **Life premium growth by economic region** (see Chart 3) shows strong volatility, particularly linked to the COVID-19 pandemic and its effects on the economy. From mid-2023, the global trend turns positive and more balanced. From 2024 onward, the dispersion of regional contributions is more contained, indicating more synchronized growth on a global scale. This

return to normal is expected to be consolidated in the 2025-2026 period, with positive contributions by virtually all regions, including Latin America and Europe, the Middle East, and Africa, which historically made more volatile contributions.

Chart 3. Global: contribution to Life premium growth by economic region



Source: MAPFRE Economics

It is worth noting that **the European Union and the United Kingdom** made particularly negative contributions, especially between Q1 2022 and Q1 2023, significantly detracting from global Life premium growth (up to -9% quarterly at times). This decline can be explained by low interest rates, regulatory pressure, and changes in savings patterns.

North America makes a consistently positive contribution throughout the period, particularly between 2020 and 2021. Its ability to sustain growth even during the most disruptive global quarters positions this region as a structural stabilizer of the Life insurance market. This trend can be associated with expansionary monetary and fiscal policies in the U.S. and the strong savings component in the Life insurance segment.

China also plays a leading role, with generally positive, albeit uneven, contributions, especially between 2019 and 2021. However, its contributions to growth lose momentum starting in 2022, coinciding with the structural slowdown of its economy and tensions in the real estate market.

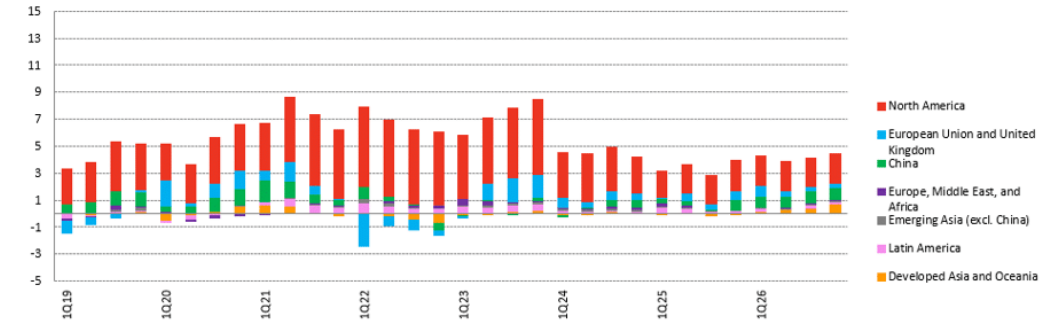
Emerging Asia (excluding China), meanwhile, contributes positively though modestly, reflecting its expansion potential, albeit still constrained by issues related to financial development and insurance penetration.

Developed Asia and Oceania, and Latin America, account for a smaller weight in absolute terms; however, their performance is relevant when it comes to understanding the structural dynamics of Life insurance in transition or mature economies with low population growth. Their contributions, while modest, are positive in the final stretch of the horizon subject to analysis, accompanying the overall sector recovery.

In summary, **global Life premium growth is clearly shaped by regional dynamics**, with **North America and China being the main drivers**, and where the post-COVID recovery shows a trend of greater geographic diversification. This pattern suggests an opportunity to strengthen the resilience of the global market through policies that promote macroeconomic stability, financial development, and insurance inclusion in still underrepresented regions.

As regards **Non-Life premium growth by economic region** (see Chart 4), the breakdown is as follows:

Chart 4. Global: contribution to Non-Life premium growth by economic region



Source: MAPFRE Economics

North America has been the biggest contributor to global Non-Life premium growth throughout the period. Its contribution has been consistently positive and particularly notable between Q1 2021 and Q1 2022, where growth exceeded 6 percentage points. This trend reflects both the size of the U.S. market and its economic recovery following the pandemic, driven by expansionary fiscal policies, rate tightening in commercial lines, and the repricing of risk in response to extreme weather events.

The EU and the UK have shown an uneven trajectory, with notable negative contributions in Q1 2022 and Q2 2022, possibly related to the post-pandemic slowdown, the war in Ukraine, high inflation, and pressures on household purchasing power. However, from 2023 onward, their recovery becomes evident, albeit modest, indicative of the stabilization of the economic environment and the possible revival of personal and commercial insurance.

Meanwhile, **China and emerging Asia** have maintained a steady and slightly positive contribution, without this making them significant drivers of global growth. In the case of China, this may reflect an already mature Non-Life market and the structural difficulties of its economy, while in emerging Asia, the contributions are limited on account of the limited weight of the insurance industry in their economies.

The EMEA (Europe, the Middle East, and Africa) group has maintained a marginally positive contribution, a testament to its stability over time, although without assuming a clear leading role. This is a reflection of the

region's fragmented markets and, in many cases, a low degree of insurance penetration.

In the case of **Latin America**, a slight improvement can be seen starting in 2023, following the COVID-19 pandemic with its significant economic impact. Recent positive contributions may be attributable to the recovery of the economy, the digitalization of distribution channels, and greater risk awareness among the population.

Finally, the economies of developed Asia and Oceania contribute only marginally to global growth. Their stable yet limited performance suggests that, although these are mature markets, growth in Non-Life premiums is more closely tied to rate adjustments than to structural expansions.

Over the forecast horizon **(2025–2026), it is expected that regional patterns will stabilize**. North America will continue to lead growth, while Europe and emerging Asia consolidate their recovery. No major surges are expected in the contribution of other regions, suggesting that the dynamism of the Non-Life sector will remain concentrated in mature economies with rate adjustments and increasing exposure to climate risks.

In short, global growth in Non-Life premiums is heavily reliant on North America, with a second group of regions (EU, China, emerging Asia) making a more moderate contribution. Regional discrepancies reflect both structural differences in insurance development and the impact of macroeconomic and climate factors. This interpretation means opportunities can be anticipated for the sector in regions with low relative growth, such as Latin America and Africa, where the protection gap remains significant.

As a final note, and bearing structural considerations in mind, **there is reason to argue that the pattern is mixed, with cyclical leadership in Life insurance during times of expansion, and structural stability in Non-Life insurance, which cushions downturns and ensures more consistent growth in the global insurance market**. This uneven evolution between Life and Non-Life underscores the different cyclical and financial sensitivity of both segments. Life insurance responds more strongly to interest rates and long-term savings expectations, while the Non-Life segment is more reactive to cost inflation and immediate demand for protection. The insurance industry must continue to strengthen its capacity for innovation, risk management, and regional diversification to sustain inflation-adjusted real growth in the coming years.

At the following *link*, you can find detailed macroeconomic and premium growth forecasts for the insurance market in 2025 and 2026 at a regional level and for a selection of the main insurance markets, in the report *2025 Economic and industry outlook: second-quarter forecast update*, prepared by MAPFRE Economics.

Credit and insurance activity

Author: MAPFRE Economics

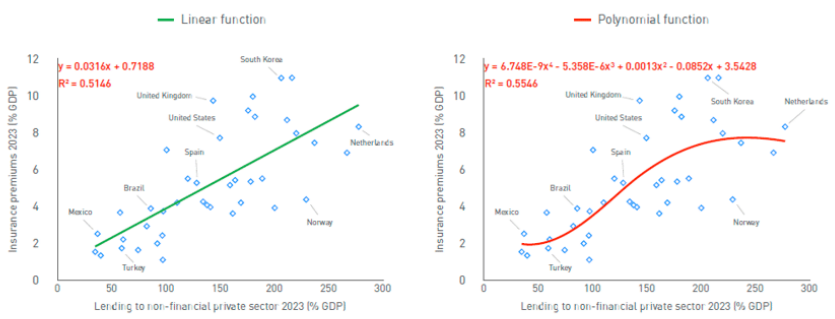
Summary of conclusions from the
MAPFRE Economics report:
Credit and insurance activity
Madrid, Fundación MAPFRE, December 2024

Evolution of credit and its role in insurance activity

Credit volume is a key economic variable that **influences various areas of the economy, including insurance activity.** It plays a pivotal role in stimulating consumption and investment, two macroeconomic factors that directly influence all areas of insurance activity, in both the Non-Life insurance segment (Motors insurance, policies for household, commercial, and business property, or personal injury coverage) and the Life insurance segment. This includes insurance associated with granting credit (in case of the death, incapacity, or disability of the debtor), which also serves as a guarantee to creditors of direct or indirect loans (through coverage of collateral associated with credit), which contributes to the stability and good operation of the financial system.

Globally, **the relationship between credit and insurance demand is particularly significant when comparing insurance premiums to the volume of household and company credit** (see Chart 1).

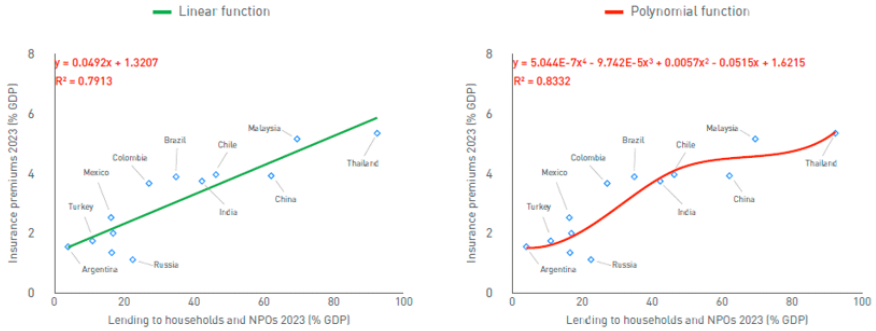
Chart 1. Global markets: lending to the non-financial private sector vs. insurance premiums (% GDP)
(fitted regression lines)



Source: MAPFRE Economics (based on data from BIS and Swiss Re)

This connection is even more pronounced in **emerging markets**, where the comparison between insurance premiums and **household credit** would account for 83.3% of insurance premium variability in these markets (see Chart 2).

Chart 2. Emerging and developing markets: lending to households and NPOs vs. insurance premiums (% GDP)
(fitted regression lines)

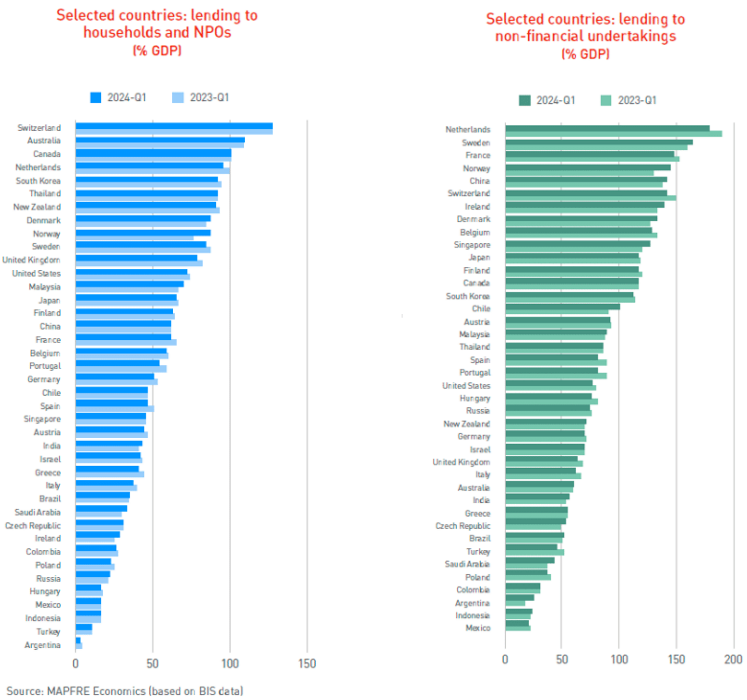


Source: MAPFRE Economics (based on data from BIS and Swiss Re)

Credit and risk cycles for the insurance industry

Credit cycles can be extremely significant for the economy and, by extension, for the insurance industry, as they **affect variables like new housing construction, real estate prices, or new vehicle registrations. They also impact nominal GDP and private consumption, which have repercussions on all areas of the insurance industry**. Emerging markets and developing countries have much lower credit-to-GDP ratios than developed markets, which have stronger capital markets and better credit ratings. These advantages enable their economies to sustain higher levels of debt without, in principle, causing financial stability issues (see Chart 3).

Chart 3. Lending to households and non-financial undertakings



Source: MAPFRE Economics (based on BIS data)

However, as history has shown, the uncontrolled expansion of credit has also generated profound economic crises in these markets (as happened in Japan in the 1990s or in the United States in 2008), triggering a crisis with global repercussions.

Development of the capital market

In addition to focusing on financing from the banking system, it is critical to highlight the importance of the development of **the capital market, the mechanism through which various economic agents access financing**, an environment where banking financial intermediaries are often the traditional protagonists. The United States is a notable exception, with a credit system more oriented towards capital markets, where a large portion of business financing comes directly from these markets, through a wide variety of financing instruments and deep primary and secondary global markets that facilitate their liquidity.

In bank-based financial systems, such as those of Europe, **banking entities are the main intermediaries that convert deposits into loans, assessing borrower risks and assuming these risks on their balance sheets**. Thus, in countries like Germany, France, Italy, and Spain, banking penetration has been central to financing, especially for households, small and medium enterprises (SMEs), and sectors such as real estate. A developed capital market connects institutional investors, such as fund managers and insurance companies, with companies seeking capital for growth, diversifying their sources of financing. This investment model is particularly important for startups, growing companies, and strategic sectors, such as technology or renewable energy, among others, a pending issue in the European Union, which is trying to improve this through the Capital Markets Union initiative.

Meanwhile, **emerging markets and developing countries need improvements in their financial infrastructure, both in banking and capital markets,** overcoming barriers such as lack of physical access to financial services, low digital connectivity, and widespread distrust of the system. Establishing networks of branches, correspondent agents and technological improvements, accessible digital payment platforms, in addition to simplifying requirements to open accounts and designing inclusive financial products, are steps that must be addressed by public policy in those countries.

Credit, demographic evolution, and population aging

Demographic trends since the end of the 20th century, characterized by a sustained drop in birth and mortality rates, and the resulting increase in life expectancy, have significantly impacted the composition of the population by age group. This change in the population's age structure in many developed countries, and increasingly in emerging ones, is characterized by the **progressive aging of the population,** with a growing proportion of

people approaching retirement age, who also benefit from an increase in life expectancy.

This demographic change, which is essential for analyzing the potential of insurance activity, also has an impact on bank lending. **Most studies on this topic conclude that one of the consequences of population aging is a contraction in credit**. This trend is largely attributable to the lower risk appetite of older individuals, the decline in household savings rates, and banks' diminishing willingness to take on risk as a result of population aging. Credit demand often follows a life cycle pattern, peaking during the working years of younger, productive individuals and dropping to relatively low levels toward the end of their careers.

At the following *link*, you can find the study *Credit and insurance activity*, prepared by MAPFRE Economics, which provides a more detailed analysis of the relationship between credit and insurance activity, along with an examination of a selection of representative markets. This selection covers key regions around the world: North America (United States), Latin America (Mexico and Brazil), Europe (United Kingdom, Spain, and Germany), and Asia (Turkey, South Korea, and Japan). In all cases, we have utilized extensive historical data, comparing the weight of the evolution of the three largest components of credit to the non-financial sector—government, household, and non-financial company credit—as well as the level of banking penetration.

Climate change: extraordinary risks and public policies

Author: MAPFRE Economics

Summary of conclusions from the
MAPFRE Economics report:
Climate change: extraordinary risks and public policies
Madrid, Fundación MAPFRE, May 2025

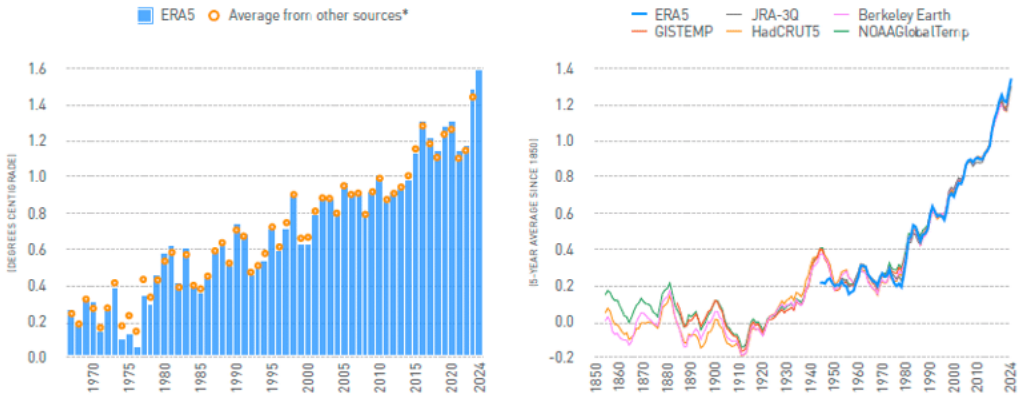
Climate change is intensifying extreme weather events and widening the insurance protection gap in the face of natural disasters. To close this gap and safeguard economic and social stability, coordinated action between governments and the insurance industry is crucial.

Impact of climate change on extraordinary risks

The Earth's climate is shaped by a complex interplay of natural cycles operating over various timescales. From the perspective of the insurance business, the primary concern is in short- and medium-term cycles, particularly those observed over the past few centuries or even recent decades. These cycles affect the intensity and frequency of extreme weather events such as hurricanes, typhoons, cyclones, hailstorms, wildfires, droughts, heatwaves, severe thunderstorms, cold snaps, snowstorms, ice storms, frost, bomb cyclones, extratropical cyclones, atmospheric rivers, gales, convective gusts, extreme cold, storm surges, snow avalanches, and upper-level cut-off lows.

The intensification of these phenomena is largely driven by global warming, which is disrupting climate patterns and increasing both the frequency and severity of extreme weather events. Since 1850, anomalies have been observed in global land and ocean surface temperatures, with averages rising significantly above long-term historical norms. Numerous studies link this trend to the industrial revolutions, identifying greenhouse gas emissions as a key driver of the planet's accelerating temperature rise (see Chart 1). Climate prediction models, including weather forecasting systems, climate change simulations, and artificial intelligence, are essential tools for estimating risk levels and potential economic losses associated with extreme weather events.

Chart 1. Increase of the global surface temperature over pre-industrial levels
(reference period: pre-industrial, 1850-1900)



Source: MAPFRE Economics (with data from the European Commission, Copernicus)
* Average of the following measurements: JRA-3Q, Berkeley Earth, GISTEMP, HadCRUT5, and NOAAGlobalTemp

Reinsurance reports typically distinguish between primary risks—such as hurricanes and earthquakes—and **secondary risks**, including severe convective storms, hail, and droughts, **to assess insurance gaps**. However, this classification is rarely adopted in public policy, which relies on its own definitions of disasters and compensable damages. Among climate-related primary risks, Asia has experienced the deadliest cyclones, such as Cyclone Bhola in 1970, while the Americas, particularly the United States, have recorded the costliest events, including Hurricanes Katrina and Harvey (see Table 1).

Table 1. Global: major catastrophic weather events since records began

Event	Year	Region	Type	Number of deaths	Approximate damages (millions of USD)
Cyclone Bhola	1970	East Pakistan (Bangladesh)	Cyclone	300.000-500.000	Massive destruction
Cyclone Tracy	1974	Australia	Cyclone	71	Massive destruction
Hurricane Katrina	2005	United States	Hurricane	1,800	125,000
Hurricane Harvey	2017	United States	Hurricane	100	125,000
Hurricane Maria	2017	Puerto Rico	Hurricane	3,000	90,000
Hurricane Helene	2024	United States, Mexico, Cuba	Hurricane	232	79,000
Typhoon Haiyan	2013	Philippines	Typhoon	6,300	13,000
Typhoon Yagi	2024	Southeast Asia	Typhoon	829	12,600
Hurricane Mitch	1998	Central America	Hurricane	11,000	6,000
Cyclone Nargis	2008	Myanmar	Cyclone	138,000	4,000
Cyclone Yasi	2011	Australia	Cyclone	1	3,500
Cyclone Idai	2019	Mozambique, Zimbabwe, Malawi	Cyclone	1,300	2,200
Cyclone Winston	2016	Fiji	Cyclone	44	1,400
Typhoon Bopha	2012	Philippines	Typhoon	1,900	1,000
Cyclone Pam	2015	Vanuatu	Cyclone	15	600
Hurricane Ophelia	2017	Ireland, United Kingdom	Hurricane	3	87
Cyclone Eloise	2021	Mozambique	Cyclone	27	Significant

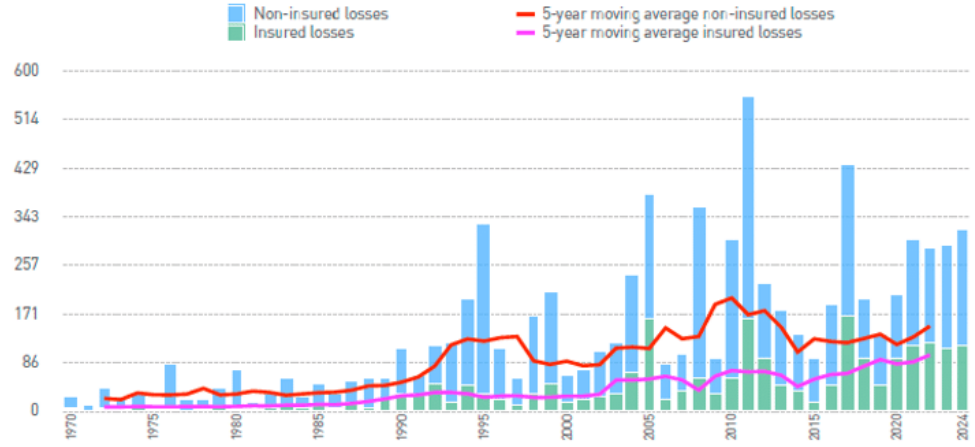
Source: MAPFRE Economics (with data from NOAA, AON, Munich Re, and CEPAL)

Economic losses and the insurance protection gap

The insurance protection gap for natural disasters refers to the difference between the total economic losses caused by such events and the portion covered by insurance policies. Certain catastrophic events are so large and systemic that neither the private sector nor public authorities can manage them independently, resulting in significant shortfalls in insurance coverage—often referred to as the "CatNat Gap." This gap is especially pronounced in regions such as Asia and Latin America, where only a small share of losses is covered by insurance. Tropical cyclones and flooding account for the highest accumulated losses, underscoring the need to improve insurance coverage in these areas.

Between 2013 and 2022, hurricanes caused an estimated 899 billion dollars in economic losses, of which only 360 billion dollars were insured, representing an insurance coverage rate of 40%. Flooding alone caused approximately 496 billion dollars in damages, with an insurance coverage gap of 80.6%. These figures highlight the urgent need to close the insurance protection gap in order to mitigate the economic impact of natural disasters. Global losses from such events show substantial year-to-year variability but exhibit a clear upward trend, driven not only by the effects of climate change but also by economic and population growth, along with urban sprawl in high-risk areas (see Chart 2).

Chart 2. Global: losses due to natural disasters
(USD, amount at constants prices in 2024)



Source: Swiss Re Institute

Protection and loss compensation mechanisms

Disaster protection mechanisms include public-private partnerships, government-backed insurance funds, and subsidized coinsurance programs with varying structures across countries. Although still underdeveloped, there are also some regional mechanisms, such as those operating in the Caribbean and Africa.

In the United States, for example, there are programs such as the National Flood Insurance Program (NFIP) and the California Earthquake Authority (CEA), which provide coverage for flooding and earthquakes, respectively. In the United Kingdom, Flood Re applies a premium to home insurance policies in which flood risk is transferred to the fund, alongside a mandatory annual contribution from all insurers offering such coverage, calculated based on market share. In France, the Nat Cat system is financed through a compulsory surcharge on property insurance policies. In Spain, the Insurance Compensation Consortium (Consorcio de Compensación de Seguros) covers extraordinary natural disaster risks by collecting a mandatory surcharge on nearly all insurance policies, with only a few limited exceptions. In Mexico, the Natural Disaster Fund (FONDEN) and the Program for the Natural Disaster Fund are key mechanisms for managing catastrophic risk. In Brazil, the Rural Insurance Stability Fund (FESR) protects rural producers against the adverse effects of extreme weather events.

Extraordinary risk coverage in agriculture is essential for shielding producers from adverse climatic events such as flooding, droughts, frosts, hailstorms, and other natural disasters. These events can cause significant losses in agricultural production, threatening food security and the economic stability of rural communities.

To address these risks, various agricultural **insurance models have been developed, combining instruments such as specialized insurance funds and multiple types of agricultural insurance**. These may include individual, group, or state-sponsored policies, covering both non-correlated and catastrophic events. Additionally, both traditional and parametric insurance products exist, with the latter determining payouts based on climatic or yield indexes.

In many countries, agricultural insurance is supported by premium subsidies to make coverage more accessible to farmers. Risk zoning tools are also used to identify areas with heightened climate risk, helping to guide crop planning and the development of insurance products.

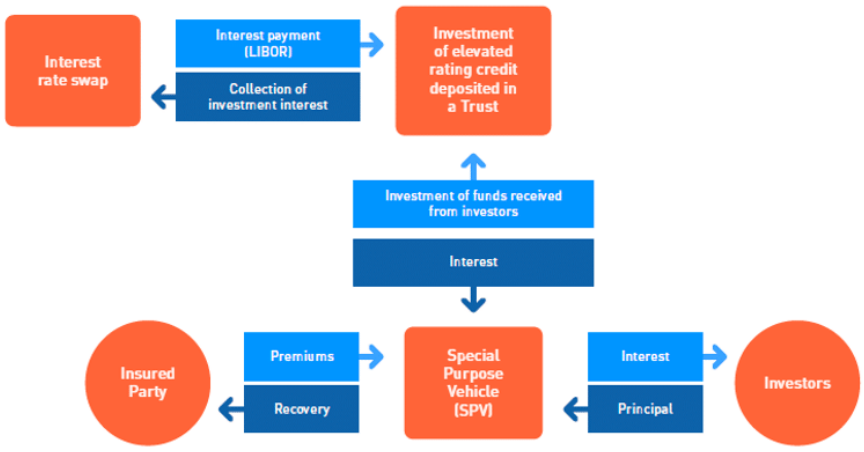
Reinsurance and catastrophe bonds

Reinsurance plays a critical role in managing catastrophic risks by **enabling insurers to transfer part of their exposure to other companies**. Reinsurance contracts can be proportional, where the reinsurer assumes a proportion of premiums and claims, or non-proportional, where the reinsurer covers claims exceeding a certain threshold. The global reinsurance market has experienced significant growth, reaching nearly 900 billion dollars in gross premiums and over 630 billion dollars in net premiums by the end of 2023—representing year-over-year increases of 12% and 13%, respectively.

Catastrophe bonds, also known as cat bonds, which emerged in the 1990s following major disasters like Hurricane Andrew and the Northridge earthquake, **allow insurers to transfer extreme risks off their balance sheets**

through securitization. These risks are pooled into insurance-linked securities (ILS) and sold to investors. These bonds are triggered under specific loss conditions, offering attractive returns and repaying 100% of the investment in the event of a catastrophe, with different bond classes according to risk levels. **Cat bonds are financial instruments that provide an additional source of funding for post-disaster recovery**. They are issued on the condition that a specific catastrophic event—such as a major hurricane or earthquake—occurs, and are activated when certain loss thresholds are met. Cat bonds offer investors competitive returns while providing immediate liquidity for disaster recovery (see Chart 3).

Chart 3. How a Cat Bond works



Source: MAPFRE RE

Climate change and investment portfolios

Insurance companies are exposed to physical, transition, and liability risks related to climate change. Physical risks refer to direct damages caused by extreme weather events, while transition risks stem from policy and technological changes needed to reduce greenhouse gas emissions. Liability risks involve potential legal actions linked to damages caused by business activities that contribute to climate change.

Global initiatives on sustainability, such as the Principles for Responsible Investment and the Principles for Sustainable Insurance, **aim to mobilize private capital toward projects with positive environmental impacts. Green bonds and sustainable bonds are vital instruments in this transition, financing low-carbon activities and supporting climate change adaptation. These bonds allow insurers to invest in projects that contribute to climate change mitigation while also diversifying their investment portfolios and reducing exposure to climate risks**. In addition to UN-led initiatives, the European Union (EU) has taken an active role in establishing a robust and comprehensive regulatory framework to integrate climate change considerations into investment decisions. This framework promotes sustainability through a range of regulations, including disclosure

requirements that must be met by investors in financial markets, as well as substantive rules covering due diligence, civil liability standards, and sanctions that go beyond basic reporting obligations.

The carbon emissions trading market is a vital mechanism for reducing greenhouse gas emissions. This system enables companies to buy and sell emission allowances, creating financial incentives to cut emissions by assigning a cost to each ton of CO2 released. There are two main types of trading systems: **regulated systems,** which impose mandatory emission limits and allow companies to trade allowances; and **voluntary systems**, where companies purchase carbon credits to offset their emissions without being legally required to do so. Regulated systems, such as the EU Emissions Trading System (EU ETS) in the European Union, are the most developed and cover a wide range of sectors, including power generation, heavy industry, and aviation. These markets aim to promote sustainability and support the transition toward a low-carbon economy.

Public policies to close the insurance protection gap

Closing the insurance protection gap for catastrophic risks is a significant public policy challenge that requires coordinated action between insurance companies and governments. Public-private partnerships (PPPs) play a fundamental role in managing disaster risks by creating collaborative frameworks to share risk and ensure affordable coverage. Public policies should integrate insurance considerations into broader climate adaptation efforts, such as investments in infrastructure, land-use planning, and early warning systems.

PPPs between government authorities and the insurance sector can be a key component in disaster risk management. These partnerships can take various forms, such as government-backed insurance pools, subsidised co-insurance schemes, state reinsurance for private insurers, or jointly funded programmes designed to ensure affordable coverage. Many countries have successfully implemented PPPs to address failures in the disaster insurance market, particularly when private insurers charge unaffordable premiums or exclude high-risk areas.

To ensure the success of PPP schemes, broad participation is essential: given the nature of the risks involved, the larger and more diverse the pool, the more stable and affordable the coverage will be. An analysis of existing PPPs currently in operation reveals a wide variety of partnerships, reflecting differences in the specific catastrophic risks covered and the insurance lines of business on which surcharges are imposed to fund their operations.

Public policies should integrate insurance considerations into broader climate adaptation efforts, such as investments in infrastructure, land-use

planning, and early warning systems. Furthermore, enhancing the collection and management of catastrophic claims data is crucial, as it supports advanced dynamic modeling and encourages data sharing between insurers and public agencies. Parametric insurance solutions, which pay a predetermined amount based on specific trigger events, can play a key role in expanding coverage by providing immediate liquidity after extreme events. Insurance can also serve as an incentive for risk reduction and be integrated into broader climate adaptation efforts by improving claims data management and combining parametric solutions with traditional insurance products.

Finally, it is worth noting that in April 2023, the European Central Bank (ECB) and the European Insurance and Occupational Pensions Authority (EIOPA) published a discussion paper addressing the growing protection gap in climate insurance. Between 1981 and 2023, natural disasters caused approximately 900 billion euros in direct economic losses in the EU, of which only one-quarter was insured. The paper proposes an EU-level solution composed of two pillars: a public-private reinsurance system to increase insurance coverage in low-coverage areas, and a public financing fund to improve disaster risk management across member states. Both pillars seek to strengthen resilience against natural disaster risks, encourage risk mitigation, and capitalize on the benefits of risk diversification at regional and national levels (see Chart 4).

Chart 4. European Union: two-pillar system to improve resilience against natural disaster risks

PILLAR 1: EU REINSURANCE SCHEME		PILLAR 2: EU CATASTROPHE FUND
Expansion of insurance coverage and supply	Objective	Incentivize risk mitigation and limit public expenditure
Insurance companies, reinsurance companies, and national schemes	Participants	Governments
Public-private	Configuration	Public
Voluntary	Enrollment	Required
Premiums based on participants' risks (capital market financing, including catastrophe bonds)	Financing	Risk-adjusted government contributions (and potential debt issuance)
Payouts according to contractual terms	Payouts	Event-calibrated payouts, conditional on implementation of national plans

Source: MAPFRE Economics (with data from the European Central Bank and the European Insurance and Pensions Authority)

The following *link* provides access to the study *Climate change: extraordinary risks and public policies*, prepared by MAPFRE Economics. The report offers a detailed analysis of how climate change is intensifying extreme weather events and widening the insurance protection gap for natural disasters, increasing extraordinary risks for the insurance industry.

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