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Impact of CSR on Organizational Resilience across Chinese Listed Firms: Combination of Process-oriented and Outcome-oriented Perspectives

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Abstract

The firms are confronted with increasingly uncertain environment. Their ability to endure, recover and bounce back from a major disturbance is essential for firms' survival and development. Therefore, how to cultivate organizational resilience has become an important issue. The paper operationalizes organizational resilience into two parts. One is the process of forming organizational resilience in pre-adversity period, another is the manifestation of organizational resilience in post-adversity period. Using the panel data from 2010 to 2019 and cross-sectional data in 2020 of listed firms in Chinese stock market, the paper employs fixed effect and OLS estimations to study the influence of corporate social responsibility (CSR) on organizational resilience by combining process-oriented and outcome-oriented perspectives. The results show that in context of China, CSR performance has mixed effects on organizational resilience. Specifically, CSR practice impacts organizational resilience through reducing financial volatility, instead of through improving economic strength in the process of formation. Furthermore, CSR practice shows no significant impact on the manifestation of organizational resilience when an adversity happens. The findings support the insurance-like effect of CSR practice. The study is the first attempt to interpret organizational resilience as a compound capability which is developed at tranquil period and manifested at adversity period. It is also one of the few empirical studies concerning the influence of CSR on organizational resilience with the background of a recently happened crisis. It contributes to the body of literatures on determinants of organizational resilience and suggests that CSR practice is a practical way to build up organizational resilience and maintain business sustainability.

Keywords: *organizational resilience; CSR; financial volatility; financial performance.*

1. Introduction

Organizational resilience is an organization's capacity to survive and even develop through the turbulent environmental changes (R. Chen, Liu, & Zhou, 2021; Duchek, 2019; Sabatino, 2016). The word "resilience" means to rebound in Latin verb. It was applied in the research field of engineering and ecology. Then, it was introduced into psychology and business fields. At the first beginning, resilience in business was proposed to study how organizations responded to external threats. Straw (1981) proposed the threat-rigidity effect and underlined that an external shock limited the information process and control, which in turn, resulted in stiffness rather than resilience

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in response. Contrary to his opinion, Meyer (1982) suggested that an organization can exhibit adaptability by absorbing the effect of adverse events through changing and learning. The two contradictory propositions contributed to the study on how the organizations reacted to disruptions. Nowadays, firms are faced with various kinds of environmental disturbance. Whether a firm is resilient enough may provide an explanation that why some firms can go through difficulties and become stronger while others are eliminated from market (Jia, Chowdhury, Prayag, & Hossan Chowdhury, 2020). Therefore, development of organizational resilience is critical for firms' sustainable development.

CSR is a business strategy which integrates economic interest, environmental benefit and social expectation into firms' operation and management under the spirit of sustainable development. It orients the balanced and sustainable development by satisfying stakeholders' interest (Bhattacharyya & Rahman, 2019). From the early stage in CSR development, there existed two opposite opinions on CSR's consequence. One believed that CSR favored corporations due to its positive effects arising from good relationship with stakeholders in line with stakeholder theory, while the opposite opinion represented by Friedman (1970) indicated that CSR implementation brought no substantial benefit after consuming valuable resources. It makes corporations assume responsibilities which should have been undertaken by other institutions. The debate attracted research interest in discovering the effect of CSR implementation on firm performance. A large body of literatures contributed to the discussion but reached no consensus. However, the unexpected major disruptions may greatly disturb the normal operation and put firms into adverse situations. Some studies introduce the concept of organizational resilience and attempt to explain why some firms are resilient enough to be able to survive adversity, sustain their operation or even emerge stronger in contrast with those which failed to keep business continuity. Among them, some scholars suggest that social and environmental practice may benefit the acquirement of organizational resilience in line with stakeholder theory (Ahn & Park, 2018; Markman & Venzin, 2014). Pündrich, Aguilar Delgado, and Barin-Cruz (2021) also pointed that CSR implementation was important for firms to respond to crisis, particularly in post-crisis period. The paper follows this streamline of research and explores the impact of CSR practice on organizational resilience.

The basis of studying relationship between CSR and organizational resilience is to conceptualize and operationalize organizational resilience(Ruijun Chen, Xie, & Liu, 2021; Jia et al., 2020). There are many types of conceptualizations. Some interpreted it from perspective of origin, stressing that it is a capability which can be developed from certain practices, such as human resource management, social and environmental practice (Ahn & Park, 2018; Mark Desjardine, Bansal, & Yang, 2017). Others interpret it as a holistic process including the stage of anticipation of risks, stage of absorbing the impact of shocks and stage of adaptation of new environment. Each stage requires some types of specific abilities. These past conceptualizations explain how resilient capacity is developed, what capability is needed in the process of development and what benefit resilience can bring. However, they do not answer the questions about how to express and measure the crucial capabilities such as preparing and withstanding the impact of a shock (Aven, 2011). Based on previous research, the paper conceptualizes organizational resilience by integrating the process-oriented and outcome-oriented perspectives adopted by past studies separately. The process-oriented perspective is concerned with formation of organizational resilience, which is achieved by accumulating economic resources and preventing resource depletion. Accordingly, the forming process is operationalized as the firms' ability to achieve higher financial performance and lower financial risk. It answers the question on how to measure the ability of a firm to prepare for the unexpected disruption and absorb its impact. However, a resilient firm should be able to withstand the impact of a shock. Such capability is manifested by less performance drop and quicker performance recovery in face of disruptions. These outcome-oriented performance indicators may check if the firms have successfully developed resilient power after long period of economic strength accumulation. Therefore, to show a holistic picture of a firm's resilient power, we need to consider not only the performance during the process of resilience formation in pre-adversity period, but also the performance in coping with adversities after a long period of development. Based on the conceptualization, organizational resilience is operationalized into financial performance and financial volatility in pre-adversity period to examine the outcome in forming stage. By introducing an unexpected adversity, two indicators, including performance drop and performance recovery are employed to measure the manifestation of organizational resilience in post-adversity period. Such operationalization facilitates the all-round observation of organizational resilience.

Existing research on impact of CSR on organizational resilience reach no consensus. Some literatures point out that CSR practice is an enabler of organizational resilience. For example, Ahn and Park (2018) made case study to show that CSR facilitates survival of firms through securing social capital and moral legitimacy from primary stakeholders and secondary stakeholders respectively. Ortiz-de-Mandojana and Bansal (2016) indicated that by promoting the long-term performance, CSR helped firms to avoid crisis and became more resilient to unexpected disruptions. (Mark Desjardine et al., 2017) found that firms with higher CSR performance recovered more quickly after financial crisis. In COVID-19 outbreak, Rui, Yrjo, Yang, and Zhang (2020) argued that firms with higher CSR ratings had significantly higher returns, lower return volatility and higher operating profit margins during the first quarter of 2020, demonstrating stronger resilient power. Magrizos, Apospori, Carrigan, and Jones (2021) found that during economic crisis, CSR is positively related to financial performance for SMEs. However, (Kee-Hong Bae, 2021) found no supporting evidence to show that CSR positively affected stock return during and after COVID-19 crisis, which implied that the organizational resilience of firms with higher CSR performance presented no substantial difference from those with lower CSR performance. Therefore, the effect of CSR on organizational resilience is inconsistent.

Most previous literatures took the financial crisis in 2008 as a background to study organizational resilience. As the economic environment and CSR strategy have experienced great changes in the past decade of years, the paper takes the first wave of COVID-19 pandemic in 2020 as a natural setting. By taking Chinese listed firms as samples, it uses the panel data from 2010 to 2019 to study the impact of CSR on formation of organizational resilience and uses the cross-sectional data in 2020 to study the its manifestation respectively. The findings show that CSR improves organizational resilience through reducing firm risk to prevent depletion of resource in pre-adversity period. In post-adversity period, firms with higher CSR performance dropped more and recovered slower, which implies that CSR cannot improve organizational resilience when a crisis happened. By doing so, the present study responds to the call for exploration of what elements may help to develop organizational resilience, and provides insight into what role CSR plays in building up resilient power of firms.

2. Literature review and hypothesis development

2.1 Conceptualization and operationalization of organizational resilience

Organizational resilience is defined as success of firms in preparing, tackling and recovering from financial difficulties by employment of their capabilities, actions and behaviors(Duchek, 2019; Jia et al., 2020; Ortiz-de-Mandojana & Bansal, 2016). Many conceptualizations are put forward in accordance with different research purpose. Some literatures conceptualize it as a process-based capability which includes phases of anticipation, endurance, bouncing back and adaptation(Burnard & Ran, 2011; S. Teoh, 2013). Its formation is closely associated with the performance in pre-adversity period. Corresponding to this type of conceptualization, organizational resilience is operationalized as long-term financial performance and financial volatility before the occurrence of unexpected disruptions. The reason is that the persistently superior financial performance greatly increases stability, which enable firms to endure shock of disruptions (Ortiz-de-Mandojana & Bansal, 2016; Pettit, Croxton, & Fiksel, 2019). As an indicator of firm risk, financial volatility shows the firms' ability to manage risk, which enables firms to be able to contain minor disruptions from escalating into major ones by establishing a set of anticipating and controlling risk management system. This stream of conceptualization and operationalization offers insight to the origin of resilient power in pre-adversity period, but it does not specify whether a firm which has superior financial performance and remarkable risk management ability can successfully cope with an unexpected disruption.

Another type of conceptualization interprets organizational resilience as a manifestation when a firm is confronted with adversities, and operationalizes it as the performance in adversity, which is argued to be the remarkable sign of organizational resilience (McCarthy, Collard, & Johnson, 2017). For example, M. Desjardine, Bansal, and Yang (2019) used two indicators to measure organizational resilience, namely severity of loss and time to recovery. They were intended to capture the stability dimension and flexibility dimension of organizational resilience respectively. (Iborra, Safón, & Dolz, 2019a) measured the resilience with two dimensions. One was the survival which was identified by whether the firms were operational within five years since the beginning of crisis. Another was sales recovery within the same period as survival. It supplemented the study of Markman and Venzin (2014) which operationalized organizational resilience only as survival rate of firms in a certain period after crisis. This stream of conceptualization and operationalization is concise and outcome-oriented, but incomplete particularly when many practitioners are interested in how to make a firm more resilient. Based on the review, combination of forming process and manifestation of organizational resilience may present a full picture in observing resilient capability of a firm. It is not only to explain where the resilient power comes from, but also to test whether the firm is resilient in tackling adversities. Accordingly, impact of CSR is displayed on its role in developing organizational resilience in pre-adversity period and in helping firms to go through difficulties in post-adversity period. The framework of the impact of organizational resilience is showed in Figure 1. Correspondingly, the present study operationalizes organizational resilience into two parts. One is the process of forming organizational resilience in pre-adversity period operationalized by the impact of CSR on financial performance and on financial volatility, another is the manifestation of organizational resilience in post-adversity period operationalized by the impact of CSR on performance drop and performance recovery.

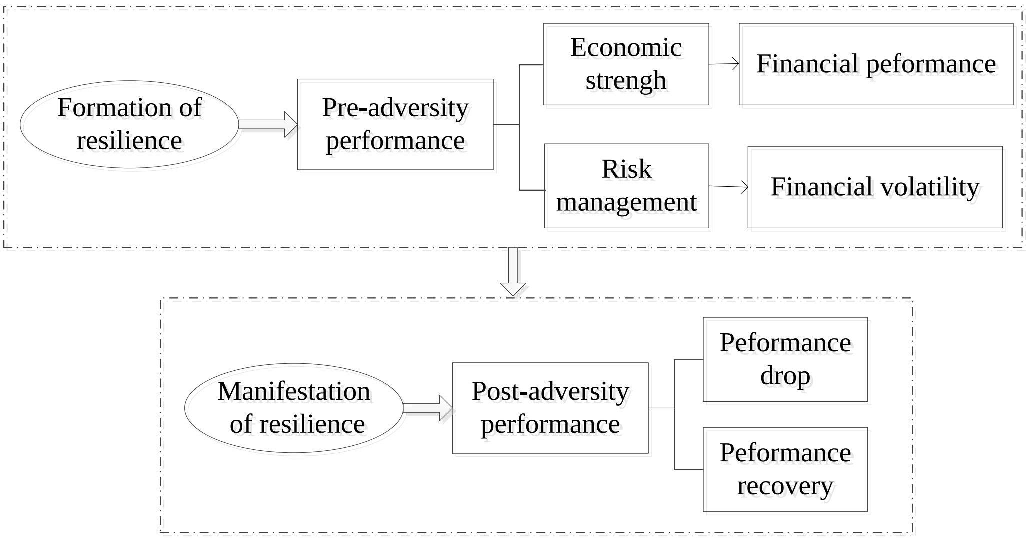

Figure1 Conceptualization and Operationalization of Organizational Resilience

2.2 CSR in China

Different contextual background leads to different understanding and expectation on CSR issues (Davidson & Yin, 2019; Gulzar, Cherian, Hwang, Jiang, & Sial, 2019). The contextual conditions should be considered in studying the CSR's economic consequences(Davidson & Yin, 2019; Wang, Dou, & Jia, 2016b).

In the past decades, the views of CSR issue were primarily contributed by academic world in the West(Davidson & Yin, 2019). Different from western countries, CSR practice was not introduced into China until its entry into WTO in 2001. In 2006, the requirement of implementing CSR practice was written into the revised Company Law(Y. Y. Hu, Zhu, Tucker, & Hu, 2018). In the same year, Guide on Listed Company's Social Responsibility (Shenzhen Guide) was issued to promote CSR disclosure. In 2007, Regulation on Environmental Information Disclosure required the firms causing heavy pollution to disclose environmental information mandatorily. The banks were also required to consider environmental performance in credit evaluation of firms. In 2008, Shanghai Stock Exchange directed listed companies to publish CSR report annually.

In order to promote CSR practice, the government encourages relevant institutions to establish evaluation system to appraise and monitor CSR implementation of Chinese listed firms. The popular appraisal system is Hexun CSR rating index (HX). In accordance with stakeholder theory, the evaluation system sets up five individual dimensions, namely, shareholder, employee, business including supplier and customer, environment and society dimension, and assigns different weights to each dimension to reflect the heterogeneity in sector nature before aggregating into a comprehensive score of overall CSR performance(Moon, 2007; Zhang, Morse, & Ma, 2019a).

CSR practice of firms can be driven by government, market, society and globalization(Moon, 2007; Zhang et al., 2019a). Compared with other countries, the Chinese governments plays more important role to facilitate CSR implementation by enacting legislation, cooperating with business and encouraging CSR behaviour. The weakness of social institutions strengthens the role of government and shapes an important feature on CSR in China(Zhang et al., 2019a). It contributes to the phenomenon that some Chinese firms are engaged in CSR practice to meet government legitimacy. CSR is viewed as a defensive measure rather than strategic measure and many companies take CSR expenditure as a cost that should be reduced(Lamarche & Bodet, 2018). Such characteristic might impact the consequence of CSR implementation as whether the CSR generates negative or positive economic consequence is largely relied on the difference in motivation(Derwall, Koedijk, & Ter Horst, 2011).

2.3 Impact of CSR on organizational resilience

2.3.1 Impact of CSR on organizational resilience in pre-adversity period

The resilient capacity of an organization needs long period of development in pre-adversity period and comes from a firm's sound economic strength and good risk management ability. These abilities are reflected in high level of financial performance and low level of financial volatility, so that it can absorb the impact of unexpected adversities and perform stably. Therefore, in the process of formation, the positive impact on CSR on organizational resilience is shown in its impact on improving firm performance and reducing firm risk.

Stakeholder theory and resource-based view are always combined to explain the positive impact of CSR on firm performance. In line with stakeholder theory, the stakeholders are groups or individuals who can affect or be affected by the activities of an organization. They control valuable resources which facilitate the implementation of business strategies. CSR practice can improve relationship with stakeholders, enabling firms to acquire the resources, creating a network and setting up good reputation. These valuable, rare, inimitable and non-substitute resources are crucial for firms to achieve persistently superior performance(Markman & Venzin, 2014). Innovation is a type of critical capacity for building organization resilience(Iborra, Safón, & Dolz, 2019b). It is directly connected with the continuous improvement of firm performance. Shareholders, as one of the important internal stakeholders, are inclined to lower their expected financial return when being disclosed CSR information, assuming more disposable resources to support firms' flexible operation(Cincera & Santos, 2015; Lee, Sameen, & Cowling, 2015; Santos, Cincera, Neto, & Serrano, 2016). Embracing a resilient supply chain is important to survival and long-term competitiveness. The focal firm, its suppliers and customers form a supply chain. They interact with each other and develop a collaborative business ecosystem. The resilience of the firm depends not only on performance of its own, but on those of firms along the supply chain (Tukamuhabwa, Stevenson, Busby, & Zorzini, 2015). CSR practice takes the interest of partners in supply chain into account and synergizes them into a dynamic system, helping firms to maintain stable and adaptive particularly in response to an unpredictable environment. Specifically, in a crisis, the speed of losing resource is higher than that of acquiring resource. Whether the firm is able to obtain resources promptly is crucial to go through difficulties. CSR might function as a channel to secure critical resources controlled by stakeholders and help firms to maintain normal operation(Wang, Dou, & Jia, 2016a).

Stakeholder theory and social capital theory offer theoretical grounds for CSR's impact on firm risk. Social capital is referred to the social networks and the reciprocity that arises from them, it includes trustworthiness from social environment, capacity of information flow and presence of norms (Sen & Cowley, 2012). The common ground generated by shared norm encourages cooperation and information flow among firms and strengthens mutual trust between members (Adler & Kwon, 2002). Good relationships with stakeholders help firms to build up social capital, which generate insurance-like effect to protect firms from being affected by negative events and reduce the overall survival challenge(Sen & Cowley, 2012). Comparatively, firms with no CSR activity lack this form of buffering goodwill and are exposed to potentially greater impacts (Godfrey, Merrill, & Hansen, 2009). As CSR has the value-creation and value-protection effect, it makes firms to be more resilient in the face of disruptions.

However, classical theory and agency theory suggest that CSR might have negative impact on organizational resilience either by decreasing economic strength accumulation or by increasing firm risk. Classical theory is a traditional view on CSR activities proposed by Friedman (1970). It articulates that companies should avoid undertaking CSR engagement as the objectivity of firms is to maximize profit for shareholders. The direct economic benefit generated by CSR practice is trivial in comparison with the large amount of resource commitment to CSR engagement, which usually leads to negative impact of CSR on short-term financial performance.

In line with agency theory, due to conflict of interest between shareholders and management, CSR may be a reflection of individual interest rather that of a company. Managers take advantage of CSR practice as a projection of individual image or firms' image to cover unethical practice or fraudulent activities. It usually leads to management opportunism and decreases firm value (H. Hu, Dou, & Wang, 2019). In studying Chinese listed firms, CSR practice increased stock price crash risk through two major channels: fully mediating role of inefficient investment and partially mediating role of information hoarding. Both of them are closely related with management's self-interest in implementing CSR activity. C. Wu, Zhao, and Chen (2019) explored whether and how the mandatory CSR disclosure in China impacted the informativeness of stock price. It found that the mandatory CSR disclosure has negative impact on the informativeness of stock price because its information hiding effect outweighed the information asymmetry reduction effect. The decrease of stock price informativeness brings more financial volatility. Therefore, the implementation of CSR may hinder the development of organizational resilience in pre-adversity period.

Despite of the inconsistency in impact of CSR on organizational resilience, most recent empirical findings support that CSR is positively related to organizational resilience by increasing economic strength and reducing firm risk(Tzouvanas, Kizys, Chatziantoniou, & Sagitova, 2020; Yu, Luu, & Chen, 2020). As the economic strength accumulation and risk reduction are two sides of a coin and reflect the organizational resilience from various aspects, the following hypotheses are put forward:

H_1: CSR has positive impact on formation of organizational resilience through increasing economic strength in pre-adversity period

H_2: CSR has positive impact on formation of organizational resilience through decreasing firm risk in pre-adversity period

2.3.2 Impact of CSR on organizational resilience in post-adversity period

After a long span of development, firms should be able to show its resilient power, cushion an unexpected shock and maintain stable performance in face of adverse situation. The outcome-oriented view is supported by many literatures. For example, Markman and Venzin (2014) argued that firms' performance in adversity is the remarkable sign of organizational resilience, and employed the drop of performance and recovery of performance to measure the resilient capability. The findings of Rui et al. (2020) showed that firms with higher social and environmental performance were more resilient as they had significantly higher stock return, lower return volatility and higher margin profit compared to firms with lower social and environmental ratings during COVID-19 health crisis and subsequent lockdown. Employee and investors loyalty were the important factors for firms to be able to survive during the health crisis. Sabatino (2016) also found that commitment, individual resilience, loyalty and positive emotions of employees were conducive for firms to cope with risks and crisis. When adverse situation emerges, firms with higher performance on employee CSR dimension manifested more collaboration and collectiveness, increasing the opportunity to overcome negative events. During economic crisis, family enterprises with less layoff of employees and less cuts of salary were more resilient, in which they tried to retain employees, stimulate them to be more innovative and generate new source of revenue (van Essen, Strike, Carney, & Sapp, 2015). Employee-related CSR activities are crucial to avoid sales decline and reduce firm risk (Kais Bouslah, Kryzanowski, & M'Zali, 2013). Nevertheless, (Kee-Hong Bae, 2021) took the US. firms as samples and used two sources of CSR ratings to study if CSR had impact on stock return during COVID-19 crash period. It found no evidence to support the hypothesis, concluding that pre-crisis CSR was not effective at helping firms to shield from adverse effects of a crisis. Despite of the inconsistency in term of impact of CSR on organizational resilience when the unexpected disruption happens, most of studies support the positive impact of CSR on organizational resilience. Therefore, the following hypotheses are put forward:

H_3: CSR has positive impact on manifestation of organizational resilience by decreasing the severity of performance drop in post-adversity period

H_4: CSR has positive impact on manifestation of organizational resilience by increasing the speed of performance recovery in post-adversity period

3. Data and Methodology

3.1 Sample construction and data

As the observation of organizational resilience requires the occurrence of an unexpected disruption as the background, the current study uses the recent outbreak of COVID-19 health crisis to examine the performance of firms in coping with the crisis. China has effectively controlled the spread of pandemic and resumed work in April after three months of economic decline from January to March in 2020. Therefore, the sample consists of Chinese firms listed on Chinese Shenzhen and Shanghai Stock Exchanges. Panel data from 2010 to 2019 is used to study the impact of CSR on the process of organizational resilience formation as the CSR practice was initiated in 2010. It is in consistency with the opinion that organizational resilience is developed over time. Additionally, the cross-sectional data in 2020 is used to examine the manifestation of organizational resilience in face of the COVID-19 outbreak. The observation of performance drop is set at the end of March, the first quarter of 2020 as Chinese economy is in decline due to the disturbance of virus outbreak, while observation of performance recovery is set at the end of June, the second quarter of 2020 because the economy is recovering after effectively controlling the virus spread (Liu, 2021). To stimulate the economic development, the Chinese government enacted a series of policies and measures. To mitigate the effect of these measures, this study does prolong the observation period in examining the net effect of CSR on post-adversity organizational resilience. In robustness check, the observation period is extended another three months to discover if the outcome is consistent. The quarterly financial data is available in Chinese Stock and Market Research database.

The commonly used CSR ratings in studying Chinese firms' CSR performance is Hexun CSR ratings(Du, Jian, Zeng, & Chang, 2018; Gong, Yujing, & Kung-Cheng, 2018; S. H. Kim, Udawatte, & Yin, 2018; Lv, Wei, Li, & Lin, 2019; Shi, Zhang, & Zhou, 2018). Based on publicly available information, Hexun cooperates with Thomson Reuters and launched CSR evaluation database of listed companies since 2010. After ten years of development, it has become an information center from which the CSR performance of listed companies is obtained(Xiong, Lu, Skitmore, Chau, & Ye, 2016). The data concerning firm-level characteristics and financial performance is extracted from Chinese Stock and Market Research database(Lv et al., 2019; C.-M. Wu & Hu, 2019; Zhang, Morse, & Ma, 2019b). The database provides the yearly and quarterly financial data including ROA, book value of asset, leverage, market to book ratio, cash and cash equivalents as well as sale expense, which facilitates the measurement of financial performance, financial volatility, performance drop and recovery in studying the impact of organizational resilience in both pre and post-adversity period. Excluding the sample firms with abnormal or missing financial data, the sample consists of 17,496 firm-and-year observations of 2,319 listed companies from 2010 to 2019 and 1,871 cross-sectional data in 2020. The continuous variables are winsorized at 1% level at each tail to eliminate the influence of extreme values before regression.

3.2 Variables

The variables and their measurements are listed in Table 1.

Table 1 Definition of Variables

Variables	Measurement (Definition)
Dependent variables	
Financial performance	Average sale growth rate over three years from 2010 to 2019
Financial volatility	Standard deviation of monthly stock return from 2010-2019
Performance drop	ROA on 31st, December in 2019 subtracts the ROA on 30th, March in 2020
Performance recovery	ROA on 30th, June in 2020 subtracts ROA on 31st, December in 2019
Independent variable	
CSR performance	Overall score of HX CSR rating

Control variable	
Firm size	Natural logarithm of the book value of assets
Leverage	Ratio of total liabilities over total assets
Market to Book ratio	Ratio of market value of equity over book value of equity
Slack resource	Ratio of cash and cash equivalents over total assets
Sale expense	Logarithm of sale expense

3.2.1 Dependent Variables

In the process of developing organizational resilience in pre-adversity period, firms need to enhance its economic strength and well manage daily risk. Lv et al. (2019) uses financial performance and financial volatility to measure the development of organizational resilience in pre-adversity period whilst Sajko, Boone, and Buyl (2020) uses ROA drop and ROA recovery to proxy for the resilient power in post-adversity period. By setting ROA value on 31st, December in 2019, one year before the outbreak of COVID-19, as benchmark performance, performance drop during crisis period is measured by ROA on 31st, December in 2019 subtracts the ROA on 30th, March in 2020. The bigger the value is, the more drop the firms have experienced. Hence, the CSR performance is expected to be negatively related to the performance drop. ROA recovery is calculated by ROA on 30th, June in 2020 subtracts ROA on 31st, December in 2019. The bigger the value is, the quicker the recovery is. It is expected that CSR is positively related to performance recovery. Financial volatility, which is to measure the total risk of a firm, is calculated by the standard deviation of monthly stock return during the span from 2010 to 2019 (Lv et al., 2019).

3.2.2 Independent Variable

The paper extracts CSR ratings of Chinese listed firms from Hexun CSR database. The rating system has been widely used in studies as one of most authoritative and comprehensive databases(Lv et al., 2019). The source of data comes from CSR report, sustainability report and annual financial report of Chinese listed firms. The great advantage of Hexun CSR rating is that it covers all listed firms, which enlarges the size of samples and makes the regression outcome more convincing.

3.2.3 Control variable

According to past studies (Lv et al., 2019; Markman & Venzin, 2014; Ortiz-de-Mandojana & Bansal, 2016), the control variables include firm size, leverage, market-to-book value, slack resource, sale expense and dividend payment.

Firm size affects firm’s capability to undertake CSR strategy as big firms have sufficient resources to support persistent CSR practice. It is expected to be positively related to organizational resilience (Iborra et al., 2019b). Leverage is a reflection of firms’ risk as it describes the proportion of liability over asset. Its effect on organizational resilience is mixed (Tzouvanas et al., 2020). Market to book ratio (MTB) is an indicator of firm growth opportunity. It has been argued that market to book value is positively related to financial performance and negatively related to financial distress risk and therefore (Boubaker, Cellier, Manita, & Saeed, 2020; Sorescu & Spanjol, 2008). Therefore, it is an important control variable in studying impact of CSR on organizational resilience. Slack resource reflects the adequacy of a firm’s current resource. It can provide sufficient support for firms to respond to turbulent environment (Tognazzo, Gubitta, & Favaron, 2016). Effect of slack resource on organizational resilience may be mixed (Tzouvanas et al., 2020). Investment in advertising is an approach to implement differentiation strategy for firms to build up competitive edge. It is positively related to financial performance and negatively to financial volatility, and is helpful to the development of organizational resilience (T. Buyl, C. Boone, & J. B. Wade, 2019; Sorescu & Spanjol, 2008). In the context of China, the advertising expenditure is represented by sale expense.

3.3 Model Specification

3.3.1 Model Specification in studying impact of CSR on development of organizational resilience in pre-adversity period

The longitudinal data is used to study impact of CSR on formation of organization resilience as it is a capacity that cannot be achieved within a short period. For longitudinal data, the pooled ordinary least square (POLS) is a commonly used estimation. It assumes that all sample firms have the same regression equation, which simplifies the estimation but ignores heterogeneity among individuals. Comparatively, the individual-specific effect estimation involves the individual characteristics into regression model by setting different intercept for each sample. If the unobserved individual heterogeneity is correlated to explanatory variables, fixed-effect estimation is more appropriate than random effect model. Many past studies apply fixed effect estimation as the baseline regression model(K. Bouslah, Kryzanowski, & M'Zali, 2018; Gangi, Mustilli, & Varrone, 2018; Lueg, 2019). The model specification for fixed effect estimation is listed as follow:

$$Y_{it} = \alpha + \beta_1 CSR_{it} + \sum \beta_k control_{it} + \mu_i + \varepsilon_{it} \qquad (1)$$

Where Y_{it} is the dependent variable which are average sale growth over three years and standard deviation of monthly stock return for firm i at year t. The two dependent variables regress on explanatory variables separately to examine the impact of CSR on financial performance and financial volatility, both of which are components of organizational resilience. CSR_{it} is CSR performance score. $control_{it}$ are the values of control variables listed in Table 1 of firm i at year t. Item u_i is the intercept item representing time-invariant heterogeneity among individual firms and ε_{it} is the error item. To control the influence of unobservable factors, we run the regression specification (1) with industry fixed effects based on the industry classification enacted by China Securities Regulatory Commission (Paul, Joy, & Andrew, 2003). Standard errors are robust to heteroscedasticity. LM test and Hausman test are made to ensure that fixed-effect estimation is more appropriate than POLS and random effect estimations. The regression analysis and diagnostic test are run by Stata 11.0.

3.3.2 Model Specification in studying impact of CSR on manifestation of organizational resilience in post-adversity period

Whether a firm has developed organizational resilience needs the observation of its performance in coping with a crisis. Specifically, the present paper takes the recent outbreak of COVID-19 as the background to observe the manifestation of organizational resilience. As the serious impact of COVID outbreak spans a relative short period in the context of China, cross-sectional data in 2020 is used and the ordinary least square estimation is employed as baseline regression in accordance with previous literature (Kee-Hong Bae, 2021). The model specification is listed as follow:

$$Y_t = \alpha + \beta_1 CSR_i + \sum \beta_k control + \varepsilon_i \quad (2)$$

Where Y_i is the dependent variable of firm i which includes performance drop and performance recovery. CSR_i is CSR performance of firm i and $control_i$ is the values of control variables listed in Table 1 of firm i. ε_i is error item. Standard errors are robust to heteroscedasticity.

4. Empirical Results

4.1 Descriptive Statistic

Table 2 shows the descriptive statistics of key variables in equation (1) and equation (2). Table 3 is the Pearson correlation matrix among variables.

Table 2 Descriptive statistics of variables

Variables	Mean Pre -crisis	Mean Post crisis	S.D. Pre -crisis	S.D. Post crisis	Minimum Pre -crisis	Minimum Post crisis	Maximum Pre -crisis	Maximum Post crisis
Dependent variables								
Sales growth	0.1192		0.1826		-0.2197		1.0465	
S.D. of monthly stock return	9.0678		1.2426		0.6931		10.1780	
Performance drop		0.048		0.028		-0.065		0.471
Performance recovery		-0.029		0.034		-0.284		0.277
Independent variables								
CSR	26.800	22.050	15.070	5.990	-9.420	-4.930	82.090	39.960
Control variables								
Firm size	22.162	9.759	1.332	0.583	15.711	8.400	28.636	12.338
Leverage	1.311	2.567	1.015	1.463	0.591	0.624	4.334	3.857
Market to book ratio	0.615	0.625	0.244	0.287	0.014	0.033	6.548	1.494
Slack resource	0.468	0.141	2.523	0.104	-9.913	0.025	9.953	0.744
Sale expense	18.304	7.742	1.658	0.695	7.714	5.204	25.026	10.173

Note: In pre-adversity period, the number of observations is 17,496 which consists of firm-year data from 2010 to 2019. In post-adversity period, number of observations is 1,871 which consists of cross-sectional data in 2020.

Table 3 Correlation matrix among variables

	Sale Growth (1)	S.D. Stock return (2)	performance drop (3)	performance recovery (4)	CSR (5)	Firm size (6)	leverage (7)	MTB (8)	ROA (9)	slack (10)	Sale expen (11)
(1)	1.000										
(2)	0.026***	1.000									
(3)	-	-	1.000								
(4)	-	-	-0.597***	1.000							
(5)	0.007	-0.043***	0.484***	-0.377***	1.000						
(6)	0.048***	-0.225***	-0.150***	0.078***	0.273***	1.000					

(7)	-0.030***	-0.008	-0.092***	0.024	-0.117***	0.156***	1.000				
(8)	0.017**	-0.263***	-0.380***	0.193***	0.075***	0.541***	0.174***	1.000			
(9)	0.034***	0.002	-0.370***	0.404***	0.119***	-0.090***	-0.170***	-0.312***	1.000		
(10)	0.033***	0.041***	0.277***	-0.151***	0.020***	-0.016**	-0.047***	-0.029***	0.006	1.000	
(11)	0.027***	-0.138***	0.061***	-0.012	0.215***	0.570***	0.013*	0.211***	0.033***	-0.029***	1.000

Note: The observation period of the three-year average sale growth rate and standard deviation of monthly stock return is from 2010 to 2019, while the observation period of performance drop and performance recovery is in 2020, there is no correlation coefficients among these dependent variables.

The Pearson correlation matrix shows that in pre-adversity period, CSR performance has not significant impact on the average three-year sale growth, while it is negatively related to standard deviation of monthly stock return. When the crisis happened, CSR is positively related to performance drop and negatively related to performance recovery. Additionally, although correlation among explanatory variables is significant, VIF test made after running regressions shows that there is no serious multicollinearity concern among the control variables.

4.2 Regression Results

Table 4 shows the results of regression analysis in impact of CSR on organizational resilience. In pre-adversity period, CSR score has no impact on average three-year sale growth. However, CSR is significantly and negatively related to the firm risk proxied by the standard deviation of monthly stock return. The outcome supports H_2, but not H_1, which implies that CSR performance has no effect on accumulating economic strength of firms in tranquil period, but it has significant effect on reducing firm risk. It is consistent with risk-reduction effect of CSR which argues that CSR practice has insurance-like effect on firms as it can mitigate risks(Farah, Li, Li, & Shamsuddin, 2021). Therefore, total CSR impacts organizational resilience through reducing total risk of firms in pre-adversity period.

In post-adversity period, the outcome in Table 4 shows that CSR performance is positively and significantly related to performance drop during crisis period, whilst negatively and significantly related to performance recovery after crisis period. It implies that the firms with higher overall CSR performance are confronted with more performance drop and slower performance recovery. Therefore, firms with higher CSR performance do not show resilient power in the face of the COVID-19 outbreak. The result does not support H_3 and H_4, and is different from the findings of other literatures (Boin & Van Eeten, 2013; Tine Buyl, Christophe Boone, & James B Wade, 2019; Joseph Fiksel, 2015). Combined the process and manifestation of organizational resilience in pre-adversity and post-adversity periods, it can be concluded that in the context of China, CSR has positive impact on organizational resilience through reducing firm risk in pre-adversity period.

Table 4 Regression outcome of impact of CSR on organizational resilience

	Pre-adversity period		Post-adversity period	
	Sale growth	S.D. of monthly stock return	Performance drop	Performance recovery
	(1)	(2)	(3)	(4)
CSR	-0.0005	-0.0027***	0.0033***	-0.0028***
	(0.216)	(0.003)	(0.000)	(0.000)
Firm size	0.1537***	0.1425***	0.0002	-0.0008
	(0.000)	(0.000)	(0.940)	(0.729)
leverage	-0.0082**	-0.0282***	-0.0003***	-0.0000*
	(0.015)	(0.009)	(0.001)	(0.070)
MTB	0.0846**	-0.9638***	-0.0337***	0.0050
	(0.011)	(0.000)	(0.000)	(0.194)
Slack resource	0.0004	-0.0031	0.0365***	-0.0096
	(0.806)	(0.385)	(0.000)	(0.391)
Sale expense	0.1034***	-0.0269	0.0005	0.0040**
	(0.000)	(0.209)	(0.753)	(0.010)
Year fixed	YES	YES	-	-
Firm fixed	YES	YES	-	-
Observations	12,280	17,496	1,871	1,871
R-squared	0.035	0.254	0.086	0.090

Note: This table presents the relationship among variables based on panel data and cross-sectional data. The dependent variables are financial performance, financial volatility, performance drop and performance recovery. Independent variable is CSR. Control variables are defined in Table1. Column (1) and (2) are the regression outcomes of fixed-effect estimation. Column (3) and (4) are the regression outcomes of OLS estimation with cross-sectional data. Figures shown in the Table are the coefficients of variables with symbols ***, ** and * denote the significance levels at 1%, 5%, 10% respectively and the P-values shown in parentheses are computed using standard errors robust to heteroskedasticity.

4.3 Robustness check

To ensure the regression outcome is consistent, the following checks are made and the results are shown in Table 5.

First, we use a two-stage least squares (2SLS) regression analysis to address potential endogeneity issues. As firms with better performance and lower risk are more likely to invest in CSR practice, reverse causality between CSR and organizational resilience may exist and cause endogeneity concern. To address the problem, the paper follows previous literatures and takes the average CSR score of firms in geographically closed area and the industry average CSR score as an instrument variables for the CSR score to make two-stage ordinary least square estimation (Boubaker et al., 2020; Y. Kim, Li, & Li, 2014). After making Hausman test, exogenous test and Sargan test, it shows that the instrumental variables do not violate the assumptions of overidentification (Sargan, 1958). The outcome of 2SLS remains the same despite that the size of coefficient is a little different. It implies that the results are robust after controlling for the endogeneity problem. As the CSR score in 2020 has not been disclosed when COVID-19 broke out, the present study uses the CSR score in 2019 to run regression, which implies that the CSR score in the cross-sectional regression is a measurement with a lag of one year. In addition, the observation period is in the narrow window during the COVID-19 crisis, firms have very little time to respond. Consequently, the reverse causality concern between CSR and organizational resilience should not exist. Therefore, 2SLS estimation is only used in robustness check in pre-adversity period (Albuquerque, Koskinen, Yang, & Zhang, 2020; Kee-Hong Bae, 2021).

Second, the present study uses alternative measures to proxy for some control variables to test if the outcome is robust. Proxies for firm size and slack resource are substituted by the natural logarithm of revenue and the growth rate of profit respectively. It is found that the outcome is robust.

Third, the present study prolongs the recovery period for another three months and rerun the cross-sectional regression. It found that the impact on performance recovery shows no difference.

Table 5 Regression outcome of robustness check

	Pre-adversity period		Post-adversity period		
Variables	Sale growth	S.D. of monthly stock return	Performance drop		Performance recovery
	(1)	(2)	(3)	(4)	(5)
CSR	-0.0087	-0.0135***	0.0033***	-0.0022***	-0.0028***
	(0.121)	(0.000)	(0.000)	(0.000)	(0.000)
Firm size	0.1912***	0.1968***	0.0002	0.0019	0.0028**
	(0.000)	(0.000)	(0.940)	(0.469)	(0.027)
leverage	-0.0164**	-0.0415***	-0.0003***	-0.0000**	-0.0000**
	(0.020)	(0.000)	(0.001)	(0.011)	(0.031)
MTB	0.0652**	-1.0268***	-0.0337***	-0.0191***	0.0106***
	(0.027)	(0.000)	(0.000)	(0.000)	(0.003)
Slack resource	0.0010	-0.0025	0.0365***	-0.0009	0.0002
	(0.525)	(0.497)	(0.000)	(0.945)	(0.205)
Sale expense	0.1071***	-0.0206	0.0005	0.0063***	0.0065***
	(0.000)	(0.294)	(0.753)	(0.001)	(0.000)
Year fixed	YES	YES	-	-	-
Firm fixed	YES	YES	-	-	-
Observations	12,280	17,496	1,871	1,871	1,871

R-squared	0.044	0.265	0.088	0.091	0.089

Note: This table presents the results of robustness check. Column (1) and (2) are the regression outcomes of 2SLS estimation with panel data. Column (3) and (4) are the regression outcomes of OLS estimation with alternative values of control variables. Column (5) is the outcome of regressing performance recovery on CSR when prolonging the observation period for another three months. Figures shown are the coefficients of variables with symbols ***, ** and * denote the significance levels at 1%, 5%, 10% respectively and the P-values shown in parentheses are computed using standard errors robust to heteroskedasticity.

5. Conclusion and discussion

Organizational resilience is a critical capacity for firms to overcome unexpected disruption and maintain sustainable development. Examination on the capacity depends not only on the process of development before the coming of adversities, but on the exhibition of resilient power when adversities occur. CSR engagement is a long-term and resource-consuming investment and its impact on firm performance is inconsistent. Is CSR engagement one of antecedents of organizational resilience? To respond to the question, the study combines the process-oriented and outcome-oriented view and explores the impact of CSR on organizational resilience by taking the background of COVID-19 public health crisis with Chinese listed firms as samples. The results show some interesting findings.

First, CSR engagement has no significant impact on improving long-term performance, therefore, its impact on organizational resilience is not through increasing economic strength. It is different from the findings of previous studies (Lv et al., 2019; Ortiz-de-Mandojana & Bansal, 2016). Trade-off theory may explain the outcome. Engagement of CSR activities do bring profit for a company, however, increase in profit cannot fully cover the cost incurred by CSR activities. Therefore, it cannot improve the financial performance, particularly when it is measured with accounting indicators. The finding shows that the in the context of China, development of CSR activities is still at the initial stage in comparison to many developed countries. Most listed firms are engaged in responsive CSR instead of proactive CSR to meet the requirements of government. They cannot fully incorporate CSR practice into their business strategy and utilize CSR as an instrumental approach to make profit. Whether CSR brings extra profit for firms is dependent on the cost and benefit generated by CSR activities. The unusually low or high performance of CSR may improve financial performance while the average level of CSR performance shows no significant impact (Brammer & Millington, 2008). Firms with unusually low CSR performance save considerable amount of cost and invest them into other profitable projects. Firms with unusually remarkable CSR performance differentiate themselves from competitors, reaping benefits by acquiring motivated employee, loyal customers and support from other stakeholders. These benefits will transfer to substantial and valuable resource and enhance financial performance. The overall CSR level in Chinese listed firms is unlikely to be unusually low due to the government supervision. Simultaneously, it is unlikely for these listed firms to exhibit unusually high CSR performance as most firms are responsive but not proactive toward CSR strategy. Therefore, CSR performance has no significant impact on financial performance, and its effect on organizational resilience is not through enhancing economic strength at pre-adversity period.

Second, CSR engagement is negatively related to financial volatility, implying that organizational resilience development mainly through reducing risks and protecting value. The finding is consistent with previous studies(Lueg, 2019; Lv et al., 2019; Rui et al., 2020). Legitimacy theory and stakeholder theory may explain the insurance-like effect of CSR. When firms engage in CSR practice, they meet the legitimate obligation and decrease the likelihood of being punished for violating regulations. Moreover, involvement in CSR activity transmits signal of good management to investors in capital market and alleviates information asymmetry, which helps firms to reduce financing cost and stabilizes investors' expectation. Customers are more likely to be insensitive to price and be loyal to firms with higher CSR performance. When adverse events happen, customers are more tolerant due to the Halo-effect generated by CSR. During crisis period, firms with higher CSR performance can take advantage of the good relationship with stakeholders and obtain resources promptly to maintain basic operation. These positive effects may not directly increase firm's accounting performance in both pre-adversity and crisis period, but it might reduce the volatility of stock price as well as to stabilize the stock return in capital market.

Third, engagement of CSR has no impact on improving the manifestation of organizational resilience in dealing with the COVID-19 outbreak. The finding is inconsistent with previous studies(Mark Desjardine et al., 2017). The possible explanation is that the COVID-19 outbreak happened abruptly, most of the stakeholders of the firms, such as suppliers, customers, employees, were seriously impacted and the benefit brough by CSR practice could not play their roles in the sudden lockdown of economy. Instead, CSR investment occupied lots of resources and its positive effect could not be shared by other business strategies particularly when CSR practice is responsive rather than proactive.

The present study makes the following contributions. First, in relation to the empirical development, the present study adds to the body of literatures on organizational resilience by further exploring CSR as one of its antecedents. Highlighting the antecedents of resilience can lead to a better understanding of organizational continuity and survival during adverse events. In addition, the present study adds to body of literatures on consequence of CSR, which has been in debating for many years particularly in emerging economies. It puts financial performance and firm risk in the framework of organizational resilience, making it possible to compare the impact of CSR on the two supplementary indicators of firm performance. The findings show that in the context of China, CSR has more effect on reducing firm risk than on improving financial performance in development of organizational resilience in pre-adversity period, which verifies the insurance-like effect of CSR activities. Second, for theoretical development, the findings of present study further highlight the stakeholder theory, social capital theory and legitimacy theory by examining the effects of CSR on organizational resilience, particularly on financial volatility. The insurance-like effect of CSR stems from the good relationship with stakeholders which provides relational social capital and moral capital to firms. Despite that these advantages are not prominent enough to improve financial performance, they help firms to hedge against adverse situations and reduce firm risk. By undertaking CSR activities, firms meet the legitimate regulations, particularly the requirement on environmental protection, which mitigates the risk of being punished by violating relevant regulations. Third, for the aspect of practical use, the findings provide valuable information to the key stakeholders of Chinese listed firms, especially the potential investors and shareholders. Firms with higher performance in overall CSR tend to have less financial volatility, enabling them to be more resilient in face of disruptions. It provides useful information in investment portfolio decision as the investors are not only concerned with investment return, but also the appropriate level of risk taking.

Although the study has some findings, it has several limitations. One is that the sample firms only come from Chinese listed firms. Whether it can be extended to other areas is still an unanswered question. As most of countries across the world are hit by COVID-19, it is recommended to make comparative study across various areas in the future. The second limitation is that organizational resilience is the capacity which can make firms to emerge stronger. The study only focuses on impact of CSR on endurance of firms and fails to explore its impact on becoming stronger. The future research might expand the scope of study and interpret the definition of organizational resilience more holistically.

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