Munich RE

Epidemic and pandemic risks

Co-creating a pandemic risk sharing solution for a more sustainable and resilient global financial ecosystem

Building more successful companies, more resilient economies, and a more sustainable future by identifying risk transfer and investment solutions generated by epidemic and pandemic risk.

- **Why?** The global disruption caused by the current outbreak cannot be ignored. Resilience improvement at all levels must recognise future epidemics as a significant risk. A key part of the solution is risk measurement and transfer. The economic impact alone exceeds, by far, the aggregate (re)insurance market capacity for the industry, therefore diverse capital providers must work together to offer stabilising diversification of risk to all sectors of the economy and support global resilience.

- **How?** A marketplace needs buyers, sellers and products – but to date what has been missing are versatile epidemic risk products. Using its epidemiological expertise, coupled with years of insurance and pricing experience, Munich Re has created a suite of risk transfer products that risk owners (businesses) want to buy to reduce their burden and volatility. Based on its unique position and experience in bridging insurance and capital markets for life risks, Munich Re will convert this risk into a transferable asset class that can be exchanged at a fair price with the capital markets to increase the availability of capacity whilst rewarding the participants. Over time the buyers, sellers and products will grow in diversity, scale and profitability.

- **What?** An exchangeable risk class, based on proven risk sharing techniques applied in the Insurance Linked Securities (ILS) sector, that represents the risk and impact of large-scale epidemics and pandemics[1]. The economic impact of epidemics can now be converted into technically priced risk, because capital can be mobilised on a co-created platform that enables greater risk bearing capacity with appropriate rewards.

Spreading cumulative systematic risks across insurance and capital markets

This thought piece serves to articulate an initiative by Munich Re to establish the **Epidemic Risk Markets platform** for the exchange and sharing of accumulative systematic risk across a wide variety of stakeholders, including capital market participants. Epidemic Risk Solutions (ERS) is a dedicated department, which was established within Munich Re Markets in 2017. Its existence predates the current "COVID-19" outbreak. Munich Re Markets creates the bridge between insurance and capital markets, delivering solutions for both market and insurance risks.

The foundation of the **Epidemic Risk Markets platform** will lean heavily on the basic principles of insurance. Therefore, this should be read as an invitation to all stakeholders to support the creation of an open market for epidemic risk management. All have the opportunity to work together and leverage expertise –including Munich Re's knowledge base – to better address the impact of epidemics, as well as to efficiently reallocate risk between suitable parties to create a resilient financial ecosystem for the future.

Reallocate insurance risks to a premium paying asset class

"COVID-19" has put the epidemic and related perils that business, society and globally connected economies face into stark relief. It has also sparked demand for epidemic and pandemic (business interruption) cover. Such cover has not been widely available to date. In light of the fact that epidemics and pandemics will continue to occur with ever greater frequency[2], the demand for insurance solutions will only increase, beyond a scale the (re)insurance industry is able to bear on its own. Therefore, epidemic and pandemic risks, like other accumulative systematic risks such as cyber and climate risk, need to find a suitable position in the wider capital markets. The concept is akin to the genesis of Insurance Linked Securities (ILS) and associated tailor-made structures. The ILS market serves as an effective bridge between the insurance sector and the capital markets, reallocating insurance risks and transforming them into a burgeoning asset class.

[1] On average, 200 epidemics outbreak events are reported every year – some cross borders and can be called pandemics. This paper will use the term epidemic to encompass outbreaks of all sizes.

[2] Amongst many other publications and available proprietary tools, for an overview of an open-source risk assessment to systematically evaluate novel wildlife-origin viruses in terms of their zoonotic spillover and spread potential, see the recent PNAS research article by Grange et al., 2021: https://doi.org/10.1073/pnas.2002324118

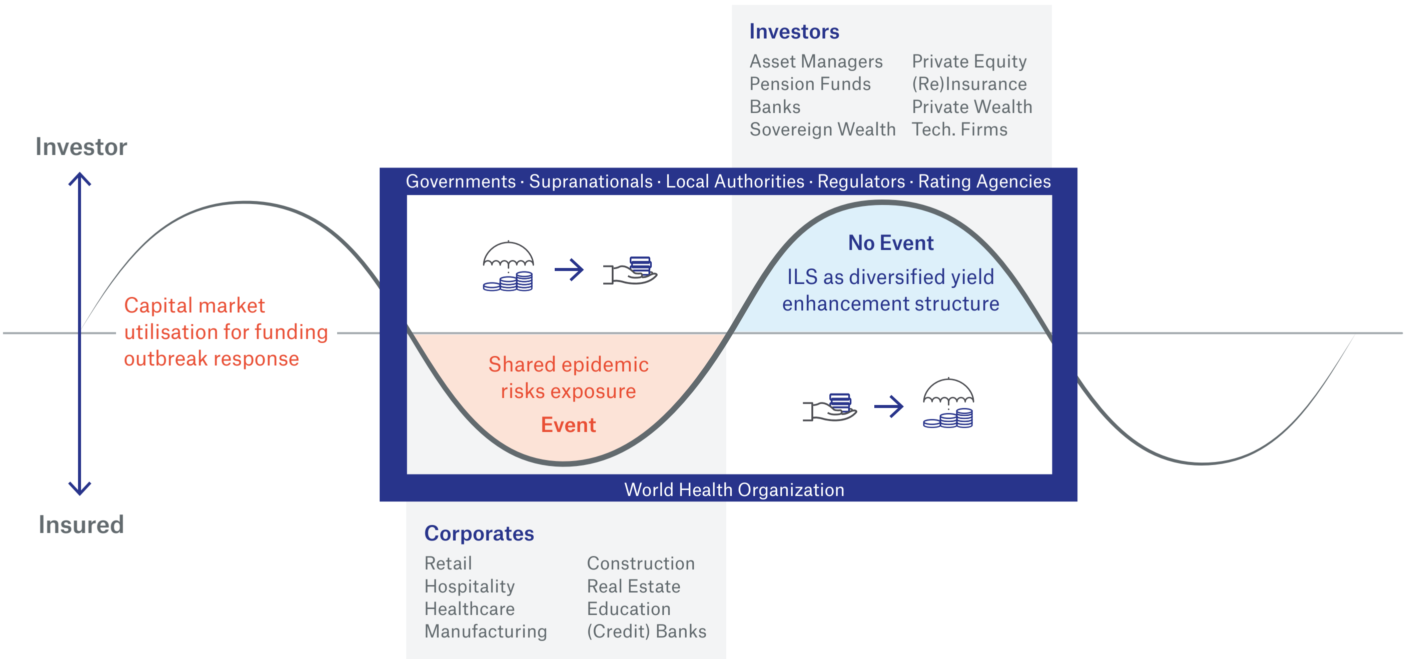
What could the Epidemic Risk Markets platform create?

Known risks are regulated, measured and monitored by various stakeholders from business owners to rating agencies, and (financial) regulators. Capital market participants and (re) insurers play a key role in actively measuring, monitoring and distributing risks according to appetite and with appropriate risk versus reward. If a risk is unknown or poorly measured and monitored, the resulting impact could exceed existing smoothing mechanisms. This has happened with sovereign credit, systemic cyber and now "COVID-19".

This risk class represents a new branch of the ILS market, addressing the economic impacts of epidemic outbreaks on business around the world, promoting better management and mitigation of the risk, which in turn will enable better measurement, monitoring and mitigation of the risk across the whole financial ecosystem.

The impacts of epidemics go beyond the economic damage to business into areas that are currently uninsurable and must remain with governments as the support system and capacity provider of last resort.

Epidemic Risk Markets platform – actors

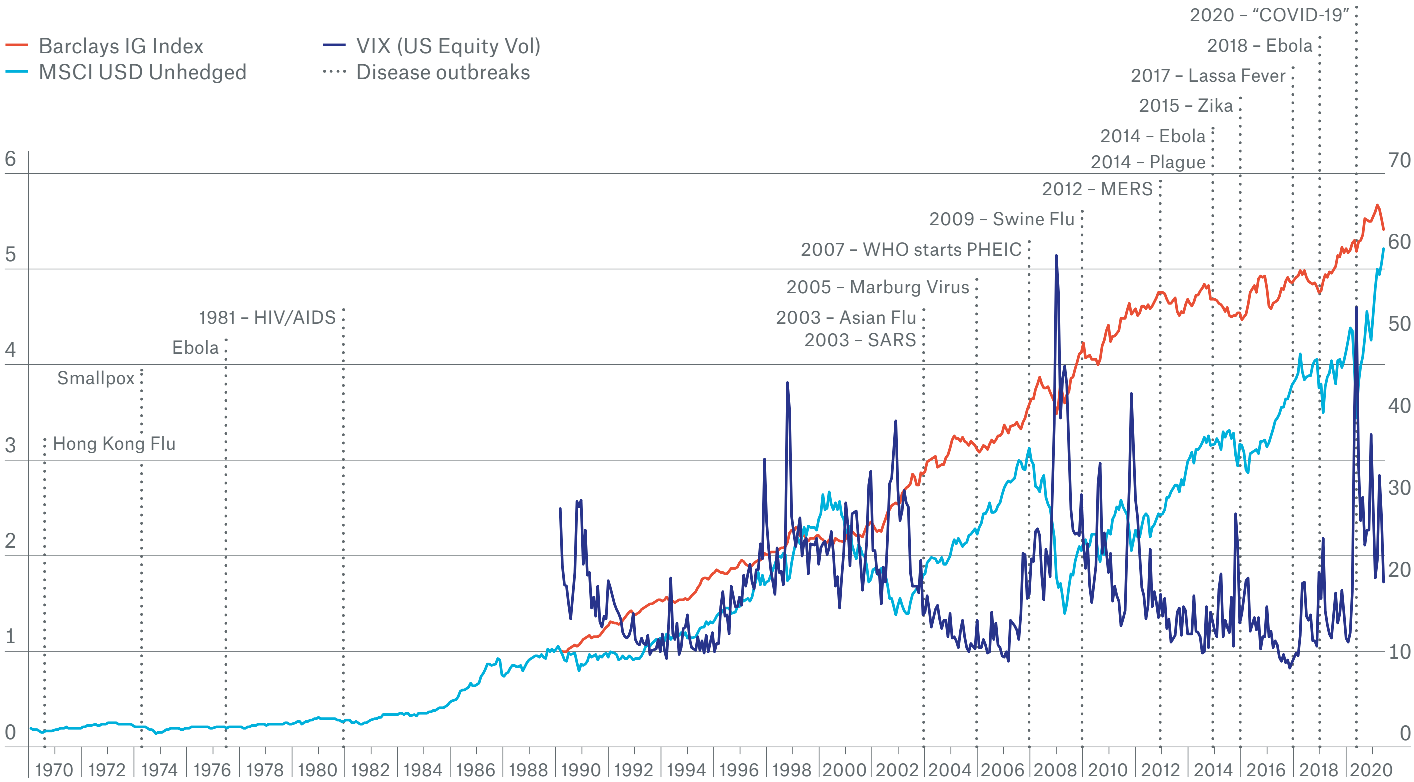


Why are we taking this initiative?

The question is not whether society will be hit by the next accumulative systematic risk but when? Epidemic risk is a highly probable, high impact yet neglected threat (a "Grey Rhino"). Capital market participants are unclear of the risk they are exposed to because they cannot quantify it, but neither are they rewarded for bearing it.

Epidemics are increasing in frequency. The trend of outbreaks per year has been increasing over the last six decades. On average, 200 epidemic outbreaks and five emerging infectious diseases are reported per year. Between 2010 and 2018 the World Health Organization (WHO) notified of 1,483 epidemic outbreak events in 174 countries. Scientific evidence suggests that emerging infectious disease outbreaks are occurring with ever greater frequency because of mostly man-made environmental shifts such as deforestation, urbanisation, and global mobility. Establishing an additional risk class that can be shared across a broad financial ecosystem supports Sustainable Development Goals, enhancing economic resilience and preparedness for the next pandemic.

Capital markets and disease outbreaks



Epidemics and pandemics are becoming more frequent and severe

The most recent publication (2020) of the Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services states that *"The risk of pandemics is increasing rapidly, with more than five new diseases emerging in people every year, any one of which has the potential to spread and become pandemic. The risk of a pandemic is driven by exponentially increasing anthropogenic changes. Blaming wildlife for the emergence of diseases is thus erroneous, because emergence is caused by human activities and the impacts of these activities on the environment."*

The observed increase in frequency of emerging infectious diseases also relates to the number of epidemic events the world experiences per year. *"In recent years, the world has seen a growing number of epidemic events, amounting to approximately 200 events annually. These events are increasing, and they are disruptive to health, economies, and society."*[3]

A cornerstone objective for Munich Re's Epidemic Risk Solutions is to facilitate the transfer of risk concentrations found on balance sheets to pockets of capital for whom the bearing of such risk is attractive. As a result, it will be possible for participants to actively (and consciously) take such risk and be rewarded accordingly, thus improving the risk/reward position of a portfolio, both from an economic as well as from a regulatory standpoint.

[3] Event 201, a global pandemic exercise, organised by the Bill and Melinda Gates Foundation and the Johns Hopkins Bloomberg School of Public Health

How to establish this platform?

The first stage involves creating a new, clear, non-damage trigger for business impact, which requires methods to establish the time of an outbreak and to agree on the scale. The World Health Organization (WHO) definitions and procedures are used as a starting point.

Epidemic: "The occurrence in a community or region of cases of an illness, specific health-related behaviour, or other health-related events clearly in excess of normal expectancy. The community or region and the period in which the cases occur are specified precisely. The number of cases indicating the presence of an epidemic varies according to the agent, size, and type of population exposed, previous experience or lack of exposure to the disease, and time and place of occurrence."[4]

In addition, a *pandemic* can be defined as "An epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people."

The WHO applies a trigger/warning system to indicate the existence of both epidemic and pandemic threats. In the early stages, outbreaks are reported in Disease Outbreak News (DON). If the situation escalates, and after careful consideration with legal protocols, governance committees, ultimately authorized by the Director-General of the WHO,

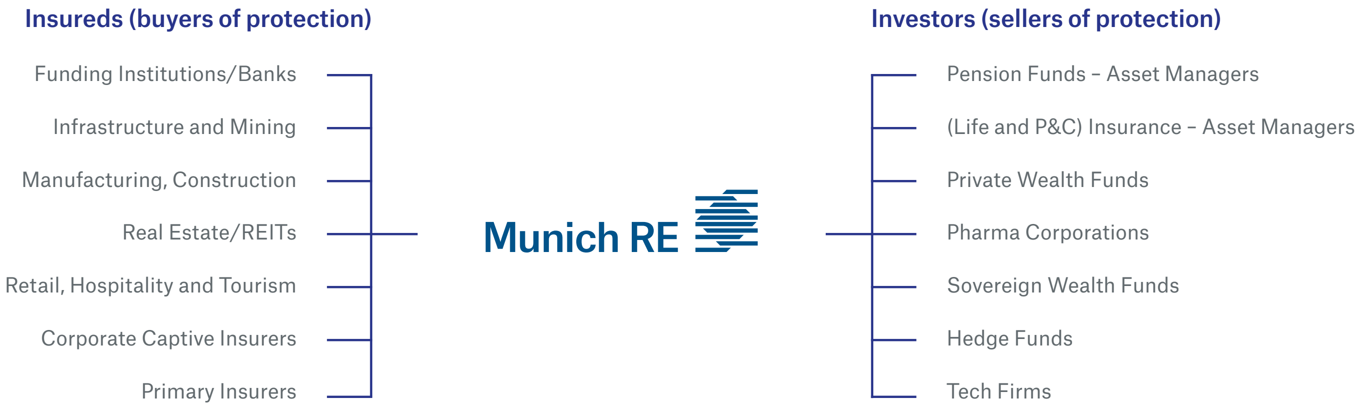
[4] https://www.who.int/hac/about/definitions/en/

may declare the outbreak a Public Health Emergency of International Concern (PHEIC).

The second stage involves pinning an epidemic outbreak to the geographical areas that impact a business income stream. Governmental authorities around the world will respond to the PHEIC declaration and may restrict the movement of people or the operation of businesses in order to mitigate the health impact on society. These restrictions form a localized observable trigger that completes the non-damage triggers.

The products designed by Munich Re's Epidemic Risk Solutions, and proposed as an innovative alternative asset class, cover the financial impact on businesses following these triggers. The financial impact can be a drop in income or an increase in expenses.

Origination and distribution of epidemic risk



Why work with Munich Re's Epidemic Risk Solutions team

Epidemic Risk Solutions has long been an active contributor to risk sharing structures. The team has concluded various transactions in Non-Life, Life and Public Sector and has successfully transferred pandemic risks to investors. Historically, the required capabilities to structure and trade pandemic risk had been developed for the management of Munich Re's own exposure. As a reinsurer, Munich Re is able to contribute capital to accelerate interest in the exposed risk.

The capability to structure and trade pandemic risk, as well as to actively manage pandemic risk exposure, is key to closing what is perceived to be a significant insurance gap that leaves economies vulnerable – something that has tragically come true today.

As industry thought leader and market maker, ERS seized the opportunity to develop a commercial business segment. With the Pandemic Emergency Financing Facility (PEF), the team structured and placed a first-of-its-kind transaction for the World Bank utilizing capital markets to fund outbreak response cost in the world's least developed countries. PEF has proven its worth when paying out early in 2020 for "COVID-19".

Non-damage business interruption solutions may prove most impactful and scalable going forward.

All these risk profiles together could be considered a new sub-class of the existing ILS asset class, delivering a diversified yield enhancement structure which is attractive from a relative value perspective.

This is a crucial point in time to develop this new market segment together.

In summary, Munich Re's Epidemic Risk Solutions invites market participants to contribute to this initiative and to benefit from the firm's knowledge in measuring, managing, monitoring and distributing epidemic risks. Creating this innovative alternative asset class will make it possible for both the insureds and investors to meet and exchange (macro) risks, managing possible concentrations of risk which could negatively influence the financial ecosystem (again). Investors will therefore be able to participate and be rewarded for this historically neglected risk.

Interested? Then reach out to our Epidemic Risk Solutions team to resilient financial ecosystem can mitigate and better manage epidemic risks.

Your team from Epidemic Risk Solutions
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Picture credits: Scanderbeg Sauer