

2022 AFIR/ERM Colloquium

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Covering Pandemic Risk:
Insurance or Smart Saving?

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About the speaker

- Dr. (rer. nat.) Michael Fackler, Munich, Germany
- Qualified actuary (DAV), self-employed
- Studied Math at Univ. Munich, Pisa, Oldenburg
- Doctorate in parallel with working: on experience rating, completed 2017
- 10 years with leading reinsurers
- 15+ years consulting actuary
- Specialized in: non-life reinsurance pricing, dealing with scarce data

Abstract

The **insurability of pandemic risk** by the private sector is questioned by many parties, the main concerns being **lack of diversification** and of **insurance capacity**.

We want to look at the problem from the perspective of a pricing actuary. Loss severity is an issue, of course, at least in the aggregate. Yet, it could ultimately depend more on the loss **frequency**, to what extent, and how, pandemic risk could be covered.

We focus on **Non-Damage Business Interruption** and illustrate that frequency and risk premium for pandemic BI are likely **far higher** than many people think.

Yet, this is possibly not totally bad news. If pandemics are more frequent, it may be easier to design reasonable ways to cover the risk. Solutions could involve a kind of **equalization reserve**.

Outline

- Pandemics: severity and return period
- Business Interruption
- Wrap up

Covid-19 and insurance

No surprise: a deadly viral pandemic after 100 benign years with some **near-misses**, e.g.:

Influenza: 1957, 1968, 1977, 2003, 2009

Coronavirus: SARS-1 2002, MERS 2012

Surprise: most affected insurance not life/health/WC, but NDBI (*non-damage business interruption*) due to preventive measures; correlation with investment

Although everyone now wants it, **industry** is apparently **not keen** on offering pandemic insurance

Issues: severity, lack of diversification, frequency (?)

Severity

Worldwide figures in \$ trillion, rough estimates

- 100 bond market; stock market; GDP
- 12 C-19 economic losses, early SR estimate
for comparison
- 2-10.5 Global Financial Crisis 2008 econ. losses
- 0.5-6 Nuclear accident loss potential
- 0.1 Nat Cat loss potential; Cat Bond capacity
- 0.02 max (re)insurance treaty capacity per event

Insurance figures, USA

in \$ trillion, estimates

- 100 P&C aggregate sum insured
- 0.8 P&C insurers' capital resources
- 0.07 Property premium p.a. (not only NDBI)
- 0.14 BI monthly sum insured (SME only)
- 1 BI monthly SI: market potential

Property loss exposure >> 100 times greater than premiums and capital

Insurance capacity

- The cost of a CoViD-19-like pandemic is some percent of the yearly world GDP
- Insuring a large part of this would require a capacity 10-100 times higher than is available now
- Amount even huge for the capital market – even if all bonds worked as pandemic Cat bonds
- **Diversification:** impossible via other insurance business, could only work over time

Premium level

Many seem to think that any Property policy can be sold at premium rate **1 per mil** of sum insured.

When are such premiums adequate?

- very low loss frequency *and/or*
- very low average loss (in % of the SI) *and*
- low loading (expenses, profit)

Severe pandemics: what **return period**?

- Some people in the London Market say:
Covid-19 is a **500y** event
 - Wimbledon Tennis Tournament had pandemic insurance, premium \$2'' p.a., 2020 Covid loss \$142'' (\approx SI), Rate on Line 1.4%; \approx **100y** event
 - World Bank PEF Cat Bond Class A (covering flu and coronaviruses): risk RoL 3.57%; **28y** event
 - Spill-over of coronavirus from animal: **15y** event?
 - Recall the near misses (slide 4) and their **trend**
- Thus: frequency very uncertain, but likely $>1\%$

Typical BI cover

Somewhat simplified:

- Insures reduction of turnover
(taking shifts in expenses into account)
- for *one year*
- after *some weeks* self-retention
- Trigger: material damage from Fire, EQ, etc.
- Non-Damage triggers possible, occur as extension to Property cover *for free*, but with *low sublimit*
- Specific: stand-alone Epidemic Outbreak NDBI

Average BI loss

Can be low, for two reasons:

1) Insured event is very short

- Unlikely for pandemics: even smaller epidemic outbreaks typically last half a year

2) Average daily loss is only small % of daily SI

- Thinkable, but if so, effect is mostly like a recession, which insurance should not cover

Can pandemic BI be cheap?

- Frequency and average loss are probably (far) too high for a 1 per mil rate
- To get to that level, one needs a high tailor-made self-retention (per day?), which makes the product complex – and its administration expensive (premium rating, loss indemnification)
- Further, cost of capital must be very low, product must diversify very well (but how?), otherwise sales are limited to a niche product

Wrap up

- If the pandemic loss potential has nearly the **magnitude** of the yearly world **GDP**, **diversification** can only work **over time**
– which is hard for states and almost impossible for private enterprises
- If the return period of severe pandemics is 100+ years, probably **no vehicle** in the financial services market can smooth this over time

Alternative cover

- If the return period is 10-20 years, the adequate premium may be 10% RoL, which appears excessive and will be hard to sell
- Here, **smart saving** could work better than insurance, being less specific, but easier and cheaper to handle: a kind of **equalization reserve**

Equalization reserve: example

- Old standard for **insurers** in e.g. Germany
- Principle: save some money in normal years, get it back in very bad years, according to pre-set rules
- Based on 15-30 year history, maximum level
- Effects: lowers profit, defers taxes, strongly smooths economic results

Fans say it's the cheapest reinsurance insurers can get

So, why not adapt it for **insureds**?

Thanks

Selected literature on insurability of pandemics:
see next slide.

For the “political” side of risk transfer in general:
see also my paper on SSRN:

*Mitigation and transfer of risks: prevention,
insurance, and limited liability*

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Literature

AAE (2021) *Insurability and pandemic (or more generally, shared resilience) risk. AAE position paper*. Actuarial Association of Europe (AAE), June 2021.

Hartwig R and Gordon R (2020) *Uninsurability of Mass Market Business Continuity Risks from Viral Pandemics*. American Property Casualty Insurance Association, June 2020.

Hartwig R, Niehaus G, and Qiu J (2020) Insurance for economic losses caused by pandemics. *The Geneva Risk and Insurance Review*, 45(2):134-170, September 2020.