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Coronavirus: The economic effects of epidemics and pandemics

Alexander Sikora-Sickl



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It comes as a surprise that despite the crucial nature of the issue only a few reliable studies have been produced for this field of social medicine so far. To facilitate a better understanding of the subject, we have gone through relevant recent (2006 to 2019) papers in order for us to consolidate our assessment of the effects of pandemics, especially on global economic performance.

The specific studies analyse and compare the effects of epidemics (i.e. a significant regional increase of new infections in one region) to those of pandemics (cross-border and cross-continental spreading of an infectious disease) on the basis of:

- **Historical case studies**
- **Macroeconomic models and simulation of shocks**
- **Simulations (e.g. actuarial models) of possible courses and effects of the disease**

Most studies rely on historical case studies so as to calibrate the parameters of the respective models. Whereas macroeconomic models are primarily aimed at quantifying the effects of rapidly spreading infectious diseases, actuarial mathematics links the expected effects to probabilities. The idea is to forecast the probability of pandemics and their socio-economic costs.

What do the aforementioned studies suggest will happen?

The various studies and their models forecast relatively limited economic effects. On average, experts envisage a decline of global economic output (as measured by GDP) of 0.6% or USD 500bn. At the same time, the consensus expects a V-shaped recovery of the economy in the coming three to twelve months. That being said, significant regional differences are likely, especially in terms of the effects on the GDP of the first world vs. developing economies.

The most negative estimate of a study with regard to an assumed outbreak of Ebola in Sierra Leone suggested a slump in GDP of 16% in this economy. This was due to the, relatively to industrialised states, deficient healthcare, the generally worse supply situation within the population, and the high population density in conjunction with a lack of hygiene (e.g. insufficient access to clean drinking water).

In a 2013 model, the World Bank set the probability of a global pandemic at 1% to 3%. This is very low, but in the event of a high rate of infection (like for the Spanish flu), the costs for the global economy could amount to as much as USD 3,000bn.

Coronavirus – Infections

Source: WHO, edited by Erste AM; Infections China (blue), Infections Worldwide (orange); 26.02.2020

The calculations of the world bank

In view of this volume, the World Bank warns that the community of states has set insufficient preventive measures. According to its model, USD 3.7bn would have to be invested annually in preventive measures (especially in developing countries) for the cost caused by infectious diseases to fall by USD 37bn.

Generally speaking, the economic cost is biggest in those sectors where personal client contact takes place and where consumption cannot be suspended. This includes numerous segments of the service sector, especially tourism and the leisure industry. [Companies with complex and global supply chains that would be disrupted by the fight against a pandemic would also be particularly hard hit.](#)

Costs of an epidemic/pandemic

In terms of countries, those economies would be worst affected that strongly depended on the input factor labour. This means that developing countries would feel the costs of an epidemic or pandemic more severely than developed countries, given that their economy is less significantly automatised and digitised.

The degree of interconnectedness of regions is another important influencing factor for the spreading of an infectious disease and costs associated with it.

For example, a virus will spread faster in open economies such as Europe than, say, in the Middle East, where the individual countries are more isolated from each other.

An important element with regard to the costs generated by pandemics is human behaviour. Fear of contagion can be both detrimental to containment and produce immediate negative economic effects. This starts at the sociology of a quarantine situation, which people will try to escape in order to avoid possible contagion and thus carry the virus with them.

The sociology of quarantine

The literature also suggests that many people resort to self-quarantine so as to avoid contracting a virus. This self-quarantine includes the avoidance of places that are associated with a heightened risk of contagion (e.g. events, restaurants, cinemas, travelling etc.), which has a negative effect on consumption.

As previous pandemics have shown, in particularly affected areas people also stay away from work so as to avoid infection. According to research, such forms of voluntarily taken protective measures account for about 60% of the knock-on costs of a pandemic.

By contrast, sick days at work make up only about 28% of total costs.

The framework has changed for the worse

Although the studies we analysed are relatively young, one can legitimately ask whether the assumptions made in the various models are still valid, or whether the framework has maybe changed drastically in recent years.

In other words: do the results of the studies apply to the spreading of coronavirus in 2020?

The most significant issue is the global increase in traffic over recent decades. This includes both the transportation of cargo and people travelling. Also, supply chains have become significantly more globalised in recent years. All of that has drastically increased the level of integration in the global economy.

After all, the economic environment is more challenging than many a previous pandemic. After several years of strong growth, economic growth is currently in a phase of slowdown. At the same time, the share of China and South East Asia in total global economic output has increased substantially in the recent ten years.

A pandemic can have a major impact on the global economy today

A pandemic, not the least one that originated in China, could therefore come with a stronger effect on the global economy in such an environment than previous pandemics. In addition, the central banks have little room to manoeuvre to thwart possible negative consequences effectively amid the current phase of low interest rates.

A study from 2006 for example makes the recommendation to the ECB to cut its key-lending rates by 100bps as first countermeasure.

Such a step would not be possible nowadays. Social media, having gained a strong foothold in our society in the recent ten years, are another important aspect. They can amplify the panic and thus further push up the costs of a pandemic. While the odd younger study does point out this effect, it has not entered the models yet.

China's share in the global economy

Source: IMF Global production; / Global trade / Global oil demand / Global metal demand / global tourism spending

Initial insights into the coronavirus do not suggest a severe course

While no final conclusions have been reached about the rampant coronavirus due to the early stages we are in, the progress so far allows for a few initial learning points. The transmission rate of the coronavirus seems to be equal to that of a cold or an aggressive form of influenza. Here, one infected person passes on the virus to two other people. In terms of the mortality rate, the Covid-19 virus ranks slightly higher than the common influenza virus, but clearly below the SARS virus. Also, the demographic groups of people above 70 and above 80 years old seem to be affected at disproportionately high rates by a severe course of the disease, whereas the age group of employable people (especially 20 to 60) shows a milder development of the disease.

Coronavirus – new infections

Change in infections in %. The explosive dynamic is slowing down; new infections (blue); change in % (orange) (Source: WHO; edited by Erste AM)

The course of new infections in China also suggests that the time frame of the pandemic should roughly follow what we have seen in other pandemics (Spanish flu, swine flu, common flu etc.). In those cases, the pandemic reached its pinnacle about three months in.

In light of these facts and on the basis of various studies on this topic, current knowledge would suggest that, while the global spreading of the coronavirus will have an effect on the global economy, it will not be overly severe and should be levelled in about twelve month's time.

Our dossier on coronavirus with analyses: <https://blog.en.erste-am.com/dossier/coronavirus/>

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Alexander Sikora-Sickl

Head of Global Strategies & Research, Erste Asset Management