SMEs through Tough Times of the Covid-19 Pandemic in China

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Abstract: Since its outbreak in late 2019, the coronavirus has disturbed the working and living of both people and businesses, and the continuing emergence of Covid-19 variations have made it hard to fully restore the activity of both society and the economy to pre-pandemic levels. In China the pandemic affected small and medium-sized enterprises (SMEs) more severely than large companies. The objective of this paper is to analyse the effects of the pandemic on SMEs in comparison with large firms based on their financial reports. This document integrates the consolidated statements of companies based in Beijing and sums them according to quarters by collecting the income statements of listed companies. Research results show that SMEs are more fragile to shocks, especially in terms of administrative costs and expenses as well as income taxes. The benefits of Chinese government policy measures concern mainly technology-based micro and small enterprises. As the forecast presented in this paper shows, the operating situation of SMEs is assumed to recover in 2023.

Keywords: small and medium-sized enterprises; comparative analysis; time series sequence; winters multiplicative model; added-value; economic policy

1. Introduction

The outbreak of the new coronavirus epidemic in late December 2019 in China and its subsequent spread in the world to unfold into a pandemic were considered a sudden attack on Chinese companies. The knock-on effects of the epidemic had a serious impact on businesses: due to the lockdowns many factories were closed, the economy was stagnant, revenues of the companies were reduced, but operating costs as a burden had to be covered, and many companies have long been living beyond their means during the pandemic, leading many companies to bankruptcy.

The goal of this paper is to analyze the effects of the covid-19 pandemic in China on the corporate sector of SMEs. The starting point is that the role of SMEs in economic growth has increased in recent years, which makes them become important constituents of economic dynamics. The *first purpose* of this paper is to analyze the impact of the pandemic on small and medium-sized enterprises (SMEs) in the Beijing district compared to large firms and identify the differences and possible similarities. The *second purpose* is to present a prediction of the operating situation of SMEs. SMEs are expected to resume normal production and operation and show an upward trend under the influence of positive macroeconomic developments. The *third purpose* is to discuss government policy measures during the pandemic and give more specific suggestions for SMEs to construct a better management structure against risks. The study answers to the following questions:

1. What was the impact of the Covid-19 contagion on SMEs compared to large companies?
2. How did the Chinese government ease the burdens of SMEs in response to the pandemic?
3. How could SMEs take advantage of these policies?

After summarizing the literature in Section 1, this paper offers the following research direction. Huang and Zhou (2020), Li (2020), and Zhu et al. (2020) are the pioneers to research the impact of SMEs on operation situations by investigating the SMEs' owners. These

investigations study SME operations and satisfaction with policies in China by using questionnaires to obtain business data, determine the problems, and find the challenges SMEs are facing. This method is always carried out by comparing absolute operating numbers from horizontal views.

However, after executing the literature review, a research gap has been identified. Absolute values have fewer practical meanings, while the relative ratio of SMEs to large companies can identify the extent of damage. The extent of influence should be detected from vertical views through the comparison of various financial indicators of SMEs with those of large companies. Such an approach may help the government to make financial support more efficient and cost-effective.

In geographic terms, the scope of this report covers Beijing, which is China's political and economic center. This report has reason to expect that a geographic unit could better provide an appropriate base to discuss the relevant trends, even though it is smaller and more homogenous than the diversified national economy of China. In Beijing, there is a vast number of both SMEs and large corporations, and the efficiency with which economic policies are implemented is also extremely high here. Taking Beijing as the main research target region makes it ideal for studying the short-term effects of economic policies on businesses.
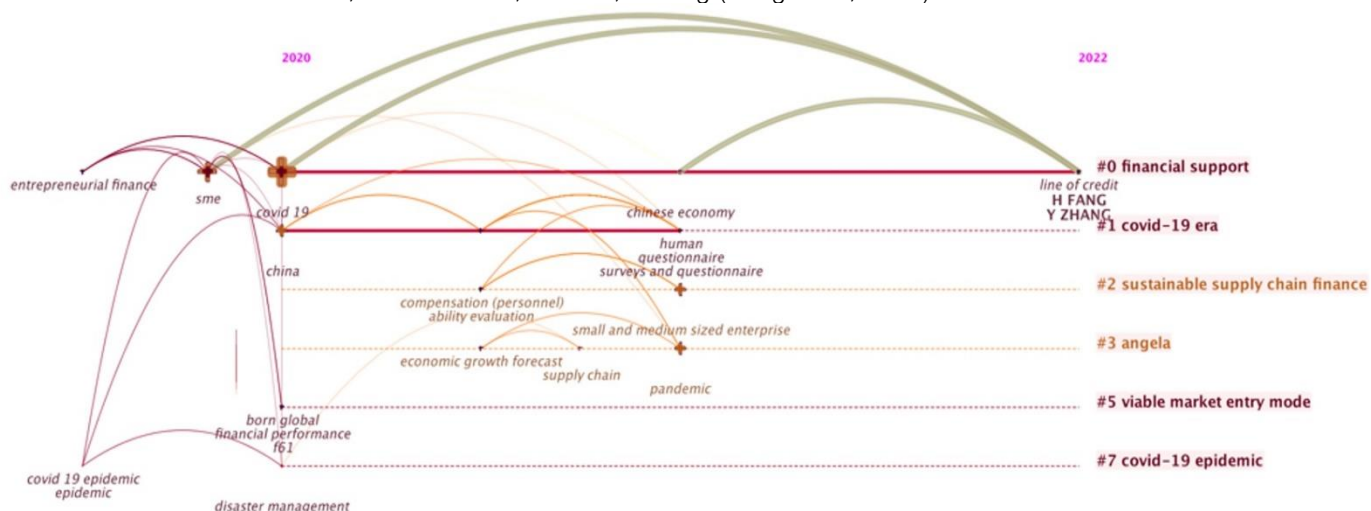
Consequently, the nature of this report is statistical analysis. Before the statistical analysis, here are some assumptions. It is assumed that large enterprises proved to be more resilient to the economic consequences of the pandemic than SMEs, with lower operating revenues and higher costs. Another assumption is that SMEs cannot make efficient use of policy benefits, but the large companies are able to do so. Therefore it is imperative to find the root cause of SMEs' problems by comparing the growth rates of operating revenues, expenses, and profits.

Therefore, the structure of the paper is the following. It starts with a review of the relevant literature. The second part describes the methodology used. The third part contains the results, the fourth one the discussion, and the fifth one the conclusions.

2. Literature review

2.1. Literature on the impact of the pandemic on Chinese companies

Since its outbreak, many experts and academics have begun to study the economic impact of the Covid-19 epidemic. In the past three years, scholars offered various research perspectives ranging from financial through credit risk management to supply chains. This is illustrated in Figure 1. The top of the figure shows the timeline. The bold text indicates important authors in the field, the non-bold text indicates keywords that appear and are used in the field, the 7 clusters on the right of the figure are the classification of keywords, and coloured lines indicate different fields. Y Zhang (with 42 citations) is the pioneer to investigate the agri-food industry systematically and measures the line of credit, which inspired other scholars, such as Y Liu, X Chen, H Fang (Yang et al., 2021).
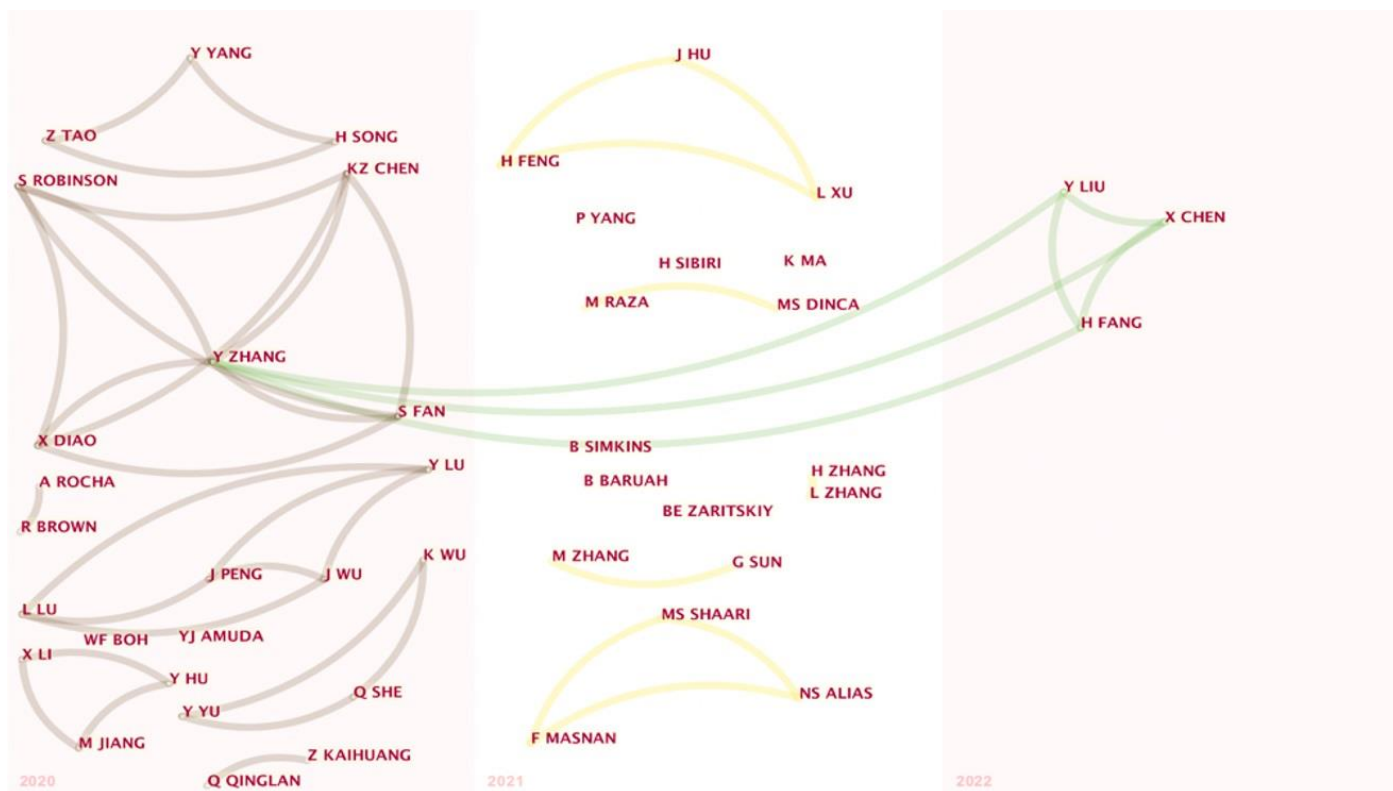
Figure 1. Literature reviews distribution. *Source: own work & CiteSpace software*

The questionnaire is the most popular approach to analysing the financial state of SMEs. Huang and Zhou have identified major public health events and found through social surveys that government policies have focused on financing, but there are limitations in the existing system and weaknesses in the implementation of local policies. Huang et al. recommend developing and improving the current problems both in the short and the long term. In the short term, the government should lower taxes and increase financial support to solve the problems of financing difficulties, heavy taxes, and excessive costs of restarting production and the work of SMEs. In the long term, the government should establish a sound and complete market mechanism to form a closed loop of production and improve the competitiveness of the industrial chain and the core competitiveness of SMEs (Huang Q. H., 2020). Similarly to Huang, Li also used a cross-sectional comparison of survey results to collate and compare the National Micro-, Small- and Medium-Size Enterprises (MSME) Survey (August 2020), the Chengdu MSME Survey (March 2 0 2 0), the Household Business Survey (April 2020) and (July 2020).

The impact of the epidemic has led to changes in business strategies and directions in the short and long term. SMEs with weak cash flow, especially in the light of the epidemic, are slowing down their capital recovery and are vulnerable to bankruptcy due to broken capital chains. Therefore, they believe that the government should focus on cost subsidies, tax breaks, and tax reductions with a view to broadening future financing channels (Li Han, 2020).

In line with the survey methods, Tsinghua University also conducted a related questionnaire survey on 1,435 SMEs, and the survey team, including Zhu, made research based on industry breakdown, number of employers, business income, time of existence using surplus cash assets, major pressures on expenses, management of cash shortages, and requirements for the relevant government. Like other survey teams, they believe that during the epidemic other subsidies such as employees' five-year insurance and pensions became the most significant overhead pressure and that the government should introduce specific policies for different industries and enterprises, with some associated costs being borne by the firms themselves and some paid by the government with no cost for the firms (Zhu Wuxiang, 2020). Only one national survey of SMEs was conducted in August 2020, while others were made regionally, e.g., in the southwest. Ma with colleges also gave factor analysis by using the SEM model (Structural Equation Model) through questionnaires combined with data from the Beijing Bureau of Statistics and concluded that the impact of the Covid-19 on

enterprises was obvious and the implementation of the policy would help mitigate negative impacts (Ma et al., 2021b). Most questionnaires take one representative region as an example to map the national situations. Beijing, with thousands of companies and a well-developed commercial ecosystem, is an excellent place to compare distinct types of companies.

The other popular method to investigate the financial situation of SMEs relying on the financial reports of listed companies. Liu et. al. (2022) used the China Listed Firms' Bank Loans Research Database and applied the line of credit to assess the financing ability of SMEs. Due to the low value of assets of SMEs, these companies face the challenges of acquiring financial support, especially under pandemics (Liu et al., 2022). Another relationship research about SMEs is that of She et al. who studied the relationship between the 'Born Global' and the financial status of SMEs by using a regression model.

2.2. Government measures

After the outbreak, in addition to focusing on fighting the epidemic to restore health, the Chinese government also introduced fiscal policies to stimulate economic development during the epidemic (Song et al., 2020). They can be classified into two categories in terms of motivation: diminishing losses and encouraging growth. To reduce losses, the central and local governments implemented measures such as tax exemptions, road traffic fee exemptions, and fee exemptions for administration expenses (Government, 2020). To encourage economic development, today the government bolsters the growth of small and medium-sized technology enterprises (Zhang et al., 2021); promotes venture capital fund assistance, and provides subsidized interest rate support for enterprise loans at a rate of 40 per cent to 50 per cent of the actual loan interest rate (Kai Huang Z., 2020); and encourages closed or bankrupt enterprises to reopen and assists in solving the problems that led to bankruptcy, such as financial difficulties, declining demand for products/services in downstream markets, and poor business management (Jiang et al., 2020).

Table 1. Government policy measures. *Source: own work.*

Time	Measures	Effects
2020.08	The main issues focus on the SMEs' expense reduction in Beijing, including urban road occupancy fees, government procurement support, special equipment inspection, and testing fees, the Occupancy Fee, and the Suspension of Sewage Charges (Non-residents) (Government, 2020)	SMEs benefit from the reduction of administrative fees.
2021.3.12	The central government encourages the innovation incentive of SMEs by tax policy. Promote deeply "Science and Technology Innovation 2030 – Major Projects"; encourage leading enterprises to form innovation consortia. (China, 2021)	The information technologies of SMEs benefit from it. Promoting the innovation industry develops fast and well.
2021.8.18	During the recovery period of the epidemic, the government of Beijing mainly issued relevant support policies for information technology for the recovery of production and life: a policy on Start-up guaranteed loans, a policy on resuming the collection of occupancy fees, a policy on normalizing epidemic prevention, and control, and accelerating recovery and development. (Finance, 2021)	
2022.1.20	Premier Li Keqiang presided over an executive meeting of the State Council to extend 11 tax for all companies, involving science and technology, employment and entrepreneurship, healthcare, and education until the end of 2023	Large companies took good use of it, whereas SMEs didn't benefit a lot from tax reductions.

The Beijing Municipal Government encourages SMEs with good credit standing or with specific business projects to obtain business start-up guarantees. However, Due to information mismatch, the government assistance for SMEs is insufficient, and some

businessmen are unable to take advantage of the government's preferential policies, such as financial support and loan reductions.

At the local level, there are few appropriate ministries dedicated to assisting SMEs, and most SME assistance policies are enacted by local people's administrations (Jiang et al., 2020). Furthermore, as a policy experimental base, Beijing implemented policies more efficiently and quickly so that they could check the effect of policy implementation in a short period. If the policies have positive impacts, then they will launch similar policies in other places.

The government's policy has gone through three stages: the first stage was based on tax and fee reduction and other burdens, the middle stage on further promoting the coverage of the policy, and the later stage on encouraging entrepreneurship and innovation.

This paper uses different listed companies' financial reports combined with the survey results of the Beijing Bureau of Statistics to find the extent of SMEs' vulnerability during their operation.

3. Methodology

SMEs are usually classified according to their sectoral characteristics in terms of the level of income. The Chinese government issued the Standard Provisions for the Classification of Small and Medium-sized Enterprises (No. 300 [2011] of the Ministry of Industry and Information Technology (China, 2018). Those listed on China's Main Board are large and mature companies with strong capitalization and stability. At the same time, the Shenzhen Stock Exchange of China established the Small and Medium-sized Board to bolster entrepreneurship and innovation, and established the Venture Version to encourage technological innovation and provide services for growth-oriented enterprises. Therefore, this paper selects large enterprises listed on the Main Board with codes beginning with 600-605 and 000, and SMEs with codes beginning with 002, 003, and 300 registered in Beijing as the main data source to produce a quantitative and qualitative analysis.
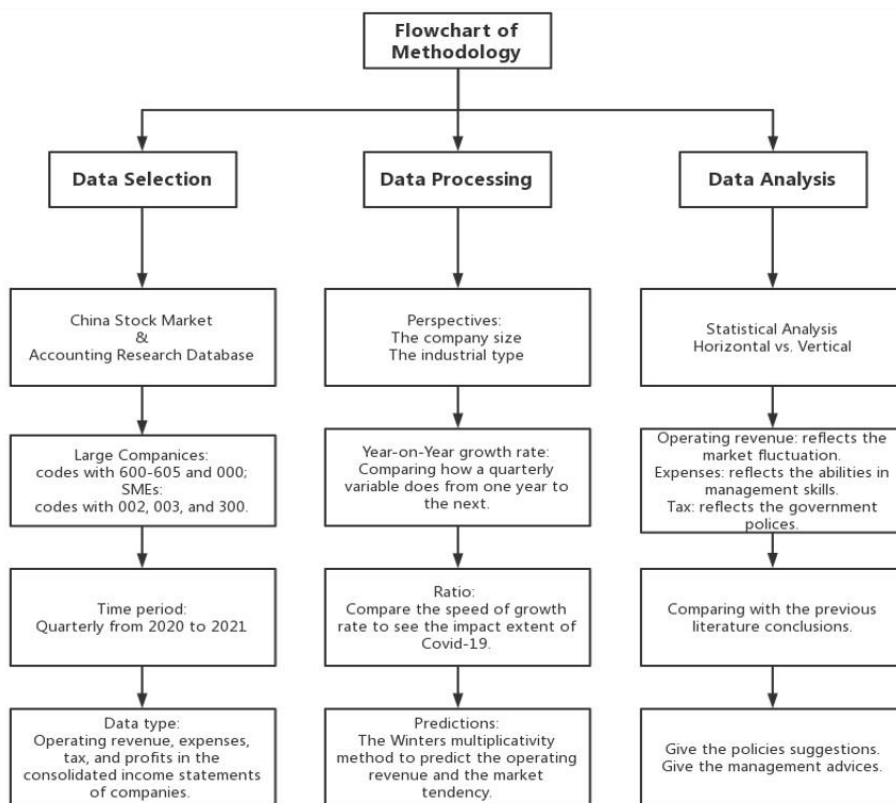

Figure 2. Flowchart of Methodology. *Source: own work.*

3.1. Metrics selection

Based on the assumption that there is no tax evasion, tax leakage, etc., in order to identify the problems in management processes, the profitability of the company is analysed from three perspectives: the operating revenue, cost, and profit in the income statement. The operating numbers, as well as the growth rates compared to the previous year, are the main data types in the research process by using a combination of absolute and relative values. To eliminate the effects of seasonal factors, this paper uses year-on-year growth rates to compare changes in operating revenue, costs, and profits of companies in each quarter, and to observe the extent of the impact of the epidemic on revenue, costs, and profits. Equation 1 shows:

$$Year-on-year\ growth\ rate = \frac{(\ the\ current\ quarter\ value\ -\ quarter\ value\ of\ the\ same\ period\ last\ year\ )}{quarter\ value\ of\ the\ same\ period\ last\ year} \times 100\% \tag{1}$$

By measuring and comparing the operating situation of enterprises, it is easier to find difficult points in the production and operation process of SMEs.

3.2. Comparative analysis

Studying the relationship between two sets of data usually involves examining whether there is a correlation or difference between them. In this paper, large companies and SMEs are selected as the observation entities, on the one hand, to find out differences and connections in the three aspects of operating revenue, cost expenditure, and profit, and, on the other hand, to compare the performance of large companies and SMEs under the external shock of the epidemic. Therefore, in addition to the conventional comparison methods of absolute values, the proportion ratio will be used in the comparisons. If large companies and SMEs are affected by the epidemic to the same extent, a certain ratio (below) will be presented in terms of growth rate comparison. Equation 2 shows:

$$Proportion = \frac{growth\ rate\ of\ SMEs}{growth\ rate\ of\ Big\ Companies} \tag{2}$$

$When\ proportion > 1,\ the\ (positive\ or\ negative)\ growth\ rate\ of\ SMEs\ is\ faster\ than\ that\ of\ Big\ Companies.$

$When\ 0 < proportion < 1,\ the\ (positive\ or\ negative)\ growth\ rate\ of\ SMEs\ is\ slower\ than\ that\ of\ Big\ Companies.$

$When\ proportion < 0,\ comparing\ which\ is\ negative\ growth.$

Hypothesis a0: A similar proportion indicates that there is no difference between large companies and SMEs in terms of the impact of the epidemic.

Hypothesis a1: Different proportions demonstrate that there is a significant difference between large companies and SMEs affected by the epidemic.

3.3. Predictions: Holt-Winters' multiplicative method

Exponential smoothing is a method of forecasting based on historical data combined with weighted averages. The prediction is based on previous data for weight assignment, and the predicted data contain past information and other factors at contemporaneous levels. Holt-Winters is a triple exponential smoothing method, which means that the forecasted data contain both trends and seasonality (Winters, 1960). Since the variance of the time series data tends to increase in the scattered plot, the multiplicative model is recommended for predicting the operating revenue of SMEs (Holt, 2004). Equation 3 shows:

$$\begin{cases} level_t = \alpha \dfrac{value_t}{season_{t-m}} + (1-\alpha)\left(level_{t-1} + trend_{t-1}\right) \\[2mm] Season_t = \gamma \dfrac{value_t}{level_{t-1} + trend_{t-1}} + (1-\gamma)\,season_{t-m} \\[2mm] Trend_t = \beta\left(level_t - level_{t-1}\right) + (1-\beta)\,trend_{t-1} \\[2mm] \widehat{Value}_{t+h|t} = \left(level_t + h \times trend_t\right) \times season_{t-m+h_m^+} \end{cases} \tag{3}$$

Among them, $\alpha, \beta, \gamma \in (0, 1)$, $level_t$ is the stable component at moment t, $season_t$ is the seasonal factor at moment t, $trend_t$ is the tendency at moment t, m the recycle period, $value_t$ is the observed value at moment t, and h is the prediction period.

4. Results

4.1. Operating revenue

The data in Figure 3 were retrieved from the Beijing Municipal Bureau of Statistics and the CSMAR database* for the comparison of the operating income of enterprises. The data for large enterprises and SMEs both come from the financial statements of operating revenue of listed companies. As it can be seen, although the total capital of large enterprises is much larger than that of SMEs, both show similar trends. The operating income for both company categories reached its lowest point in the first quarter of 2020 and then rises at a different rate.
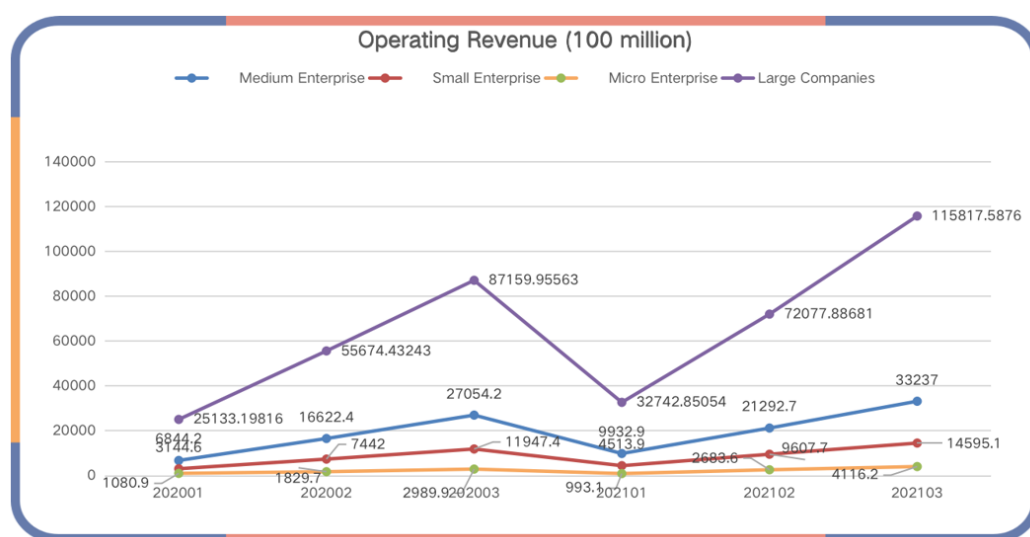

Figure 3. Operating revenue (CNY 100 million). *Source: Beijing Municipal Bureau of Statistics & CSMAR database.*

* Note: China Stock Market & Accounting Research Database is a comprehensive research-oriented database focusing on Chinese finance and economy.

Table 2. The growth rate of total operating revenue growth rate (year-on-year) (%). *Source: own work & CSMAR database.*

Time	Large Listed Enterprises in Beijing	SMEs listed in Beijing	SMEs/Large
2021Q3	23.64%	31.08%	1.315
2021Q2	21.37%	42.07%	1.969
2021Q1	21.18%	49.95%	2.359
2020Q4	-2.86%	1.77%	-0.620
2020Q3	-2.31%	-2.80%	1.213
2020Q2	-4.21%	-8.29%	1.968
2020Q1	-5.24%	-15.92%	3.040

However, since there is seasonality in the operating revenues of companies, the comparison of absolute values alone does not indicate the size of the impact of the Covid-19

epidemic. It is more informative to compare the revenue data of the same period through year-on-year growth. Table 2 shows that there was an upward trend for both large companies and SMEs with slow growth rates as the recovery from the pandemic took shape. Nevertheless, there are some minor differences: large companies recorded negative growth in operating revenue, whereas SMEs started to grow in the third quarter of 2020, with a growth rate of 1.77 per cent. In 2021, the growth rate of large companies was significantly slower than that of SMEs, with large companies maintaining a growth rate of around 20% and SMEs fluctuating around 30-40%.

The ratio of operating revenue growth rates between large companies and SMEs is not a fixed value, which indicates that the two elements did not receive the same impact from the epidemic. When the ratio is lower than 1, the (positive or negative) growth of large companies is higher than that of SMEs. In Table2, it is easy to identify a pattern that the growth rate of SMEs is usually faster than that of large companies. But the fourth quarter of 2020 was a very special example of a period when SMEs turned from negative to normal growth, but large companies were still in the negative growth territory. Another slight downward trend in growth rate in the third quarter of 2021 was due to an increase in the number of infected individuals from abroad leading to the start of a new urban lockdown and home quarantine in Beijing.

Non-operating revenue is a supplement to the operating revenue of a company in table3. When the main operating revenue is low, an increase in non-main operating revenue will reduce the burden of running the business. The non-operating revenue of large enterprises showed a positive trend in the second and third quarters of 2020, especially in the first quarter of 2021 with a growth rate of 25.9%. However, the non-operating revenue of SMEs took up slight growth rate values in the fourth quarter of 2020 and the first quarter of 2021, and the rest of the non-operating revenue growth rates of SMEs have serious negative growth rate values, especially for the third quarter of 2020 when the growth rate was -33.72%.

The ratio of non-operating revenue growth rates showed a different picture. The growth rate ratio fluctuated with no pattern here because the negative growth rate of SMEs and large companies did not sync up. The negative values of -6.569, -6.317, and -3.379 are lower than -1, which is attributable to the highly negative growth rate of SMEs.

Table 3. Non-operating revenue growth rate (year-on-year) (%). *Source: own work & CSMAR database.*

Time	Large Listed Enterprises in Beijing	SMEs listed in Beijing	SMEs/Large
2021Q3	2.60%	-17.10%	-6.569
2021Q2	-1.77%	-15.79%	8.897
2021Q1	25.90%	4.90%	0.189
2020Q4	-7.01%	0.77%	-0.110
2020Q3	5.34%	-33.72%	-6.317
2020Q2	4.60%	-15.53%	-3.379
2020Q1	-23.98%	-11.34%	0.473

Various businesses have been affected to varying degrees by the pandemic. This paper devotes special attention to four selected industries: 1. manufacturing, 2. construction, 3. wholesale and retail trade, and 4. information technologies. They were chosen to distinguish traditional Chinese industries such as manufacturing and construction, from new ones, such as information technologies as well as wholesale and retail trade. Wholesale and retail trade was selected because of the innovations that took place there during the pandemic. Observing changes in the four sectors helps to get a clearer insight into the influences of the pandemic on SMEs in different sectors. In addition to the significant development triggered by the Covid-19 pandemic in the pharmaceutical and health industries, certain other sectors, too, witnessed unanticipated growth. For large enterprises in Figure4, information technologies are one of the few industries with growth. Manufacturing and construction resumed production in the second quarter of 2020, hence operating revenues rebounded as well. Large enterprises in wholesale trade were most severely damaged because of the lockdown of cities and were characterised with negative operating revenues throughout 2020. Small and medium-sized businesses in

information technologies were also steadily growing. However, the growth rates of wholesale and retail trade and information technologies practically showed the same trends in the third quarter of 2020, but in the subsequent quarter, they started to expand progressively (Lu et al., 2021).
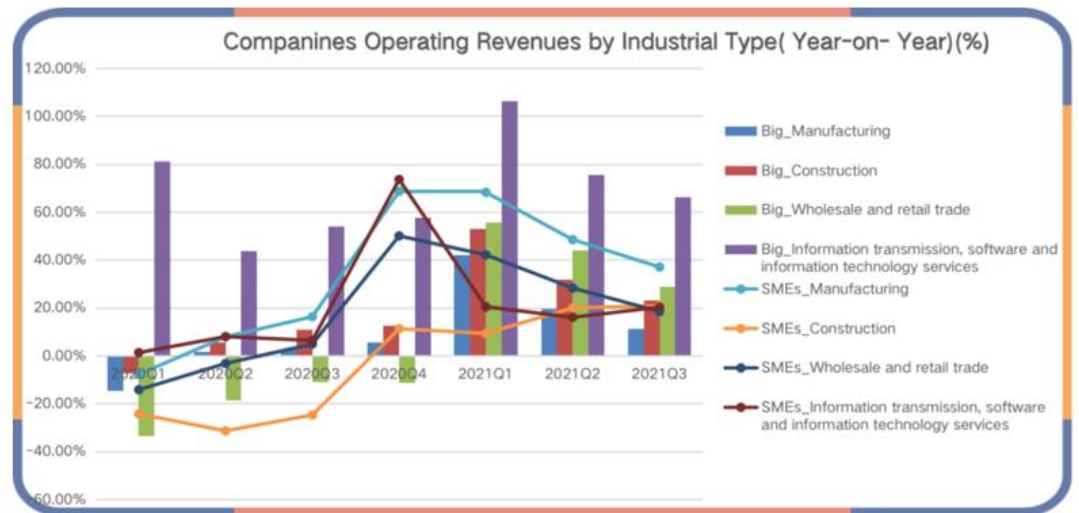

Figure 4. Operating revenue by selected industries and corporate size (%). *Source: own work & CSMAR database.*

4.2. Cost: administrative expenses & tax

It is commonplace that a good company must have high operating revenue and low cost. Administrative costs are significant components of overall costs. Corporate administrative overheads include administrators' wages and office expenses, maintenance costs, depreciation of fixed assets, and other management and operating expenses incurred within the scope of business. Taxes reduce corporate income, but the Chinese government provided companies with tax relief to push down their burden during the pandemic. The lines of the administrative expenses of large enterprises and SMEs had the same slope and show a synchronous trend. However, the fluctuations of taxes of SMEs were smaller than those of large companies (see Figure 5).
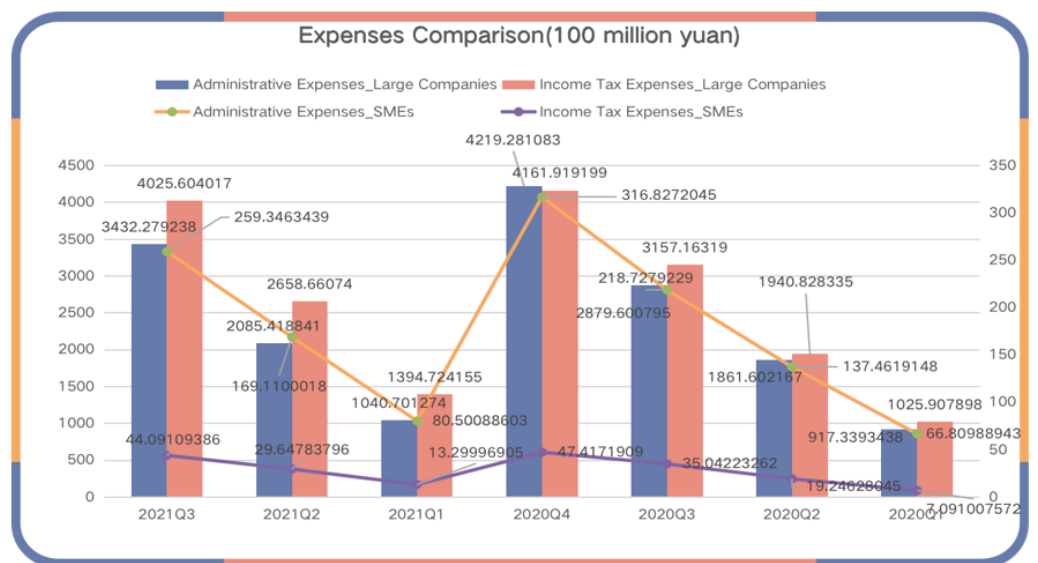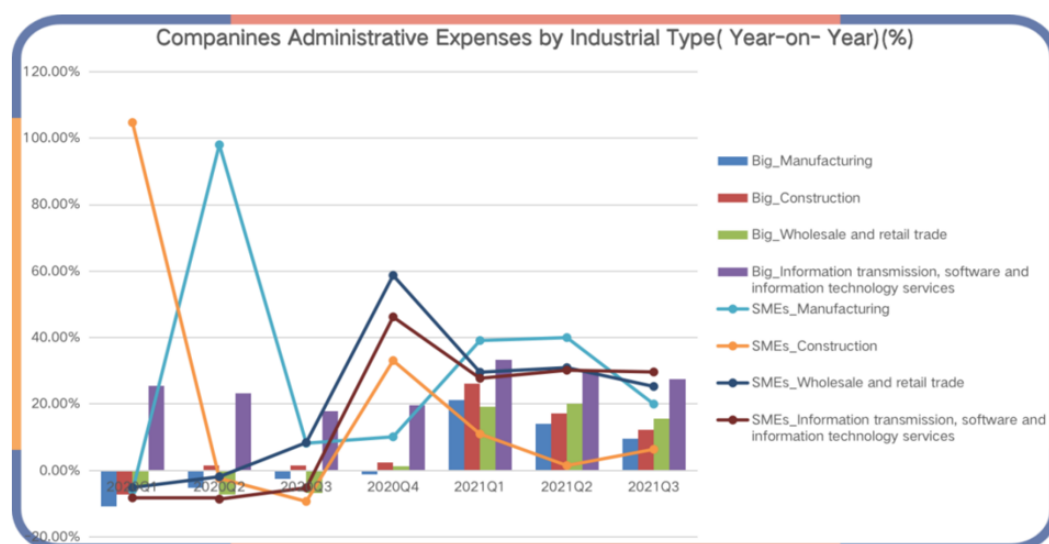
- Administrative expenses

Figure 5. Comparison of expenses (CNY 100 million). *Source: own work & CSMAR database.*

The growth rate of administrative expenses has a path like that of operating revenue. In the first three quarters of 2020 shown in Table 4, the administrative expenses displayed negative growth rates for both SMEs and large companies. But SMEs had a higher negative growth rate than large companies, the former ranging between -6.47% and -2.36%, while the latter between -2.07% and -0.41%. From the fourth quarter of 2020, the expenses of SMEs and large companies were positive. In 2021, the growth rate of SMEs was 18.57%, while that of large companies was 19.19% Whereas the growth rate of administrative expenses of large companies was steadily increasing quarter-on-quarter, that of SMEs fluctuated more. As mentioned before, the administrative expenses of large companies were more stable than those of SMEs.

As far as the growth rate ratios of the two types of companies in Table 4 are concerned, most of them were above 1 except for the third quarter of 2021 with 0.968. This ratio indicates that administrative expenses increased faster in SMEs than in large companies. The development of the ratios can be divided into two phases. In 2020, the growth rate ratio reached a maximum of 11.734, which is a positive value due to both negative growth rates. The growth rate of administrative expenses of SMEs was decreasing rapidly under the pandemic. In 2021, the ratio was close to 1, and the dynamics of administrative expenses in both types of companies were analogous.

Table 4. The growth rate of administrative expenses (year-on-year) (%). *Source: own work & CSMAR database.*

Time	Large Listed Enterprises in Beijing	SMEs listed in Beijing	SMEs/Large
2021Q3	19.19%	18.57%	0.968
2021Q2	12.02%	23.02%	1.915
2021Q1	13.45%	20.49%	1.524
2020Q4	0.96%	3.12%	3.242
2020Q3	-0.41%	-2.36%	5.798
2020Q2	-0.55%	-6.47%	11.734
2020Q1	-2.07%	-6.10%	2.944

Figure 6. Comparison of expenses by selected industries and corporate size (%). *Source: own work & CSMAR database.*

- Taxes

The higher the income, the higher the income tax expenses. Large enterprises have a lagging effect on operating revenues due to their enormous size. Their negative income tax

growth rate reached its highest value in the second quarter of 2020: that is -19.44%. But SMEs recorded their peak negative income tax growth in the first quarter of 2020.

The ratio of income tax is consistently greater than zero, which indicates that both large companies and SMEs displayed a synchronized growth trend, and the ratio of the growth rates of SMEs to large companies fluctuated in the 1-3 value range proving that the growth rate of income tax of SMEs is faster than that of large companies. There was only one special case in the third of 2021 with a 0.939 ratio when the growth rate of SMEs was slower than that of large companies.

The growth rates of income tax and income tax payable differed significantly due to a certain degree of tax relief provided by the state. However, in terms of growth trends, large enterprises record negative growth for taxes payable in 2021, only showing positive values in the first, the second, and the fourth quarters of 2020. However, the tax payable by SMEs, in general, came close to positive values during the pandemic period, except for -38% of the third quarter of 2021.

The ratio of SMEs' taxes payable growth rates compared to that of large enterprises was nearly negative and less than -1 in the third quarter of 2020 and the second and third quarters of 2021, which indicates that the tax payable by large enterprises was decreasing faster than that by SMEs. The ratio, which was greater than zero in the fourth quarter of 2021 and the fourth quarter of 2020 but still less than 1, means that the decreasing dynamics of large enterprises were still stronger than that of SMEs.

Table 5. Growth rate of tax expenses & taxes payable. *Source: own work & CSMAR database.*

Income Tax Expenses Growth Rate (year-on-year) (%)			
Time	Large Listed Enterprises in Beijing	SMEs listed in Beijing	SMEs/Large
2021Q3	27.51%	25.82%	0.939
2021Q2	36.99%	54.04%	1.461
2021Q1	35.95%	87.56%	2.436
2020Q4	-6.70%	-20.55%	3.069
2020Q3	-9.54%	-21.36%	2.239
2020Q2	-19.44%	-27.90%	1.436
2020Q1	-16.86%	-46.62%	2.765
Taxes Payable Growth Rate (year-on-year) (%)			
Time	Large Listed Enterprises in Beijing	SMEs listed in Beijing	SMEs/Large
2021Q3	-59.81%	-38.00%	0.635
2021Q2	-58.24%	13.13%	-0.225
2021Q1	-55.94%	15.70%	-0.281
2020Q4	14.70%	13.77%	0.937
2020Q3	-21.31%	15.05%	-0.706
2020Q2	9.40%	14.14%	1.503
2020Q1	5.61%	12.87%	2.293

The amount of tax payable in all four quarters of 2020 showed a relatively flat trend, which demonstrates that the government carried out tax relief policies impacting them (Tian, 2021).

For SMEs, tax cuts were offered in the construction industry, which shows an almost negative tax growth, with a negative tax rate growth rate of -48.17% in the first quarter of 2021 (see Table 11). In contrast, manufacturing maintained a growth rate throughout the pandemic, reaching even 129.46%. Information technologies and sales recorded positive tax growth as the epidemic eased. In the case of large companies, manufacturing also had positive growth rates, and information technologies and sales were also progressively positive. Construction was positive in 2020 but negative in 2021.
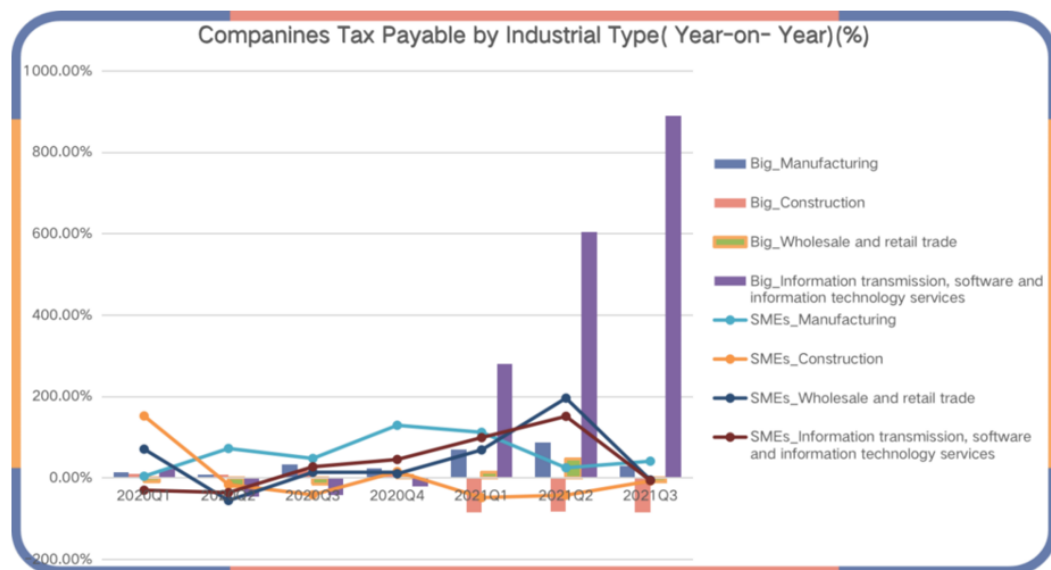
Figure 7. Taxes payable by selected industries and corporate sizes (%). *Source: own work & CSMAR database.*

4.3. Profits

Profit is the ultimate goal of companies and they strive to increase their profitability. In addition, profit maximization under certain circumstances contributes to the maximization of social wealth. As a result of the impact of the pandemic in early 2020, businesses of all sizes shut down production, which resulted in low operating revenue levels and the contraction of net profits. At a first glance, the net profits value of SMEs and large companies were situated in the cointegration trajectory. However, the strange fact is that the net profits of large companies reached CNY 1,815,733 million, whereas those of SMEs were CNY –1,342 million, in the fourth quarter of 2020. These figures moved in the opposite direction. SME revenues were growing at a slower rate than expenses and taxes, and thus high expenses were squeezing their profits.
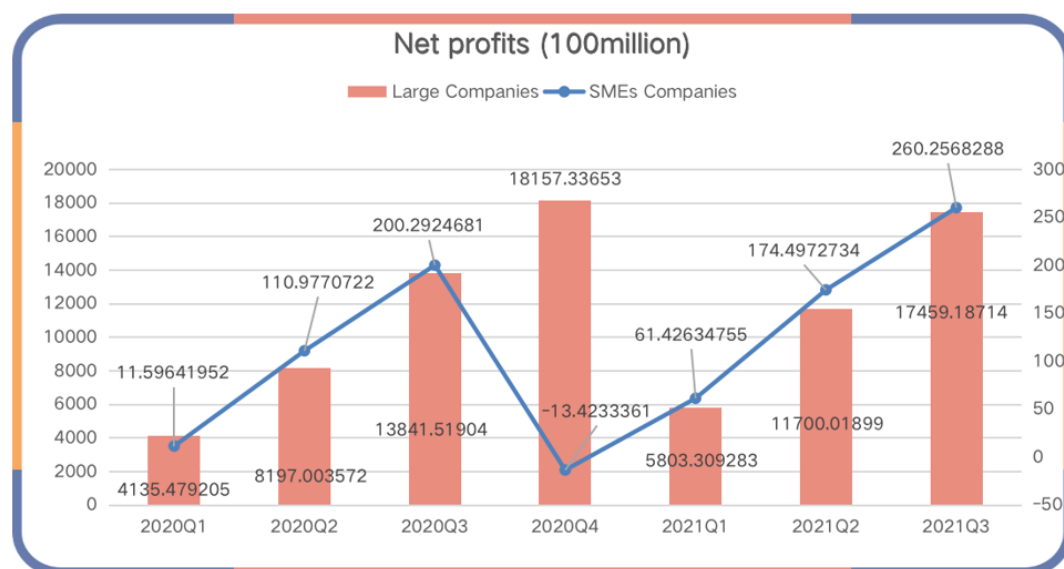

Figure 8. Net profits (Yuan 100 million). *Source: own work & CSMAR database.*

The net profit growth of large enterprises was on a slow recovery path, simultaneously with the slow pickup of the whole economy. It can be seen in Table 6 that the net profit of large companies was steadily recovering, although there was a small drop to 26.14% in the third quarter, although still in the positive territory. On the other hand, the growth rate of SMEs fluctuated sharply. Growth rate reached the highest value with 489% in the second quarter of

2020 and the lowest one at -377% in the fourth quarter. The consequence of this was a similar fluctuation in the ratio of SMEs to large companies in the growth rate of net profits. The net profits growth rate of SMEs was faster than that of large companies. The worst situation happened in the fourth quarter of 2020, when the ratio equalled 112.894. This huge discrepancy eased in the second quarter of 2021.

Table 6. The growth rate of net profits (year-on-year) (%). *Source: Own work & CSMAR database.*

Time	Large Listed Enterprises in Beijing	SMEs listed in Beijing	SMEs/Large
2021Q3	26.14%	29.94%	1.145
2021Q2	42.74%	57.24%	1.339
2021Q1	40.33%	429.70%	10.655
2020Q4	-3.34%	-376.74%	112.894
2020Q3	-7.18%	84.45%	-11.769
2020Q2	-19.39%	488.81%	-25.214
2020Q1	-16.85%	-79.71%	4.731

The general net profit trend of large enterprises in the four selected industries was on the rise, but the annual profits of SMEs fluctuated more than those of large enterprises as shown in Figure 9. Net profits of SMEs in manufacturing exhibited a downward trend, and in construction they were in negative territory until 2020 but in positive one 2021 due to huge labour and equipment expenses. The development of information technologies and new retail sales units brought about by the pandemic induced higher net profits in the second quarter of 2020, and then – with the adaptation of the society and the employment of other industries – they gradually levelled off.

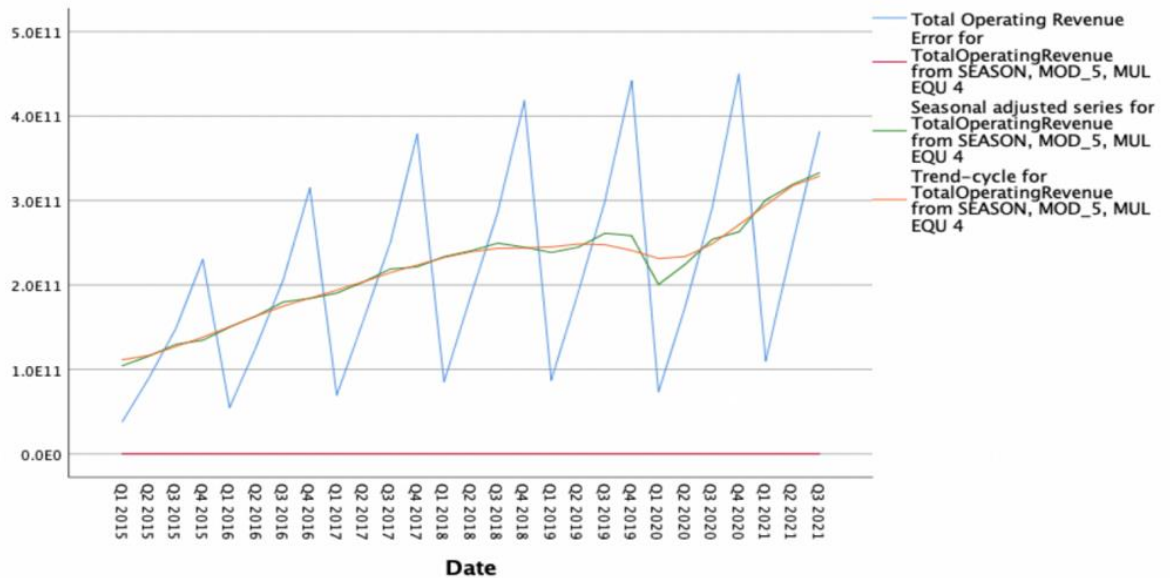Figure 9. Net profits by selected industries and corporate size (%). *Source: own work & CSMAR database.*

4.4. Prediction

As a Black Swan event (Taleb, 2009), the Covid-19 pandemic had only a short-term influence on the economy. According to its regular pattern, this paper depicts the economic development path by using the exponential smoothing method.

The seasonal decomposition of the original time series makes it easier to understand the inherent temporal traits of the economic effects of the pandemic, and thus enables one to choose the right predictive model. Long-term trends and cyclical variation series can overlap to a substantial extent with the series corrected for seasonal factors, because the values of the error series are relatively small. In the trend line (green line) in Figure 10, with the seasonal

factors eliminated, traces of the new Covid-19 pandemic impact can be observed. At this moment, the green and yellow lines diverge, with the yellow line being higher than the green one. This indicates that the pandemic was only a minor hiccup in the overall trend of total operating revenue and caused only a temporary deviation from the green line.

The blue line (Seasonal Factor/Value): is the seasonal factor decomposed from the series.

The red line (Error Series): The series left after removing seasonal factors, long-term trends, and cyclical variations from the time series.

The green line (Seasonal Adjusted Series/Level): is the corrected series after removing the seasonal factors from the original series.

The yellow line (Trend): This is the series consisting of long-term trend and cyclical change in the original series.
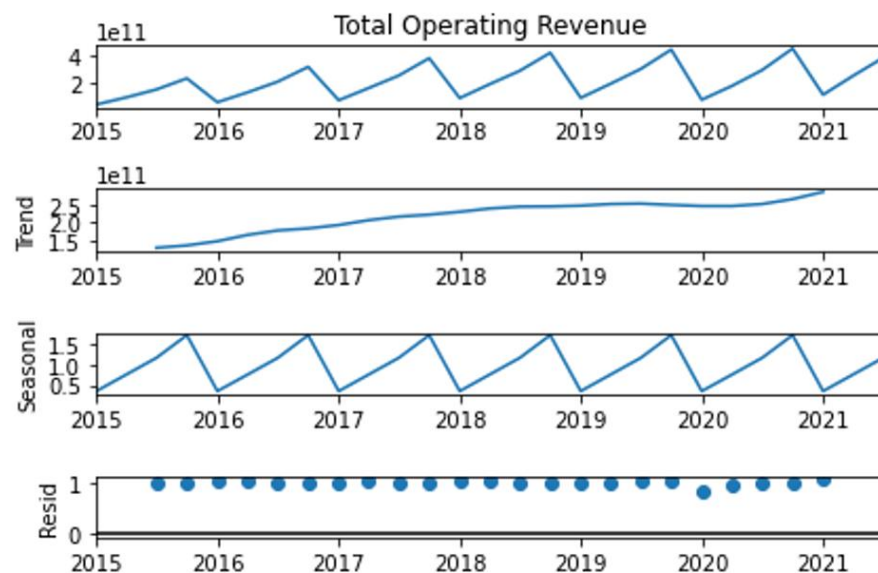

Figure 10. Seasonal decomposition. *Source: own work & SPSS & Python.*

The Winters multiplicativity method is used for series with linear trends and seasonal effects that depend on the level of the series (Hasan & Dhali, 2017). There is a linear trend due to the seasonality of the business income of enterprises, combined with the upward trend of the current macroeconomic development. The significance of the "Q (18)" statistic is P = 0.206, which is greater than 0.05 (here P > 0.05 is the result obtained by expectation), so the original hypothesis is accepted, and the rest of this series is considered to be in line with random distribution. No outliers appear, and all reflect that the fit of the data is 88.7%, the adjusted fit effect is 99.6%, and the fitting effect is particularly good. Finally, by using the

seasonal time series to forecast from 2022 to 2025, this paper finds that SMEs will show an upward trend in the future with positive growth rate, and the seasonality will be more pronounced throughout the year, with greater fluctuations between seasons.   (See Figures 11&12 and Table 7.)

Time Series Modeler

Model Description

			Model Type
Model ID	Total Operating Revenue	Model_1	Winters' Multiplicative

Model Statistics

Model	Number of Predictors	Model Fit statistics Stationary R–squared	Ljung–Box Q(18) Statistics	DF	Sig.	Number of Outliers
Total Operating Revenue–Model_1	0	.887	19.177	15	.206	0

Model Summary

Model Fit

Fit Statistic	Mean	SE	Minimum	Maximum	5	10	25	Percentile 50	75	90	95
Stationary R–squared	.887	.	.887	.887	.887	.887	.887	.887	.887	.887	.887
R–squared	.996	.	.996	.996	.996	.996	.996	.996	.996	.996	.996
RMSE	8.619E+9	.	8.619E+9	8.619E+9	8.619E+9	8.619E+9	8.619E+9	8.619E+9	8.619E+9	8.619E+9	8.619E+9
MAPE	3.912	.	3.912	3.912	3.912	3.912	3.912	3.912	3.912	3.912	3.912
MaxAPE	27.442	.	27.442	27.442	27.442	27.442	27.442	27.442	27.442	27.442	27.442
MAE	5.845E+9	.	5.845E+9	5.845E+9	5.845E+9	5.845E+9	5.845E+9	5.845E+9	5.845E+9	5.845E+9	5.845E+9
MaxAE	2.013E+10	.	2.013E+10	2.013E+10	2.013E+10	2.013E+10	2.013E+10	2.013E+10	2.013E+10	2.013E+10	2.013E+10
Normalized BIC	46.121	.	46.121	46.121	46.121	46.121	46.121	46.121	46.121	46.121	46.121

Figure 11. Model Summary. *Source: own work & SPSS.*

Table 7. Operating Revenue Predictions (CNY 100 million). *Source: Own work & CSMAR database.*

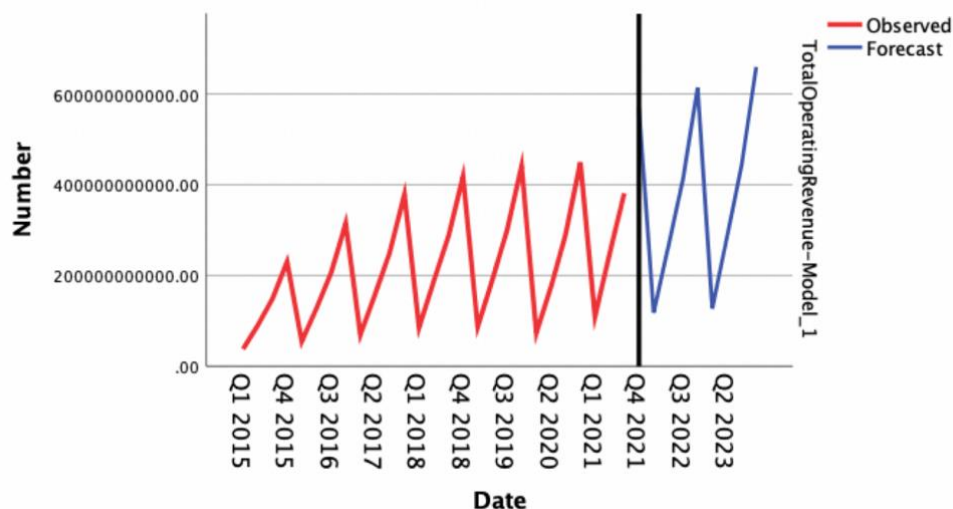| Time	Total Operating Revenue (100 million yuan)	Year-on-Year growth rate(%)
2020Q4	4494.914962	1.77%
2021Q1	1100.035942	-2.80%
2021Q2	2484.246772	-8.29%
2021Q3	3811.954895	-15.92%
2021Q4	5688.525893	26.55%
2022Q1	1181.350287	7.39%
2022Q2	2637.470678	6.17%
2022Q3	4121.442166	8.12%
2022Q4	6141.189065	7.96%
2023Q1	1273.522329	7.80%
2023Q2	2839.31592	7.65%
2023Q3	4430.934183	7.51%
2023Q4	6593.852236	7.37%
2024Q1	1365.694371	7.24%
2024Q2	3041.161163	7.11%
2024Q3	4740.4262	6.98%
2024Q4	7046.515407	6.86%
2025Q1	1457.866412	6.75%
2025Q2	3243.006405	6.64%
2025Q3	5049.918217	6.53%
2025Q4	7499.178578	6.42%

Figure 12. Prediction Trends. *Source: own work & SPSS.*

5. Discussion

The Covid-19 pandemic was a Black Swan event (Taleb, 2009), which is used to describe events that are unpredictable and cause serious harm to human beings and/or the economy. The impact of Covid-19 on the economy was short-lived, but its occurrence exposed many problems that had existed in the Chinese economy so far. In addition, along with the identification of the problems, many innovative solutions were born. The impact of the pandemic on all industries has not disappeared, but consequently, resources were shifted and redistributed from traditional industries, such as manufacturing and construction, to more efficient ones such as information technologies and a new style of wholesale and retail services.

5.1. Operating revenue

The operating revenue of an enterprise is the income obtained through the sale of goods or services in a certain period, thus the amount of this revenue is directly affected by market trends, including their fluctuations. Table 2 shows that the growth rate of operating revenue is on the rebound, regardless of corporate size. The Black Swan events occur without warnings. Thanks to scientists researching the virus increasingly extensively, new vaccines and treatment programs were introduced, which gradually weakened the strength of the virus. Finally, the city of Beijing lifted the closure, factories and schools reopened, supermarkets and food markets also assumed normal business. Although large companies were slow to recover, their revenues set to rise steadily, which reflects their ability to counterweight and resist risks. In contrast to this, SMEs rebounded rapidly with sharp fluctuations. For example, in the first three quarters of 2021, when the pandemic eased, an explosive rebound took place, indicating that SMEs are highly sensitive to market economic fluctuations (Vichova & Taraba, 2020). This market sensitivity draws attention to the instability and vulnerability of SMEs to disaster damage. The development of the ratio of growth rates confirmed this.

However, the non-operating revenue of SMEs (shown in Table 3) was negative most of the time under the survey, which indicates that SMEs are more homogeneous in terms of operation and face difficulties in quickly diversifying risks when a pandemic is approaching. Due to the negative growth of SMEs, the proportions of the growth rate of SMEs to large companies' growth rate assumed negative values, which suggests that SMEs should strengthen their non-main operating income to diversify risks. The introduction of the new online sales forms in the wholesale and retail market offered an opportunity for SMEs to extend their non-operating business, such as online trading instead of the traditional selling model.

Changes and turning points in the economic situation were also reflected in the operating revenue of different industries. Among large companies, traditional manufacturing and construction clearly showed a steady increase with the easing of the pandemic and the recovery of the economy, but this happened at a slower pace, which indicates that they can no longer continue to be the main drivers of China's economic growth. In contrast, information technologies reached positive growth rates throughout the pandemic, even reaching 100% (as can be seen in Figure 4), which indicates that the next driving force of the Chinese economy will be the technology sector. The switch to online education, online offices, etc. boosted the expansion of information technologies. It exerted an enormous impact on wholesale and retail trade. At the beginning of the pandemic, this industry was the hardest hit by the consequences, but due to the development of information technologies, new sales models emerged, resulting in the renewal of domestic trade.

In the case of SMEs, the dynamics of information technologies were slower than that of large corporations as shown in Table 9. One of the reasons for this is that the information technology sector requires a lot of money and many highly educated people, but the weaknesses of SMEs are the most pronounced in this field (Jin et al., 2021). The implications for government policies are obvious: the promotion of information technologies tailored to the needs of SMEs is indispensable.

5.2. Cost: administrative expenses & tax

- Administrative expenses

In 2020, the administrative expenses of companies displayed a negative growth trend (see Table 4). Some firms even stopped operating due to lockdowns, thereby their costs decreased. However, in comparison, the decline in administrative expenses for large companies was smaller than those for SMEs. Because of the strong capital endowment and mature corporate system of large companies, many large firms used the home office to continue to run and maintain their business operations. In contrast, their vulnerability made many small companies unable to conduct business during the quarantine period and were unable to pay salaries without earning a revenue. The increasing costs of health prevention measures (masks and protective clothing, etc.) were high.

In 2021, the Chinese Consumer Price Index (CPI) was up by 1.5% year-on-year, indicating a slight inflation during the severe phase of the pandemic (the CPI peaked at 5.4% in January 2020). Inflation typically increases living costs and other expenses, exacerbating the plight of companies (Ma et al., 2021a). At this time of the revival of inflation, the administrative expenses for large companies grew slowly, indicating that such companies were recovering at a slowly increasing rate due to their mature management systems. However, the administrative expenses of SMEs rebounded rapidly and reached the highest growth rate in the first quarter, indicating that SMEs started to resume operations at this time, but the lack of a mature management system or managers to control them led to the highest growth rate of expenses in the first quarter when they resumed production work.

The most interesting phenomenon is that large technology-based companies seem to have been unaffected by the pandemic, with positive administrative expenses throughout the Covid-19 period. However, small and medium-sized businesses in the technology sector changed with the pandemic. Relevant government promotion measures might have contributed to this: during the pandemic, the government introduced policies related to bolstering science and innovation companies by reducing and delaying the levy of business management and other fees, which to some extent enabled science- and innovation-oriented SMEs to reduce their administrative expenses.

- Taxes

The ratio of income taxes in Table 5 is above 1 in most cases. The income taxes growth rate of SMEs was higher than that of large companies. This made it more difficult for SMEs to survive, which implies that the government tax relief for SMEs should be strengthened. During the pandemic, the government enacted phased tax breaks and delayed the payment of income tax in 2020, but SMEs in Beijing did not benefit from this compared to large firms.

Table 5 includes the differences in the growth path between the income taxes and taxes payable. The gap between the two kinds of taxes refers to the major characteristics of the implementation. The growth rates of taxes payable by large firms were negative in the 2020

Q3 and 2021 Q1 & Q2 & Q3, resulting in negative SMEs-to-large-company ratios. The reason for this is that large companies often have a dedicated team of financial and accounting professionals who interpret and apply tax policies to their business operations when policies are introduced, which allows them to enjoy the full benefits of tax policies. However, SMEs lack information on tax reliefs and don't have professional managers apply the policies. According to Li Han, many SME owners are not familiar with the official tax policy and do not know how to apply for the benefits (Li Han, 2020).

The growth of taxes payable in traditional industries listed in Figure 7 shows the policy orientation of the country. The distribution of industries in the market will be adjusted through tax policies. As a result of enjoying the national support policy for the information technology sector, the tax payable by information technology companies was not very high. However, the increase in the amount of taxes paid by large companies was significantly smaller than that of SMEs. The government's tax policy has not been publicized enough for all business owners and thus they failed to understand and enjoy related benefits. This illustrates again that tax policy measures are less effective for SMEs than for large firms. In 2021, the whole economy recovered to a normal trajectory, hence tax benefits were significantly reduced (Huang et al., 2021).

5.3. Profits

The reason why there was a deep negative value for SMEs in the fourth quarter of 2020, as shown in Table 6, is that whereas the revenue was on a slightly positive growth path, administrative costs and taxes payable were up. Furthermore, the huge fluctuations reflect the recurring economic and epidemic situation (Sun et al., 2021). Because of their flexibility, SMEs could react at the first moment. China controlled the spread of the pandemic in the second quarter, with a good growth trend of resuming production and work by SMEs. But the recurrence of the pandemic in the fourth quarter and the return of infected people from outside the country led to new infections, turning SMEs' profits into the negative. The high volatility made it necessary for the government to focus more on SMEs and to make efforts to prevent and control Covid-19.

The economic rebound, recurring epidemics, and rising upstream costs, coupled with the impact of environmental regulations on power outages are the direct sources of declining profits for SMEs in the short term.

Long-term factors such as operational and institutional problems, on the other hand, are at the root of the problem. First, SMEs are chronically disadvantaged in the industry value chain due to the lack of sufficient capital flows. Second, SMEs have limited human resources and inadequate modern corporate management: the cost of epidemic prevention increases for SMEs, and they need to spend much on health protection items. Third, the financing cost of SMEs is relatively high. Due to the higher default risk of private SMEs, the interest rates of bank loans to private enterprises could be much higher than those to state-owned enterprises, especially in an unfavourable economic environment.

5.4. Comparison of the results of this paper with those of the relevant literature

This paper builds on previous literature and delves further into the subject. By comparing the growth rates, it became clear in which areas the SMEs are struggling and the extent to which government policies are implemented. Table 8 compares the major findings of this paper with the relevant statements of other literary sources.

In terms of corporate size comparison, large enterprises have strong risk resistance, and the capital reserves and risk preventions became important when companies were hit by the consequences of the pandemic. Their operating revenue decreased under risk management. The growth rate of administrative expenses for large companies is about the same as that of SMEs, but large companies tend to enjoy more tax relief benefits in terms of smaller taxes payable. Large enterprises with a substantial pool of management talents performed well in controlling costs, management expenses dropped by about 1% in 2020. With effective access to information, large companies can enjoy and take advantage of government tax benefits, and moderate the rate of growth in taxes payable. Finally, the net profits of large enterprises showed a steady rebound in the first quarter of 2021. In contrast

to this, SMEs do not have strong risk resistance in the face of the Covid-19 pandemic, and due to their sensitivity and vulnerability to risks, their business conditions fluctuate with the epidemic situation. SMEs' operating revenue declines the most when they are hit by covid-19 pandemic. Based on the ratios of the growth rate of operating revenue, most of these ratios exceed 1.

Table 8. Comparison with previous literature. *Source: own work.*

Items	Research findings of other scholars	Research findings of this paper
Operating Revenue	1. The operating revenue of SMEs is declining during pandemics (Li Han, 2020). 2. Technology and pharmacy industries are developing fast during the pandemic (Lu et al., 2021).	1.SMEs had a higher degree of operating revenue (positive/ negative) growth than large enterprises and responded to the market more quickly than large enterprises. 2. Manufacturing and construction can no longer continue to be the main drivers of growth in China; information technologies recorded high positive growth rates during the pandemic.
Cost	1. Compared with the beginning of the pandemic, the cost of raw materials gradually decreased (Li Han, 2020). 2. SMEs need to obtain many pandemic prevention items such as masks and protective clothing, and the cost pressure is high (Lu et al., 2020). 3. During the epidemic, other subsidies such as employees' five-year insurance and pensions became the most significant overhead pressure (Zhu Wuxiang, 2020).	1. The ratios of administrative expenses were more than 1 in 2020, which shows that SMEs suffered more serious impacts than large companies. But in the post-pandemic recovery, the administrative expenses of the two types of companies are similar, and the ratio is near 1. 2. The effects of the policies of cost reduction for SMEs were reflected in the negative growth rate in 2020. 3. The lack of a mature management system or the shortage of managers to control costs led to the highest growth rate of expenses of SMEs in the first quarter of 2021, when they resumed production. 4. Large technology-based companies seem to be unaffected by the pandemic, with positive administrative expenses throughout the epidemic period. However, small and medium-sized businesses in information technologies changed with the epidemic, which indicating that the government provides help to science-based SMEs.
Taxes	1. The government should introduce specific policies for different industries and enterprises, with some costs borne by the enterprises themselves and others borne and paid by the government (Zhu Wuxiang, 2020). 2. Policy implementation is restricted (Kai Huang Z., 2020).	1. The policies of tax reduction indeed reduced the burden of companies, but many SMEs did not benefit from the reductions. The 4 possibilities of tax reduction were exploited by large companies. 2. The breakdown of industries in the market will be adjusted through tax control. The tax payable by information technologies companies is not very high.
Profits	1. Big companies made more profits than SMEs. They do better at optimising their operating cash flows and stabilizing their balance sheets. (Kai Huang Z., 2020).	1. The high cost and taxes become the main issues of SMEs, resulting in fewer profits during the pandemics.

It is obvious that SMEs develop faster than large companies. However, due to the costs of the necessary sanitation facilities for epidemic management, SMEs have the highest growth in administrative expenses during the pandemic. Net profits are unstable and fluctuate significantly. Even in such a difficult environment when companies fought for survival,

information technologies companies recorded an upward trend regardless of corporate size, and with the Covid-19 pandemic, a new era of information digitalisation started in China, which promoted the modernization and transformation of the country.

In such a tough time, not only the government should issue some policies for administrative cost reduction and tax relives, but also companies should integrate and cooperate more intensively. Large companies should help SMEs to grow jointly in terms of sharing management systems, controlling costs, and taking advantage of tax policies.

6. Summary and conclusions

The findings of most of the relevant former literary sources were based on empirical surveys and descriptive studies on SMEs. In contrast to this approach, this paper adopted a different methodology since it analysed the operating conditions of enterprises using data from the financial statement of listed companies in terms of year-on-year growth rates, and compared the performance of SMEs and large companies along indicators such as operating revenues and costs, including administrative expenses and taxes, as well as net profits. Another novel element of this paper vis-à-vis the existing relevant literature is that it gave a forecast about the operating revenues of SMEs by applying the Holt & Winters Multiplicative Method. Year-on-year growth rate was used to eliminate the effects of seasonality and differences in the capital endowment of the firms examined. The ratio of various growth rates of large enterprises and SMEs was used to analyse the impact of the same event on companies of various sizes. This approach can help policymakers to provide SMEs with targeted government support. Furthermore, the Holt & Winters Multiplicative Method predicts the future trend of enterprises by eliminating the influence of seasonal factors. Large companies and SMEs were selected from four specific industries characterizing "old" and "new" China (manufacturing and construction, on the one hand, and information technologies as well as wholesale and retail trade undergoing profound technical modernization, on the other hand).

The comparison of the growth rates of different industries revealed that information technologies companies reached a qualitative leap during the pandemic and wholesale and retail sales promoted by information technologies also grew rapidly. Large companies have more favourable conditions to develop the IT industry. SMEs benefited from IT platforms and help provided by large firms. In the context of the forecast of operating revenues, it was argued that Chinese SMEs are set to be on a seasonal upward growth trend promoted by government incentives and positive market expectations.

With the help of the analysis, the following questions were answered:

- **What was the impact of Covid-19 contagion on SMEs compared with large companies?**

The growth rate of revenue in the first quarter of 2020 was negative year-on-year. SMEs were impacted more seriously than large firms. The growth rate of the revenue of SMEs returned to the positive in the fourth quarter of 2020, which implies that it took a relatively brief time for SMEs to recover their losses, which fully reflects their flexibility.

On the revenue side, due to the sensitivity of SMEs, operating revenues reflect the stages of the business cycle. On the cost side, the pandemic had an enormous impact on SMEs' overhead costs, but SMEs enjoy the benefit of related overhead reductions whereas taxes remained the most important burden for SMEs. However, because tax payment is a complex matter in China and requires specialized personnel to manage it, SMEs faced difficulties in obtaining tax benefits and thus could not fully enjoy the tax relief offered by the government. The lack of synchronization between revenue and cost growth made profits very volatile and exacerbated the risk of SMEs' bankruptcy.

- **What was the major response of the Chinese government to easing the burdens of SMEs?**

With the outbreak of the pandemic and the ensuing economic recession, the Chinese government continued to introduce new policies for SMEs. On the fiscal side, taxes were lowered, and administrative fees were suspended or eliminated. On the monetary policy side,

the scope and number of loan restrictions were relaxed, and science and technology innovations (STI) were actively encouraged and supported. However, most SME owners were not familiar with the benefits of the policy and thus missed preferential opportunities. In addition, the government values STI companies, but there are no preferential or supportive policies for other industries, and the policy coverage is insufficient. Therefore, for the policies promulgated by the government, this paper proposes the following recommendations:

(1) The government should strengthen the influence and coverage of its policies. The government's relief policy is greatly beneficial to the reduction of SMEs' administrative expenses, so it should be continued. In addition, the government should enhance the dissemination of information so that SMEs can enjoy the benefits of the tax breaks.

(2) The government should promote cooperation between SMEs and large companies by offering preferential financing conditions for joint projects between large and small cooperative enterprises.

- **How could SMEs take advantage of these policies?**

Faced with the dilemma of operating in the post-pandemic era, SMEs should take the initiative to resolve it. SMEs should:

(1) Actively follow the news and information released by government departments. Timely access to government policies is conducive to the better use of tax and other relief measures and policies to reduce costs and improve profitability.

(2) Strengthen management cost control. Advanced production technology and equipment can reduce the expenses of firms so that costs can be effectively controlled.

(3) Introduce highly skilled and educated personnel helps to manage business operations better. Professional personnel can make better planning for enterprise expenses, save costs and, at the same time, can quickly seize good opportunities for investment and development.

(4) Strengthen cooperation with large enterprises. Large enterprises have sufficient funds to conduct product development, and cooperation with them can reduce the cost of product development for SMEs; under the guidance of large enterprises, SMEs could promote the modernisation and could have more opportunities to gain experiences. Big trends can be discovered the and more profits can only be gained with a good business vision.

Finally, the limitations of this paper must be mentioned. The most important one is that Beijing, as the most representative city, provides unique and specific findings for SMEs that are characteristic of this city alone. Nevertheless, the development of SMEs in central and western China cannot be neglected, either. This research will serve as a good basis for future investigations at the regional level. By comparing the eastern, central, and western cities, differences in the impact of the pandemic can be identified more effectively on the regional level and can help the Chinese government to elaborate more efficient measures to promote the reduction of regional gaps and the mitigation of poverty in the different regions.

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