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THE IMPACT OF GLOBAL CRISES ON THE BUSINESS OF INSURANCE COMPANIES

International Business

Bachelor's thesis

Turku School of Economics

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Abstract

Global crises have become more common and pose ongoing challenges for risk management professionals, which insurers are. The whole insurance industry is based on sharing risks with individuals, companies and governments, whereby an uncertain and interdependent world can cause large, sudden losses and create systemic vulnerabilities. The purpose of the study is to examine the impact of global crises such as climate change, geopolitical conflicts and pandemics (COVID-19) on the operating environment of insurance companies. Additionally, the study examines the changes caused by these crises to the business of insurers.

The study is conducted as a literature review based on academic articles and books, industry reports and institutional reports. The academic discussion particularly emphasizes effective risk management, uncertainty tolerance and industry regulations, which together affect how crises can be controlled and managed. It is also essential to note that modern crises can generate spillover effects, resulting in unexpected operational and financial consequences. Crises particularly challenge risk modeling and risk-taking, as mapping conscious risk is more challenging due to the scale of crises.

The conclusions regarding the impact of global crises on business have led to multiple new developments, as they affect several areas simultaneously, including operations, underwriting, claims, and investment activities. This has also increased the overall complexity of the industry. As a result, technology is increasingly being utilized, risk management strategies are being monitored and products are being renewed. In addition, cooperation between various public and private entities has also become an important aspect of profitable business, as systematic, global crises challenge the limits of insurability and force private insurance companies to reconsider commercially viable insurances.

Keywords: Insurance industry, global crises, risk management, risk modelling, uncertainty, climate change, geopolitical conflict, pandemics

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Tiivistelmä

Globaalit kriisit ovat yleistyneet ja aiheuttavat jatkuvia haasteita riskienhallinnan ammattilaisille, joita vakuutusyhtiöt ovat. Koko vakuutusala perustuu riskien jakamiseen yksilöiden, yritysten ja valtioiden välillä, joihin epävarma ja toisistaan riippuvainen maailma voi aiheuttaa suuria, äkillisiä tappioita ja luoda systeemisiä haavoittuvuuksia. Tutkimuksen tarkoituksena on tarkastella globaalien kriisien, kuten ilmastonmuutoksen, geopoliittisten konfliktien ja pandemioiden (COVID-19), vaikutuksia vakuutusyhtiöiden toimintaympäristöön. Lisäksi tutkimus tarkastelee näiden kriisien aiheuttamia muutoksia vakuutusyhtiöiden liiketoiminnassa.

Tutkimus toteutetaan kirjallisuuskatsauksena, joka perustuu akateemisiin artikkeleihin ja kirjoihin, toimialaraportteihin sekä institutionaalsiin raportteihin. Akateeminen keskustelu korostaa erityisesti tehokasta riskienhallintaa, epävarmuuden sietokykyä ja toimialasääntelyä, jotka yhdessä vaikuttavat siihen, miten kriisejä voidaan hallita ja kontrolloida. On myös olennaista huomioida, että modernit kriisit voivat synnyttää heijastusvaikutuksia, jotka johtavat odottamattomiin operatiivisiin ja taloudellisiin seurauksiin. Kriisit haastavat erityisesti riskimallinnusta ja riskinottoa, sillä tietoisien riskien kartoittaminen on vaikeampaa kriisien laajuuden vuoksi.

Johtopäätökset globaalien kriisien vaikutuksista liiketoimintaan ovat johtaneet useisiin kehityskulkuihin, sillä ne vaikuttavat samanaikaisesti useisiin osa-alueisiin, kuten liiketoimintaan, vakuutusten myöntämiseen, korvauskäsittelyyn ja sijoitustoimintaan. Tämä on lisännyt toimialan kokonaismonimutkaisuutta. Tämän seurauksena teknologiaa hyödynnetään yhä enemmän, riskienhallintastrategioita seurataan ja tuotteita uudistetaan jatkuvasti. Lisäksi yhteistyö eri julkisten ja yksityisten toimijoiden välillä on tullut tärkeäksi kannattavan liiketoiminnan osaksi, sillä järjestelmälliset globaalit kriisit haastavat vakuutettavuuden rajat ja pakottavat yksityiset vakuutusyhtiöt arvioimaan uudelleen taloudellisesti kestäviä vakuutusratkaisuja.

Avainsanat: Vakuutusala, globaalit kriisit, riskienhallinta, riskien mallintaminen, epävarmuus, ilmastonmuutos, geopoliittinen konflikti, pandemiat

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1 Introduction

The insurance industry plays a central role in managing risks within the economy by protecting individuals and organizations against shocks and unexpected events (Puławska et al. 2025, 1). As an industry fundamentally built on risk management and predictability, its stability depends on the ability to understand and anticipate the effects of global crises on its business operations. However, the global environment has evolved rapidly in recent years, exposing insurers to increasingly complex risks related to climate change, economic instability, and global health crises (Cernit et al. 2024, 52–53). As a result, insurance companies are facing growing pressure, as these crises have become more difficult to manage and introduce higher levels of uncertainty into their business. Given that the insurance sector represents a trillion-dollar industry and plays a vital role in maintaining economic stability (Owadally et al. 2018, 2), it is essential to assess how global crises may threaten its functioning. Examining the current crisis-driven business environment of insurance companies therefore provides valuable insights into the industry's need for adaptation and the development of new adjustments.

A crisis is a state in which a system becomes unstable, shifts quickly from equilibrium, and produces harm to human well-being. In these conditions, the system is pushed into a turbulent state where stabilizing mechanisms are disrupted, leading to outcomes such as loss of income, as well as broader human harm. (Lawrence et al. 2024, 7.) A global crisis refers to an event that extends beyond national borders, affects large parts of population, and has interconnected impacts (Wernli et al. 2023, 207). Such crises pose an increasing challenge for insurers due to their wide-ranging and systemic effects on business operations, which makes this topic particularly relevant for this thesis. The motivation for the study is its timeliness, as the current global environment is characterized by increasing uncertainty, which is driven by factors such as economic volatility, environmental challenges, and geopolitical shifts (Duan 2025, 98). Examining the impact of global crises on insurers provides insight into their ability to adapt to changing conditions and respond to future emerging risks, as in response to recent global shocks, the insurance sector has implemented strategic adaptations to strengthen its resilience and crisis-driven innovations have supported the industry's long-term stability in an increasingly uncertain global economy (Vojvodic-Miljkovic et al. 2025, 66–67). These changes are particularly important, as outdated operating models in a rapidly evolving environment necessitate the insurance sector to reconsider their business processes (Venkatesh 2020, 43).

The crises in this study refer to the perspective of pandemics, climate change and geopolitical conflicts. These specific crises have been selected as they are structural, long-lasting and systemic, pursuing changes in the operating environment of companies (IAIS 2022; Global Risks Report 2025). They also tend to affect multiple countries and multiple different insurance types simultaneously, challenging insurers to re-examine their operations. The crises can also be branded as risks of new age, as these are interconnected and unpredictable, affecting multiple sectors. While pandemics, geopolitical conflicts and natural disasters are not new phenomena, their economic impact and scope has become increasingly evident in a globalized world, especially for insurers. These events also challenge the capacity of insurance markets to absorb large-scale losses and highlight the growing complexity and interdependence of global risk environments. (OECD 2021.) Financial risks are understood as outcomes and reinforcing factors of these crises, rather than as an independent crisis category.

The aim of this thesis is to examine how global crises have affected the business of insurance companies. In the modern business environment, major crises generate significant uncertainty while simultaneously acting as incentive for strategical changes. The following sub-questions of the thesis are used to further explore the effect of crises on insurance industry:

1. How do global crises affect different aspects of the insurance operating environment?
2. How have insurance companies responded to these crises?

The first sub-question focuses on identifying the impacts that insurers face in their operations during global crises, which is discussed more closely in Chapter 3. The second sub-question examines how insurance companies have adapted to these challenges, particularly in terms of their products, financial practices, and strategic decisions, which are examined in Chapter 4. Together, these questions provide an approach to understanding both the effects of global crises and the responses they have triggered within the insurance industry. Chapter 2 provides theory and background information on insurance business and lastly, Chapter 5 summarizes the conclusions of the work.

2 The Insurance Industry and Its Exposure to Global Crises

2.1 Core functions of insurance business

The insurance business is based on many separate functions, as the industry requires financial security, risk awareness and specialized expertise. The core functions of insurance companies are based on *sales and predominantly premiums*, which provide the financial basis for insurers (Nataldy & Pardede 2019, 258). Insurance companies cover risks or financial losses by collecting premiums from customers, which are paid in advance to distribute risk taking to insurers (Denuit et al. 2020, 1). These payments serve as funds that the company uses to pay claims and meet regulatory requirements. Premiums are based on calculated risk models and are used to convert losses into a certain price. This price functions both as a protection for consumers purchasing the insurance and as a mechanism for insurer to manage the cost of the risk. (Landsman & Sherris 2001, 103.) In addition, insurance premiums typically include an agreed deductible, which the policyholder pays in the event of a loss. This reduces burdensome minor claims and helps prevent opportunistic behavior from policyholders. The sale of insurance also involves underwriting from the companies, which refers to the process of evaluating and classifying applicants in order to determine whether coverage is offered and under what terms. Based on this assessment, applicants may be accepted at standard or adjusted premiums, offered modified coverage, or denied insurance. (Rejda 2008, 24.) Although the buying and selling of insurance is the most visible aspect of the business, underwriting shows that it is not merely a sales activity, but a process based on risk assessment and decision-making.

Along with selling insurance, one of the most essential functions for insurers is *claims operations*. The insurance premiums should reflect the expected claims and certain components, such as claim-settlement expenses in order to control risk (Kahane 1979, 223). Claims payments, typically captured as incurred losses, constitute a major component of insurers' costs and are a key determinant of underwriting profitability (Rejda 2008, 112). The insurance industry's operations are based on perceived legitimacy and trust, as policyholders rely on insurers to fulfill these contractual obligations in times of loss. Claims handling is therefore both financially significant and challenging, as it affects profitability while also maintaining customer confidence and the credibility of the system. Claims sometimes take years to process, their volume can be high, and they require employees with specialized expertise to make decisions about payment (McKinsey 2017). All of these factors reduce available resources and make business operations more difficult to predict.

As mentioned, premiums are based on the calculated price of the insured risk, and insurance business is based on *risk sharing*. Risk sharing is the process by which a risk-bearing party uses insurance to shift the risk to another party more able or willing to bear it. (Wagner 2009, 377.) Risk-bearing party may refer to multiple actors, as insurance sector aids individuals, businesses, and governments to manage risks and uncertainties, serving as a critical component of the financial system and thus playing a vital role in supporting economic growth (Tasdemir & Alsu 2024, 1). Without insurers, individuals would not take risks and companies would not be willing to make investments.

Insurance can contribute to economic growth and stabilize society through risk sharing, by promoting financial stability through insurance, facilitating trade, mobilizing national savings, risk pooling and efficient allocation of a country's capital (Arena 2008, 938; Skipper 1997, 4–5). The societal role is also seen as a common interface with the public sector, as in large and comprehensive crises, governments also participate in risk management and act as insurers. Such crises can include natural disasters and pandemics, which cause widespread destruction.

Cooperation as a risk-sharing mechanism between the private and public sectors is also important, as public-private partnerships can incorporate the advantages of both public insurance systems and private insurance systems (Altun & Güldiken 2019, 1084).

One of the less recognized functions of insurance companies is their *investment activity* in financial markets. This is largely driven by their business model, in which policyholders pay premiums in advance, while claims expenses often arise later. By collecting premiums in advance and due to the probabilistic timing of payouts, insurers have funds available for investment, allowing them to generate additional income (Kozlova et al. 2019, 85). Insurance companies are a significant source of long-term risk capital to the real economy, and are among the largest institutional investors, as they hold around 12 percent of global financial assets. This long-term investment horizon can enable them to act as a shock absorber in global financial markets. (IMF 2016.) In other words, the operations of insurance companies are supported by long-term investments, which then contribute to financial stability and enable claim payments. In addition to stocks and funds, insurance companies' investment portfolios also include government and corporate funds, as well as real estate. Diversification across multiple asset classes supports risk management and helps insurers meet solvency and liquidity requirements. (Poufinas & Siopi 2024, 27.) They also often aim for safer, long-term investments while also holding shorter-term, easily liquidated investment solutions. Balancing these options ensures that in the event of an unexpected crisis, the company can meet its claims obligations while its long-term investments generate stable returns. (OECD 2017.)

2.2 What makes the insurance industry vulnerable during crises?

While the previous section outlined the core functions of insurance companies, this subsection focuses more closely on the industry characteristics. This is important, as these characteristics also influence how the industry responds to crises. One of the most central characteristics of the insurance industry is its reliance on risk modelling and probabilistic estimation. These models are also fundamental to the regulatory environment of insurers, as solvency frameworks and risk-based capital requirements use quantified risk assessments to evaluate insurer's financial resilience (IMF 2016). As a result, risk models are embedded in the institutional foundations of the industry, which also increases the sector's vulnerability to errors and unexpected systemic shocks. This creates a system in which the ability to measure and quantify risk is more uncertain, even as accurate risk assessments have become more important for financial stability and decision-making. Crises such as COVID-19 demonstrated this phenomenon on how large-scale shocks can affect multiple aspects of insurers' operations, including claims, investments, and underwriting (Liedtke 2021, 266). Therefore, insurers are exposed to shocks that exceed the assumptions of existing risk models.

Another characteristic affecting the vulnerability of insurance companies is the long-term horizon of liabilities, such as life insurance products. In such cases, the company may not be liable for compensation until decades after the insurance was bought, which causes a significant trend risk in the insurance portfolio (Jetses & Christiansen 2021, 901.) Insurance policies and their terms also involve assumptions based on data, which can change unexpectedly over the course of years. The same applies to pricing, as insurance policies priced decades ago may not reflect the correct level of risk later (Hwang & Tsai 2014, 34). This becomes particularly problematic during crises, which can trigger sudden increases in claims costs and leave pricing unable to adjust quickly enough. Price based assumptions about long-term expected returns are also crucial for the management of insurance companies' assets and liabilities, as they influence how assets are allocated to cover long-term liabilities. (Gilles et al. 2003, 5.) These assumptions are sensitive to changes in the economic environment, particularly interest rates and inflation, which can affect the value of future liabilities. Over long time horizons, even small deviations can accumulate, leading to significant underpricing and underreserving problems (Hwang & Tsai 2014, 34). Insurers must therefore balance long-term risk exposure across large policyholder bases, which make them more vulnerable to large scale crises.

Insurance acts as a stabilizer in the economy, which also exposes it to multiple sources of vulnerability. It supports economic stability by enabling risk sharing across households, businesses,

and financial markets. Crisis events involve a very large number of people and properties simultaneously, making the traditional techniques of risk diversification usually adopted by insurers insufficient (Turchetti et al. 2012, 685). As a result, insurers may have to give out substantial compensation costs that weaken their financial position. At the same time, the industry depends on functioning markets and a stable business environment, which are often disrupted during large-scale crises (Browne & Kim 1993, 628). This creates a “double exposure”, as insurers are affected both by increasing expectations from investors and other stakeholders and rising claims costs (Kumar 2023, 1). In addition, the insurance sector amplifies these effects, as insurers are exposed to similar market conditions. During global crises, financial performance tends to move in the same direction across the industry, reflecting strong systemic interdependence (Denkowska & Wanat 2019, 23–24). This makes the sector particularly vulnerable to widespread shocks in the global economy.

2.3 Types and characteristics of global crises

Climate change is one of the most significant global crises, creating major pressures for businesses through increasing physical risks and regulatory changes. Insured natural catastrophe losses have exceeded USD 100 billion for the sixth year in a row and is on a trend of rising annually (Swiss Re Institute 2025). Additionally, European Environment Agency (2025) has estimated 822 billion economic losses in EU from 1980 to 2024, with 25% of the damages accumulating between 2021–2024. This development demonstrates the growing frequency and severity of climate-related events, which affect wider geographic areas and lead to higher and increasingly uncertain losses for insurers. As a result, climate change introduces growing challenges for the insurance sector. (Yang et al. 2025, 2–3.) These challenges also include failure in fight against climate change, natural disasters and reduction of biodiversity, and it is also an underlying driver for other risks (eg. displacement) (Chepurko 2020, 80; Global Risks Report 2025.) The increasing severity of catastrophes is also forcing insurers to focus on research and innovation in order to keep up with the cycle of major climate events, as it impacts liability insurance, claims and operational risk (eg. terms & conditions) specifically (Allianz 2022). This has presented the challenge of climate change for the insurance industry and the need to adjust existing practices to accommodate a wider range of spatial and temporal uncertainty (Thistlethwaite & Wood 2018, 280).

Climate change is not the only global crisis currently affecting insurers. Geopolitical conflicts are becoming more prominent in the world, creating challenges for insurers in multiple areas of business like claims, legal and compliance risk, assets, financial markets, operational risk (eg. supply chains, espionage) and trade barriers (Swiss Re 2023). These crises are not limited to solely

wars and armed conflicts, but also include factors such as impacts on alliances, sanctions, industrial policies changing, fragmentation and rise of global debt (Aiyar et al. 2023). In recent years, geopolitics has emerged as a growing concern, as reflected in survey results where 23% of respondents identified state-based armed conflict (including proxy wars, civil wars, and terrorism) as the top risk for 2025. In addition, rising geopolitical tensions are increasingly linked to geoeconomic confrontation, including sanctions, tariffs, and investment restrictions. (Global Risks Report 2025.) The exact cost of geopolitical conflicts is difficult to determine, as they have a more clear secondary impact on insurers' business segments such as investments and sales. However, the Ukrainian war only is estimated to cause losses for insurers between \$10bn and \$35bn, which is comparable with a mid-sized natural catastrophe (Allianz 2022). Additionally, geoeconomic crises increase market volatility, affecting finances (Puławska et al. 2025, 24). This shows the scale of geopolitical conflicts and the price that insurers have to pay for possible instability they cause for business.

In addition to other global crises, the COVID-19 pandemic clearly revealed the vulnerability of an interdependent world. It is particularly evident as the pandemic caused global systemic disruptions, high uncertainty around quarantine and daily life, as well as it had a hard impact on economy (Allianz 2022). COVID-19 pandemic provided proof that the consequences of a global pandemic cannot be entirely covered by the private insurance market, as poorly worded terms and conditions caused an unpleasant surprise for companies in the industry (Richter & Wilson 2020, 173). As a result, the industry had multiple impacted business areas, such as claims, assets and financial markets, and operational risks (terms & conditions, underwriting) (Allianz 2022). Although the world has experienced multiple pandemics before, the scale and reach of COVID-19 has been unprecedented in modern history, due to its global spread and economic disruption (Mas-Coma et al. 2020, 1). The pandemic demonstrated weaknesses in the globalized system, which continue to influence insurers' risk exposure and overall operating environment. It also had an impact on asset returns and asset-liability balance (Puławska 2021, 12). This led to losses of estimated around \$44 billion, making the pandemic the third largest catastrophe loss behind Hurricane Katrina and the 9/11 attacks (Allianz 2022). To provide a clearer overview of the crises, these aspects are summarized in Table 1, which presents the key characteristics, business impacts, and financial consequences of the crises.

Table 1 Key characteristics and impacts of global crises on the insurance industry

Crisis type	Key characteristics	Impacted business areas	Financial impact
Climate Change	<ul style="list-style-type: none"> - Increasing frequency - Severity of catastrophes - Underlying driver for other risks (eg. displacement) (Global Risks Report 2025) 	<ul style="list-style-type: none"> - Liability insurance - Claims - Operational risk (eg. terms & conditions) (Allianz 2022) 	<ul style="list-style-type: none"> - Over USD 100 billion insured losses annually (Swiss Re Institute 2025) - 822 billion economic losses in EU (1980–2024) (European Environment Agency 2025)
Geopolitical conflicts	<ul style="list-style-type: none"> - Impacts on alliances - Sanctions - Industrial policies changing - Fragmentation - Rise of global debt (Aiyar et al. 2023) 	<ul style="list-style-type: none"> - Claims - Legal and compliance risk - Assets and financial markets - Operational risk (eg. supply chains, espionage) - Trade barriers (Swiss Re Institute 2023) 	<ul style="list-style-type: none"> - Estimated USD 10–35 billion losses from Ukraine war (Global Claims Review 2022) - Increased market volatility (Puławska et al. 2025)
Pandemics (COVID-19)	<ul style="list-style-type: none"> - Global systemic disruptions - High uncertainty - Impact on economy (Allianz 2022) 	<ul style="list-style-type: none"> - Claims - Assets and financial markets - Operational risks (terms & conditions, underwriting) (Allianz 2022) 	<ul style="list-style-type: none"> - Around USD 44 billion (Global Claims Review 2022) - Impact on asset returns and asset-liability balance (Puławska 2021)

As illustrated in the table, these developments demonstrate that global crises do not only create isolated disruptions, but systematically reshape the financial conditions in which insurers operate. Business becomes challenging when a single crisis affects multiple lines of business and operations at once, possibly causing significant financial losses. Therefore, identifying crises and learning from past situations is essential for insurance business continuity.

3 The Impact of Global Crises on the Business of Insurance Companies

3.1 Predictability loss and challenges in risk modelling

The operations of insurance companies are based on managing, understanding, and minimizing risks. However, global crises have made this task increasingly challenging by reducing the predictability of risks and their potential impacts, forcing insurers to operate under greater uncertainty and make decisions based on more limited or unreliable information. This was seen during COVID-19, as pre-pandemic risk models were usually based on 2002 SARS epidemic and 1918 Spanish Influenza pandemic, which were not comprehensive enough to provide insurers with protection against losses caused by coronavirus (Richter & Wilson 2020, 183, 189–190). The loss of predictability further complicates risk modelling and becomes more difficult to manage as crises evolve and COVID-19 is an example of how rare crises are difficult to measure. This in turn challenges traditional insurance products and forces companies to make limitations or, in the worst case, complete exclusions to insurance policies, which then affect the customer experience (Richter & Wilson 2020, 173–175). At the same time, uncertainty surrounding rare crises creates significant challenges for risk modelling, particularly in the form of model risk. Model risk arises when decisions rely on models that may be inaccurate, incomplete, or incorrectly applied, thus causing wrong estimates and potential mispricing of risk (KPMG 2026).

Model risk has become a highlighted challenge in the risk management practices of insurance companies, as global crises challenge predictions and historical data. This can be seen through the problem of climate change, as modern catastrophe risk models, which, despite their sophistication, remain limited in capturing where extreme losses occur more frequently than expected and where risk patterns change over time (Heinrich et al. 2022, 536). Therefore insurers are constantly trying to improve their models and find potential weaknesses, as modern crises make older risk models partly useless. Additionally, insurance models provide only a simplified representation of reality, and their reliability depends on the quality of the data, which is why models alone cannot fully address insurers' risk management challenges (Njegomir & Ćirić 2012, 59). These risk management challenges become particularly problematic in pricing, where incorrect assumptions may result in significant mispricing of premiums (Arandjelović & Shevchenko 2026, 15). In global crises, these limitations are amplified, as rare and widespread events are inherently difficult to predict. As a

result, weak models not only increase vulnerability during crises but also reduce insurers' ability to accurately define and manage acceptable levels of risk. (Bradley 2025, 161.)

3.2 The impact of crises on insurance risk management

Building on the challenges in predictability and risk modelling discussed in the previous section, global crises are now increasingly complex and interconnected, as rather than emerging as isolated events, modern crises develop through interconnected systems where risks are difficult to identify, separate, and anticipate (Schweizer & Juhola 2024, 1). Emblemståg (2020, 50) notes that complex risks often emerge gradually and with weak signals, making early detection and management particularly challenging for insurers. This complexity also limits the effectiveness of traditional risk management approaches that rely on clearly defined risks and stable assumptions. At the same time, regulatory frameworks implemented by the European Union impose requirements for capital, liquidity, and transparency, as well as constraints for the use of certified risk models. Thus, firms have been driven to outsource the problem of risk modelling and the provision of risk models has come to be dominated by three major competitors: RMS, AIR and EQECAT (Heinrich et al. 2022, 538.) Maintaining a flexible approach to risk management is therefore challenging for insurers, as they increasingly rely on externally developed risk models while also needing to balance regulatory requirements with the uncertainties caused by crises.

A key factor in the challenges of risk management is the multi-layered nature of modern crises, which affect several areas of insurance operations simultaneously. For example, climate change not only increases physical damages and compensation claims but also raises questions regarding liability, insurance terms, and creates long-term exposure (The Geneva Association 2021). Similarly, geopolitical crises and wars influence underwriting conditions, investment environments, and broader market dynamics, often creating spillover effects that extend beyond the initial source of risk (Hemrit & Nakhli 2021, 321). These factors force insurers to adapt, as risks cannot be completely controlled and should instead be managed through available data and strategic decision-making. This also highlights a weakness in strategic management, where limited information has resulted in an informational void that affects insurance practices (Haley & Tan 1996, 37). Managing these spillover effects, which can be amplified by incomplete or inaccurate information, cause insurers to adapt new technologies and develop better management strategies in order to better mitigate losses.

These developments have significant implications for risk management practices within insurance companies, as they require insurers to integrate risk considerations into all areas of their operations. At the same time, the limitations of existing models, particularly those based on historical data, highlight the need for a shift toward more adaptive approaches (Meyers 2006, 1). In this context, resilience is becoming an important complement to traditional risk management, emphasizing the ability to respond to and recover from unexpected events rather than relying solely on predictive accuracy (Sutcliffe & Vogus 2003, 108). This implies that the objective of risk management is no longer to eliminate uncertainty through prediction, but to ensure that organizations remain functional even when those predictions prove to be inaccurate. Consequently, the growing complexity of global crises not only increases the difficulty of managing risks, but reflects a shift in how risk management is changing from a primarily analytical function toward a more strategic role (Grünbichler & Errath 2007, 111).

3.3 Economic and financial implications for insurers

Global crises and the uncertainty they cause not only affect the operational environment of insurance companies but also have wider economic dimensions. Uncertainty is often reflected in the economy, which means that insurers have had to consider securing their own investments and returns in the middle of global crises (Lee et al. 2021, 22). The finances of companies are strongly linked to the threats at hand, and some are better equipped to overcome these challenges brought about by uncertainty than others. For example, larger companies may be more exposed to market fluctuations or have more complex risk. Additionally, the more non-insurance-related liabilities, the more vulnerable a company is in a crisis. Some insurers can also rely on high-risk investments, which usually means higher losses. (Weiß & Mühlnickel 2014, 95, 98.) Every insurance company has its own weaknesses from an economic perspective, which makes it important to map crises and their adverse effects. The solvency of insurance companies is guided by regulatory frameworks and risk models, but these instruments may be insufficient when firms are exposed to systemic risk, as prudential regulation does not fully account for such exposures unless a system-wide shock is incorporated into capital requirements (Schmeiser & Siegel 2013, 1).

The volatility of financial markets and the uncertainty in investments have made pricing of assets harder, especially during times of high market volatility. Making firms and regulators need a balance between policyholder protection and market efficiency (Liedtke 2021, 266). This uncertainty from volatility can further spill over into the macro-economic environment, affecting both investments and insurance sales. In terms of crises, climate risk is the most significant macro-

financial driver of insurance stock performance, influencing short-term return volatility and long-term equity risk premia. This makes investors anticipate higher underwriting losses, greater capital strain, and increased asset volatility, all of which contribute to upward pressure on expected returns. (Puławska et al. 2025, 22.) These factors can lead to overall greater volatility in insurance stocks and alter how markets value insurers' risk exposure. Investor uncertainty is also reflected in insurance companies through share price volatility and higher return requirements, which in turn influences insurers' strategic and risk management decisions (Puławska et al. 2025, 24). This lack of certainty can also extend beyond insurers themselves, if the pressure from investors increases the need to raise prices for customers.

Insurance pricing strategies are also becoming more difficult to standardize, as unpredictability has become the new norm. During the COVID-19 pandemic, studies show that the solvency ratio and return of assets decreased for insurance companies, negatively affecting the functions of insurance industry (Puławska 2021, 1). However, pricing is not able to react as quickly as needed to these financial decreases when it comes to immediate crises. The frequency of extreme events and uncertainty have made it difficult for companies to rely on past statistics when estimating probable risks in the future (Stott et al. 2016, 24–25). This also highlights a new challenge for the industry, as risks have to be progressively priced in an environment where the underlying risk models are no longer reliable. This phenomenon is increasingly visible across all insurance lines, as insurers face growing pricing pressures arising from ongoing geopolitical conflicts that could disrupt supply chains and rise global tariffs, increasing the prices of goods used in the auto, housing, and commercial building sector (Bostjancic 2025, 34).

The financial uncertainty caused by crises may also persist long after the initial shock. As global crises usually take time to resolve, the long-term financial effects can only be guessed in the beginning. Financial risks can also be transmitted through interconnected networks, where shocks and economic policy uncertainty contribute to increased market instability and uncertainty (Zhang et al. 2021, 10). This uncertain macroeconomic environment challenges insurers in maintaining investment valuations amid volatile financial markets. It affects strategic decisions on asset allocation, liquidity management, and overall investment strategy, while also potentially reducing confidence in insurance-linked investment products, which may result in lower business volumes (OECD 2025).

4 Insurance Companies' Responses to Crisis-Induced Changes

4.1 Adjustments in Pricing and Insurance Coverage

The crisis-related factors discussed in the previous chapter have required insurance companies to adapt in multiple ways. The loss of predictability, increased complexity of risks, and financial pressure have led to adjustments in pricing, enhanced risk management practices, and broader strategic transformations (Déroche 2023, 252, 256; Bostjancic 2025, 42). This has also meant reviewing and updating their own products and operating models to reduce business risks. The modern pricing models have already adapted a lot during the last 50 years, as insurance companies have moved from simple calculations to applying economic competitive equilibrium models and lastly to models inspired by the advances in financial economics. (Tsanakas & Desli 2005, 1666.) Insurance premiums have increased sharply, as insurers are responding to expectations of future risk with higher premiums today. Also, the recent rise in premiums is linked to increasing risks, higher replacement costs, and broader insurance coverage. These increases cannot be explained solely by rising claims costs or expanded coverage, since they are driven by more aggressive risk-based pricing. (Keys & Mulder 2024, 3, 38.) This suggests that for insurers, crises affect pricing not only through higher insurance premiums but also through a stronger emphasis on risk-based pricing approaches. This risk-based approach has been utilized systematically as climate change and extreme weather events have become more common in order to mitigate possible losses (Oh et al. 2026, 1). It is also important to note that during crises, regulations and market constraints may limit insurers' ability to adjust premiums, highlighting the time lag between changing risk conditions and pricing responses. (Aizawa & Ko 2025, 2410–2411.)

Pricing is not the only thing that has required closer examination after crises. The terms and coverage of insurance also involve continuous monitoring and adjustment as situations change. At the beginning of the crises, insurers may not have been able to take into account all the dimensions to be compensated, which could result in large compensation amounts. Therefore, it is important that after extreme events all aspects of insurance are analysed and examined so that the terms and conditions are sufficient to minimize the risks later (Kousky 2017, 77). After September 11 attacks, insurance companies in the United States excluded all political, conflict-related insurance terms from aviation insurance policies, fearing for another economic shock. Later, these bans have been gradually relaxed, and some types of coverage are available for an additional fee, but the terms have not reached the same level as before. (Nyampong 2012, 4–6.) After a major event like this, it is normal for insurers to review again their existing terms and conditions. The September 11 attacks

were a costly crisis for the insurance industry and the uncertainty they generated led insurers to respond with exclusions and broader revisions of policy terms. Without a quick response, losses could rise suddenly, and uncertainty about the continuation of the attacks forced insurers to make completely excluding solutions.

Coverage is not necessarily about only excluding certain terms, as it can also mean reducing maximum compensation amounts and increasing deductibles to share business risk with customers. Setting a liability cap clarifies maximum exposure for the company regarding its obligations in a claim situation and helps plan for worst-case claim costs, as it is possible to concretely assess potential claims costs during crises (Mao et al. 2016, 16; Born et al. 2019, 1065). A liability cap means that a contract limits damages payable to an agreed amount, so that both parties are aware of the exact extent of the assumed risk (Lupton 2013, 279). Another approach to limiting insurance contracts is raising deductibles, which means more responsibility for the customer in claim situations, reducing costs and unnecessary services for insurance companies (Mirian et al. 2020, 857). This practice works on a large scale, when there are a lot of volume and everyone's recoverable amounts are lower. For many years in the United States and Canada higher catastrophe claims paid by insurance companies have resulted in higher premiums, higher deductibles, sublimits, exclusions, and withdrawal of capacity in zones of elevated risk (The Insurance Institute of Canada 2025). This trend implies that insurers are less prepared to take responsibility for insuring especially in high-risk areas and as a counterbalance, various restrictions have been adopted to facilitate risk management. Primarily, insurance models provide insights into insurance uptake and how pricing and design can influence the availability and demand for coverage even in risk areas (Ingels et al. 2024, 101). Alternative solutions like strategy models can therefore help maintain customer access to insurance coverage without jeopardizing customer satisfaction.

4.2 Adjusting Risk Management and Economic Strategies

Crises have forced companies to improve their risk management strategies and methods. Risk management has become more efficient with the development of technology, especially artificial intelligence, which enables early detection of patterns or anomalies that could potentially lead to financial risk. The application of AI predictive models provides an advantage in forecasting future risks and providing deeper insights to support better decision making. (Sari & Indrabudiman 2024, 2080.) This comes also with downsides, as still of today no technology guarantees complete reliability, especially with AI which a comprehensive list of new risks associated with AI systems, which also includes the field of safety-related systems, does not yet exist (Steimers & Schneider

2022, 26). During and after the COVID-19 pandemic, insurance companies changed their risk management in line with not only according to professional logic but also but also in response to political and economic logic. The aim is to adapt better risk management and to place more emphasis on risk mapping and the management of financial uncertainties. (Metwally & Diab 2023, 40.) Scenario analysis has also become a notable risk management method of today, as it allows insurers to measure possible impact of extreme events and foster necessary developments (Clerc 2021, 49). Scenario analysis means that instead of a single prediction, it is a description of a set of possible eventualities describing what the world may look like in the future (Tourki et al. 2013, 4). The ultimate purpose is to sharpen the focus on possible future uncertainties so that responding to them makes business easier.

Insurers are now more aware of the potential threats of interconnected risks and are doing active work in managing them through reinsurers (Khanlarzadeh 2022, 447–448, 458). Reinsurance means practice, where an reinsurer agrees to cover part of the losses that another insurance company has to pay to its customers. In practice, the insurer transfers a share of its insurance risk to the reinsurer. (Patrik 2006, 1.) This ensures that widespread crises do not take down individual insurance companies (Wehrhahn 2009, 1). Reinsurers have become increasingly important in risk management of global crises, as higher-frequency and higher-severity events have increased the pressure on primary insurers. Without reinsurance, insurance premiums would likely be higher, less insurance would be offered, and coverage for low-frequency, high-severity events such as natural catastrophes might not even exist (Polacek 2015, 4). In this changing environment, reinsurance also allows insurance companies to limit direct losses, keep exposures within their risk appetite, and increase transparency regarding the financial impact of extreme events (Richter & Wilson 2020, 176). Over time, the use of reinsurance has evolved and has more sophisticated structures, such as layered excess-of-loss programs, catastrophe bonds, and multi-year arrangements (Trottier & Lai 2017, 84; Maynard & Ranger 2012, 319). These allow insurers to better anticipate correlated risks and improve knowledge against interconnected global crises (Yang 2024, 11). This area of insurance is predicted to grow during the upcoming years, as risks are becoming increasingly unpredictable and difficult for individual actors in the industry to manage them financially (Zhao et al. 2021, 469–470).

Risk management is also adjusting to economic regulations and understanding that after crisis situations many criteria are frequently reviewed or requirements are tightened. Most often, the emphasis is on capital requirements and emphasizing solvency, as companies must ensure sufficient assets to pay compensation expenses and ensure the durability of the financial system in the event

of a crisis (Brender 2014, 1). The improved performance of the industry in comparison with prior mega-catastrophes such as 9/11 or 2005 hurricane season, shows that considerable progress has been made in risk and exposure management, capital allocation, rate of return targeting, and the ability to raise new capital (Cummins 2007, 216). This suggests that insurers have strengthened their financial resilience through improved risk management practices, stronger profit retention, the accumulation of reserves, and higher capital levels (IMF 2020). These changes made by insurers have enabled the industry to recover more quickly from losses and maintain the ability to offer insurance cover even after catastrophic events, which has been an important lesson during more modern crises like COVID-19 (Levantesi & Piscopo 2021, 10). However, these models alone are insufficient for future crises, as maintaining resilience in risk managing requires continuous adaptation and development from insurers, which is why current advanced management systems do not guarantee the same level of security against crises in the future.

4.3 Product Adjustments, Developing Technology and Cooperation

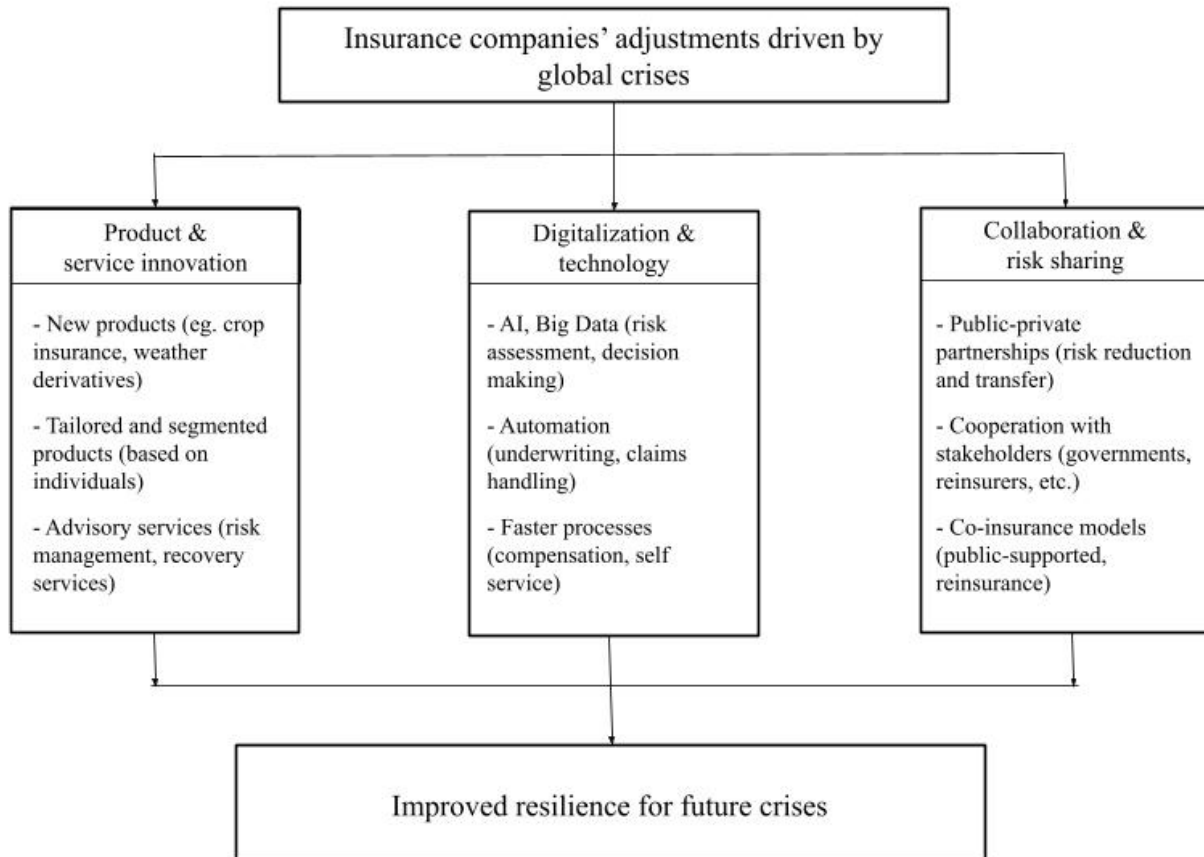
Risk management is one element of insurance companies' strategies, but they include much more. Business models also involve applying innovative strategies and digital marketing technologies, implementing new financial solutions, and developing new insurance products (Kneysler 2024, 52). These require constant review to ensure they respond as accurately and competitively as possible to the current needs of the insurance market. New products developed due to climate change are, for example, crop insurances and weather derivatives. With these derivatives, insurers offer a comprehensive service in the event of a claim, such as the organisation of damage repair and referrals to appropriate companies to carry out those repairs. As part of business diversification, insurers offer advisory services related to climate change risk assessment and risk management, business continuity planning, emergency management, and recovery services. (Dlugolecki 2000, 595; Dlugolecki 2008, 78; Clemo 2008, 114; Herweijer 2009, 376–377; Botzen 2010, 586.) These examples illustrate the ongoing back-end work that insurance companies must undertake to ensure that their products remain aligned with evolving customer needs and risk environments. As a result, insurers increasingly segment their products and services, preparing more tailored coverage that reflects individual risk profiles (Zhang 2023, 126). Insurance providers can also enhance customer experience by offering tailored policy options, personalised communication and customized digital services that meet the specific needs of policyholder. This development is also important for competition, as customers prefer coverage that matches their specific needs, thus strengthening the customer experience. (Malleesh et al. 2026, 256–257.)

Another adaptation tactic for businesses is to better utilize data and technology. Technological developments have helped companies to better navigate uncertain operating environments and manage risks. In some cases, crises have served as a driving force for insurance companies to collect and analyze technology to better manage operations (Volosovych et al. 2021, 9–10). Insurance companies are allocating increasing resources to technology functions and digital capabilities, requiring significant investments to adapt operations to increasingly complex business environments (McKinsey 2019). Digitalization is transforming how insurers interact with customers, particularly in areas such as sales and customer service. It also influences all business processes, including the automated handling of contracts and decision-making, especially in risk assessment through tools such as artificial intelligence and big data. In addition, digitalization is reshaping existing insurance products, for example through telematics-based solutions, while also enabling the development of entirely new offerings such as cyber risk insurance. (Eling & Lehmann 2018, 363.) Similar findings were found during the COVID-19 pandemic, as the crisis forced companies to accelerate their digital platforms (Pauch & Bera 2022, 1682). One reason for automation is the high volume of claims caused by widespread crises, which require modern processing systems. Thus, automation can also help to detect fraud in claims, accelerate decision-making, and speed up compensation processes, which is important for reduced operational costs and customer satisfaction (Subbian 2025, 464).

Insurance companies have adapted their operations by strengthening cooperation with governments and other stakeholders through public-private partnerships designed to improve risk communication, risk reduction, and risk transfer in response to large-scale crises (Kousky & Kunreuther 2018, 181). Managing risks increasingly requires cooperation between insurers and governments in order to distribute risks across multiple actors (Turchetti et al. 2012, 685). The thesis has discussed the role of reinsurers in risk management, but many other stakeholders have also become active risk sharers. Climate change risk has further strengthened international cooperation among insurance industries (Kong & Sun 2021, 3), with many private insurers sharing covered risks with public-supported companies through co-insurance (Perazzini et al. 2024, 229). This development highlights the importance of government and industry collaboration in insurance markets, recognizing that collective responsibility is necessary to enable individuals to take responsible actions for their own protection (Jarzabkowski et al. 2023, 128). Sharing risks with governments allows insurers to limit exposure to highly correlated losses while improving the capacity to finance large-scale crises (Jia et al. 2025, 287). In the worst case scenario, cooperation agreements can therefore be the most important tools for ensuring economic balance in a

widespread crisis. The mentioned changes in business models have led insurers to adapt their business models in several ways, particularly through changes related to products, technology, and collaboration, which are illustrated in Figure 1.

Figure 1 Insurance companies' business model adjustments



Sources: Dlugolecki 2000, 595; Dlugolecki 2008, 78; Clemo 2008, 114; Herweijer 2009, 376–377; Botzen 2010, 586; Mallesh et al. 2026, 256–257; Eling & Lehmann 2018, 363; Subbian 2025, 464; Turchetti et al. 2012, 685; Kousky & Kunreuther 2018, 181

As the figure illustrates, crises have improved business models in many different areas. The changes are intended to ensure companies' resilience in the face of increasingly diverse problems, so that they can be better prepared for them in the future. In addition, the changes are also closely customer-related, as evolving products can bring better or more tailored solutions to the market compared to the previous ones. This can improve competitiveness and thus strengthen business operations through insurance premiums received.

5 Conclusions

The purpose of this thesis was to examine how global crises have affected the business of insurance companies. The study addressed this by analyzing how different crises influence insurers' operations and what kinds of changes or adjustments they have triggered. In addition, it presents recent developments in insurance business practices and offers a current perspective on how the insurance sector is evolving under increasing uncertainty caused by crises. In this way, it answered the main question of the thesis: how global crises have affected the business of insurance companies. The intention of this thesis is to bring together the impacts of various crises on insurance companies, which are often examined separately. In addition, it highlights recent changes in business practices that may support industry professionals in analyzing changes in the operating environment.

The first sub-question examined how global crises affect different aspects of insurance companies' operating environment. The literature suggests that there is a major challenge in the growing tension between unpredictability and risk modelling, affecting operational environment. Although risk models remain central to decision-making, their role has shifted from providing reliable predictions to supporting decision-making under uncertainty. At the same time, the interconnected nature of crises complicates risk assessment, as their effects may emerge immediately or with delay. This increases the likelihood of systemic risk management and modelling errors, particularly as an underestimation of possible outcomes. As a result, the financial and operational aspects of insurance have become more closely linked, since risk modelling outcomes are directly reflected in pricing and profitability (Finger et al. 2024, 1151). This interconnection also increases vulnerability, as weaknesses in risk modelling can quickly translate into financial losses, highlighting how uncertainty is no longer affects only isolated insurance operations but increasingly influences the industry as a whole.

The second sub-question focused on how insurance companies have responded to these changes. The findings show that insurers have adapted through changes in pricing, coverage, risk management, and technology. Pricing has become more forward-looking, reflecting the need to anticipate uncertain future risks, while coverage terms have been tightened to better control exposure. At the same time, risk management practices have also been strengthened through the use of scenario analysis, reinsurance, and improved use of data (Flaig & Junike 2022, 2; Dias et al. 2025, 20; Maltumkar 2025, 2312). Additionally, the results indicate a broader structural shift: insurers are increasingly reliant on cooperation and risk-sharing mechanisms, such as reinsurance

and public-private partnerships, as they are no longer able to manage risks independently (Kousky et al. 2017, 1). Together, these developments can demonstrate the broader transformation the insurance industry is going through, where adaptability, technological capabilities and shared responsibilities are becoming central characteristics.

The main research question was addressed by combining these findings. The results indicate that uncertainty and unpredictability have become defining characteristics of the insurance business. Global crises affect multiple areas simultaneously, including business operations, underwriting, claims and insurance investing, increasing the overall complexity of the industry (Liedtke 2021, 266). In response, insurers have implemented various adaptations discussed in Chapter 4. Although, the findings suggest that even with these changes made, systemic risks cannot be fully managed at the firm level. The literature also indicates that the boundaries of insurability are evolving, as risks can no longer be assessed solely on the basis of probability. Overall, the industry appears to be shifting from prediction-based risk management toward a more adaptive and resilience-oriented approach, where multiple experts and stakeholders are needed to overcome these future risks.

Finally, future research could further examine how the boundaries of insurability are shaped in practice and what makes a crisis uninsurable for companies. In particular, it would be valuable to analyze how different stakeholders, such as regulators, insurers, and governments influence these boundaries in response to systemic crises and whether these can still be effectively managed through developing insurance solutions and technology.

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Appendices

I have used ChatGPT to assist with grammar checking and structure of sentences, as well as for rephrasing written text. All written content is made by the author. Additionally, I used AI-assisted searching tools such as Volter's AI Assistant and Elicit to find specific, peer reviewed articles regarding the thesis and arguments made in the text.

Prompts used for ChatGPT:

14.4.2026:

“The main point of this sentence remains unclear, how can I formulate it more clearly?”

“Is this grammatically correct?”

“Simplify this sentence.”

16.4.2026:

“How could I phrase this without it sounding repetitive?”

“Rephrase this.”

“Is this argument unnecessary repetition?”

26.4.2026:

“Is this an understandable point?”

“Condense this argument.”

“Can you word this differently?”

“Check for grammatic errors.”

Prompts used for Volter's AI Assistant and Elicit:

6.3.2026:

“How has climate change affected risk management of insurance companies?”

16.3.2026:

“How much have geopolitical tensions, wars or threats caused losses for insurers?”

21.3.2026:

“How has Covid-19 affected the business of insurance companies?”

29.3.2026:

“What kind of losses has Covid-19/geopolitical tensions/climate change caused for insurers”