

# Risk Management and Uncertainty

Zekai Chen<sup>1</sup>, Nan He<sup>2</sup>, Chengbo Zhang<sup>3\*</sup>

<sup>1</sup> Business School, Monash University, Melbourne, 3145, Australia

<sup>2</sup> School of management, Wuhan University of Technology, Wuhan, 430000, China

<sup>3</sup> Trinity College, Toronto University, Toronto, M5S 1H8, Canada

\*Corresponding author. Email: chengbobyang.zhang@mail.utoronto.ca

These authors contributed equally.

## ABSTRACT

This article examines the relationship regarding risk and uncertainty. While it is well known that investments in the future are predicted based on future economic trends, the acceleration of globalization and the transformation of the world into a larger whole has led to the fact that what happens in any corner of the the global economy can be affected. In the paper, the impact of political decisions on economic and investment risks and the impact of certain contingencies on investment risks are discussed, and the uncertainty of the future caused by COVID-19 is studied. The paper also shows how companies or investors can deal with risks and manage them through case studies.

**Keywords:** risk, risk management, uncertainty, political uncertainty, pandemic, capital market, company risk, black swan, influence to economic, economic under COVID-19

## 1. INTRODUCTION

Many economic decisions are made based on expected outcomes, and by the same token, investment decisions are made based on expectations. However, due to the accelerated globalization, the "butterfly effect" that occurs elsewhere can also affect investors' decisions about future investments. In other words, the risk and return on investment are closely related to global uncertainty. Uncertainty is the inability to predict future events. Under normal circumstances, most investors make some predictions about the level of risk/reward, but the increased level of uncertainty may make these predictions inaccurate.

## 2. UNCERTAINTY AND RISK MANAGEMENT BACKGROUND

'Uncertainty' presents a fundamental feature of 'risk' that, when defined and understood with some precision, is necessary for a correct understanding of the notion of 'risk' and the efficient application of risk management in theory and practice [1]. As part of its "Risk Management - Terminology" guide, the International Organization for Standardization (ISO) published the official definition of ISO Guide 73: 2009 on November 13, 2009. The purpose of this article is to examine "uncertainty" within "risk

management" by using the standard's most recent definition of "risk" and its interpretation of the notion of "uncertainty."

A risk manager discovers, evaluates, and manages hazards to the profitability and capital of a business. Risks stem from a variety of sources, such as uncertainty about government policies, uncertainties about how people's proclivity to make decisions changes over time, and uncertainties about accidents and natural catastrophes. As part of a comprehensive risk management program, a firm or individual investor is able to assess all potential risks. It has been claimed that "we do not manage risk and therefore do not possess it. We manage risk, then, in order to determine which risks we should take, which risks will lead us to our objectives, and which risks will incur enough expenditure to justify accepting them," as Ara Valente suggests. In this article, we will be talking about both macro and micro aspects of risk.

A macro risk can be defined as a subset of political risk. There are certain laws and policies in the country where an investor resides, which may adversely affect the overseas operations of a company [2]. The occurrence of macro risks can, in some cases, be attributed to factors beyond the control of the current government. The macroeconomic factors affecting the country in which a

company was founded may make it more difficult for the company to earn income outside of the country in which it was founded. It is often a requirement for a company before entering a foreign market to conduct a risk analysis to determine the level of political risk associated with that market.

More precisely, political risk is a subset of macro risk. In the event of a change in government or instability in a given country, it is possible that the return on investments may be adversely affected. There can be instability in a country if a new government takes over, a new legislative system is established, foreign decisions are made, or there is military control over the country. Investing over a long-term horizon can expose an investment to additional political risks [4].

In contrast to macro risk, there is also micro risk. Unlike macro risk, micro risk is specific to the risks and situations faced by individuals. According to All Things Supply Chain, they are smaller in scope than macro risks, but just as disruptive. Micro risk management entails identifying general trends such as high turnover of high-value employees, internal fraud or errors, or recurring supply chain disruptions [5]. After micro-risk identification is complete, you can change your strategy or backup procedures to minimize problems. You can also pay more attention to conditions or situations that could cause losses to individuals when investing and circulate information to effectively manage losses to investors from micro-risks. In the following sections, uncertainty is broken down by political uncertainty and pandemic uncertainty.

### **3. POLITICAL UNCERTAINTY AND RISK MANAGEMENT**

The next section examines how political uncertainty impacts people's risk perceptions and risk management. It is important to remember that uncertainty is a key mechanism by which government actions and policies affect the financial markets. The perception of risk in the capital market is significantly impacted by uncertainty when it comes to government policies and economic conditions. The rise in risk perception linked with excessive political uncertainty can have a variety of effects on financial policy. Politicians' uncertainty affects investors' perceptions of risk, causing the cost of equity capital to rise. Furthermore, political uncertainty heightens management's perception of business cash flow risk. This is because individual firms experience both unique and aggregate cash flow shocks, as the association between political uncertainty and total asset returns and volatility indicates [4]. For example, Hydro One, the Canadian power company, was externally influenced during a period of political uncertainty and reduced its investment in physical capital, but increased its search and recruitment of top talent, which could be considered another "cash flow" hit.

#### ***3.1. Political Uncertainty Influences to Companies***

Simultaneously, because profitability is a stochastic process that is impacted by current government policies, businesses make varied decisions in response to "risk management" owing to political variables. At the same time, the government acts in a quasi-benevolent manner, taking the welfare of investors and related political costs into consideration when making policy decisions. Two factors strongly influence the price of stock after a policy change is implemented: whether the change is implemented and the degree of surprise associated with the conclusion. When considering the optimal government policy, a policy shift is most likely to occur if the previous policy results in surprisingly low realized profitability. Thus, a policy change might boost a company's predicted profitability, hence increasing the stock price, a phenomenon known as the cash flow impact [6].

However, because new rules provide increased uncertainty, they can also increase the discount rate, hence lowering the stock price, a phenomenon known as the discount rate impact. The authors of their study noted that the discount rate effect exceeds the cash flow effect, resulting in a decline in stock values when government policy changes are announced. The reason for this is that positive announcement returns are often low, since investors anticipate that policy changes will boost stock values. Furthermore, policy changes enhance the volatility and correlation of stock returns by increasing uncertainty and the variability of random discount factors [7].

#### ***3.2. Political Uncertainty Influences to Capital Market***

Major global financial markets and options markets can also fluctuate during moments of significant political instability. Due to the fact that these political events may be deemed external, a significant advantage of the political activities approach is that it allows for a separation of political uncertainty from larger economic fundamentals uncertainty. In this study, the authors investigate three option market variables: implied volatility, implied volatility slope, and variance risk premium [8] in order to examine whether they are effective in protecting against political events of various types. The market variables demonstrate that when political events occur, options become more expensive because they protect against the risk related to governmental occurrences. Additionally, the security offered by options is typically more beneficial in terms of economic downturn and high uncertainty.

Political uncertainty as a result of anticipated changes in government policy has piqued the interest of financial economists, resulting in a growing body of literature. It

is covered in the literature for this survey all aspects of asset pricing, including equity markets as well as other financial markets, corporate policies that affect actual decisions, such as financing, investing, and disclosing, financial intermediation by banks and venture capital firms, as well as the economic environment and household characteristics [8]. Ex-ante departures of comparable businesses can boost exit rates when political risk is high. Furthermore, when political risk exists, MNCs' own experience under the existing system has minimal influence on the leave rate of subsidiaries but might raise it when the political regime changes. These data bolster the concept that a country's own business experience has a greater or perceived effect on its decision-making process than information gained from previous peer firm departures [9].

#### **4. "BLACK SHAWN EVENTS" UNCERTAINTY AND RISK MANAGEMENT**

Along with political insecurity, we may face the possibility of specific diseases, such as the two-year-old COVID-19 outbreak (2019). This epidemic is also categorized as an instance of uncertainty since it impacted not only public health, but also the global economy and its stability, putting a stop to 11 years of global stock market boom. Since the 1918 influenza pandemic, the world has not witnessed this disease, and its impact is extrapolated from its uncertainty [10]. The new Crowne Plaza pneumonia epidemic adds to everyday life's anxiety for a variety of reasons, including uncertainty about the pandemic's duration and therefore how it will effect the globe, as well as if another pandemic would harm the global economy. These unsolved uncertainties enhance investor and business uncertainty, a risk that requires careful assessment. The current coronavirus pandemic has heightened uncertainty in virtually every facet of everyday life, and medical specialists and epidemiologists still do not fully understand the virus. It is not known when vaccines will be in stock, and no one is able to predict when the world will return to normal. To produce vaccines around the world, it is imperative that governments, private businesses, and nonprofit organizations work together in order to accomplish this [11]. Numerous countries have enacted various sorts of lockdowns and quarantines, adding to the tension and panic. Due to a lack of medical supplies, particularly masks and respirators, international rivalry for masks and respirators has pushed hospitals and health centers to restrict their supplies [12]. These reasons have contributed to an increase in global insecurity.

The outbreak had a detrimental effect on both the globalized supply chain and the labour. During the outbreak, most nations ordered residents to return home, closed their borders, and prohibited the flow of all

commodities aside from those required for survival, such as foodstuffs and medicine. The result is that international supply chains, international passenger and freight transit, manufacturing, and commercial services, as well as hospitality, tourism, and education have all been disrupted or are significantly handicapped due to the recent events. As the majority of small companies, such as coffee shops, dining establishments, and beauty centres, shut down and unemployment increases globally, governments are compelled to provide them with cash to weather this unprecedented catastrophe [13].

However, such stimulation and freebies would ultimately impose a massive financial burden on all nations in the coming timeframe, which might be compounded further by economic collapse triggered exclusively by a "black swan occurrence." In such a bleak and unpredictable environment, we must learn how to prevent or handle similar terrible circumstances in the future, in addition to addressing urgent difficulties [14]. Each apparently unrelated "black swan occurrence," such as the current epidemic, eventually impacts a big global economy in an era of globalization.

In today's globally interconnected society, the uncertainty created by a "black swan occurrence" does not effect a single location or industry. Discontinuous uncertainty appears to be the most appropriate term to describe the uncertainty surrounding a new coronavirus pandemic, as its effects are strikingly similar to those of natural disasters, which result in widespread human and economic casualties. did not perceive it as a serious threat, highlighting the Point. Indeed, they appeared to be mainly concerned with supply chain continuity in order to maintain the availability of manufactured products from China while they awaited additional orders from the WHO regarding the looming calamity, which may result in significant political turmoil.

Take lessons from the present outbreak and ensure that information is shared in order to prepare for the next global pandemic's effect. As the virus spreads internationally, the virus's influence on governments, public institutions, industries, and individual businesses becomes increasingly obvious, as the majority of nations come to a halt owing to embargoes and border closures, creating uncertainty at the industry and corporate levels. A critical lesson for international business leaders and politicians to take away from this experience is to address all areas of uncertainty concurrently or sequentially in order to guarantee a more cohesive response to future global disasters [15].

##### ***4.1. Managing Unexpected Risks***

While the danger of Coronavirus infection remains uncertain, it is critical to recognize that we must now assess risk in other dimensions and determine ways to reduce possible losses from a pandemic. Uncertainty

drives reactions. Risk and uncertainty are distinct concepts: risk is quantified, with known consequences and associated probability. An uncertain situation arises when there are several possible consequences, and some or all of those outcomes are unknown, as well as a range of probabilities for those results. COVID-19 is a pandemic for which the probability of infection remains uncertain, although it is becoming clearly evident that infection is more prevalent than previously thought. It follows that there is no information on its mortality rate. If the morbidity and mortality rates for new coronavirus pneumonia were known, the risk of infection and death from new coronavirus pneumonia might be calculated [16].

## 5. CASE STUDY

As a result of the lasting effects of the novel coronavirus COVID-19, economic conditions in all sectors have been severely compromised. The following are some examples of how various industries, various national government agencies, companies, etc. have managed their risks in the light of the outbreak, as well as some recommendations.

Firstly, global demand for products has become significantly unstable because of the epidemic and the supply chain affected by it needs to be adjusted accordingly. If a company is not able to cope with the lack of production resources to deliver on schedule, it is likely to face closure, and there have been numerous plant closures because of the epidemic. The cost of renting premises and operating costs need to be considered. In addition, companies should become more flexible and resilient in their supply chain management in order to be prepared for the risk of sudden uncertainty and to reduce their dependence on the origin of raw materials and move more towards self-sufficiency to avoid the possibility of not being able to supply due to lack of production materials. In terms of communication with customers, efforts are made to develop remote customer service systems as far as possible to reduce the impact on on-site communication.

Secondly, some workplaces affected by COVID-19 have protective measures and procedures that company managers can adopt to protect the lives of employees and customers. For example, companies can purchase large quantities of disposable gloves, disposable masks, and protective clothing, as well as alcohol disinfectants. Companies can also reduce the risk of new coronavirus infections for those involved by organising telecommuting and shorter working hours, and by stipulating that employees and customers need to be separated by a pane of glass in order to communicate and interact [17]. Due to the nature of the work, offline operations are the only option otherwise face the possibility of a complete shutdown of work, when companies' disinfection are proper that tend to be better

protected against the risk of infection and prevent the need for quarantine and restricted travel again due to the occurrence of large aggregations of COVID-19 infections.

Thirdly, for the insurance industry, risk managers need to continuously improve their company's enterprise risk management framework and improve their employees' 'response manual' from COVID-19, whether by preparing relevant scenario analyses in advance or by refining risk plans. It is also important to note that business interruptions caused by an epidemic are not covered by insurers' policies and that insurers should actively consider this to optimize their cover [18]. Perhaps this point may differentiate insurers from others, as if insurers were able to include business interruptions due to an epidemic in their coverage, people might buy insurance in large numbers as a result, an inference that has some merit in the face of the increasing probability of uncertain risk occurrence nowadays. However, insurers will still need to make a full assessment before deciding whether to add a cover item, as this also involves risk considerations.

Fourthly, the airline industry was the hardest hit by COVID-19, with a precipitous drop in the number of civilian flights used due to the segregation of countries and travel restrictions. Airlines everywhere suffered heavy losses, but there were also airlines that turned a profit due to good risk management, for example: Ethiopian Airlines. Ethiopian Airlines has found ways to control its losses in response to COVID-19 shortly after the outbreak. For example, the airline arranged for 45 of its spare passenger planes to be used for the transport of cargo and parcels. Ethiopian Airlines has reached an agreement with the United Nations to help Ethiopia provide services such as personal protective equipment and cargo charters and global vaccine distribution to more than 80 countries. In addition, Ethiopian Airlines has invested in a new terminal to help passengers experience a better contactless flight service [19]. Ethiopian Airlines provides a good model for managing the risk of uncertainty. Being resilient and responding to all the changes that uncertainty brings, and always making positive changes, may be the winning formula for companies to be able to survive in adversity.

## 6. CONCLUSION

Since no one can accurately predict the future, the best way to manage our risk is to obtain the most accurate information as quickly and early as possible to mitigate risk and ensure returns in a timely manner. Due to the high degree of globalization, the activities of governments around the world can cause fluctuations in risk. In addition, certain small probability events, such as the current pandemic, can lead to different attitudes toward risk and reward. This has led to many cases dealing with similar uncertainty risks.

There are two types of uncertainty summarized above: macro-uncertainty and micro-uncertainty. Uncertainty in the field of risk management refers to the lack of knowledge and awareness of risk events, their consequences, and the likelihood of their occurrence. The "duality" of risk comes from the duality of the impact of uncertainty on business objectives: positive and negative. Determining the nature of uncertainty is a fundamental criterion for companies to choose the direction and degree of risk management. Regardless of whether or not a great uncertainty event like COVID-19 will be encountered again in the future, one should always be resilient when managing risk and take a more *flexible approach to responding to and dealing with risk* by analyzing more and newer information. Risk management is a perpetual course that requires constant updates and iterations every day, and the efforts and dedication of everyone involved in risk management.

## REFERENCES

- [1] T.Linda. "What Is Risk Management and Why Is It Important?" *SearchCompliance*, TechTarget, 12 Oct. 2021, <https://searchcompliance.techtarget.com/definition/risk-management>.
- [2] K.Julia. "Macro Risk." *Investopedia*, Investopedia, 13 Sept. 2021, <https://www.investopedia.com/terms/m/macrorisk.asp>.
- [3] S.Fraser. "Macro vs. Micro Risk Management." *Small Business - Chron.com*, Chron.com, 14 Jan. 2021, <https://smallbusiness.chron.com/macro-vs-micro-risk-management-32620.html>.
- [4] S. Kaplan and A. Mikes(June, 2012). Managing risks: A new framework. Harvard Business Review. Retrieved April 7, 2022, from <https://hbr.org/2012/06/managing-risks-a-new-framework>
- [5] B. Soraya. "Managing Scientific and Political Uncertainty." *Researchgate*, [https://www.researchgate.net/profile/Soraya-Boudia/publication/271907452\\_Managing\\_Scientific\\_and\\_Political\\_Uncertainty\\_Environmental\\_Risk\\_Assessment\\_in\\_a\\_Historical\\_Perspective/links/54d61a0f0cf24647580a29f3/Managing-Scientific-and-Political-Uncertainty-Environmental-Risk-Assessment-in-a-Historical-Perspective.pdf](https://www.researchgate.net/profile/Soraya-Boudia/publication/271907452_Managing_Scientific_and_Political_Uncertainty_Environmental_Risk_Assessment_in_a_Historical_Perspective/links/54d61a0f0cf24647580a29f3/Managing-Scientific-and-Political-Uncertainty-Environmental-Risk-Assessment-in-a-Historical-Perspective.pdf).
- [6] J. Henisz J, and A. Delios. "Information or Influence? The Benefits of Experience for Managing Political Uncertainty." *Sagejournals*, 1 Nov. 2004, <https://journals.sagepub.com/>.
- [7] John W., and S. Vähämaa. "US Presidential Elections and Implied Volatility: The Role of Political Uncertainty." *Journal of Banking & Finance*, North-Holland, 10 Dec. 2012, <https://www.sciencedirect.com/science/article/pii/S0378426612003603>.
- [8] L.Dai, and B. Zhang. "Political Uncertainty and Finance: A Survey." *Wiley Online Library*, 24 June 2019, <https://onlinelibrary.wiley.com/doi/full/10.1111/ajfs.12257>.
- [9] M.Li, et al. "Political Uncertainty and Allocation of Decision Rights among Business Groups: Evidence from the Replacement of Municipal Officials." *Pacific-Basin Finance Journal*, North-Holland, 26 Mar. 2021, <https://www.sciencedirect.com/science/article/pii/S0927538X21000482>.
- [10] A.Thaqeb, S.Asaad, et al. "The Pandemic and Economic Policy Uncertainty." *Wiley Online Library*, 12 Oct. 2020, <https://onlinelibrary.wiley.com/doi/full/10.1002/ijfe.2298>.
- [11] S.Denis, and M.Fischbacher. "The Changing Nature of Risk and Risk Management: The Challenge of Borders, Uncertainty and Resilience - Risk Management." *SpringerLink*, Palgrave Macmillan UK, 24 Mar. 2009, <https://link.springer.com/article/10.1057/rm.2009.1>
- [12] W. Zhu., et al. "Pandemic Uncertainty and Socially Responsible Investments." *Frontiers*, Frontiers, 12 March 2021, <https://www.frontiersin.org/articles/10.3389/fpubh.2021.661482/full>.
- [13] S.Chen, et al. "Political Uncertainty and Firm Entry: Evidence from Chinese Manufacturing Industries." *Journal of Business Research*, Elsevier, 31 July 2020, <https://www.sciencedirect.com/science/article/pii/S0148296320304616>.
- [14] A. Ababa. "Assessing Organizational Risk Management Practices In Time of COVID-19 Crisis-A Case Study of Ethiopian Airlines" July. 2021, <http://197.156.93.91/bitstream/123456789/6690/1/Nekerwon-Final%20Research%20Report-July%202021.pdf>
- [15] S.Piyush, et al. "Managing Uncertainty during a Global Pandemic: An International Business Perspective." *Journal of Business Research*, Elsevier, 25 May 2020, <https://www.sciencedirect.com/science/article/pii/S0148296320303258>.

- [16] S.David W. “Uncertainty and Risk Are Multidimensional: Lessons from the COVID-19 Pandemic.” *Sagejournals*, 28 May 2020, <https://journals.sagepub.com/doi/full/10.1177/0743915620930007>.
- [17] S.Piotr, et al. “Risk Management in the Context of COVID-19 Pandemic in an Enterprise – Ishikawa Cause-and-Effect Diagram.” *System Safety : Human - Technical Facility - Environment*, 2021, <https://yadda.icm.edu.pl/baztech/element/bwmeta1.element.baztech-27f58b3c-7a94-4f11-a183-edfd9856d924>.
- [18] A.Richter and T. Wilson. “Covid-19: Implications for Insurer Risk Management and the Insurability of Pandemic Risk - the Geneva Risk and Insurance Review.” *SpringerLink*, Palgrave Macmillan UK, 22 Sept. 2020, <https://link.springer.com/article/10.1057/s10713-020-00054-z>.
- [19] A. Ababa, “Assessing Organizational Risk Management Practices In Time of COVID-19 Crisis-A Case Study of Ethiopian Airlines” July. 2021, <http://197.156.93.91/bitstream/123456789/6690/1/Nekerwon-Final%20Research%20Report-July%202021.pdf>