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The Risk of the COVID-19 Pandemic and Its Influence on the Business Insurance Market in the Medium- and Long-Term Horizon

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Abstract: The aim of this article is to identify the risk and the likelihood of potential consequences of the COVID-19 pandemic on the business insurance market in the medium- and long-term horizon. The first section of this elaboration presents the theoretical approach connected with the nature of the pandemic. The second section outlines the presentation of the COVID-19 measurement rules and the third describes the potential effects of COVID-19 on the insurance market. Contrary to other elaborations on this topic which have appeared so far (these are mostly reports describing the financial market in short- and long-term horizons), here, the authors present the medium-term horizon as well. The possible consequences of COVID-19 are outlined both in relation to the insurance company client, e.g., change in the amount of the insurance premium under the insurance agreement, as well as in relation to the insurer, e.g., appearance of innovative and competitive offers (Trott's concept Special attention has been paid to the way in which the insurer's strategy (scenario analysis) may be used to build resilience to other crises as well as to the planning of emergency solutions. Actual events confirm the hypothesis that changes in the business insurance market dominated the losses in the aftermath of the pandemic.

Keywords: COVID-19; pandemic risk; insurance; crisis

1. Introduction

The world significantly changed in both its social and economic aspects at the beginning of the 21st century. It happened as a result of the global pandemic, which was identified as a coronavirus 2. The virus is connected with acute respiratory distress syndrome, or SARS-CoV-2, called Coronavirus Disease-19, or COVID-19 (Qiu et al. 2020). The beginnings of this pandemic were reported in the Chinese city of Wuhan in 2019. While spreading around the world, the pandemic caused, on the one hand, huge economic losses, and on the other, human tragedy. Despite the disputes between the insurers and the insured concerning some of the insurance agreements, and especially business interruption insurance, the consequences of the financial impact of COVID-19 have been partially mitigated thanks to the insurance contracts which have been signed and thanks to government support. Such insurance covers, e.g., payment of compensation due to death in order to support families of those who died as a result of COVID-19, as well as the medical expenses and hospitalisation costs and financial support on account of loss of income from economic activities (Przybytniowski 2021; Grzebieniak 2021). Scientists dealing with COVID-19's spread (Fong et al. 2020) and its influence on the world economy and financial markets claim that in a way, society will not return back to life before the pandemic. Experience

underlines the meaning of a sound framework of insurance supervisory authority in ensuring that insurance companies will provide financial support during times of risk and that they will fulfil their obligations to the insured even in extreme cases. As a result, financial markets, including the insurance ones, as well as potential customers will react more decisively to future threats, including the risk of an epidemic, meaning that security measures and limitations will be introduced faster. According to van Drop and Barrett from Sanger Institute in Hinxton and Young from Warwick University, humans may have contact with various diseases in their lives, and as a result, there is an element of threat, with the hope to bring them down to the same level as that caused by a flu (CDC 2019). Nevertheless, this situation forces the insurance supervisory authorities to look into the legal basis. It also gives the opportunity to ensure that precautionary approaches included in the legal regulations are fulfilled.

The main aim of this elaboration is to understand the very essence of the COVID-19 pandemic's risks and its potential outcomes, taking into consideration capital requirements and the influence of the risk on the business insurance market in the medium- and long-term horizon.[1] The theoretical and empirical analysis was conducted in relation to the pandemic risks, taking into consideration mainly the risk of death resulting from the pandemic scenario. The analysis was centred around the existing studies as well as an overview of the existing literature about the risk management and presenting the problem of COVID-19. It must be remembered that the risks of the COVID-19 pandemic influence other random events, such as business interruption insurance, organisation of mass events, tourism, and financial insurance.

The presented literature overview, together with the first research concerning the business insurance market, should direct the debate of the scientific community and the management of the insurance companies to the problem of the COVID-19 pandemic.

Taking into consideration the structure of this elaboration, the authors reviewed the financial situation of insurance companies through the prism of capital requirements connected with the pandemic risk in medium- and long-term horizons. The financial situation was reviewed in accordance with the standard methods in a chosen regulatory framework referring to the business insurance market. The next issue which has been dealt with is the one concerning the existing definitions, the scope of capital requirements, and measurement indicators of COVID-19, and it has been dealt with through the use of existing documentation together with the source description. The third section deals with the influence of the COVID-19 pandemic risk on the potential social and economic threats, referring to functioning of the business insurance market and implications connected with capital requirements' design policy in the medium and long term. Once again, this was carried out on the basis of the existing literature and research on the subject.

2. COVID-19 Pandemic Risk Measures for Business Insurance Market

2.1. Pandemic Risk

Global Monitoring Exercises (GME) are a part of the International Association of Insurance Supervisors (IAIS) framework, which aims to evaluate the changes in the global insurance market and the possible appearance of systemic risk in the insurance sector. In 2020, GME was reorganised in order to evaluate the influence of the COVID-19 pandemic on the global insurance market. The evaluation covered the 60 most prominent international insurers from 18 countries, as well as contributions from insurance supervisory institutions from 39 countries (European Parliament and European Council 2009).

Defining the existing phenomenon and the very term of pandemic risk is crucial while specifying the amount of insurers' capital which they should have as financial security to cover financial losses resulting from the pandemic event, as well as while taking into account the characteristic features of an insurance service. The fact that today there is not a scientifically and globally accepted definition of a pandemic, although the World Health Organisation can declare a pandemic, is very surprising.

The quick spread of the COVID-19 virus fits the definition of pandemic risk which was presented by Dabla-Norris and Gündüz (Dabla-Norris and Gündüz 2012) in their elaboration. They described this phenomenon as an administrative shock and not as a strictly economic one.

This is supported by a definition provided by Wojtyna (Wojtyna 2020). He claims that pandemic risk is a strong, varied in different sectors, slowdown in business activity in relation to a strong, poorly recognisable epidemic shock and administrative decisions resulting from it.

On the other hand, while taking into consideration the characteristics of insurance services (Przybytniowski 2019), pandemic risk may be defined through its insurance, which "equals the sum of insurance premium" and becomes measurable, but at the same time certain losses must occur (Śliwiński 2002). Bearing in mind the definition of fortuitous events, it must be remembered that if it does not occur, then payment of compensation or benefit does not take place. Jonas (Jonas 2013) defines pandemic risk as the likelihood of a pandemic with a particular "severity", measured by the number of deaths caused by the pandemic or by the expected value of influence the infection may have on the economy, human health, and society. Fan, Jamison, and Summers (Fan et al. 2018) enumerate the characteristics which must appear to talk about the pandemic risk. Those include costs directly connected with preparing for the pandemic or repairing its consequences, losses connected with the actual number of deaths caused by the pandemic, as well as the financial losses connected with it, the probability of pandemic occurrence, and its severity. Providing a definition of pandemic risk and the characteristics of this risk is important from the point of view of insurance, both Sector I and Sector II, especially when it comes to the appearance of new general terms and conditions (GTC). Merriam-Webster dictionary defines pandemic risk as an event which takes place on a large geographical scale (such as continents or many countries) and usually affects a considerable portion of humanity (Pandemic n.d.). This definition is not precise enough to determine legal capital requirements. However, according to the research team led by Singer (Singer et al. 2021), different quantitative definitions of pandemic risk used in epidemiological measures (which will be covered later in this elaboration) provide different estimations concerning the probability of pandemic occurrence. Bearing in mind regulations applied for capital requirements, different definitions of pandemic may lead to various levels of capital requirements. Thus, it is important to clearly define what is and what is not taken into account while establishing requirements aiming at pandemic risk management. Table 1 shows various frameworks which regulate capital referring to pandemic risk. These frameworks cannot be directly linked with the risk of the COVID-19 pandemic as they refer to catastrophic risk or extreme events and some are connected with life insurance, and at the same time, they would also be connected with pandemic situations. Definitions presented in Table 1 are broad and include common factors referring to unfavourable and extreme random events which have an influence on an insurance contract, and which may influence insurance companies' solvency in a negative way (Financial Services Board 2015). Some of the presented definitions go beyond the pandemic and include other extreme events, such as terrorist attack, nuclear disaster, or natural disaster.

Definitions presented in Table 1 reflect catastrophic events or extreme ones, which are characterised as "rare". This corresponds to the calibration level of particular legal frameworks and should cover not only the risk of mortality but also other risk categories such as capital market risk or financial and economic risk. In practice, it seems that there is no place for such definitions because of the challenges connected with calibration (e.g., historical data used to establish the level of capital requirements usually do not reflect the risk event, for example, the economic one which resulted from the previous pandemic), as well as because of different approaches to legal regulations.

Table 1. Comparison of risk categories with the COVID-19 pandemic.

Chosen Regulatory Framework	Year	Specification	Definition
Australia	2012	Exceptional occurence	Takes into account the impact of single individual events which may happen within a year following the reporting date, causing many claims. Those events may include: terrorist attacks, natural disasters, and pandemics, which may cause death and morbidity
Canada	2021	Catastrophic risk	Risk resulting from an unfavourable single event on a large scale
European Union (Solvency II)	2009	Catastrophic risk-connected with death	Risk of a loss or unfavourable changes of the value of liabilities the policy covers, resulting from wrong assumptions relating to premium amounts and provisioning for extreme or irregular events
IAIS (Standards of required capital for the global market)	2019	Catastrophic risk	Risk connected with unfavourable changes in capital requirements value connected with unexpected low-frequency random events of high severity
Mexico	2021	Extreme event	Risk resulting from insurance obligations taking into account extreme events in life insurance
South Africa	2018	Catastrophic risk connected with death	Risk of unfavourable change of the value of liabilities or risk of loss resulting from irregular or extreme events, the results of which are not properly included in elements of insurable risks in life insurance

Source: Author's own elaboration based on: Australian Prudential Regulatory Authority; Financial Curator; European Parliament and The Council of Europe; International Association of Insurance Supervisors; Comisión Nacional de Segurosy Fianzas; Prudential Authority, South African Reserve Bank.

2.2. Transmission Channels

Taking into consideration deliberations connected to "pandemic risk", as well as the literature on the subject (Carlsson-Szlezak et al. 2020a, 2020b; Baldwin 2020), three main transmission channels may be defined[2].

1. Those having a direct influence on the supply of the insurance products. A prolonged pandemic accompanied by social distancing may directly reduce customers' confidence in the insurance market by keeping them locked up. As a result of that, it may affect the trust for the insurers in the medium and long term, which may in turn influence their financial results.
2. Those having an indirect influence on the insurance market, and in turn the real economy, due to a gradual decline of household property and getting rid of savings because of increasing expenses for current needs (standing charges increase). Withdrawal and termination of insurance contracts, resignation from signing new agreements, or no renewal of the previous ones may appear as a result.
3. Those influencing the disruption on the customers' side as the COVID-19 pandemic causes limitations or even suspension in offering some insurance products in the medium or long term due to gradual introduction of or prolonging lockdowns. This may result in lowering the financial results of insurance companies.

Thus, it may be stated that the so-called shock connected with the expectations on both the insurers' and customers' side is gradually progressing, and causes the "wait and see" attitude. On the demand side, one may notice reluctance to the insurers, which in turn leads to uncertainty and a lower sense of security connected with declining confidence not only in insurers but also in the whole financial market.

Gourinchas (Gourinchas 2020), in his elaboration, stated that "modern economy is characterised by a complex network which connects employees, entrepreneurs, contractors, customers and financial intermediaries. Everyone serves a different function". Whereas Baldwin (Baldwin 2020), while describing COVID-19's influence on the income flow in

households, claims that households will have limited incomes which will lead to limiting both savings and consumption levels.

2.3. Measurement of COVID-19 Pandemic Threats

Before reviewing the potential economic influence for the business insurance market in the medium and long term, it is important to contextualise appropriate information connected with COVID-19. Without such information, it will not be possible to correctly evaluate and understand the COVID-19 pandemic's influence on the market in question. Current and reliable information allows the scientists to analyse how the pandemic spreads (Ritchie et al. 2020) and what risk of investment it carries in the medium and long term. Moreover, it provides information on whether the decisions made by the insurance companies' management are effective or not.

As a result, to illustrate the social and economic situation of society, three basic indicators should be taken into account (Ritchie et al. 2020):

(1)   Total number of COVID-19 tests administered,
(2)   The number of diagnosed and confirmed cases of COVID-19,
(3)   The number of confirmed cases of COVID-19-related deaths.

For research purposes, all the data and information are transmitted and collected by the Center for Systems Science and Engineering at John Hopkins University, MD, USA. On the basis of these data, the case fatality rate (CFR) can be calculated as the number of confirmed deaths divided by the number of confirmed cases (John Hopkins University 2020). However, the credibility of this rate depends on additional factors, e.g., age of the population.

$$\text{CFR} = \frac{\text{number of death cases during } n \text{ period}}{\text{number of diagnosed cases during } n \text{ period}} \times k \tag{1}$$

where:

CFR—case fatality rate,
n—specific time period,
k—conversion factor, which allows to express the mortality rate by the number of death cases per a certain number of people who suffer from COVID-19, for example 1000 people.

As well as the case fatality rate, there is also the infection fatality rate (IFR), which provides information about the percentage of people who were infected with COVID-19 and died as a result of it. In this case, it is the percentage of people who were infected with COVID-19 and died because of it who had not been diagnosed earlier. It can be expressed as the relation between the total number of deaths caused by COVID-19 in a particular period of time to the total number of diagnosed cases in a particular period of time:

$$\text{IFR} = \frac{\text{total number of deaths during } n \text{ period}}{\text{total number of diagnosed cases during } n \text{ period}} \tag{2}$$

where:

IFR—infection fatality rate, which is the percentage of people infected with COVID-19 who died because of it,
n—specific time period, e.g., in a given month in a given area.

To calculate this rate, one needs two numbers: the total number of people suffering[3] from COVID-19 and the total number of deaths caused by this disease. Unfortunately, this rate does not fully meet the expectations of the researchers analysing the cases of COVID-19 as it is difficult to establish the actual number of people who became ill. What is more, many people did not have any symptoms or were not tested, which makes this rate unreliable. Therefore, according to Roser (Ritchie et al. 2020), the numbers from the above-mentioned rates should not be adopted according to the nominal value, as those rates are based only on confirmed cases. The proof confirming such thesis is the latest research conducted by Silverman (Silverman et al. 2020), who claims that there is a big difference in measurements

connected with COVID-19 cases. He believes that the ILI (Infrastructure Leakage Index) should be applied in this case. He used data concerning infected people who have similar symptoms and the number of actual confirmed cases of COVID-19:

$$\text{ILI} = \frac{\text{Vstart during } n \text{ period}}{\text{UARL during } n \text{ period}} \qquad (3)$$

where:

ILI—the actual number of people diagnosed with COVID-19,
Vstart—the actual number of people who fell ill with COVID-19 (people who have or have not been tested but most probably suffered from COVID-19, e.g., those in quarantine),
UARL—unavoidable[4] number of people who will fall ill with COVID-19,
n—specific time period, e.g., in a given month in a given area.

The author of the elaboration claims that the ILI rate may be a useful predictor, especially in medium-term research concerning COVID-19 cases for insurance companies, both Sector I and Sector II. It may significantly influence faster modification and adaptation of insurance products according to Trott's idea (Trott 2017). The reason for this statement is that between March and April of the current year, the number of people who became ill with COVID-19 as well as the number of people in quarantine has escalated. It may result from the fact that some may not have been diagnosed properly as being infected with this particular virus, e.g., people who do not have any symptoms or who are not tested.

3. Discussion

3.1. Impact of the COVID-19 Pandemic on the Stock Market Situation

The risk of COVID-19's influence on the financial situation of the insurance market in the background of various business sectors must be seen from the angle of the situation on the stock market (Jaworski 2021; Machmuddah et al. 2020).

Since the beginning of the COVID-19 pandemic, the drops in European countries' stock market indexes: Germany (DAX—26.40%), Italy (FTSE MIB—27.30%), France (CAC 40—26.40%), Greece (ATC—28.80%), and Great Britain (FTSA 100—21.40%) (Statista 2020), were the most visible. Index MSCI Europe has dropped by 35% since the information about the COVID-19 pandemic appeared. However, since that time, by the end of 2020 it had already increased by 24%. Despite that, as of 31 December 2020, about 6.5% was still missing from the stock exchange figures compared to before the pandemic outbreak.

While looking at MSCI Europe index companies, it can be seen that the beta factor—the level of correlation between the return of investment in stocks of a given company and a hypothetical investment in the index of the entire stock market—in many sectors has risen significantly. The variability of the rate of return has risen significantly in sectors traditionally considered to be less risky. Especially in the real estate sector, there has been a change of about 60%, from 0.59 to 0.93. Considerable growth is also visible in the energy sector, from 1.21 to 1.54. However, the beta factor has slightly fallen in the IT sector and the financial sector, including the insurance one, from 1.33 to 1.21 and from 1.21 to 1.32, respectively (Table 2).

Over the period in question, the forecast weighted average net income, which is a part of the index, declined by almost 38%. The most significant drops were visible in the energy sector, property sector, financial sector (including insurance), and luxury goods (declined by: 102% (which indicates projected net loss), 98%, 91.7%, and 78%, respectively), which could be expected during economic recession. At that time, the level of economic activity slowed down, demand for energy declined, and customers gave up on expenses or postponed them. On the contrary, the slightest change in profits could be noticed (surprisingly) in the healthcare system (declined by almost 4%).

Table 2. Beta factors of MSCI Europe index.

Specification	31 December 2019	31 December 2020
MSCI Europe	1.00	1.00
Healthcare	0.83	0.78
Media	0.58	0.75
Consumer goods	0.52	0.57
IT	1.33	1.21
Materials	1.30	1.11
Communication services	0.87	0.95
Industry	1.10	1.13
Finances (including insurance)	1.21	1.32
Luxury goods	1.13	1.18
Real estate	0.59	0.93
Energy	1.21	1.53

Source: compiled on the basis of (KPMG n.d.).

It should be noted that after the first information connected with COVID-19, which caused high drops on the world stock exchange, currently, it is difficult to find another stock market which has gained as much as NIKKEI Index (Tokyo stock exchange)[5]. This index noted a rate of return of about 28%, in comparison with 15% for American S&P500 and of hardly 1.5% for German DAX.

A similar situation occurred for other world stock exchanges, including the one in Poland. Currently, the Polish stock exchange is still attempting to cover the losses, and at the end of 2020, in comparison with the day the pandemic was announced, WIG had a loss of 10% and WIG20 of 13%. While considering domestic stock indexes, it should be underlined that the insurance industry, when compared to other industries, has been moderately affected. The normalised index of the insurance industry had decreased by 22.4% to 100 as of 31 December 2019 on the Warsaw stock exchange market during the initial period of the pandemic (Mckinsey 2020). During that period, the biggest declines were observed in: the aviation industry—55.1% and the petrochemical industry—41.0%, the banking industry declined by 37.80%, and the smallest decline was in the pharmacological industry—0.5%. According to the quoted report, at the end of December 2020, valuation of insurance companies in relation to February 2020 had decreased by 5%, while bank valuation had decreased by 8% (Mckinsey 2020).

3.2. Capital Requirements for Insurance Companies during COVID-19 Pandemic

Capital regulatory frameworks and factors characterising risk prevention, e.g., mortality resulting from COVID-19 (COVID-19 risk measurement), are described in Table 3. These frameworks are usually expressed as absolute mortality rate growth while taking out insurance policies. In reality, insurance companies use them to calculate the amounts of insurance funds that need to be put aside to pay the unexpectedly higher benefits on account of death caused by the COVID-19 pandemic.

Capital requirements presented in Table 3 are used in extreme conditions to determine the mortality rate which results from the extreme event of the COVID-19 pandemic. According to IAIS (International Association of Insurance Supervisors (IAIS) 2018), extreme conditions may be defined as a computational technique of capital requirements consisting in charging the balance sheet of the insurer by using particular factors connected with extreme conditions. In practice, it is an overestimation of technical provisions or insurance contracts with the use of more unfavourable mortality rates described in Table 3 for the period of one year, consecutive to the day of making the report.

Table 3. Capital requirements arising from mortality risk during the COVID-19 pandemic.

Chosen Capital Regulatory Framework	Category of Insurance Risk	Predicted Growth in Mortality Rate Per 1000 Insured People
Australia	Insurance risk included (the risk appears [1])	+0.5 for two years following the date of the report
Canada	Mortality risk included [2]	+1 to 2 (depending on the geographical region), from one year to two since the date of the report
European Union (Solvency II)	Risk connected with death—risk of death as a result of a catastrophe [3]	+1.5 for a year since the date of the report
IAIS (Standards of required capital for the global market)	Risk connected with death—risk of death as a result of a catastrophe [3]	+1 for a year since the date of the report
Mexico	Risk connected with death	+0.5 for every year since the date of the report
South Africa	Risk connected with death [4]	On the basis of a particular pattern [5] for every of the three consecutive months following the date of reporting the infection

Legend: [1] Apart from the mortality rate, there is also one more indicator, namely the duration of the illness. [2] In case of the insurance contracts including mortality risk as a result of an accident and death; moreover, the insurance contract is extended by the stress factor connected with death—extra 20%. [3] In cases where an insurance company meets the criteria of proportionality, it can use a simplified calculation of mortality risk as a result of catastrophe, calculated roughly as 0.15% of the predicted payment on account of death minus the sum maintained as a reserve. [4] Apart from underlining the mortality rate, capital requirements on account of death risk also require to determine the disability and morbidity rates. [5] Supplement in monthly mortality rates is calculated as: $\frac{4 \times \min[\max(0.2 \times \text{ death rate per 1000 citizens} + 0.105, 0.125), 03}{1.000}$. Source: elaboration based on (Yong 2021).

For example, assuming that mortality of a 45-year-old woman is 0.0015, an insurance company applying extreme conditions specified by IAIS (Global Insurance Capital Standard (ICS) should apply the mortality rate of 0.0025 (calculated as 0.0015 + 0.001) in the year consecutive to the day of making the report and present the balance taking account of possible stress. With regard to different conditions, higher mortality rates may lead to higher payment of compensations due to death. It will lead to increases in the technical provisions value or insurance contracts to satisfy growing claims due to life insurance contracts in case of COVID-19 pandemic risk.

3.3. COVID-19: Potential Social and Economic Consequences for the Insurance Market in the Medium- and Long-Term Horizon

The COVID-19 pandemic influences insurance companies' activity both in a direct way due to health changes (e.g., increase of incidence of COVID-19 and mortality), and in an indirect way due to financial shocks (e.g., lower stock prices, higher credit spreads). Insurance supervision (KNF—Polish Financial Supervision Authority) has taken a flexible approach to prudential regulations (доступу 2020).

Sector I insurance companies mostly have long-term liabilities, and therefore their risk is exposed to turbulence in the markets and spread over time because of the duration of these liabilities (Chodorow-Reich et al. 2020). As a result, during the pandemic, risks connected with the payment of life insurance benefits are growing faster in relation to compensations in case of pensions.

Whereas when taking into account the insurance market Sector II, it is the insurer who ensures the protection from various property losses. Those losses are mostly fulfilled by annual contracts (medium-term contracts). As a result of COVID-19 pandemic risk, the likelihood of paying out higher liabilities in Sector II increased (which influences the asset share) in comparison to insurance companies in Sector I (Foley-Fisher et al. 2019). This is connected with the fact that in Sector II, in the medium term, there is a higher probability that they will be subjected to pandemic risk because of turbulence in the stock market (Paulson et al. 2014) than in Sector I.

The current crisis has caused cumulation in relation to losses incurred and accident losses on the insurance market, e.g., by cancellation or suspension of sporting events or business interruptions. It should be noted that this market has a very precise definition of a random event and insurance company responsibilities. Data from the Swiss Re Institute (Przybytniowski 2021; Swiss Re n.d.) show that in 2020, the world economy shrank by almost 3.9% GDP because of the COVID-19 pandemic, whereas global costs are estimated at about 12 billion USD. These phenomena have been confirmed in a report about the possibility to insure the COVID-19 pandemic risk by the Geneva Association (The Geneva Association 2021) and Sankt Gallen University (The Geneva Association 2021). The report points out that COVID-19 pandemic risk revealed huge gaps in the risks in the area of business continuity. It is believed that less than 1% of the estimated world GDP decline caused by the pandemic risk—about 4.5 billion USD in 2020—will be covered by the insurers. Moreover, it is stated that in order to compensate for the losses, the insurance companies will suffer because of the unpaid insurance premiums caused by business interruptions (which are about 30 billion USD a year). The insurers would have to collect this premium for 150 years in order to absorb the estimated 4.5 billion USD loss in the global production caused by COVID-19 pandemic risk (Przybytniowski 2021). Whereas, although the solvency ratio of individual insurers has not worsened, some insurance companies still incurred losses connected with operational risk (e.g., Swiss Re recorded net losses of about 878 million USD in 2020, where payments of benefits connected with the risk of death constituted about 24% of all the financial reserve and claims connected with the COVID-19 pandemic) (Przybytniowski 2021). Consequences which appeared as a result of the lockdowns led to a discussion about the insurance coverage scope, especially about whether the risks which appeared during and as a result of the COVID-19 pandemic are covered by the insurance. At the same time, it shows what challenges connected with proper qualification and evaluation of such risks the insurers face. The risk connected with the world business insurance market is generally perceived as lower than that in the case of banks, although most payments entail high costs of policies, overestimation of the risk of deaths, or unfavourable tax consequences (Paulson et al. 2014).

The real impact of claims paid by Sector II insurance companies and caused by the COVID-19 pandemic surprised the industry, switching the focus from assets to payment of liabilities (Autonomous 2020). There are two main reasons for this state of affairs (Michalski and Przybytniowski 2020):

(1) The interpretation of exceptions connected with pandemic risk in General Terms and Conditions (GTC) was questioned.
(2) Existing scenarios did not predict such a huge influence of activities connected with the restrictions.

Preliminary estimates put the risks of the COVID-19 pandemic on the level of a medium/large natural disaster in terms of possible claims (Autonomous 2020). According to Autonomous (Autonomous 2020): " . . . estimated amounts of insurance losses have changed from 'moderate hurricane', which is adequate to the top catastrophes from 2011 or 2017 (losses on the level of 100 billion USD) . . . with provisionally established losses in the range from 31 to 86 billion USD for COVID-19 . . . (which makes 1.3–3.6% of global (world) premiums)". Similar figures were presented by Willis Towers Watson (WTA) (Willis Towers Watson (WTW) 2020). Payments of compensations mainly in the field of insurance Sector II were estimated at a moderate level—in the range from 32 to 80 billion USD for Great Britain and USA markets.

On this level of the COVID-19 pandemic risk, the uncertainty range connected with the payment of compensations in the field of insurance Sector II is high—from the optimistic scenario (the level of 11 billion USD) to the least optimistic one (the level of 140 billion USD). The analysis of the estimated scenarios for the global market, in the medium- and long-term horizon, shows that they may result from, e.g., postponing, suspending, and cancelling sporting events, "freezing" of the tourist industry, or business interruptions. While putting those estimated loses in the context of data from Swiss Re (Swiss Re 2020),

it may be stated that losses caused by the COVID-19 pandemic will equal those caused by a natural disaster—at a level of 144 billion USD. This amount is comparable to the two worst years—hurricanes from 2017: Harvey, Irma, and Maria, and the earthquakes from 2011: Japan and New Zealand.

In Poland, the COVID-19 pandemic's influence on the insurance market was mostly noticeable in loss ratio reductions. Since the lockdown was announced, there has been a loss ratio decline to nearly 50% in compulsory motor insurance, while this ratio was nearly 70% before the pandemic began (PIU n.d.). The reasons for limiting the number of reported insurance claims during the first period of the pandemic must be sought. Moreover, loss ratio improvement should also be sought to reduce the value of average damage in the aftermath of the introduced lockdowns. While observing group 3 (AC), the loss ratio fall decreased to 30%, which is a result of a slight increase of the value of average damage due to a reduction in the number of reported accidents during the pandemic (PIU n.d.).

4. Conclusions

The COVID-19 pandemic crisis has shown that insurers' mortality risk exposure connected with COVID-19 goes beyond mortality. Regulatory frameworks, though not necessarily through capital requirements, may consider encouraging insurers to deal with other kinds of risks, which may result from future pandemics. Those may include increased credit risk or operational risk with their higher interdependencies.

According to the conducted analysis, basic threats which can be observed in the insurance market are:

1. Pressure to change the amount of insurance premiums.
2. Capital requirements frameworks should work first and foremost as an early warning tool which may be used by the insurance supervisory authorities to evaluate how the insurance companies fulfil obligations to their clients in case of unfavourable scenarios connected with COVID-19 pandemic risk.
3. Proper determination of the level of technical provisions.
4. Deteriorating economic conditions.

It should be noted that voluntary insurance, especially individual insurance, is treated by the customers as products of a "second-rate" category in their insurance portfolio. During the current crisis, insurers may expect a temporary contraction in demand for this type of contract, especially in the short- or medium-term horizon. During the COVID-19 pandemic, customers have noticed different needs which make them feel safer when it comes to their health.

The current crisis, as we observed, may be a new beginning for the insurance companies' management, e.g., by changing the scope of protection in health insurance, life insurance, or remote working.

Capital requirements is only one of the tools used to supervise and at the same time evaluate future insurance companies' solvency. Capital requirements referring to insurers should take into account other forms of protection, e.g., own risk and solvency assessment (ORSA), in accordance with the provisions of art. 45 directive 2009/138/WE[6].

Apart from the threats, the COVID-19 pandemic and the accompanying sense of danger may create an opportunity for an insurance market and solvency ratio development by:

1. Increasing customers' awareness (usefulness of classical protection insurance).
2. Extending the range of products by a detailed definition of pandemic risk in GTC (General Terms and Conditions).
3. Simplifying procedures concerning concluding insurance contracts as well as claims' settlement.
4. Increasing the demand for new technological and innovative solutions (Pearson's concept) (Trott 2017).

It should be underlined that the COVID-19 pandemic and the accompanying crisis have become a challenge and, at the same time, a catalyst for processes which have already

started in the Polish and the world economy. Concepts such as pandemic risk, remote working, and digitalisation have become important determinants of the fourth industrial revolution, and in the face of the COVID-19 pandemic took on a new, more demanding meaning, also for the insurance market. Medium- and long-term changes, challenges, and consequences will still pose a challenge and will be a large unknown for many industries.

Notes

1   By medium-term horizon, the authors refer to 12 months (the duration of one-year contracts refers mainly to property insurance), whereas long-term horizon is a period over 12 months (long and whole life insurance contracts refer mainly to life insurance).

2   A fiscal response was necessary in order to improve the economic situation, both on a global scale and in individual countries. To stop the disease from spreading and to save the economy, together with the work places the governments all over the world spent almost 12 billion USD, which makes up almost 12% of the world GDP (data from: International Monetary Fund (IMF), Fiscal Monitor: Policies for the Recovery, Washington, October 2020). In the countries from Central Europe, it was about 175 million USD, which makes up almost 10% of their GDP.

3   According to the Main Sanitary Inspectorate, clinical criteria, an infected case of COVID-19 (definition from 31 October 2020) should be understood as a person who has at least one of the following symptoms: cough, fever, breathlessness, loss of sense of smell which appeared suddenly, or taste perversion which appeared suddenly. Moreover, while defining COVID-19 infection, the criteria of diagnostic imagining, laboratory diagnosis, as well as epidemiological diagnosis should be applied. While defining COVID-19 cases, epidemiological surveillance also takes into consideration possible cases, probable cases, and confirmed cases (Government Legislative Centre: www.gof.pl: accessed on 24 October 2021).

4   This is the number of people who will fall ill with COVID-19 according to the conducted research and adopted research methods.

5   At that time, Japanese GDP increased by about 1.1% per year, and the economy fell into a deflationary spiral.

6   The supervisory authority of the host country should make sure that the insurance company from the third country carries out, in relation to the branch of the company operation, at least once a year, their own risk and solvency assessment (European Insurance and Occupational Pensions Authority 2010).

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