

Pandemics and insurability

For **bipar** By Karel Van Hulle



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He served as head of insurance and pensions at the European Commission until March 2013, where he was responsible for the development of Solvency II. In that capacity, he represented the EC within EIOPA and was a member of the technical committee of the IAIS.

He joined the EC in 1984 after serving eight years with the Belgian Banking Commission. Before becoming head of insurance and pensions in 2004, he was responsible at the EC for financial reporting, auditing and company law, including corporate governance.

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1. Introductory comments

Covid-19 is a pandemic (from the ancient Greek pan= all + demos= people). This is described in Wikipedia as a sudden outbreak of an epidemic (an infectious disease) that spreads worldwide, or at least across a large region. Pandemics have the potential to affect the whole economy, causing significant losses to individuals and businesses.

If the potential impact of a pandemic is so huge, is it technically possible to provide insurance cover against such a risk. Is pandemic risk insurable?

The objective of this note is to provide some clarification on what has turned out to be a major challenge for the insurance world, without entering into too much technicality.

No attempt is made to discuss the legal arguments that are being invoked today in various countries about the impact of Covid-19 on insurance contracts, nor on the merits of a retroactive coverage of claims imposed by regulation. This is a matter that requires further research and will no doubt be the subject of litigation.

2. What is insurance?

Before discussing the impact of Covid-19 or pandemics more in general on insurance, it is important to stress that insurance is based upon a contract under which one party, the insurer, promises another party, the insured, cover against a specified risk in exchange for a premium.

People sometimes forget the contractual basis of insurance. It is impossible for an insurer to calculate the price for taking over a risk from a private individual or a business without clearly identifying under which conditions such a risk transfer takes place. The contract is at the same time a protection for the insured: the insurer will indeed be bound by the terms of the contract and the insured can rely on this.

Insurance is complex because it deals with the future. The future is uncertain and an insurer will have to estimate the probability of a specific risk materialising. Calculating the value of the risk relating to an insurance contract will usually involve the intervention of an actuary, who will calculate the insurance liability (technical provision or reserve), which the

insurer has to set up as soon as the contract has been signed, on the basis of that estimated probability. The liability reflects the **expected risk**, i.e. it corresponds to the specific risk both parties to the contract have agreed to insure¹.

Calculating the insurance liability (which may imply stochastic modelling) is only possible if the risk that is insured can be reasonably valued. This means that the risk can be clearly identified and measured. The conditions of identifiability and measurability are crucial in order for an insurer to decide whether it wants to take over the risk and under which conditions. The insurer will need to define the premium that is needed to cover the risk (including costs, loadings and a profit margin).

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Clear identification and measurement of the risk is at the same time important for the insured, who needs to know what exactly is insured and which risk has been taken over by the insurer under which conditions. That will allow the insured to judge whether the premium requested by the insurer is appropriate.

In addition to the expected risk, the insurer will need to set aside capital to cover **unexpected risk**. An unexpected risk is not necessarily unforeseeable. Under Solvency II, insurers need to set up a capital buffer that protects them against unexpected risks, such as a pandemic.

Under Solvency II, this capital buffer is referred to as the Solvency Capital Requirement (SCR). It is calculated, using a standard formula or an internal model approved by the supervisory authority. The SCR is set to take account of unexpected risks, for which a time horizon of once in 200 years has been agreed. The standard formula for the calculation of the SCR contains a number of risk modules and risk sub-modules, reflecting the material quantifiable risks to which most insurance undertakings are exposed in different lines of business, such as life insurance, non-life insurance and health insurance.

The Health Catastrophe Risk sub-module in the standard formula for the calculation of the SCR specifically includes a capital charge for pandemic risk, which has been calculated on the basis of a pre-defined scenario that takes account of an increase in mortality as a result of a pandemic. The same is true for the Life Catastrophe Risk sub-module.

However, no specific capital charge for pandemic risk is foreseen in the standard formula for non-life insurance. This should be covered by the sub-module for Other Non-life Catastrophe Risk. Considering the enormous impact of Covid-19 on the economy as a whole, it would be good to use the opportunity of the 2020 Solvency II review to re-examine the sub-module for Other Non-life Catastrophe Risk to ensure that a sufficient capital buffer is available in order to protect the insurance industry for the consequences of a pandemic for all non-life lines of business.

3. Is there a particular problem with the insurability of a pandemic?

The world does not have a lot of experience with pandemics, although recent viruses, such as ZIKA, EBOLA, MERS and SARS have heightened awareness of the pandemic threat. Influenza pandemics, such as the Spanish Flu and the 2009 H1N1 pandemics, have historically been the most prevalent pandemic threat, with about three occurring every century.

The problem with a pandemic is that it affects or is likely to affect the whole world at the same time. In order to stop the pandemic or to limit its spreading, governments will take measures which affect the normal operation of the economy and of society as a whole. Countries or regions might be put into lockdown. Businesses may be prohibited from operating or may only be allowed to operate under certain conditions. Travel within or between countries may be prohibited and most events involving large audiences may have to be cancelled. The costs resulting from such measures can be astronomical and are virtually impossible to calculate especially in a highly interconnected world.

Technically speaking, it is difficult for an insurer to insure pandemic risk because the traditional business model of insurance builds on the underwriting of large diversified pools of mostly idiosyncratic (unsystematic) and

¹ VAN HULLE, K., *Solvency requirements for EU insurers*, Intersentia, Cambridge-Antwerp-Chicago, 2019, 3-6.

uncorrelated risks. In the case of a pandemic, these conditions are not satisfied: risks are highly correlated and it is impossible to use diversification as a risk mitigation tool because there is no diversity of risk available to offset one country or region against another.

4. Will insurance never cover losses arising from a pandemic?

The answer is clearly "no". Under freedom of contract, insurers can always decide to cover losses arising from a pandemic, if the customer wants this and if coverage of the risk is in line with the risk appetite of the insurer and its risk tolerance (subjective insurability). Because of the reasons mentioned before, coverage of such a risk is not evident because the consequences are difficult to identify and to measure. This would normally result in a higher premium. Insurers will also have to include certain ceilings in the contract and will transfer all or part of the risk to one or more reinsurers, who will also have to decide whether and to what extent they want to provide cover.

Insurability is not a strict formula but rather a set of criteria, not all of which can be quantified or observed, some of which have trade-offs, and others which change over time. Key criteria for insurability are for risks to be both random and assessable².

The time and location of an insured event must be unpredictable and the occurrence itself must be independent of the behaviour of the insured, i.e. it must be subject to a defined and observed law of large numbers or at least to a known maximal loss. Events that are highly correlated expose insurers to systematic risk which cannot be diversified away through risk selection. Because the insurer will have to hold capital against the possibility that such risks occur simultaneously, that risk will have to be compensated for in the premium.

The frequency and severity of claimable events must be estimable and quantifiable within reasonable confidence limits. Insurers can be constrained when critical data for assessing and ultimately pricing new risks are lacking. Even with a wealth of data, insurers can be reluctant to cover some risks due to ambiguity over

the probability of specific events and/or the magnitude of potential consequences. An insurer's capital can potentially be exhausted if the scale of losses is significantly larger than expected at the time the policy was written. This will have to be taken into account in defining the risk tolerance of the insurer.

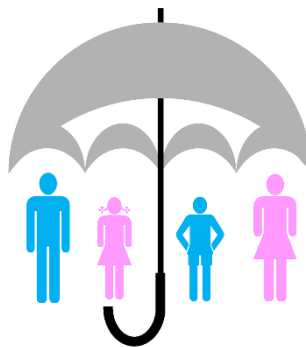
From the point of view of the insured, the premium must be affordable, while contributing sufficiently to decreasing risk exposure. For the insurer, the premium must be adequate to at least cover the expected claims and claims handling costs, plus the administration and capital costs. And the maximum exposure must be manageable.

The limits to insurability are not fixed. They expand with new markets, new exposures and innovative risk transfer solutions. More sophisticated risk modelling is a key to expanding the boundaries of insurability. The current rapid progress in digital technology and increased availability of large amounts of data is bringing risk modelling capabilities to new levels, allowing insurers to more accurately quantify probabilities and underwrite previously difficult-to-insure risks.

A number of product developments and innovations have expanded the scope of insurance, for instance through the introduction of triggers, through modelling advances and through the introduction of more efficient ways of risk transfer.

Insurability is not only determined subjectively by the individual insurer and/or reinsurer, it is also determined by the (re)insurers of a market as a whole. In the case of a pandemic risk, insurability will in the end depend on whether international markets in their entirety have sufficient capacity. It is in nobody's interest that the insurance industry as a whole becomes overexposed.

Parametric insurance might provide a solution in the case of a pandemic. Parametric or index-based solutions provide a pre-established payment to the insured upon the occurrence of a specific catastrophic event, for instance payment of the economic losses resulting from a pandemic for the hospitality sector if the room rate revenue is reduced by comparison to historical averages. Pay-outs are based on exceeding the threshold values of one or several pre-defined and agreed triggers and not



² See also, Swiss Re Institute, *Commercial Insurance: innovating to expand the scope of insurability*, Sigma, 2017, No 5, 11-12.

on the actual losses experienced. This is an important advantage compared to traditional insurance because it avoids cumbersome loss adjustment and provides almost immediate liquidity to the insured.

As for traditional insurance, in the case of life insurance, the number of deaths covered by life insurance policies might increase as a result of a pandemic. Unless there would be a specific exclusion (which is rare), death benefits to beneficiaries would normally be insurable.

In the case of health insurance, health costs (for instance, expenses for testing and hospitalisation) may increase as a result of a pandemic. These costs would normally be insurable. This would also be the case for disability/morbidity insurance.

Other types of insurance that might be affected by pandemics (such as Covid-19) include business interruption and event or travel cancellation. These would probably need to be looked at on a case by case basis.

Credit insurance will obviously be heavily impacted by the pandemic.

5. Is there a difference between the risk resulting from a pandemic and the risk resulting from a natural catastrophe?

In the same way as a natural catastrophe, a pandemic is a catastrophic risk with a low frequency and a high-severity. However, it is very unlikely that a natural catastrophe will arise at the same time everywhere. This is different from a pandemic and particularly from the Covid-19 pandemic, which unlike some of the preceding pandemics, has infected the whole world.

In the case of a natural catastrophe, the conditions for insurability, such as pooling of risks and diversification, are normally present. The potential risk is therefore easier to calculate and this is often done through the use of models. However, the complexity of the calculation has increased significantly with climate change, as climate change affects the construction of natural catastrophe models, which are based upon experience from the past and which may not include changing climate patterns.

A pandemic is by definition spread over different regions and/or continents. It is therefore difficult to limit the risk and make that risk insurable.

6. Concluding observations

Pandemic risk is in principle insurable and insurance solutions are available in the market. Insurability is however complex and it is likely that many of the losses incurred by individuals and businesses will remain uninsured. This creates a protection gap which needs to be addressed.

It is unlikely that insurers alone will be capable of covering all the losses resulting from a pandemic. It is therefore useful to think about a shared responsibility between the private sector and the public sector through a public/private partnership, as has been the case in a number of countries for other catastrophic risks. This could be done at national level but also at European level, in order to show solidarity between member states, as all of them face the same problem.
