Critical Evaluation about the Effects of Monetary Policy on Economic Recovery Under Keynesian Model

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Abstract. In response to the Covid-19 crisis and to mitigate its impact, countries have enacted a range of policies to stimulate effective economic development. In the context of Keynesianism, this paper evaluates the effectiveness of China's monetary policies enacted during Covid-19 as an example. Faced with tightening labor, supply, and consumption at home, China's central bank decided to ease monetary policy, increasing the overall money supply. Through the analysis of the Keynesian model, it is determined that the loose monetary policy used in China during Covid-19 has effectively stimulated aggregate domestic demand and increased GDP, but at the same time the price level has increased, the unemployment rate and the average domestic wage have increased. Through the evaluation of the loose monetary policy adopted by China during Covid-19, this paper proves that in the period of economic crisis, actively adopting loose monetary policy is effective, which is conducive to stimulating demand, increasing total output value, and conducive to economic recovery. At the same time, loose monetary policy will lead to higher unemployment and higher price levels. The living cost of residents will rise, and the instability of employment will lead to the decline of income expectations, which will affect the consumption willingness of residents. The government also needs to adopt policies to address livelihood issues after adopting loose monetary policy to deal with the economic crisis.

Keywords: Covid-19; Economy crisis; Monetary policies; Keynesian Model.

1. Introduction

The global financial crisis that started in 2008 and the COVID-19 pandemic that started in 2019 have each had a significant impact on the world economy in less than two decades. The lengthy process of recovering from the global financial crisis of 2008 has rekindled interest in ideas like economic resilience, or an economy's capacity to absorb shocks and bounce back. Josef, Pawel and Ali presented an argument in their analysis about Economic resiliency and recovery that conventional thinking in macroeconomics says, Recessions are only transitory, and once idle labor and capital are put back to work, the economy will resume its long-term GDP growth trajectory. This perspective has been challenged in the wake of the 2008 financial crisis. Output and employment data for many countries suggest that few economies have returned to pre-crisis trends in real GDP growth. First off, because of labor, capital, and skill shortages brought on by shocks and linked with declining output, a restoration to the previous economic status quo is challenging. When investment declines during a recession, the capital-to-labor ratio is reduced, workers exit the labor force, sometimes permanently, reducing labor force participation, and when they lose their jobs, they no longer gain additional human capital by learning on the job, as well as their existing skills atrophying [1]. Second, the level and growth of total factor productivity are decreased due to a fall in research and development as well as reduced capital investment levels incorporating new technologies. The nation's ability to recover from the crisis' consequences also depends on economic factors such the economy's structure, degree of openness to trade, exchange rate system, and countercyclical policies and actions to stop the productivity decline [2]. At different rates of recovery, countries have adopted different monetary policies to stimulate demand, stabilize output and stabilize unemployment. In order to assessing the effectiveness of monetary policy in economic recovery. This paper will take China as an example to evaluate the effectiveness of loose monetary policies in economic recovery by analyzing the loose monetary policies adopted by China in the face of Covid-19.

In the face of Covid-19's economic impact, some researchers have drawn analogies to the economic crisis of 2008. Josef, Pawel and Ali studied the resilience - that is, after the 2008 global financial crisis, 199 Nuts-3 areas in Central and Eastern Europe (CEE) demonstrated their capacity to endure economic shocks and recover from them. It estimates that just 31 out of the 199 regions will fully restore their employment within two years of recovery from Covid-19 [2]. George contrasts the New Deal of the 1830s with the fiscal and monetary measures taken by the United States in response to COVID-19 to show the effectiveness of monetary policy, and the concurrent sharp decline in the velocity of money has more than offset any inflationary effects of monetary growth [3]. Xinping Yieng and Yunchan analyze China's response to the impact of Covid-19 [4].

In this paper, the monetary policy used by China during Covid-19 will be presented, and the IS-LM and AD-AS models will be used to analyze China's monetary policy through the assumptions of the Keynesian model, and finally the effectiveness of China's monetary policy will be evaluated.

2. The Case of Chinese Monetary policy

Keynesian model has set up a downward rigid real wage in the labor market, which makes monetary policy from governments have lag effect and invalid. The change of Chinese monetary policy has given a good example to clarify this problem. Chinese monetary policy has experienced a significant change from the beginning of 2020 to the end of 2022, which was identified as the time under Covid pandemic. The effects from Covid pandemic on Chinese economy presented on supply aspect, which is the industrial chain is constrained, there is a shortage of labor, and both the supply and demand of goods are stagnating [4]. Covid-19 pandemic had directly affected on employment of China. Fang etc had concluded 100 million jobs submitted on Chinese web platforms were assessed by employers in 2020 who will number in the millions. They discovered that there were 31% fewer new jobs produced in the first 13 weeks following Wuhan's lockdown on January 23, 2020, than there were in the same period the previous two years, which was 3,800,000 [5]. The loss of employment was significantly presented as the decrease in new job created. Fang etc, had pointed out that, firstly, Job creation decreased in the 14 weeks after the Wuhan lockdown by 9.6% as a result of Covid-19 instances in the city, but by 10.7% as a result of cases in other regions of China. Second, the imported Covid-19 epidemic shocks that were spread across international supply networks also hindered China's ability to create jobs. The biggest effect is a decline in export demand as a result of foreign governments' responses to the Covid-19 outbreak in their foreign policy. Foreign Covid-19 epidemic shocks decreased the number of new jobs in China by 11.0% during the course of the same 14-week period, hurting the labor market's recovery [5]. In order to escaping from the effect from Covid pandemic, there are two kinds of solution can be taken into consideration. According to the conventional wisdom, recessions are only transitory, and once idle labor and capital are put back to use, the economy will resume its long-term GDP growth trajectory. However, the data on output and employment from many nations demonstrate the reality that real GDP growth is not likely to resume its pre-crisis trajectory very soon. Because the ‘economy crisis’ which caused by uncertain accidents for example Covid pandemic would lead to a shortage of labour, capital and technology then lead to a decrease of total output [2]. On the other hand, Keynesian claimed that the demand of minimum nominal wage determined the demand of labor. When the situation that total output of China had been decreased during the Covid pandemic, the income in the economy was supposed to be decreased as well, which would lead to a decrease in real money wages. Therefore, the demand of labor would be decreased.

The Covid-19 epidemic also had an effect on the Chinese market's demand. Xinping etc had analyzed the effect on total demand and private consumption in China. Small company owners' consumer expenditure has decreased by roughly 40% as a result of the epidemic, particularly in the travel, dining, and personal services industries. Family consumption also had a sharply decrease in a short run. The influence of the epidemic on household consumption was examined using transactional

household financial data, and it was discovered that consumption rose during the early stages of the outbreak. However, when social distance increased, spending fell quickly [4].

To ensure that China's economy continues to grow steadily despite the epidemic, get rid of the impact of the epidemic, and stimulate the domestic economic recovery after the epidemic, the Chinese government has adopted a relatively loose monetary policy. The main measures taken by the Chinese government include increasing the money supply to stabilize the price level and inflation rate, while smoothing interest rates. Secondly, the Chinese government has also implemented measures to stimulate economic recovery, such as reducing taxes and increasing spending to provide credit support and help small and medium-sized enterprises [4]

3. The Analysis of Chinese Monetary Policy During Covid-19 Pandemic

The Keynesian model will be utilized in this part to study the effects of China's lax monetary policy used during the pandemic on the supply and demand sides, respectively, and to determine how successfully the Keynesian model controls the economy through monetary policy. In order to calculate the changes in interest rates, investment, savings, and consumption that would come from an increase in the money supply under Keynesianism, this study will first use the IS-LM model. From there, it will calculate the changes in aggregate domestic demand. The analysis for the supply side will focus on the relationship between labor demand and labor supply. By analyzing the changes in China's employed population and unemployment rate during the Covid pandemic, the Production function is used to show the changes in China's aggregate output during the epidemic. As well as the impact of the Keynesian assumption of downward rigid nominal wage level on labor demand and unemployment rate in this process. The AS-AD model is then used to examine how the Chinese government's loose monetary policy has affected both the inflation rate and the level of prices.

3.1. The Effect of Chinese Monetary Policy on Money Market

This part of the analysis will firstly focus on the impact of China's central bank on financial markets after boosting the domestic money supply. According to Keynesian theory, money supply is regulated by the central bank according to the market, this analysis defines nominal money supply as exogenous variable MS. while real money supply represents the real purchasing power of the amount of money circulating in the country. This is determined by dividing the price level by the nominal money supply. P will be used to denote the price level so that real money supply (ms) can be calculated by MS/P (in Figure 1). Data from the Chinese National Bureau of Statistics show that the nominal money supply had increased from 1986488.82 billion yuan in 2019 when Covid pandemic did not appear to 2664320.84 billion yuan in 2022 when Covid pandemic has affected Chinese people’s life for two years [6].

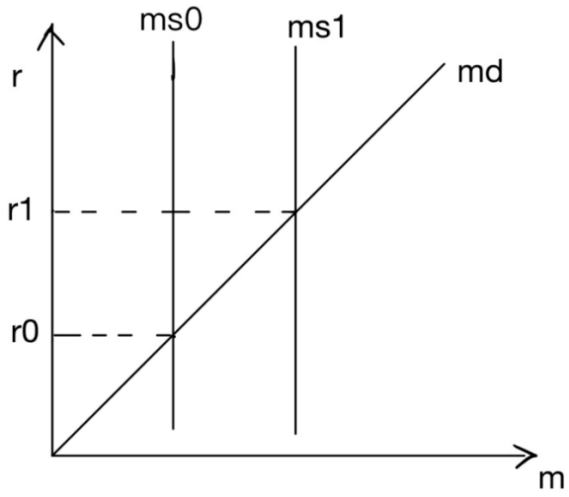

Fig. 1 The increase of nominal money supply

As the central bank of China continues to increase the money supply during the epidemic, the number of bonds in the financial market will be less relative to money, and thus the demand for bonds by the population would increase as a result, and the price of bonds will increase as a result, so interest rates in the financial market would fall from in 2019 to in 2022. According to the investment function.

$$I = g(r) = g0 - g1 - r \quad (1)$$

where g0 represents the exogenous factors affecting investment, g1 represents the marginal propensity to invest, and r represents the interest rate, a decrease in the interest rate r will result in an increase in investment I thus causing a downward shift in the LM curve from LM0 to LM1 (in Figure 2).

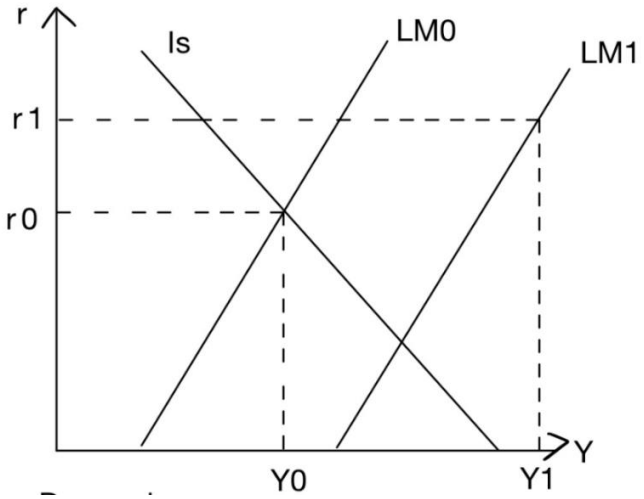

Fig. 2 The increase of interest rate and left shift of LM curve

In equilibrium, aggregate demand is equal to aggregate expenditure, expressed as a function

$$E = C + I + T \quad (2)$$

where E represents aggregate expenditure, C represents consumption, I represent investment and T represents taxes. With an increase in investment I and no change in C and T, aggregate expenditure E would increase from Y0 to Y1, so aggregate demand will increase at all price levels, which is shown on the AD-AS curve as a shift to the right of the AD curve from AD0 to AD1 (in Figure 3).

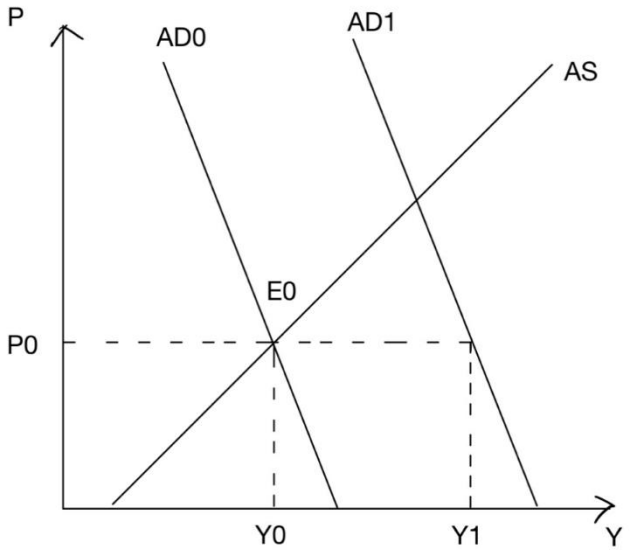

Fig. 3 The increase of Aggregate demand

3.2. The Change in Price Level of Chinese Market

A higher aggregate demand level in Chinese market would cause a higher level of price from P0 to P1 because of the different level of aggregate demand and aggregate supply. According to the above analysis, as the People's Bank of China increases the nominal money supply, China's aggregate domestic demand would increase from AD0 to AD1 at all price levels. The gap between the increased total demand AD1 and the original total supply AS0 would lead to the phenomenon of short supply. When demand exceeds supply, the market price level P would rise from P0 to P1. An increase in price P will affect both the demand aspect and the supply aspect.

The money market shows how growing price P affects China's overall demand. First off, a rise in prices will cause the actual money supply to drop. When the price level increases from P0 to P1, MS1/P0 would decrease to MS1/P1, so MS1 would decrease to MS2. As the real money supply decreases, people's demand for money would increase, which would affect people's demand for bond, and people's demand for bond would decrease. The interest rate r is going to go up because the demand for bond is going to go down, from r1 to r2 (in Figure 4).

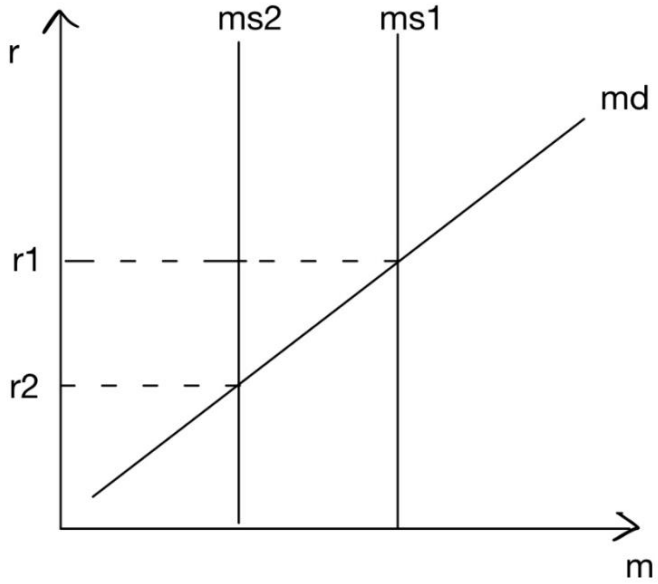

Fig. 4 The decrease of real money supply

Due to the rise in investment interest rates, people would tend to change their investment decisions and increase their investments, which would cause a up shift of LM curve from LM1 to LM2 (in Figure 5).

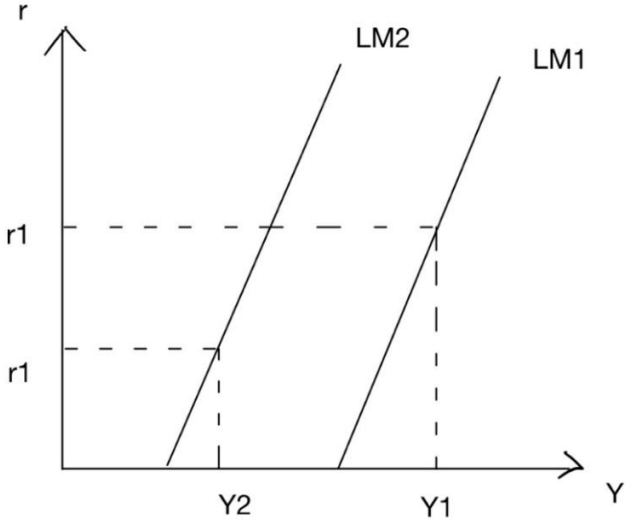

Fig.5 The decrease of interest rate and right shift of LM curve

Moreover, according to the total expenditure model:

$$E = C + I + T \tag{3}$$

If consumption and tax remain unchanged, the increase in investment would bring about the increase in total expenditure from Y1 to Y2. In the case of equilibrium, the total demand is equal to the total expenditure, so the total demand would increase. This increase in aggregate demand was endogenous caused by the increase of price, which presented on the AD-AS graph was that the aggregate demand would move along the AD1 curve to the point E1.

The labor market exhibits the effects of price changes on the supply side. Firstly, in order to determine the causes of involuntary unemployment, Keynes claimed that money wages were fixed or downwardly rigid [7]. Real wages will decrease from W/P0 to W/P1, or from W0 to W1, when the price level rises from P0 to P1, assuming no change in the nominal pay W. The new real money wage is still above the equilibrium of labor demand and labor supply in labor market because of the downwardly rigid assumption from Keynesian. Falling real wages mean companies could increase employment, so labor demand increased from L0 to L1. Corresponding to the production function, the increase of labor quantity would lead to the increase of output from Y0 to Y2 (in Figure 6).

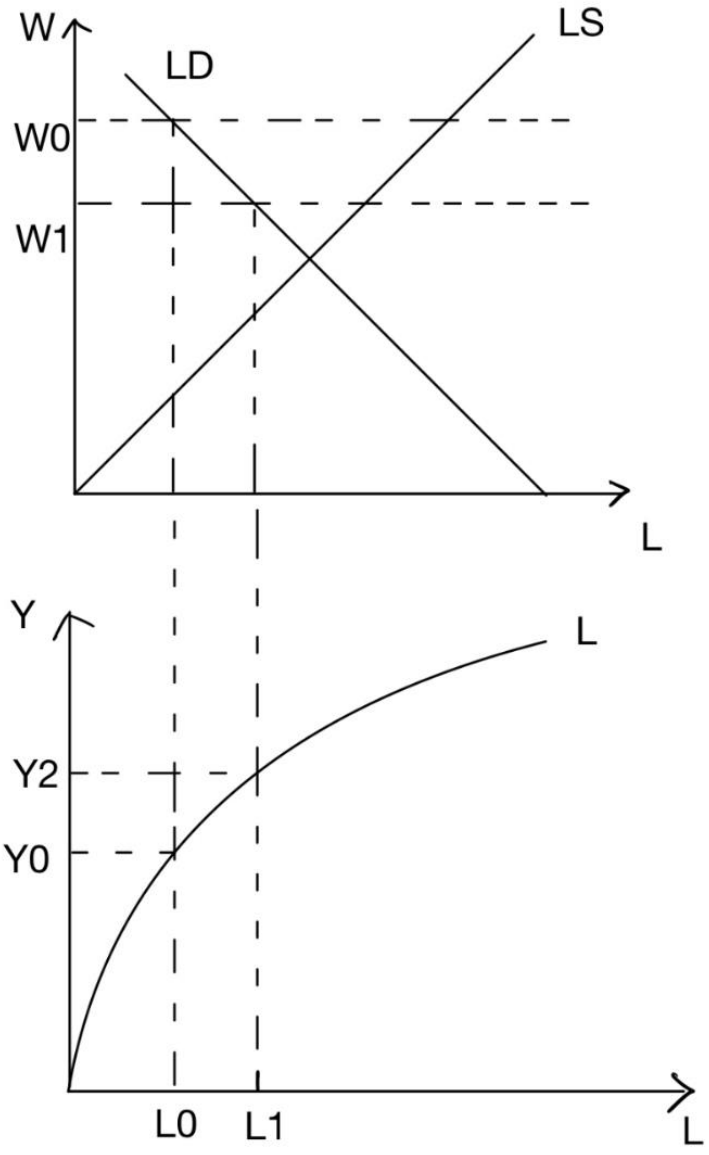

Fig. 6 The decrease of real money wage, the increase of labor demand and output

The Aggregate supply increased, represented on the AD-AS image as the aggregate supply moved to E1 on the AS0 line. Therefore, E1 was the equilibrium of AD1 and AS at the new price level P1, which is also the equilibrium of the new supply and demand equilibrium in the Chinese market (in Figure 7).

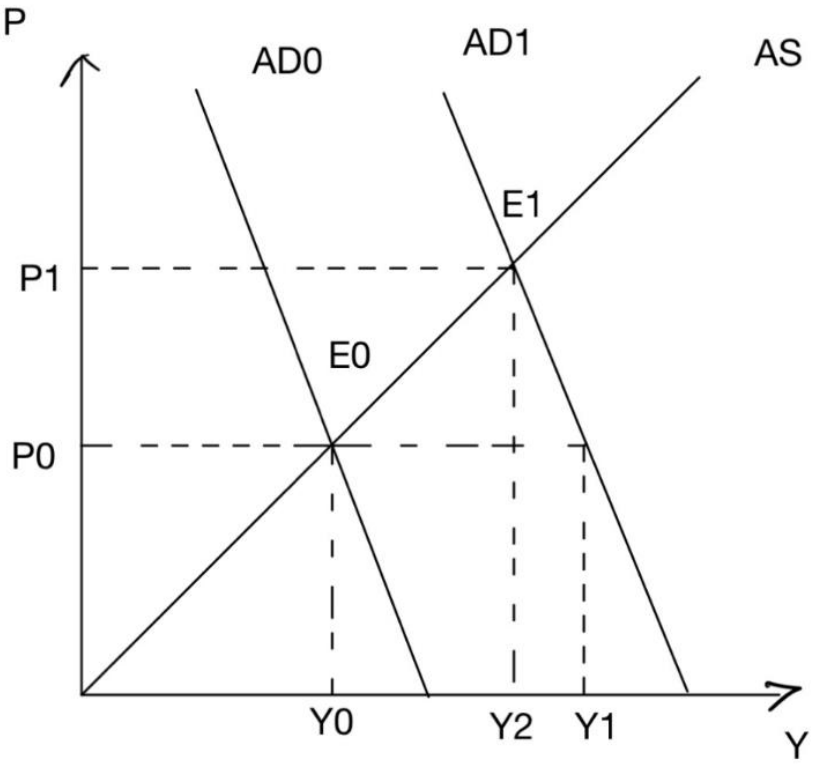

Fig. 7 The New equilibrium

4. The effect of Chinese Monetary Policy Based on Keynesian Model

In result, under the Keynesian model analysis, China's expansionary monetary policy during the Covid-19 period brought about an increase in the interest rate on investment, which in turn stimulated a rise in domestic aggregate demand. Secondly, The price level and inflation rate both increased as a result of China's expansionary monetary policy. This situation has also brought about a decrease in the purchasing power of wages for workers, lowering real wages, but increasing the demand for labor by firms and reducing unemployment to some extent. Finally, China's expansionary monetary policy has stimulated a rise in aggregate demand from the demand side, which has also lifted aggregate output from the supply side. Overall, it improved GDP and aided the recovery of the economy after the effects of COVID-19.

4.1. Effectiveness

According to the above analysis, under the Keynesian model, the Chinese central bank's move to opt for a sustained increase in the money supply during the Covid-19 period was effective in easing unemployment, stimulating aggregate domestic demand, and allowing GDP to pick up. Data from China's National Bureau of Statistics indicate that the country's gross domestic output (GDP) would grow from 101,356.7 billion yuan in 2020 to 121,02072 billion yuan in 2022. Moreover, Average wages in China have really gone up during Covid-19. According to the data provided by CNBS, from 2020 to 2022, the average wage for Chinese city dwellers would rise by 16,650 yuan; the average wage for workers in state-owned enterprises grew by 15,490 yuan; Urban collective unit employees' average pay climbed by 9,278 yuan, while other unit employees' average pay increased by 17,174 yuan [6]. In the data provided by CNBS, investment also increased from 2,574,701 in 2020 to

3,121,814.5 in 2022 during the 2020-2022 period, an increase of 21% [6]. Finally, the data provided by CNBS also prove the authenticity of the rising price level. If I use every hundred units to represent 1,978 dollars. Then China's commodity price will increase from 478 units of commodity price in 2020 to 498.7 units of commodity price in 2022 [6].

4.2. Lose Efficiency

Although the analysis of China's investment volume, total expenditure, price level and nominal wage during the epidemic under the Keynesian model is proved to be accurate by the data, the employment population does not increase as the Keynesian model analysis, on the contrary, China's employment population will decline during the period of 2020 to 2022. the unemployment had experienced a decrease based on the data from CNBS. CNBS presents a figure of employment in China between 2020 and 2022, which are 750.64 million people in 2020 and 733.51 million people in 2022. This 2.28% decrease in employment was not out of predict [6]. It is a normal situation instead. The 2.28 percent decline in employment was driven largely by private businesses and self-employed workers. According to CNBS industry classification statistics, during 2020 to 2022, the employed population of urban units, state-owned enterprises, urban collective units, and other units will decline by 1.5 million, 700,000, 90,000, and 750,000 respectively [6]. The remaining decline of about 1.4 million jobs was due to private and private employment and urban private employment and private employment. The decline in employment in both private and individual businesses is an inevitable consequence of Covid-19. Wuhan, the Chinese city most affected by Covid-19, offers the most intuitive example of the decline in employment. The number of newly advertised positions decreased by around 31% in the first 14 weeks following the lockdown of Wuhan, the first epicenter of COVID-19, on January 23, 2020, compared to the same period in 2018 and 2019. The COVID-19 instances in Wuhan and other regions of China had a significant negative impact on job creation in Chinese cities, although the latter's job creation flexibility was slightly greater in quantity. The employment population in Wuhan was visibly affected by Covid-19, primarily by entrepreneurship. Due to COVID-19 cases in the city of Wuhan, job creation decreased by 9.6% in the 14 weeks after the lockdown, but by 10.7% due to cases in other parts of China [5]. Josef, Pawel and Ali claimed that under the effect of economy crises, restoring previous economic conditions is difficult because the shocks have created shortages of Labour, capital and skills associated with the decline in output. When investment declines during a recession, the capital-to-labor ratio falls, and workers quit the labor market, often permanently, which lowers labor force participation [2]. The shortages brought on by Covid-19 have hit private and self-employed businesses hard, forcing them to reduce the size of their businesses and employ fewer workers in order to weather the crisis. However, the private sector and small businesses contribute a huge amount to the economy, often accounting for two-thirds of net job growth. Due in part to their lower operational expenses and fixed expenditures, small businesses generally experience contractions early and more severely than large corporations. This seems to be the case not only in this widespread recession, but small business owners may also suffer the most from these contractions. While few studies have measured the impact of small business owners on the performance of their companies, small business owners are not well diversified [8]. China's loose monetary policy has alleviated the situation to some extent, but it is not an effective way to solve the problem.

Starting from the Keynesian model itself, the failure of monetary policy to adjust the employed population is related to the change of nominal wages. The change in nominal wage will lead to changes in real wage, unemployment and output. In a closed economy, money wages generally decrease flat, and in the short run, real wages decrease, although not always proportionately [9]. In a closed economy, money wages generally decrease flat, and in the short run, real wages decrease, although not always proportionately. In response, Keynes challenged the traditional model’s proposition that ‘labor always settles for its own real wage’ in his general theory of the employment rate and money in terms of the relationship between the real wage and the maximum amount of employment and between labor and marginal output. In the case of China, A rise in the price level

should have brought down real wages and thus unemployment. However, in the process of rising price level, nominal wages increase along with rising price level, while real wages do not show a downward trend as predicted, which makes the pressure on firms not decrease. Under the continuous impact of Covid-19 on total output, firms cannot increase employment. It's more likely to shrink the number of workers [10].

5. Conclusion

The post-Keynesian model has become important in the aftermath of the 2008 economic crisis. A Keynesian approach to monetary and fiscal regulation in the face of the impact of Covid-19 is effective. The Keynesian model recognizes that economic crises reinforce the unequal distribution of income between wages and profits earned in money, which makes wealth inequality, household debt, and macroeconomic instability]. But during Covid-19, China's monetary policy ignored the problem, causing unemployment to fall less than expected, and the private sector and small and micro enterprises bore the brunt of Covid-19's impact. In the subsequent economic recovery, the Chinese government should pay attention to the balance of resource allocation and provide support and assistance to private enterprises and small and micro enterprises through monetary and fiscal policies, to accelerate the economic recovery.

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