

Analysis of the Enterprise Resilience under the Impact of the Epidemic

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Abstract: *The COVID-19 outbreak at the end of 2019 swept the world like a hurricane, and has had a huge impact on China's economic development. Although China has achieved a major victory in the battle against COVID-19 at the present stage, the impact of the epidemic on China's economy cannot be ignored, especially on the development of Chinese enterprises. In the post-epidemic era, for Chinese enterprises, they should focus on how to achieve steady development in the face of such sudden public crises, which involves the issue of survival resilience of enterprises. Based on this, this paper focuses on the analysis and discussion of the survival resilience of enterprises under the impact of the epidemic, and thus puts forward some suggestions to improve the survival resilience of enterprises for reference.*

Keywords: *epidemic impact; enterprise; survival resilience*

1. Introduction

After the outbreak of COVID-19, in addition to posing a serious threat to people's lives and health, it has also caused a heavy blow to China's economic development. Under the leadership of the CPC Central Committee and the joint efforts of the whole society, China has achieved a major victory in the epidemic prevention and control at the present stage, and the industrial economy has gradually recovered. However, due to the COVID-19 virus has not been effectively controlled around the world and the mutation of novel coronavirus, the domestic epidemic has occurred repeatedly, which has brought great uncertainties to China's economic development. At present, in China's economic development, we still need to strictly prevent and control the risks brought by COVID-19.

Enterprise is the micro main body in economic operation. How the production situation of an enterprise directly determines the level of economic development. Due to the impact of the epidemic, Chinese enterprises face great challenges in production and operation, especially in the early days of the outbreak of the epidemic, China's catering, accommodation, tourism and other industries once fell into a survival crisis, and in the first quarter of 2020, China's GDP also had an obvious downward trend. Therefore, in the face of such an environmental background, the assessment of the resilience of enterprises under the impact of the epidemic will help enterprises to better cope with such sudden public crisis, and it is also of great practical significance to promote the economic and social development.

In the long history of mankind, there have been many large-scale public health events. In the face of their impact on economic development, it has been widely concerned and studied by scholars at home and abroad. For example, the SARS incident in China in 2003 has a great impact on economic development, and has thus attracted full attention and research from domestic scholars. The COVID-19 outbreak at the end of 2019 has led domestic scholars to further study the economic impact. Among them, there are many studies on the micro impact caused by COVID-19. The existing literature mainly analyzes the micro impact caused by the epidemic from the perspectives of the survival rate and operation status of enterprises. Under the impact of the epidemic, it has had a great impact on the development of small and medium-sized enterprises in China, and there is a great obstacle to the resumption of work^[1]; The epidemic has a greater impact on the catering, accommodation, tourism and other industries. The older the enterprises are, the less affected the survival rate is, and the productivity decline of large enterprises is smaller than that of small enterprises^[2]. In terms of enterprises responding to the impact of the epidemic, the existing literature is mainly studied from the perspective of enterprise resilience. Huai Ying took Gree Electric Appliances as an example to study the resilience attributes of enterprises from the perspective of capital^[3]; In their research, Qian Lina et al. pointed out that in the post-epidemic era, enterprises need to maintain dynamic competition and resilient growth^[4]; On the basis of quantitative resilience, Yang Yi et al. analyzed the resilience of private enterprises by

describing the enterprise resilience index, and believed that the resilience of enterprises of different sizes or industries is quite different^[5]; Feng Haiyan's research on the resilience of enterprises mainly studies on why enterprises need resilience, what is enterprise resilience, how enterprises build resilience and how enterprise resilience plays a role^[6]. From the existing research, more people discuss the impact of the epidemic from the theoretical level, and there are few empirical studies. At the same time, there are few studies on the measurement of the survival resilience of enterprises. There is a lack of assessment on the survival resilience of Chinese enterprises before and after the impact of the epidemic, and the policy suggestions put forward are mostly macro level. Based on this, on the basis of the existing research, the paper evaluates the resilience of enterprises under the impact of the epidemic through empirical analysis, and thus puts forward specific policy suggestions.

2. Conceptual interpretation

2.1. The connotation of resilience

"Tilience" first appeared in physics, and refers to the toughness of a material that allows it to absorb energy under load and thus avoid fracture. The better the toughness of the material, the more effective the deformation force, the less likely it is to fracture. Later, the concept of "resilience" has been gradually applied to other fields. For example, in ecology, resilience refers to the resilience of the ecosystem to absorb disturbance and maintain specific conditions. In management, organizational resilience refers to the adaptability of environmental emergencies and the psychological characteristics of overcoming adversity in the face of stress.

2.2. Definition of enterprise survival resilience

The concept of resilience in physics is reflected in the field of business operation. The resilience of enterprise survival refers to the adaptability of the enterprise to resist the impact of external risks, restore and maintain the normal operation state, which is an attribute of the enterprise itself. At present, the research on the survival resilience of enterprises is constantly enriched, among which the survival resilience of enterprises under the impact of the epidemic is defined as the range of indicators related to the decline of the survival status of enterprises and the time needed to restore positive growth after the impact of the epidemic.

3. Empirical analysis

3.1. Study design

Different from the existing literature, in this paper, a-share listed companies are taken as the investigation object, combined with the definition of enterprise survival resilience, and an evaluation model is constructed based on the two financial indicators of the profitability and growth ability of the enterprise, so as to evaluate the survival resilience of enterprises under the impact of the epidemic. In terms of the evaluation time dimension, the first quarter of 2018 to the first quarter of 2021 were selected to identify and measure the survival resilience of enterprises. All the data are from WIND Information Financial Terminal.

3.2. Variable selection and interpretation

Referring to the existing literature, this paper mainly selects the three indicators of return on equity ($\ln jzc$), return on total assets ($\ln bcl$) and net interest rate on sales ($\ln xr$) to measure the profitability of the enterprise, the year-on-year growth of operating income ($\ln y$), and the year-on-year growth rate of net profit ($\ln jr$) to measure the growth ability of the enterprise. Interpretation of each variable is shown in Table 1.

Table 1 Interpretation of each variable

variable		explain
profitability	Return on equity (lnjzc)	Comprehensive index is mainly composed of sales net interest rate, total asset turnover rate and equity multiplier, that is, return on equity = net interest rate of sales total asset turnover rate equity multiplier
	Return on total assets (lnbcl)	It refers to the profitability of all the assets of an enterprise, which is mainly affected by the net interest rate of sales and the asset turnover rate, that is, the return rate of total assets = the turnover rate of the net interest rate of sales assets
	Net interest rate on sales(lnxr)	It is mainly used to measure the sales income acquisition ability of an enterprise in a specific period, which is composed of net profit and sales income. It refers to the comparison relationship between the two, that is, the net interest rate of sales = (net profit / sales income) 100%
Growth ability	Year-on-year growth rate of operating revenue(lnyy)	It is mainly used to test whether the profitability of the enterprise is improved, which refers to the percentage of the growth of the enterprise in a certain period compared with the same period of last year. If the growth of the revenue year-on-year, the profitability of the enterprise is strengthened, otherwise, it means that the profitability of the enterprise is reduced
	Net profit year-on-year growth rate(lnjr)	Specifically, it refers to the percentage increase of the net profit of the enterprise in a certain period and the net profit in the same period of last year. If the net interest rate increases year-on-year, it indicates that the enterprise has strong profitability

3.3. Empirical results and analysis

3.3.1. Descriptive statistical results

Table 2 Descriptive statistics of the outcome variables

variable	2018.4		2019.4	
	[-3,-1]	[1, 3]	[-3,-1]	[1,3]
Lnbcl	0.04	0.04	0.03	0.03
	0.04	0.07	0.07	0.05
lnjzc	0.04	0.04	0.04	0.03
	0.07	0.07	0.07	0.11
lnjr	0.17	0.11	0.11	-0.03
	0.81	0.83	0.83	0.95
lnxr	0.92	0.09	0.09	0.06
	0.19	0.23	0.23	0.26
lnyy	0.15	0.08	0.08	-0.09
	0.45	0.38	0.38	0.46

As can be seen from Table 2, in the three quarters before and after the fourth quarter of 2018, the mean difference of the main control variables is not obvious, indicating that the impact of non-economic factors on the survival status of enterprises is not obvious. However, from the perspective of the average results of the three quarters around the fourth quarter of 2019, it can be found that there are significant differences between the mean values of the control variables, among which the year-on-year growth rate of operating income and net profit also show a trend of negative transformation. It can be seen that the epidemic has a great impact and negative impact on the living status of listed companies.

3.3.2. Regression analysis

In order to realize the measure of the survival resilience of enterprises under the impact of the epidemic, the event analysis model is used to evaluate the survival resilience of enterprises under the impact of the epidemic, that is, the sustainability of the decline of the survival status of listed companies and the time required to restore positive growth. The results are shown in Table Table 33. It can be seen from Table 3 that the impact of the epidemic on listed companies in the previous quarter was not significant, but in the first quarter after the impact, all indicators used to measure the

profitability and growth ability of listed companies showed a negative transition trend, indicating that the economic development of enterprises was significantly affected by the impact of the epidemic. And in the second and third quarter, the estimate of absolute coefficient has a downward trend, the total assets of return after the outbreak impact began positive growth, it reflects the total assets of return of listed companies recover quickly, affected by the impact of the outbreak gradually weakened, also proved that the outbreak of our country enterprises have strong survival toughness.

Table 3 Measures of the resilience of listed companies under the impact of the epidemic.

	lnbcl	lnjzc	lnjr	lnxr	lnyy
A quarter ago	-0.003 0.001	-0.0001 0.002	-0.028 0.018	0.002 0.004	-0.015** 0.008
A quarter later	-0.071*** 0.001	0.089 0.002	-0.028 0.031	-0.090 0.008	-0.368 0.014
Two quarters later	0.047 0.001	0.058*** 0.002	-0.159*** 0.027	0.016*** 0.006	-0.214*** 0.012
Three quarters later	0.033 0.001	0.046 0.003	-0.087*** 0.028	-0.015*** 0.006	-0.157*** 0.012
constant term	0.022 0.005	0.019** 0.006	-0.473 0.372	0.074 0.011	-0.006 0.049
sample capacity	35474	35322	31609	35114	34791
adjust R ²	0.092	0.058	0.038	0.042	0.116

4. Conclusion and suggestion

4.1. Conclusion

This paper is mainly to study the survival resilience of enterprises under the impact of the epidemic. In the process of research, the data of a-share listed companies from 2018 to 2021 are selected for empirical analysis. In the specific analysis process, the survival resilience of enterprises under the impact of the epidemic is mainly evaluated through the two indicators of profitability and growth ability. The empirical results show that the epidemic has a significant impact on the living status of listed companies, but there are differences in the time dimension; among them, the epidemic impact makes the total asset return rate of listed companies negative, turning from negative to positive in the first quarter, while other indicators are basically recovered after three quarters. This fully reflects the strong resilience of Chinese enterprises under the impact of the epidemic.

4.2. Policy recommendations

4.2.1. Implement the long-term strategy of promoting sales promotion expenses and expanding domestic demand

The epidemic has had a great impact on China's economy, and consumption and demand are important factors driving China's economic growth. In this regard, it is necessary to adjust and optimize the relevant fiscal and monetary policies, promotion fees and expand domestic demand from the macro level, so as to expand the product sales space of enterprises and improve the ability of profit growth of enterprises. In terms of specific measures, on the one hand, we will continue to implement the preferential tax policies for relevant enterprises and residents. We can stimulate consumption by issuing consumption vouchers, shopping vouchers and other ways. At the same time, we should also increase the publicity and guidance of key product safety, such as pork, fruits, vegetables, etc.. Strictly control the market prices, stabilizing consumer confidence; on the other hand, we should pay attention to cultivating new consumption points. Combined with the current digital development trend, we will further accelerate the development of 5G network infrastructure. Promoting the digital transformation and upgrading of industries. Promote the development of emerging service industries such as Internet health, food and beverage delivery. By using the online chemical transfer, drive consumption growth. At the same time, we should also increase the support for the digital transformation of the traditional real economy. Promote the more affected film and television entertainment, catering, accommodation, tourism and other industries to quickly resume production.

4.2.2. Commercial banks and other financial institutions will play a major role

Under the impact of the epidemic, many enterprises in China are still facing the difficulty of resuming work, especially small, medium-sized enterprises, which are limited by their capital and scale. In this regard, it is necessary for commercial banks and other financial institutions to increase support in financing, actively launch various preferential financing policies, to optimize the loan interest rate, give blood and oxygen to enterprises, help enterprises better cope with uncontrollable external factors, and ensure that enterprises can overcome difficulties smoothly. In addition, the government should continue to implement preferential fiscal and financial policies, guide financial institutions to constantly adjust and improve financial support methods, and help enterprises solve problems such as debt repayment and capital turnover difficulties when they resume work and production. At the same time, for enterprises in the industry that are greatly affected by the epidemic, financial institutions should be encouraged to increase the extension and renewal of loans, and the loan interest of small and medium-sized enterprises should be appropriately reduced or exempted, so as to avoid the capital rupture of enterprises.

4.2.3. Improve the regenerative ability of enterprises to survive sustainably

When enterprises gradually return to normal operation, it is necessary to timely withdraw short-term assistance policies, and study and introduce relevant industrial policies from the aspects of operating costs and long-term operation ability of enterprises, so as to help enterprises improve the ability to resist risks, improve the survival resilience of enterprises, so as to better deal with various risks. At the same time, we should fully develop different levels of labor market, do a good job in information transmission and supply and demand matching, help enterprises solve the uncertainty in employment, cultivate business resilience and maintain motivation. In addition, attention should also be paid to creating a fair and just development environment, constantly optimizing the business environment, and improving the level of public services, so as to enhance the confidence in the development of enterprises, and promote them to further enhance their resilience from cultural and technological innovation.

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