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Supply, demand or irrelevance? A European protection gap

Nick Donovan
Head of Market Development
Lloyd's

Insurance is widely available in Europe to protect private individuals and businesses against the risk of financial loss from natural disasters.

European citizens and businesses, however, buy relatively little such cover: according to a recent study by the credit rating agency DBS Morningstar, between 1981 and 2023, natural catastrophes in Europe resulted in €900bn of economic losses, with one-fifth of those occurring in 2021, 2022 and 2023. Despite the increasing frequency and severity of climate-related disasters, 75% - 80% of the economic losses from such events in the EU are uninsured, including seven countries where this figure is more than 95%.

Clearly if economic losses are uninsured, the burden of bearing those losses remains with individuals, businesses or with governments, effectively as contingent liabilities on the public purse.

It is a widely held belief in the European insurance industry that this is a sub-optimal outcome, and that it constitutes a "protection gap" which should be reduced by actions from some combination of governments, national and supra-national regulators, (re)insurance companies, the capital markets, business owners and citizens. This belief could, however, reflect the self-interest of insurance carriers and brokers, given they seek opportunities to grow their businesses.

This paper attempts to address two questions:

- Is the European natural catastrophe "protection gap" a meaningful problem for society?
- If so, are demand- or supply-side reforms more likely to close the gap?

One can make the case the gap is a mirage. The perceived gap could merely be the outcome of rational choices by individuals and businesses in the face of government policies. In this argument, consumers and businesses are consciously self-insuring, using money that could be spent on insurance for other, potentially higher yielding, purposes and entering into an implicit contract with the state as their insurer of last resort. European states have for decades provided safety nets through strong public welfare systems in many areas, including health services, housing and pension provision, and they seemingly have, at least until now, willingly adopted such a role in natural disaster refinancing and recovery efforts. European states have other, truly massive contingent / off-balance sheet liabilities (notably unfunded government pension schemes) and this uncertain obligation seems to have sat alongside them over many years.

Recently, however, academic evidence indicates that widespread lack of insurance protection against natural disasters does represent a sub-optimal outcome for society, and European countries specifically. This is independent of whether individuals and businesses are behaving thoughtfully and rationally in their insurance purchasing choices, and whether

or not governments have the fiscal headroom to absorb additional post-disaster expenses. An important area of research articulates the adverse economic consequences of reliance on self-insurance and the state.

Economists have long been interested in "hysteresis", which is the concept of persistent adverse effects or "scarring" from external events on economic growth.

The effects of a wide variety of different exogenous shocks, from wars through financial and political crises, have been subject to time-series analysis, and permanent adverse economic impacts are found: economies frequently fail to return to their pre-crisis trend levels of economic growth. It is not easy always to isolate the effect from the cause, though; sometimes poor economic governance or performance foments the political or economic crisis in the first place.

Natural catastrophes are different: they occur independently of economic conditions and produce a clear cause and effect. Natural disasters, growth and insurance represent a different analytical challenge however, since economists have not until recently been able to robustly quantify insured losses, total economic losses, as well as long-term growth data from a sufficiently wide sample of disasters and affected countries. These are the key variables required to be able to draw conclusions on the long-term impact of insured and uninsured losses on economic growth rates. As a consequence, past research had little to say about the impact of insurance on disasters and economic growth.

Von Peter et al (2024) have worked with Munich Re and others to quantify the long-run impact of hundreds of disasters, covering total and insured losses to more than 200 countries and jurisdictions between 1950 and 2011, from four types of natural disaster: geophysical disasters (mainly earthquakes and volcanoes); meteorological (storms); flooding; and extreme temperatures, droughts and wildfires. Von Peter's work presents three conclusions.

The first conclusion is that natural disasters adversely impact growth, leaving behind permanent impacts on economic output. This is despite the fact that the damage to buildings and infrastructure is not part of measured GDP, while the subsequent investment in reconstruction is included.

"*the initial hit to economic activity gives way to subdued growth in later years … the consequences of natural disasters are substantial and play out over years. Like wars and financial crises, "unmitigated disasters" are macroeconomic shocks with permanent effects*".

Natural disasters impose immediate costs on governments through reconstruction expenditure, relief payments and / or loss of tax revenues. Governments may also have to invest in risk adaptation or mitigation measures, and also absorb losses on government property and other assets. But **uninsured natural disasters reduce economic growth forever**: the impact is felt not just through the immediate damage to assets and infrastructure. On average, real economic growth following (uninsured) catastrophes

dropped 2% immediately on the catastrophe, underperformed in the subsequent two years, and is thereafter permanently impacted, leading to cumulative output costs in the range of 2-4% of GDP, a huge sum.

The second finding of Von Peter's analysis is that **insurance mitigates the growth impact**, and can even allow countries to experience positive economic growth impacts over the long-term from disasters. "Insured losses turn out to be inconsequential, if not expansionary, at the country level". The relative growth impact is strongest immediately after the disaster. Interestingly, even the initial impact of a disaster is mitigated when assets are insured. One likely explanation is that insureds can start to finance rebuilding if they know that insurance payouts are more likely to be forthcoming. Also, insureds choose ex ante which assets to insure, presumably prioritising critical infrastructure and assets most important to the reinstatement of productive economic activity. Finally, insurance has a positive effect on risk management and mitigation activities, even if only to enable insurers to limit their own liabilities. One benefit of a well-functioning insurance market is the ex ante incentives it provides for risk prevention measures. But all these factors taken together equate to a meaningful positive impact from insurance on long-term growth trends after natural disasters. Or to put it another way, economies subject to natural disasters that have mitigating insurance in place will grow significantly (and permanently) more than those that do not.

The third finding is that the **negative impact on growth is most significant in countries which lack the (re)insurance capacity to reinsure themselves** effectively. Natural disasters usually only affect one region or territory at a time: you would think that it would be attractively diversifying for investors to have multi-regional exposures. But rather little natural catastrophe risk is shared internationally. Ito and McCauley (2002) find that only about 8% of insured losses associated with 93 major disasters had been reinsured internationally; when one includes uninsured losses, this figure is approximately 2%.

Von Peter's analysis demonstrates that countries with low insurance take up will experience persistent adverse growth trends in the face of natural disasters. Unfortunately the EU not only meets this criterion, but exhibits several other characteristics likely to exacerbate the issue -

- high and increasing frequency and severity of natural disasters
- low and falling insurance take up of insurance
- high national debt to GDP ratios, potentially limiting governmental fiscal responses in crises.

We look at each of these trends in turn. As EIOPA and the ECB point out, **Europe is the fastest-warming continent in the world**, and the number of climate-related catastrophe events in the EU is rising, hitting a new record in 2023. The severity of the events is also rising, through some combination of changes to the events themselves but also exposure growth. As society's wealth grows over time, so does the economic

impact of natural disasters, especially given trends for growth in higher risk areas (e.g. residential and commercial construction on coastlines and flood plains).

EIOPA undertake analysis of the percentage of insured and uninsured economic losses from natural catastrophes in the EU. Their 2023 paper analysed insured to economic losses from natural disasters over the period 1980 to 2021, showing that only about a quarter of losses on average were insured, falling to less than 5% for a number of states. They also repeated the analysis over the period 2015 – 2023 and this showed a consistent trend of a declining share of insured to total economic losses from natural disasters, taking the insured share well below 20%. Furthermore, this decline is pronounced among low-income households, increasing the pressure on governments to respond in moments of crisis: "the share of low-income consumers with insurance for property damage caused by natural catastrophes has declined from around 14% to 8% since 2022 … low income households may also be disproportionately vulnerable to financial stress and are more likely to live in areas with increased exposure to environmental stress or natural catastrophes, due to the affordability of land and housing or limited resources to relocate to safer areas or invest in disaster-resistant housing."

In the face of economic impacts following natural disasters, national and local governments can and do step in to finance reconstruction and recovery efforts. Following the devastating floods in Germany in 2021, for example, the federal and local governments (the Länder) swiftly approved both a comprehensive assistance package including €400 million for emergency relief (to cover emergency expenses and repair direct damage to buildings and infrastructure) and a multi-billion euro recovery programme to rebuild infrastructure and support long-term reconstruction. It seems fair to assume the greater the economic support provided, the lower the long-term growth impacts of natural disasters will be.

The issue is that many EU / EEA countries now have **historically high debt to GDP ratios**. This increased government borrowing has a number of causes, including the fiscal responses to the global financial crisis in 2008 and the Covid-19 pandemic in 2020, the cumulative impact of consistently high annual budget deficits, and longer-term adverse demographic trends. Unfortunately some of the highest levels of state indebtedness (relative to GDP) are seen in countries exposed to some of the most significant disaster risk (e.g. earthquakes and floods in Italy, wildfires and windstorms in Greece, floods and windstorms in France). Disasters will lead to a sub-optimal allocation of government funds, and it is not inconceivable that a European national government will, following a major disaster, lack the fiscal flexibility or headroom necessary to provide the levels of disaster response that they (and more importantly, their voters) would want. As Ito & McCauley describe it, "Advanced economies with little fiscal space that provide ex-post government disaster insurance without international reinsurance could experience **disaster risk morphing into financial risk**."

All countries are not equally affected by these trends of course. And obviously insurance comes at a price. So one might reasonably expect any European governments who were concerned about the situation to undertake a cost-benefit analysis of the impact on underinsurance of any remedial measures. Such an exercise is beyond the scope of this paper, but I hope to have shed light on why the European natural disaster insurance "protection gap" is a meaningful problem and exposes EU economies to significant risk.

I now turn to the second question in this paper: are demand- or supply-side reforms more likely to close the gap?

The reasons European consumers and business owners buy relatively little insurance are fairly well documented: some combination of high expectations of the role of government in disaster response (moral hazard); a distrust of insurance companies, leading to uncertainty over whether policies will respond as expected; affordability constraints; a lack of risk awareness and, in some countries, what is described as a "lack of a proper culture of risk". All countries are different, rendering generalisations dangerous and sometimes pointless. But as a European country with one of the lowest insurance penetrations, I think it interesting to discuss what a "**lack of a proper culture of risk**" may mean in Italy, and what conclusions we can draw about lessening the protection gap as a result.

Italian political scientist Alessio Cornia (2015) describes this concept of lacking a proper culture of risk as "a combination of low risk awareness, fatalism, superstition and the widespread idea among Italians that, even if risks are always present, they will not be personally concerned by the disaster's consequences …. In order to avoid the feeling of being powerless, they just do not think about risks and they tend to remove the lessons learned from past experiences."

Cornia interviewed crisis management experts at the Italian Civil Protection department, and undertook focus groups with individuals living in 'at risk' areas and / or having lived through the devastating 2009 flash flood in Messina or the L'Aquila earthquake.

"*In Italy,* ***citizens think that they aren't personally concerned by risks. Risk is something that concerns only other people****. […] We – as Italians – don't want to take into consideration risks, we prefer not talking about risks because – in order to ward off bad luck – we are more disposed to think that the earthquake has never occurred, or that it won't affect us again, that it will occur in another area, not again in our territory.*" [Expert interview with a CPD representative]

The fatalistic attitude Cornia comes across has negative implications for citizens' inclination to prepare for and mitigate disasters. Why observe safety standards when constructing residential property, or participate in other risk mitigation activities, if disastrous outcomes are predetermined or somehow inevitable? Why indeed buy insurance?

Furthermore, the Italian crisis management system relies on the public sector playing a critical in risk prevention, disaster management and relief and reconstruction. Self-reliance in the face of potential or actual disaster is not a central value in the prevailing culture. Italians think of the state in a paternalistic way, and the civil protection agency as a kind of charitable institution, devoted to the reconstruction and recovery of affected areas, and the distribution of relief monies and assistance.

Given these prevailing sentiments, it's understandable how reluctant Italians are to take out insurance. Some do of course, but these are often in high risk situations, creating an unappealing cycle where insurers take more risk for relatively less premium, forcing them to raise prices, which deters others from insuring.

In no way do I wish to conflate this purported 'Italian' mindset with cultural norms in other parts of Europe. But I do believe the seriousness of the protection gap problem facing governments, combined with the entrenched nature of many citizens' beliefs about risk and insurance, requires firm action.

A wide range of solutions have been proposed to contribute to increasing demand for insurance. Some of them sound plausible but lack urgency or likely tangible impact in the short- to medium-term. Who could, for example, disagree with efforts to drive up financial literacy and risk and insurance awareness? EIOPA talk of "impact underwriting", which incentivises policy holders to implement risk mitigation actions and strategies, reducing exposure to climate-related risks and hazards. We are told that "a lack of policyholder awareness about climate change and related adaptation measures is a key factor influencing the demand for corresponding insurance products."

I respectfully disagree: **European citizens and businesses are well aware the climate is changing, but are nevertheless buying sufficient insurance in ever fewer numbers**. To me "education and information" solutions seem rather academic, failing to appreciate the gravity of the situation and the required speed of response. A firmer policy hand is necessary to grasp the nettle. Ultimately individuals and businesses must be required, or at least strongly encouraged, to buy suitable insurance to protect themselves and their businesses.

Luckily European governments understand this, and national insurance schemes are their answer. National schemes continue to be established in the EEA to complement private insurance propositions; currently there are nine. And they are working: the average share of insured losses in countries with a national scheme is about 47%, while it is below 18% for those without a national scheme.

EIOPA lay out some common features of these types of schemes: they have a broad scope of coverage, aiding diversification across perils and assets; they are indemnity-based, with risk-based premiums; they make use of commercial reinsurance, where it is available and affordable; and critically, the majority of the insurance schemes EIOPA looked at incorporate a mandatory element. This can be mandatory take up (where

business or property owners are required by law to take up coverage), or mandatory offer (where insurers operating in certain business lines must offer protection against defined natural catastrophes within the scope of cover), or both.

The newest scheme is in Italy, where all companies (not individuals or households), with a few exceptions, were required by law to obtain insurance for natural disasters, including earthquakes, floods and landslides, by April 2025. Coverage is now mandatory for land, buildings, machinery and equipment, and insurers operating in the market are obliged to offer quotes for the coverage, with fines for non-compliance. Premiums are risk-based, considering typical underwriting characteristics, e.g. occupancy, location, value, construction, loss history etc. Deductibles can vary by insured value. SACE, the state insurer, provides reinsurance for up to 50% of insurers' exposures, backed by a €5bn state guarantee fund.

Should such a scheme work as planned, it should be achieving three goals: **driving up insurance penetration (at least among commercial entities), avoiding anti-selection, and diversifying the risk pool** to make participation more attractive to insurers.

Mandatory schemes have downsides, however. I find three noteworthy, with the second and third closely related.

First, the potential moral hazard: if I must buy insurance anyway, what incentive do I have to mitigate risk? Such schemes could, for example, undermine efforts to promote construction in less risky areas and reduce adherence to building safety standards. The Italian proposal, for example, recognises this and allows insurers to incorporate risk quality and mitigation in their pricing decisions. Other mandatory schemes have learned lessons: the National Flood Insurance Programme in the USA adjusted its pricing mechanism to ensure that prices reflect risks at the level of individual buildings, so improving incentives to improve the underlying risk.

Second, most schemes rely, in part or in whole, on state-backed reinsurance to enable the originating insurers to offer compellingly priced cover, thus failing to move the ultimate risk away from the national balance sheet. While more certain recovery payments may secure reconstruction and long-term growth, the indebted governments are adopting these schemes at least partly to reduce their exposure to the immediate costs of increasingly severe and frequent disasters. It is interesting the Italian government has only confirmed SACE's participation until the end of 2026.

Third, what if businesses in higher risk areas face unaffordable premiums? In Italy there is already evidence of insurers withdrawing from business lines altogether rather than be coerced by the scheme into offering coverage they find unacceptable. This downside is closely linked to the second: if governments or the commercial market cannot or will not provide competitively priced reinsurance to the insurance providers, at least while the local insurers build up sufficient surplus, the primary market will never be able to offer a

compelling proposition to insureds. If SACE's support was withdrawn the scheme might well collapse under the weight of unacceptable quotes for cover.

All this is to explain that the solutions to the protection gap must include both demand and supply-side elements. **It is not sufficient to mandate insurance sale or purchase**. The supply of reinsurance capacity must be such that it enables the primary insurer to offering compellingly priced, suitable cover to individuals and businesses who are required to purchase it. If not guaranteed by the respective national state, this capacity can come from local or overseas commercial reinsurers, or global capital markets through cat bond / ILS issuance, or regional pooling arrangements such as an EU-wide reinsurance scheme. But it must come from somewhere. The majority of disaster-prone countries do not have sufficiently deep pools of capital locally to comfortably accept the tail risk of major disasters and price reinsurance protection accordingly.

Governments often find it hard to resist the lure of protectionism in insurance and reinsurance. Why would one want to see profitable (re)insurance business, and the jobs that accompany it, being underwritten to the benefit of foreign shareholders? Local (re)insurers lobby hard against this. But this problem will not be solved locally without the benefit of overseas capital or reinsurance support.

There seem two routes to explore to render national insurance schemes more sustainable without exposing governments to undesirable financial risk: the first is to **encourage greater international risk-sharing** through global reinsurance support or ILS structures securitising tranches of the schemes, whilst the second is some kind of **regional risk pooling arrangement.**

New Zealand offers the best example of how to achieve the former (i.e. international risk sharing) successfully. This was demonstrated in the response to the catastrophic 2011 earthquake the country suffered, which caused an estimated $18bn of losses (more than 10% of GDP). In New Zealand, government-provided earthquake cover is an effectively mandatory add-on to the property damage coverage required by mortgage lenders. Nguyen, C and I Noy (2017)'s analysis showed that -

"*over 90% of households participate and 70% of losses were insured. We estimate that 60% of insured losses were in turn re-insured, so that almost half of the losses were borne by the rest of the world. The New Zealand result is closer to an ideal type of international risk-sharing*."

I would suggest that European governments or federal institutions explore all options to open access to their risk pools from reinsurance capacity support. This can include designing the underlying schemes in ways that make the risk pool more attractive to reinsurers and the global capital markets, as well as lowering barriers to entry for overseas reinsurers.

Finally, as EIOPA and others point out, a European-wide reinsurance scheme, for example, might "benefit from the strongest risk pooling and diversification, have more

funds at its disposal and ultimately have a greater impact on EU economic resilience than a scheme with more limited participation." Clearly the establishment and funding of such a scheme would be a highly politically charged decision.

I hope through this paper to have demonstrated that the relative lack of insurance against natural disasters is a significant, and growing issue, for European governments. I believe the stimulation of demand through national insurance schemes is the fastest route to swift recovery after natural disasters, while mitigating the negative long-term growth impact associated with ex post government financing of reconstruction and relief. But that these schemes will be more likely to succeed in the long-run with adequate international reinsurance and risk-sharing, rather than relying purely on national capital pools or sovereign financing.

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