The Impact of the COVID-19 Pandemic on China's Economic Structure the Stay-at-Home Economy

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Abstract. The impact of the new coronavirus outbreak on China's industrial economy is enormous. the outbreak of the new coronavirus at the end of 2019 coinciding with the Chinese New Year interrupted the current economic development plan of China. It also had an impact on the macroeconomic, meso-industrial and micro-individual development. To solve the current development problems and to avoid the phenomenon of economic cliff, which is the main policy choice of the grassroots industrial organizations and related departments at this stage. This paper analyzes the impact of the new coronary pneumonia on China's economy, compares the online consumption before and after the epidemic, theorizes the "home economy" under the epidemic, and explores the relevant countermeasures after the epidemic, in order to boost market confidence, support steady economic growth, and lay a solid economic foundation for the country to achieve the general tone of "seeking progress while maintaining stability". In this way, this paper can boost market confidence, support steady economic growth, and lay a solid economic foundation for the country to achieve the general keynote of seeking progress while maintaining stability.

Keywords: COVID-19 pandemic, stay-at-home economy, online consumption.

1. Introduction

Since the end of 2019, when novel coronavirus pneumonia was discovered and then rapidly spread in Wuhan, China, and then the spread of the epidemic around the world in March 2020, the people of China have been in deep water. As a developing country with the second largest population, China has successfully withstood covid-19 after covid-19. As the saying goes: one hair moves the whole body. The global pandemic of the New Crest Pneumonia outbreak has had a huge impact on the Chinese economy and the world economy in 2020-2022. Economies have been affected to varying degrees.

First, the world economy is already growing at a slower pace. The International Monetary Fund's World Economic Outlook survey, published in October 2020, shows that the world economy as a whole is expected to grow by -4.4% in 2020, the slowest growth rate since World War II and a sharp drop from last year's forecast of 3.0% for 2020. The US consumer price index (CPI) was 2.5% in January, fell to 0.1% in May and rose to 1.2% in November 2020. The situation in Europe and Japan is similar to that in the US. The Harmonized Index of Consumer Prices (HICP) for the euro area rose by 0.8% year-on-year in October 2019, falling to -0.2% in August 2020 and -0.3% in September and October, indicating deflation in the euro area [1]. Among the major emerging economies, Russia's unemployment rate rose by 1.9 percentage points between September 2019 and September 2020, to 6.4%. China's unemployment rate rose from 5.2% in December 2019 to 6.2% in February 2020, then fell back to 5.2% in November as the epidemic abated over time and the economy recovered [2]. Third, some research findings revealed some time ago suggest that the impact of the neonatal aftermath on the US and European markets may be more long-lasting. On 4 August, the Office for National Statistics reported that 1.8 million people in the UK suffered from 'long-term neonatal symptoms' between 5 June and 2 July. The data suggests that the proportion of people in the UK with 'long term newborns' who have recently left the Wrigley market (unable to find work and not actively looking for a new job) has risen to 5%, compared to 2.4% in the same period last year. According to analysis carried out in July by the Institute for Fiscal Studies, the 'new long crown' could have a 'very lasting impact' on the aromatherapy market.

Nevertheless, under such tremendous pressure, China's economic structure is quietly undergoing a transformation. In the context of the current new industrial era of rapid development of the socialist market economy, the private sector, as the backbone of the national economy, has continued to grow in size and number in recent years, while laying a good foundation for the country's sustainable economic development goals. However, there is no denying that the outbreak of the new coronavirus coincides with the traditional Chinese New Year festival at the end of 2019. Intense population movement across the country, with people of all kinds trying to take advantage of this rare opportunity to return home, has meant that the virus outbreak has spread even faster and more widely. The widespread spread of the virus disrupted China's initial economic development plans, with traditionally established growth areas such as oil and finance lagging behind or even stagnating, while new growth engines such as the digital economy and online consumption grew rapidly [3]. According to Professor Xu Fei of Shanghai University of Economics and Finance, "The problems caused by the outbreak were difficulties in offline production and sales, rising operating costs, difficulties in capital turnover, pressure to repay loans, slowed industrial development and unexpected forms of business." During the outbreak, offline business was interrupted, pupils could not get to school on time and residents, for example, could not shop in supermarkets and grocery shops. The model of people staying home for long periods to deal with the epidemic reinforced to some extent the development of the 'home economy' model and contributed to a rapid change in online consumption patterns [4]. As epidemic prevention and control enters a normalized phase, digitalization and consumption are showing a trend of closer integration. The home economy is a new term that emerged with the rise of the Internet, mainly meaning working from home, working part-time from home, working from home or doing business from home, while spending at home is also an essential part of the home economy. The home economy has given a new impetus to China economic development [5].

The main contributions of this paper are as follows: To study the changes in the development of China's economic structure and the impact of the development of the residential economy on China's economic development in the context of the novel coronavirus. Data were collected by means of an electronic questionnaire, and statistical methods were used to compare people's consumption on the Internet before and after the epidemic. The results of this study show that the epidemic prevention and control model of people staying at home has to a certain extent promoted people's ability to spend money online and the rapid development of the "home economy" model.

2. Method

2.1. Data

This paper is based on the data in the database of the National Bureau of Statistics for research and analysis, the consumption level before and after the examination rate epidemic will be significantly different, so the data from 2016-2021 on the national online retail sales data were chosen to conduct specific analysis. Considering the smoothness of the data and the heteroskedasticity that may exist in the model, the logarithm is taken in this paper to waive it, and the logarithm method is taken as ln(x+1) to prevent the variables from being lost, but +1 is not reflected in the formula and the writing of the variables. Then, using Eviews software, the data were analyzed by means of ADF tests, estimation of model coefficients, and analysis of variance separation.

2.2. Model Construction

Examining the dynamics of the national 6-year data from 2016-2021, the vector autoregressive model, or (VAR) for short, is chosen for modeling.

The basic model is as follows.

$$ln(\alpha)_t = \Phi_1 ln(\alpha)_{t-1} + \Phi_2 ln(\alpha)_{t-2} + \cdots + \Phi_p ln(\alpha)_{t-p} + \lambda\, ln(\beta) + \varepsilon_t \quad (1)$$

In equation (1), α is the national online retail sales, which is an endogenous variable. ln(α)t-1 …ln(α)t-p is the lagged term of the endogenous variable, ln(β)is the exogenous variable, and ε t is the random disturbance term.

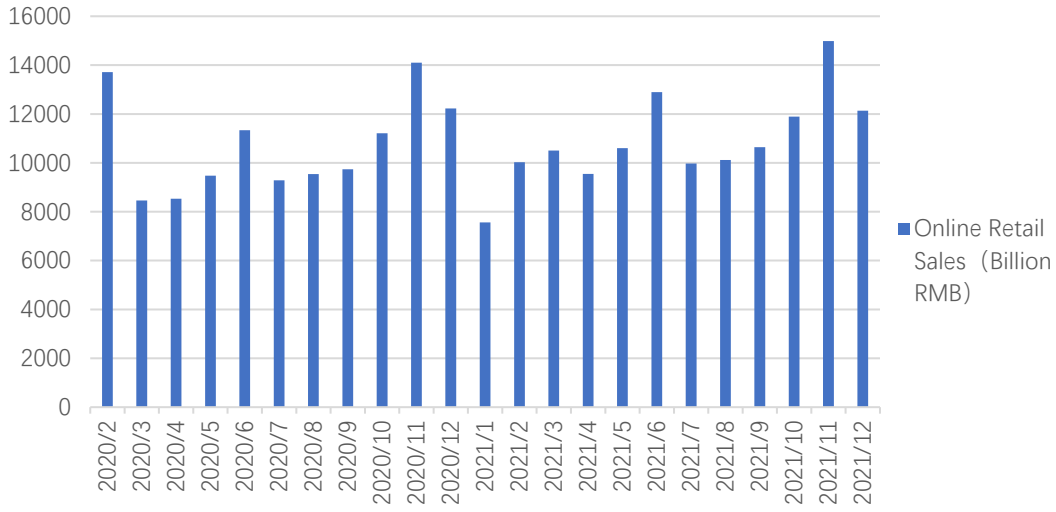


Figure 1. Chinese online retail sales

From Fig. 1 we can see that from 2016 to 2021, the online e-commerce retail sales in China are increasing year by year. And the growth rate of online retail sales from 2017 to 2020 is decreasing year by year, from an initial increase of nearly 39.20% in 2017 compared to 2016 to 10.60% in 2020. And the growth rate has increased in 2021. It is not difficult to see that China's online retail sales have rebounded somewhat after the epidemic.

3. Results and Discussion

3.1. ADF Test

The purpose of the ADF test is to determine whether a unit root exists in a series, as a way of detecting whether a series is smooth: if the series is smooth, there is no unit root, otherwise there is a unit root. Therefore, the ADF test assumes that H0 is the presence of a unit root, and if the resulting significance test statistic is below a 5% confidence level, it is equivalent to a positive rejection of the original hypothesis. An autoregressive process is said to have a unit root if the lag coefficient b is 1. When a unit root exists, the relationship between the independent and dependent variables is misleading because the errors in the residual series do not decrease as the sample size (i.e., the number of periods) increases, which means that the effect of the residuals in the model is constant. This type of regression is also known as Pseudo-regression. If there is a unit root, it is a random walk process.

Table 1. The ADF test

ln(α)	(c, t, k)	Augmented Dickey-Fuller test statistic	Prob (<0.0500)
Order 0, None	(0, 0, 0)	0.5405	0.8241
Order 0, Intercept	(c, 0, 0)	-3.8211	0.0089
Order 0, Trend and intercept	(c, t, 0)	-4.3797	0.0119
1st difference, None	(0, 0, 1)	-5.5917	0.0000
1st difference, Intercept	(c, 0, 1)	-5.5126	0.0003
1st difference, Trend and intercept	(c, t, 1)	-5.3196	0.0020

Prob>0.05 at order 0 (accepting the original hypothesis), it can be concluded that the original series is not smooth under this test. 1st difference and None are shown in Table 2. from the p-

value=0.000<0.05 (rejecting the original hypothesis), it can be concluded that the series after the first order difference has been smooth under this test.

3.2. Optimal Lag Order

Firstly, build the VAR model directly according to the default lag order in Eviews to get Table.2, and then select the lags according to the best lag length criteria (AIC, SC, LR) in Table.2. Set the lag length in the pop-up window in Eviews, and the resulting output is the value of AIC, SC, LR, etc. for each lag, with * indicating the best lag selected for that criterion. The software uses AIC as the criterion to account for the loss of degrees of freedom. According to Table 2, the best lag order is the first one, after which the application software calculates the coefficients Φ, λ of the model to generate equation (2).

$$ln(\alpha)_t = 0.5415\ln(\alpha)_{t-1} - 0.6267\ln(\alpha)_{t-2} + 0.0002\ln(\beta)_{t-1} - 0.000066ln(\beta)_{t-2} + 9.9534 \quad (2)$$

Table 2. Results of the best lag order test for the VAR model

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-164.758	NA	13150.19	15.160	15.259	15.183
1	-154.048	18.499*	7168.532*	14.550*	14.847*	14.620*

3.3. Pulse Analysis

This impulse analysis was conducted to describe the development of online retail sales in response to the turmoil caused by the Chinese epidemic. In Figure 2, each row and column show the effect of the same shock on different migrations.

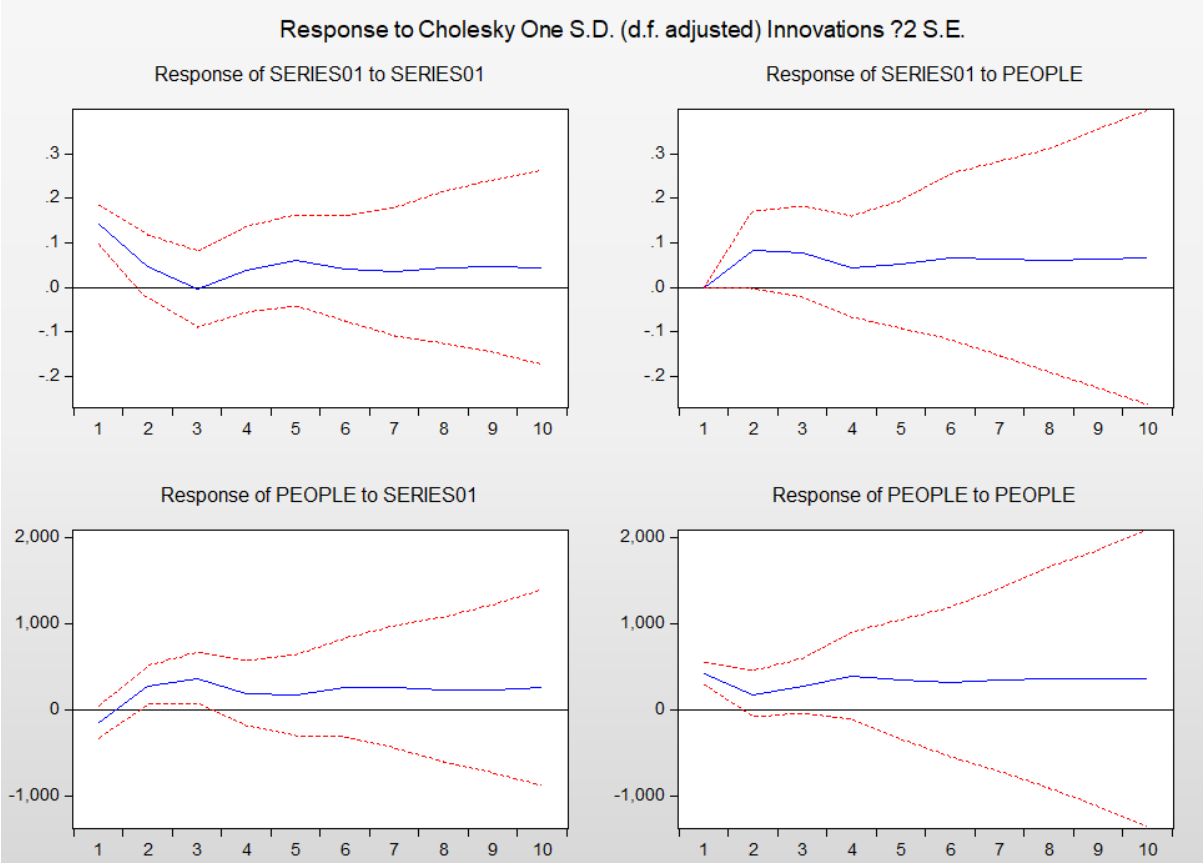


Figure 2. Pulse Analysis

From the lower left corner of the Figure 2 China's total online consumption on the epidemic of a standard deviation of the new interest shock, period 1 is less than 0, period 2 and 3 is greater than 0,

from the beginning of the third period to period 4 and began to gradually decline, and after the fifth period tends to level off, indicating that over time, the dependence of food, tobacco and alcohol spending sentiment from large to small, and then from small to large, after which it becomes increasingly weak.

The online e-commerce retail sales in the upper right corner receive the impact of the epi-demic, which is 0 in the 1st period, then increases dramatically, decreases slightly in the 3rd and 4th periods, and the impact degree becomes smaller and smaller after the 5th period, and finally also tends to level off. This indicates that the development of the epidemic has a driving effect on online consumption behavior, and the role gradually diminishes.

3.4. Pulse Analysis Variance Decomposition

From Table 3. it can be seen that the impact of online e-commerce retail sales on the epi-demic is not high, while Chinese residents' consumption behavior online has received some influence from the epidemic, and the variance decomposition results are all around 10%, promoting a small role of dumplings. It can be seen that the new crown lung fire epidemic has indeed affected the consumption structure of Chinese residents, leading to a slight change in it.

Table 3. Results of the best lag order test for the VAR model

Variance Decomposition	S.E.	Contribution of online consumption to the epidemic	S.E.	Contribution of the epidemic to China's online consumption
Period				
1	0.1409	0.0000	446.5921	10.5508
2	0.1707	24.1289	561.1480	32.6108
3	0.1882	37.5123	730.6889	45.2306
4	0.1977	39.2843	851.7404	38.2944
5	0.2127	39.7001	938.0711	34.9612
6	0.2266	43.6735	1023.509	35.7113
7	0.2382	46.9316	1113.022	35.9009
8	0.2496	48.5244	1196.228	34.9586
9	0.2618	49.9116	1273.772	34.4107
10	0.2737	51.5704	1350.617	34.3192

4. Conclusion

The research in this paper leads to the conclusion that the spread and proliferation of the new coronavirus in China has indeed affected the consumption structure of the Chinese population, promoting their online consumption and the rapid development of their economy, probably for several reasons: firstly, all the behaviours that had to turn to online consumption due to the impact of the epidemic were released to the greatest extent during this epidemic. Influenced by traditional attitudes and habits, consumers have always been accustomed to buying or consuming specific consumer products offline. However, during the epidemic, the closed home model of fighting the epidemic broke consumers' inherent consumption habits on the one hand, and the development of the online economy facilitated new online consumption acts on the other. Secondly, the epidemic led to a nationwide work stoppage, delaying the return to work and the start of school to avoid a cluster of infections, and the online office and education sectors entered a period of explosive growth. As schools and universities across the country continued to delay the start of school, online education users showed unprecedented growth, with major online education platforms increasing their promotional efforts and expanding their market share through various marketing tactics, and offline education institutions teaching courses through online platforms to maintain their existing customer base. At the same time, online education-related electronic equipment and other industries are also being driven. In addition, the ready-to-use industry has also accelerated its development. The changes and developments in the ready-to-use industry, which is the backbone of the distribution of food

products in the same city, are closely linked to the ready-to-use e-commerce industry. The explosive growth of the home economy during the epidemic could not have been achieved without the support of the delivery industry, where all activities related to physical commodities needed to be delivered by means of delivery. The various courier and takeaway, e-commerce and fresh food delivery industries interact and reinforce each other. The delivery industry sector realises contact-free delivery during epidemics through technologies such as courier cabinets, drones and intelligent delivery robots, which minimise cross-contamination between personnel and also maximise consumer demand for timeliness. With the surge in delivery orders from takeaways, fresh food and superstores, the ready-to-eat delivery industry has entered a new phase of development.

The epidemic had an obvious impact on the offline economy, but it also gave hope and momentum to the future development of the home economy. With its convenience, efficiency and safety, the home economy shone during the epidemic. It not only triggered the online sales of physical goods, but also promoted the service industry to speed up the transformation of business development model, promoting the otaku economy as the most popular economic hotspot since the outbreak of the epidemic. This period is also a key time for the home economy to strengthen its influence on consumers, cultivate new online consumer behavior and reshape consumer spending habits.

Personally, I suggest that the first government should strengthen regulation and introduce relevant regulatory norms. The current online service market is mixed, uneven, there are many mature online goods and services platform to provide consumers with quality services; at the same time, there are a large number of developments has not yet become a system of enterprises, which provide consumers with goods and services have quality problems, after-sales service is not perfect, resulting in consumer dissatisfaction with their products and services, seriously affecting the consumer experience. Therefore, the government should take different regulatory approaches for enterprises with different degrees of development, introduce specific regulatory rules and regulations, and take corresponding punitive measures for different violations. To protect the basic rights and interests of consumers, row to promote the continued healthy development of the house economy.

Second, to promote the combination of the residential economy and the real economy of the real economy is the basis of China's national economy, any form of commercial activities cannot be carried out without the development of the real economy. House economy uses advanced science and technology to provide goods and services online and the supply of goods and services offline are closely linked. In the future, with the further development of science and technology, the home economy built on the real economy will provide consumers with more diverse and convenient consumption scenarios. Vigorously developing the house economy on the basis of the real economy can provide material security for the development of the house economy, and at the same time can increase the vitality of the real economy and accelerate the pace of upgrading the real economy.

Third, accelerate technical improvement and innovation, and strengthen industry self-regulation. For enterprises to promote the development of the house economy should first improve the level of technology, improve the carrying capacity of the platform and service system. The use of big data and artificial intelligence technology, accelerate technical improvement and innovation. At the same time, the house economy as an emerging economic situation, participating in the house economy enterprises should strengthen industry self-regulation. The current industry norms are not perfect. Government regulation is still negligent, take advantage of the opportunity to exploit the loopholes and seek improper benefits through illegal forms. And should strengthen the ability to self-restraint, Lake to higher standards and norms require themselves, to provide consumers with more high-quality goods and more intimate service than offline, the only way to promote the continued healthy development of the house economy.

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