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Inflation, Monetary Policy, and Economic Impact: Taking the Federal Reserve's Interest Rate Hike as an Example

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Abstract: The Federal Reserve’s interest rate hike is one of the key topics of the current research. Due to the status of the dollar in the global economy, the Federal Reserve's interest rate hike has a profound impact. Therefore, this article collected and analyzed the data of interest rate increases of the Federal Reserve in the past five years. This article discusses the reasons for inflation, as well as the impact of the Federal Reserve's interest rate hike on the foreign exchange market. This paper found that the Federal Reserve’s interest rate hike has almost no effect on curbing inflation. As the Federal Reserve’s keeps raising interest rates, less trust in the world leads to a weaker dollar and slower economic growth. With regard to the Federal Reserve continues to raise interest rates, China should take precautionary measures on the premise of ensuring its own economic development and stability. For investors should be timely attention to the Federal Reserve rate hike frequency and response.

Keywords: federal reserve, inflation, foreign exchange market

1. Introduction

In 2022, the United States of America ‘s annual inflation rate is 7.9%, the highest inflation rate since the stagflation in 1982 [1]. There are two main reasons for this inflation. First are the expansionary policies used by the government during the recession caused by the pandemic, which caused the demand-pull inflation, and the second factor is the outbreak of the conflicts between Ukraine and Russia, which led to a surge in the oil price, causing the cost-push inflation. The war further aggravated the inflation problem not only in the USA but also in the rest of the world especially those countries who is the importer of Russia’s oil.

Inflation caused a lot of problems in everyday life. People’s purchasing power will decrease. Those who have fixed wages can buy fewer things than before. People’s living standards will decrease. Labor will be bargaining for higher wages. For example, in the UK workers are striking for higher wages. If the wage of labor increases, the cost of production increases which causes cost-push inflation. This forms a wage-price spiral. Also, high inflation causes a lot of uncertainty. This makes firms less willing to invest their money. This will slow down economic growth. Furthermore, inflation increases the price of the export, so the demand for the export will decrease, this will worsen the current account positions, and the demand for the country’s currency will decrease leading the currency to depreciate.

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All of these detrimental effects determine when inflation is higher than expected. The country's central bank and government should start designing policies for the economy to control inflation. USA's central bank raised the interest rate seven times last year. Intended to control inflation. The policy has some effect. The annual inflation rate in the US slowed to 6% in February of 2023, the lowest since September of 2021 [2]. But it is still much higher than the inflation rates the central bank wants the economy to have. And at the same time, this policy also has a negative effect. The purpose of this article is to analyze the effect on the economy when the federal reserve increases the interest rate.

The remaining sections of this paper are arranged as follows: section 2 introduces the effect of the policy in the domestic market and the foreign market. Section 3 explain the effect of this policy on other countries forex market. Section 4 analysis how it can control inflation. And finally give the conclusion about the result this paper gets.

2. The Effect of the Raise in Interest Rate: A Theory Framework

One way to analysis the consequence of this change is using ISLM models and ADAS models. In an economy which real income stays the same, but the interest rate increase. The LM curve will shift to the right. This will affect the goods market as well. In the domestic market, the total output equals household consumption of final goods, firms' investment in final goods and the government spending on final goods. And the investment (I=g0-g1r) is inversely related to the interest rate, and it is an endogenous variable of the IS curve, so the equilibrium points of the goods market shifts along the IS curve upwards to the new intersection of the IS and LM curve. In figure 1, the LM curve shifts to LM1 and output decreases to Y1 and the interest rate increase to r1 which is what the central bank wants.

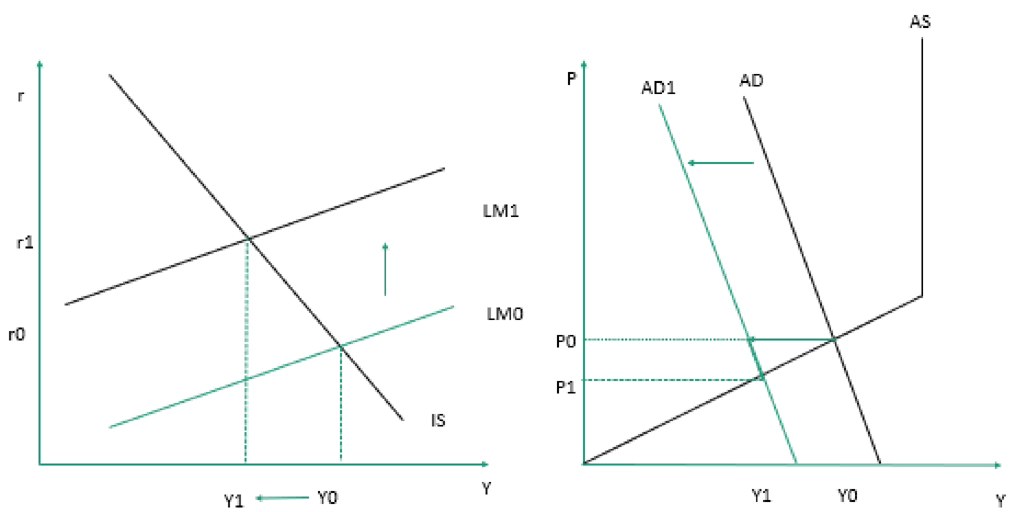

Figure 1: Use ISLM and ADAS models to analysis the effect of the raise in interest rate.
Photo credit: Original

However, the effect didn't stop there. Because the LM curve shifts upwards, this causes the real output of the economy decreases. With the same price level, the real output of the economy decreases. This means that the AD curve shifts to the left. At the current level, there is an excess supply. This means there is a downward market force on the price level, which will decrease the price.

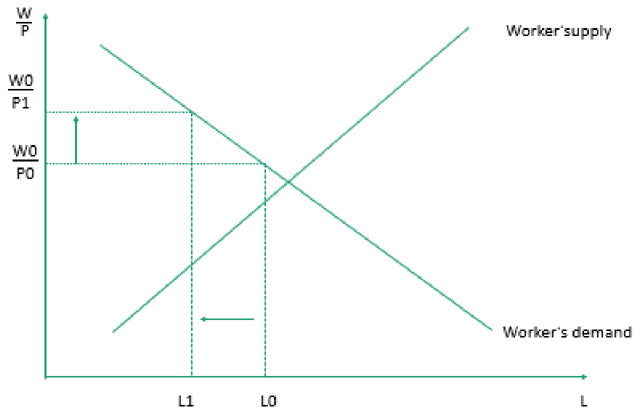

Figure 2: The effect of raise in interest rate on labor market.
Photo credit: original

When the price decreased, the real supply of money will increase, and this causes the excess demand for money and excess demand for bonds and other interest related assets. The price of bonds and other assets will increase. With the negative relationship between them, this will decrease the market interest rate. So, the LM curve shifts downward when the price level decrease. The price level will be decreasing until the AD equals AS. Because the nominal wages of labor are downwardly rigid in Keynes assumption, the price level decreases will cause the real wage increase, this decreases the demand for labor in the labor markets. As figure 2 shows, due to the rise in real wages the employment of labor decrease. Because the Aggregate supply of an economy is a function related to labor and capital. So, the amount of labor who is employed decreases will cause the AS to decrease. This means the total output should decrease. The LM curve will not shift back to the initial positions. Instead, stop before it goes back. Finally, the inflation rate will decrease, but at the same time bonds and other assets price will decrease, and the economic growth rate will decrease. This really cause a lot of serious consequences. For examples this is one of the reasons why Silicon Valley Bank bankrupt, because the used their saver's deposit to buy bonds, and the rise in the interest rate cause the value of their investment shrink a lot. Also, the GDP growth rate of USA at 2022 is about 2.1% [3]. It is much lower than 5.9% in 2021 [4].

3. The Effect of this Policy on Other Countries Forex Market: Stylized Facts

3.1. Why Chooses China?

China as the second largest economy on the world and the biggest merchandise trade countries. Its global trade and investment are expanding in size and scope. With the increasing influence of China in the global economy, China's foreign exchange market is playing an increasingly important role on the international financial market. So, using China's data should be very typical.

The components of China's foreign exchange market include a lot of participants. They are mainly individuals, enterprise, commercial banks, foreign banks securities companies and investment funds. These organizations and peoples determine the demand and supply of the currency. After 2005, Chinese central bank announce that the exchange rate system of China become floating exchange rate. The demand and the supply of the currency from these participants determine the exchange rate of the RMB. They will only be intervening this market when the exchange rate changes a lot in the short run.

3.2. The Effect of the Policy to this Market

When us' interest rate increase, more people want to save their money in us bank the exchange rate of us dollar will appreciate because the demand for the us dollars will increase. This will cause the demand of the RMB to decrease, this means that RMB has depreciation pressure. Central bank needs to use their foreign reserve to buy RMB and sell US dollars to make sure that exchange rate wouldn't change a lot. Beside of that, because the interest rate in US is high, this causes the hot money flow to the US market, this will affect the China's domestic capital markets.

3.3. What Can Chinese Central Bank Do

In the short run, Chinese central bank increases the interest rate as well. This can attract the international investor. And cancel out the negative affect of federal reserve increases interest rate. But the problem is very severe. China will face same problem with US after China increases its interest rate.

In the long run, they should focus on increase the international competitiveness of RMB in the global market. By growth their economy and developed their technology using supply-side policy and expansionary fiscal policy. The Chinese government has been pushing for countries to settle trade in RMB, in the March 28, 2023, France has become the first European country to sigh a trade deal allowing payments to be made in China's currency, Renminbi, rather than dollars. As the result, trading in the renminbi hit a record high of 3.2%, this helped the Chinese currency to retain fourth place in the global list, behind the US dollar, the euro and the British pound [5].

4. Inflation

4.1. The Cause of Inflation under the COVID-19 Pandemic

Since the disintegration of the Bretton Woods system established by the United States 50 years ago, the inflation rate of the United States in the past 50 years is indeed much higher than that of the 40 years before the disintegration, indicating that inflation is related to the excess of the dollar [6]. As can be seen from Figure 3, the inflation rate in the United States has started to rise since 2020. By 2022, it has reached 8.6%.

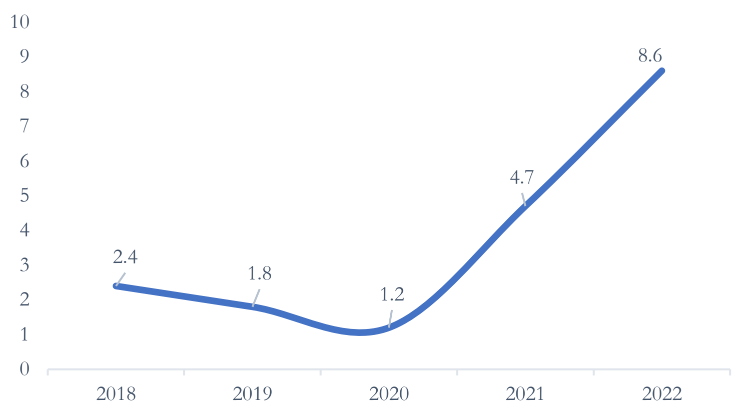

Figure 3: U.S. inflation rate (%).
Data source: Kuaiyi Wealth Management Network [7]
Photo credit: Original

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The cause of inflation can be explained by Fisher equation: MV = PQ. In this equation, M stands for money supply. V is for velocity of money. In other words, this means that people's need for consumption. On the right-hand side of the equation, P is the price of the goods in the market and Q is the total number of goods in the market. This shows that the left-hand side of the equation is the total money supply and the right-hand side is the total amount of goods traded.

The Fisher equation states that when the velocity of money (V) and the total number of goods in the market (Q) are relatively stable, the quantity of money supplied (M) determines the price of goods in the market (P). Inflation has quickly emerged as the biggest economic problem facing the United States in the wake of the novel coronavirus outbreak [8]. The United States after the outbreak of COVID-19, because of the government's advice and people's fear of the pandemic leads to a decline in people's need for consumption and the total number of goods in the market. That means that both V and Q in this equation go down. In order to maintain economic growth, the US government adopts expansionary monetary policies such as increasing the supply of dollars, this is going to cause M in this equation to go up. And then P is going to go up. This is the logic behind the pandemic causing inflation in the United States.

As rising inflation has gradually affected all levels of society, the US government and the Federal Reserve have become increasingly tough in their anti-inflation attitude. At present, the Federal Reserve has started to raise interest rates and shrink the balance sheet process [9].

4.2. How Does the Federal Reserve Rate Hike Affect Inflation

The Federal Reserve rate hike would send the world's dollars back to the United States. After that, most directly affected are companies and investors or consumers around the world, so this article will analyze this problem from the perspective of companies and investors or consumers.

It is very important for companies to borrow money from banks to carry out business activities. After the Federal Reserve raises rates, this means it becomes more expensive for businesses to borrow from banks. In other words, companies are paying more interest to banks than ever before. In this case, in order to reduce costs, the companies will pay the loan to the bank in time. In order to make more money in a short period of time, companies sell products and services in large quantities. Because of more products, the supply would be greater than the demand. In this case, prices would fall and inflation would be suppressed.

Next, this paper analysis from the perspective of consumers and investors to raise interest rates to curb inflation. Like companies, the Federal Reserve raises rates makes it more expensive for consumers and investors to spend and use money. In addition, higher interest rates lead to higher returns on savings. Then people will convert their money into savings. In this case, demand will be smaller than supply. Then the price of goods will be reduced and inflation will be suppressed.

4.3. The Effect of the Federal Reserve's Rate Hike on Restraining Prices

The Federal Reserve's monetary policy of raising interest rates to curb inflation has little effect. Consumption is an important part of the U.S. economy. This means that only increase people's consumption to stimulate the economy growth. But because of the COVID-19 pandemic, Americans have seen their incomes drop or even lose their jobs. In order to meet the demand of consumption and investment, people will borrow money from banks. With the outbreak of energy crisis caused by the war between Russia and Ukraine and the epidemic, the Federal Reserve needs to raise interest rates to curb inflation. But if the Federal Reserve raises rates, it means that more costs for people to spend and invest. This causes people to be unable to repay their previous loans, so the Federal Reserve keeps raising interest rates not only did this fail to tackle inflation and it triggered a new crisis. The debt

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burden of the United States is high, and it has overdrawn the future. It has been unable to pay it back by its own strength. Therefore, it is only a matter of time before the debt crisis erupts [10].

5. Conclusion

Through research, the pandemic and war caused global inflation. To the world's top two economies the United States and China as an example for analysis: how should China respond to the Fed's interest rate hikes in the last five years and how does the Federal Reserve's interest rate hikes affect inflation and are they effective in improving inflation. This article found that after the Federal Reserve raised interest rates China will raise interest rates in the short term to stabilize the RMB exchange rate and offset the negative impact of the Federal Reserve's rate hike, but be aware that China will face the same problems as the US after China raises interest rates in the short time and adopt an expansionary monetary policy in the long term to promote economic development technology. In addition to this, MV=PQ is used to analyze the Federal Reserve to restrain inflation by raising interest rates. The Federal Reserve's rate hikes will have little effect on inflation that due to COVID-19 and the Russia-Ukraine war. The main contribution of this article is to analyze the impact of the Federal Reserve's interest rate rise on China and how China should deal with the interest rate rise. It will help investors and consumers make clear judgments on the current world economic situation.

References

[1] Wage growth vs inflation U.S. 2023. (2023). Statista. https://www.statista.com/statistics/1351276/wage-growth-vs-inflation-us/#:~:text=The%20inflation%20situation%20in%20the%20United%20States%20is

[2] Trading Economics. (2022b). US Inflation Rate Rises above Forecasts in March. Trading Economics. https://tradingeconomics.com/united-states/inflation-cpi

[3] Trading Economics. (2022a). US GDP Growth Revised Down to 3.4% in Q3. Tradingeconomics.com; TRADING ECONOMICS. https://tradingeconomics.com/united-states/gdp-growth

[4] The World Bank. (2022). GDP growth (annual %) | Data. Worldbank.org. https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=US

[5] Yuan rising in global payments. (2022). English.www.gov.cn. https://english.www.gov.cn/news/topnews/202202/18/content_WS620ef3dfc6d09c94e48a530c.html

[6] Martin Almuzarra, Agia Sboldone, Wang Ying & Xie Huajun. (2022). How long Will U.S. Inflation Last? What causes it? Financial Market Research (07),76-79.

[7] Kuaiyi Wealth Management Network. (2021). Annual consumer price inflation rate . (CPI growth rate). https://www.kylc.com/stats/global/yearly_overview/g_inflation_consumer_prices.html

[8] Zhou Jinghong & Hu Yijian. (2023). The Policy Background, Formation Process and Countermeasures of the Inflation Reduction Act in the United States. International Taxation (03),39-44.

[9] Huang Qin-Wu Jiao. (2022). Status, causes, Countermeasures and prospects of inflation in the United States. Developmental financial research (6), 61-73. The doi: 10.16556 / j.carol carroll nki KFXJR. 2022.06.004.

[10] Wang Jian & Li Shuangshuang. (2013). The impact of High US National Debt burden Ratio on economy and countermeasures. East China Economic Management (04),91-97.