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UNDERESTIMATION OF NOVEL RISKS AND ANTI-PANDEMIC PERFORMANCE: THE MODERATING EFFECTS OF POLITICS AND ADAPTIVE INNOVATION

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Abstract

Based on prior research and observations of global responses to the COVID-19 pandemic, we study the relationship between underestimation of novel risks and the performance of fighting adversities (PFA). While prior research suggests that underestimation of risks may have some positive effects on PFA, we propose that, for novel adversities such as the COVID-19 pandemic, underestimation of its risk can be very harmful and damaging. We also propose that the relationship between the underestimation and PFA can be moderated by intensiveness of politics (IPS) and adaptive innovation. The contingent model in this paper provides insightful practical implications to risk and disaster management in human collectives.

Keywords: Underestimation of Novel Risks, Politics, Adaptive Innovation, Adversity

INTRODUCTION

Risk estimation is an important tool in risk and disaster management for human collectives, which include healthcare organizations, communities, regions, states and countries. Risk estimation may involve two types of errors. Type I errors in risk estimation occur when adversities that are predicted do not occur (risk is overestimated), and Type II errors in risk estimation occur when adversities that are not predicted do occur (risk is underestimated). In this paper, we focus on Type II errors, which should be particularly relevant for human collectives facing a novel disease such as the COVID-19 pandemic (Haigh, Rahayu, & Amaratunga, 2015；Stewart, Grahmann, Fillmore, & Benson, 2017). Observing global responses to the COVID-19 pandemic, we stress the importance of paying more attention to this type of errors. Also, based on the observations, we illustrate the moderating effects of politics and adaptive innovation on the relationship between Type II errors and PFA.

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Insufficient research has been conducted so far on the relationship between underestimation of novel risks and PFA (Aerts, et al., 2018; Etkin, Mamuji, & Clarke, 2018), and research findings have been mixed. While some studies find that underestimation of risk or overconfidence may have some positive effects on organizational performance of fighting adversity (e.g., Patterson, Goens, & Reed, 2009), other studies show opposite findings.

Our current paper addresses this research gap based on prior research as well as observations of global responses to the COVID-19 pandemic from the United States and China. Developing a conceptual model in the area of leadership and that of risk management, we first discuss the relationship between underestimation of novel risks and PFA. We then identify two major moderators reflected on the challenges in the 2020 war against the pandemic. After that, we propose a conceptual model showing the main effect as well as the moderating ones as discussed in this paper (see Figure 1). We conclude with a discussion of the implications of the findings from this study.

UNDERESTIMATION OF NOVEL RISKS AND PFA

Performance of fighting adversities (PFA) can be determined by both the proactive capacity of taking action before adversity and the reactive capacity of recovering after adversity (Välikangas, 2010). Both capacities may be influenced by objective estimations of risks (cf., Collins, 2007; Baykal, 2018).

Researchers often consider PFA at different stages, such as performance before, during, and after adversity (Kaplan and Waller, 2018; Stoverink, et al., 2020), or, anticipation of, coping with, and adaptation to the disaster (e.g., Cameron, Dutton, and Quinn, 2003; Duchek, 2020). At all of these stages, underestimation of risks may have important effects on PFA.

According to research (e.g., Patterson, Goens, & Reed, 2009), underestimation of risks or overconfidence facing adversity may have some positive effects on organizational performance, because it allows decision-makers to have a positive outlook about the future when facing adversity, which manifests itself as a form of "psychological immunity" for rebounding from adversity (Everly, 2011). However, studies showing this positive effect have mainly been conducted in research settings with conventional or common adversities, such as those in stock markets. Insufficient research has been conducted on the relationship between underestimation of novel adversities and PFA (Aerts, et al., 2018; Etkin, Mamuji, & Clarke, 2018).

The 2020 global responses to the COVID-19 pandemic provides an ideal research setting for studying such a relationship. Empirical observations from global responses to the pandemic show that underestimation of novel risks can be very harmful and damaging. Take China as an example. When the pandemic was first discovered in Wuhan city at the end of 2019, confirmed cases were mainly found in a single food market, which partially explained why the city government underestimated the threat of this novel disease. Based on the fact that cases of infection were mainly found among those who had worked in or visited the food market, the city estimated that “although significant evidence confirming human-to-human transmission has yet to be found, the possibility of limited human-to-human transmission cannot be ruled out”… “Yet the risk of sustained human-to-human transmission is rather low.” (cf., Chik, 2020a; Wikipedia, 2020). As a result, the local government did little to prevent this pandemic in the first two weeks of January, 2020. When the disease was proved to be highly affective, it was already too late. When the pandemic was finally brought under control in March, 2020, over 4000 Chinese had died, and China’s economy suffered heavy losses (Chik, 2020b; Wikipedia, 2020). Similar cases can also be observed in other countries. In some major Western countries, for instance, this pandemic was also underestimated at the very beginning. For instance, it was considered as merely a type of flu, which was infecting Asians only. Moreover, it should disappear on its own in the summer when the weather got warmer (e.g., Sullivan, 2020; Trump, 2020).

On the other hand, avoiding underestimation of the risk seems to cause less damages when dealing with novel adversities such as the COVID-19 pandemic. One case in point is what happened in Beijing, China in June, 2020. After eight weeks without any new locally transmitted cases, a case of local infection of the pandemic was suddenly reported on June 11, 2020. Similar to the case in Wuhan, the case was first found to be related to a food market, the Xinfadi market. Learning from the mistake of Wuhan that underestimated the novel risk, Beijing quickly tested about 76,500 people who had visited the market within three days, and found 79 new infections, all of whom were hospitalized without any delay. These new cases also prompted the government to shut down the market as well as five others in Beijing, and to lock down 11 nearby residential communities and nine schools that had reopened after lockdowns in February. At the same time, Beijing also re-tightened traffic controls into and out of the city, barring inter-provincial tour groups and suspending sporting events. Local media outlets described these efforts as a “wartime mechanism” and called on citizens to cooperate (Wang, & Yu, 2020; Chik, 2020b). Because of all these efforts, there was no casualty this time, and the city was able to quickly stop the spread of the pandemic by July 5, 2020 (Galbraith & Woo, 2020).

These two cases of food markets, as mentioned above, reflect consistently the challenge of avoiding underestimation of novel risk in disaster management. The main reason here is that few people have any experience or knowledge with regard to a novel disease like this pandemic. Also, the COVID-19 virus also has the capability of fast-mutation (Bernal-Torres et al., 2020; Newkirk, & Dwyer, 2020). All these underline the importance of estimation of novel risks objectively. Indeed, in recent research of different novel adversities, many authors have also suggested the significance of avoiding underestimating novel risks (e.g., Burke, et al., 2015; Haigh, Rahayu, & Amaratunga, 2015；Prior, & Roth, 2013；Stewart, Grahmann, Fillmore, & Benson, 2017). According to all these, we propose:

Proposition 1: *For novel adversities such as the COVID-19 pandemic, underestimation of their risks can be very harmful and damaging for human collectives in terms of performance in disaster management.*

THE MODERATING EFFECT OF POLITICS

Research has suggested that politics can affect the processes of decision-making (e.g., Sylvan, Goel, & Chandrasekaran, 1990; Nai, 2019), which is also true for those in risk and disaster management (Bennett, 2019; Kurian, et al. 2016). There are at least two reasons that help explain the effects of politics here. First, politics can influence the control of information (Mansell, 2017). In the literature of power and resource dependency (Pfeffer & Salancik, 2003), it has been documented that information control and manipulation are often used to gain power or influence others. Given intensified power struggles and politics, negative information about the pandemic is more likely to be controlled if the information is harmful to the political image of government leaders. In other words, working under stress to win in their power struggles, these leaders may try to control information for political gains (Wolfe, 2020), which in turn can enhance the negative relationship between underestimation of novel risks and the anti-pandemic performance or PFA.

Moreover, politics can also influence the interpretation of information (Baekgaard, et al., 2019; Bonnet, & Rosenbaum, 2020). For instance, trying to get re-elected, government leaders may still declare that the threat of the pandemic can be ignored even if the number of casualties and the rate of infection have both reached a very high level (e.g., Patterson, Goens, & Reed, 2009). Observing all these from government leaders' responses to the COVID-19 in 2020, we hypothesize that politics should enhance the negative relationship between the underestimation of novel risks and PFA.

Proposition 2: *With high intensiveness of politics and power struggle, a significantly negative relationship between underestimation of novel risks and PFA is more likely to be observed than with low intensiveness of politics and power struggle.*

THE MODERATING EFFECT OF ADAPTIVE INNOVATION

According to research (e.g. Schumpeter, 1983; Cooke, 2012; Alexander, & Van Knippenberg, 2014), adaptive innovation can be defined as a type of evolutional or incremental new adaptations in response to significant changes in the environments. Research has suggested that adaptive innovation can be an important ingredient to risk and disaster management (Rautela, 2005; Galbreath, Charles, & Oczkowski, 2016).

Observing responses of human collectives to the COVID-19 pandemic in 2020, we can identify several elements or approaches of adaptive innovation in dealing with the novel adversity.

Element 1, establishing new protocols creatively

Facing the pandemic, human collectives often establish new protocols creatively so that they can improve information transparency in their communities (Bell & Kozlowski, 2011). These protocols include formal reflection and debriefing through TV, internet and other means of communication (Salas et al., 2008). Take China as an example. Since mid-January, 2020, the country has been using new protocols to key the society informed about the pandemic everyday (Chik, 2020b; Wikipedia, 2020). One new innovation here was the Joint Defense Mechanism of the State Council, which is holding cross-department and cross-region press-conference daily with both online and offline news media. With this system, the Chinese governments were able to gain supports and understanding of its aggressive quarantine policies, which were the key to bring the pandemic under control in March, 2020.

Element 2, conducting boundary spanning creatively

To improve PFA, human collectives can also engage in boundary spanning creatively (Lengnick-Hall et al., 2011). For example, China's medical system faced a great shortage of qualified human resource (i.e., qualified medical doctors and nurses) in January 2020 when the pandemic just broke out. To overcome the difficulty, the government adopted boundary spanning creatively across all medical organizations throughout the country. Doctors and nurses were transferred from all over the country, including army units, to work in Wuhan and other infected areas (Chik, 2020b; Wikipedia, 2020). With this boundary spanning, the country was able to overcome the difficulty in human resources shortage and brought the pandemic under control in a short period of time.

Element 3, reallocating power creatively

Reallocating power creatively can also be considered as an element of adaptive creativity when dealing with adversity (Bratberg, 2010). For example, when the pandemic was discovered in Wuhan, China's 1.4 billion citizens needed to use face masks so that the price of masks increased several times right away. Even so, many of the citizens were still unable to get hold of masks they need (cf., Zhuang, & Xin, 2020). Addressing this shortage, China shifted the responsibility of mask production from the Ministry of Industry and

Information to the more powerful State Reform and Development Committee (Zhuang, & Xin, 2020). With this creative reallocation of power, resources for mask production increased rapidly so that the supply of face masks become stable after March, 2020.

Based on all these observations as well as prior studies, we propose:

Proposition 3: *Adaptive innovation adopted by human collectives should weaken the negative relationship between underestimation of novel risks and performance of fighting adversity (PFA).*

DISCUSSION AND CONCLUSIONS

Figure 1 shows a conceptual model summarizing the propositions above. While prior research found that underestimation of risks may have positive effects in some situations, such as stock market trading or business turn-around (e.g., Hayward, et al., 2010), we argue that the findings may not be applicable in other research settings or areas. For fighting against a novel pandemic in human collectives, for instance, underestimation of its risk cannot lead to positive outcomes and can be very damaging. Our key argument here is that there is a fundamental difference between the risk in the stock market and the risk caused by a novel pandemic. While the former can lead to accounting losses that are very painful to a small number of stock investors, the latter can cause great losses to all sectors in a society. Viewing the consequences of this pandemic since 2020 in all major countries throughout the world, one can see that the risk involved is too great to be ignored by decision-makers throughout the world.

In addition, based on prior research as well as observations from global responses to the 2020 COVID-19 pandemic, we propose that the negative relationship between underestimation of risks and PFA can be moderated by politics and adaptive innovation. While the former can enhance the negative effect of underestimation, the latter may weaken the negative effect. Figure 1 proposes a conceptual model summarizing the forgoing views.

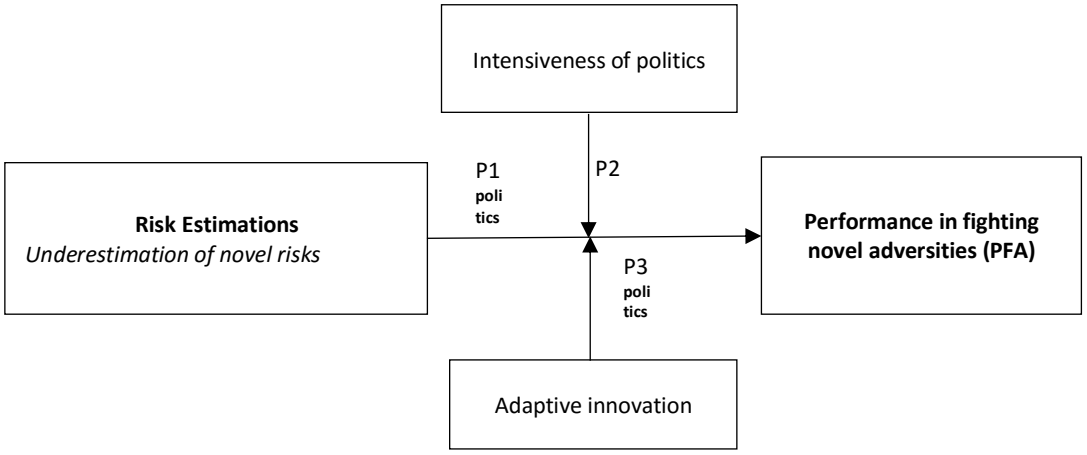

Figure 1. **A conceptual framework of the relationship between risk estimations and PFA**

Proposing a framework as shown in Figure 1, we imply two major points of view. These points of view are discussed below.

First, when fighting a novel disaster such as the COVID-19 pandemic, human collectives should rely on science and reduce the influence of politics. If human collectives allow government leaders to play politics regardless of basic interests of the society, they should be unable to deal with the novel pandemic effectively and efficiently.

Second, when fighting a novel disaster such as the COVID-19 pandemic, human collectives and their leaders can make mistakes at the very beginning. What is important here is the ability to correct the mistakes timely and creatively. Here the approaches of adaptive innovation can be very useful and helpful.

Contribution and Implications

This paper contributes by extending our understanding of underestimation of novel risks and its consequences in disaster management. In other words, this paper reflects on learning experience from 2020 global responses to the COVID-19 pandemic. The findings of our current paper have several important implications for both academic researchers and managerial practitioners.

Implication for academic researchers

For academic researchers, our conceptual model and related findings have some important implications. Firstly, our current paper demonstrates the necessity of avoiding politics in fighting against adversities. However, it remains unclear how human collectives can effectively control the threat of politics in when fighting a novel pandemic such as the COVID-19. In other words, more academic research should be conducted on the issue how to neutralize the threat of politics in risk assessment and disaster management. For academic research of risk estimation and disaster management, it is necessary and helpful to have more scientists and managerial researchers who can conduct studies outside of political spheres.

Secondly, our current paper highlights benefit of adaptive innovation in fighting novel adversities. It is worth conducting more academic studies of adaptive innovation. Many important and interesting issues have remained unclear so far. For instance, what should be the relationship between organizational politics and adaptive innovation? and what are the resources that can enhance organizational performances in adaptive innovation? The results from studying these issues should enrich the literature of innovation and risk management.

Finally, the results from our current paper imply a very interesting academic issue --- how should human collectives make correct estimation of novel risks. While we argue that it is risky to underestimate novel risks such as the COVID-19, we do not mean that overestimation of novel risks is better. It is an important task for academic researchers to develop a scientific approach to balance these two types of mistakes in estimation of novel risks, i.e., underestimation of novel risks on the one hand and overestimation of novel risks on the other.

Implications for managerial practitioners

For managerial practitioners and decision-makers in the real world, our conceptual model and findings also have some important implications. Specifically, first, our results in this paper suggest that managerial practitioners and decision-makers should endeavor to be politically impartial in risk estimation and disaster management. This is especially important when studying or estimating risk of novel adversities such as the 2020 COVID-19 pandemic.

Second, our current paper highlights benefit of adaptive innovation in fighting novel adversities. For novel adversities such as the 2020 COVID-19 pandemic, it would be very difficult for human collectives to avoid making the same mistake of underestimating risks in the future. To reduce the damages caused by this type of mistakes, adopting an approach of adaptive innovation should be very helpful.

LIMITATIONS AND DIRECTION OF FUTURE RESEARCH

The main limitation of our current paper is that some of elements of adaptive innovation, as identified in our current paper, can be culture- or China-specific. Therefore, for future research, it should be very helpful to conduct similar studies in other cultural and institutional contexts. In this way, we can test the external validity of the findings generated in our current paper.

Another main limitation of this paper is insufficient empirical data that can be used to support our theoretical framework. In other words, to test a theoretical model such as that proposed in our current paper, we need not only empirical observation and case studies, but also more solid empirical evidence based on high-quality empirical data that are collected with scientific methodology. Future studies should make great efforts to collect empirical data so that the model proposed in our current paper can be tested empirically.

Although the paper has some limitations, as discussed above, the model and related results presented in this paper can still be useful and significant. We therefore call for more studies, especially empirical ones, to deal with the issues examined in our current study, such as the issue how to adopt the approach of adaptive innovation to struggle against novel adversities, and the issue of correct estimation of novel risks. All these should help improving research and/or performance in risk and disaster management.

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